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Note

¹Based on the interview of late Mr. Sakip Sabancı by one of the authors.

The role of innovation in value creation after spin-off in the USA

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Abstract: This paper suggests a model of value creation during the US spin-off process. While it is a well-known fact that the post-spin-off performance is in general positive, the reason for the performance is still unclear. Based on previous research, we suggest that the parent firm would experience better performance after spin-off. We also suggest that the spin-off would experience better performance *vis-à-vis* benchmark, due to their innovative activity. We argue that the innovation after spin-off would be the key to explain the relationship between spin-off event and post-spin-off performance.

Keywords: spin-off; innovation; learning; process.

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1 Introduction

The importance of global entrepreneurship in the field of management is well-known. Developed countries hope that the dynamism of entrepreneurship would revitalise their mature economy and limited growth opportunity (Carree et al., 2002). Developing countries, like China, would like to promote entrepreneurship to catch up to the technological development of developed countries (Zapalska and Edwards, 2001). When large corporations pursue innovative and entrepreneurial activity, it is called corporate entrepreneurship (Sharma and Chrisman, 1999). However, encouraging corporate entrepreneurship is not an easy process. Organisations often experience familiarity or maturity traps (Ahuja and Lampert, 2001) which prohibits breakthrough innovation and organisational rejuvenation. Sometimes, radical change in organisational structure is necessary to encourage entrepreneurship.

One of the ways to regenerate the sustainability and redefine the business domain is through spin-offs. Spin-offs have attracted growing attention among practitioners and researchers in both the USA and around the globe (Anslinger et al., 1999). This attention is initially due to accumulated findings of value creation from spin-off, including the positive cumulative abnormal return in the stock price of the parent firm during the announcement period and completion period (Hite and Owers, 1983; Schipper and Smith, 1983). Although spin-offs are generally thought to be value-added business activities, relatively a little is known about the ways in which spin-offs actually increase worth. Previous research has tended to focus on one of three main research streams:

- 1 examining the parent and/or spin-offs' short-term performance (Boudreaux, 1975; Hite and Owers, 1983; Johnson et al., 1994; Schipper and Smith, 1983 among others)
- 2 tracking the long-term performance of the parent and/or spin-offs (Cusatis et al., 1993; Woo et al., 1992)
- 3 identifying the variables that determine the success of the spin-offs (Woo et al., 1992; Wruck and Wruck, 2002).

Past researchers have reached a consensus with regard to the first path. The short-term performance of spin-offs generally is good in terms of stock price. The cumulative abnormal returns of the announcement and completion period of spin-offs are positive as well. We know that spin-offs are a value adding process for shareholders, at least in the short run. Meanwhile, researchers have not yet reached any definitive conclusions regarding the second stream. Although Cusatis et al. (1993) has shown that the long-term

stream. Furthermore, the situation along the third stream is similar. We have reached some important, albeit provisional, conclusions regarding the determinants of a spin-off success. For example, we know that the relative size of the spin-off influences the magnitude of cumulative abnormal returns during its announcement period (Hite and Owers, 1983; Johnson et al., 1994; Miles and Rosenfeld, 1983; Schipper and Smith, 1983). Still, relatively a little is known about how spin-offs influence the firm's internal processes. Relevant information about how intensely and radically a spin-off unit innovates after a spin-off, one of the most significant of these internal processes, is sorely lacking.

As we can see the case of Xerox and its spin-offs, spin-offs have brought numerous innovation to the world (Chesbrough, 2002). In light of the value creating qualities of spin-offs, it is natural to query the relationship between the spin-off event and a firm's innovative behaviour. Previous researchers have reached conflicting conclusions. Some have found a weak and indirect relation between divestitures and innovation (search) (Hitt et al., 1996; Hoskisson et al., 1994). Others have shown that the divestitures have direct and positive effects (Hoskisson and Johnson, 1992) on search intensity. Search intensity is defined as the degree of managerial commitment and the firm's outcome to investigate new solutions, processes and products. Among divestitures, researchers have not yet investigated the ways that the spin-off process influences search intensity. Similarly, researchers have not yet explored the influence that the organisational conditions exert upon search intensity during spin-offs. Prior strategy research has shown that two factors affect the search intensity (Cyert and March, 1963):

- 1 the extent to which goals are fulfilled
- 2 the amount of organisational slack (Cyert and March, 1963).

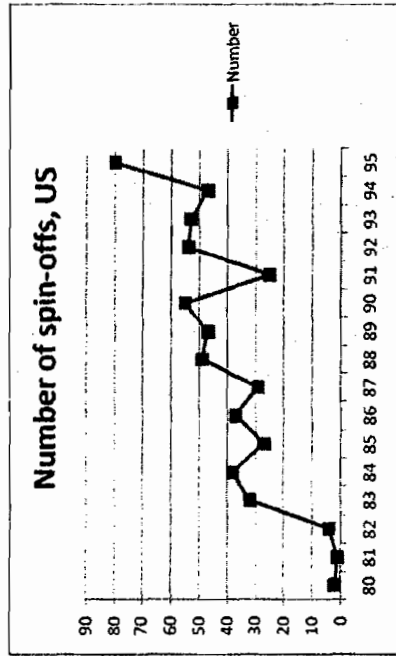
By examining the literature on spin-offs and search, we can begin to ask exactly how the conditions internal to the spin-off affect the intensity of the search. This paper attempts to review the research on spin-offs, divestitures and search. We suggest an advancing theory and propose a future research question that would fill the gap in the literature.

2 Literature review

2.1 The prevalence of spin-offs and their relation to performance

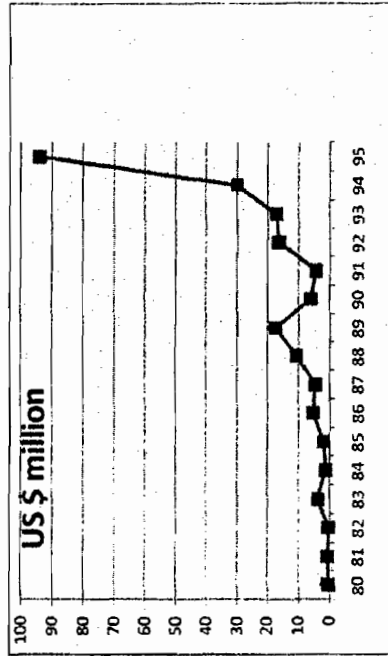
Spin-offs had been prevalent in the USA, especially between 1994 and 1996 (Figure 2). Even in the 1970s, the importance of divestment, including spin-offs, was recognised by Haynes (1972). He described the divestment wave of the 1970s as an 'aftermath of the merger fever in the 1960s'. Some managers are not enthusiastic about reducing the size of their firm. Nevertheless, spin-offs became prevalent in the 1990s for many reasons. One of the reasons included a desire to resolve the 'energy' problem (Lian and Rozeff, 1985), which is the opposite of synergy. Famous spin-offs include AT&T, Sears, Marriott, Sara Lee, H&R Block, Kimberly-Clark, General Mills and 3M. The number of spin-offs greatly increased between 1980 and 1995, along with a remarkable rise in the dollar amount of spin-off volume (Figures 1 and 2).

Figure 1 Number of spin-off in the USA, 1980-1995 (see online version for colours)



Source: SDC (Security Data Company).

Figure 2 Dollar value of spin-off in the USA, 1980-1995 (see online version for colours)



Source: SDC (Security Data Company).

Following previous scholars (Cusatis et al., 1993; Woo et al., 1992 among others), this paper will follow the definition of the SEC (U.S. Securities and Exchange Commission), which dictates that in a 'spin-off', a parent company distributes shares of a subsidiary on a pro-rata basis to the parent company's shareholders. As a result, the subsidiary becomes a separate company. State law and the rules of the stock exchanges determine whether a

While Security Data Company (SDC) follows the definition of SEC, the exact definition of a spin-off is still being debated. Tübbe (2004) claimed that the term 'spin-off' should be considered broadly, so that it includes corporate spin-offs, institutional spin-offs and university spin-offs. In terms of corporate spin-offs, he differentiated between the restructuring-driven spin-off and the entrepreneurial spin-off. The restructuring-driven spin-off is controlled by the parent firm. Entrepreneurial spin-offs are not necessarily managed by the parent firm. Rather, they are initiated by former employees who worked for the parent firm. Gompers et al. (2005) describe this type of entrepreneurial spin-off as 'entrepreneurial spawning', that is 'creating ... venture capital-backed entrepreneurs' from an established firm. According to Tübbe (2004), equity spin-off is the main form of restructuring-driven spin-off. In financial economics, 'spin-off' usually means 'equity spin-off'. The equity spin-off can be defined in the following way: shareholders of the parent firm obtain stock in the newly created child firm on a pro-rata basis. When the child firm does not receive equity financing from the parent firm, it is called a 'spin-out'.

Other researchers have defined the term spin-off as an equity spin-off and this way of viewing this event follows the SEC's definition. Miles and Woolridge (1999, p.1) defined spin-off as the "divestment of a business division to shareholders through a distribution of the subsidiary's common stock in the form of a dividend". Rosenfeld (1984) defined spin-off as a divestment of a controlled subsidiary separating a publicly traded company, in which the current shareholders of the parent firm receive all of the common stocks as dividends.

It is worthwhile to review the spin-off process to provide a better understanding of spin-offs. A typical spin-off process includes five steps:

- 1 a parent firm publicly announces the planned spin-off
- 2 the board of directors approves it
- 3 the company receives the results of applications for the Internal Revenue Service ruling
- 4 the parent firm receives approval from stockholders
- 5 the completed spin-off is announced (Kudla and McInish, 1984).

The parent firm must provide several documents prior to a spin-off process, including a plan of reorganisation, a proxy statement and a registration statement. A plan of reorganisation is an agreement between the parent and the child firm regarding certain details of the spin-off like the division of assets and liabilities. The plan of reorganisation should be approved by the board of directors of both firms as well as the shareholders of the parent firm. The proxy statement gives notice to the shareholders about a meeting regarding plans for the firm's reorganisation. The registration statement must be submitted to the SEC. A prospectus is included in the registration statement. There, the SEC keeps all the records for the spin-off.

Perhaps, the most amazing feature of spin-offs is their performance. The parent firm receives an average 3% of CAR (Cumulative Average Return) in its stock during the spin-off announcement period. Moreover, both the parent and child firms (spin-off unit)

operating performance. The child firms similarly tend to show a higher growth in both sales and returns on sales than its benchmark (Cusatis et al., 1993). This seems to indicate that there is a definite correlation between spin-off events and sharp changes in performance.

2.2 The evidence of direct effect of spin-offs on performance

The spin-offs have gained interest among academics because of their popularity and the favourable reaction the stock market has towards them. The direct effect of spin-offs on performance has been examined extensively by scholars in both strategic management and financial economics. The purpose of this section is to show three distinct features of spin-offs. The first is the positive stock market response after the announcement of a spin-off. The second is the main motivation of spin-off differs from that of other divestitures. The third is the stock market response to spin-offs is more positive than to other types of divestitures (Table 1).

Prior studies have shown that the shareholders of both the parent and the child firms gain significant positive returns on the day the spin-off is announced. The reported cumulative average returns are approximately 3%. Hite and Owers (1983) reported 3.3% of CAR while Miles and Rosenfeld (1983) found 3.34% and Schipper and Smith (1983) discovered 2.84% of CAR. The difference in CAR is due to the difference in period window they used. This is a much higher abnormal return compared to other types of divestitures. In the case of equity carve-outs, the average cumulative abnormal return is about 0.4–1.8% depending on the period and size of the sample. As Schipper and Smith (1983) have shown, the average market-adjusted positive return for the announcement of equity carve-out is about 2%. In the case of sell-offs, it is about 0.70–2.80%. In case of management buyouts, the short term operating performance is known to be positive. The effect of leveraged management buyouts on firms' operating performance and market-adjusted returns are both significantly positive, according to Kaplan's study (1989, p.237). However, while consistently positive stock market responses are common during the spin-off announcement period, market reaction to the announcement of sell-offs has been erratic (Klein, 1986, p.685). This is shown in Table 1. It is not only over the short term that the spin-offs engender a positive market response, firms also experience a positive financial growth over the long term following divestitures. According to Gilson et al. (2001), the firms' long-term financial performance tends to increase after spin-offs, equity carve-outs and targeted stock offering.

The positive stock market reaction to the spin-offs' announcement and completion has long puzzled the management researchers. If the strong or semi-strong efficient market hypothesis holds, the sum of the two firms after a spin-off should be equal to the single firm prior to it. Empirical analyses have shown that the stock market reactions to the parent firm are positive during both the announcement and completion periods. Moreover, the long-term performance of the child and the parent firms is generally positive (Cusatis et al., 1993). This indicates that the sum of value of two divided firms might be greater than the value of the single undivided firm. This has been a puzzle in the field of strategic management and financial economics. Naturally enough, it has generated considerable research (Allen, 2001; Allen et al., 1995; Copeland et al., 1987; Cusatis et al. 1993; McConnell et al. 2001).

Table 1 Divestiture announcement day return

Author(s)	Financial return(%)	Sample size	Period	Type of divestiture	Cumulative average return window	Operating returns (1 year)
Boudreaux(1975)	-2.50	31	1965-1970	Involuntary spin-offs	(-2,0)	
Hite and Owers (1983)	1.40 ^{a†}	110		Sell-offs	(-1,0)	
Alexander et al. (1984)	0.17 ^{a†}	53	1964-1973	Voluntary sell-offs	(-1,0)	
Rosenfeld (1984)	2.33 ^{a†}	62	1963-1981	Sell-offs	(-1,0)	
Hearth and Zaima (1984)		58	1979-1981	Sell-offs		
Jain (1985)	0.70 ^{b†}	1107	1976-1978	Voluntary sell-offs	(-5,1)	
Linn and Rozeff (1985)	1.45 ^{a†}	77		Sell-offs	(-1,0)	
Schipper and Smith (1983)	1.8 ^a	76	1965-1983	Equity carve-out	5 days	
Klein (1986)		202	1970-1979	Sell-offs		
Hite et al. (1987)	1.66 (successful) ^a 1.41 (unsuccessful) ^b			Voluntary sell-offs (partial)		
Kaplan (1989)	-	76	1980-1986	Management buyout	-	Positive
Smith (1990)	-	58	1977-1986	Management buyout	-	Positive
Klein et al. (1991)	1.06 ^a	52	1966-1988	Equity carve-out	(-1,0)	
Michaely and Shaw (1995)	0.4 ^f	28	1981-1988	Equity carve-out	(-2,2)	
Lang et al. (1995)	2.80	93	1984-1989	Voluntary sell-offs	(-5,5)	
Allen and McConnell (1998)	1.90 ^g	186	1978-1985	Equity carve-out	(-1,1)	

^aAnnouncement day Cumulative Average Return (CAR), parent firm.

^bAverage Excess Return, parent firm (seller).

^cCumulative Excess Return.

^dMean-adjusted returns model.

^eSingle-index model.

The researchers who have previously studied spin-offs were aware that the value creation

85 papers and books published between 1960 and 2002. The most common focus of the papers is the phenomenon of value creation. The parent firms generate around 3% abnormal positive stock market after spin-offs (Cusatis et al., 1993 among others). Moreover, return on the assets of the parent firms improved by 3% by the end of the first year after spin-offs (Daley et al., 1997). Previous scholars have questioned the conditions of the value creation (Allen et al., 1995; McConnell et al., 2001). Scholars have traditionally considered value creation to be the most significant feature of spin-offs (Tulbke, 2004).

2.3 The moderating and mediating variables affecting the relation between spin-offs and performance

Although researchers have often conducted in-depth analyses of the direct effects of spin-offs on performance, relatively a little work has been done on the moderating and mediating variables that affect this relationship. The moderating and mediating variables influence the relation between the spin-off and its performance. The moderating and/or mediating variables include relative size of spin-off, the child firm's executives shareholding (Allen, 2001), prior takeover experience of the parent firm (Allen et al., 1995), the child firm manager's incentive (Aron, 1991), corporate focus (Daley et al., 1997), information asymmetry (Krishnaswami and Subramaniam, 1999), technology transfer (O'Shea et al., 2005) and innovative learning (Arrighetti and Vivarelli, 1999).

The first types of variables are based on agency theory. They include executives' shareholdings, managers' incentives and information asymmetry. The subsidiary managers, who later become managers of the child firm, are generally privy to better information than the executives of the parent firm. Because of this inside information, they are more aware of the value of the spin-off firm. They thereby increase the shareholding when the parent firm commits the spin-off (Allen, 2001). One interesting feature of Allen's work is his observation that the insiders who traded during the three-month period directly following spin-off experience the most significant gains. This is inconsistent with the information asymmetry explanation, which dictates that as more people know the true value of the firm, they have fewer gains from the trade. When senior managers monopolise the information, they can experience greater gains than the other market participants. In addition, the manager of the child firm (spin-off unit) has greater incentive to innovate when he owns the shareholdings of the child firm. There are two reasons that a manager with shareholdings would innovate intensively. Firstly, the innovative activity, such as a new patent, may signal the stock market that the firm will prosper. Therefore, the financial performance of the stock would improve. Secondly, the innovative activity can be licensed or used for a new product development, which helps to increase revenue and profits.

The second reason is based on learning and innovation. It includes technological transfer and innovative learning (Tables 2 and 3). The knowledge gained from the parent firm can moderate the relationship between the spin-off event and the child firm's success. Depending on their innovative activity, a child firm's performance can be moderated or mediated. Innovative motivation and learning are important factors in determining the post-spin-off performance (Arrighetti and Vivarelli, 1999). Arrighetti and Vivarelli's study employed a content method. The interviewees who consisted of

post-entry performance. They concluded that innovative motivation and innovative learning strongly influence the spin-offs' performance. This study had several limitations. Firstly, the sample only included firms based in Milan, Italy. Secondly, the study utilised the survey method exclusively. It is very common for entrepreneurs to often attribute their success to their own ability, such as their high levels of motivation and knowledge. The self-justification that often follows success is an issue intrinsic to the survey method.

Other variables are related to the prior conditions of the parent firm, such as prior takeover experience of the parent firm and corporate focus of the parent firm (Allen et al., 1995). The relative size of the spin-off is always an important variable, one that positively moderates the relationship between the spin-off event and the stock market reaction to it (Allen et al., 1995). In other words, because the parent firm decided to spin-off a greater proportion of the whole firm, the stock market reaction tends to be more positive.

Table 2 Divestiture and innovative (search) input

Authors	Result	Measurement	Period	Sample (firms)
Hoskisson and Johnson (1992)	Divestiture, reducing in diversification scope leads increase in R&D intensity. Some restructuring increased diversification scope decreased R&D intensity	R&D input intensity	1979-1989	174
Hitt et al. (1996)	Divestiture intensity is indirectly negatively related to internal innovation and positively indirectly related to external innovation	Divestiture intensity: (i) number of divestitures made (ii) percentage of sales divested External innovation: survey, Internal innovation: R&D input intensity	1985-1991	250
Hoskisson et al. (1994)	Attempted to find the influence of R&D intensity on divestiture intensity but did not find (p.1211, 1228)	R&D input intensity	1985-1990	203

Table 3 Divestiture and innovative (search) output

Authors	Result	Measurement	Period	Sample
Hitt et al. (1996)	Not significant (p.1104)	New product intensity	1985-1991	250 firms

3 Propositions and a model

In this section, we attempt to integrate prior research into the current project and introduce variables previously omitted. However, before integrating the prior research, we must discuss which aspect of performance we should discuss. There are many different ways to measure the performance of a given firm. When couching performance

financial stock market performance (yearly performance *vis-à-vis* benchmark) and long-term operating performance (yearly performance *vis-à-vis* benchmark).

Similar variables may have different effects on the different areas of performance. For example, Allen et al. (1995), concluded that the relative size of a spin-off demonstrates a positive relationship with the short-term performance of the parent firm, this is especially true during the time surrounding the announcement period. At the same time, the absolute size of the spin-off negatively moderates the relationship between the spin-off and the long-term financial performance (Sadtler et al., 1997, p.30). It means that a small spin-off, one with less than \$ 200 million of market capitalisation, has a greater positive stock market performance than larger size spin-off companies, those with more than \$ 200 million of market capitalisation. In this paper, we want to discuss the long-term financial and operational performance of the child firm. We have interests in long-term performance because there is a lag between innovation and the performance. The announcement of additional R&D expenditures can be considered as a positive sign to the shareholders, leading to a positive stock market response. However, the introduction of new products and services requires time even after the R&D expenditures. The increased revenue and profits come next after the innovation.

According to the previous literature, we can conclude the following propositions. The following propositions suggest that the spin-off events positively influence the long-term performance of both the parent and the child firms.

Proposition 1: *The parent firm experiences a greater positive long-term performance after the spin-off than the past.*

Proposition 2: *The spin-off firm experiences a greater positive long-term performance than the benchmark firm for the first six years after the divergence.*

We consider that three years after the divergence is the appropriate time period to measure long-term performance following Cusatis et al. (1993). After three years, we assume that the effect of spin-off disappears. Variables from the prior literature can explain the post-spin-off performance. The spin-off event itself may have a direct effect on the long-term post-spin-off performance. In terms of short-term stock market performance, the spin-off event may influence short-term financial performance because the spin-off announcement itself can function as a signal to buyers of the stock market.

Three variables are especially relevant to the explanation of short-term market performance. Firstly, the parent firm's reduced focus can positively influence the post-spin-off performance. Secondly, the relative size of the spin-off is known to influence the performance positively after the spin-off, especially the short-term performance. Finally, prior takeover experience is related to a positive stock market response during the spin-off announcement period. These variables may determine a long-term performance. This is because the short-term stock market performance shows the market's expectation of future firm value.

Changes in top managers (Wruck and Wruck, 2002), managerial shareholdings (Allen, 2001) and information asymmetry are also variables which may influence the child firm's performance.

Learning variables, such as technology transfer and innovative learning, can moderate or mediate the relationship between the spin-off event and post-spin-off performance

Figure 3 Conceptual relationship among spin-off event, innovation and post-spin-off performance (see online version for colours)

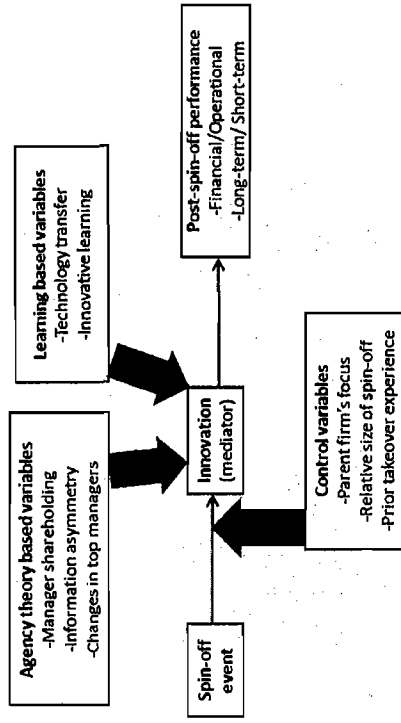
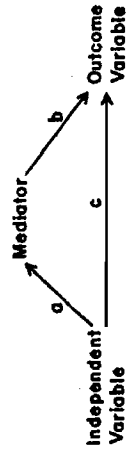


Figure 4 The relationship among independent variable, mediator and outcome variable and the relation



Source: Baron and Kenny (1986, p.1176).

The innovation of the child firm is a mediator of its long-term performance. There is, of course, a great difference between the mediators and the moderators (Baron and Kenny, 1986). The independent variable influences on the mediator and the mediator influences the dependent (outcome) variable (Figure 4). The spin-off event may influence the innovative activity of the child firm and the innovative activity may determine the long-term performance of the child firm.

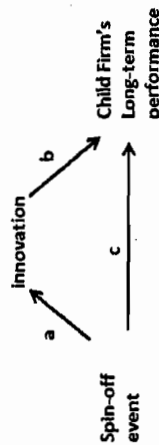
The spin-off events have a positive effect on performance, whether we are considering long or short term. Thus, innovation subsequent to a spin-off is a possible mediator. We usually use R&D expenditure over sales as a proxy for innovative intensity. While it is uncertain whether spin-off increases innovative intensity, an increase in innovative intensity might influence performance positively. As a matter of fact, previous research has shown that the announcements of spin-offs are positively related to short- and long-term performance. The source of value creation remains controversial. We can infer that the search activity after spin-offs could be related to their cumulative

Table 4 Announcement of an R&D expenditure increase and abnormal returns

Authors	Time window (days)	Return (%)	Period	Sample
Chan et al. (1990)	2	1.38(AR)	1979-1985	95
Woolridge and Snow (1990)	2	1.13(CAR)	1972-1987	52
Zantout and Tsetsekos (1994)	2	0.74(AR)	1979-1990	114
Szewczyk et al. (1996)	2	0.47(CAR)	1979-1992	252

Note: AR = Average abnormal return; CAR = Cumulative abnormal return.

Figure 5 A conceptual relationship among spin-off event, innovation and long-term performance



Interestingly, the announcement of an increase in R&D expenditures leads to positive abnormal returns during the announcement period (Woolridge and Snow, 1990) (for more information see Table 4). Stock investors consider R&D expenditure announcement a good sign, because it promises growth opportunity. R&D investment today may not increase profits and sales immediately. It is paid back in the long term, opening opportunities for a new market and noble products in the future. It is especially true for the firms in high-technology industry (Chan et al., 1990; Zantout and Tsetsekos, 1994). Assuming that a firm's sales are constant, an increase in R&D expenditure means a higher R&D intensity (R&D/sales). It is implied that the shareholders consider a more intensive search (increase in R&D expenditures) as a positive signal for the growth of a firm. From the work described in Table 4, we can draw the following propositions.

Proposition 3: *Innovative intensity after spin-off has a positive relationship with the long-term performance of the spin-off firm after the spin-off event.*

The relationship between the spin-off event and long-term performance (path a) is a positive one (Cusatis et al., 1993) among others (Figure 5). The relationship between the managerial commitment to innovation (R&D expenditure over sales) and the long-term performance (path b) is also positive.

Then what exactly constitutes the relationship between the spin-off and the innovation? We can have some idea from the existing literature that questions the relation between mergers and innovation and divestitures and innovation. Spin-offs are often referred to as 'reverse mergers' (Tubke, 2004, p.1). Spin-off can be called as a reverse merger because a merger is integration of two firms into one, whereas spin-off is separation of one firm into two. It is a reverse merger because spin-off can be a way to reverse mergers. Allen et al. (1995), argued that the firms with a positive stock market response during spin-off announcement period tend to have a more favorable innovation

While the relation between M&A and search input intensity is negative, the relation between divestiture and search intensity is weak and insignificant (Hitt et al., 1996). In one study, divestiture decreased the diversification scope of the firms (single business, dominant, related and unrelated level of diversification), which led to increased R&D input intensity (Hoskisson and Johnson, 1992). Since the spin-off is one mode of divestitures and can be considered as a reverse merger, we can expect that the relationship between the spin-off and the search input intensity will be positive.

If there is a reason that the search intensity decreases after mergers, the same reason may explain why search intensity increases after spin-offs. Search intensity after M&A tend to decrease due to multiple reasons. In the M&A case, a firm can enjoy economies of scale in R&D. They can fire the overlapping R&D department. They also need to focus on generating immediate cash which they spent to takeover the target firm. In case of spin-off, the newly created firm cannot enjoy economies of scale in R&D anymore. They need to start investing on their own R&D. Also, they obtained cash from their IPO. Therefore, they have a reason and resources to invest on R&D. From the previous literature, we can draw the following propositions.

Proposition 4: *The sum of the parent and the child firm's search input intensity subsequent to spin-off is greater than the parent firm's search input intensity prior to it.*

We just discussed about search input intensity, how much resources managers are willing to spend towards R&D investment. How about search output intensity, which is the actual innovative output?

Existing studies do not offer any definitive accounts of the changes in search output intensity subsequent to spin-off. However, they do suggest some tentative determinants for the changes in the search intensity after changes in organisational structure.

Firstly, managerial incentives influence the search intensity after divestiture (Hitt et al., 1996). Jensen (1993) suggests that the poor managerial incentive may cause ineffective R&D and capital expenditure allocation. Diversification/divestiture events change corporate governance. These events also change managerial incentives, so that the search becomes more difficult or inefficient. The search intensity changes after divestiture according to Jensen (1993) and Hitt et al. (1996). This is due to altered managerial incentives.

Secondly, managerial risk aversion influences the search intensity after divestiture (Baysinger and Hoskisson, 1989). Managerial risk aversion is high in large diversified firms. Managers in diversified M-form firms tend to avoid long-term risky projects, such as R&D investment. Managerial risk tendency may determine the search intensity after divestiture. Managers avoid long-term investment, such as R&D expenditures and focus on increasing return on assets (Burgelman, 1984; Hayes and Abernathy, 1980; Hill et al., 1988). This is consistent with the findings of Hoskisson and Hitt (1988), Baysinger and Hoskisson (1989). Hoskisson and Hitt (1988) who found that the less diversified firms tend to exhibit more R&D intensity than firms that are more diversified, after controlling for size and industry effects. Baysinger and Hoskisson (1989) found that R&D intensity in dominant-business firms is higher than that of the related-business firms and the R&D intensity in related-business firms is higher than that of the unrelated business firms.

Thirdly, divestiture may cause lower morale and the threat of unemployment which

hypothesis does not apply to the spin-offs. After divestiture, the parent firms may experience a lower morale and the threat of unemployment. However, employees in spin-off firms may even have a higher morale. They may even have a more entrepreneurial spirit after the spin-offs because of the decrease in the firm's size and the various organisational changes that occur after spin-offs. Interestingly, Hitt et al. (1996)'s empirical results did not support their hypothesis regarding lower morale and the threat of unemployment.

Finally, we suggest that

- 1 managerial incentive
- 2 managerial risk tendency
- 3 entrepreneurial spirit after spin-off are the reasons that would positively influence the search intensity.

From the previous literature, we can draw the following propositions.

Proposition 5: The sum of the parent and the child firm's search output intensity subsequent to the spin-off is greater than the parent firm's search output intensity prior to it.

4 Conclusion

Spin-offs have gained an increased attention among strategic management scholars. Concurrent with the rise in the importance of spin-offs, research about search has also become significant. Prior research has proved fruitful, especially in the elaboration of the spin-offs' most salient features. However, a little research has been done on the spin-off process itself, especially about search. In sum, we know the following four things from the literature.

Firstly, the stock market reactions surrounding spin-off events are positive. In this stream of research, scholars have simply looked at the stock market reaction using an event study. Secondly, even the long-term performance of the child firms and the parent firms are competitive compared to the benchmarks. In this group of studies, researchers asked whether a spin-off is actually related to value creation over the long term. Scholars also have indicated that the spin-offs are value enhancing (John, 1993). Thirdly, various reasons for such a market reactions have been suggested. These reasons include: decrease in agency costs, different clientele effects and wealth transfer from bondholders to shareholders (Galai and Masulis, 1976). Although there are two case studies which support the wealth transfer hypothesis (Alexander et al., 1984; Parrino, 1997), previous literature has found a weak empirical evidence for the wealth transfer theory (Hite and Owers, 1983; Schipper and Smith, 1983). In these studies, the independent variables are the factors surrounding spin-off and the dependent variable is the stock market reaction. In other words, the researchers have examined whether the factors surrounding spin-offs can explain the variance in stock market reactions. Finally, the researchers in diversification and divestiture have suggested that the search intensity and the level of diversification may be related.

financial distress, agency costs and the degree of autonomy affect innovative intensity. Examining the subject matter in this way would generate a new field of study in relation to this important topic: spin-offs and innovation.

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