

Asset specificity and the fear of exploitation

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Abstract

If asset specificity renders the investing party dependent ex post, why would the ex ante willingness to make relationship-specific investments vary? We show how specific investments generate both positive and counter-negative cooperative incentives. We also observe the influences of trust and time horizon on these incentives, which are aggregated to derive the specific investments effect (SIE). Our result suggests that while the fear of exploitation increases proportionally to the magnitude of specific investments and the attendant quasi-rents, it grows exponentially with the deterioration of inter-personal (trust) and/or inter-temporal (time horizon) contexts.

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1. Introduction

A central tenet of transaction cost analysis is that transaction-specific investments promote integration since the probability of opportunism to appropriate quasi-rents increases with investments highly specialized to an exchange (Williamson, 1985; Joskow, 1988; Anderson and Weitz, 1992; Gulati et al., 1994). As a classic example, the Chrysler Corporation in 1986 instructed its parts suppliers to reduce prices by 2.5 percent after specialized

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investments had been made. Chrysler strictly enforced this policy and terminated its relationships with suppliers who did not comply (The Next Act, 1986).

An interesting question arises: if asset specificity renders the investing party dependent and hence vulnerable to exploitation *ex post*, why would one's willingness to commit vary *ex ante*? Research shows that firms in Japanese automaking, Italian knitwear, and New York apparel industries demonstrate greater willingness than others to make specific investments (e.g., Sako and Helper, 1998; Dyer 1996; Uzzi, 1997). For example, Japanese automobile suppliers develop more unique parts for their customers and make greater investments in specialized assets. In contrast, components that require considerable engineering development efforts tend to be produced in-house in the U.S. (Smitka, 1991; Dyer and Ouchi, 1993; Monteverde and Teece, 1982). In a large-sample, cross-national empirical test, Dyer and Chu found that U.S. supplier-automaker relationships were characterized by lower asset specificity compared to Japanese relationships. The observed variation of institutional arrangement for transactions with specific investments suggests that the connection between asset specificity and governance structure may be more complex than has been explained by transaction cost economics (Robins, 1987; Chiles and McMakin, 1996; Nooteboom et al., 1997).

This paper offers an analytical approach that systematically explores factors that explain the variance of *ex ante* willingness to make specific investments. We argue that such variance depends critically on the extent to which specific investments create dependence upon making specific investments. Understanding the mechanisms of how specific investments create dependence is important because dependence gives rise to the fear of exploitation and diminishes the willingness to invest (Williamson, 1985; Anderson and Weitz, 1992; Morgan and Hunt, 1994; Gulati et al., 1994).

Our research suggests that asset specificity simultaneously generates two distinct incentives that create dependence by inducing the investing party to cooperate *ex post*: one *positive*, which promotes cooperation; the other *counter-negative*, which deters defection. The positive incentive exists because cooperation is a pre-requisite to reap the potential quasi-rent and retain the resources (Williamson, 1985; Parkhe, 1993; Anderson and Weitz, 1992). The counter-negative incentive exists because one would have to forego the quasi-rent and lose the committed resources when defecting. Thus, asset specificity has the effect of eschewing opportunism because opportunistic behavior risks the dissolution of a relationship, which runs counter to self-interest (Williamson, 1985; Anderson and Weitz, 1992; Morgan and Hunt, 1994).

Moreover, relationship-specific investments cannot be made in a vacuum but must necessarily be embedded in the context of a relationship that characterized *jointly* along the inter-personal and the inter-temporal dimension. The inter-personal dimension refers to the strength of social ties that generate trust while the inter-temporal dimension refers to the expected time horizon of future encounters (Granovetter, 1985; Uzzi, 1997; Sako and Helper, 1998; Heide and Miner, 1992; Axelrod, 1984; Artz and Brush, 2000). That greater trust and/or longer time horizon is more amenable to specific investments is intuitively appealing and supported by research (e.g., Uzzi, 1997; Morgan and Hunt, 1994; Chiles and McMakin, 1996; Nooteboom et al., 1997; Sako and Helper, 1998).

There is an extensive body of literature addressing the role of the relational context in encouraging specific investments across disciplines, including marketing, strategic

management, law, economics, and sociology (Macneil, 1980; Dore, 1983; Goldberg and Erickson, 1987; Noordeweir et al., 1990; Crocker and Masten, 1991; Zaheer and Venkatraman, 1995; Artz and Brush, 2000; Dyer and Chu, 2003). Zaheer and Venkatraman maintain that the process by which the relationship is managed, in addition to the actual type of contract, is critical to determine the effectiveness of a relational contract. Promoting relational norms that facilitate information sharing, joint planning, long-term orientation, transparency, and persuasive rather than demanding negotiation strategies are considered important process elements (see Artz and Brush for a review). In this paper, we address the effect of relational context on specific investment by considering the joint impact of trust and time horizon, which captures the holistic notion of an ongoing social relationship. As such, we explore how the fear of exploitation that stems from specific investments is shaped by the joint effect of the inter-personal and the inter-temporal aspect of a relationship.

Drawing on transaction cost theory within a relational context, this paper derives an indicator of specific investments effect (SIE) from a simple decision-making model. SIE captures the combined effects of the positive and counter-negative incentives as well as their interactions with the underlying relational context (inter-personal and inter-temporal). SIE measures the extent to which asset specificity compels the investing party to cooperate *ex post* from fear of losing the specific interments and not getting the attendant quasi-rent once resources are committed. The need to cooperate *ex post* thus gives rise to dependence and entails the appropriation concern of the investing party.

Our research suggests that the fear of exploitation begins to grow when specific investments are made in a context deviating from full trust *and* assured future. It escalates at an increasing rate if a relationship deteriorates either inter-personally or inter-temporally. SIE approaches infinity when there is no trust and/or a one-off exchange, implying that no credible commitment should ever be made. Our result suggests that while the fear of exploitation increases proportionally to the magnitude of specific investments and the attendant quasi-rents, it grows exponentially with the deterioration of the inter-personal (trust) and/or the inter-temporal (time horizon) context. Because the same level of asset specificity could generate dependence to varying degrees depending upon the relational context in which it is embedded, the fear of exploitation may be higher (lower) for a lower (higher) level of specific investment.

In addition, our research suggests that trust and time horizon reinforce each other in alleviating the fear of exploitation. In other words, the exploitation concern would be less sensitive to the deterioration of trust in a relationship characterized by a longer time horizon. As well, the sensitivity of such concern would be less in a more trusting environment when the time horizon shortens. This implies that engaging in “repeated transactions” with “trusted partners” has a multiplicative (rather than additive) impact on one’s willingness to make specific investments. Lastly, a corollary to the question about one’s willingness to invest in specific assets is: “What is the threshold level for a specialized investment that is required for cooperation to be possible?” We derive such a threshold level in this paper.

In this paper, asset specificity is treated as a factor that modifies the payoff structure of a repeated exchange (see also, Gulati et al., 1994). We demonstrate how investments unique to a relationship generate both positive and counter-negative incentives that give rise to dependence. We also observe the influences of trust and time horizon on these incentives, which are aggregated to derive the specific investment effect. SIE captures the overall effect

of specialized investments on inducing the investing party to cooperate ex post and thereby creating dependence. While SIE looks at the effect of specific investments from the focal party's perspective, the balance of specific investments made by both parties is considered. The implication of our research on the choice of governance structure is discussed. The model on which this research is based and the results derived therefrom are presented in the section below, followed by discussion and concluding remarks.

2. The model

Party A faces a relationship with party B in which the alternative payoffs to party A are in the order of $T > R > P > S$, as is typical in prisoner's dilemma situation, where T (temptation) denotes the payoff when A does not cooperate but B cooperates, R (reward) when both A and B cooperate, P (punishment) when neither A nor B cooperates, and S (sucker) when A cooperates but B does not. As is common in any mixed motive relationship, party A has the option of either cooperating or defecting and faces the risk of being defected.

Consider party A contemplating an investment in specialized assets that will have no residual value should the relationship end. If both parties cooperate, the specialized investment, K , would generate a return Z , which is the quasi-rent from which K has already been deducted. K will be lost if either or both parties defect. Party A's payoffs adjusted for this relationship-specific investment (K) are presented in the following table:¹

	A	
	Cooperation	Non-cooperation
B		
Cooperation	$R_{\text{adj}} = R + Z$	$T_{\text{adj}} = T - K$
Non-cooperation	$S_{\text{adj}} = S - K$	$P_{\text{adj}} = P - K$

Note that party A discounts the future at the rate of δ , the value of which ranges from zero to one. The discount rate δ incorporates party A's time preference and perceived likelihood of the continuation of the exchange (Garvey, 1995). Since a lower preference for the future value of money offsets a higher probability of the continuation of the exchange, for simplicity we define δ in this paper as the time horizon regarding the future interactions with party B that party A expects. An extended time horizon provides an opportunity to reward good behavior and punish bad, implying that the potential vulnerability entailed by commitment can be overcome by greater expectation of continuity (Axelrod, 1994; Heide and Miner, 1992; Artz and Brush, 2000). Moreover, the termination point of the repeated interaction is unknown or else cooperation would not be possible (e.g., Telser, 1980).

In addition to time horizon (δ), trust is explicitly incorporated in the model as a variable, Q , that influences party A's decision. Q , like δ , ranges from zero to one and is defined as

¹ Party A is essentially conducting a thought experiment before the investment (K) is actually made. Party A asks, "To what extent would the relationship-specific investment compel me to cooperate once it has been made?" To know this, party A likes to see the net balance of the impact of K and Z on his/her expected payoffs with respect to the cooperation and non-cooperation strategy.

party A's subjective estimation of the probability that party B will cooperate.² Arrow (1973) claims that an element of trust exists in every transaction and without trust there can be no cooperation. Recent organizational studies contend that the inclusion of trust would yield greater predictive power for relationship dynamics (Nooteboom et al., 1997; Chiles and McMakin, 1996; Mudambi and Helper, 1998).

Treating trust as a probabilistic construct is consistent with the view of Gambetta (1988, p. 217) who defines trust as “the probability that one economic actor will make decisions and take actions that will be beneficial or at least not detrimental to another.” Similarly, La Porta et al. (1997) define trust as a propensity for people to cooperate. Parks et al. (1996) define trust as the belief that the other party will not exploit one's goodwill. Sako and Helper (1998) maintain that trust is an expectation held by an agent that its trading partner will behave in a mutually beneficial manner.

The concept of trust adopted here encompasses both “hard” data such as contracts and guarantees that one relies upon to gauge the probability of the other's cooperation and “soft” data such as one's faith in the other's goodwill. A supplier withholding a piece of vital information, for example, is engaging in opportunistic behavior although he/she may not violate the letter of the contract (Wathne and Heide, 2000). This paper takes the view that the rent-seeking tendencies of exchange partners tend to vary and can be screened (Barney and Hansen, 1994, pp. 188–189; see also Chiles and McMakin, 1996; Nooteboom et al., 1997; Sako and Helper, 1998; Chen, 2000).³ This reduced form of trust follows the rational expectation perspective succinctly summarized by Hardin (1991) as “You can more confidently trust me if you know that my own interest will induce me to live up to your expectation.”⁴

We differentiate two key risks about trust that party A faces: risk of manipulation and risk of abuse. The risk of manipulation pertains to the risk of being misled, which is rooted in the construct of social embeddedness when fraud is considered an intrinsic part of self-interest (Granovetter, 1985; Elangovan and Shapiro, 1998; Uzzi, 1997). Granovetter maintains that trust engendered by personal relations presents, by its very existence, an enhanced opportunity for malfeasance. Acting cooperatively to beget more trust before defection or cooperating to disguise non-cooperation is a fact of life that we all witness. It follows that cooperation per se cannot be taken at its face value if the risk of deceit is to be avoided. Similarly, as it is not possible to tell whether or not cooperation is genuine by the act itself, it is equally impossible to discern the true motive behind non-cooperation without further information. While a defection could be truly ill-intended, it may also be due to misperception or mistake (Kreps, 1990, p. 523). It follows that trust may be abused if one continues to cooperate after defection of the other party unless there is evidence suggesting misperception or mistake. These two risks represent the potential misjudgment of trust: trust manipulation may occur if one takes cooperation at its face value,

² Party A may expect party B to participate in planning and forecasting, sharing information on production requirements, future design changes and the like (Artz and Brush, 2000).

³ We do not address the sources of trust; it could be based on contracts and guarantees or simply on faith in the other's goodwill (e.g., Sako and Helper, 1998; Chen, 2000).

⁴ “Interest” does not have to be pecuniary as individuals can sometimes be trusted to behave honestly even when it is against their monetary interests (Chen, 2000; Fukuyama, 1995).

while trust abuse could exist if one continues to cooperate after defection without further evidence.

This paper examines asset specificity in an environment where trust is free from these two risks. We contend that this best describes the mind of a “would be” investing party because a priori few would like trust to be manipulated and/or abused when contemplating a high stake relationship-specific investment. How realistic is our normative position in light of the positive evidence that trust violations do occur in reality? It is plausible to argue that the more significant is the pledge, the more this position realistically portrays the state of mind of the “would be” investing party.

Given the payoff structure (T, R, P, S), specialized investment (K), quasi-rent (Z), time horizon (δ) and trust level (Q), party A needs to compare the expected present value of cooperation with that of non-cooperation in order to decide whether or not to cooperate.⁵

We first calculate the present value of party A's payoff when cooperation is the envisaged strategy. The expected present value of party A's payoff when choosing cooperation while party B does not at $t=0$ is

$$(1 - Q)[S_{\text{adj}} + \sum_{t=1}^{\infty} P_{\text{adj}} \times \delta t] \quad (1)$$

Eq. (1) can be expressed as

$$(1 - Q) \left[S - K + \frac{\delta}{1 - \delta}(P - K) \right] \quad (2)$$

Note that cooperation ends at $t=1$ upon party B's non-cooperation.⁶ As discussed above, this is to avoid trust abuse because party A *cannot* tell at $t=0$ whether the non-cooperation is truly intended or not.⁷ That party A receives $S - K$ for the first period and $P - K$ after that does not suggest that party A continuously makes commitment after being cheated. It simply means that party A would be left with $P - K$ (rather than P) as the new status quo after the relationship breaks. This is because what has been committed cannot be retrieved. δ represents the likelihood that the interaction will go on in the subsequent periods and party A will receive $P - K$ as a result. The same argument equally applies to the subsequent scenarios.

We then consider the scenario where the two parties cooperate at $t=0$ and party A continues to cooperate while party B does not at $t=1$. The expected present value of this scenario is

$$(1 - Q)Q[R_{\text{adj}} + \delta \times S_{\text{adj}} + \sum_{t=2}^{\infty} P_{\text{adj}} \times \delta t]. \quad (3)$$

⁵ The following discussion models the decision-making process of party A, controlling the risks of trust violations (abuse and manipulation). The model does not seek to establish the equilibrium condition for the interaction.

⁶ While the decision-making process of party B is not modeled, it mirrors that of party A.

⁷ This does not preclude, however, that party A will cooperate with party B again in another encounter. Party A may reevaluate all the relevant parameters including the payoff outcomes, trust, and time horizon should the occasion for another decision arise. Party A again will go through the same decision-making process as described in this thought experiment if trust abuse is to be avoided for that decision. We recognize that this normative point of view may be at variance with the positive, behavioral point of view.

Eq. (3) can be expressed as

$$(1 - Q)Q \left[R + Z + \delta(S - K) + \frac{\delta^2}{1 - \delta}(P - K) \right]. \quad (4)$$

Note that to avoid trust manipulation party A holds the level of trust in party B unchanged at $t = 1$ even though party B cooperates at $t = 0$. This is because, as argued previously, party A *cannot* judge whether party B's cooperation is genuine or otherwise.⁸ Cooperation again comes to an end after party B's defection. We sum the expected present values of all payoff outcomes where party A cooperates while party B defects in the first period, the second period, the third period, and so on, ad infinitum, to obtain

$$\begin{aligned} \text{EPV}(A)C_{t=0} = & \sum_{t=0}^{\infty} (S_t - K_t)(1 - Q)[\delta Q]^t + \sum_{t=0}^{\infty} (R_t + Z_t) \frac{1 - \delta^{t+1}}{1 - \delta} (1 - Q)Q^{t+1} \\ & + \sum_{t=0}^{\infty} P_{\text{adj}} \delta t \frac{\delta}{1 - \delta} (1 - Q)Q^t. \end{aligned} \quad (5)$$

Eq. (5) can be rearranged as

$$\text{EPV}(A)C_{t=0} = \frac{(1 - Q)}{1 - \delta Q} \left[\frac{\delta}{1 - \delta}(P - K) + S - K + \frac{Q}{(1 - Q)}(R + Z) \right]. \quad (6)$$

Alternatively, party A considers non-cooperation as an option. Non-cooperation by party A at $t = 0$ would result in a payoff of T_{adj} with a probability of Q and P_{adj} with a probability of $1 - Q$. For the same reason of avoiding trust abuse, party B ceases to cooperate after party A defects. The sum of the expected present values of party A's payoffs under a non-cooperative strategy is

$$\text{EPV}(A)N_{t=0} = QT_{\text{adj}} + (1 - Q)P_{\text{adj}} + \sum_{t=1}^{\infty} P_{\text{adj}} \times \delta t. \quad (7)$$

Eq. (7) can be written as

$$\text{EPV}(A)N_{t=0} = Q(T - K) + \frac{1}{1 - \delta} [\delta Q + (1 - Q)](P - K). \quad (8)$$

⁸ This is not to claim that upgrading trust is erroneous; it merely points out that party A acts in accordance with the principle of avoiding trust manipulation in this thought experiment. In fact, party A may increase his/her trust in party B in the next encounter if he/she believes that party B's cooperation is genuine in this encounter. Whatever the level of trust that party A deems fit in the next encounter will stay unchanged for that decision if trust manipulation is to be avoided. Everyday experience suggests that manipulation does occur as a result of upgrading trust due to previous cooperation. We recognize that this normative view may be at variance with the positive, behavioral point of view.

Party A will be indifferent between cooperation and non-cooperation when $EPV(A)C_{t=0}$ is equal to $EPV(A)N_{t=0}$, which can be expressed as

$$(R - P) + (K + Z) = \frac{1 - \delta Q}{\delta Q} [(T - R) - (K + Z)] + \frac{1 - Q}{\delta Q^2} (P - S). \quad (9)$$

Party A will choose to cooperate if the LHS is greater than the RHS in Eq. (9) and vice versa. The common term of $(K + Z)$ on both sides of Eq. (9) allows us to diagnose the dual effects of specific investments on inducing the investing party to cooperate as well as not to defect.

3. The effect and threshold of specific investments

3.1. Cooperation-promoting effect

The difference between the adjusted payoff of mutual cooperation and that of mutual non-cooperation ($R_{adj} - P_{adj} = (R - P) + (K + Z)$) on the LHS of Eq. (9) represents the potential *benefits* from cooperation after adjusting for specific investments. Note that $R - P$ represents the payoff difference that offers incentive for parties to form a relationship in the first place (Rapoport, 1967; Hwang and Burgers, 1997; Schmidt et al., 2001). All else being equal, the greater the potential benefits of a joint action, the greater is one's inclination to cooperate.

Because K and Z enlarge the payoff difference between mutual cooperation and mutual non-cooperation, they provide additional incentives to cooperate. The quasi-rent, Z , promotes cooperation because one's own cooperation is a necessary condition for Z to be gained. The specific investment, K , also promotes cooperation because the payoff from mutual non-cooperation would be reduced by the amount of K .

3.2. Defection-detering effect

The adjusted payoff difference between unilateral non-cooperation and mutual cooperation, $T_{adj} - R_{adj} = (T - R) - (K + Z)$, on the RHS of Eq. (9) represents the immediate gains to be reaped from opportunistic behavior after the investment is made. The presence of short-term gains as shown in the payoff difference $T - R$ apparently hinders cooperation (Rapoport, 1967; Dawes et al., 1986; Hwang and Burgers, 1997; Schmidt et al., 2001). Because K and Z narrow the short-term opportunistic gains, they reduce the attractiveness of unilateral defection. The quasi-rent, Z , deters defection because it cannot be gained if one chooses to defect. The specific investment, K , also deters defection because K would be lost if one defects unilaterally.

The defection-detering effect, representing the counter-negative incentive to cooperate, is additionally subject to the collective influence of trust (Q) and time horizon (δ), as shown in the coefficient $(1 - \delta Q)/\delta Q$ on the RHS of Eq. (9). This coefficient is inversely related to Q and δ , suggesting that the defection-detering effect of K and R hinges not only on their absolute values but also critically on the inter-personal and inter-temporal contexts of a relationship against which it is committed. Specifically, a particular investment would have

a greater effect on eschewing opportunistic behavior if it is made in a lower trust and/or shorter time horizon environment.

3.3. The specific investment effect

The specific investment effect is obtained by combining the cooperation-promoting effect and defection-deterring effect into one measure. Eq. (9) can be expressed as

$$(R - P) + (K + Z) = \frac{1 - \delta Q}{\delta Q}(T - R) - \frac{1 - \delta Q}{\delta Q}(K + Z) + \frac{1 - Q}{\delta Q^2}(P - S). \quad (10)$$

As can be seen from Eq. (10), specific investments increase benefits from cooperation by $K + Z$ and reduce opportunistic gains by $(1 - \delta Q)/\delta Q \times (K + Z)$. SIE is obtained as

$$\text{SIE} = (K + Z) + \frac{(1 - \delta Q)}{\delta Q}(K + Z) = \frac{K + Z}{\delta Q}. \quad (11)$$

The greater the SIE, the more the asset specificity compels the investing party to cooperate ex post. This is because only through cooperation can potential losses (losing K and not getting Z) be avoided once resources are committed. The need to cooperate to earn Z and avoid losing K gives rise to dependence and the fear of exploitation. SIE suggests that the fear of exploitation grows linearly to the magnitude of specific investments and the attendant quasi-rents but exponentially to the deterioration of trust and/or time horizon. Because the same level of asset specificity may create dependence to varying degrees, our research suggests that the fear of exploitation may be higher for a lower level of relationship-specific investment.

Specifically, SIE equals $K + Z$ when there is complete trust ($Q = 1$) and an assured future ($\delta = 1$). Note that the defection-deterring effect in Eq. (9) disappears in this extreme case. Since there is no reason to defect unilaterally under the situation, the decrease of short-term gains as a result of the investment becomes irrelevant.⁹ As a result, relationship-specific investments would only provide additional benefits of cooperation, which is neutral to trust and time horizon.

At the other extreme, SIE tends toward infinity when there is no trust ($Q = 0$) and/or in a one-shot encounter ($\delta = 0$). This suggests that even an infinitesimal amount of commitment would generate an infinite impetus to cooperate ex post; in such instances no one would be willing to make any relationship-specific investment. In between the extreme scenarios, SIE grows at an increasing rate as a relationship deteriorates either inter-personally or inter-temporally: $\partial \text{SIE}/\partial Q < 0$, $\partial \text{SIE}/\partial \delta < 0$, $\partial^2 \text{SIE}/\partial Q^2 > 0$, $\partial^2 \text{SIE}/\partial \delta^2 > 0$. The negative signs of the first derivative suggest that the investment would induce greater cooperation ex post if made in the context of lower trust and/or shorter time horizon. The positive signs of the second derivative suggest that one would be increasingly reluctant to make

⁹ When there is complete trust and certain future, one is essentially committed to oneself. The fear of exploitation would obviously cease to exist under this circumstance.

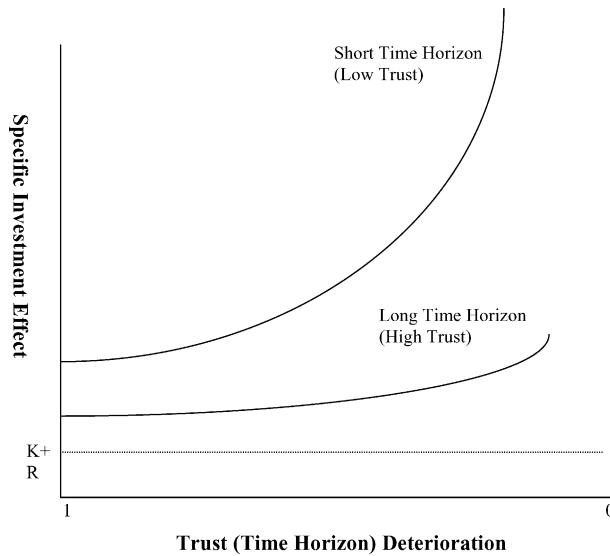


Fig. 1. The impact of specific investment on cooperation when trust (time horizon) deteriorates in long vs. short time horizon (high vs. low trust) context.

such investments as a relationship deteriorates. This result offers a fresh perspective to the importance of building trust and fostering a forward-looking orientation.

Additionally, the positive signs of the mixed partial derivatives, $\partial^2 \text{SIE} / \partial \delta \partial Q = \partial^2 \text{SIE} / \partial Q \partial \delta > 0$, suggest that the sensitivity of SIE with respect to trust (time horizon) is subject to the influence of time horizon (trust). The positive sign of $\partial^2 \text{SIE} / \partial \delta \partial Q$ suggests that the sensitivity of SIE with respect to time horizon declines as trust increases since $\partial \text{SIE} / \partial \delta$ is negative. As well, the positive sign of $\partial^2 \text{SIE} / \partial Q \partial \delta$ suggests that the sensitivity of SIE with respect to trust declines as time horizon extends since $\partial \text{SIE} / \partial Q$ is negative. Our results suggest that the influences of social ties and the continuity of repeated exchanges on cooperation are multiplicative rather than additive. Not only are a greater trust and a longer time horizon conducive to idiosyncratic investments (e.g., Uzzi, 1997; Morgan and Hunt, 1994; Chiles and McMakin, 1996; Nooteboom et al., 1997; Dyer, 1996; Sako and Helper, 1998), our results suggest that one renders the other more effective in alleviating the fear of exploitation.

Scholars have long recognized that resource owners increase productivity through cooperative specialization. Greater productivity gains from cooperative specialization are, however, made possible only if firms are willing to commit specific investments to a relationship and combine resources in unique ways. Our analysis provides a strong theoretical support for the realization of such gains in practice. While building trust and/or fostering a forward-looking expectation facilitate making relationship-specific investment, they reinforce each other in realizing the potential gains from cooperative specialization.

Fig. 1 shows that SIE grows at a slower pace when trust deteriorates in a more favourable future outlook. As well, SIE grows slower in a higher trust environment should the time

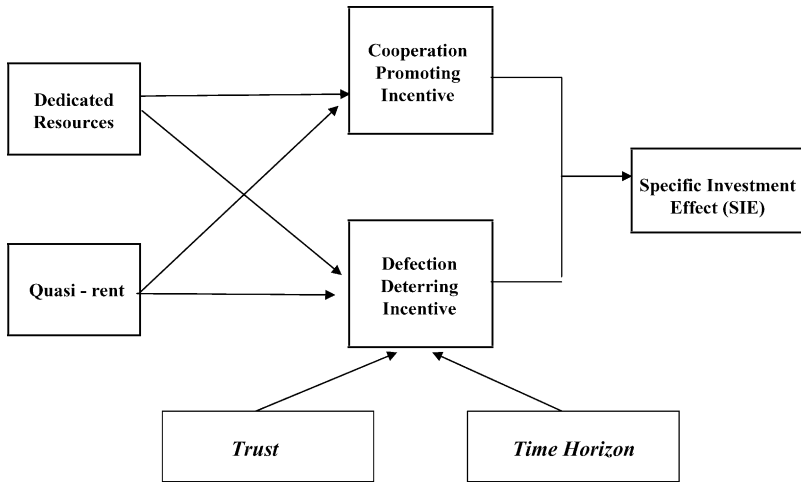


Fig. 2. The dual incentives of cooperation and the specific investment effect.

horizon deteriorate. Fig. 2 depicts the interaction between the dual cooperation incentives after making specific investments and the contextual background in which it is embedded.

3.4. The balance of specific investments by both parties

It is noteworthy that it is not the absolute level of asset specificity by one party, but the relative balance of specific investments by both parties that determines the dependence or power of each party (Williamson, 1985; Zaheer and Venkatraman, 1995). We next examine the absolute as well as the relative impact of party B's specific investments on relationship dependence.

Note that while party B's payoffs are not part of the payoff matrix modelled directly, they are indirectly a part of the model through party A's trust in party B. In other words, as party B's payoffs will influence party A's trust in party B, the impact of party B's specific investments are filtered through party A's trust. The extent to which party A's dependence is mitigated by party B's specific investments can be expressed as

$$SIE_R = SIE_{A1} - SIE_{A2} = \frac{(K + Z)_A}{\delta_A Q_{A1}} - \frac{(K + Z)_A}{\delta_A Q_{A2}} = \frac{(K + Z)_A}{\delta_A} \left(\frac{1}{Q_{A1}} - \frac{1}{Q_{A2}} \right). \quad (12)$$

SIE_R measures the level of dependence that is reduced. SIE_{A1} and Q_{A1} denote respectively party A's specific investment effect and his/her trust in B before party B's specific investments, while SIE_{A2} and Q_{A2} denote those thereafter. Because party A is likely to trust party B more after B's specific investment, $Q_{A1} < Q_{A2}$. As $1/Q$ decreases at a decreasing rate when trust improves, it is increasingly more difficult for party B's marginal specific investment to offset party A's dependence. This implies that an equal amount of specific investment by one party has a greater impact on reducing the other party's dependence

when trust is low than when it is high. Moreover, taking the extreme case that party A trusts party B completely after party B's investment, $1/Q_{A2}$ equals one but not zero. This means that party A's dependence is equal to $(K+Z)_A/\delta_A$ after B's specific investments that earns party A's full trust. Thus, no matter how much party B earns trust from party A due to the commitment, it does not eliminate the fact that party A still depends on party B to recoup his/her own specific investment.

We next consider the relative dependence of two parties when both make specific investments. The relative dependence (RD) can be expressed in Eq. (13):

$$RD = \frac{SIE_A}{SIE_B}. \quad (13)$$

RD equals one if both parties commit by the same amount and if the perceived relational contexts characterized by Q and δ are at the same level. Thus, one party's dependence on the other cancels out as the relative dependence is not affected. Moreover, it implies that, even with the same amount of specific investments, the party who perceives a less favorable relational context, either in shorter time horizon or lower trust, will perceive a higher level of dependence.

3.5. The threshold of specific investment for cooperation

The combined value of $K+Z$, which represents the critical threshold level above which party A will cooperate, can be obtained by rearranging Eq. (10) as

$$(K+Z) = \delta Q \left[\frac{1-Q}{\delta Q} (T-R) + \frac{1-Q}{\delta Q^2} (P-S) - (R-P) \right]. \quad (14)$$

Eq. (14) indicates that party A would cooperate if the LHS is greater than the RHS. It follows that without specific investments (i.e., $K+Z$ takes on the value of zero), cooperation would not be possible if the brackets on RHS assume a positive value. In other words, cooperation is not justifiable under the original payoff structure with its underlying context. After making the relationship-specific investment, however, one would cooperate as long as $K+Z$ is greater than the threshold value on the RHS of Eq. (14).¹⁰ Eq. (14) further suggests that, all else being equal, the binding force of $K+Z$ is stronger in a relationship characterized by lower trust and/or shorter time horizon.

4. Discussion

Transaction cost theorists have argued that the contingent value of a specialized resource exposes its owner to a greater risk of hold-up than the owner of a generalized resource. Given this possibility, the resource owner might never make the specialized investment, and

¹⁰ Wathne and Heide discuss how Taco Bell franchisees continued to work with the franchisor despite strong opposition to the newly introduced retail format (Taco Bell Express). Because of their investments in specific capital, the franchisees were locked-in as their next best opportunity was less attractive than continuing to run a Taco Bell franchise.

the potential gains from specialization will be foregone. Therefore, when asset specificity is great, transacting parties will make special efforts to design an exchange that has good continuity properties (Williamson, 1985; Joskow, 1988). In particular, for simple transactions when asset specificity is negligible, market governance is considered to be relatively efficient. Conversely, when asset specificity is high, hierarchical governance is more efficient. But when is asset specificity high and when is it low? Our research indicates that the impact of asset specificity on the fear of exploitation only partially depends on the amount to be invested. The choice of the appropriate governance structure must also be referenced to the context within which the investment is made.

Williamson (1991) has argued that under conditions of great asset specificity hybrids are disfavored relative to hierarchy. In today's competitive environment, firms are increasingly using alliances to gain advantages. Our research shows that a hybrid structure such as joint ventures, partnerships between suppliers and buyers, technology licensing and alliances can be the appropriate governance structure even if a large amount of asset specialization is required to enhance productivity and produce rent to sustain the relationship. Being able to generate trust and foster a long-term relationship are the fundamental managerial capabilities to allow lowering transaction costs arising from asset specificity and to render the existence of alliances feasible. In aggregate, because it is possible to lower the transaction hazards for any given level of asset specialization, the appropriate governance structure choice critically depends on how the relationship is managed (see also, Dyer, 1996).

5. Conclusion

Firms are increasingly focusing on core competencies while outsourcing non-core activities. Creating strategic advantages through close working relationships frequently requires sharing sensitive cost and process information and committing unique resources (Uzzi, 1997; Sako and Helper, 1998; Dyer, 1996). This however may weaken bargaining power and increase the exposure to opportunism. Thus, along with the potential of superior performance from inter-firm asset specialization, close collaborations may bear significant risks. In an IT industry outsourcing report (KPMG, 1997), the most frequently encountered problems are related to post-contractual dependency. Forty-two percent of respondents complained of "over-dependence on suppliers," while 39 percent felt they were "locked-in" to their suppliers.

This paper asks why some firms are more willing than others to make costly-to-reverse investments. By exploring the extent to which asset specificity induces cooperation *ex post*, this paper suggests that specific investments and the relational context (inter-personal and inter-temporal) in which they are embedded jointly give rise to the exploitation concern. Our analysis delineates the mechanisms behind the fear of exploitation. Specifically, the immobility of dedicated assets promotes the "inclination towards cooperation" and diminishes the "attractiveness of defection" at the same time. While the intensities of both are positively related to relationship-specific investments and the attendant quasi-rents, the latter is subject to the additional influence of trust and time horizon.

The aggregation of both yields the specific investment effect, which measures the overall impact of relationship-specific investments on inducing cooperation *ex post*. A higher value of SIE implies a higher level of dependence and hence a greater fear of being exploited. SIE equals the sum of the committed amount and the attendant quasi-rent with full trust and assured future, in which case there is no fear of exploitation. SIE attains infinity when there is no trust and/or commitment is made in a one-off encounter, in which case the fear of exploitation is infinite. In between, one would be *increasingly* more reluctant to make unique investments if a relationship deteriorates inter-personally and/or inter-temporally. As such, our research not only concurs with but goes beyond the proposition that the strength of social ties is a major determinant of idiosyncratic investments (e.g., Moran and Hunt). We argue that efforts made in cultivating trust are important because trust deterioration hinders specific investments at an increasing rate, and the prolongation of the time horizon has the similar effect.

One important result of our analysis is the asymmetric role that relationship-specific investments and the relational context (both inter-personal and inter-temporal) play in shaping the fear of exploitation. While the magnitude of specific investments and the attendant quasi-rents have a linear, positive relationship to the fear of exploitation, the deterioration of trust and time horizon exhibit a negative, exponential relationship to such fear. Our analysis suggests that we need to go beyond specific investments *per se* to grasp a better understanding of the exploitation concern; a higher level of specific investment could imply a lower level of exploitation concern in a more trustworthy and/or prolonged relationship.

Moreover, while an improvement in either inter-personal or inter-temporal context alleviates the fear of exploitation, their combined influences are multiplicative rather than additive. As specific investments by both parties determine dependence in a relationship, the balance of both party's specific investments is addressed. We found that one party's absolute dependence is increasingly more difficult to be offset by the other party's specific investment. The relative dependence however is restored if both parties make the same amount of investment. We also derive the critical threshold of specific investment beyond which cooperation would be enforced is derived.

Our research carries implications for the choice of the appropriate governance structure for firms making specific investments. While hierarchy is considered as a more efficient way to organize when transaction-specific investments are great, our research suggests that a hybrid structure such as strategic alliances may be a good choice. At the heart of the issue is whether firms are capable of managing both the inter-personal as well as the inter-temporal aspects of a relationship successfully.

Our research provides ample opportunities for empirical studies. One could test the fit of the model by operationalizing the fear of exploitation as the dependent variable and the magnitude of specific investment, quasi-rent, trust and time horizon as the independent variables. One could also test the functional forms of the coefficients as some may be linear while others are not. Understanding why one party is more willing to invest in assets that are unique to a relationship than the other party is a challenging question for researchers. More theoretical and empirical studies are needed to explore this issue further and to arrive at a satisfactory answer.

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