

# **Experimenting with Risk and Management Control Systems in Inter-firm Alliances**

By

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## **Originality Statement**

‘I hereby declare that the intellectual content of this thesis is the product of my own work, except to the extent that assistance from others in the project’s design and conceptions or in style, presentation and linguistic expression is acknowledged.’

Signed

Date 29/April/2016

## **Acknowledgements**

Completing a doctoral degree was one of my dreams in high school; however, I never imagined I would study a PhD in management accounting. Initially, I thought accounting was merely about numbers and calculations that support organisations to make decisions. However, towards the end of my PhD journey, I learnt and realised the critical role that accounting and management control systems play in influencing organisations' daily operations and ensuring their success. I am amazed at how accounting and management control systems are practised in organisations, and this has motivated me to continue my management accounting research journey.

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## **Abstract**

This thesis examines the interrelations between risk and management control systems in inter-firm alliances—specifically, how risks influence the choices and construction of management control systems, and how these management control systems subsequently affect the articulation and evolution of risks. The research issues are examined by using the theoretical perspective of a three-stage experimentation process under the actor-network theory. Data were collected from two international joint ventures in the Chinese automobile industry through formal and informal interviews, observations and review of internal and external documents.

This study found that risk and inter-firm alliances continuously and mutually construct each other through management control systems. On the one hand, management control systems contribute to the articulation of risks in inter-firm alliances by identifying the source of risk, generating risk perception, rationalising and objectifying risk perception, and producing knowledge on risk. On the other hand, different management control systems are initiated, crafted, selected, formalised and negotiated as the outcome of the partner firm's efforts to experiment with solutions to address risks.

These findings contribute to the accounting and management control literature by demonstrating that risk management in inter-firm alliances is not a static phenomenon. Instead, risk and management control systems in inter-firm alliances are (re)constructed through an ongoing experimentation process that involves interactions among firms in crafting and testing solutions to risks. In this ongoing experimentation process, management control systems are not only used to manage risks, but also contribute to the articulation of new risks. This thesis also extends prior research by highlighting how personal ties may play a critical role in the risk management of alliance relationships. Overall, this thesis demonstrates the practice of forming and deploying multiple alliances to create an alliance portfolio in order to manage the dynamics of risks in inter-firm alliances.

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## **List of Abbreviations**

ANT	Actor-network Theory
ATS	After-treatment System
CAAM	China Association of Automobile Manufacturers
CEARC	Cino East Asian Research Centre
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CTG	Chang Truck Group
DECIATS	Delink Cino After-treatment Systems
DECIEE	Delink Cino Engine
DECIEF	Delink Cino Filtration
ERP	Enterprise Resource Planning
FUCIE	Futong Cino Engine
IT	Information Technology
JV	Joint Venture
MCS	Management Control System
NPV	Net Present Value
OEM	Original Equipment Manufacturer
R&D	Research and Development
SACIE	Sag Cino Engine
Sag	Sanqu Automotive
US	United States

# **Chapter 1: Introduction**

## **1.1 Introduction**

This thesis examines how management control systems (MCSs)<sup>1</sup> are implicated in the process of articulating risks in inter-firm alliances. Specially, it analyses the processes through which risks are articulated and experimented with, and how MCSs may be implicated in these experimentation processes. In doing so, this thesis argues that risk and MCSs continuously and simultaneously act on each other through iterative and complex processes, involving a network of relations between heterogeneous entities and practices in the everyday business of inter-firm alliances. Exploring and explaining how risks and MCSs may affect each other in inter-firm alliances requires processual analysis. As such, this thesis adopts a field study method. This chapter highlights the background, motivation and specific research questions of this thesis.

This chapter is organised as follows. Section 1.2 provides the background and motivation of this thesis. In particular, this section outlines how risk in inter-firm alliances and MCSs for risk management of inter-firm alliances were studied in prior accounting literature, and how existing views on risk and MCS inter-firm alliances may limit our understandings of the complex dynamics of risk, and the implications of this for MCSs. This section also highlights the research questions that were pursued in this thesis. Section 1.3 discusses how the rest of this thesis is organised.

## **1.2 Background and Motivation**

Recent research suggests that a significant amount of risk exists in organisations, which challenges their ongoing management and survival (Mikes 2009; Power 2004; Wahlstrom 2009). Empirical evidence also confirms a large number of organisational failures and recognises risks as a significant contributing factor (Power 2009). For these reasons, risks have become an important management issue (Hutter & Power 2005; Power 2009). One strategy that organisations have adopted to manage risks is using inter-firm alliances.<sup>2</sup> These organisations believe that, by entering inter-firm alliances,

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<sup>1</sup> Appendix 1 lists and defines the major concepts related to this thesis, including risk, MCSs, risk management models and practices, inter-firm alliances, material devices and inscriptions, and accounting inscriptions.

<sup>2</sup> Inter-firm alliances are generally defined in the literature as a voluntarily initiated cooperative arrangement between organisations (Das & Teng 1998, 2001, 2002). Inter-firm alliances are different to

they are able to share risks with or fully transfer risks to their partners. This approach to risk reduction or elimination has been a key stimulus for the formation of inter-firm alliances (Das & Teng 2001; Gulati 1995). Consequently, risk consideration is critical in forming inter-firm alliances.

While inter-firm alliances are used as one important strategy to manage risks, research has also suggested that inter-firm alliances are significant sources of risks (Das & Teng 1998; Dekker 2004; Muthusamy & White 2005). For example, ‘inter-firm alliances are purported to engender two general types of risk: relational risk and performance risk’ (Anderson et al. 2015, p. 36). These risks are said to be both related and unrelated to individual partner firm’s efforts (Das & Teng 1999). That is, in seeking to manage risks through inter-firm alliances, organisations simultaneously create risks. This causes a paradox — that risk management is also risk creation. This paradox is interesting theoretically and empirically because it raises questions about whether the use of inter-firm alliances do manage risks or create risks, and whether the efforts of managing risks may end up with the risk management of nothing (Power 2009). Thus, this thesis focuses on the complex dynamics of risk and risk management, and how MCSs are implicated in these dynamics. Specially, it seeks to explore and analyse the processes through which risks are articulated and managed, and how MCSs may be involved in these processes.

While prior accounting literature has engaged with issues of MCSs in inter-firm settings, it has focused much attention on the design and choice of ‘optimal’ MCSs for the effective management of these relationships (Anderson & Dekker 2005, 2009; Das & Teng 1998, 2001; Dekker 2004; Ding, Dekker & Groot 2013; Van der Meer-Kooistra & Vosselman 2000). These prior studies have not engaged adequately with the complex and paradoxical nature of risks in inter-firm alliances, or considered how MCSs may be related to these risks. This is the main focus of this thesis. In particular, this thesis was motivated by the following four main factors.

First, prior research has not adequately engaged with the complex dynamics of risks in inter-firm alliances. Most prior research has treated risks as theoretical phenomena ‘out there’ that can be measured outside the daily operations and management of inter-firm alliances. In particular, the management control literature has drawn on theory to make

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traditional market transactions or bureaucratic organisations because they involve repetitive transactions between two or more organisations, where all partner firms jointly make decisions about the daily operation and management of the inter-firm alliance.

predictions about possible events, conditions of occurrence and consequences of risks in inter-firm alliances (Das & Teng 2001; Dekker 2004). This has led to the belief that risks and their consequences can be precisely described and anticipated, thereby creating the tendency for management control researchers to predetermine different types of risks and their contingencies *a priori* to the activities and events, as practised in the daily operation of inter-firm alliances (Das & Teng 1998, 2001; Dekker 2004; de Man & Nadine 2009; Ireland, Hitt & Vaidyanath 2002; Van der Meer-Kooistra & Vosselman 2000). These studies have argued that predetermined risks are those that ought to occur in inter-firm alliances' practices. For example, Das and Teng (1998) employed transaction cost economic theory to conceptualise relational risk as the event of shirking, distorting information and stealing one's partner's skills. They used this theory to propose the conditions that lead to the occurrence of relational risk (such as opportunistic partners, specific assets and transaction uncertainty) and anticipate the consequences of relational risk (such as hurting one's partner's interest and reducing both partners' confidence in each other). In a similar manner, Dekker (2004) drew on organisational theory to articulate the notion of coordination risk to describe ineffective cooperation between partners, which may affect the alliance's ability to create value. Dekker further suggested that the occurrence of coordination risk is contingent on the condition of joint decision making and task performing between alliance partners.

Although Das and Teng (1998), Dekker (2004) and other similar studies have enriched our knowledge about risks, predetermining risks through theoretical lenses may oversimplify the phenomena and underspecify its articulation processes in inter-firm alliance practices. In this sense, Mahama and Ming (2009) and Power (2009) argued that risks are empirical phenomena that do not pre-exist, but emerge through practices of relating and interacting. Renn (2010) also argued that risks make no sense if they can be predetermined independently of practical activities. This is because risks are the consequences and triggers of the practices of interacting, and the choices made through such interactions (Mahama & Ming 2009). Thus, as empirical phenomena, risks cannot be predefined or categorised *a priori*. Rather, risks should be understood as being articulated through arrays of activities that may interact and relate with each other. Given that practical activities vary across time and space, risks may be articulated and practised differently in different inter-firm alliance settings. For example, what is articulated as risk at the stage of forming an alliance may be different to risk during the operation of the same alliance, as new activities emerge in the network relations. Thus,

risks may change and evolve during the ongoing processes of alliances. This implies that risks are neither static nor the properties of certain events or settings in inter-firm alliances. Rather, risks are dynamic and articulated by practitioners as they encounter certain events in their everyday practices. Therefore, to understand the complex nature of risks in inter-firm alliances, it is important to understand how a variety of practical activities interact with each other to generate the outcome of certain entities, activities or relationships labelled under the term ‘risk’. It is also important to follow the dynamics of interactions between practical activities, as they may become conduits for the evolution of risks.

Second, in studying risks, prior research has focused exclusively on risks in inter-firm alliances (Das & Teng 1998, 2001; Dekker 2004). That is, prior research has tended to assume that risks in inter-firm alliances are a phenomenon that only appears after the formation of inter-firm alliances, thereby creating the impression that risks in inter-firm alliances are purely caused by activities and events that occur after alliances are formed. For example, relational risk and coordination risk are conceptualised on the basis of the ‘cooperative relationship’ between partner firms, while performance risk is conceptualised around the ‘unsatisfactory performance’ of alliances (Das & Teng 1998, 2001; Dekker 2004). The cooperative relationship between partner firms and performance of alliances are activities that can only be discussed after alliance relationships are formally established. However, Shields and Shields (1998) highlighted the importance of studying the antecedents of a particular phenomenon in order to improve appreciation of that phenomenon. Thus, drawing on Shields and Shields (1998), this thesis examines how risks may be articulated at different stages of inter-firm alliances.

Third, with the belief that risks and their conditions of occurrence can be determined *a priori* to activities practised in inter-firm alliances, prior research has had the tendency to prescribe and pre-design MCSs that ‘should’ be used to manage those predetermined risks in a very structural and constrained manner (Das & Teng 1998, 2001; Dekker 2004; Langfield-Smith 2008; Mjoen & Tallman 1997; Nooteboom, Berger & Noorderhaven 1997). For example, to control relational risk, researchers have advocated the use of control mechanisms, such as shared ownership of specific investments, outcome controls, behaviour controls and informal controls (Das & Teng 1998, 2001; Dekker 2004; Langfield-Smith 2008; Mjoen & Tallman 1997; Nooteboom, Berger & Noorderhaven 1997). Prior research has also suggested that control mechanisms—such

as partner selection, legal contracts, outcome controls, behaviour controls and information contracts—should be used to mitigate the risks associated with coordination failures (Dekker 2004; Ireland, Hitt & Vaidyanath 2002). Das and Teng (1998) suggested that performance risk can be managed with exit provisions, licensing, recurrent contracts and assigning key managers to alliances. These studies have tended to presume fixed properties, structural forms and functions for MCSs in risk management. However, anchoring MCSs with fixed positions may limit our understandings of how MCSs are articulated and can perform in the practice of risk management of inter-firm alliances. This is partially because risks may evolve in the practice of operating and managing inter-firm alliances; thus, MCSs used to manage risks may also change and perform differently as risks evolve. Therefore, in the inter-firm alliance context, it is important to free MCSs from theoretically predefined positions and examine how they articulate, develop and perform over time in practice.

Fourth, in determining the relationship between risks and MCSs, prior research seemed to model this relationship in a linear and unidirectional manner. That is, prior research has had the implicit assumption that MCSs are always enacted to control or manage risks. For example, Das and Teng (2001) and Van der Meer-Kooistra and Vosselman (2000) argued that using certain MCSs is negatively associated with the occurrence and consequences of risks. These studies implied that appropriate design and choice of MCSs will be effective in managing different types of risks in inter-firm alliances. However, some existing research has suggested that, while MCSs may be used to solve certain problems, they may simultaneously create disorder or uncertainties (Chua & Mahama 2007; Vinnari & Skærbæk 2014), which implies that the relationship between risk and MCSs may be complicated. Thus, it is important to examine the complex, interactive and iterative relationship between risks and MCSs, rather than focusing on the linear model of this relationship.

This thesis seeks to fill the gap in the prior literature by exploring the following overall research question:

*How do risks and MCS affect each other in inter-firm alliances?*

To address this overall research question, this thesis examines three interrelated sub-questions:

- 1. How is the concept of risk articulated in the practice of enacting and managing inter-firm alliances?*
- 2. How does the articulation of risk influence the choices or construction of MCSs in inter-firm alliances?*
- 3. What are the effects of enacting MCSs as part of risk articulation processes in inter-firm alliances?*

Given that the research questions of this thesis examine the processes and practices through which risks are articulated in inter-firm alliances, and how MCSs may be related to or affect such processes, a practice theory was needed. Thus, actor-network theory (ANT) was drawn upon to provide a theoretical lens for the study. More specially, Callon, Lascoumes and Barthe's (2009) notion of collective experimentation with matters of concern was adopted as a theoretical framework to address the research questions of this thesis. Given that this theoretical framework has a processual focus, a qualitative field study approach was used, which involved collecting data from interviews, document reviews and observations. Data were collected from joint ventures (JVs—one form of inter-firm alliances) and NVivo was used to analyse the data. The results indicated the following:

- risks and risk management models (inter-firm alliances and MCSs) were continuously articulated as the outcome of an ongoing experimentation process
- risk and MCSs co-constructed each other in the dynamics of inter-firm alliances
- managing risk in one JV may lead to the creation of new risks in the same or a different JV
- multiple JVs were formed with different rationalities as a response to local conditions, thereby creating a JV portfolio to deal with the continuous evolution of risks
- personal reciprocal behaviour (based on personal *guanxi* and 'face') plays a significant role in rescuing alliance relationships between partner firms.

### **1.3 Organisation of the Thesis**

The remainder of this thesis is set out as follows. Chapter 2 presents a review of the extant literature, which comprises four major parts. The first part critically reviews how the concept of risk is studied and examined in prior literature. In particular, it reviews

research that studies risk as a theoretical and empirical phenomenon. The second part examines prior research that studies inter-firm alliances as a solution to and source of risk. The third part critically reviews extant accounting literature that focuses on the design and choice of MCSs for the risk management of inter-firm alliances.

Chapter 3 presents the analytical framework informing this thesis. This framework focuses on one emerging area of ANT that examines the process of economisation through a three-stage experimentation process. This chapter discusses the implications of this emerging area of ANT for understanding the constructivist nature of risks in inter-firm alliances, and the implications of that for MCSs. This framework requires examination of heterogeneous actors and activities, as well as their interactions with each other, as practised in the daily operation and management of inter-firm alliances.

Chapter 4 discusses the qualitative field study approach adopted by this thesis to address the research questions of this study. It describes the reasons for adopting a qualitative field study. This research examined one focal JV and five other JVs that were relevant to the focal JV, and this chapter discusses the background of these six JVs. This chapter also describes the methods and procedures used to collect and maintain data, and how these data were analysed.

Chapters 5, 6 and 7 present the results of the data analysis. The results indicate that risks and MCSs are continuously (re)constructed through three interconnected rounds of experimentation process, which are yet subject to further experimentation when the researcher left the field. Chapter 5 presents analyses and discussions of the processes and practices through which risks were articulated, and the implications of this for MCSs in the first round of the experimentation process. This round of experimentation was centred on constructing a proposal to form a medium-duty engine JV between two firms, labelled 'Cino' and 'Delink'. Following ANT, this chapter analyses:

- how risks were articulated as the outcome of making sense of a matter of concern that Cino encountered in its daily operations
- how these risks led to the proposal to form an engine JV between Cino and Delink
- how new risk concerns and management control models (partner selection and JV contract) to mitigate these risk concerns were hypothesised
- how the enactment of the engine JV created new matters of concern.



In doing so, this chapter highlights the various interacting practices between heterogeneous actors (such as partner firms, MCSs and accounting inscriptions) that facilitated the experimentation process. Appendix 3 presents the details of the heterogeneous actors and how they interact with each other.

Chapter 6 continues the analysis of Chapter 5 by discussing the processes and practices involved in the second round of the experimentation process. This round of experimentation focused on constructing the proposal to form a JV portfolio with non-Delink related local firms in the Chinese market. In particular, this chapter highlights how new risks were articulated as the result of enacting and operating the medium-duty engine JV, and how these new risks led to the development of the proposal to form a JV portfolio with non-Delink related firms as a risk solution. This chapter also discusses the consequences (the creation of new matters of concern) that resulted when the JV portfolio model was operationalised. This chapter delves into the interactions, struggles and compromises between heterogeneous actors that emerged when experimenting with risks and solutions to these risks. This chapter also discusses how the accounting inscriptions and devices and other inscriptions performed in the experimentation processes. Appendix 3 presents the heterogeneous actors involved and how they interact with each other.

Chapter 7 continues Chapter 6 to discuss the processes and practices involved in the third round of the experimentation process. This third round of experimentation centred on constructing a proposal to form an after-treatment system (ATS) JV between Cino and Delink. This chapter demonstrates how the enactment and operationalisation of the JV portfolio created its own problems, which led to constructing a proposal to form an ATS JV between Cino and Delink, and the articulation of new risks and revised MCS models to deal with such risks. In doing so, it shows how the heterogeneous actors continuously interacted with each other to facilitate the experimentation process (see Appendix 3). This chapter also discusses how the enactment and operationalisation of the ATS JV and respective MCS models created uncertainties and problems.

Following the three empirical chapters, Chapter 8 summarises the thesis. This chapter reviews the major conclusions that link the themes emerging from the analysis. Overall, this study found that risks and MCSs continuously and mutually constructed each other throughout the three rounds of the experimentation process, which centred on constructing a proposal to form the engine JV, JV portfolio and ATS JV. On one hand,

management control actions contribute to the articulation of risks in inter-firm alliances by identifying the source of risk, generating risk perception, rationalising and objectifying risk perception, and producing knowledge on risk. On the other hand, different management control models are initiated, crafted, selected, formalised and negotiated as the outcome of partner firms' efforts to experiment with solutions to address risks. Chapter 8 also discusses how these conclusions may contribute to the existing literature.

## **Chapter 2: Literature Review**

### **2.1 Introduction**

This chapter reviews the literature relevant to the research questions examined in this thesis. Section 2.2 reviews prior research that examined risks as a theoretical and empirical phenomenon. Section 2.3 reviews studies that suggested that inter-firm alliances are both solutions to and sources of risk, and discusses the effects of risks on inter-firm alliances. Section 2.4 focuses on accounting studies that examined risk and MCS design choices for risk management in inter-firm alliances. This section also reviews accounting studies that provided alternative views on risk and MCS, mainly in the non-inter-firm alliance context (such as intra-organisations and government enterprise). Section 2.5 presents the chapter summary.

### **2.2 The Concept of Risks**

Prior research has engaged with risk by associating it with unanticipated negative variations to people's expectations or normal thinking (March & Shapira 1987; Miller, KD 1992; Miller & Leiblein 1996). In particular, risk is conceptualised as the probability of the occurrence of some imaginable event or action that causes negative outcomes for people. Ciborra (2006, p. 1340) argued that 'risk calculus requires to take into account all possible values of accounting variables in the future, attributing to each of them a probability distribution'. According to these researchers, risk should have three features. First, risk is argued to have a probability feature. Risk is used to describe the probability of occurrence of certain or a series of events or actions. The probability is generally estimated based on certain statistical instruments by considering observations for past events, which is used to project the occurrence of the same or similar events in the future. Thus, probability estimates whether certain events may occur. Second, to say that an event is risky, researchers have suggested that these events should be identifiable. This is because risks are used to delineate the possible occurrence of some imaginable events or actions. These events are imaginable because they (or similar events) have occurred in the past, or they are thinkable based on feelings, experiences or conventions. Finally, risks are always associated with negative outcomes that events inflict on people. These are negative outcomes that people do not

expect to experience, which may go against their expectations and make them sacrifice some resources (such as money).

Based on this conceptual definition of risks, prior research has sought to study risks as a theoretical phenomenon that can be isolated from a set of interacting and relating practices that lead to risks. In particular, prior research has tried to predetermine what risks ‘should’ occur in the real world, and attempted to prove the ‘existence’ of these risks in practice. In predetermining risks, prior researchers have articulated risks as hypothetical cases by compiling conjectures on the probability, events and consequences of risks, based on their calculations, feelings, expectations, predictions and past experiences that seem to have certain logic. These hypothetical cases of risks are considered by these researchers as what ‘should’ occur in practice.

To facilitate this conceptualisation of risks, prior research has drawn on a set of theories—such as agency theory, transactions cost economic theory and organisational theory—to derive hypotheses about risks. In particular, prior research has borrowed these theoretical ideals and assumptions to predetermine risks in a very constrained form outside practice. For example, some researchers have drawn on agency theory to predetermine risks as the event of agents’ self-interested behaviours that may sacrifice the benefits of the principal, when there is information asymmetry and conflict of interests between the principal and agent (Leland 1996; Zsidisin & Ellram 2003). Transactions cost economic theory has been largely used by prior research to theorise risks as the occurrence of high transaction costs, taking into consideration transaction characteristics (such as transaction frequency and asset specificity), transaction environment characteristics (such as potential alternative parties in the transaction and market uncertainty) and transaction party characteristics (such as limited rationality and opportunistic behaviour) (Brouthers & Brouthers 2000; Van der Meer-Kooistra & Vosselman 2000; Williamson 1979, 1989). Similarly, organisational theory has been used to conceptualise risk as the event of failing to achieve predetermined outcomes when there are coordination problems between the units in organisations or among parties in inter-firm settings (Dekker 2004; Fisher 1995; Osborn & Hagedoorn 1997). Once these hypothetical cases of risks had been theorised, they were tested with empirical cases. This method of studying risks has largely influenced our understandings of risks in inter-firm alliances in the existing accounting literature.

While predetermining the events, conditions of occurrence and consequences of risks enriches knowledge about risks (at least from theory), research in social science and sociology seems to suggest that risks are empirical phenomena (Beck 1992; Douglas 1992; Lupton 1999; Mahama & Ming 2009; Miller, Kurunmaki & O’Leary 2008; Power 2009, 2013). These researchers have challenged the treatment of risks as theoretical phenomena by arguing that risks can only be initially understood through the practices of interacting and relating, before using theories to make sense of them. For example, Lupton (1999, p. 29) argued that ‘a risk object ... is not a static, objective phenomenon, but is constantly constructed and negotiated as part of networks of social interaction and the formation of meaning’. Lupton’s (1999) claim resonates with Mahama and Ming (2009), who argued that the concept of operational risk is elusive and problematic, and research efforts should focus on how certain events and activities become constructed under the name of ‘operational risk’. Through a case study of an ‘unauthorised trading event’ at National Australia Bank, Mahama and Ming (2009) found that, through continuous practices of discussing and debating—involving the media, the bank’s top management and regulatory bodies, and the mobilisation of three entities (experts, public fear and similar historical events) in these practices—the ‘unauthorised trading event’ became framed as risk. The researchers argued that risks are the outcomes of interactions among entities that people encounter or interact with in their daily life. In other words, risks do not exist before interactions and relations, but emerge through the practices of relating and interacting. Thus, it is imperative to examine the set of interacting and relating practices that lead to the construction of risks, rather than ‘standing above’ such practice and pretending that the ‘fancy risks’ are exactly the risks that will arise in practice. The logic is simple: how can we understand risk as empirical phenomenon if we do not examine the set of interacting and relating practices in people’s daily lives that lead to these risks?

As empirical phenomena, risks are also said to be dynamic in nature. If it is accepted that risks are the outcomes of a set of interacting and relating practices, risks are subject to constant change with the emergence of new activities, or changes in existing activities in practice. As Lupton (1999) stated, activities in practice are not static, but dynamic. For example, unpredictable, new and surprising activities continue emerging and affecting people’s daily life. If all natural disasters and human-made accidents were known in advance or predicted accurately, there would be no or little damage associated with these events, as it would be possible to take precautionary procedures to avoid or

mitigate the consequences of such events. Unfortunately, in practice, activities are evolving and changing all the time, sometimes with unpredictable directions or patterns. The dynamic nature of activities occurring in practice may alter how these activities interact among themselves or with other entities, thereby altering existing knowledge or generating new knowledge about risks. For example, Beck (1992) showed how understanding risk as ‘something given by God’ has changed to viewing risk as a human-made danger, in association with the modernisation process. Similarly, Power (2004) argued that the public’s concerns about primary risks to health (financial and physical) could be transformed to secondary risk (such as reputation) with the emergence of the public’s expectations to manage intangibles. The point here is that risks should be understood as a dynamic and temporal assemblage, the meaning and identity of which are fluid and subject to change. Given the practice and dynamic nature of risks, it is imperative to understand risks as empirical phenomena when studying risks in inter-firm alliances.

### **2.3 Risks and Inter-firm Alliances**

Risks are ubiquitous in almost every aspect of people’s real life. The term ‘risk’ was traditionally used to describe natural disasters (such as earthquakes and tsunamis) due to non-human forces. The German sociologist Ulrich Beck expanded the usage of the term to refer to unpleasant consequences created by people’s own actions. In particular, he focused on studying risks in the context of the industrial revolution, and argued that society has become more risky because of human-induced technological developments, such as the invention of nuclear, chemical and genetic technology. Thus, people are exposed to risks (such as possible damage to their wellbeing) associated with these new technologies invented and used by themselves ((such as the leak of nuclear power).

Since Beck’s expansion of the term ‘risk’ to encompass human-induced risks, increasing events are viewed and described in terms of risk. For example, ‘environmental risk’ is used to describe unpleasant environmental damage caused by human activities, which may have consequences on human’s wellbeing (Davidson & Freudenberg 1996; Van der Oost, Beyer & Vermeulen 2003). In finance, ‘risk’ is used to describe the chance that there will be variations between expected and actual returns associated with a particular investment (Altman & Saunders 1998; Crouhy, Galai & Mark 2000; Jarrow, Lando & Turnbull 1997). ‘Information technology risk’ refers to the probability of failing to protect information from unauthorised access and uses

(Aubert, Patry & Rivard 2005; Bahli & Rivard 2003; Benaroch 2002). More recently, 'risk' has been used to describe public concerns about the credibility of regulators and government agencies' management activities (such as the Enterprise Risk Management Framework) that are supposed to create social wellbeing (Power 2004, 2009). With the word 'risk' being employed for different purposes in various disciplines, it has become an increasingly common term in people's daily lives.

Due to the increasing pervasiveness of risk in people's lives, researchers have started to study risk in organisations comprised of individuals and the interactions and relations between those individuals (Mikes 2009, 2011; Miller, Kurunmaki & O'Leary 2008; Power 2004, 2007, 2009). These organisation researchers argue that more and more organisations are at risk, and that risk has become an organising principle for organisations. They advocate that the study of risk should be expanded from a traditional focus on the meaning of risk to exploring various methods that can be used to address, mitigate, avoid or manage such risks. Indeed, risk consideration has been incorporated in the strategies, objectives, corporate governance, regulations and even daily management of organisations in both public and private sectors (Christian & Tobias 2103). As Power (2004, p. 24) argued:

Claims for the benefits of risk management are numerous. In financial services organizations, risk management has enabled a new focus on asset and earning quality. In the corporate sector more generally, risk management has become perceived as integral to business strategy and to value creation. Risk management has been shifted from a back-office, transaction-veto defensive role into a fundamental part of the business model. Risk officers and chief risk officers have been created as champions of risk management. In the public sector, risk management is becoming part of the way organizations challenge themselves in the absence of market mechanisms. And in all these settings it is widely accepted that the managed taking of risks is essential to progress and the creation of value—with the exception of extreme enthusiasts for the precautionary principle.

Among the various methods that organisations use to manage risks, inter-firm alliances are said to be one important strategy.

### **2.3.1 Inter-firm alliances as strategies for managing risks**

Inter-firm alliances are generally defined in the literature as voluntarily initiated cooperative arrangements between organisations (Das & Teng 1998, 2001, 2002). Inter-

firm alliances are different from (i) traditional market transactions between organisations that involve one-off buy or sell transactions and (ii) bureaucratic organisations where all management and operational decisions are purely and completely made by a single organisation. Rather, inter-firm alliances generally involve repetitive and iterative transactions between two or more organisations, in which all partner firms jointly make decisions regarding the daily operation and management of the alliance. Inter-firm alliances can have 'a variety of co-operative arrangements, including direct investment, JVs, supplier relationships, technology licensing, technology exchange, research and development agreement, and so on' (Das & Teng 1998, p. 827).

Researchers have considered inter-firm alliances a critical strategy for managing risks for two main reasons. First, inter-firm alliances help organisations diversify risk (Nuño & Oosterveld 1988; Osborn & Baughn 1990). By entering inter-firm alliances, organisations commit to joint operations of certain activities with others. Undertaking joint operations allows organisations to share the resources needed, and the benefits and consequences of alliance-related activities. This is said to reduce the risk that organisations may face when they operate alone. For example, it is argued that inter-firm alliances may be a good way to reduce the high transaction costs that can occur in a market transaction (Hennart 1988; Williamson 1985). Teece (1992) contended that risks can be diversified and spread via cooperation, as partner firms can commit jointly to the innovation process and share potential losses from failed efforts.

Second, inter-firm alliances are said to enhance organisations' capability to deal with risks (Das & Teng 1998; Gulati 1995; Hagedoorn 1993; Nooteboom, Berger & Noorderhaven 1997; Teece 1992). It is argued that, by entering inter-firm alliances, organisations have access to unique resources that are unavailable if they operate alone (such as technology, local knowledge, marketing skills, government suasion, management competence, research and development [R&D] capability, financial resources, physical location and loan capital). Pooling unique resources in alliances is said to create a resource reservoir from which resources can be drawn to enhance organisations' ability to deal with uncertain situations (Das & Teng 1998; Kought 1988; Osborn & Baughn 1990; Teece 1992). For example, Das and Teng (1998) argued that combining unique resources from different partner firms can create synergy, which may enhance the partners' ability to anticipate, withstand and deal with risks.



Overall, these previous researchers suggested that, by entering inter-firm alliances, organisations are able to share, reduce or minimise risks. As Castells (2000, p. 187) argued, ‘cooperation and networking offer the only possibilities of sharing costs, and risks, as well as keeping up with constantly renewed information’.

### **2.3.2 Inter-firm alliances as sources of risks**

While inter-firm alliances are considered one important strategy to manage risks, it is argued that they are simultaneously a significant source of risks (Anderson & Dekker 2009; Das & Teng 1998; Dekker 2004; Ring & Van de Ven 1992, 1994). Researchers have argued that, by forming inter-firm alliances, organisations are exposed to risks both related and unrelated to their alliance partners. This is because the relationship between partner firms and the conditions under which alliances operate are dynamic and unpredictable. As such, partner firms are unable to anticipate *ex-ante* all possible changes or future conditions that could occur in the actual operation of inter-firm alliances. Thus, it is difficult for partner firms to take all possible precautions against unforeseen changes or future conditions associated with alliance operations. Thus, the use of inter-firm alliances is said to pose risks to organisations.

For example, Ring and Van de Ven (1994) argued that inter-firm alliances are an inherently risky strategy because they are threatened by uncertainties related to the future state of alliances, and problems of adverse selection and moral hazard. In a later study, Das and Teng (1998) modified the risk terminology used by Ring and Van de Ven (1994). In particular, Das and Teng (1998, 2001) conceptualised two types of risks in inter-firm alliances: relational risk and performance risk. They defined relational risk as the possible default of partners. Given that cooperation is the core activity underpinning inter-firm alliances, relational risks are said to arise when one partner does not commit to cooperative activities, as agreed or expected by other partners. Performance risk is conceptualised as the failure to achieve alliance objectives, despite the best cooperation efforts between partners. Even if partners cooperate fully, performance risks may still exist due to lack of competencies and extraneous factors beyond partners’ control. Dekker (2004) moved beyond the economic focus of Das and Teng (1998, 2001) to add what he called ‘coordination problems’ in inter-firm alliances. By definition, coordination problems refer to the risk of partner firms’ failure or inability to execute tasks (especially when these tasks are complex and uncertain) that require collective efforts between them. While various forms of risks have been

proposed by prior studies, they all agreed that inter-firm alliances are significant sources of risks.

Prior research has also suggested that risks may have significant consequences in inter-firm alliances. It has been argued that risks may hurt partners, hinder the execution of joint tasks or activities, and lead to poor alliance performance or even the dissolution of alliances (Das & Teng 1998; March & Shapira 1987; Ring & Van de Ven 1994). For example, relational risk is argued to cause unintended leaks of partner firms' intellectual property rights and private knowledge, add unfair costs to partners, incur costs to renegotiate alliance contracts, cause dissatisfaction between partners, dampen partners' incentives to cooperate, and damage the quality of the products (Anbarci, Lemke & Roy 2002; Berdrow & Lane 2003; Ellram 1990, 1993; Makhija & Ganesh 1997; Mohr and Sengupta 2002; Rokkan & Buvik 2003). Performance risks (lacking competence) may also make strategic objectives difficult to achieve, which may lead to the dissolution or failure of alliances (Das & Teng 2001; Gulati 1995). Contractor and Ra (2002); Dekker (2004); and Easterby-Smith, Lyles and Tsang (2008) argued that coordination risk adds substantial costs to partners and increases the probability of poor alliance performance. Collectively, these researchers suggested that, when forming inter-firm alliances, risks emerge that can create problems or have severe consequences on both the alliance and individual partner firms. This seems contrary to the purpose of forming alliances to minimise risks, and creates a paradox regarding risk in inter-firm alliances: if alliances are meant to manage risks, why do they simultaneously pose risks? This suggests that the relationship between risk and inter-firm alliances is complex and problematic, which highlights the importance of researching in more detail the risk management of inter-firm alliances.

When studying risks that exist in and have significant consequences for inter-firm alliances, most (particularly accounting) researchers have tended to treat risks in inter-firm alliances as a post-alliance formation phenomenon. That is, prior research has assumed that risks in inter-firm alliance are purely a phenomenon caused solely by events, activities or conditions that occur after the formation of inter-firm alliances. For example, relational risk and coordination risk are conceptualised on the basis of the 'cooperative relationship' between partner firms, while performance risk is conceptualised around the 'unsatisfactory performance' of the alliance (Das & Teng 1998, 2001; Dekker 2004). The cooperative relationship between partner firms and

performance of the alliance are activities or situations that can only be discussed after the alliance relationship is formally created.

Treating risk as a pure post-alliance formation phenomenon simplifies how risks can be studied in inter-firm alliances, by assuming away the possible effects of risk prior and leading to the formation of inter-firm alliances may have on risk in inter-firm alliances. Thus, understanding risks as a post-alliance formation phenomenon may not provide a comprehensive picture of risks in inter-firm alliances. The alliance literature has suggested that activities, processes and practices that exist before the formation of alliances have implications for the ongoing operations of alliances (Narasimhan & Nair 2005). For example, the factors that lead to the formation of inter-firm alliances influence subsequent alliance performance. These factors can include buyers' quality expectations about suppliers' products or services, information sharing and trust between partner firms, partner firms' market commonality and resource alignment, collective strength, inter-partner conflict and inter-dependencies between partner firms. These studies resonate with Shields and Shields's (1998) argument about the importance of first understanding the antecedents of a phenomenon (such as participative budgeting), before emphasising the effects of that phenomenon on other variables. Based on the findings of these previous studies, this thesis argues that risk prior and leading to alliance formation may affect risks in inter-firm alliances. Thus, it is interesting to examine how risk leading to alliance formation might be connected to and affect risks in inter-firm alliances, and the effects of these risks on subsequent management actions.

## **2.4 Risks and MCSs in Inter-firm Alliances**

Given the complex relationship between risks and inter-firm alliances, and the severe consequences that risks may bring to inter-firm alliances, accounting researchers have explored the design of MCSs to deal with risks in these alliances (Anderson & Dekker 2005; Das & Teng 1996, 1998, 2001; Dekker 2004; Dekker & Van den Abbeele 2008; Ireland, Hitt & Vaidyanath 2002; Langfield-Smith, 2008; Langfield-Smith & Smith 2003; Mjoen & Tallman 1997; Van der Meer-Kooistra & Vosselman 2000). With the view that risk is a reality that can be measured and predetermined outside a set of interacting and relating practices, prior accounting researchers on inter-firm alliances have aimed to design (what they call) the 'optimal' or 'ideal' MCS with certain theoretical logic (such as minimising transaction costs associated with alliance

operations) that is presumed to be appropriate to control problems that may arise in inter-firm alliances (Das & Teng 2001; Dekker 2004; Ring & Van de Ven 1992). These accounting studies have argued that these optimal or ideal MCS models should and would be used in the practice of managing risks in inter-firm alliances. The MCSs proposed in these studies include a set of management control packages, specific control mechanisms and cost and accounting information.

Das and Teng (2001) proposed a conceptual management control model to manage relational and performance risk in inter-firm alliances based on two task characteristics: task programmability and outcome measurability. Task programmability is defined as the degree to which appropriate behaviours that should be taken to facilitate transformation process are known. Outcome measurability refers to the ability to measure outputs in a precise and objective manner. Based on their belief that the occurrence of relational risk is associated with low output measurability, and that performance risk occurs when task programmability is characterised as low, Das and Teng (2001) proposed a management control model to deal with these two risks. In particular, behaviour controls (such as explicit clauses) should be used to directly regulate the conduct of partners to mitigate relational risk when inter-firm alliances are characterised by low outcome measurability and high task programmability. In addition, outcome controls (such as close monitoring of performance) should be adopted to direct alliance managers' attention to key performance measures in order to reduce performance risk when inter-firm alliances are characterised by low outcome measurability and high task programmability. Finally, social control (such as developing shared values, goals and beliefs) seems appropriate to attenuate both relational and performance risk when inter-firm alliances are characterised by low outcome measurability and low task programmability. Das and Teng's (1998) MCS models are purely based on inferences, which have not been tested with empirical data.

Van der Meer-Kooistra and Vosselman (2000) theorised three structural forms of MCSs, including market-, bureaucracy- and trust-based controls. They argued that the choice of these three structural forms of MCSs (to control inter-firm alliances) should depend on the characteristics of transactions, transaction environment and transaction parties. Market-based controls refer to control mechanisms that rely on publicly available information to manage the alliance relationship. Such controls rely on free information available from the market; thus, no specific control instruments need to be articulated. Typical examples of market-based controls include competitive bidding, non-detailed

contracting, competition-induced standards and compliance. When alliance transactions are characterised by high task programmability, low asset specificity, high repetition, high output measurability and transparent market information, alliance partners are able to switch to alternative transaction options without incurring too many costs. Under these alliance transaction characteristics, a market-based control pattern should be used to manage potential alliance-related problems (Langfield-Smith & Smith 2003; Van der Meer-Kooistra & Vosselman 2000). The ability of alliance partners to switch to other contracting parties in the market without incurring substantial loss (since no specific assets are invested in the alliance) (Caglio & Dittillo 2008; Spekle 2001) is said to restrain alliance partners from taking any opportunistic actions. In addition, partners can attain relevant information from the market, which reduces information asymmetry among alliance partners (Spekle 2001; Van der Meer-Kooistra & Vosselman 2000). This is believed to mitigate moral hazard associated with partner firms.

Bureaucracy-based controls refer to control mechanisms—such as specified norms, standards and rules—that can be specified and formally enacted to regulate alliance transactions. These bureaucracy-based controls are structured around the stipulation of detailed information or agreements on predefined activities and outcomes. Typical examples of bureaucracy-based controls include detailed selection criteria, contracts, outcome controls, behaviour controls, rigid performance targets, performance measurement systems and hostage arrangements. A bureaucracy-based control pattern is believed to be the most appropriate MCS when alliance transactions involve high task programmability, moderate assets specificity, uncertainty and repetition. Moderate asset specificity makes alliance partners vulnerable to the risks of others' opportunistic actions, which can be mitigated by norms and standards specified in contractual rules (Lee & Cavusgil 2006). When partners are interdependent, they are exposed to the risk of moral hazard problem (Lavie & Rosenkopf 2006; Wathne & Heide 2000). Moral hazard can be reduced by using contractual rules in which partners are forced to meet specified targets (Baiman 1990; Chong & Eggleton 2007). Contractual rules are said to enhance coordination by clarifying the joint tasks and relevant duties of each partner in order to overcome future uncertainty.

Trust-based controls represent control mechanisms that are primarily based on trust to manage the alliance relationship. These control mechanisms are constituted based on mutual confidence and informal arrangements. Typical examples of trust-based controls include competence trust, contractual trust, goodwill trust, non-specific contracts,

socialising process, open book accounting and information sharing. Prior research has suggested that trust-based control models are structured to help partner firms obtain information about alliance transactions and to guide alliance-related activities, which should make the alliance relationship more predictable in order to help partner firms manage risks. According to Van der Meer-Kooistra and Vosselman (2000), a trust-based control pattern should be effective in mitigating control problems when (i) transactions are characterised as having low task programmability, high asset specificity, low repetition and low output measurability and (ii) the transaction environment is highly uncertain (Langfield-Smith & Smith 2003; Lee & Cavusgil 2006). First, trust-based controls help alliance partners signal their expectations and willingness regarding continuous cooperation with each other when alliances are facing high uncertainty (Van der Meer-Kooistra & Vosselman 2000). This is said to reduce the chances of partners engaging in opportunistic behaviours. Second, trust-based controls are said to activate interactions between partner firms, which helps partner firms learn from and adapt to each other. This is believed to enhance coordination between alliance partners (Baiman & Rajan 2002a; Coletti et al. 2005). Finally, trust-based controls may motivate partner firms' open commitment to alliance-related activities and facilitate information flows between partner firms. This is said to reduce the likelihood of moral hazard (Gambetta 1988; Sako 1992).

To test their proposed MCS models, Van der Meer-Kooistra and Vosselman (2000) completed a case study of two JVs. In their first case, involving a JV between two Dutch oil companies, they found that the JV was characterised by high asset specificity, frequent transactions, environment uncertainty, and an intimate cooperative relationship between partner firms. They also find that bureaucracy-based controls were used in this JV because the JV used specified detailed rules and requirements to standardise and guarantee gas delivery, so that the risks of opportunistic behaviours and moral hazard were minimised. In the second case, Van der Meer-Kooistra and Vosselman (2000) found that trust-based controls were used in JVs whose transactions were characterised by lower repetition, higher uncertainty, and partners with more outsourcing experience. They argued that trust-based controls facilitated joint consultations and information sharing among partners, which could also reduce the risk of opportunistic behaviours and moral hazard. However, contrary to the authors' expectation, the empirical cases revealed two additional characteristics of transaction parties—organisational culture and the partner firm's history—that would affect the choice of their proposed MCS models.

Langfield-Smith and Smith (2003) extended Van der Meer-Kooistra and Vosselman's (2000) study by considering the role of trust. They sought to link different types of trust with the three patterns of MCS models proposed by Van der Meer-Kooistra and Vosselman (2000). In order to make this link, Langfield-Smith and Smith (2003) drew from Sako's (1992) trust framework, which classified three types of trust: contractual, competence and goodwill trust. Contractual trust represents partners' perceptions of other partners' willingness to honour an agreement. Competence trust refers to partners' perceptions of other partners' ability to sufficiently perform a particular role. Goodwill trust can be described as 'the expectation that another will perform in the interests of the relationship, even it is not in the other's interest to do so' (Dekker 2004, p. 32).

Langfield-Smith and Smith (2003) theorised the different types of trust to play different roles in fostering the functioning of three types of MCS modes—market-, bureaucracy- and trust-based controls—in alliance relationships. First, trust is not relevant under market-based controls because no specific control is required. This is consistent with Van der Meer-Kooistra and Vosselman's (2000) view that alliance partners can choose to switch to other partners to mitigate the risk of opportunism, moral hazard and coordination problems at any stage of alliances. Second, in the process of selecting partners, given that detailed rules of behaviour and performance goals are established under bureaucracy-based control, trust is supposed to play a limited role. In the early stages of alliance relationships, the partners' perceptions of competence trust and contractual trust are critical to developing bureaucracy-based control. Competence trust ensures that partners have the ability to perform relevant tasks, which is said to enhance cooperation for joint activities. Contractual trust enhances the chances that partners will honour an agreement that is specified in the alliance contract (Sako 1992), which is said to mitigate the risk of moral hazard and opportunistic behaviours.

Third, a trust-based control pattern is proposed to be adopted when alliances are facing a high level of uncertainty, whereby a rigid alliance agreement cannot be elaborated. As such, the initial selection of partner firm is based on 'perceptions of competence trust, contractual trust and goodwill trust, which arises through friendships, former contractual relationships, and reputation' (Dekker 2004, p. 287). This is said to avoid potential opportunism, moral hazard and coordination problems through the selection of partners that have the ability and reliability to complete an alliance agreement, and willingness to exert efforts in the alliance. When partners enter an alliance agreement, each of the three types of trust may develop. Competence and contractual trust are

developed through consultation and communication among partners, and certification of activities and legal regulations, while goodwill trust evolves through interactions and reciprocal actions among partners. The development of goodwill trust enhances partners' perceptions of integrity and dependability, which promotes frequent interactions, intense communication and personal consultation among alliance partners. Therefore, critical information flows through the whole alliance, which mitigates the risk of opportunistic behaviours and moral hazard (Das & Teng 2001). The development of contractual trust enhances partners' feeling of accountability and responsibility to the alliance agreement, which mitigates opportunism and moral hazard (Sako 1992). The development of competence trust demonstrates partners' ability to perform a particular role under a collaborative environment, which mitigates the risk of poor cooperation for joint activities (Sako 1992). The development of competence, goodwill and contractual trust is said to provide information about the environment and partners, and facilitate the flow of this information across partner firms, which enables partners to elaborate a more detailed alliance agreement. This helps enact trust- and bureaucracy-based control (Langfield-Smith & Smith 2003).

Landfield-Smith and Smith (2003, p. 304) tested their hypothesised management control model in a case study of an outsourcing relationship, and found some evidence supporting their hypothesis. In particular, they found that MCS models gradually changed over the life of the outsourcing relationship, as contingent factors changed. Initially, they found that high uncertainty, high asset specificity, low output measurability and low task programmability led to the adoption of a trust-based control pattern. As the alliance relationship developed, they found that trust—particularly goodwill trust—developed through establishing mutual interest, building individual- and team-level trust, and joint dispute resolution. This 'played a role in working with control mechanism to ensure control, and in allowing the operations to proceed in the absence of tightly specified rules' (Landfield-Smith & Smith 2003, p. 304). Further, they found that the development of trust enhanced task programmability and outcome measurability through information sharing among partners, which fostered a shift from using a trust-based control pattern to a bureaucracy-based control pattern. Thus, Landfield-Smith and Smith (2003) concluded that there is a mutually supportive, cooperative and compatible relationship between trust and MCS models in controlling inter-firm alliances.



Dekker (2004) extended prior studies by explicitly highlighting two alliance problems—appropriation and coordination problems—and examining how MCSs should be designed to deal with these problems. The concept of appropriation problems is similar to the notion of relational risk proposed by Das and Teng (1998), which refers to the risk of one partner firm's investment in the alliance being appropriated by others in a situation of uncertainty and information asymmetry. Coordination problems are defined as the risk of non-performance due to poor cooperation between partner firms when undertaking joint activities, despite the fact that both parties are willing to cooperate fully and not behave opportunistically.

Further, Dekker (2004) proposed that formal control is able to address the appropriation problem and coordination problem. Formal control refers to the use of contractual obligations and formal organisational mechanisms for cooperation to regulate alliance outcomes and alliance partners' behaviours (Ouchi 1979). Some cooperation criteria can be specified in these formal controls to ensure that alliance outcomes and alliance partners' behaviour comply with predetermined objectives. In a study of a railway safety equipment alliance, Dekker (2004) found that board monitoring for alliance partners' action diminishes information asymmetry among alliance partners, which reduces the chances of immoral behaviour. He also found that establishing specific performance goals with rewards motivates alliance partners to contribute efforts and act collectively with each other's interests. This facilitates partners to achieve predetermined goals and attain fair rewards via their individual contributions, which enhances coordination and reduces the chances of opportunism.

Dekker (2004) also theorised that informal control moderates the association between control problems and the use of formal control. Informal controls generally relate to non-legally binding activities or mechanisms (such as good intentions and oral communications) that cannot be formally enacted, but can stimulate alliance partners' self-regulating behaviours (Ouchi 1979). Informal control is often argued to be based on trust (Adler 2001; Ring & Van de Ven 1992). Dekker (2004) explained the moderating role of trust in the relationship between control problems and the use of formal controls. First, trust does not have a direct effect on an increased or reduced need for the use of MCSs. It is 'the magnitude of the transaction hazards that induces the use of formal control mechanisms' (Dekker 2004, p. 34), not trust *per se*. Second, the use of MCS models to control alliance problems is contingent on the level of trust between partner firms. It is said that there should be a threshold (determined by the alliance's transaction

hazards) that indicates how trust may affect the use of formal controls. Before reaching the threshold, trust is supposed to complement and support the development and functioning of formal controls. After the threshold has been reached, trust is argued to substitute the use of formal controls, as additional expansive formal control mechanisms would be unnecessary.

Dekker (2004) tested his MCS models with an empirical case study of a strategic alliance involving the supply and innovation of railway safety systems. The case study supported most of his arguments on the relationship between control problems in alliances and the use of formal controls, and the role of informal controls in this relationship. Data collected from the case showed that managing coordination problems is one purpose of using formal controls, and trust (including capability and goodwill trust) moderates the relationship between control problems and the use of formal controls. Further, Dekker (2004) found that ensuring alliance stability and continuity is another purpose (besides appropriation and coordination problems) for using formal controls, which was not included in his MCS models. Finally, through the case study, Dekker (2004) found evidence for the use of specific management accounting—such as financial incentive systems, planning, budgeting, cost calculations and open book accounting—in the management of inter-firm alliances.

Following Das and Teng (1998), Van der Meer-Kooistra and Vosselman (2000), Langfield-Smith (2003) and Dekker (2004), other accounting studies have researched specific management control mechanisms, with a particular focus on the optimal design or use of partner selection, contract, cost management intervention, open book accounting and possible interrelations between these mechanisms to control or manage risks in order to ensure alliance performance (Agndal & Nilsson 2009; Anderson & Dekker 2005; Cooper & Slagmulder 2004; Ding et al. 2013; Dekker & Van den Abbeele 2010; Ding, Dekker & Groot 2013; Langfield-Smith 2008). Anderson et al. (2015) focused on three intra-firm MCS management control frameworks: Simon's (1995) levers of control framework, and Merchant and Van der Stede's (2007) and Jensen and Meckling's (1992) agency-based control framework. Anderson et al. (2015, p. 36) examined 'the suitability of three such frameworks to be used as descriptors of the management controls that are employed by three large firms with extensive alliance activity'. The data obtained from their three case study alliances suggested that the three intra-firm management control frameworks were used by alliances to manage risks. However, the authors also noted that management control frameworks differ from each

other by having their own specificity to deal with certain types of risks in inter-firm alliances. In summary, prior accounting researchers have had the tendency to design ‘optimal’ MCS models that ‘should’ be used to manage inter-firm alliances. This has significantly contributed to understandings of how risks may be controlled or managed through appropriate design and use of pre-specified MCS models. However, by prescribing ‘optimal’ MCSs that ‘should’ be used to manage risk in inter-firm alliances, prior research has tended to give fixed positions to MCSs.

First, prior research has tended to specify *a priori* the structural forms of MCSs that can be used (at least theoretically) for risk management in inter-firm alliances. In doing so, it has assumed that different MCSs should have their own fixed properties, characteristics and functionality, which will not change and will have the same meaning in different alliances or different contexts of the same alliance. In addition, these pre-specified MCS were assumed to perform their function in a uniform manner to manage risks in different alliance contexts. Any failures or unsatisfactory outcomes associated with the use of these MCSs for risk management in inter-firm alliances are generally ascribed to external factors (such as cultural or political reasons). However, some accounting researchers—particularly those who adopted a qualitative field approach to study accounting/MCS—have started to challenge the assumption of fixed position on accounting/MCS (Dechow & Mouritsen 2005; Miller 1992; Preston, Cooper & Coombs 1992). In particular, these accounting researchers have argued that accounting/MCS are fragile because they are continually translated as they are practised in local contexts. In other words, the properties, structures, functionality and meaning of accounting/MCS are fluid because they are subject to ongoing changes. Thus:

a management accounting system is never a ready-made package to be implemented, but rather a loosely coupled set of ideas and technologies that are constantly shaped and reshaped when they ‘travel’ from one setting to the next (Justesen & Mouritsen 2011).

At the same time, MCSs may generate unintended or varying effects as they encounter local activities during their ‘travel’.

For example, Preston et al. (1992) studied the fabrication of budgets in the United Kingdom National Health Service. They demonstrated how, during the process of being advocated, the original initiative of management budgeting confronted recurrent challenges, resistance, uncertainty and attacks by various local and national actors (such

as clinicians and the general public). This led to controversies regarding how to redefine the initiative and undertake the design/redesign of the specific formula of management budgeting. In their study of the integration of management and control of two firms through enterprise resource planning (ERP), Dechow and Mouritsen (2005) did not view ERP as a fixed accounting technology with a pre-programmed unchanging essence. Rather:

the technological features of ERP systems enable and constrain what can be modelled and made visible and the infrastructure of the technologies used to support the ERP system develop differential access to the ERP system. ERP systems are moldable but they fight back because programming choices for one item can return and make other items impossible. ERP systems are thus unruly (Justesen & Mouritsen 2011, p. 173).

Both Preston et al. (1992) and Dechow and Mouritsen (2005) offered a new way of understanding accounting/MCS as a fragile assemblage, the uncertain fate of which is held in the hands of heterogeneous others. This manner of understanding MCSs challenges how the relationship between MCS and risk in inter-firm alliances is studied in prior accounting research. If it is accepted that risk is an empirical phenomenon that is dynamic in nature, then the identities, functions and meanings of MCSs could also change in the practice of managing these evolving risks, as embedded in the wider alliance context.

Second, as noted earlier, most prior accounting research has presumed a unidirectional relationship between risk and MCSs in inter-firm alliances. In particular, they have assumed that MCSs are always designed and enacted to manage risks, even though MCSs may sometimes be conduits for risk in inter-firm alliances. With this assumption in mind, prior accounting research has had the tendency to treat MCSs as a ‘dead’ mechanism that can only be passively adopted to deal with so-called different types of risks that are characterised by different patterns/combinations of contingent variables. In other words, MCSs are treated as the mere outcome or selection choice in response to the appearance of a certain type of risks that are predetermined *a priori*. In this way, MCSs are ‘marginalized and subordinated to material, ideological, professional and political conditions or personal interpretations of accounting’ (Justesen & Mouritsen 2011, p. 161). Interestingly, since the 1980s, some accounting researchers have called for study of how accounting/MCS is practised in the context in which it operates (Ahrens & Chapman 2007; Burchell, Clubb & Hopwood 1985; Hopwood & Miller 1994; Mouritsen 1999). These researchers have argued that accounting cannot be

understood by isolating it from the context in which it operates because it shapes and is shaped by specific locales. One important message is that accounting/MCS is not a pure fixed or inactive object that is passively adopted by humans or organisations in particular contexts. Rather, accounting is an ‘active player’ that can influence and generate effects on local activities in which it is practised.

For example, Miller (1990) showed how accounting enables governments to practise their programmatic ideas ‘at a distance’, as it is able to trace activities that are physically far away and make present absent things and people in the ‘centre of calculation’. Robson (1992) wrote that the power of accounting—particularly accounting numbers—to act ‘at a distance’ emanates from its materiality, combinability and relatively high degree of stability. In her ethnography of three Australian hospitals, Chua (1995) found that accounting, together with other inscriptions and rhetorical strategies, fosters an uncertain faith that links the multiple interests of different parties. Mouritsen (1999) showed how competing accounting calculations stage the conversation between managers on firms’ outsourcing decisions. In the context of inter-firm alliances, Chua and Mahama (2007) clearly depicted how accounting recurrently interacts with the alliance contract, which dynamically alters the relationship between partner firms. Overall, these studies advocated the idea that accounting/MCS itself is an independent actor that is forced to act by others. Translating to the context of this thesis, this study believes that MCS is enacted not only to manage risk, but also to actively contribute to constructing risk, and MCSs and risk simultaneously participate in the construction of each other. This belief resonates with the finding of a recent study by Vinnari and Skærbæk (2014) that risk management itself creates uncertain outcomes.

In summary, this thesis seeks to extend existing studies by exploring the complex interdependent relationship between risk and MCSs in inter-firm alliances at an empirical level, even though doing this may challenge some fundamental assumptions that sustain the findings of those previous studies. In this sense, a practice examination of the complex relationship between risks and MCSs in inter-firm alliances is required.

## **2.5 Conclusion**

This chapter has reviewed the prior research that has treated risk as a theoretical phenomenon. While treating risk as a theoretical phenomenon has enriched our understandings of risk, this manner of studying risk tends to ignore the empirical nature of risk. This chapter has also reviewed studies that examined the empirical nature of risk.

In addition, this chapter has argued that people and society are becoming more aware of risks and as such risks are becoming prominent in people's daily lives. This led researchers to start studying risks in organisations that are comprised of interactions between individual people. This chapter has reviewed studies that considered inter-firm alliances an important strategy for organisations to manage risk. It has also reviewed studies that argued that inter-firm alliances are simultaneously significant sources of risks. To deal with risks associated with inter-firm alliances, more and more accounting researchers have studied the 'optimal' or 'ideal' design of MCSs (including accounting system) that 'should' be used for the risk management of inter-firm alliances. This chapter also reviewed these studies. However, the review of some recent accounting studies (primarily in the non-inter-firm alliance context) suggested that accounting or MCSs are constructed, are emerging/changing and have the power to affect others, as they interact with a variety entities and activities in practice. Thus, this chapter argued that this manner of understanding MCS challenges the beliefs of accounting researchers involved in studying the design of 'optimal' MCSs to manage risks in inter-firm alliances, which makes the research questions of this study interesting and important to examine.

## **Chapter 3: Theory Development**

### **3.1 Introduction**

This chapter draws on ANT as the analytical framework of this thesis. It aims to discuss how an emerging area of ANT (the study of the process of economisation) can be used to understand how risks become articulated in inter-firm alliances. In doing so, this chapter also seeks to demonstrate how MCSs may be implicated in the process of articulating risks. This chapter is organised as follows. Section 3.2 explains the rationale of adopting ANT to explain the research questions of this thesis. Section 3.3 discusses the conceptual foundation of ANT, particularly focusing on its core elements derived from sociologists' study of scientific knowledge in the making. Section 3.4 discusses how ANT has recently been employed to study the process of economisation. Section 3.5 discusses the notion of matters of concern as the starting point for studying the process of economisation. Sections 3.6, 3.7 and 3.8 review the three stages of the experimentation process (from the macro to micro world, research collective in the micro world, and from the micro back to the macro world) and explain how these stages have implications for understanding risk and MCSs in inter-firm alliances. The final section concludes the chapter.

### **3.2 Actor-network Theory**

Given that the focus of this thesis is examining the processes and practices through which risks are articulated in inter-firm alliances, and how MCSs may be related to or affect such processes, this study required a practice theory. ANT is a practice theory that adopts a constructivist approach to examine how certain realities are constructed through a set of interacting and relating practices. As a constructivist theory, ANT views reality (such as risk and MCSs) as a fragile assemblage that is (re)construed through a network of relations, rather than considering reality as something that exists 'out there' and can be determined *a priori*. The researcher believed that this view of ANT would help answer the research questions of this thesis.

ANT originally focuses on studying the social implications of science and technology. One essential aim of ANT is to study the practices and processes of how science and technology are constructed, deconstructed and re-constructed in scientists' everyday work (Callon 1986, 1991; Latour 2005; Law 1991). This theory has been used in the

sociology of science literature to study scientific controversies in the making, scientific controversies' closure, the control of human and non-human actants at a distance, and the role of mediators in translating others' interests (Mahama 2000, p. 43).

Although its original focus is the (re)construction of scientific knowledge, ANT has been increasingly drawn upon by accounting researchers to study:

1. the emergence and construction of accounting (Jones & Dugdale 2002; Miller, P 1990; Preston, Cooper & Coombs 1992; Robson 1991)
2. accounting change (Chua 1995; Llewellynn & Northcott 2002)
3. the use of accounting calculation to enable control at distance (Miller, P 1990, 1991)
4. the construction of space and time through accounting technologies (Dechow & Mouritsen 2005; Quattrone & Hopper 2005)
5. the mediating role of accounting and other MCSs in drawing organisational boundaries and networks (Chua & Mahama 2007; Miller & O'Leary 2007; Mouritsen 1999; Mouritsen & Thrane 2006).

This accounting research provides a solid support for this thesis to adopt ANT to explain how accounting and a set of other MCSs may be implicated in the practice of articulating risks in the everyday business of inter-firm alliances.

### **3.3 The Conceptual Foundation of ANT**

ANT has its origins in sociological studies examining how scientific knowledge is made. Sociologists such as Latour, Callon and Law followed science in the making by entering laboratories to observe *in situ* scientific activities and practices as they occurred in the process of creating scientific knowledge. Based on their observations of how scientific knowledge is made, these sociologists argued that we should not impose *a priori* distinctions between human/social and non-human/nature. That is, we should not presume that humans who have brains and consciousness are the origins of all actions. Similarly, we should not treat non-humans as cold objects that can only be passively acted upon by humans. Rather, ANT theorists argue that human and non-human should be treated symmetrically because both have the potential to act. This does not simply mean that we should treat non-humans as if they have something similar to humans' brains that allows them to act. Rather, Latour (2005, p. 76) argued:



ANT is not, I repeat is not, the establishment of some absurd ‘symmetry between humans and non-humans’. To be symmetric, for us, simply means not to impose *a priori* some serious asymmetry among human intentional action and a material world of causal relations. There are divisions one should never try to bypass, to go beyond, to try to overcome dialectically. They should rather be ignored and left to their own devices, like a once formidable castle now in ruins.

This suggests that we should be open about how entities (regardless of whether they are human or non-human) can act in constituting certain realities. Thus, ANT encourages researchers to examine the multiple ways that entities may act in different practices. However, ANT theorists argue that the way an entity acts depends on its relations with others. That is, an entity makes no sense when it is isolated from others. For example, a lecturer makes no sense by himself or herself. The title ‘lecturer’ is only meaningful when there are students with whom the lecturer can share knowledge, a room and facilities (such as chairs, whiteboard, projector and eraser) that enable communication between the lecturer and students, and a university that organises the enrolments of students and assigns the lecturer to teach those students. The students, classroom and university together qualify a certain person as a lecturer, and equip this person with the capacity to teach. This implies that an individual actor, alone, may not necessarily be the source of action. Rather, an actor may be caused to act by others through certain relations. It is in this respect that ANT requires us to examine how a variety of entities may be interacting or relating to each other in different ways to produce different courses of action.

Further, ANT does not separate the micro from the macro. Prior sociologists have sought to analyse social phenomena by dividing them into macro and micro phenomena based on certain scales. The social phenomena with large scales (such as the culture of a group of people) are classified as a macrocosm, while those with a small scale (such as individual action) are considered a microcosm. The macrocosm and microcosm are assumed to have different elements, and subsequently must be studied differently. This means that an analytical choice has to be made regarding macro or micro before researchers begin studying a particular social phenomenon. The macro and micro have long been treated as opposing each other, since the inception of social theory, and the study of one must be based on certain assumptions about the other. However, Latour (2005, p. 5) considered this division devastating to social theory:

It is tied to an order relation that goes from top to bottom or from bottom to up—as if society really had a top and a bottom—; it implies that the element ‘b’ being macro-scale is of a different nature and should be studied thus differently from element ‘a’ which is micro-scale; it is utterly unable to follow how an element goes from being individual -a- to collective -b- and back.

ANT theorists argue that focusing on a network of relations helps eliminate the *a priori* division between the macrocosm and microcosm. This is because the focus on relations between actors makes it possible to study how they are connected to each other to form a longer and tighter network, and how they are disconnected from each other to shorten and loosen the network. That is, instead of taking a position between the two seemingly opposing poles (macrocosm and microcosm), the focus on a network of relations allows us to examine how a given local entity extends its reaches to a global view through multiple connections, and how a certain global view reduces to a local entity through a variety of disconnections. Thus, the *a priori* divide between the macro and micro is replaced by ANT’s notion of relations.

Finally, ANT theorists argue that there is no pre-existing reality (such as a culture as a phenomenon in a macrocosm) ‘out there’ in the world waiting to be discovered, measured or represented. Rather, the interactions between multiple entities make certain objects, activities, practices and processes (such as culture) appear real, but only temporarily. That is, ‘realities’ are the outcome of the interactions and relations between entities. ANT theorists avoid the assumption that realities predetermine their own constituents and organise how these constituents should interact in order to prove the existence of these realities. As Latour (1986, p. 273) argued, ‘society is not the referent of an ostensive definition discovered by social scientists despite the ignorance of their informants. Rather it is performed through everyone’s effort to define it’. ANT encourages us to study all possible activities and interactions between entities (such as controversies, debates, struggles, resistances, coordination and compromises) that make certain realities occur.

The ANT view is that interactions between entities are ongoing processes because we cannot limit *a priori* the number of entities and how they act in their interactions with each other. Any entity is free to join or exit the interactions at any time and place, depending on its relationships with others. This suggests that we should not assume that any reality (as the outcome of interactions between entities), once formed, will be fixed forever. Rather, any reality is dynamic because it is always subject to changes. ANT

encourages us to examine how interactions between entities stabilise, for a certain time and in a particular place, and break apart at other times and places.

### **3.4 ANT and the Study of Economic Transactions**

Although ANT's original focus has been on scientific knowledge/realities in the making, recent researchers have used ANT to study economic transactions. In particular, Callon (1998, 2007) and his colleagues directed research attention towards studying the process of economisation. Economisation was defined by Caliskan and Callon (2009, p. 370) as 'the assembly and qualification of actions, devices and analytical/practical descriptions as "economic"'. In essence, the idea of the process of economisation requires researchers to deconstruct economy by tracing its origins and the processes through which those origins evolve, transform and are constituted as being 'economic'. The study of economisation requires removal of the assumption that economy is an independent reality 'out there' that predefines its components and how these components should function in order to achieve presupposed economic outcomes. Rather, Callon, Lascoumes and Barthe (2009) defined 'economy' as the outcome of the interactions between all entities that are involved in their attempts to shape and define the economy. For example, economists (in academia) create economic theories that are enacted and tested by economists (in practice) in their everyday business. Subsequently, economists (in practice) note any variations from economic theories that inform economists (in academia) how to implement theories. Each of these entities (economists in academia and practice, economic theories and everyday practices) alone is unable to create the economy, but they work together to make the economy occur.

Caliskan and Callon (2009) identified three possible entities (based on prior research in economics, economic sociology and anthropology) involved in the economisation process: institution, institutional arrangements and materiality. Institution refers to conventions, cultural values, norms and routines that are created by humans. The idea is that humans have limited capacity, and create institutions as theoretical prostheses to help them solve problems that they are otherwise unable to solve. For example, institution endows humans with extended ability to coordinate together, without which the process of economisation would be impossible. The arrangements between institutions contribute to generating economic behaviours. These arrangements enable the exchange of different institutions, which enables humans to compare, combine, calculate and evaluate. This allows humans to choose one institution that enables them

to act more efficiently and effectively, and thus behave ‘economically’. The exchange of institutions is not possible without materiality (such as techniques, standards and calculating instruments). In particular, the circulation of certain materiality from hand to hand enables humans to calculate and confer values to this materiality. Thus, institutions, institutional arrangements and materiality are interdependent and affect each other to make economisation possible. Thus, economisation ‘is a consequence of how competent and active people engage with specific things ... and the intersection between the materialities of things and people’s skills and competencies, in the process of economic valuation’ (Caliskan & Callon 2009, p. 388).

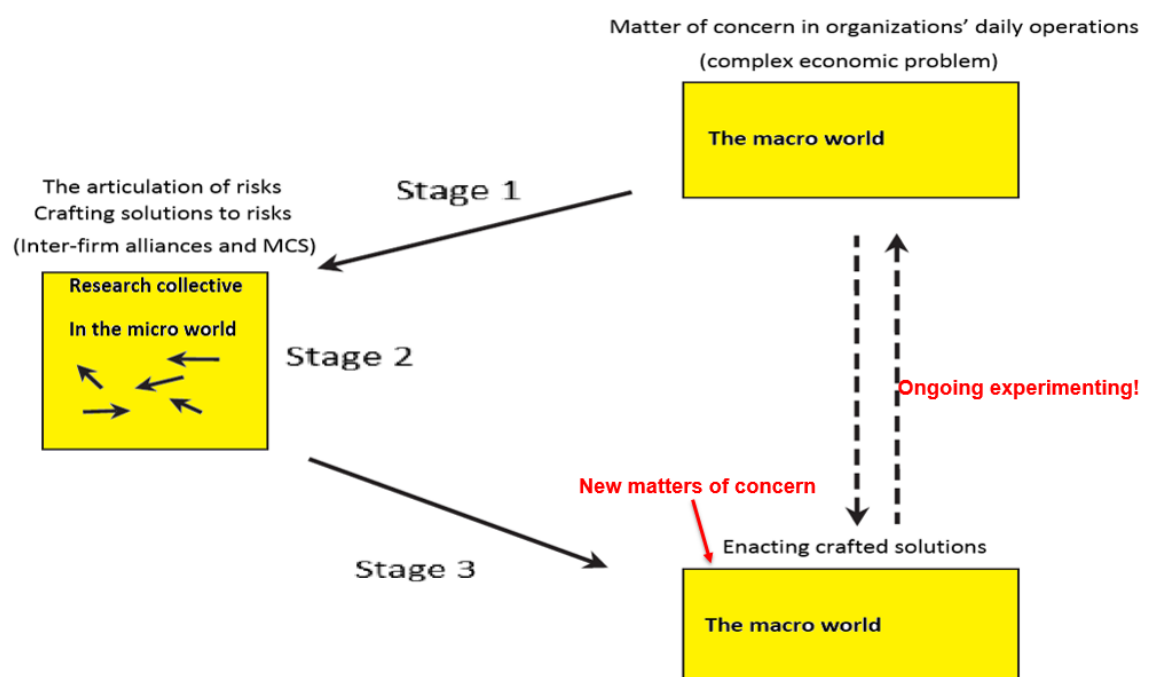
### **3.5 Matters of Concern**

To study the process of economisation, Callon, Lascoumes and Barthe (2009) suggested that the best starting point is what they termed ‘matters of concern’. They defined ‘matters of concern’ as the situation of initial shock in practice, which seems unusual to people. In other words, matters of concern refer to objects, activities or events that are inconsistent with people’s plans or deviate from people’s normal thinking patterns. They are issues for which there is no precise knowledge about the nature, causes or potential effects, outcomes or consequences—that is, issues for which people do not have clear or full understanding. Given the lack of knowledge about matters of concern, there are no indisputable solutions to deal with them. This is said to create uncertainty about how matters of concern would affect people’s daily lives, for which people are concerned about.

Callon, Lascoumes and Barthe (2009) argued that matters of concern are the focus of managing economic transactions because they trigger the articulation of economic problems and become the basis of constructing solutions to economic problems. For Callon, Lascoumes and Barthe (2009), all business problems start from matters of concern. Given that risk has been increasingly treated as a problem for contemporary business or economic organisations, it is reasonable to think that risks may become articulated due to matters of concern. To understand how risks become articulated due to matters of concern, it is important to know how organisations make sense of matters of concern when they arise. Callon Lascoumes and Barthe (2009) stated that making sense of matters of concern follows a process of experimentation. This process includes a three-stage translation involving:

1. reducing matters of concern in the macro world to simple entities or relationships in the micro world
2. a research collective in the micro world that involves tentatively drawing connections between entities, and hypothesising certain relationship models
3. returning the hypothesised relationship model back to the macro world to solve matters of concern.

This three-stage experimentation process is an ongoing practice. Figure 1 depicts ANT's notion of the ongoing practice of the three-stage experimentation process, and how this theoretical perspective of ANT helps explain the research questions of this thesis. This concept of experimentation gives a basis for understanding how risk becomes articulated and risk management solutions are constructed in economic transactions, such as inter-firm alliances. The following section specifically discusses the three-stage translation process of experimentation and how it may help explain the research questions of this thesis.



**Figure 1: Three-stage Experimentation Process Adapted from Figure 2.3 of Callon, Lascoumes and Barthe (2009)**

### 3.6 From Macro to Micro World

According to Callon, Lascoumes and Barthe (2009), the first stage of experimentation involves reducing or simplifying the complex matters of concern that people encounter

in their daily lives (macro world) to certain entities/activities/relationships, and moving these simplified entities/activities/relationships into a virtual environment (the micro world) in which such matters can be handled. In the business context, it is inevitable that organisations will encounter matters of concern in their daily operations (the macro world), which their existing economic arrangements or management control mechanisms are unable to manage. When matters of concern arise in organisations' daily operations, they would pose uncertain outcomes to organisations. That is, it is unknown how organisations will be affected by the matters of concern. This causes organisations to seek to understand the matters of concern. Given that there may be no precise knowledge about the matters of concern, organisations make the concern understandable and familiar by situating it in their own past history/experience, or relating it to something similar that they have seen or heard from others in their networks. This enables organisations to attribute matters of concern to entities/activities/relationships with which they are familiar. Although these entities/activities/relationships may not necessarily be exactly the same as the matters of concern, they at least allow organisations to develop some knowledge about the concern. In this process, some elements of the matters of concern may have to be eliminated, ignored or simplified by organisations because they would otherwise make the attribution process difficult or even impossible.

Further, these entities/activities/relationships (simplified from matters of concern in the macro world) may be recorded in a two- or three-dimensional space through using inscriptions.<sup>3</sup> For example, accounting numbers, written words, graphs and tables can be used to describe an organisation's operations in different years. The combined use of accounting numbers and other inscription devices helps organisations depict and materialise entities/activities/relationships that are believed to represent matters of concern. Thus, entities/activities/relationships can be imitated, calculated, edited and manipulated (Callon 1998; Miller, P 1990, 1991; Robson 1992). At this time, the matters of concern that organisations encounter in their daily operations (macro world) are reduced to entities/activities/relationships at a manageable scale (micro world).

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<sup>3</sup> Inscriptions are material translations (through writing, recording, drawing and tabulating) of any entity that can be acted upon (Robson 1992). Inscriptions may take the form of (but are not limited to):

photos, maps, graphs, filmed or electronically recorded traces, direct visual observations recorded in a laboratory notebook, diagrams, illustrations, printed samples, 3D models, ultrasound scans, or sonorous spectrums that are arranged and filtered by techniques enabling them to be visualized (Callon et al. 2009, p. 52).

### **3.7 Research Collective in the Micro World**

In ANT parlance, a research collective refers to the interactions among all relevant stakeholders in creating knowledge about the entities/activities/relationships that are reduced from the macro to micro world. When matters of concern are reduced or simplified to entities in the micro world, organisations are able to develop and create new knowledge about these simplified entities and relationship. Organisations attempt to relate these simplified entities and (if related in a certain way) analyse how the entities produce certain effects. Some of the effects may be perceived as a hindrance to organisations to achieving their objectives, and thus become articulated as problems. Organisations may simultaneously draw on some entities/events that they know about and relate these entities/activities/relationships to the causes, nature and consequences of problems. Through this relating process, organisations may start to consider some of the problems as being risky or posing dangerous outcomes to existing or future operations. This may lead organisations to form risk perceptions about the problems. This risk perception may be further rationalised by organisations, thereby turning the perception of risks into acknowledged fact. Organisations may simultaneously attach certain meanings and measures to such ‘risks’ in order to formalise them and make them describable. The tentative relationships between entities/events/activities come to represent a hypothesis about the existence of risks. As such, this thesis argues that risk is constructed as a sensible way of making sense of matters of concern that arise in organisations’ daily operations.

Inscriptions participate actively in organisations’ efforts to articulate risks out of matters of concern. Inscriptions are material translations (through writing, recording, drawing and tabulating) of any entity that can be acted upon (Robson 1992). Inscriptions may take the form of (but are not limited to):

photos, maps, graphs, filmed or electronically recorded traces, direct visual observations recorded in a laboratory notebook, diagrams, illustrations, printed samples, 3D models, ultrasound scans, or sonorous spectrums that are arranged and filtered by techniques enabling them to be visualized (Callon, Lascoumes & Barthe 2009, p. 52).

Inscriptions enable the reduction of matters of concern to a form that can be acted upon. Inscriptions also materialise matters of concern in visual forms (Robson 1992), which is particularly useful in simplifying complex activities, entities, phenomena and

relationships into solid forms that can be depicted in two- or three-dimensional spaces. Reducing matters of concern to entities and depicting these entities in two- or three-dimensional spaces provides conditions for organisations to relate different entities in tentative ways, on the basis of which certain effects or patterns can be retrieved. These effects or patterns may become the object of discussion, which can trigger exchange of ideas and discussions among people to produce further knowledge on these effects.

Inscriptions help circulate information/ideas among people, which is central to making sense of matters of concern. Inscriptions may carry information about certain entities or ideas from one person to others, without transforming its meaning, which makes it possible to exchange and create equivalence among multiple information/ideas (Callon 1986; Chua 1995). Furthermore, in the process of carrying information/ideas from one to another, inscriptions may transform the meaning of such information/ideas. Accounting inscriptions are particularly relevant here. Accounting inscriptions allow various mathematical calculations to be completed and, through these calculations, information or ideas from different sources may be simplified and combined in certain formats, through which some surprising outcomes may be obtained (Briers & Chua 2001). These surprising outcomes may become the basis of articulating problems and forming risk perceptions of organisations.

Inscriptions allow representation, which is helpful in objectifying risk perceptions. Accounting inscriptions are pertinent here. By being able to translate and represent perceived dangers in numerical terms, accounting inscriptions (such as accounting numbers) provide 'hard facts' about the outcomes of such danger. This helps rationalise risk perceptions and makes the perceived risk describable. The inscriptions (particularly accounting) that participate in the practice of articulating risk remain an empirical issue to be examined.

In articulating risks, organisations simultaneously construct possible solutions. To seek these solutions, organisations may call upon actors within or outside the organisation to discuss different economic arrangements that have the possibility to attenuate the articulated risks. Different economic arrangements may be assessed, tested and compared. Prior research has suggested that inter-firm alliances may be selected as a strategy for dealing with risks (Castells 2000; Hagedoorn 1993; Nooteboom, Berger & Noorderhaven 1997; Osborn & Baughn 1990; Teece 1992). Inscriptions are essential in helping organisations experiment with and select economic arrangements to manage



risks. Inscriptions allow organisations to determine the conditions and barriers to operating each economic arrangement, as well as simulating the consequences of each arrangement. This allows actors to demonstrate to others the logic of using a particular economic arrangement to manage risks. In addition, inscriptions can convert the consequences of different economic arrangements into equivalences that can be compared, so that a suitable arrangement can be selected. Through discussion among actors and mobilisation of inscriptions, inter-firm alliances may emerge as the solution to the articulated risks. ANT encourages researchers to study the discussion among different actors, and how inscriptions participate in these discussions and lead to the selection of inter-firm alliances, among a set of alternatives, as the solution to risks.

In proposing inter-firm alliances as the potential solution for risk, organisations are simultaneously experimenting with possible relationship models that are expected to make the alliances work. Certain issues may be discussed and negotiated among parties in alliances, such as the process of selecting partner firms, how to define and distribute the roles and responsibilities of partner firms, the ways partner firms should cooperate with each other, potential conflicts between partner firms and ways to address conflicts, and possible mechanisms for structuring and governing the inter-firm alliance (Chua & Mahama 2007; Mouritsen & Thrane 2006). The discussions and negotiations among actors may enable development of a shared understanding on the above issues. This shared understanding becomes the basis of constructing a relationship model about the inter-firm alliance. Constructing the relationship models is one form of making hypothesis about how the alliances should operate. It is in this sense that the alliance model is not predetermined, but negotiated.

MCSs play a central role in the process of constructing an inter-firm alliance model. They help:

1. constitute an acceptable performance for inter-firm alliances
2. design specific mechanisms to measure alliance performance
3. synergise resources from partner firms and redistribute the synergised resources to alliance activities
4. elaborate a budget for future alliance operations
5. build reporting systems for the alliance and partner firms (Chua & Mahama 2007; Mahama & Chua 2011; Miller & O'Leary 2007; Mouritsen & Thrane 2006).

Although it remains an empirical issue to examine the variety of roles that MCSs may play, the point here is that MCSs contribute to constructing alliance models and provide a blueprint for how the alliance model will work.

In articulating alliance models, organisations may inevitably encounter limitations or difficulties (Anderson & Dekker 2005; Chua & Mahama 2007). These limitations or difficulties may trigger another round of discussions among the actors enrolled in the network of inter-firm alliances. At the same time, actors and material devices may be enrolled in the discussions. The discussions may lead to the articulation of new risks and construction of some solutions, particularly to address the limitations, difficulties and new risks. MCSs may be one such solution and part of an alliance model for risk management. ANT examines how MCSs interact with other alliance practices in constructing the alliance model, and how MCSs are themselves constructed as the outcome in the efforts to build such a model. It should be mentioned at this point that these solutions (inter-firm alliances and respective MCSs) are crafted primarily based on organisations' hypothetical expectations, and organisations believe that these hypothetical models, when enacted in the macro world/daily operations, should also be able to deal with matters of concern.

### **3.8 From Micro Back to Macro World**

According to Callon, Lascoumes and Barthe (2009), after the theoretical models of inter-firm alliances and respective MCSs are experimented with and constructed in the micro world, they are brought back to the macro world. Support is organised for these theoretical models to be replicated, legitimatised and operated in the macro world. This requires interessement and enrolment of other entities (such as employees, government or technology) with which organisations are dealing, and from which the support for these theoretical models can be obtained. Latour (1987) argued that five strategies can be used to interest others. First, it can be shown that these theoretical models consider the interests of the enrolment targets or make their objectives easier to achieve. Second, the enrolment targets' interests/objectives can be replaced with new ones that align with those of these theoretical models. This is when enrolment targets' preferred methods of achieving their goals are removed or become impossible. Third, the enrolment targets can be taken to a short detour. Instead of entirely displacing enrolment targets' interests, they can be signalled that, 'by inviting you to come to my way, I am not going to divert or replace your interests, rather trying to make it easier for you to

achieve your own goals' (Latour 1987, p. 157). Latour (1987) argued that this enrolment strategy is only possible under three conditions: (i) the main road (for laypeople to achieve their goals) should be clearly cut off, (ii) the new detour should be well signposted, and (iii) the detour should appear short. Enrolment targets eventually return to their 'main road' after they finish the short detour provided by the economic decision makers. Fourth, enrolment targets' goals and interests can be reshuffled. That is, a scenario can be created to make enrolment targets perceive a problem that cannot be addressed with their current knowledge and solutions. This increases their margin of manoeuvre when theoretical models are provided to them. In the last strategy, the theoretical models become indispensable. When reaching this point, every enrolment target is forwardly contributing to the spread and promotion of these theoretical models.

In the process of organising support to enact inter-firm alliances and respective MCSs in the macro world to deal with matters of concern, resistance may simultaneously arise. That is, when organisations seek to implement the theoretical models of inter-firm alliances and respective MCSs in their daily operations, these models may not necessarily function as expected. This is because entities, events and activities in the macro world are more dynamic and uncertain than those that are simplified in the micro world (based on which theoretical models of inter-firm alliances and respective MCSs are constructed). It is argued that people, objects and activities in the real world are dynamic and, with respect to inter-firm alliances, it is possible that the interests of partner firms may change at any point, which may lead to actions that are not consistent with those hypothesised in the initial alliance contract.

Callon, Lascoumes and Barthe (2009) argued that the relations between objects and activities in the macro world may be much more complex than those assumed in the micro world. In the macro world, objects and activities may be connected in a network of relationships in thousands of ways. The complex relations between objects and activities in the macro world complicate how hypothesised solutions (as constructed in the micro world) may be implemented in the macro world. In the context of inter-firm alliances, one partner firm may be unexpectedly connected to the other partner firm's competitor, which may create problems in the operation of inter-firm alliances. ANT allows for the examination of the dynamism and complexity that may arise when enacting and operating inter-firm alliances and respective MCS models. The dynamism and complexity of the macro world challenges how inter-firm alliances and respective MCS models (as constructed in the micro world) may be enacted. These challenges may

generate new matters of concern, and thus trigger new experimentation processes with risk and MCSs. When these new MCSs are implemented in the macro world, this may again generate matters of concern that trigger another set of experimentation processes. This causes the experimentation process to be an ongoing practice.

### 3.9 Conclusion

This chapter has presented ANT as the theoretical framework to address the research questions of this thesis. It has discussed the reasons for adopting ANT as a theoretical framework, and discussed the conceptual foundations of ANT as follows:

- the imposition of *a priori* roles to human and non-humans should be avoided
- entities' capacity to act depends on its relations with others
- the separation of macrocosm and microcosm as an starting analytical point should be removed
- reality is the outcome of interactions between the entities that are involved in making and defining the reality.

This chapter has also argued that the recent attention of ANT has shifted from studying the production of scientific knowledge to the construction of economy. In particular, the construction of economy is the outcome of the process of economisation. To study the process of economisation, this chapter presented Callon's (2007) notion of matters of concern and the three stages of the experimentation processes. This chapter indicated how matters of concern and the three stages of the experimentation process will help address the research questions of this thesis. In particular, this chapter focused on theorising how risks become articulated as the outcome of organisations' efforts to make sense of matters of concern, how inter-firm alliances are constructed as the solution to risks, and how MCSs may be implicated in these processes when inter-firm alliance models are constructed and enacted in practice. Given that ANT is a practice theory that requires us to follow actors as they participate in the economisation process, this thesis adopted a methodological approach that allowed us to study the specific activities, processes and practices that create the articulation of risks and MCS in inter-firm alliances, as well as the dynamics of risk and MCSs. The following chapter discusses the research methodology applied.

## **Chapter 4: The Field Study**

### **4.1 Introduction**

This chapter discusses the field study method employed in this thesis. In particular, this chapter discusses the suitability of employing the field study method to examine the research questions of this thesis, the processes of selecting the research sites, the multiple methods used to collect data in the field and the procedures used to analyse the data collected. This chapter is organised as follows. Section 4.2 describes the field study method employed in this thesis. Section 4.3 describes the details of the research sites. Section 4.4 explains how the data were collected in the field, while Section 4.5 discusses the data analysis process. Section 4.6 concludes this chapter.

### **4.2 The Field Study Method**

Ahrens and Chapman (2006) highlighted the importance of using an appropriate research method to address research aims and particular questions of interest. Given that this thesis sought to examine the processes by which risks are articulated and evolve in inter-firm alliances, and the role of MCSs in these processes, a qualitative field study method was used. A qualitative field study is defined as follows:

- (1) The researcher has direct, in-depth contact with organizational participants, particularly in interviews and direct observations of activities, and these contacts provide a primary source of research data.
- (2) The study focuses on real tasks or processes, not situations artificially created by the researcher.
- (3) The research design is not totally structured. It evolves along with the field observations.
- (4) The presentation of data includes relatively rich (detailed) descriptions of company contexts and practices.
- (5) The resulting publications are written to the academic community (Ferreira & Merchant 1992, p. 4).

Researchers who adopt qualitative methodology understand the field based on the view that ‘social reality is emergent, subjectively created, and objectified through human interaction’ (Chua 1986, p. 615). This view is consistent with this thesis’s argument about risk. This thesis argues that risks are articulated as the outcome of interactions between heterogeneous entities, rather than being an objective reality ‘out there’ that is waiting to be identified, measured or portrayed with certain contingent variables. Thus, qualitative field study has value for addressing the research questions of this thesis.

Field studies allow researchers to closely engage with actors in the field, and see how these actors undertake their daily activities. This increases the chance of observing what actors are relating to, how they are interacting with each other, and how these relationships are brought about. As Ahrens and Chapman (2006, p. 7) highlighted:

the field often draws the researcher into its interactions, unlike other context-rich domains such as historian's archive or the worldwide web's virtual record, for example. In the field, people engage with each other, objects, ideas, accounting systems and metrics, and occasional fieldworkers.

The possibility offered by field studies of engaging closely with actors in the field was very helpful for addressing the research question of the thesis. Field studies allowed us to explore how a variety of actors interact with each other in specific ways to articulate risks, and how MCSs may be implicated in these processes.

Further, field studies allow researchers to continuously engage with actors in the field (during the data collection period) to obtain rich data and information about the changes occurring in the field (Boudreau & Robey 2005; Chua 1995; Chua & Mahama 2007). In particular, field studies allow researchers to capture information about the causes, patterns and effects of changes in actors' interests and preferences, and how these changes affect how these actors interact with others, which may cause further changes. In other words, field studies allow researchers to observe how actors undertake their daily activities and feel possible changes through time and space, instead of randomly capturing certain activities or phenomena in a particular time and space locale. This is pertinent to studying how risks evolve in inter-firm alliances, and the effect of this evolution on MCSs.

In addition, field studies allow actors in the field to speak and act freely, without straying from the research aims and particular questions of interest. That is:

Compared to other forms of research that involve interaction with humans, such as field experiments and laboratory experiments, for example, qualitative field studies hold great potential for open-ended interaction between the researcher and the researched. The researcher has less control over the researched, but has the opportunity to learn from their unprompted actions ... structured and unstructured data all underline the significance of the researcher's theoretical work to prevent her from being overpowered by the volume and complexity of field data (Ahrens & Chapman 2006, p. 7).

Field studies' potential to link structured and unstructured data makes this the most appropriate method for this thesis. It allowed the researcher to seek data for the main research questions, without posing a definitive and pre-set boundary on the data that needed to be collected from the field. This was particularly helpful in addressing the research questions of this thesis by avoiding predetermination of which risks and MCSs should exist in inter-firm alliances.

Finally, Ahrens and Chapman (2006) argued that research questions, theory and data are intertwined. This suggests that theory should inform how data are collected, and data should reflect on and contribute to theory. As discussed in the previous chapter, this thesis used ANT to make sense of the research questions. Given that ANT is a practice theory that focuses on 'actors in the doing of things' in their daily activities, field studies allow researchers to engage with and follow actors as they articulate risks and construct MCSs in inter-firm alliances. Thus, using field studies is consistent with the essence of ANT, which makes field studies compelling for the present thesis.

### **4.3 The Research Sites**

The qualitative field studies were conducted on international JVs. International JVs involve independent entities that are jointly owned by two or more partner firms, with at least one partner headquartered outside the venture's country of operation (Geringer & Hebert 1991; Lyles & Salk 1996). Although there are many different forms of inter-firm alliances—including licensing, outsourcing, supply chains, equity swaps, JVs, mergers and acquisition—there are three reasons this thesis focuses on JVs as the context to examine the research questions (how risks are articulated and evolve in inter-firm alliances, and how MCSs may be implicated in these processes). First, JVs are a good context that exemplifies risk issues in inter-firm alliances. This is because JVs are one of the most common and popular forms of inter-firm alliances, contributing to almost 20% of all inter-firm alliances (Hagedoorn 1996; Hagedoorn & Duysters 2002). Second, risks in JVs are said to be high (Barkema, Shenkar & Bell 1997; Li et al. 1999; Tsang 2002), which provides a rich context to study the research questions of this thesis. Third, most prior research examining the risk–MCS relationship in inter-firm alliances was conducted in outsourcing or supply chains. Thus, examining JVs adds to the accounting literature by providing evidence on the risk–MCS relationship in another type of alliance relationship.

The researcher targeted international JVs (with one Chinese firm and at least one Western firm as the partner firm) that were operating in China as the potential research sites. Prior research has suggested that risks in international JVs that operate in China tend to be higher than those in other countries because of the increasingly tough price competition; uncertain regulatory and tax environment; underdeveloped legal, corporate governance and other institutional systems; ease of losing intellectual property rights and trade secrets; and cultural distance when undertaking business (Beamish 2013; Child & Yan 1999; World Economic Forum 2000; Yatsko 1997). Thus, international JVs in China provide a rich context to study risk and MCSs. Further, there are a large number of international JVs in China, which allowed the researcher to carefully select research sites for this thesis. As Child and Yan (1999, p. 284) stated, ‘since 1992 China has ranked second only to the United States (US) as a host country for foreign direct investment, most of which has been implemented through international JVs’. Thus, China offers a particularly instructive location to study risk and MCSs in international JVs.

The researcher initially contacted six international JVs in China as potential research sites (two from the automotive industry; one from the medium-duty engine industry; and one each from the medical, clothing and energy industries). The researcher negotiated with key contact people who were responsible for managing each of these six JVs about the possibility and extent to which the researcher could study their JVs. This led to the loss of three JVs (two automotive JVs and one energy JV) because the researcher was only allowed to conduct interviews with a limited number of personnel in these JVs due to security reasons. The researcher then had informal conversations with the key contact people of the remaining three JVs, after which the researcher had a basic understanding of these JVs (such as the size, revenue, history and partner firms of the JVs). For the clothing JV, the Chinese firm partner was purely responsible for manufacturing, while all the processes of researching and designing relevant products were undertaken by the foreign partner firm. This business structure was considered by the researcher as less informative about risk and MCSs because there were a limited number of joint activities between the partner firms in researching, designing and manufacturing products. Thus, the clothing JV was dropped.

Both the medical and medium-duty engine JVs were appealing potential research sites that were considered able to provide rich context to the study. However, the researcher eventually selected the medium-duty engine JV as the research site because the



researcher had very good access to this JV. In the initial engagement with the key contact personnel in the medium-duty engine JV, the researcher was promised to be permitted to attend the partner firm and JV meetings, and to review confidential partner firm and JV internal documents. The key contact person promised to introduce the researcher to other personnel in the JV and partner firms, if required.

Further, the researcher realised that, to fully understand risk and MCSs in the medium-duty engine JV, the researcher might need to simultaneously study the partner firm and other five independent JVs that were connected to the focal medium-duty engine JV. In the initial engagement, the key contact person briefly discussed risk and MCS-related issues in the medium-duty engine JV. This led the researcher to believe that data about risk and MCSs in the medium-duty engine JV might be very rich, and the researcher would need a large amount of time and research funds to collect these data. The researcher believed that if time and research funds were devoted to collecting data from the medium-duty engine JV, it may not be possible to also collect data from the medical JV (the researcher had a limited number of years and constrained research funds to complete this thesis). Given the good access and potential rich data, the researcher decided to use the medium-duty engine JV as the primary research site.<sup>4</sup>

Since the key contact person of the medium-duty engine JV was from the foreign partner firm, this thesis treated the medium-duty engine JV and foreign partner firm as the focal organisations around which data collection, structured analysis and discussion were organised. Thus, risk and MCSs in the medium-duty engine JV (discussed and analysed in next chapter) were explained from the foreign partner firms' perspective.

Overall, the medium-duty engine JV and foreign partner firm granted the researcher full access to their discussions, meetings and documents, and allowed the researcher to conduct interviews with them and their partner firms. To ensure the confidentiality of the information collected from the research sites, the researcher signed a confidentiality agreement with the foreign partner firm. To further protect the confidentiality of the participating companies and individuals, pseudonyms are used in this paper, instead of real names. For example, the medium-duty engine JV is called 'DECIE', while 'Cino' is

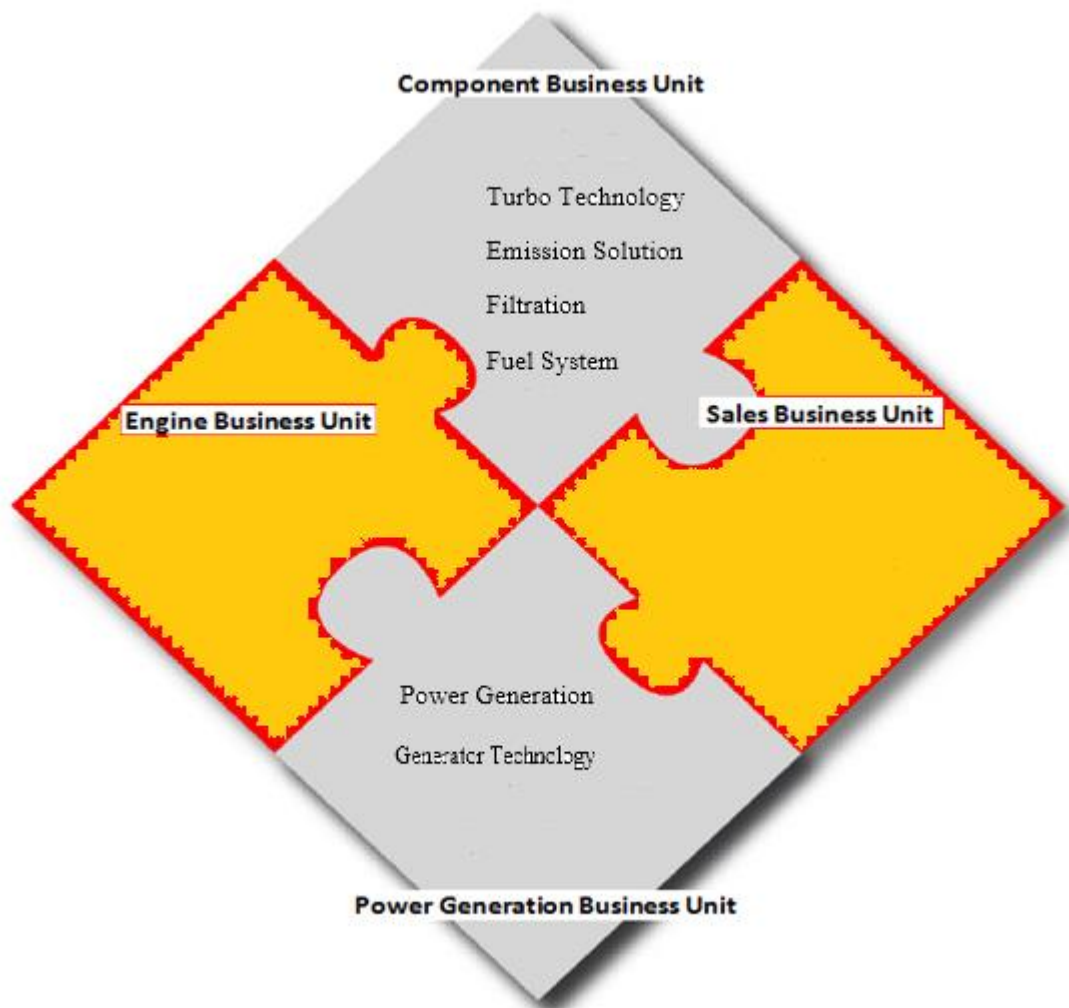
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<sup>4</sup> As discussed below, to fully understand the articulation and evolution of risk and the implications of this for MCSs in the medium-duty engine JV, the researcher needed to collect data from the foreign partner firm of the medium-duty engine JV, as well as one ATS JV that shared the same partner firms with the medium-duty engine JV. Thus, the research site of this thesis included the medium-duty engine JV, the ATS JV, and the foreign partner firm of these two JVs.

used to designate the foreign partner firm. The following subsections present the background of the foreign partner firm and its JVs in China.

#### **4.3.1 Cino**

Cino was founded in the early 1990s in the US as an engine company that manufactured and sold diesel engines. After almost a century of operation and expansion, Cino has now become a global leader that designs, manufactures, sells and services engines and related technology. It now has about 500 company-owned independent distributor facilities and more than 5,200 dealer locations in over 190 countries. Cino is now organised into four separate, yet complementary, business units: engine business, power generation business, component business and distribution business. The engine business manufactures and markets diesel and natural gas-powered engines for on- and off-highway use. The power generation business provides power generation systems, components and services for standby power, distributed power generation and auxiliary power for mobile applications. The distribution business manages the global distribution strategy and channels for all lines of Cino's products. The component business designs and manufactures four components of engines: filtration, turbo technologies, emission solutions and fuel systems (Cino Annual Report 2012). Thus, the component business itself consists of filtration business, turbo technologies business, emission solutions business and fuel systems business. Figure 2 summarises Cino's business structure.



**Figure 2: Cino's Business Structure**

#### **4.3.2 Cino's connections with China**

Cino has been building connections with China since its formation in the US. The earliest contact between Cino and China is dated back to the 1920s. In the 1920s, the then director of Cino wrote a letter to the National Government of China about potential cooperation between Cino and the government. At that time, engines were the national industrial base and the Chinese national government was quite positive about Cino's initiative. There had been intercourse between Cino and the Chinese national government since that time. In 1941, the US passed the *Lend-lease Act*, whereby the US would support China in its anti-Japanese war by providing military aid supplies. These supplies included patrol boats and army trucks that were equipped with Cino's engines. At the end of 1944, one company—the Chang Truck Group (CTG)—wrote to Cino about the possibility of commercial cooperation. In particular, the company wanted to implement local production (in China) of Cino's engines. In his reply to CTG, the director of Cino expressed strong interest in the local production proposal, and

willingness to establish factories in China after the anti-Japanese war. However, due to tense China–US relations, Cino’s director’s plan to establish factories in China could not be realised until 40 years later. As economic and trade relations between China and the US gradually recovered in the 1970s, some US-made medium-sized mining trucks equipped with Cino diesel engines were imported to China for mining use. This reopened the possibility of cooperation between Cino and Chinese firms. In 1975, the director of Cino visited Beijing with the aim of signing an after-sales service agreement with CTG, and further considering the possibility of expanding Cino’s business in China. As more trucks equipped with Cino diesel engines were imported to China and used in the mining industry in the 1970s, these diesel engines were widely recognised by local users. However, the high price of importation limited the total number of trucks that CTG could afford to purchase. As a result, CTG presented a proposal for technology import and local production of Cino’s engines. Cino positively responded to CTG’s proposal, which facilitated later cooperation between CTG and Cino.

In 1981, Cino signed a licensing agreement with CTG to allow CTG to manufacture Cino’s heavy-duty diesel engines. The import and local production of Cino’s heavy-duty diesel engines was one of the most important projects under ‘The Sixth Five-year Plan of China’ in the engine industry. One aim of The Sixth Five-year Plan of China was to expand international trade, effectively use foreign funds and actively import foreign advanced technology that was suitable for national needs to promote development of the economy and technology. As the overall performance of Cino’s diesel engines was widely recognised by Chinese customers, Cino’s key engine components also attracted some Chinese enterprises. In 1982, Wu Power Group signed a licensing agreement with Cino to manufacture Cino’s holt-branded turbocharger products. The two experiences of cooperation on licensing agreements (one with CTG to make heavy-duty diesel engines and one with Wu Power Group to make turbochargers) lay the foundation for cooperation between Cino and Delink.<sup>5</sup> Due to the growth of Cino’s business in China and the frequent and close interactions with Chinese local stakeholders, Cino established Cino China Investment Co. Ltd to manage and control Cino’s China operations. It is worth mentioning that, after the formation of Cino China Investment Co. Ltd, all strategic decisions associated with JVs (such as the formation of JVs and selection of JV partners) were initiated by Cino and operated through Cino China Investment Co. Ltd. Thus, this thesis treats Cino and Cino China

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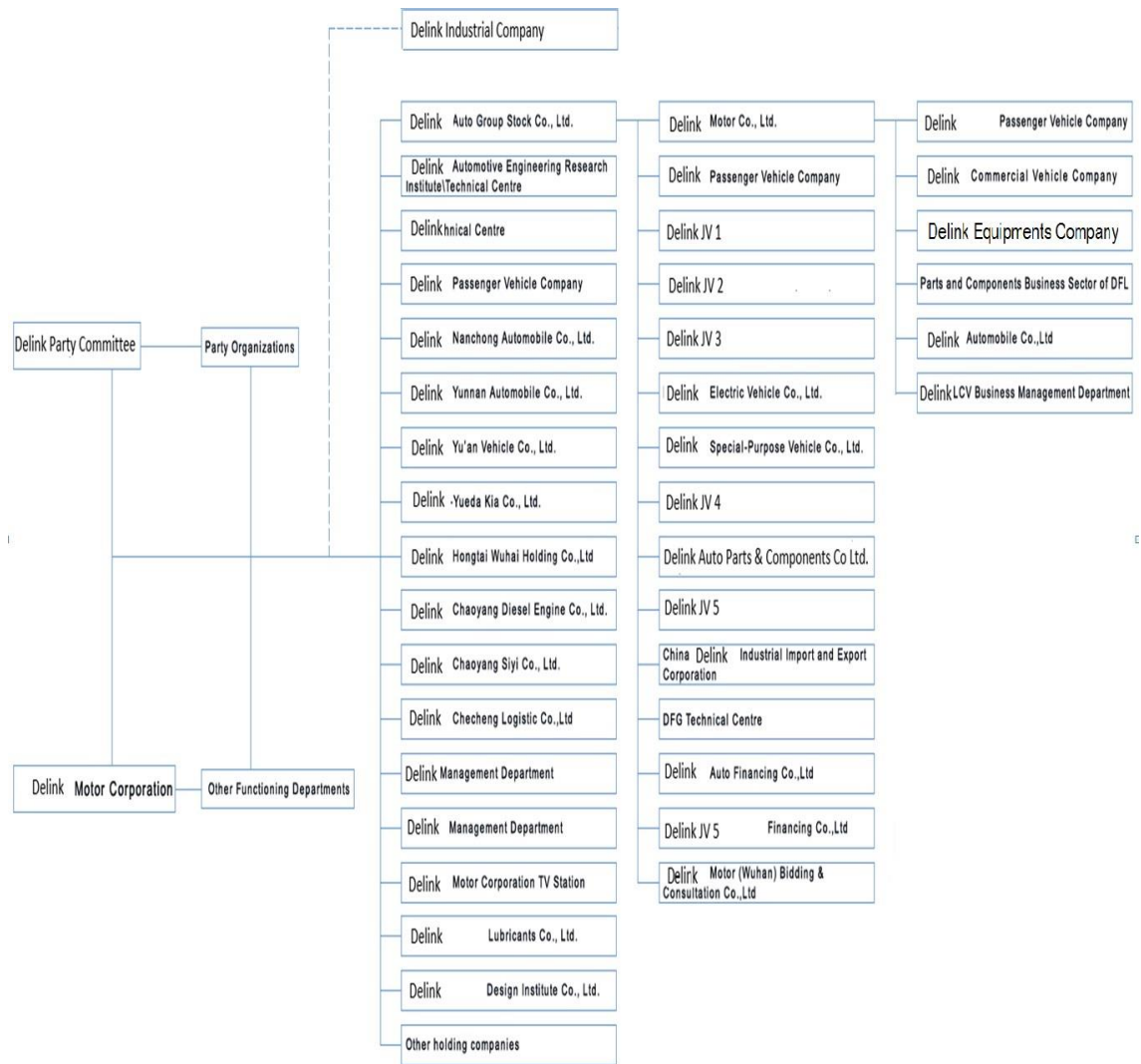
<sup>5</sup> Delink and Cino’s cooperation with Delink will be discussed in Section 4.3.3.

Investment Co. Ltd as an integrated single unit when dealing with JV-related business in China. For the rest of this thesis, 'Cino' is used to refer to this integrated unit.

### **4.3.3 Cino's cooperation with Delink**

Delink Motor Cooperation was one of Cino's earliest and largest cooperation partner firms in China. Delink Motor Corporation was established in 1969 and had a wide coverage of business, involving researching, designing, manufacturing and selling whole serial commercial vehicle (light-, medium- and heavy-duty commercial vehicles), passenger vehicles, auto parts and components, vehicle manufacturing equipment and auto-related business. By the end of 2011, Delink's assets totalled 29 billion US dollars and the company had 160,000 employees. The total sales revenue of Delink Motor Cooperation continued increasing from the 1990s and reached 50 billion US dollars in 2011. Figure 3 presents the overall business structure of Delink Motor Cooperation. Note that the focal organisations under study are Cino and its JVs in China, and all Delink Motor Cooperation's operations that involve cooperating with Cino are exclusively negotiated by Delink's commercial vehicle company. For the rest of this thesis, 'Delink' refers to Delink's commercial vehicle company, which makes business decisions associated with Cino on behalf of Delink Motor Corporation.

It took two years from the initial contact between Cino and Delink to sign a licensing agreement between these two firms. In 1984, the former chief executive officer (CEO) of Cino visited Chinese Second Automobile Group (the former name of Delink) for potential cooperation opportunities. At that time, there were only two major commercial vehicle manufacturers in the Chinese market: Chinese First Automobile Group and Delink. While Chinese First Automobile Group and Delink were the two key groups that the Chinese government was supporting to make commercial vehicles, Chinese First Automobile Group was designated by the Chinese government to undertake the national responsibility of developing independent technologies. Thus, the Chinese government was reluctant to let Chinese First Automobile Group cooperate with foreign firms to make engines. This made Delink the only cooperative target if Cino wished to expand its business in China. Thus, Delink became the main object of study during the CEO's visit.



**Figure 3: Delink's Business Structure**

Further, at that time, Delink was transforming from making heavy-duty to medium-duty trucks. Given that Delink had no experience making medium-duty engines, they were eagerly seeking potential partners who could provide advanced and world-leading medium-duty engine technologies. In fact, Delink organised technology specialists to iteratively compare the overall performance of engines from five countries, including France, the US, Britain, Japan and Germany. Based on thorough investigations, Cino's B series diesel engine was selected as the target for importation and learning. Delink even established a diesel engine plant to prepare for the forthcoming cooperation with Cino. Based on the mutual willingness for cooperation, in 1986, Cino signed a licensing agreement with Delink to manufacture B series medium-duty diesel engines.

Cino has formed a total of 10 JVs in China with five Chinese local firms since it entered the Chinese market. Note that Delink Cino Engine (DECIE), the medium-duty engine JV between Cino and Delink, was the focus of this study. The researcher had initial

conversations with DECIE's key contact person about to the extent to which other JVs were involved in the risk management of DECIE. This led to eliminating four of Cino's JVs that were considered by the researcher irrelevant to the research questions of this thesis. Eventually, six of Cino's JVs were kept as potential research sites, where data necessary to address the research questions would be collected. The details of these six JVs and possible relationships between these JVs are explained as follows.

#### *4.3.3.1 Cino's JVs*

Cino has four JVs with Delink: Delink Cino Filtration (DECIEF), DECIEE, Cino East Asian Research Centre (CEARC) and Delink Cino ATS (DECIATS).

*DECIEF* is a 50:50 filtration JV between Cino and Delink, which was established in 1994 in China with an investment capital of 2 million US dollars and a total number of 700 employees. DECIEF manufactures and sells air filters, fuel filters, lube filters, fuel water separators and coolant, which can be applied to a wide range of commercial vehicles, including on-highway heavy-, medium- and light-duty trucks; passenger vehicles; on-highway buses; mining, marine, agriculture, construction, oil and gas light-duty automobiles; power generation, industrial and locomotive. DECIEF is the supplier company of DECIE, which supplies filters that can be used in engines made by DECIE.

*DECIE* is a 50:50 engine JV between Cino and Delink, which was established in 1996 in China with an investment capital of more than 1 billion US dollars and a total number of 2,500 employees. DECIE primarily produces Cino technology-based B, C, L and LK series of mechanical diesel engines; ISB, ISDe, QSB, ISLe, ISL, QSL, ISZ and QSZ series of completely electronically controlled diesel engines; and B, C and L series of natural gas engines. These engines can be widely applied in light-, medium- and heavy-duty trucks; senior intercity buses; large and medium-sized buses; construction machinery; marine main and auxiliary generators; and other fields. DECIE is critical to Cino because the majority of Cino's revenue earned in China comes from the sales revenues of DECIE. Delink is critical to DECIE because around 55% of DECIE-made medium-duty engines are supplied to Delink's medium-duty commercial vehicles, which forms the largest portion of DECIE's revenues.

*CEARC* is a 50:50 JV between Cino and DECIE. Given that DECIE is a 50:50 JV between Cino and Delink, Cino effectively has a total 75% ownership in CEARC, and Delink has a 25% share in CEARC. CEARC was first established in 2006 and had four

subsequent development stages. These stages were completed in 2011 with a total cumulative investment capital of 61 million US dollars. After completing the four development stages, CEARC became Cino's first engine R&D centre in China. CEARC also became second only to the US headquarters of Cino's technical centre as Cino's largest R&D institution in the world. In terms of the function of CEARC, this research centre undertakes R&D of all Cino's localised engines and engine-related products made in China, which can be applied to commercial vehicles, engineering machinery, power generators, marine engines and other markets. Overall, the establishment of CEARC marked the expansion from pure manufacturing of Cino technology-based products in China to local R&D of products fit for the Chinese market.<sup>6</sup> Thus, after the establishment of CEARC, all engines and engine-related products (such as filtration, turbo and after-treatment solutions) made in Cino's JVs in China (DECIEF, DECIE, DECIATS and so forth) were also researched and developed locally in China.

*DECIATS* is a 50:50 JV between Cino and Delink, which was established in 2010 in China with an investment capital of 5 million US dollars and a total number of 1,000 employees. DECIATS makes diesel engine ATs, which supports the full line of Delink's commercial vehicles. In particular, ATs made by DECIATS are supplied to DECIE. DECIE in turn assembles and integrates its engines and ATs made by DECIATS, together with other engine components, to create a whole engine package that is sold to customers (such as Delink).

#### **4.3.4 Cino's cooperation with Sanqu Automotive**

Sanqu Automotive (Sag) was formed in 2002 to manufacture heavy-duty military off-road vehicles, heavy-duty trucks, medium-sized buses and classics, medium- and light-duty trucks, and heavy-duty axles. Among all these products, Sag's main product is heavy-duty trucks. Sag is a JV between Sag Group and Torch Automobile Group Co. Ltd, where Sag Group takes 49% share right and Torch Automobile Group Co. Ltd takes 51% share right.

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<sup>6</sup> CEARC has its own engine bench that has the ability to test full flow emission, pilot centre vehicle electronic control laboratories, applied mechanics and materials science laboratories, and a large number of advanced testing and development platforms. These platforms facilitate the R&D of engines and engine-related products. Prior to the formation of CEARC, all these R&D activities were undertaken at the US headquarters of Cino's Technical Centre. That is, all core technology, design and development of engines and engine-related products to be manufactured in Cino's China JVs were conducted and completed at the US headquarters, while Cino's JVs in China were only responsible for (i) applying or modifying Cino's completed product design to meet local customers' specific needs and (ii) manufacturing the products.



Sag Group only has 49% share right in Sag, while the main operational, management and investment decisions are made by Sag Group according to the JV agreement between Sag Group and Torch Automobile Group Co. Ltd. In 2009, Sag sold a total of 58,000 vehicles worth 2 billion US dollars within China. The company sold its products to 43 countries with a total exportation number of 12,000 units, achieving 4.5 billion US dollars in sales revenues. Overall, in 2009, Sag's domestic heavy-duty truck sales ranked third and export sales ranked third in the Chinese heavy-duty truck industry. Sag's large number of sales in the Chinese heavy-duty market, alongside the company's spirit of making high-quality products and upgrading its products, led to the formation of a JV between Sag and Cino to make heavy-duty engines.

*Sag Cino Engine (SACIE)* is a 50:50 JV between Cino and Sag, which manufactures an 11-litre new generation of fully electronically controlled heavy-duty engines. SACIE has an annual production capability of 50,000 units of engines. These heavy-duty engines are supplied to Sag's heavy-duty commercial vehicles.

#### **4.3.5 Cino's cooperation with Futong**

Futong was formed in 1996 to manufacture and sell light- and heavy-duty trucks, buses, sport utility vehicles and agricultural machinery. Futong has total assets of more than 38 billion US dollars, with a total of 40,000 employees. Futong sells its products to over 80 countries and has R&D centres and manufacturing factories in 20 countries. In 2011, the total production and sales of Futong ranked highest in the world's commercial vehicle industry. The brand value of Futong exceeds 83 billion US dollars, ranked fourth in the auto industry and first in the Chinese commercial vehicle market. Futong's sales of light-duty commercial vehicles have been the highest in the Chinese market since 2002, which lay the foundation for the formation of a light-duty engine JV between Cino and Futong.

*Futong Cino Engine (FUCIE)* is a 50:50 JV between Futong and Cino, which manufactures a 2.8- and 3.8-litre new generation of fully electronically controlled light-duty engines. FUCIE began with an investment of 3.4 billion US dollars and has an annual production capability of 400,000 units, which is the largest manufacturing plant for light-duty diesel engines in China. The engines made by FUCIE are primarily supplied to the light-duty commercial vehicles made by Futong.

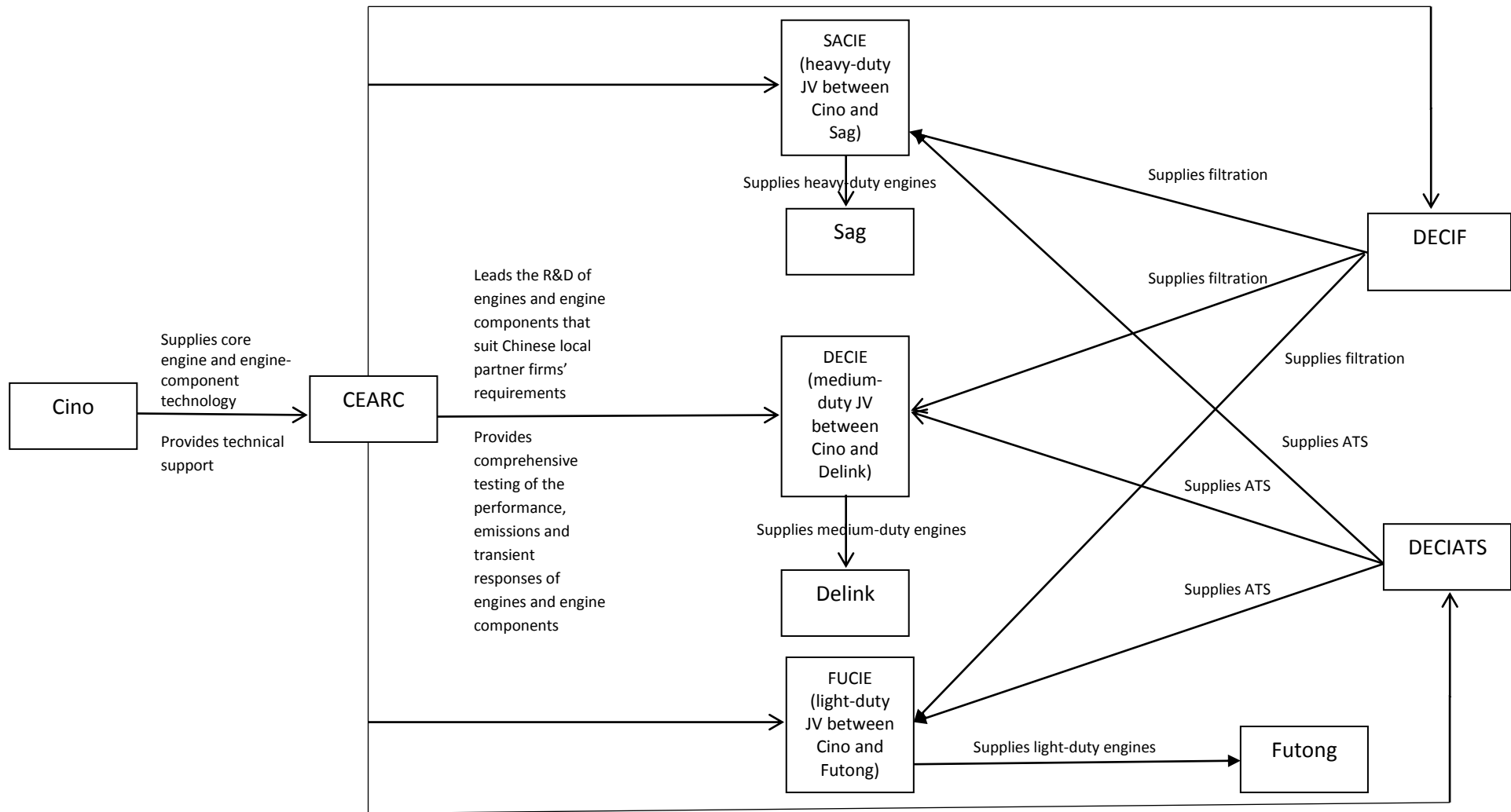
#### **4.3.6 Overview of the relationship between Cino, Cino's JVs and Cino's three partner firms (Delink, Futong and Sanqu Automotive Group)**

Cino and its six JVs have multiple business relationships with each other. First, Cino supplies core engine and engine component technology to CEARC. Based on the technology supplied by Cino, CEARC leads further R&D processes, with the primary aim of designing products that suit the requirements of Chinese local partner firms. In addition, CEARC is responsible for providing comprehensive testing on the performance, emissions and transient responses of engines or engine components before formally producing the conceptual models of relevant products.

Second, DECIE, SACIE and FUCIE are Cino's 50:50 engine JVs with Delink, Sag and Futong, respectively. These three JVs introduce, apply and manufacture engines that are researched, developed and designed by CEARC. Medium-duty engines made by DECIE are primarily supplied to medium-duty commercial vehicles made by Delink and Delink-related companies. Heavy-duty engines (11-litre fully electronically controlled heavy-duty engines) made by SACIE are primarily supplied to heavy-duty commercial vehicles made by Sag. Light-duty engines (2.8- and 3.8-litre new generation fully electronically controlled light-duty engines) made by FUCIE are primarily supplied to light-duty commercial vehicles made by Futong. Besides the provision of technical, R&D and testing support to the three engine JVs, CEARC also provides support to Cino's two component JVs (DECIEF and DECIATS). DECIEF and DECIATS in turn supply filtrations (ATSs) to the above three engine JVs. These filtrations (ATSs) are assembled into the 'final engine' in the three JVs, before these 'final engines' are sold to Cino's partner firms. Figure 4 depicts the complex relationship between Cino, Cino's six JVs and Cino's three local Chinese partner firms.

To summarise, DECIE was the initial focal research site that provided the context to study the research questions of this thesis. In the process of collecting and analysing data (as discussed later in this chapter), it became apparent that Cino and Cino's five other JVs (DECIEF, CEARC, SACIE, FUCIE and DECIATS) were inevitably involved in the articulation and management of risks in DECIE. Thus, the research site eventually included Cino, DECIE and DECIATS. Studying these three research sites also allowed the researcher to obtain information about Cino's other four JVs. The empirical chapter discusses the specific details of how and why these four JVs were formed, and how the

formation of these JVs related to risk and MCSs. The next section discusses the data collection approach employed for these research sites.



**Figure 4: Relationships between Cino, Cino's Multiple JVs and Cino's Partner Firms**

## 4.4 Data Collection

This thesis adopted a processual approach for collecting data. As Pettigrew (1979, p. 570) wrote:

The longitudinal-processual approach to the study of organizations recognizes that an organization or any other social system may profitably be explored as a continuing system with a past, a present, and a future ... A longitudinal-processual analysis is more likely to be interested in language systems of becoming than of being, of processes of structural elaboration rather than the precise description of structural forms, of mechanisms that create, maintain and dissolve systems of power (Pettigrew 1973) rather than just attempt to codify distributions of power at one point in time.

That is, instead of looking at the presence of risks and MCSs (such as the structural properties of the conditions of risk occurrence) at a particular time, this thesis collected data about specific activities and how these activities were related or unrelated to each other in the continuous process of constructing risk/MCSs and causing particular effects in inter-firm alliances. Thus, the data collection process was decomposed into three phases: the pre-alliance phase, formation and enactment of the alliances phase, and post-formation phase. These three sequential phases of data collection do not suggest a linear account of the articulation and evolution of risk and MCSs, as the phases can be overlapping and iterative. This processual approach was adopted to enable the investigation of (i) the different and temporal emphasis placed on activities associated with risk and MCSs and (ii) how activities at one stage may affect or be affected by those occurring at other stages.

The data collection process followed a loosely structured approach. The researcher set the structure of collecting data prior to the actual data collection process. Setting the structure of collecting data *a priori* ensured that the researcher would focus on collecting data that were pertinent to addressing the research questions of this thesis. However, if the researcher strictly followed pre-set structures to collect data, some emergent issues relevant to the research questions may have been missed, thereby leading to the loss of valuable data from the field (Mahama 2000). To avoid the loss of valuable data, the researcher was open to emergent issues that could appear during data collection. The researcher only followed in detail those emergent issues that were helpful in addressing the research questions.

The data required to address the research questions were collected from multiple sources. Collecting data from multiple sources is consistent with most prior and extant research that has adopted a field study method to study management accounting issues (Ahrens & Chapman 2007; Chua & Mahama 2007; Ferreira & Merchant 1992). Further, data collected from multiple sources can be corroborated with each other, which improves the validity of field data (Yin 1989). Yin (1989, p. 97) argued that:

the most important advantage presented by using multiple sources of evidence is the development of convergent lines of inquiry ... In this manner, the potential problems of construct validity also can be addressed because the multiple sources of evidence essentially provide multiple measures of the same phenomenon.

Thus, using multiple sources of evidence can confirm whether the same construct is valid across different sources. For example, the researcher's interpretation of risks in inter-firm alliances based on the interview results could be compared with risk recorded in the companies' internal management reports. This comparison would allow the researcher to validate his or her own interpretations of risks based on these two sources. Thus, three methods were used for data collection: interviews, document reviews and observations. The interview and observation protocol was approved by The Australian National University Human Ethics Committee. The three methods used for data collection are discussed below.

#### **4.4.1 Interviews**

Before the formal data collection process, the researcher conducted six mock interviews. Three of the mock interviews were conducted with three academic colleagues. A semi-structured interview protocol (see Appendix 4A) based on prior research was developed prior to the interviews, and used in the mock interviews. Feedback from the academic colleagues led to the wording of questions in the interview protocol being adjusted. The adjusted protocol was used in the other three mock interviews, conducted on three practitioners. These three interviewees were the CEOs or senior managers of three local Australian companies (two in the construction industry and one in the energy industry), who were responsible for managing at least one JV. The purpose of undertaking these three mock interviews was to let the researcher experience the real interview atmosphere, which helped the researcher better control the interviews conducted with participants in the research site. For example, during these three mock interviews, the researcher encountered a few scenarios where the interviewees unintentionally led the

interviews in directions that were not helpful in addressing the research questions. The researcher learnt about the conditions and reasons that led to the interviewees' divergence from the research questions. In addition, the researcher considered possible strategies to overcome these problems. Some of these strategies were used in the later data collection process. The researcher's supervisor also attended the three mock interviews with the practitioners, and gave the researcher suggestions about how to improve his interview skills. Overall, the mock interviews helped the researcher prepare the interview questions and improve his interview skills.

The formal data collection process started with introductory interviews with the representative of the foreign partner firm (Cino) in DECIE (the medium-duty engine JV) and some other staff at Cino and the engine JV who were responsible for the daily management of DECIE. These interviewees had very good access to information about (i) the antecedents (e.g. historical events) that led to the formation of the JV, (ii) risks and MCSs articulated during and after the formation of DECIE, and (iii) the effects of enacting the MCS for risk management of the JV. Access to this information enabled the researcher to understand the articulation and dynamics of risks and MCSs that were perceived, interpreted and managed by these interviewees. To mitigate the effects of respondent bias or poor recall on the quality of data collected from the initial interviews, the data were corroborated with data collected from other interviewees and other sources (such as document reviews).

In addition, the introductory interviews suggested the chronology of activities and relationships between these activities that might have implications for risks and MCSs in JVs. This allowed the researcher to target events and activities, observe relevant documents and negotiate access to those activities and documents. For example, by completing the introductory interviews, the researcher knew that the representative of Cino in DECIE had a routine meeting with the general manager of the JVs at the end of each year, in which risk issues about the JV were discussed. This led the researcher to negotiate access to those meetings in order to collect data about risks and MCSs. By talking to the informants, it was indicated that they followed the 'A-review'<sup>7</sup> document to assess risk and prepare MCSs for risk management in the JV. This led to the researcher's subsequent negotiation with the company to study the A-review document.

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<sup>7</sup> The A-review document is a framework that provided a roadmap for Cino to select and process a business model, among a set of alternatives (including organic, acquisition, alliance, minority investment and supply contract), when Cino wished to start a new business to achieve growth.

Further, the introductory interviews allowed the researcher to identify other key actors involved in the articulation and evolution of risks and MCSs in the JV. For example, in the introductory interviews, the representative of Cino in DECIE indicated the people who helped initiate and evaluate the possibility of forming the JV and enacting the JV. This helped the researcher identify a number of potential interviewees. In addition, the representative of Cino in DECIE helped refer the researcher to those key actors. For example, in the introductory interview with the representative of Cino in DECIE, the researcher was told ‘I will connect you with the general manager of DECIE and I think he is the person you must talk to’.

Finally, the initial interviews were used to build trust between the researcher and the informants. Building trust helped remove the scepticism of the initial interviewees about the data being used for undesirable purposes, which encouraged the informants to freely divulge information. Building trust between the informants and researcher was achieved through:

1. the researcher’s promise of only using the data collected for the purpose of completing the PhD thesis
2. the researcher indicating the intention only to learn about risk and MCSs, as practised in the JVs, rather than to judge the appropriateness or correctness of the activities, procedures and processes mobilised for risk management in the JVs
3. the development of personal friendships.

Other interviews were conducted after the introductory interviews. The interview protocol prepared before data collection was used in these interviews. These interviews were undertaken for three reasons. First, by obtaining additional data from these interviews, the researcher was able to link the data collected from multiple interview participants. This enabled the researcher to provide a comprehensive analysis of the logic, processes, activities and consequences of articulating risks and MCSs in inter-firm alliances. For example, the reasons the representative of the foreign partner firm in the engine JV undertook certain activities for risk management could be explained by the actions taken by the general manager of the JV. Second, these interviews were used to verify the researcher’s interpretation of the data collected from the document reviews and observations, which ensured the validity of the researcher’s interpretation. On all occasions, there was high convergence between the data collected from multiple sources.



Third, these interviews provided opportunities for the researcher to ask questions that could be helpful in addressing any ambiguities that arose during the observation and document review.

A total of 50 interviews were conducted with personnel, including general managers, senior managers and employees of the JV, and managers of Cino. Twenty-nine of these interviews were formal interviews, in which semi-structured interview protocols were used. The length of the interviews varied from 30 minutes to two hours, with an average time of 50 minutes. Ten of these interviews were tape recorded, and all interviews were translated from Chinese to English, and transcribed soon after the interviews. Notes were taken on the other 19 interviews during the interview process, and memos and details of the interviews were recalled and written down within one week of each interview. The researcher also completed 21 informal interviews, most of which were unstructured. Memos were taken on some of these informal interviews, and key points were recalled and recorded within two days of each interview. Most of these informal interviews were undertaken (i) during coffee, lunch and dinner times with the interviewees or (ii) while travelling between the JVs sites and Cino's head office in China (Cino's head office in China and the JVs under investigation were located in different cities, and the researcher visited all these research sites, during which some interviews, document reviews and observations were undertaken for data collection). Table 1 presents a breakdown of the interviews.

**Table 1: Summary of Data Collection Activities**

Research Activity		Cino	DECIE	DECIATS	Total
Approximate period covered		June 2012–January 2014	December 2012–January 2014	December 2012–January 2014	
Length of time		24 months	13 months	13 months	
Interviews	Formal	16	6	7	29
	Informal	10	6	5	21
	Total	26	12	12	50
Meetings, brainstorming and other informal occasions		6	2	6	14
Observation days		45	2	3	50
Documents	Internal	13	8	31	52
	External	> 8	> 11	> 3	> 22
	Total	> 21	> 19	> 34	> 74

#### 4.4.2 Observations

Data were also obtained from direct observation. As indicated earlier, the initial interviewees directed the researcher to relevant research sites to observe the articulation and evolution of risks and MCSs in the JVs. Through these initial interviews, access to the research sites was simultaneously negotiated. The observed research sites primarily encompassed formal meetings. First, six formal meetings in Cino were observed. These meetings included:

1. two formal meetings between personnel (such as executives and managers) in Cino, where performance problems and issues relating to the operation and management of DECIE were discussed
2. two A-review meetings (details about A-review documents and meetings are discussed in the next chapter), where the potential problems, challenges, risks and MCSs in the daily operation of DECIE were discussed
3. two telephone meetings between personnel from Cino's US head office and Cino China on issues associated with preparing the A-review document to form DECIATS.

Second, observations were made during two formal meeting between Cino and DECIE. The managers of Cino and general manager of DECIE were the key participants in these two meetings. Performance and issues associated with the operation and management of DECIE were discussed. Third, the researcher attended and observed two formal meetings between Cino and DECIATS. One of these two formal meetings was an A-review meeting, where the progress and development of the A-review document associated with the formation of DECIATS were discussed. Risk and MCSs relating to the formation and operation of DECIATS were also discussed. The other meeting was a brainstorming session, which was attended by the general manager and chief financial officer (CFO) of DECIATS and personnel from Cino. Potential challenges (that provided the basis of articulating risk) in DECIE and possible management control solutions for these challenges were discussed in the brainstorming session.

Besides attending formal meetings, the researcher was based in the focal research sites (Cino, DECIE and DECIATS) to observe how activities were undertaken and how things (relating to risk management) were done locally by different personnel. For example, the researcher observed the culture/customs of doing things by the personnel in the daily operation of the focal research sites. Any critical issues associated with risk

and MCSs in the JVs obtained from these observations were immediately recorded. The researcher was given an office desk and seat in an open area in the focal research sites, which facilitated the observation process. Simultaneously, the researcher ensured that he did not interrupt any work of the personnel (such as by asking questions) at any time during the observation. In the observation process, the researcher thought of some questions, which were written down and asked later in the interviews. Further, the researcher was invited to attend some company dinners and lunches, where observations were made. Critical issues regarding the risk management of JVs were immediately recorded after the dinners and lunches.

Consistent with Latour and Woolgar (1979), no attempt was made to conceal the observational role of the researcher. Before each observation, all participants were notified by the key contact person about the presence of the researcher in the meeting. The researcher observed these meetings and possibly took notes during the meetings solely for the purpose of collecting data for this PhD thesis, and did not participate in the discussions of the meetings in any way. The purpose of attending the meetings was explained to the participants before each meeting began. Details and critical issues from the meetings were recalled and written down immediately during each observation. Overall, 14 formal meetings and 50 days of working in the key focal research sites provided the key arena from which data from observations were collected.

#### **4.4.3 Document review**

In addition to interviews and observations, the researcher reviewed documents as part of the data collection process. The researcher reviewed a total of 52 internal documents from the focal research sites. These internal documents included contracts, letters, minutes of meetings, brochures, administrative reports, reference guides, acquisition and alliance roadmaps, historical reviews, graphs, diagrams and writings from the interviewees, A-review documents and technical analysis process maps. The researcher received electronic copies of most of these internal documents. For a few documents, the researcher was only allowed to review them onsite. Notes were taken immediately when the researcher felt necessary, in the course of reviewing these documents.

In addition, publically available documents containing information directly or indirectly related to risk management of the JVs were gathered and reviewed. These public documents included financial reports, prospectuses, press releases, newspaper articles,

magazine articles and online commentary articles. The researcher retrieved and reviewed more than 22 external documents.

It was important to include document review as part of the data collection process. First, reviewing documents demonstrated the historical activities and processes through which risk became articulated in the JVs, and how the MCS could be affected. This provided a rich source to collect information about the antecedent, practices and effects of risk and/or the management of risks. Second, because some documents (such as the A-review document) were inscriptions that played critical roles in articulating risk and MCSs in the JVs, reviewing these documents made clear to the researcher the strategies and practices that were mobilised in the risk management of the JV. Third, reviewing documents provided additional evidence that could be used to confirm the data collected from the interviews and observations, which could improve construct validity.

#### **4.4.4 Constructing a database**

The researcher maintained both electronic and hard copies of the data gathered from interviews, observations and document reviews. A hard copy of the data that were initially obtained in electronic form was made and stored in the researcher's office. Similarly, data that were initially obtained in hard forms were scanned to obtain an electronic copy, which was maintained in three electronic disks. Maintaining these data in both electronic and hard copies allowed 'a chain of evidence to be established such that external readers can follow the filed report to the evidence upon which the report is based' (Mahama 2001, p. 111). In addition, these data were input and maintained in NVivo. NVivo is software that provides a database for evidence collected from the field. Evidence in NVivo can be arranged and compared in different ways, which facilitated analysis of the data collected from the field. The following section presents the processes through which the data were analysed.

### **4.5 Data Analysis**

Data analysis was undertaken during and after the data collection process. Consistent with Mahama (2000), the data collected were analysed at within-case and cross-case levels. The data collected were first analysed on a case-by-case basis. Each complete case was classified as one context that included all three stages of the experimentation processes (from macrocosm to microcosm, collective experimentation, and return to the macro world), as guided by the theoretical framework discussed in the theory

development chapter. In total, the researcher identified three complete cases, which are discussed in more detail in the empirical results chapter. The analysis of each of these three cases was then combined at an aggregate level to describe and explain the phenomena that were investigated under the research questions of this thesis. This allowed the researcher to identify similarities and variations in the phenomena under examination across these three cases.

During the data analysis process, the researcher organised the raw data collected from the field into major concepts that closely approximated the processes and practices identified in the field study that were pertinent to addressing the research questions of this thesis. To facilitate the data analysis, the researcher employed Patton's (2002) three-stage coding framework. This framework involves breaking down the data into discrete parts, conceptualising the data, and re-organising the data in new ways. In the first stage, the researcher read line by line the interview transcripts, documents, and notes and memos recorded based on observations. Based on close examination of the raw data, the researcher generated a number of concepts that seemed to resemble the data. Most concepts were derived from the words and phrases used by the actors in the field. The researcher began generating concepts as soon as the data were collected from the interviews, observations and document review. The researcher continued revising existing concepts and developing new concepts as more data were collected from the field. After several iterations and comparisons between generated concepts, a total of 82 concepts were produced.

The researcher grouped these 82 concepts into 18 categories based on similarities. Each category was derived from and labelled according to the theoretical framework that informed this thesis. The grouping of different concepts was undertaken based on how closely different concepts were able to represent a certain attribute, property, dimension or element of a particular category (Patton 2002). For example, evidence from the field indicated that there were several different methods through which actors interacted with each other, including controversies, conversions, negotiations, communications, discussions, meetings, contacts, chats, encounters and showing. These different methods of interactions represented multiple 'attributes' of interactions, and were subsequently grouped into the category of 'interactions'.

Generating and categorising concepts helped improve the validity of the categories that were used to resemble the data collected from the field at theoretical/abstract level. As Mahama (2001, p. 113) argued:

The grouping of concepts into categories had the unintended consequences of providing an initial test of the applicability of the theoretical framework similar to what factor analysis or cluster analysis would do under quantitative analysis. In a way, it provides some form of factor loading where the categories serve as the constructs and the concepts become the factors.

Similar to Mahama (2010), who found ‘loadings’ for all ‘constructs’ in his study of the constituting and stabilising of inter-firm alliances, the concepts generated from the field data loaded on all categories. These categories and concepts are summarised in Appendix 2A.

In the second stage, the researcher connected the 18 categories (developed in the first stage) based on the paradigm developed by Strauss and Corbin (1990).<sup>8</sup> Seven of the original categories were coded as phenomenon, three as causal conditions, five as intervening conditions, two as action/interaction intermediaries, and three as consequences (see Appendix 2B).

The three focal research sites where the field data were collected (Cino, DECIE and DECIATS) represented the context. In each context, causal conditions lead to the occurrence of the core phenomenon under investigation. For example, given that one core research question of this thesis focused on examining the articulation of risks in inter-firm alliances, the articulation of risks in a JV (by Cino) was coded as a phenomenon, and the controversies between JV partner firms through which such risks become articulated were coded as a causal condition. In addition, inscriptions that were mobilised in articulating risks were coded as action/interaction intermediaries, although the specific inscriptions mobilised depended on the intervening conditions (the prior history of JV experience between partner firms) that facilitated or constrained their choice. This method of coding was widely used to draw relationships between other

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<sup>8</sup> The paradigm includes six elements: causal conditions, phenomenon, context, intervening conditions, actions and consequences. The paradigm encourages the researcher to explore the causes that lead to a particular phenomenon that is observed, the context in which that phenomenon is embedded, the actions taken or to be taken to deal with the phenomenon, the conditions facilitating or constraining these actions, and the results of these actions. Thus, the paradigm helped the researcher classify different categories into each of these six elements, so that a relationship between different categories associated with the same phenomenon could be established. This allowed the researcher to propose certain relationships between categories, and test and revise these relationships in other contexts.

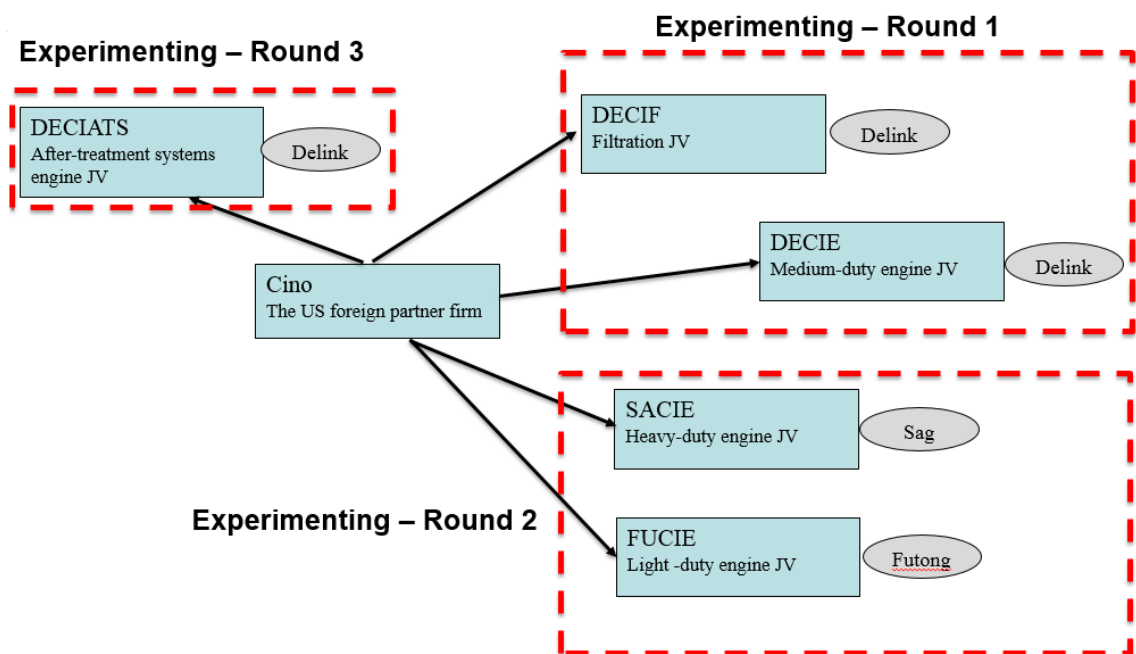
categories regarding core risk and MCS phenomenon that were investigated in this thesis.

It is worth mentioning that the second stage of coding not only helped draw relationships between different categories regarding the same core phenomenon, but also demonstrated variations between the same or similar phenomenon in different contexts or at different times. This is believed to increase the internal validity of the findings of this thesis (Yin 1989).

In the third stage of coding, the researcher compared similarities and differences regarding core phenomenon observed in different contexts. These comparisons provided conditions to integrate a variety of relationships between categories into major themes around the core phenomenon under study. The comparisons were undertaken a few times, during which some relationships between categories (generated in the second stage of coding) were revised. Through these repetitive coding processes, three interrelated themes involving three rounds of experimentation on risk and risk management were developed. The first round of experimentation encompassed two years in the early 1990s, when China was experiencing its second stage of economic reform and open-up policy. During this period, the Chinese government began to encourage foreign companies to enter China and cooperate with local Chinese firms to undertake business. As such, for the first time, many Chinese firms had the opportunity to cooperate with Western firms, which resulted in a trend of learning about the West's leading technology and management experience. The first round of experimentation centred on articulating risks under technology licensing agreements, and constructing the medium-duty engine JV and filtration JV with Delink. The second round of experimentation encompassed three years in the early 2000s, when China was experiencing rapid economic development. Economic development (such as constructing buildings and public infrastructure) could be seen in almost every aspect in China. The second round of experimentation involved articulating risks in the medium-duty engine JV, and crafting a heavy-duty engine JV with Sag and a light-duty engine JV with Futong. The third round of experimentation occurred in 2012 and lasted for two years. During this period, China's economic development was declining, as influenced by the global financial crisis. The third round of experimentation involved articulating new risks in the medium-duty engine JV, and constructing an ATS JV with Delink. For each round of experimentation, the three stages of the experimentation process (as discussed in Chapter 3) were identified and analysed. These three rounds of

experimentation were reviewed and validated with the field data. The three rounds of experimentation are summarised in Figure 5 and reported in detail in Chapters 5, 6 and 7, respectively.

It is worth mentioning that the three stages of the coding process did not occur in a sequential manner. For example, the first stage of coding was re-triggered when the researcher realised that there were still some gaps and unknown or poorly developed concepts in the process of undertaking the second stage of coding. The researcher moved back and forth between these three stages of coding processes before the eventual three themes were developed.



**Figure 5: Three Rounds of Experimentation**

## 4.6 Conclusion

This chapter has presented the research methods employed in this thesis. It has demonstrated that using the field study method was appropriate because it enabled the collection of data necessary to use ANT (as the theoretical framework) to explain the articulation and evolution of risks and MCS. This chapter has described the three focal research sites (Cino, DECIE and DECIATS) at which data were collected, and the processes through which these sites were selected. This chapter has also provided an account of the multiple methods through which data were collected, including interviews, observation and document review, and discussed Patton's (2002) three



stages of coding process that were used to analyse the data collected from the field. The following chapters discuss the findings of this thesis.

## **Chapter 5: Matters of Concern and the Emergence of an International JV**

### **5.1 Introduction**

This chapter presents an analysis of the matters of concern in a technology licensing agreement, the practices and processes through which these concerns became articulated as risks (leading to the formation of an engine JV between Cino and Delink), and how MCSs were implicated in these processes. This chapter is organised as follows. Section 5.2 examines the processes through which an ‘unusual event’ in the technology licensing agreement led to the hypothesis of the existence of risks under the technology licensing agreement. Section 5.3 discusses how an engine JV was formulated as the solution to the hypothesised risks and risk concerns, and how MCSs were constructed therein. Section 5.4 analyses how the engine JV models, when enacted and operated, created a new problem. Section 5.5 discusses the findings, while Section 5.6 summarises the chapter.

### **5.2 Articulating an Engineering Problem as Risk**

Cino and Delink had been cooperating with each other in a technology licensing agreement for 10 years. At the end of the tenth year of cooperation, it was noticed that customer claims on engine repairs in the Chinese market were three times higher in number and twice as high in frequency as those received in the US. The engines sold in the Chinese market were made under the technology licensing agreement. Given that the core technology used in the engines made under this agreement and the equivalent engines made in the US head office were exactly the same, Cino expected that engines made in China should have similar performance and quality as those made in the US. As such, the high number and frequency of claims for engine repairs in the Chinese market were considered unusual to Cino, which became an issue for Cino.

To make sense of the issue of the unusual number and frequency of customer claims for engine repairs, Cino undertook a technical inspection with the aim of diagnosing the causes of this issue. The decision to conduct a technical inspection was based on the fact that Cino had world-leading technicians, and it was believed that Cino’s technical strength would help discover the underlying reasons for this striking event. As explained by the director of Cino’s strategy department:

The easiest way for us to start with [diagnosing the unusual number and frequency of customer claims under the technology licensing agreement] was from the technical aspect ... because it sounded like a technical problem, although we were not quite sure about what was going on there in China. The good thing was that we had experienced and qualified technicians and engineers that others did not have. You know, all our technicians and engineers received the most sophisticated and the best, I believe, training in the world. A large number of them had more than 20 years' experience in engine service industry ... I mean, they were really the elites in this industry. We strongly believed that they could give us an answer on this issue ... That was the only and the best thing that we could do at that time.

That is, the technical inspection was considered the best action Cino could take to begin investigating the unusual number and frequency of customer claims for engine repairs. Consequently, a technical team (comprising four engineers from the manufacturing department and four technicians from the quality control department of Cino's head office) was sent to Delink's manufacturing plant to diagnose possible reasons for the unusual number and frequency of customer claims for engines made under the technology licensing agreement.

The technical inspection team examined the quality of engine materials and the assembling activities at Delink's engine manufacturing site. They found that some major assembling jobs for engines were completed with manual labour. This manufacturing practice was compared to Cino's general US practice, where similar assembling jobs were completed by machines or with the assistance of professional engineering instruments. For example, Delink completely relied on human labour to place a screw into the engine, according to certain installation positions. This meant that each job was done entirely based on the workers' 'feelings', and there was no fixed standard to calibrate the tightness of the screws on the engines. This resulted in a situation where the tightness of screws on different engines had large variations, even though these jobs were completed by the same worker. In the US, the same task was completed by applying an electronic screw gun to ensure consistency in different jobs. Thus, the use of manual labour for assembling jobs was considered by the technical team to create a higher probability of engine performance differences than using machines. As such, the use of manual labour was problematised as an engineering problem that caused the unusual number and frequency of customer claims on engine repairs. The inspection team's diagnosis of this engineering problem was recorded in an inspection report that was conveyed to Cino's US head office.

Given that Cino had encountered this engineering problem for the first time, the company was unclear about the possible effects that might be caused by this problem. Thus, this problem became a matter of concern to Cino. To explore the possible effects of the problem, a research collective was constituted, comprising Cino's marketing and sales director, CEO and CFO. Cino's marketing and sales director had 30 years of sales and marketing experience in the automobile, food and finance industries. Cino's CEO and CFO had good appreciation of the factors that could affect the company's financial performance. The financial, marketing and sales expertise of actors in the research collective led them to focus on the commercial implications of the engineering problem. An experimentation process was undertaken through the combined use of inscriptions, personal feelings and past experience. The director of Cino's marketing and sales department situated the engineering problem within his 30 years of work experience in the automobile industry. This led him to develop the feeling that Cino's Chinese and global customers would attribute the failure of engines to Cino, even though the engines made under technology licensing were beyond Cino's direct control. That is, if unresolved, the local engineering problem in the technology licensing agreement would have negative effects on Cino's global reputation.

To validate this feeling about the possible negative effects of the engineering problem on Cino's global reputation, the marketing and sales director collected two inscriptions (historical documents and interview scripts) from two macro world actors (Cino's past and existing regular US customers, respectively). First, the director of the marketing and sales department reviewed historical documents (a diagnostic report of past US customer complaints) with a particular focus on information relating to engine performance difference. Second, the sales and marketing director sent personnel to conduct informal interviews with Cino's regular US customers in order to collect the customers' opinions on the engine performance differences. The records in the historical documents and interview results were corroborated with each other, which suggested that customers, at least in US, strongly disliked engine performance differences. As noted by the director of Cino's marketing and sales department:

By looking at the historical documents, it gives me a clear view on how customers reacted to engine performance difference in the past. Through the interviews, I am able to get first-hand information from our existing customers. This information is real data from our past and existing customers ... you know, for engine service industry, customer satisfaction is always important and one of the priorities that we

have to consider. Without the real record in the historical documents and the live customer feedback written in the interview script, my personal feeling is simply an assumption and I would not be confident in arguing my feeling out to others.

The linking of historical documents and interview results helped the director of Cino's marketing and sales department rationalise his feeling that the engineering problem would significantly damage potential customers' confidence in Cino-branded engines in the Chinese market and possibly worldwide. The rationalised feeling of possible reduction of customers' confidence became the basis of hypothesising the existence of potential damage to Cino's global reputation. The potential damage on Cino's local and global reputation resonates with the concept of 'reputational risk' proposed by Power et al. (2009). Power et al. (2009) use the concept of 'reputational risk' to describe the lowered trustworthiness or credibility of individuals' or organisations' as perceived by the public to which they are accountable. While this study shares similarity with Power et al. (2009) on the object of reputational risk, they are different on the source of the reputational risk. For Power, reputational risk is a secondary risk that only originates from management of another (first order) risk. If the concept of reputational risk was used in this study to represent the potential damage to Cino's global reputation, it refers to the first order risk that is relating to a real local problem (poor quality engine product).

In articulating reputational risk, Cino's CEO and CFO simultaneously imagined the possible financial implications that may be caused by this risk. By drawing on their personal feelings and past experiences in the automobile industry, they conjectured that the consistent supply of high-quality and reliable engines was the main reason that customers chose to purchase Cino-branded engines. If customers lost confidence in Cino's ability to make reliable engines, they were less likely to purchase Cino's engines. This led the research collective to develop a hypothesis about the existence of possible negative financial effects on Cino's Chinese and global business.

Contrary to some prior research's view that risks exist 'out there' and can be identified and measured, the above analysis indicates that reputational and financial risks were articulated. This view of risks is consistent with prior research that held a constructivist view on risks (Lupton 1999; Miller, Kurunmaki & O'Leary 2008; Rocher 2011). While prior research has argued that risk construction is purely a process occurring either in the macro or micro world, the above analysis extends prior research by presenting a specific practice (experimentation) in articulating risks. The experimentation process

disregards the distinction between the macro and micro world, and focuses on how the research collective connected the macro and micro world activities and actors to create a risk hypothesis. That is, risk was articulated as the outcome of an experimentation process, with the aim of making sense of the possible effects of an engineering problem on Cino's global reputation and financial performance. This sense-making process was operationalised through the combined use of personal feelings and past experiences, a set of management control practices (technical inspection, linking inscriptions, referring to the company's US practice, informal interviews and reviewing historical documents) and material devices (an inspection report, interview scripts and historical documents). Thus, management control practices—instead of managing risks as assumed in prior research (e.g., Anderson et al. 2015; Das & Teng 1998)—contributed to the articulation of risks.

### **5.3 Emergence of an Engine JV Model to Solve the Engineering Problem**

The reputational and financial risks led Cino to experiment with possible solutions. For Cino, the best solution would include an arrangement that allowed Cino to have management control and monitoring power over the engine manufacturing processes. Obtaining management control and monitoring power was considered key to improving the quality of engines made under the technology licensing agreement, which would address the reputational and financial risk. Thus, a research collective was constituted to assess a possible economic arrangement that would achieve Cino's management and monitoring aims. The research collective listed three possible solutions: direct intervention, direct investments and JVs.

For the option of direct investments, Cino would have to establish its own manufacturing plant in China to build engines, so that the company could take charge of the engine manufacturing process. The operation of this option required the largest investment among the three alternatives. In addition, Cino had no experience of independently making sales in the Chinese market. As a result, the financial outcome of this option was uncertain. In addition, Chinese business law does not allow a foreign company to establish an independent manufacturing factory in the engine industry in China. According to Chinese business law, for foreign firms to create a JV that manufactures and sells engines in China, they need to work with at least one Chinese

local firm, and the foreign firm can hold a maximum of 50% of shares in the JV. As such, the use of the direct investment option was considered unfeasible.

For the option of direct intervention, Cino would have to help Delink set up machines and equipment to replace the use of workers for some assembling tasks. Although Cino would attain one-off gain by selling the machines and equipment to Delink, this option was considered to give very limited management and monitoring power to Cino over Delink's engine manufacturing process. Cino would still not have the authority to fully participate in Delink's daily engine manufacturing processes. As such, it was uncertain how much the quality of engines made by Delink under the technology licensing agreement could be improved, so that the reputational and financial risk could be addressed.

For the option of JV, Cino would need to make investments to form an independent manufacturing plant, and would need to participate in the daily operation of the potential JV. This was argued to give Cino greater management and monitoring power over the engine manufacturing process, compared to the option of direct intervention. It was also believed to offer a greater chance of helping Cino improve the quality of engines made under the technology licensing agreement. Further, although the JV option would need larger investments than the option of direct intervention, the formation of a JV would allow Cino to continue charging the technology licensing fees from Delink, and generate extra income by sharing revenues with Delink from the sale of engines (made in the JV). These two sources of income were considered sustainable and preferable to the option of direct intervention (where the revenue from selling machines and equipment to Delink would only be one-time gain).

By considering the financial gains and the management and monitoring control power implication of the three alternative options, the research collective determined that forming an engine JV was the 'optimal' solution. Once the engine JV was hypothesised as the solution to address the reputational and financial risks under the technology licensing agreement, the focus of the research collective shifted to constructing a relational model for the JV, and selecting, negotiating and contracting with a potential partner firm.

Selecting partner firms involved sourcing possible partner firms and assessing their suitability for partnering in a JV. Sourcing potential partner firms was guided by Cino's business philosophy and potential partner firms' willingness to cooperate. Cino had the

business philosophy of always cooperating with leading original equipment manufacturers (OEMs) to ensure as much engine sales as possible in the local market. This led to shortlisting two potential partner firms: Chinese First Automobile Group (known as FAW) and Chinese Second Automobile Group (now known as Delink). FAW and Delink were the two largest medium-duty commercial vehicle manufacturers and sellers in China. Cino contacted key personnel in FAW and Delink (separately and independently) to seek their opinions on the possibility of forming a JV. FAW had no intention of forming JV with Cino—it was entrusted by the Chinese central government to develop the Chinese automobile industry, and its focus was on independent R&D of engines. However, Delink showed strong interest in forming a JV with Cino, as it had the expectation of learning world-class engine technology. This interest in learning world-class technology helped Cino enrol Delink in its proposed engine JV network. Thus, Delink was targeted as the potential partner firm, and invited by Cino for further discussion regarding crafting an engine JV model.

Cino's executives formed a team to assess the suitability of Delink as the potential partner of the engine JV. The team focused on understanding how selecting Delink as the potential partner firm would help the proposed engine JV address the reputational and financial risk under the technology licensing agreement. This assessment process comprised four interconnected practices. First, a pre-JV formation audit was conducted by Cino, whereby an audit team of accounting, law, technology, information technology (IT) and quality control experts was sent to Delink to collect comprehensive information about Delink.<sup>9</sup> This information was summarised and recorded in an audit report that was sent to Cino's head office for further evaluation. Second, the team examined and discussed the financial liquidity and legal status of Delink in the Chinese market. They concluded that Delink was financially and legally healthy. Third, Delink's sales volumes were collected from China Association of Automobile Manufacturers (CAAM),<sup>10</sup> and compared to those of competitor firms in the Chinese medium market. This led to the perception that Delink had a dominant marketing position relative to its competitors in the Chinese medium-duty commercial vehicle market. This was

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<sup>9</sup> The information collected encompassed Delink's production capacity, supply networks, engine R&D level, patented engine and related products, IT system, financial performance, market share, organisation structure, manufacturing plant, workers' professional skills and personal safety.

<sup>10</sup> CAAM is a non-profit organisation that was established in 1987. One of its main functions is to collect, collate, analyse and disseminate technical and economic information about the automobile industry to the public. The organisation also tracks and understands technology development trends in domestic and foreign markets, and forecasts markets to provide information services to its member organisations.



considered critical to ensuring a reasonable number of Cino engine sales. Fourth, the perception of Delink's dominant position in the Chinese medium-duty commercial vehicle market was corroborated with news reported by the local Chinese public media. This added validity to Delink's perceived dominant market position. Thus, the suitability of Delink as a potential partner firm was determined not only by the financial relationship between Delink and Cino, but also by Delink's connections with actors (Delink's competitors in the Chinese market, CAAM and the public media). This resonates with Chua and Mahama (2007), who found that alliances' practices are embedded in an 'action net' that is broader than the dyadic relationship between JV partners.

In assessing the suitability of Delink as a potential JV partner, the research collective encountered two issues. The first issue was related to Delink's traditional public ownership management system. Delink was 100% owned by the Chinese central government, and undertook social responsibilities. Delink had its own banks, hospitals, restaurants and schools, which provided services to Delink's employees. Delink's employees enjoyed internal discounted fees for the services provided by Delink, which were significantly lower than market prices. Delink was absorbing the cost of these internal discounted fees for services provided to its employees. In addition, under Delink's existing costing system, utilities expenses unrelated to the engine manufacturing process *per se* (such as electricity expenses for heating in winter for employees) were allocated to engine production costs. The second issue was associated with Delink's operational practices. In particular, the quality of welding masks used by workers did not meet the international standard, some workers did not wear welding masks at all in their daily work, and pirated software was widely used in Delink's computers. As stated by the strategy manager in the engine JV:

What Cino cared the most was the standardisation of the manufacturing process and workers' personal safety. For example, it was not acceptable to Cino to use pirated computer software in the potential JV, while we [employees of Delink] were thinking about a different thing: why not the use cheaper copy that could perform exactly the same functions as that of a legal copy? Later, I realised that the US had a more well-established legal system ... I guess Cino was thinking ahead about any possible events and practices in potential JV that might cause risks to them.

It was believed that Delink's operational practices were likely to cause occupational health problems to the workers.

Delink's public ownership management system and operational practices had never been used by Cino in its general practice in the US. This created ambiguity about how this public ownership management system and operational practices would affect Cino's business, if applied in the proposed engine JV. Thus, Delink's public ownership management system and operational practices became a concern to the research collective.

To make sense of this concern, employees from Cino's accounting and legal department were enrolled in the research collective, and a centre of calculation was established. The centre of calculation aimed to calculate the financial effects of Delink's public ownership management system and operational practices on Cino-branded engines. To calculate the financial effects of Delink's public ownership management systems, the research collective attained inscriptions from three actors in the macro world (the Chinese local automotive and US legal environment in which the proposed engine JV would be located). These three actors were Delink, CAAM and the US public media. From these three actors, inscriptions were collected that included historical cost data associated with Delink's social responsibility, the sales price of competing medium-duty engines available in the Chinese market, and the outcomes of similar legal cases in the US. These inscriptions were brought to the centre of calculation, which enabled the team to produce a new inscription: the estimated sales price of engines made in the proposed engine JV. The estimated engine sales price was much higher than that of most engines available in the Chinese market. This was considered to reduce the price competitiveness of engines to be made in the proposed engine JV in the Chinese medium-duty engine market.

Further, the research collective attained inscriptions (newspapers and US regulations) that contained information about similar cases in the US. These inscriptions helped the research collective project the likely outcome if Delink's operational practices were applied in the proposed engine JV. According to these inscriptions, Cino's head office would incur a huge fine if one employee of the proposed engine JV was found to have an occupational health problem caused by using a poor-quality welding mask in the manufacturing process. In addition, if employees continued using pirated software in the proposed engine JV, Cino's head office could face lawsuits with software developers, and incur penalties. This could lead to significant costs associated with such lawsuits. In addition, the use of poor-quality welding masks and pirated software would damage Cino's reputation, particularly in developed countries. By using accounting calculation

inscriptions, the research collective developed a hypothesis about how Delink's social responsibility and operating practices would pose risk exposure to the sales and reputation of the proposed engine JV, if applied in the engine JV. This risk exposure was considered to go against the original purpose of forming the engine JV, which was to address the reputational and financial risks associated with engines made under the technology licensing agreement. Thus, this risk exposure was unacceptable to Cino.

While the research collective articulated risk concerns about the effects of Delink's social responsibilities and operational practices on the proposed engine JV, they simultaneously sought possible solutions. Given that these risk concerns were unacceptable to Cino, the only solution was to remove Delink's social responsibility and operating practices from the proposed engine JV. However, this would require consent from Delink. Cino was drawing on its world-leading engine technology and management experience to enrol Delink to accept its hypothesised model of removing social responsibility and operating practices from the proposed engine JV. Cino stated that it would not form an engine JV with Delink if Delink's public management system and operating practices were applied in the proposed engine JV. This clear stance made Cino's hypothesised model (removing social responsibility and operating practices from the proposed engine JV) become indispensable to Delink because Delink had a strong desire to import Cino's world-leading engine technology to replace its obsolete engine technology. As a company owned by the Chinese central government, Delink had the historical responsibility of exporting Chinese-made commercial vehicles to other countries. The import of Cino's world-leading engine technology was expected to increase the competitiveness of Delink's commercial vehicles, which was helpful to Delink's export business. Equally important, Delink was eager to learn advanced management and manufacturing experience skills from Cino. As explained by the engineering manager of the engine JV (a former engineer for Delink):

In order to make the formation of the JV possible, Delink made a big concession with good faith of learning management experience and technology knowledge from Cino. Just after the formation of the JV, there were big personnel changes within Delink. Many old employees of Delink, particularly middle level managers, who worked for the original technology licensing agreement, were forced out of the JV. Instead, most employees in the JV were now Cino-appointed personnel. In addition, Cino-appointed personnel got promoted quickly in the JV, which made Delink-appointed personnel in the JV very unhappy. In order to achieve smooth transition to JV, Delink even sent

Minqi [one of the leaders of Delink Group] to the JV to repress the dissatisfaction of older employees of Delink in the JV.

Thus, Cino's mobilisation of its world-leading engine technology and management experience led to the successful enrolment of Delink in its proposed model without much contention.

In summary, sourcing and shortlisting possible partner firms and assessing the suitability of a target partner firm formed an effective management control, which was believed (by the research collective) to ensure that the proposed engine JV would achieve the aim of addressing the financial and reputational risks associated with engines made under the technology licensing agreement. This resonated with Das and Teng (1998), Dekker (2004) and others who noted the importance of partner selection when managing risks associated with inter-firm alliances. While these prior studies focused on predefining the 'golden rules' that firms should always follow when selecting their alliance partners, the partner firm selection here was the outcome of an experimentation process. This experimentation process involved sourcing possible partner firms, testing the suitability of potential partner firms and enrolling targeted firms to make changes. This suggests that selecting alliance partner firms is not predetermined, but emerges as the outcome of an array of practical activities.

The consideration of Delink as the potential partner firm laid the foundation for Cino and Delink to negotiate a theoretical JV contract model for the proposed engine JV. Cino made its proposed JV contract indispensable to Delink by mobilising its past JV operating experience. Cino had JV operating experience in other countries, while Delink had no such experience. This created an advantage for Cino and a problem for Delink, which let Cino dominate the negotiations to construct a theoretical JV contract model for the proposed engine JV. Indeed, Delink accepted most roles (to be enacted in the JV contract) proposed by Cino, without much contestable discussion. Most of the items proposed by Cino were immediately accepted by Delink during the negotiation between these two firms. These items covered issues relating to the partner firms' responsibilities, share investment, engine JV's board composition, reporting structure and budget for the pre-JV formation expenses.

A total of seven items were agreed between Cino and Delink, which formed the basis for constructing the contract for the proposed engine JV. First, Delink would be mainly responsible for the manufacturing, marketing and sales activities for the potential JV,

while Cino would take the main role of researching and developing engine technology for the potential JV. Second, both parties would have an equal share in the potential engine JV. Third, a budget for pre-JV expenses would be jointly prepared by the partner firms, together with a formal control procedure for the approval and reimbursement of pre-JV expenses. Fourth, there were no specific requirements regarding the types of investment made by each partner firm, except that each party would make an equal amount of investment. Fifth, the JV board would have six members, among which three would be appointed by Cino, and three would be appointed by Delink. Sixth, the JV would adopt a dual reporting system. That is, the delegated employees would only need to report to the board members from the same partner firm, unless other arrangements were agreed between the partner firms—except for the annual board meeting, where basic accounting information (such as profits of the JV) would be shared between Cino and Delink. Seventh, there were discussions on staff appointments for key management positions in the potential JV. A Cino-delegated employee would take the general manager position. As a compromise, Delink would assign one of its employees as the deputy general manager position. A Cino-delegated employee would be appointed as the leader for manufacturing engines and controlling engine quality, while Delink would appoint one of its own employees to take charge of marketing and sales activities in the JV. Delink would appoint the accounting manager, while Cino would appoint the deputy accounting manager. They also agreed that other key management positions would be determined, if necessary, during the actual operation of JV. The agreements between Cino and Delink on these items provided the basis for drafting the engine JV contract.

Interestingly, the agreement between Cino and Delink did not directly lead to the actual drafting and signing of the engine JV contract, but rather to a detour that hypothesised the formation of a filtration JV. This detour was initiated with the emergence of an actor in Delink's business network. In the negotiations between Cino and Delink to draft a contract for the potential engine JV, Cino was informed that Delink was using Booth as the filtration supplier of engines made under the technology licensing agreement, and Delink was intending to continue using Booth as the filtration supplier in the proposed engine JV. Given that Booth was Cino's major competitor in the Chinese market, Cino's strategy director was very sensitive to the potential enrolment of Booth in the proposed engine JV. This led the research collective to focus on hypothesising how the enrolment of Booth in the proposed engine JV would influence the network relationship

between Cino, Booth and Delink. This sense-making process was facilitated through drawing on personal experience and open discussion between Cino's executives. It was felt by most of Cino's executives that there would be high probability of strategic cooperation (such as the formation of an engine JV) between Delink and Booth in the future, if the existing cooperative relationship between Delink and Booth was extended to the proposed engine JV. If the cooperation between Delink and Booth occurred, it would pose a large threat to the proposed engine JV between Cino and Delink. In addition, it was felt that, if Delink was able to acquire filtrations or filtration technology from Booth, it would reduce Delink's dependence on Cino, and subsequently weaken Cino's bargaining power in key management decisions during future operations of the proposed engine JV.

Further, if the proposed engine JV was to procure filtrations from Booth, it would let Booth profit from Cino's owned subsidiaries. It was felt that this would increase the overall competitive power of Booth in the Chinese market, which would indirectly weaken Cino's competitive position. The potential danger of an uncooperative relationship between Cino and Delink and danger to Cino's competitive position in the Chinese market became a risk concern to Cino if the proposed engine JV was to continue.

The findings here show that risk concerns were hypothesised as the outcome of making sense of an unexpected problem (the use of Booth as the supplier of the proposed engine JV) that emerged in the process of crafting the engine JV model. This suggests that risk in inter-firm alliances can be articulated by hypothesising the proposed JV model, which can occur *a priori* to the actual formation and operation of inter-firm alliances. This finding adds to prior research (e.g., Das & Teng 1998; Dekker 2004) that treated risk in inter-firm alliances as a pure post-alliance formation phenomenon. Further, given that the engine JV model was proposed to address reputational and financial risk, the articulation of the risk concerns (in the process of crafting the engine JV model) suggests that new risks may be created as the unexpected outcome of organisations' efforts to manage risks. This is consistent with Chua and Mahama (2007), Power (2007) and Vinnari and Skærbæck (2014), who argued that risk management may result in unexpected consequences or end up with risk management of nothing.

The hypothesised danger associated with the potential enrolment of Booth in the proposed engine JV led the research collective to craft other possible solutions. One

solution was raised in the meetings of Cino's executives—to discuss with Delink whether there was a possibility to form a filtration JV with Delink to supply filtrations to the engine JV. The logic was simple: forming a filtration JV with Delink to supply the filtrations to the proposed engine JV would help remove Booth from Delink's business network, and build trust between Cino and Delink in the JV. The initiative of forming a filtration JV was significant to the proposal of forming an engine JV because it required much less initial investment. This was particularly important because Cino and Delink did not have much past experience with each other in jointly operating a JV. The research collective aimed to mobilise the operation of the filtration JV as a pilot test (a form of experiment) for the proposal to form an engine JV. As a result, the research collective suspended the crafting of an engine JV model, and redirected attention to the possibility of forming a filtration JV with Delink:

The actual formation of an engine JV between Cino and Delink was a step-by-step process. I mean, both partner firms perceived the need for the formation of DECIE [the engine JV between Cino and Delink], but they were just not quite sure whether they should jump straight away to that spot. I guess, on the one hand, both partners had not yet got enough trust in each other. On the other hand, given that Delink was the central government-owned company, Delink had some concerns about the ownership of the state property after the JV was formed. Thus, the formation of the filtration JV emerged as a good transition for partner firms to build more trust in each other before the eventual formation of the engine JV (DECIE-appointed strategy manager in the engine JV).

Cino used two tactics to successfully enrol Delink to form a filtration JV. First, Cino's world-class technology and management experience in manufacturing filtrations were strong seduction to Delink. This was because, as aforementioned, Delink was eager to learn world-class engine and engine-related technology, as a company owned by the Chinese central government. Second, the proposal of forming a filtration JV was argued by Cino to better consider Delink's interest. It was proposed by Cino that the potential filtration JV would be able to replace Booth to supply filtrations to the potential engine JV. Delink was told that filtrations made in the proposed filtration JV would pair better with engines made in the proposed engine JV because these products both used Cino-based technology. The paring between Cino technology-based filtrations and engines was expected to increase the engine performance made in the potential engine JV.

The negotiations between Cino and Delink for the formation of a filtration JV progressed very quickly without much resistance or many obstacles. It was proposed that the theoretical management control model that initially hypothesised the potential engine JV (on items including responsibilities, share investment, board composition, reporting structure and pre-JV expenses) should be transplanted to the filtration JV. This led to the signing of a contract and enactment of the filtration JV. Cino and Delink strictly followed the theoretical management model, and both partner firms were cooperative with each other in trying to put filtrations into production. Within two years, the filtration JV had successfully launched the production of six or seven Fleetguard products, and a host of Delink-designed filtration products under non-exclusive licenses. The cooperative experience in operating the filtration JV built trust between Cino and Delink. This trust laid the foundation to launch the proposed engine JV between Cino and Delink. This resonates with Van der Meer-Kooistra and Vosselman (2000), Langfield-Smith and Smith (2003), Dekker (2004) and others, who found that trust is an important management control mechanism in developing and managing alliance relationships. However, this thesis extends prior research by discussing a different path that led to trust building in the inter-firm alliance. Van der Meer-Kooistra and Vosselman (2000) and Dekker (2004) found that trust between alliance partners depends on their past cooperative experience. Through a case study, Langfield-Smith and Smith (2003) showed that trust is gradually developed through cooperative activities between partner firms during the ongoing development and management of inter-firm alliances. In contrast, this thesis found that trust in the engine JV was developed as the outcome of taking a ‘detour’ (forming a filtration JV) from the ‘main road’ (the proposal to form an engine JV).

#### **5.4 Emergence of New Concerns**

Two years after the operation of the filtration JV, the proposed engine JV and hypothesised theoretical management control model (as articulated in the micro world) were returned to the macro world for implementation and realisation of the collective interests of Delink and Cino. In enacting the theoretical model, both partner firms acted strictly according to the JV contract. Delink used some of its own suppliers and sales agents for the engine JV. Delink-appointed personnel were told to strictly follow the procedures and practices introduced by Cino. Cino invested one of its classic engine products, as well as equipment and machines, into the engine JV. Cino also sent a



training team to the engine JV to help employees learn how to use the equipment and machines, and to teach other working and management knowledge.

Besides the clauses stated in the JV contract, Cino and Delink took voluntary action to support the operation of the engine JV. First, Delink promised 100% penetration rate of engines made in the JV. That is, if a surplus of engines made in the engine JV were left unsold, Delink would purchase all these engines. Second, both Cino and Delink voluntarily shared cost and compatibility information. In addition, information about the compatibility between the engines made in the engine JV and commercial vehicles made by Delink was voluntarily provided by Delink to Cino. Cino used this compatibility information to modify and improve engine technology. Third, Delink liaised and convinced the local provincial government to provide preferential tax policies, and to establish a reservoir to supply high-quality talents for the JV. The JV between Cino and Delink was considered by the local government as one of 100 major projects, and the local government sought to ensure the success of the JV project.

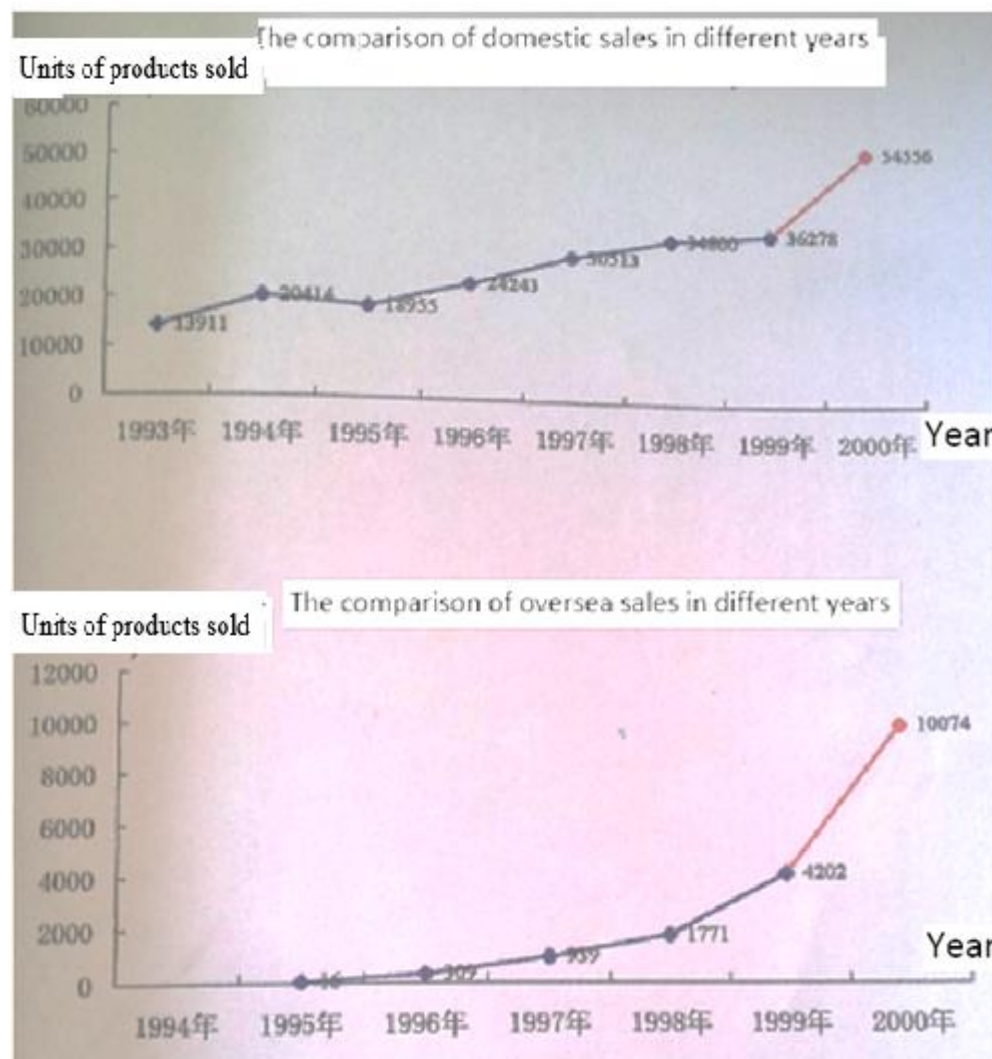
Due to the collaborative atmosphere between the partner firms, the problem of poor-quality engines under the technology licensing agreement was solved. This led to a significant and unexpected increase of engine sales in the Chinese market in the first five years of operation of the engine JV. With the worldwide reputation and sales network of Cino, the JV's exporting business also increased dramatically. The sales of engines made in the JV in China and overseas markets had increased by roughly 120% in the first four years of operation. Cino created an accounting chart (see Graph 1) to depict the increase in sales and comparisons between sales in the Chinese domestic market and overseas markets in different years.

Although there had been a dramatic increase in the sales of engines made by the engine JV, Cino believed that the JV could sell even more engines, given the large demand for engines made in the JV in the Chinese market. In other words, Cino felt that current sales of engines made in the JV were far from reaching the potential demand in the Chinese market:

The contradiction between demand and supply was the biggest problem we had this year. This problem was particularly salient in the recent three months. The supply of engines fell short of demand. Engine sales kept on increasing every consecutive month. Workers had continuously worked for a long time. There was urgent need for

workers to rest and recover; for more investments on equipment (work summary for the year 2000 and work ideas for 2000 and 2001).

Cino did not anticipate the situation of rapid engine sales growth, given that the company's primary initial intention of forming the JV with Delink was to improve the quality of engines made by Delink under the technology licensing agreement. The rapid increase in sales of engines made in the JV was perceived by Cino as an opportunity to expand its production scale and increase engine JV sales in China.



**Graph 1: The Increase and Comparison of Domestic and Overseas Sales of Cino Technology-based Engines from 1993 to 2000**

Cino took advantage of the opportunity of rapid engine sales growth in the Chinese market by introducing a new series engine into the engine JV. The introduction of the new series engine further boosted the sales of the engine JV between Cino and Delink. The significant increase of engine sales made Cino believe that China was becoming a

dominant medium-duty engine market in the world. This was explained by the director of Cino's strategy department:

You know that, in the 1990s, China was implementing the economic reform and opening-up policy when we formed the JV here in China. China was experiencing rapid economic development at that time and buildings, social infrastructures, highways were up everywhere. Everywhere was under construction. Chinese economy was developing so fast that every company wanted to have its operations expanded to China. What did that mean to us? Opportunities! Transporting building materials from the factory to the construction sites needed vehicles; more and more highways meant that the logistics industry would become much more flourishing than before, which also meant that the demand for commercial vehicles would largely increase. Our strong sales in the engine JV had confirmed our anticipation of the potential huge Chinese market.

By realising the potential of the Chinese medium-duty engine market, Cino planned to further increase sales of the engine JV by enlarging the JV's target customer range. In particular, Cino proposed opening the sales of engines (made by the engine JV) to non-Delink related OEMs to maximise the engine JV's profit.<sup>11</sup> Cino explained this initiative to Delink and believed that Delink would accept this proposal; however, Delink rejected the proposal to enlarge the JV's target customer range. For Delink, if engines made in the engine JV were sold to non-Delink related OEMs, it would reduce the competitiveness and uniqueness of Delink's own medium-duty commercial vehicles, as Delink would not be the only OEM in China to own Cino technology-based engines. The possible reduced competitiveness and uniqueness of Delink's own commercial vehicles was thought to threaten Delink's dominant position in the Chinese medium-duty commercial vehicle market. In fact, Delink stated to Cino that it would only make additional investment to match Cino's investments to the engine JV if engines made by the JV were sold only to Delink or Delink-related OEMs. As stated by the chief strategy manager of the engine JV:

It did not make any sense for Delink to supply engines made in its subsidiary company [DECIE] to its competitors. We knew that Cino wanted more and more profits and they had certain performance indicators to achieve. But they did not understand Chinese local situations, which was totally different to that in the US or

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<sup>11</sup> Under the current engine JV arrangement, Delink was in charge of the sales and sales channels of the engine JV, and engines made under the engine JV between Cino and Delink were exclusively sold to Delink and Delink-related OEMs (the original commercial vehicle manufacturers).

Europe. In China, most local companies did not have the independent research and development capability of making engines that had the same performance and quality as those made in DECIE. And most Chinese customers firmly believed that US and European technology-based engines would be much better than those locally-made ones ... What I am trying to say is that engine meant almost everything for customers when they chose commercial vehicles. Delink could not give its strength [Cino technology-based engines] to our competitors, which would otherwise not be able to differentiate Delink's commercial vehicles from those of its competitors.

Delink's concerns about Cino's proposal to enlarge the engine JV's target customer range seemed irrational to Cino. As explained by the marketing and sales manager of Cino:

I think the underlying logic is simple. The more engines DECIE could sell, the more profits both firms [Cino and Delink] could earn. We understand that Delink was afraid that, if Cino technology-based engines were supplied to other OEMs in the Chinese market, it might have some negative effects on our partner firm's [Delink's] sales of commercial vehicles. But we believed that the sales of commercial vehicle would depend not only on engine itself, but also other things, like brand name, interior decoration, after-sale service and sales promotion, etcetera. I mean, it was the whole 'package' that would affect customers' ultimate choice on the purchase of commercial vehicles. You know, doing business with competitors was not an unusual practice in the US. I felt that this control structure [opening sales to non-Delink or non-Delink related OEMs in the Chinese market] would create less competitive conflict, and more effectively allow DECIE to target OEM opportunities outside of those defined by Delink. Unfortunately, under the existing management structure, Delink was in charge of the sales channel of DECIE and they were reluctant to sell engines made in DECIE to other OEMs in the Chinese market. This would limit the potential profit that we could get from the JV.

Thus, Delink was concerned about the long-term strategic effect, while Cino was focused on the short-term financial benefit of enlarging the target customer range of the potential engine JV. Cino continued exerting efforts to convince Delink to accept its proposal to enlarge the engine JV's target customer range by (i) highlighting how the engine JV and Delink would benefit financially and (ii) exemplifying similar practices (of firms cooperating while simultaneously competing) in the US. However, this persuasion failed. Delink insisted that the engine JV's existing customer range should

be maintained, whereby engines made in the JV should only be sold to Delink or Delink-related customers.

Delink's clear position of being unwilling to enlarge the engine JV's target customer range to non-Delink related OEMs went against Cino's plan to expand engine sales in the Chinese market. The failure to persuade Delink to enlarge the engine JV's target customer range became a matter of concern to Cino. Thus, Cino undertook a set of activities and practices to make sense of this concern, which will be discussed in the next chapter.

## **5.5 Discussion**

This section discusses how the findings of the data analysed in this chapter addressed the research questions of this thesis. First, we found that reputational and financial risk prior to the formation of the medium-duty engine JV was articulated as the outcome of an experimentation process. This experimentation process involved diagnosing the causes of the problem (an unusual number and frequency of customer claims for engine repairs) that Cino encountered in the macro world of its daily operations, and constituting a research collective (consisting of Cino's directors) in the micro world (a manageable virtual environment) to hypothesise the potential effects of this problem. Second, the articulation of risks influenced construction of the MCS. The articulation of risks made the research collective draw and connect a set of management control practices (such as conducting a pre-JV formation audit and mobilising world-leading engineering technology and management experience to enrol partner firms and open discussion) with the hope of seeking and developing solutions to these risks. This led to the construction of theoretical management control models (partner selection, JV contract and formation of a filtration JV) that were intended to deal with the risks in the proposed engine JV. Third, in crafting an engine JV model to address reputational and financial risks, new problems emerged. Making sense of these emerging problems became the basis of articulating new risk concerns in the proposed engine JV. In addition, this chapter has discussed how the enactment and operation of the proposed engine JV model addressed the risks (concerns), while simultaneously generating a new problem (the failure to expand sales of the JV).

Three themes are salient in the above findings: (i) constructing a risk management model, (ii) the mutually constitutive relationship between risk and risk management

practices and (iii) the use of a JV to build trust between partner firms. These three themes are discussed in the following sections.

### **5.5.1 Constructing a risk management model**

This chapter found that an engine JV, partner selection, JV contract and filtration JV were the theoretical models used by Cino to manage risks. This provides additional support for the finding of Dekker (2004) that formal control (JV contract) and social control (partner selection) are important MCS for managing problems in inter-firm alliances. While Dekker (2004) and similar others formulate a set of sounding alliance conditions under which these formal and informal controls ought to be used, this chapter finds that risk management models emerge as the outcome of a set of everyday relating practices. As such, the finding of this chapter is more consistent with prior research's view on the constructivist nature of MCS (Lupton 1999; Mahama & Ming 2007; Miller et al. 2008). However, this chapter extends prior research by identifying a particular way through which risk management models are constructed: - the experimentation process. This experimentation process was undertaken by the research collective in the micro world in Cino's offices, where data gathered from the Chinese engine market were transported, disassembled, manipulated and reassembled in a different form. This chapter has discussed how the proposal to form an engine JV resulted from the research collective's efforts to compare three competing options that had the possibility to manage financial and reputational risk under the technology licensing agreement. The selection of Delink as the partner firm of the proposed engine JV was the outcome of the research collective's tentative enrolment of two potential partner firms, examination of the suitability of the target firms as JV partners, and choice made therein. The JV contract was drafted after iterative discussions in the research collective, during which some items were challenged and renegotiated before being eventually listed in the proposed engine JV contract. The proposal to form a filtration JV was the outcome of imagining a possible network relationship between Cino, Delink and one of Delink's existing supplier firms. The finding here suggests that the risk management model was not prescribed based on certain theoretical principles or alliance transaction characteristics, but constructed through the practice of experimentation.

### **5.5.2 Mutually constitutive relationship between risk and risk management practices**

This chapter found that financial and reputational risks under the technology licensing agreement made the research collective undertake the management control action of assessing, testing and comparing alternative economic arrangements to experiment with risk solutions. This led the research collective to hypothesise the proposal to form an engine JV as the solution to manage financial and reputational risk. In the process of crafting the engine JV model, the combined use of a set of management control actions (a pre-JV formation audit, a competition analysis, reference to the public media, relating concerned partner firm practices to similar cases in the US, and accounting calculations) and inscriptions (production costs and sales price of engines made in the proposed engine JV and competing firms, newspaper articles and US regulation) helped identify problems, and generate and objectify risk perception. This became the basis of articulating new risk concerns about damaged global reputation and sales. This finding challenges the implicit assumption widely immersed in the accounting literature (e.g., Anderson et al. 2015; Dekker 2004; Van der Meer-Kooistra & Vosselman 2000) that MCS are always used to manage risks. MCS also actively contributes to formulate the identity of risks by sourcing the object of and producing knowledge on such risks. In addition, prior research have the implicit assumptions that risk in inter-firm alliances can only be caused by activities or events (such as partner firms' opportunistic behaviour) that occur after these alliances are formed. This chapter extends their findings by showing how risk in inter-firm alliances can arise in the process of crafting the JV model, prior to the actual formation of the JV.

Consistent with prior research (Dekker 2004; Anderson et al. 2015), this chapter found that risks influence the choices and articulation of MCS. It has been shown that risk concerns triggered Cino to mobilise another set of management control actions (negotiation with partner firm and mobilising world-leading engine technology and management experience) to experiment with possible solutions to mitigate these risk concerns. This became the basis of crafting an engine JV contract and developing the proposal to form a filtration JV as risk management practices. As can be seen, the risk management practices were both the outcomes and conduits of risks. Thus, risk and risk management practices co-constitute each other.

The co-constitutive relationship between risk and risk management practices suggests that new risk (concern) may be created as the outcome of managing risk. For example, in crafting the engine JV model to deal with reputational and financial risks under the technology licensing agreement, new risk concerns about potential damage to Cino's Chinese and global reputation and sales, and about the use of Booth as the filtration supplier of the proposed engine JV, were also hypothesised. This finding provides additional support for Vinnari and Skærbæk's (2014) study which argues that managing risks may cause unexpected outcomes. Similar to their argument, this chapter showed that the use of MCS in managing risks in inter-firm alliances may lead to the creation of new risks within the same alliances. This finding contributes to prior research (e.g. Dekker 2004; Anderson et al. 2014) that examine MCS in inter-firm alliances.

### **5.5.3 Using alliances to build trust between partner firms**

Cino formed a filtration JV with Delink to mitigate risk exposure to using Cino's competitor firm (Booth) in the engine JV between Delink and Cino. In particular, Cino suspended continuation of the proposal to form the engine JV, while taking a detour to form a filtration JV. The formation and operation of the filtration JV helped build trust between Cino and Delink. This trust laid the foundation for the formation of the engine JV between these two partner firms. This finding extends Langfield-Smith and Smith (2003) and Mahama and Chua (2016) by revealing how trust between partner firms in one alliance can be achieved through concurrent activities (the formation of another alliance) outside this alliance.

## **5.6 Conclusion**

This chapter has demonstrated three stages of the experimentation process, through which risks and MCSs in the JV were articulated. In the first stage, the problem of an unusual number and frequency of customer claims under the technology licensing agreement was reduced to an engineering problem. In the second stage, a research collective was formed to understand the implications of the engineering problem for Cino's future business. This led to the articulation of reputational and financial risks under the technology licensing agreement with Delink. To address these risks, an engine JV between Cino and Delink was experimented as the solution. Crafting the engine JV model encountered unexpected problems, which led to the formulation of new risk concerns related to Cino's global sales and reputation. These new risk concerns were



believed to hinder the accomplishment of the original purpose of forming the engine JV, which led the research collective to construct risk management models (a JV contract and formation of a filtration JV). The enactment of the proposed engine JV model created a new problem, in which Delink failed to expand the sales of the engine JV.

## **Chapter 6: Matters of Concern and Crafting a JV Portfolio**

### **6.1 Introduction**

This chapter analyses the processes and practices through which Cino articulated the risk of over-dependence on Delink in the Chinese market. A JV portfolio model was experimented as the solution to this risk. This chapter also discusses how the enactment of the JV portfolio model created new concerns. This chapter is organised as follows. Section 6.2 examines the processes of how Cino made sense of the issue of failing to enlarge the engine JV's target customer range, through which the risk of over-dependence on Delink was articulated. Section 6.3 discusses how the proposal to form a JV portfolio emerged as the solution to deal with the risk of over-dependence on Delink. This section also discusses how the JV portfolio was problematised in the process of crafting a theoretical management model for the JV, and how these problems were solved. Section 6.4 discusses how the enactment and operation of the alliance portfolio generated new problems. Section 6.5 discusses the findings from the data analysed in this chapter, while Section 6.6 concludes this chapter.

### **6.2 Articulating the Problem of Exclusive Dependence on Delink as Risk**

Cino's failure to persuade Delink to enlarge the engine JV's target customer range, as discussed in the previous empirical chapter, caused Cino's management to consider the firm's long-term strategy in the Chinese market. The strategic analysis focused on examining the Chinese medium-duty commercial vehicle market, and the importance of Delink to Cino's business in China. To facilitate strategic analysis, two management control practices were simultaneously undertaken. First, Cino calculated and compared the sales growth rate and market share of Delink and other local medium-duty OEMs in the Chinese market, based on the information collected from CAAM. Through these calculations and comparisons, Cino found that Delink's sales volume of medium-duty commercial vehicles was three times more than that of the second-largest OEM in the Chinese market, and Delink took one-third of the share of the Chinese medium-duty commercial vehicles market. Second, Cino conducted interviews with sales agents of Delink's commercial vehicles and collected their opinions about Delink's next five years of sales. Different sales agents' opinions were grouped based on similarities,

which led to the emergence of three categories (negative, neutral and positive). The grouping of the interview results showed that the majority of Delink's sales agents had a strong positive opinion about Delink's leading position in the Chinese market for the next five years.

The results of the accounting calculations were corroborated with those from the interviews, which suggested that Delink had stable and the largest medium-duty engine sales in the Chinese market. Cooperating with Delink could guarantee a huge amount of Cino's sales of medium-duty engines. No other medium-duty OEM in the Chinese medium-duty engine market would replace Delink's position in Cino's Chinese business. Thus, Cino concluded that it was not affordable to lose Delink in the Chinese market. However, continuing to cooperate with Delink would mean that Cino would lose the opportunity to make engine sales to non-Delink OEMs in the Chinese medium-duty engine market. As such, Cino's Chinese business would exclusively depend on Delink. This exclusive dependence on Delink became a matter of concern to Cino.

To make sense of the issue of Cino's exclusive dependence on Delink in the Chinese market, Cino's CEO, CFO, strategy director and accounting director constituted an expert team (a type of research collective) to evaluate the potential effects of such reliance on Cino's future business in China. To evaluate the potential effects, the research collective gathered information about Cino, Delink and a few actors outside the engine JV that were likely to affect the engine JV. These outside actors included Cino's and Delink's competitors, and potential commercial vehicle customers in the Chinese market and other global markets. In this manner, the research collective used information to create a network of relations that allowed them to evaluate how Cino's future Chinese business would be affected by possible relations among actors in the network. This experimentation process was conducted through four interconnected practices.

First, the research collective expected that the exclusive dependence on Delink was likely to tie Cino's future business in China solely to Delink's business performance. This was believed to place Cino in a vulnerable position, where the company's future business in China would be directly and significantly affected by Delink's competitive relationships with other local medium-duty OEMs. Although Delink was currently taking one-third of the Chinese medium-duty commercial vehicle market, the possibility that Delink's market share would become saturated or even decrease in the future could

not be excluded. This was particularly concerning because more and more commercial vehicle companies were entering the Chinese medium-duty commercial vehicle market. If Delink's sales of medium-duty commercial vehicles became saturated (decreased), the sales of engines made by the engine JV would also be fixed (decrease). This was explained by the chief strategy manager of the engine JV:

The introduction of a C series engine to the engine JV [between Cino and Delink] would no doubt increase the overall sales of our engines. However, those sales were all made to Delink or Delink-related OEMs. But you had to think about the whole Chinese medium-duty commercial vehicle market. How about if the engine JV met all the demands of Delink and Delink-related customers in the future? When that happens, would there be still any opportunity for the growth of the engine JV business? If we would limit our sales to only Delink and Delink-related OEMs, one day the demand and supply for engines made in the engine JV would be saturated.

As demonstrated by this quotation, Cino imagined that it might be too risky to exclusively depend on Delink to guarantee Cino's future sales in the Chinese market.

Second, the sales volume and growth rate for the entire Chinese commercial vehicle market (including the light-, medium- and heavy-duty commercial vehicles<sup>12</sup> markets) were compared to those in some European, North American and African countries. This showed that China was becoming the largest commercial vehicle sales market in the world. In fact, it was revealed that the Chinese commercial vehicle market had grown at a rate of 10.8% per annum in each consecutive year from 1999 to 2002. Thus, the research collective concluded that there was huge growth potential in the Chinese commercial vehicle market. As the CEO of Cino explained:

We all felt that Cino should increase its investments in China. China had key factors to make itself become a huge commercial vehicle market. First, China had vast territory and abundant resources. Second, China was undertaking highway and infrastructure construction. Although the total length of China's highway was just over 500 kilometres at the end of the 1990s, it was growing at 800 to 900 kilometres per year. We all agreed that China would surpass North America and Europe and become the largest commercial vehicle market in the world one day in the near future. However, ...we all believed that that day would come, but we just didn't realise that

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<sup>12</sup> At the time when information about the Chinese medium-duty commercial vehicle market was collected, Cino incidentally collected information about the Chinese heavy- and light-duty commercial vehicles markets.

the day came so quickly, and much quicker than what we expected. Fortunately, the sales information collected from CAAM and the interviews made it clear to us that the Chinese commercial vehicle market was becoming the biggest commercial vehicle market in the world.

As can be seen from the quotation, Cino realised the huge potential of the Chinese commercial vehicle market, and was eager to increase its engine sales in China with the momentum of the rapid Chinese economic development. However, the exclusive dependence on Delink would limit Cino's engine sales to other non-Delink OEMs in the Chinese market (particularly light- and heavy-duty commercial vehicle markets). This led the research collective to develop the hypothesis that Cino might end up giving the rest of the market (non-Delink related business) to its competitors, and subsequently lose a large amount of potential customers in the Chinese market.

Third, Cino analysed the business practices of its major Chinese local competitor firms. This highlighted that Cino's local Chinese competitors (such as Weecai and Yuchai) were developing at a rapid speed. The sales of engines made by Weecai and Yuchai were spreading to more and more different OEMs in the Chinese market:

Our competitors were supplying engines to many different OEMs, while we only had one OEM [Delink and Delink-related OEMs]. This put us at a very disadvantaged position. Although the total sales volume of Delink's commercial vehicles was growing each year in the past, the market share of Delink in medium-duty commercial vehicles was relatively constant. If we kept Delink as our only supplier in the Chinese market, it would mean that we would be locked by Delink, and our future development in China would be limited. I mean, it was going to be hard for us to occupy more market share other than that of Delink's in China. If you look at what our competitors were doing, particularly Weecai and Yuchai, they kept on increasing their market share by selling their products to more and more OEMs—I mean, totally different OEMS. I guess that's one of main reasons that made them develop from the brink of bankruptcy to a company whose sales were second to ours in the Chinese market (strategy manager of Cino).

The above quotation demonstrates how the research collective felt that local competitors' sales expansion strategies would pose a threat to Cino's business in China.

Fourth, the research collective linked the issue of Cino's exclusive dependence on Delink to Delink's opportunistic behaviour in the engine JV. In particular, the procurement cost for components of B series engines made in the engine JV was 3% to

5% higher than the market price. Cino knew that the suppliers of these components were Delink-appointed companies. However, given that Delink was responsible for the procurement of engine components, as determined in the engine JV agreement, Cino was unable to control or intervene in Delink's choice of supplier for the engine JV:

As we kept on investing in DECIE, risks associated with Delink would increase as we would gradually lose our bargaining power. This would happen because Delink was our only customer in China...Delink was in charge of the procurement of components for the B series engine in the JV. The supplier they chose gave us a higher price than the market price. We knew that the component supplier was a Delink-related company. We had to bear this higher price and try to recover this loss by selling the engine at a higher price or making more sales to Delink. And we could not choose other engine component suppliers because it would damage our JV relation. If the JV relation was damaged, we would cut off our own revenue source in the Chinese market. The point I was trying to make was that if, today, Delink used its identity of being our own and biggest customer as the point of bargaining for procurement-related benefit, they might do the same thing for decisions in other areas in the future (manager of Cino's strategy department).

Thus, the research collective believed that Cino's exclusive dependence on Delink would encourage Delink's opportunistic behaviour in the future operation of the engine JV.

In summary, these four interconnected practices led the research collective to develop a hypothesis about the existence of risk exposure from Delink's potential opportunistic behaviour and the loss of a large number of potential customers in the Chinese market. The hypothesis became the basis of articulating the risk of over-dependence on Delink in the Chinese market. The risk exposure from Delink's opportunistic behaviour (one dimension of the risk of over-dependence on Delink) refers to the possibility that Delink may take the advantage of its position in the engine JV to choose preferred suppliers so as to obtain self-benefits at the expense of Cino's interests. This is similar to the relational risk (Das & Teng 1996) or appropriation risk (Dekker 2004) conceptualised in prior research. In addition, risk exposure associated with the potential loss of the rest of the market in which the partner firm operated. The potential loss of the rest of the market could affect the JV's performance, and thus Cino's China business. This resembled the concept of performance risk proposed in prior research (Das & Teng 1996). However, while Das and Teng (1996) argued that relational risk and performance

risk are mutually exclusive to each other in inter-firm alliances, the finding here extends prior research by showing how these two risks could coexist in the form of two dimensions of the risk of over-dependence on a JV partner firm.

Also, this risk of over-dependence on Delink could be seen as the consequence of Cino's efforts to make sense of an unexpected problem (Cino's failure to enlarge the target customer range of the engine JV) that emerged when enacting and operating the engine JV model. Given that the engine JV model was originally proposed as the solution to address financial and reputational risk under the technology licensing agreement (as discussed in the previous chapter), it could be interpreted that the risk of over-dependence on Delink in the engine JV was articulated as the outcome of managing risks that led to the formation of the JV. This finding supports prior research by Chua and Mahama (2007), Power (2007) and Vinnari and Skærbæk (2014) about the consequences of risk management. In addition, this finding extends prior research by presenting a specific practice (the experimentation process) that helped realise and understand the consequences of risk management.

### **6.3 Crafting an Alliance Portfolio as a Solution to the Risk of Over-dependence on Delink**

In articulating the risk of over-dependence on Delink, the research collective simultaneously experimented with possible solutions that were intended to manage these risks. The research collective sought possible economic arrangements with the possibility of expanding Cino's engine sales to non-Delink related customers in the Chinese market, without compromising Delink's competitive position. Given that Delink was clearly unwilling to sell medium-duty engines made in the engine JV to non-Delink related customers in the Chinese market, the only option available for Cino to expand its engine sales was entering the Chinese light- and heavy-duty commercial vehicle market.

Thus, the research collective assessed the potential to enter the Chinese light- and heavy-duty commercial vehicle market. In making this assessment, the research collective attained inscriptions about the past five years of engine production and sales volume in the Chinese light- and heavy-duty commercial vehicle market from CAAM. These inscriptions revealed that the Chinese light- and heavy-duty engine market had been increasing in the past five years. The research collective believed that these

inscriptions reflected the rapid and significant economic development in China. This led the research collective to conclude that the increasing momentum of engine production and sales of Chinese light- and heavy-duty engines would continue at least for the next five years. Further, given that Delink was focused on the Chinese medium-duty engine market, the research collective believed that entering the Chinese light- and heavy-duty commercial vehicle market would not harm Delink's interests. As a result, the research collective argued that the Chinese light- and heavy-duty commercial vehicle market would provide a good opportunity for Cino to expand its sales to non-Delink related customers.

Regarding the models of entering the Chinese light- and heavy-duty commercial vehicle market, the research collective proposed using a JV option and eliminated the rationalities of other alternative options (such as direct investments). This was because the engine JV model had been tested in the cooperation between Cino and Delink, which was perceived by Cino to be a success. The research collective believed that the same JV model would generate similar outcomes if applied in the Chinese light- and heavy-duty commercial vehicle market. Thus, forming a light-duty engine JV and heavy-duty engine JV with Chinese local OEMs was considered the solution to deal with the risk of over-dependence on Delink. In ANT terms, it can be interpreted that Cino sought to create a network of relations in the form of building multiple JVs with different partner firms in order to redistribute its resources (and attendant risks) among multiple partner firms. The formation of multiple alliances resonates with the concept of alliance portfolio in the alliance literature (Goerzen 2005, 2007; Wassmer 2008). The prevalent view in the alliance literature is that alliance portfolios may be used to create synergy by combining resource/technology knowhow of different JVs in the portfolio. The finding here extends prior research by demonstrating an additional rationale of forming alliance portfolio—to diversify the risk of over-dependence on Delink, while maintaining stable relations with all partner firms in the JV network. Thus, an alliance portfolio was used by Cino as a control mechanism to manage the risk of over-dependence on Delink. The logic was explained by Futong's relationship manager of Cino:

We knew that we had to reduce the dependence on Delink in the Chinese market. Given that it was not possible to do so in investing medium-duty engines to other OEMs, the only possible way was to introduce another range of our products to the Chinese heavy-duty or light-duty market and form a JV with the leading firm in those



markets. If in the future, we break up with Delink, we at least would still have another company to cooperate with in the Chinese market.

After forming a JV portfolio was proposed as the solution to the risk of over-dependence on Delink, the research collective directed their focus to selecting a partner firm and constructing a JV contract. Following Cino's business tradition of cooperating with leading OEMs in the local market, the research collective targeted Sag and Futong as potential partner firms for the heavy- and light-duty engine JVs, respectively. This was because Sag and Futong were the largest OEMs (based on production volume) in the Chinese heavy- and light-duty commercial vehicle market, respectively. Further, based on the past experience of operating the medium-duty engine JV, the research collective proposed to replicate the contract used for the medium-duty engine JV with Delink in the proposed heavy-duty engine JV with Sag and light-duty engine JV with Futong.

To finalise the proposed JV portfolio and respective MCS model, Sag and Futong were enrolled by the research collective. The research collective successfully enrolled Sag and Futong to accept its proposed JV portfolio model by considering Sag's and Futong's interest. For Sag, the company had long been eager to upgrade its existing outdated heavy-duty engines used in its commercial vehicles. Sag initially engaged with Man Se Corporation (one of Europe's leading commercial vehicle manufacturers) to negotiate the possibility of forming a JV to make heavy-duty engines in China. However, Sag encountered an impasse in its negotiations with Man Se Corporation because the two companies could not agree on the target customer range of the potential JV. In contrast, as an independent engine manufacturer, Cino was able to provide world-leading heavy-duty engine technology and related services exclusively to Sag. For Futong, the company had the ambition of expanding its sales overseas, particularly to North America and Europe. However, at the time when Futong was negotiating with Cino for the formation of a light-duty engine JV, the quality of engines used in Futong's light-duty commercial vehicle was not competitive to those of other OEMs in the North American and European markets. In addition, the engines made by Futong were unable to meet the European Emission Standard IV that was adopted in the North American and European markets. Thus, the use of Cino technology-based engines was expected to increase the competitiveness of Futong's commercial vehicles in the North American and European markets. Further, Cino successfully enrolled Sag and Futong to accept its proposed JV contract by mobilising its past JV experience. Cino had past JV experience,

while Sag and Futong had no prior JV experience in China. Mobilising past JV experience allowed Cino to generate an impression to Sag and Futong that Cino's proposed JV contract was indispensable for the proposed heavy-duty engine JV if this JV were to succeed.

In the micro world (constituted by Cino's directors) of crafting the heavy-duty engine JV model with Sag, an unexpected issue emerged, associated with Sag's daily operation (one element of the macro world). This issue was Weecai's acquisition of Sag. Weecai is a major competitor of Cino that researches, develops and sells engine and engine-related products in the Chinese market. For Cino, the full acquisition of Sag by Weecai would mean that Sag was losing independent power to make decisions, particularly relating to the formation and operation of the proposed heavy-duty engine JV. Weecai would become the substantive actor that was making the final calls for decisions related to the proposed heavy-duty engine JV. This posed a question to Cino: whether Sag could still act the same way in negotiating and operating the JV after its acquisition by Weecai.

To answer this question, Cino's CEO, CFO, engineering directors, strategy director and accounting departments formed a new research collective. This research collective sought to understand the potential effects of Weecai's acquisition of Sag on the proposed engine JV between Cino and Sag. This sense-making process was conducted through open discussion in the research collective. In the open discussion, one argument was that Cino, Sag and Weecai could jointly research, develop and make heavy-duty engines. This argument was not accepted by most of Cino's executives in the research collective because it seemed to raise one challenging question: given that Weecai has full and independent capacity to make engines at low cost, why would Weecai cooperate with its competitor (Cino) and spend more money to make engines that would be sold to Weecai's 100%-owned subsidiary company (Sag)?

Another argument raised in the open discussion in the research collective was that Weecai would take action to limit the sales of engines made in the proposed heavy-duty engine JV (between Cino and Sag) to Sag's heavy-duty commercial vehicles. The logic of this argument was that Cino and Weecai were competitors in the Chinese engine market, and Weecai would not allow its subsidiary company (Sag) to purchase engines made by Sag and its competitor (Cino). Rather, most of Cino's executives in the research collective expected that the most likely situation would be that Weecai would

supply its own engines to Sag's heavy-duty commercial vehicles. This would mean that, if the heavy-duty engine JV between Cino and Sag was formed, the penetration rate of engines made in this engine JV to be adopted in Sag's commercial vehicles would be limited and suppressed by Weecai. As the CEO of Cino stated:

There was no doubt that Weecai would use its power as the biggest shareholder of Sag to limit the penetration rate of the engines made in a potential JV between us and Sag to be adopted in Sag's commercial vehicles. We [the participants in the executive meeting] all thought this would happen. This logic was simple. We and Weecai were competitors in the Chinese market. In fact, Weecai regarded us as its biggest competitor. How would they allow us to supply engines to its subsidiary company? If Weecai let that happen, it would first lose a large amount of income, given that Sag could sell around 30,000 heavy-commercial vehicles each year. Also, Weecai would lose face in the public. I mean, the end users would think about why Weecai's own OEM subsidiary would equip Cino technology-based engines—maybe because Cino technology-based engines were better than Weecai's own engines? Wasn't this strange? We were sure that Weecai would think about this and they did not want this happen.

You know, our main purpose of forming JVs with Chinese local OEMs was to guarantee a reasonable percentage of penetration rates for our engines. If the penetration rates could not be guaranteed, there was no point for us to form a JV. We just could not run the risk of forming an engine JV with Sag and selling engines made in this engine JV to other heavy-duty OEMs in the Chinese market. You could not simply assume that other OEMs in the Chinese heavy-duty commercial vehicle market would purchase the engines made between you and their competitors. This was not the way how things were working here in China. In China, you know, *guanxi* was the factor you always need to think about when you are trying to make sales. So the point I was trying to make was that, if the sales of engines made in the potential JV with Sag could not be guaranteed, we would expect no sales could be made at all.

The likely harmful effects of Weecai's acquisition of Sag on the proposed heavy-duty engine JV between Cino and Sag were further objectified by the hypothetical suppressed penetration rate of engines. The hypothetical suppressed penetration rate of engines was believed to limit the sales of the proposed heavy-duty engines. If sales of the engines made in the proposed heavy-duty engine JV were limited, Cino would not achieve its original purpose of forming a heavy-duty engine JV to expand its engine sales to non-Delink related customers in the Chinese market. This became the basis of

problematizing the proposed heavy-duty engine JV model, which made the research collective suspend the proposal to form a heavy-duty engine JV with Sag.

The research collective's intention to suspend the proposal of a JV partnership with Sag was based on the relation (in the form of a management control power battle) between Sag and Weecai. The previous owner and substantial operator of Sag, Shanxi provincial government, had a hostile attitude towards Weecai's acquisition, and resisted relinquishing its management control power. Sag had been under the direct control of the Shanxi provincial government since 1999. As the only OEM at scale in Shanxi province, the Shanxi provincial government regarded Sag one of the most important projects to propel the growth of the local automotive industry. Given that Shanxi was a large province in the west of China in which industry was underdeveloped, Shanxi's provincial government had a strong desire to develop the automotive industry to cultivate new business, alongside the original heavy-duty commercial vehicle business. As such, the Shanxi provincial government wished to retain independent management control and decision power over Sag, even if Sag Group was acquired by Weecai.

Further, as one of the leading heavy-duty commercial vehicle producers in the Chinese market, Sag was one of the largest taxpaying companies, contributing significantly to the finance income of the Shanxi provincial government. The acquisition of Sag Group by Weecai would reduce the income of the Shanxi provincial government, as a large amount of revenue earned by Sag would be distributed to the Shandong provincial government (because Weecai was under the direct control of the Shandong provincial government). Thus, the Shanxi provincial government sought opportunities to retain the majority of Sag's ownership from Weecai.

For Weecai, the company wished to take over management control and decision power of Sag from the Shanxi provincial government. Weecai was seeking the opportunity to have its own OEM subsidiary company. Weecai's acquisition of Sag was under Weecai's strategic intention to have and operate its own OEM subsidiary company. Weecai wished to have direct management control power over Sag to gain enhanced operational experience of running an OEM.

The Shanxi provincial government ultimately gained the upper hand when competing with Weecai for management control and decision power over Sag. This was because the original management leaders of Sag had worked for the company for 15 years, and

had built a solid foundation in the company.<sup>13</sup> This meant that the Weecai-appointed management personnel in Sag had no real voice or power during the daily operation and management of Sag. In other words, the substantive power of managing and operating Sag remained with the Shanxi provincial government.

Sag showed its ability to independently make management control and operational decisions (out of the control of Weecai) regarding Cino, with the hope of continuing negotiations to form a heavy-duty engine JV. The director of Cino's strategy department explained:

Sag told us that the management team, culture and strategy of Sag would not change, although the company was acquired by Weecai. For them, Weecai was purely a shareholder of Sag and they would not allow Weecai to intervene in the company's daily operations and management.

Thus, the research collective's perception of the problem of the suppressed engine penetration rate of the engines to be made in the proposed heavy-duty engine JV (associated with Weecai's acquisition of Sag) was mitigated, and the research collective became open to continue negotiation on the proposed heavy-duty engine JV with Sag.

To further attract Cino to return to the proposed heavy-duty engine JV, Sag enrolled Shanxi's provincial governor in the JV negotiation between Cino and Sag—Sag enrolled the governor to lobby Cino to continue the negotiation with Sag regarding the formation of the JV. Shanxi's provincial governor had previously worked in Suzhou's industrial park, and was an expert in the commercial vehicle industry. He understood the importance of an automobile industry to lead Shanxi province's economic development. He was personally flown to Cino to talk with Cino's CEO. The provincial governor asked Cino's CEO to give him the personal favour of forming a heavy-duty engine JV with Sag. The provincial governor promised that, if a heavy-duty engine JV was formed between Cino and Sag, preferential tax policy would be granted to the JV. In particular, he promised that there would be no value-added, consumption or export tax on the JV. The research collective expected that this would decrease the costs and increase the profits of the proposed heavy-duty engine JV:

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<sup>13</sup> In 1990, in the plan to transfer the planned economy to a market economy, Sag encountered unprecedented difficulties in which the company was insolvent and almost became bankrupt. Under this situation, Yupu Zhang stepped in as the director of Sag. During his 18 years of leadership, Sag escaped the insolvent situation and gradually developed into one of China's top 500 enterprise companies. As such, most of the company's employees advocate and admire Yupu Zhang.

[Shanxi's provincial governor] personally flew to Beijing and expressed the message that the whole Shanxi government would provide strong logistic support to the potential JV. He shared his personal thoughts on the formation of the JV between Cino and Sag. He said, 'the cooperation with Cino would be a milestone for Sag in the area of international cooperation. Sag was one of the leaders in Chinese heavy-duty commercial vehicle market and Cino was a world-leading diesel engine manufacturer. The formation of a JV would bring win-win results to both firms. And the cooperation between Cino and Sag would write a new chapter in China's truck industry' ... [Shanxi's provincial governor] showed us the proposed joint venture site [the Jinwei New City]—the industrial development, infrastructure, transportation, sports and entertainment centre of the Jinwei New City. He also showed us the companies that had already set up their business in the Jinwei New City. The whole site was amazing, including the full range of services we would need from the application for manufacturing license and the transportation of finished products. All these could be done within Jinwei New City. The provincial governor even offered us many concessional policies that would probably not be provided in other cities in China (strategy manager of Cino).

Shanxi provincial governor's personal involvement in the JV negotiation and promise to provide preferential tax policy made the research collective believe that the proposed heavy-duty engine JV would be privileged. They believed this offered the JV a unique competitive advantage in the Chinese market. As a result, the research collective decided to enact the proposed heavy-duty engine JV model with Sag. From the perspective of ANT, the tie developed between the Shanxi provincial governor and Cino's CEO was essential in maintaining a stable JV relationship between Cino and Sag. The power of this tie lay in the provincial governor's personal bureaucratic ability to give privileged treatment to the proposed JV. In return, Cino's CEO had to form a heavy-duty engine JV with Sag to boost the local economy. This resonates with the concept of personal *guanxi* in the management literature (Luo & Chen 1997; Park & Luo 2001; Yang & Wang 2011). To avoid losing 'face' (social prestige and status) in a *guanxi* network, one person is obliged to give favour(s) to another person in the network when asked. This person is supposed to be repaid by the person who received the favour. The findings here extend prior research by demonstrating the importance of personal *guanxi* in maintaining alliance relations.

In crafting the light-duty engine JV model with Futong, an unexpected issue emerged, associated with the short history of Futong. Futong was formed in 1996 and had less

than 10 years of operating experience. Compared to Cino's other two partner firms (Delink and Sag) in the Chinese market, Futong had a much shorter history. Although Futong was currently the largest OEM in the Chinese light-duty commercial vehicle market, Futong's short history created ambiguity about the long-term performance of the proposed light-duty engine JV. To make sense of this ambiguity, Cino's sales and marketing director, strategy director and law director, as a research collective, focused on experimenting with the sustainability of Futong's leading position in the Chinese light-duty commercial vehicle market. To facilitate this experimentation, the research collective gathered data about the Chinese light-duty commercial vehicle market that allowed them to conduct three interrelated practices.

First, Cino conducted a competition analysis, in which the Chinese light-duty commercial vehicle market was compared to the medium-duty commercial vehicle market. The analysis revealed that more than 30 companies manufactured light-duty commercial vehicles in the Chinese market. The total number of competitors in the Chinese light-duty commercial vehicle market was much higher than that in the medium- and heavy-duty markets. This indicated that the competition in the Chinese light-duty commercial vehicle market might be more intense than that in the medium- and heavy-duty markets.

Second, Delink's leading position in the Chinese medium-duty commercial market was used as a reference to estimate the sustainability of Futong's leading position in the Chinese light-duty commercial vehicle market. The difference in the total number of sales of light-duty commercial vehicles between (i) Futong and other OEMs in the Chinese light-duty commercial vehicle market and (ii) Delink and other OEMs in the Chinese medium-duty commercial vehicle market were calculated. This calculation was Cino's effort to establish an equivalence between Futong's and Delink's leading positions in two different markets. The calculation showed that the difference in the total number of sales of light-duty commercial vehicles between Futong and other OEMs in the Chinese light-duty commercial vehicle market was much smaller than that of medium-duty commercial vehicles between Delink and other local medium-duty OEMs. As Futong's relationship manager in Cino explained:

We knew that Futong was growing very fast from the late 1990s to 2005. And indeed Futong had become the largest light commercial vehicle manufacturer and seller since 2003. But initially when we talked about the proposal of forming a JV with Futong, we were just not as confident about Futong's sales as that we had on Delink. I don't

know—probably because Futong only had a short history. Thus, we were thinking to make gradual investments to the potential JV with Futong. Instead of making a one-time investment in the potential JV with Futong, as what we did for DECIE and SACIE, we would make additional investments to the JV only when the sales of light-duty engines made in the potential JV achieved our pre-set targets.

As can be seen from the above quotation, the research collective was not confident about the sustainability of Futong's leading position in the Chinese light-duty commercial vehicle market. The research collective believed that, if Futong lost its leading position in the Chinese light-duty commercial vehicle market in the future, the potential light-duty engine JV's sales would be reduced, and it would be financially and legally costly for Cino to find an alternative partner firm to form a new light-duty engine JV. The research collective would prefer to select an OEM that had a sustainable leading position in the Chinese light-duty commercial vehicle market at the beginning of the JV. Ideally, the sustainability of the leading position of the potential partner firm in the proposed light-duty commercial vehicle market would be equivalent to that of Delink in Chinese the medium-duty commercial vehicle market. This would guarantee a stable and reasonable amount of engine sales for the proposed light-duty engine JV.

Third, Cino conducted a three-step accounting analysis. In each step, more actors were enrolled in the research collective. These new actors helped collect more data about the Chinese light-duty commercial vehicle, which made the three-step accounting analysis possible. In the first step of the analysis, Cino's marketing and sales department and law department were enrolled in the research collective. These two departments helped estimate the size of the Chinese light-duty commercial vehicle market for the next five years. The marketing and sales department collected historical statistics about the sales of Chinese light-duty commercial vehicles in the past five years from CAAM. Based on these historical statistics, the average sales growth rate of the light-duty commercial vehicles for the past five years was calculated. The law department highlighted two major macro world factors that were likely to influence the sales of the proposed light-duty commercial vehicles in the Chinese market (the release of upgrading Emission Standard II to Emission Standard III by the Chinese central government, government subsidies and preferable tax policies for the purchase of commercial vehicles that met Emission Standard III). Considering the data collected from CAAM and government policy-related information provided by the law department, the marketing and sales personnel estimated the sales growth rates of the Chinese light-duty commercial vehicle



market for the next five years. According to this estimation, the sales growth rates of the Chinese light-duty commercial vehicle for the next three years should be adjusted upwards by 5%, based on the average sales growth rate of the past five years. The sales growth rate for the fourth and fifth year should return to the average sales growth rate of the past five years. The sales growth rate estimated for each of the next five years was multiplied by respective previous years' predicted sales to estimate the sales of the Chinese light-duty commercial vehicle market for each of the next five years.

In the second step, Cino's marketing and sales department estimated Futong's market share in the Chinese light-duty commercial vehicle market for the next five years. Historical statistics about the market share of Futong in the past five years were obtained from CAAM. Further, the marketing and sales department collected macro world information about the selling price, sales policy, promotion policy and sales agents of Futong's light-duty commercial vehicles and those of Futong's local competitors. The sales information about Futong and its local competitors' commercial vehicles were then compared. The marketing and sales department combined historical statistics from CAAM and commercial vehicle sales information from Futong and its local competitors. This led to the estimation that the market share of Futong would increase at 3% each year in the following five years. Futong's market share for each of the following five years was calculated as the product of each year's growth rate and respective previous year's market share.

In the third step, the sales of Futong's light-duty commercial vehicles for the next five years were calculated as the product of the estimated size of the Chinese light-duty commercial vehicle market and Futong's share in the Chinese market. The estimated sales of Futong's light-duty commercial vehicles were then used to calculate Cino's share of the JV profits, based on the assumption of (i) 50:50 equal share investment and (ii) a penetration rate of engines that was the same as that used in the engine JV between Cino and Delink.

The same three-step accounting analysis was done for other leading light-duty commercial vehicle manufacturers in the Chinese market. Comparing Futong's predicted sales figures with those of other Chinese light-duty commercial vehicles OEMs revealed that Futong was likely to slowly increase its sales and expand its leading position in the Chinese light-duty commercial market in the following five years. This convinced the research collective that forming a light-duty engine JV with Futong

would enable Cino to generate considerably more profit than forming JVs with other local Chinese light-duty OEMs. If Cino did not form a JV with Futong, it would lose the best opportunity to enter and occupy the Chinese light-duty engine market.

In summary, in experimenting with the sustainability of Futong's leading position in the Chinese light-duty commercial vehicle market, the first two practices (competition analysis and referencing Delink's leading position in the Chinese medium-duty market) concurrently suggested Futong's 'weak' leading position. However, the third practice (three-step accounting analysis) suggested that Futong was the best available partner for the proposed light-duty engine JV in the Chinese market. This led the research collective to form the opinion of endorsing the enactment of the proposed light-duty engine JV model between Cino and Futong.

#### **6.4 The Emergence of Further Concerns**

When the proposed alliance portfolio model was enacted in practice, the partner firms acted mainly according to the JV contract. Sag (Futong) exerted their efforts primarily on increasing their commercial vehicle sales and reducing material and manufacturing labour costs. They voluntarily subordinated and made concessions whenever there was a conflict with Cino related to the management and manufacturing process of the heavy-duty (light-duty) engine JV. Further, Sag and Futong successfully lobbied local government to grant preferable tax policies, JV site location and leasing costs to the heavy- and light-duty engine JVs. As a result of the positive cooperative atmosphere between partner firms, the heavy- and light-duty engine JVs quickly entered production. The sales of commercial vehicles (equipped with engines made in the heavy- and light-duty JVs) increased significantly both in the Chinese and global markets. Correspondingly, Cino expanded its engine sales to non-Delink related customers in the Chinese market.

While forming heavy- and light-duty engine JVs enabled Cino to address the risk of over-dependence on Delink in the Chinese market, a new problem arose. This new problem was associated with Delink's uncooperative behaviour. Five years after the formation of heavy- and light-duty engine JVs, Delink began evidencing uncooperative behaviour against the medium-duty engine JV with Cino. Delink's uncooperative behaviour was reflected in accounting-related information and actions. First, Delink reduced the penetration rate of engines made in the engine JV (between Cino and Delink) that was to be adopted in Delink's medium-duty commercial vehicles. Cino was

told by Delink that the cost of engines made in the engine JV was too high, which made Delink's medium-duty commercial vehicles lose competitive advantage in the Chinese market. In response to the high engine cost, Delink started to use more of its own engines in its medium-duty commercial vehicles.<sup>14</sup> Cino was even notified by Delink that Delink would gradually use more and more of its own engines. This meant that the engine JV between Cino and Delink was losing and would increasingly lose engine sales to Delink. As such, Cino was losing and would increasingly lose revenue from the engine JV between Cino and Delink.

Second, Delink became resistant to voluntarily sharing accounting and engineering information with Cino, which the company used to do. In particular, Delink-appointed procurement personnel (accounting personnel) in the engine JV became reluctant to provide information about the list of suppliers of engine components (the quotes provided by those suppliers) to Cino-appointed personnel. Rather, only the eventually selected supplier and finalised transaction price was shared with Cino. In addition, Delink stopped disclosing engineering information about how the engines made in the engine JV matched with Delink's commercial vehicles. Delink's resistance to share accounting and engineering information made it difficult for Cino to improve (lower costs and develop better technology) the engines made in the engine JV. This new problem (Delink's uncooperative behaviour) led Cino to undertake a set of activities and practices to make sense of this issue, which will be discussed in the next chapter.

## **6.5 Discussion**

This section discusses how the findings of the data analysed in this chapter addressed the research questions of this thesis. First, we found that the risk of over-dependence on Delink in the engine JV was articulated as the outcome of an experimentation process. This experimentation process involved the formation of a research collective (primarily constituted by Cino's directors) in the micro world (a manageable virtual environment) to make sense of a concern (Cino's failure to enlarge the target customer range of the engine JV) that Cino encountered in the macro world (the daily operation of the engine JV with Delink). Second, the articulation of the risk of over-dependence on Delink

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<sup>14</sup> Delink had its own engine R&D and manufacturing factory that was entirely independent of Cino and the engine JV (between Cino and Delink). The name of the factory was Factory 49. Most engines made in Factory 49 were supplied to Delink's own commercial vehicles. Factory 49's ability to independently research, develop and manufacture engines continued improving after Delink's cooperation with Cino to make engines.

made the research collective experiment with risk solutions through adapting risk management models that had been used in the engine JV. This led to the hypothesis of crafting a JV portfolio with non-Delink related OEMs and respective management control models (partner selection and JV contract) as the solution to address the risk of over-dependence on Delink. Third, this chapter indicated that the return of the proposed JV portfolio model to the macro world for implementation addressed the risk of over-dependence on Delink, while simultaneously generating a new problem (relating to Delink's uncooperative behaviour).

The above findings can be divided into four themes: (i) constructing a risk management model, (ii) the mutually constitutive relationship between risk and risk management practices, (iii) using an alliance portfolio to hedge against risk and (iv) the connection between the corporate business relationship and personal reciprocal behaviour based on personal 'face'. These four themes are discussed below.

### **6.5.1 Constructing a risk management model**

This chapter has shown that an alliance portfolio (the formation of heavy- and light-duty engine JVs with non-Delink related firms) was hypothesised as the solution to deal with the risk of over-dependence on Delink. The proposal to form an alliance portfolio was formulated as the outcome of an experimentation process. In contrast to Chapter 5, this chapter showed that the primary object of experimentation was not a JV contract. This was because Cino proposed to adapt the JV contract that was used in the medium-duty engine JV for the heavy- and light-duty engine JVs. The JV contract used in the medium-duty engine JV (between Cino and Delink) was perceived by Futong and Sag as a successful practice; thus, these two targeted partner firms did not have major dissenting opinions on this model.

Rather, the experimentation process involved an iterative process that focused on (re)testing the suitability of Sag (Futong) to be the potential partner firm of the heavy-duty (light-duty) engine JV. The research collective initially targeted Sag (Futong) as the partner firm of the proposed heavy-duty (light-duty) engine JV because of Cino's business tradition of cooperating with leading local OEMs in any markets. With the emergence of unexpected macro world activities (Sag's acquisition by Cino's competitor firm, and the realisation of the short operating history of Futong), the research collective undertook a set of management control practices to imagine the likely effects of these unexpected activities on the heavy- and light-duty engine JVs.

These likely effects led to the research collective problematising the proposed JV portfolio model as a solution to the risk of over-dependence on Delink. In particular, the problem of the proposed JV portfolio model was related to the suitability of Sag (Futong) as the partner firm of the heavy-duty (light-duty) engine JV. The research collective even made the decision to withdraw negotiation with Sag for the proposal to form a heavy-duty engine JV. Interestingly, Sag's own management control power battle (the execution of a three-step accounting analysis) returned Cino to continue its negotiations with Sag (Futong) to enact the proposed heavy-duty (light-duty) engine JV model.

In short, Cino experienced struggles in crafting the JV portfolio model. These struggles were caused by unexpected activities that emerged while crafting the model. A set of management control actions were taken, either by Cino or a partner firm, that allowed Cino to re-test the suitability of Sag (Futong) as a partner firm for the proposed heavy-duty (light-duty) engine JV. Thus, the formulation of a JV portfolio model to address the risk of over-dependence on Delink was the outcome of the iterative experimentation process.

### **6.5.2 Mutually constitutive relationship between risk and risk management practices**

Similar to the finding in Chapter 5, this chapter found that risk and risk management practices (the mobilisation of management control actions and inscription, and the crafting of a JV portfolio model) co-constituted each other in the ongoing management of the medium-duty engine JV between Cino and Delink. On the one hand, risk management practices contributed to the articulation of risk. A set of management control actions (calculating and comparing the sales growth rate and market share of Delink and its competitor firms, interviewing the sales agents of Delink's commercial vehicles, and linking the results of accounting calculations and interviews) and inscriptions (interview scripts and numbers) were drawn to help the research collective realise Cino's exclusive dependence on Delink in the Chinese market. Another set of management control actions were further undertaken to help the research collective understand the potential effects of Cino's exclusive dependence on Delink. These management control actions included projecting how Delink would be affected by its competitor firms in the Chinese medium-duty commercial vehicle market, analysing parallel segments in the same commercial vehicle market, comparing the performance

of the Chinese market to that in other countries, referencing competitor firms' practice, and exemplifying Delink's past behaviour in the medium-duty engine JV. To execute these management control actions, inscriptions that included accounting information (such as the sales growth rate and market share) were drawn to bring macro world activity/information to the micro world, and enable combining and calculating of the information obtained from different sources. The combined use of these management control actions and inscriptions led to the development of the hypothesis of two effects (the loss of the opportunity to expand Cino's engine sales in the Chinese market and Delink's possible appropriation behaviour) that could be caused by Cino's exclusive dependence on Delink in the Chinese market. These two projected effects became the basis of articulating the risk of over-dependence on Delink.

On the other hand, the risks triggered selecting and combining different management control actions to craft risk management models. In particular, the articulation of the risk of over-dependence on Delink motivated the research collective to choose and connect a set of management control actions to seek possible risk solutions. These management control actions included open discussion between Cino's executives, competition analysis, referencing the existing JV partner firm's leading position, comparing the size of different segments of the Chinese commercial vehicle market, accounting calculation and analysis. Inscriptions were collected to facilitate the execution of different management control actions, including the engine penetration rate, size and sales growth rate of the Chinese commercial vehicle market, and sales volume and market share of the potential partner firm and their competitor firms. These management control actions and inscriptions together contributed to constructing the proposal to form a JV portfolio and respective management control model (partner selection and JV contract) as a solution to the risk of over-dependence on Delink.

Further, together with the findings in Chapter 5, this chapter has shown that the enactment of the engine JV model addressed reputational and financial risk under the technology licensing agreement, which simultaneously became the conduit for the articulation of the risk of over-reliance on Delink in the Chinese market. This suggests that new risk in inter-firm alliances may be created as the outcome of organisations' efforts to use these alliances to manage risks.

### **6.5.3 Using JV portfolio to hedge risk**

Cino formed a heavy-duty engine JV with Sag and light-duty engine JV with Futong, thereby crafting an alliance portfolio with non-Delink related firms to deal with the risk of over-dependence on Delink in the Chinese market. Cino was trying to enrol non-Delink related OEMs in its JV networks to exploit the Chinese heavy- and light-duty commercial vehicle market to mitigate the risk exposure (inability to make sales to non-Delink related OEMs) to Delink, while maintaining its relationship with Delink in the Chinese medium-duty vehicle market. Forming a JV portfolio in different segments of the market was the management control practice used to deal with risk in this market.

### **6.5.4 Connection between the corporate business relationship and personal reciprocal behaviour based on ‘face’**

Personal reciprocal behaviour based on ‘face’ has implications for the corporate business relationship. When Cino was about to withdraw its negotiations with Sag to form a heavy-duty engine JV, Sag mobilised Shanxi’s provincial governor to lobby Cino’s CEO to continue the JV negotiation. In particular, the governor asked Cino’s CEO to give him a ‘face’/favour to resume negotiations with Sag to form a heavy-duty engine JV. In return, the governor promised Cino’s CEO that Cino would receive preferable tax and operational policies. This personal reciprocal behaviour based on personal face partially contributed to Cino’s eventual return to negotiations with Sag for the proposal to form a heavy-duty engine JV. This laid the foundation for the formation of the JV.

## **6.6 Conclusion**

In summary, this chapter has discussed the three stages of the experimentation process through which risk and risk solutions were articulated. In the first stage of the experimentation process, the problem of failing to enlarge the target customer range of the engine JV between Cino and Delink was narrowed down to the problem of Cino’s exclusive dependence on Delink in the Chinese market. In the second stage, a research collective was formed to make sense of the potential effects of the problem of Cino’s exclusive dependence on Delink on Cino’s China business. This led to the articulation of the risk of over-dependence on Delink in the Chinese market.

The risk of over-dependence on Delink led the research collective to hypothesise a JV portfolio as the risk solution. In crafting a theoretical model for the proposed JV portfolio, the emergence of unexpected activities led the research collective to problematise the appropriateness of the proposed JV portfolio model to address the risk of over-dependence on Delink. Through another set of experimentation activities, the problem associated with the JV portfolio was solved. When the JV portfolio model was enacted and operationalised, it created a new problem in which Delink began to act uncooperatively against Cino. The next chapter examines the new round of experimentation undertaken to make sense of this problem and formulate a solution to manage it.



## **Chapter 7: Articulating New Risks in the Engine JV and Constructing an ATS JV**

### **7.1 Introduction**

This chapter analyses the processes and practices through which the risk exposure of losing trust with Delink was hypothesised, how an ATS JV model between Cino and Delink was constructed as the solution to mitigate the risk exposure, and how the enactment of the ATS JV model created new matters of concern. This chapter is organised as follows. Section 7.2 examines the processes of how the risk exposure of losing trust with Delink was hypothesised as the outcome of making sense of Delink's uncooperative behaviour. Section 7.3 discusses how the proposal of forming an ATS JV between Cino and Delink was experimented as the solution to rebuild trust with Delink. This section also discusses how risks in the proposed ATS JV and respective risk management control models were articulated. Section 7.4 discusses how the enactment and operation of the ATS JV generated new problems. Section 7.5 discusses the findings from the data analysed in this chapter, while Section 7.6 concludes this chapter.

### **7.2 Uncooperative Behaviour and Risks**

As discussed in the previous chapter, Delink began to act uncooperatively with Cino after Cino formed a JV portfolio with non-Delink related OEMs in the Chinese market. Delink's uncooperative behaviour was reflected in the reduced penetration rate of engines made in the medium-duty engine JV, and the firm's reluctance to share accounting- and engineering-related information with Delink. To understand why Delink behaved uncooperatively, Cino began an investigation with informal communications between Cino- and Delink-appointed personnel in the medium-duty engine JV. In particular, Cino-appointed personnel in the engine JV (such as the general manager of the JV) were required to actively engage with Delink-appointed personnel (such as the deputy general manager of the JV) through informal channels, such as causal chats during dining and coffee time, and other similar informal conversations. These informal communications aimed to help Cino determine the possible causes of Delink's uncooperative behaviour. These informal communications were based on personal friendship or *guanxi*, which refers to private conversations that are unrelated to

partner firm-level related decisions. The mobilisation of informal engagements to understand Delink's uncooperative behaviour was explained by the CEO of Cino:

During that sensitive time, I would recommend that any questions asked directly by Cino would be interpreted by Delink as foreshadow, where Cino would do something against Delink's interests. The easiest way to start with the investigation was through personal relationships. Some Cino- and Delink-appointed personnel in DECIE had developed very good personal relationships ... If you kept on attending informal functions with the same group of people, you would be treated as one member of their group and they would share more 'group information' with you. It was just the way things were done here in China.

According to the above quotation, the investigation of Delink's uncooperative behaviour started with informal engagements because Cino did not want to undertake any formal corporate-level communications. Cino's management team was afraid that such formal communications might be wrongly interpreted by Delink, and be likely to exacerbate Delink's uncooperative behaviour during the 'cold times' between Cino and Delink.

Through the informal engagement, a few opinions about Delink's uncooperative behaviour were collected from multiple Delink-appointed personnel in the medium-duty engine JV. A few inscriptions were mobilised and connected to each other to grant credibility to different opinions in explaining Delink's uncooperative behaviour. In particular, a summary report was prepared to record different opinions (collected from Delink-appointed personnel in the medium-duty engine JV) on Delink's uncooperative behaviour. With the mobilisation of numbers, different opinions were further coded, sorted and aggregated based on similarities. The number of frequencies of each group of opinion mentioned by Delink-appointed personnel was counted and ranked. This quantifying process helped Cino's management team focus on the two opinions with the highest frequency ranking. These two opinions were considered by Cino's management team to be the primary causes of Delink's uncooperative behaviour.

First, Delink was not quite happy about Cino's continuous formation of JVs with Sag and Futong. In particular, Delink thought that Cino's formation of JVs with Sag and Futong signalled that Cino was not confident about the engine JV with Delink. This made Delink develop the perception that Cino would not share all its best resources with Delink in the future. Second, Delink thought that Cino was not flexible in making

products that specifically suited the Chinese market. For Delink, Cino had rigorous procedures and standards for making engines and providing after-sale service. These procedures and standards for manufacturing and servicing engines were transplanted to the engine JV between Cino and Delink, which contributed to the high costs of making and servicing engines. This high cost made Delink's commercial vehicles lose a price competitive advantage to other local Chinese OEMs. This loss of competitive advantage was considered the primary reason for Delink's gradual decline of market share in the Chinese medium-duty commercial vehicle market.

To validate the plausibility of these two opinions (Delink's unhappiness with Cino's formation of JVs with non-Delink related OEMs and inflexibility to make products that fit the Chinese market) in explaining Delink's uncooperative behaviour, Cino's CEO personally engaged with Delink's CEO. Open-ended questions were asked by Cino's CEO in his 'friend talk' with Delink's CEO in the hope of gaining answers related to these two opinions. As the CEO of Cino explained:

We needed to approve this conjecture [Cino's inflexibility to make engines that suited the Chinese market and Delink's unhappiness with Cino's continuous formation of JVs with Futong and Sag as the causes of Delink's uncooperative behaviours]. Well, the best way to approve it was through my personal *guanxi* with Delink's CEO. Delink's CEO and I had been good friends in the past 20 years. He was in fact one of the earliest personnel with whom I was dealing back to the 1980s, when I was the manager of international business development in Cino. That time, Lixi was an engineering manager in Delink ... we had participated in the development and cooperation between Cino and Delink. We had also witnessed the development of Cino's business in China. Almost every time I came to China, he invited me to dinner ... I mean, we were really good friends. If he told me what was happening, I would no doubt believe that was what really happening. I invited him for coffee and dinner, just like the normal catching up between good friends. We were open-minded and shared our opinions about what was the problem between Cino and Delink and how to solve the problem.

The above quotation suggests that the informal engagement between Cino's and Delink's CEOs confirmed that Cino's inflexibility to make engines that suited the Chinese market and Cino's continuous formation of JVs with Futong and Sag were the causes of Delink's uncooperative behaviour. This analysis highlights the importance of informal engagement based on personal *guanxi* to diagnose problems between partner firms in inter-firm alliances. As discussed in the next section, this informal engagement

also provided a condition to initiate a solution to address the problem. Thus, informal engagement forms an effective control mechanism to manage inter-firm alliances. This is similar to the informal controls (such as trust-based self-enforcing safeguards) proposed in prior research (Dekker 2004; Langfield-Smith & Smith 2003; Vosselman & Van der Meer-Kooistra 2009). However, while previous research generally treated informal controls as an organisational-level control mechanism, the finding here extends prior research by suggesting that personal *guanxi* has important implications in the management of alliance relations.

Given that this was the first time Delink had displayed uncooperative behaviour towards Cino in their 30 years of cooperation, it was unclear how the two problems (that caused Delink's cooperative behaviour) would affect Cino's future business in the Chinese market, if unresolved. Thus, the ambiguity about the possible effects of these two problems became a matter of concern to Cino. To make sense of this matter of concern, the Cino-appointed general manager in the medium-duty engine JV and Cino's CEO, CFO and strategy director, as a research collective, tentatively predicted what further actions Delink might take against Cino, and the possible effects of these on Cino's future Chinese business. This process was undertaken through three interrelated analysis.

First, the research collective self-reflects on how well Cino met the needs of Chinese local end customers (purchasers of commercial vehicles equipped with Cino engines). The self-reflection revealed that the Chinese local end customers' needs had shifted from pursuing engine quality to engine price.<sup>15</sup> However, Cino was unaware of this shift in customer needs and had continued focusing on making high-quality engines. Making high-quality engines required Cino to implement rigorous procedures and standards, which made it difficult to control or lower engine costs.

Second, the research collective considered Delink's long-term business plan and business philosophy. Although Delink was currently focusing on the Chinese medium-duty commercial vehicle market, the company had the long-term plan of expanding its market share into the Chinese heavy- and light-duty commercial vehicle markets. In

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<sup>15</sup> The shift of local Chinese customers' needs was primarily due to significant improvement in the average quality of engines made by Chinese local engine and OEM companies. As the quality of engines significantly improved, the quality and performance differences between these engines and other engines based on world-leading technology were significantly reduced. In other words, engines made by local Chinese engine and OEM companies were more than sufficient to perform most work required by local Chinese customers. At the same time, engines made by local Chinese engine and OEM companies were generally cheaper than those made by a JV (with a foreign partner firm). As a result, increasing numbers of local Chinese customers were using engines made by Chinese local engine and OEM companies.

addition, as a typical Chinese government-owned enterprise, Cino had the business tradition of being 'loyal' to its partner firm. Delink considered that, if Cino decided to cooperate with Delink to make medium-duty engines, Cino should also cooperate with Delink to make heavy- and light-duty engines. Cino's cooperation with Futong and Sag made Delink quite upset. In fact, Cino's cooperation with Futong and Sag was interpreted by Delink as Cino helping Delink's competitors compete with Delink.

Third, the results of self-reflection and researching into Delink's long-term business plan and business philosophy allowed the research collective to imagine Delink's possible future actions against Cino, and the possible effects of this on Cino's Chinese business. The research collective predicted that the failure to meet the shifting needs of the Chinese local end customers in the Chinese medium-duty commercial vehicle market, and the perceived action of helping competitors in the Chinese heavy- and light-duty commercial vehicle markets might reduce Delink's commercial vehicle sales in the entire Chinese commercial vehicle market. This led the research collective to perceive that Delink would gradually lose confidence in Cino's competence to make engines suitable for the Chinese market, and sincerity to invest its best engine-related resources in the medium-duty engine JV. As such, if Delink's unhappiness with Cino's formation of JVs with non-Delink related OEMs and inflexibility to make Chinese-suitable products was unresolved, Delink would gradually reduce the engine penetration rate, or even cease cooperation with Cino. If the engine penetration rate continued reducing, Cino would gradually lose its biggest customer in the Chinese market. This would result in a significant source of revenue. As a result, the research collective hypothesised the existence of danger from losing confidence and sincerity between Cino and Delink.

Delink's confidence and sincerity in Cino resonates with two dimensions of trust between alliance partner firms (competence trust and goodwill trust) in Dekker (2004). Van der Meer-Kooistra and Vosselman (2000), Dekker (2004), Langfield-Smith and Smith (2003) and others highlighted the importance of having trust during the management of inter-firm alliances. The findings here share the same view with prior research, yet through a different angle—by highlighting the harmful effects of losing trust in an alliance relationship. In addition, while prior research has argued that trust is based on past cooperative experience or activities undertaken between partner firms, the findings here suggest that the trust between partner firms can also depend on their relationships with other actors (such as customers and competitor firms) in the partner firms' networks. For example, the risk exposure of losing trust was hypothesised based

on making sense of Delink's uncooperative behaviour. Delink's uncooperative behaviour originated from its perception that Cino was helping its competitors compete with Delink in the Chinese market, and Cino's rigorous standards and procedures for making and serving engines causing the company to lose commercial vehicle sales in the Chinese market.

### **7.3 Constructing an ATS JV to Rebuild Trust with Delink**

While hypothesising the existence of danger of losing trust between Cino and Delink, the research collective simultaneously experimented with possible solutions. The research collective sought to develop an economic arrangement that could rebuild trust between Cino and Delink. The collective proposed that Cino and Delink could cooperate to make ATSs (an important component of the engine). The idea to make ATSs with Delink originated from the informal engagement between Cino's and Delink's CEOs (as mentioned in the previous section). In this informal engagement, Delink's CEO mentioned that Delink was in the process of developing its own ATSs in order to end its dependence on Booth for the supply of ATSs.<sup>16</sup> This information was noted by Cino's CEO, who raised the issue with the research collective. The collective believed that if Cino helped Delink develop its own ATSs, Delink would appreciate Cino's efforts, which may improve the relationship between the two partner firms. Thus, cooperating with Delink to make ATSs was considered a very good opportunity for Cino to rebuild trust with Delink. To accomplish the economic arrangement of cooperating with Delink to make ATSs, the research collective proposed forming an ATS JV with Delink. Cino's past successful JV experience in China made the research collective automatically consider the JV option as the optimal solution when Cino wished to start a new ATS business in China, without considering the rationalities of alternative options.

After proposing the formation of an ATS JV with Delink, the research collective directed their attention to articulating a relational model that was intended to make the ATS JV function. The articulation of a relational model was achieved through an experimentation process involving the combined use of inscriptions and open discussion between actors in the research collective. The entire process of constructing a relational

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<sup>16</sup> Booth was the largest ATS manufacturer in the Chinese market, with monopoly power over the market. Delink had been using ATSs made by Booth since Booth entered the Chinese market, and Booth had absolute bargaining power in negotiating with Delink about ATS price. This made it difficult for Delink to lower ATS costs in order to reduce the overall cost of its commercial vehicles.

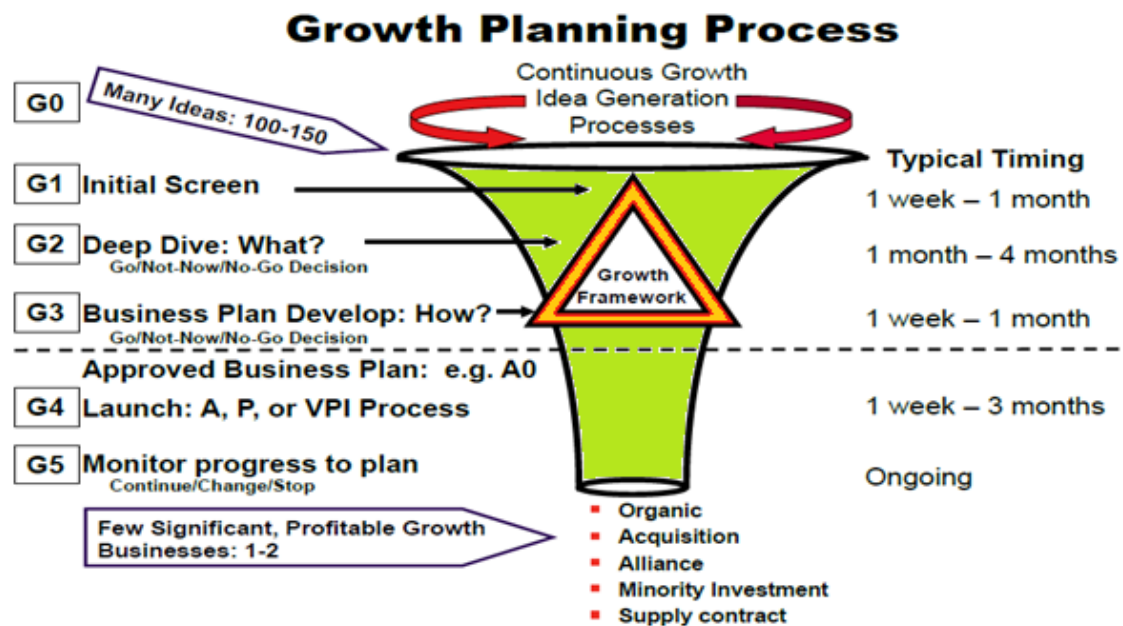
model for the ATS JV followed the A-review document. The A-review document is an inscription that provides a roadmap regarding how to select and process a business model, among a set of alternatives (including organic, acquisition, alliance, minority investment and supply contract—see Graph 2), when Cino wished to start a new business to achieve growth. The A-review document was developed by Cino in 2005 based on the company's past business experience and practice. The A-review document had six sequential stages:

1. G0 (Brainstorming of Ideas)
2. G1 (Initial Screen)
3. G2 (Deep Dive: What?)
4. G3 (Business Plan Develop: How)
5. G4 (Launch: A, P or Value Package Introduction Process)
6. G5 (Monitor Progress to Plan).

The time deadline for each of the six stages was projected in the A-review document, and specific questions that needed to be answered in each of the six stages were listed. These questions were extracted from the challenges, drawbacks, merits, and good and bad practices of Cino's past operating experience, and acted as a kind of a checklist to complete each stage of the A-review process. The importance of having a common practice (such as an A-review document) for undertaking business was outlined in Cino's Business Model and Operating System:

As we grow in existing markets and expand into new markets, we will have to demonstrate an even more disciplined approach to our work. We cannot hope to grow to a \$30B company without common processes and approaches. The Cino Business Model and Operating System (COS) [an A-review document is one type of COS] is how we will assure our success. Using COS better enables us to keep focused on the customer while continuously improving everything we do by working together to reduce variation and eliminate waste. COS is the common approach that will be applied globally across Cino regardless of the type of the business. This common approach is critical to the achievement of our aggressive growth plans and is the foundation for cross business unit and cross functional coordination (2012, p. 2).

In summary, the A-review document established the procedures that Cino should follow to design, evaluate, select and process a particular business model, and listed 'checklists' for each step.



**Graph 2: The A-Review Document**

Following the A-review document, the research collective tested the financial feasibility of the proposal to form an ATS JV by concurrently conducting three accounting analyses, including scenario, net present value (NPV), break-even and probability analyses. The scenario analysis primarily focused on estimating three accounting inscriptions for the potential ATS JV: sales volume, sale price and cost. The best, base and worst cases for each of the three items were obtained through discussions between participants in the A-review process. Different participants in the research collective were allocated to prepare the best, base and worst cases for each of the three accounting inscriptions. For example, the director of Cino's sales and marketing department was allocated to prepare the base, best and worst cases for sales volume and sale price, while the director of the procurement and engineering departments was required to prepare the best, base and worst cases for production cost.<sup>17</sup> After the scenario analysis was conducted, the three cases of sales volume, price and costs were passed to the accounting department to process the NPV and break-even analysis. The best, base and

<sup>17</sup> After a participant in the A-review document was allocated to conduct a particular task, he or she would call a meeting in his or her own department, which key employees of the department would attend. The best, base and worst cases of a particular accounting item were obtained through discussions between employees in that department. Each employee raised their own opinion (if possible) in the discussion based on their past experience, available knowledge (for example, this knowledge was obtained through formal and informal contact with the government, interviews with ATS sales agents, and information released by professional organisations) and personal feelings about the effects of possible future events on the three accounting items. This opinion was then challenged or discussed by other employees in the same department. Through these iterative discussions and debates, the best, base and worst cases of a particular accounting item were agreed among key employees in the same department. The director of the department would present this information to other A-review participants.



worst cases for each of the three accounting items were matched and integrated to obtain the best, base and worst cases of NPV and break-even year. That is:

In calculating the best case of NPV and break-even year, we used the highest revenue and lowest manufacturing costs obtained from the marketing and sales department and procurement and engineering department, respectively. Similarly, we used the lowest revenue and highest manufacturing costs to get the worst case of NPV and break-even year. The base case of NPV and break-even year were calculated based on the parameters [such as penetration rate, sales price and manufacturing costs] of our existing ATS sales to DECIE ... We also used @risk [software] to estimate the probability of the occurrence of a particular NPV as the NPV value itself might be misleading (Cino-appointed vice accounting manager in the ATS JV).

The NPV analysis was further connected to probability analysis. In particular, the probability of the occurrence of each of the three scenarios of NPV value was calculated. Calculating the probability of occurrence of each possible scenario of NPV was completed through a material device called @risk software. The role of @risk software in estimating the probability of occurrence of different NPV values was explained by the strategy manager of Cino:

The use of @risk to estimate the probability of the occurrence of a particular NPV was simple. We simply put all the parameters [such as sales volume, selling price and costs] and risk triggers [such as changes in the sales volume, selling price and costs] that might result in the changes on NPV into the model provided by @risk. The probability of the occurrence of corresponding NPV values would be shown on the computer screen. These probabilities were very important information to us. The NPV value itself might be misleading. For example, the NPV value might be quite high, but the high NPV value would be meaningless if the probability of the occurrence of this NPV value was only 10%. That is, there would be still high risk associated with the project of forming an ATS JV, as there was only a little chance of realising that high NPV value.

That is, calculating the probability of the occurrence of NPV values provided additional assurance in projecting the financial outcomes of the potential ATS JV.

The concurrent operation of NPV, break-even and probability analyses showed that:

- the base case of NPV was small
- the probability of the occurrence of the base case NPV was around 80%

- it would roughly take six years for the potential ATS JV to break even under the base case scenario
- the probability of achieving the worst and best cases of NPV was less than 10%.

The results of these three accounting analyses were connected, which revealed that the formation of an ATS JV had a high probability of not adding financial value to Cino. This led the research collective to hypothesise the existence of risk concern about the non-value adding of the proposed ATS JV.

The high probability of the risk of non-value adding, based on the A-review document, would suggest that Cino should abandon the proposal to form an ATS JV with Delink, and alternative solutions should be sought. However, the research collective ‘ignored’ the risk of non-value adding due to Cino’s CEO’s personal feelings and persistence to form the ATS JV. First, the CEO believed that the most important issue at that time was rebuilding trust with Delink. The formation of an ATS JV might not necessarily add financial benefits to Cino, but it was believed to enhance Delink’s trust in Cino. The enhanced trust would bring benefits to the long-term cooperation between Cino and Delink. Second, Cino had been using a JV model for its China operation for the past 20 years, which had brought significant benefits to Cino. This led Cino’s CEO to develop strong personal faith in the outcomes of using the JV model, and preference to use a JV as the best option for Cino to start a new business in China. Thus, the proposal to form an ATS JV with Delink passed the feasibility test.

The findings here highlight the importance of personal faith in driving the decision to form an ATS JV under high risk of non-value adding. This resembles Chua (1995), who found that accounting inscriptions help constitute personal faith, which drove accounting system change in three Australian hospitals. However, the findings here add to prior research by showing ‘ignorance’ as another way of dealing with risks. Given that managing risks may result in the risk management of nothing (Power 2009), should we just do nothing for risks? Here, the ‘ignorance’ of risk in the proposed ATS JV model contained the research collective’s belief in rebuilding trust between Cino and Delink to secure the benefits of the medium-duty engine JV. Under ANT, construction of the proposed ATS JV model would be interpreted as Cino’s effort to invest additional resources to its JV portfolio under possible overflows (the potential loss of trust between Cino and Delink due to Cino’s formation of heavy- and light-duty engine JVs with Sag and Futong, respectively) in order to maintain the stability of the network.

This finding extends prior research by demonstrating how, when trust is damaged between partner firms, it may be rebuilt through forming another alliance between the same partner firms.

After the proposed ATS JV model passed the feasibility test, the research collective experimented with possible challenges (guided by the A-review document) related to the future operation and management of the ATS JV. This experimentation process was conducted through a few interconnected practices, including brainstorming and discussions between A-review participants in the research collective, calculations and rankings. The discussion between A-review participants was a brainstorming process (following the A-review document) in which each participant was free to argue their opinions (based on their personal experiences and/or feelings) about the potential challenges that might arise in the future operation and management of the potential ATS JV. A total of 24 challenges were proposed. Each of the challenges was explained to other participants in the A-review process (the reason the problem was a challenge and the effect of the challenge on Cino's business). The participant who proposed a particular challenge was required to give:

- one score in a three-point range where 3 = least severity on Cino's businesses, 6 = medium severity on Cino's business and 9 = most severity on Cino's business
- one score in a three-point range where 3 = least probability of occurrence, 6 = medium probability of occurrence and 9 = highest probability of occurrence.

The participants also had to explain the reason they chose a particular score for a particular challenge item. Some participants did not agree with the scores given to particular challenge items, and the participant who proposed and scored the challenge items had to respond to these dissenters. A typical example of the debates between different participants in the A-review processes is listed below:

When I initially proposed the challenge of 'downward pricing pressures', I scored 9 marks for severity of the consequence and 9 marks for likelihood of the occurrence of this event ... Neil [manager of the strategy department] thought the score for the severity of the consequence of the 'downward pricing pressures' should be lowered down from 9 to 6 marks. He pointed out that the Chinese government's release of NS4 [an emission standard] would make Cino technology-based ATS more desirable and preferable than those of other competitors [few firms in the Chinese market were able to research, develop and make ATSs for engines to strictly meet NS4]. That is,

the release of NS4 would increase our bargaining power on negotiating the ATS price to be supplied to Delink's commercial vehicles. Well, I responded to Neil, saying that Delink would obtain ATS technology that would meet NS4 sooner or later, if not from us. Delink was negotiating with Vista [one of Cino's competitor firms] for forming a heavy-duty engine JV, and Delink would obtain the qualified ATS from Vista. Neil was eventually convinced by me ... Lynn [manager of the procurement department] also recommended lowering down the severity score. They told me that the price of the stainless steel [raw material to make ATSs] could be reduced by 5%, which would buffer the effects of 'downward pricing pressure'. Well ... I didn't have any information about the raw material price changes and I was convinced by her. Eventually, we reset the severity score for 'downward pricing pressure' at 6 (Cino-appointed general manager in the ATS JV).

As seen in the above quotation, the score for the severity and probability of occurrence of different challenge items became the object of discussion between the A-review participants. Through these discussions, a final score for the severity and probability of occurrence of different challenge items was finalised. The score of severity was multiplied by the score of probability to obtain a total score. The nine challenge items (proposed by all A-review participants) with the highest total score were labelled as risks in the proposed ATS JV model. These nine risks included flexible products to be made in the JV, unclear scope of activity, Delink not adopting the volume as promised, downward pricing pressure, kits not purchased from Cino, the effect on one of Cino's supplier, sufficient resource allocation for execution, general manager selection delay, and lack of experience with JVs. These nine risks are shown in Graph 3.

These nine risks were articulated in the process of crafting the ATS JV model before the formation of this ATS JV. This finding extends prior research (e.g., Das & Teng 1998, 2002; Dekker 2004), which generally treated risk in inter-firm alliances as a pure post-alliance formation phenomena. In addition, given that the purpose of crafting the ATS JV model was to address the risk exposure of losing trust with Delink, it could be interpreted that new risks were created by the ATS JV as the outcome of the research collective's efforts to manage risk in the medium-duty engine JV. This finding supports Vinnari and Skærbæk (2014), who argued that risk management may create uncertainties that would otherwise not emerge. Vinnari and Skærbæk's (2014) finding of the uncertainties of risk management was based on the study of a single municipality in a public sector setting; thus, this thesis extends their findings to an economic context

that comprised multiple inter-firm alliances. This economic context shows how risk management of one inter-firm alliance may create new risks in a different alliance.

In articulating the nine risks in the proposed ATS JV, the research collective simultaneously sought possible mitigation actions to these risks. In seeking these possible mitigation actions, the research collective undertook an experimentation process involving three sequential processes of drafting and categorising mitigation actions, constructing an initial term sheet and signing an ATS JV contract, and settling conflicts on key management positions in the ATS JV. This experimentation process involved a set of calculating and ranking practices, which were made possible through the combined use of open discussions and inscriptions. These

#	Risk	Sev.	Lik.	RPN	Business Impact	Mitigation Category	Mitigate Action	Action Owner	Status
1	"Flexible" products to be made in JV	9	9	81	Business values	Boundary (walk-away) / On-going management	Existing agreement in principle with Delink. Include in JV contract with clear definition of what constitutes "Flexible" and why it is important.	Negotiation Team	G
2	Scope of activity unclear	6	9	54	Partner issues	Term sheet item (neg. out)	Develop and communicate clear scope of activity with Delink	A	G
3	Delink doesn't take volume promised	9	6	54	Revenue/profitability	Unanswered risk	Continue to engage Delink on regular basis to ensure development plan, timeline is communicated and open up opportunity Cino engineering to work with Delink plant VPI programs in 2012. Additional idea is limiting scope to Delink (not traditional 2-channel JV model) puts all focus on Delink volume and creates incentives and visibility.	A	Y
4	Downward pricing pressures	6	9	54	JV & Cino Profitability	Unanswered risk	Add in estimated price reductions into scenario analysis in Financial model	A B	Y
6	Kits not purchased from Cino	6	6	36	Cino Profitability	Term sheet item (neg. out) / On-going management	Spin off project - develop clear cost reduction targets for key sourced components by end of Q1 2012 to match expected competitors actions. Also market space and pressure on JV for cost reduction.	A C D	Y
<b>Cino Internally Controllable</b>									
5	Impact on other partnerships - supplier partners	9	6	54	Partner Issues	Cino internal controllable	Compensate supplier partners; secure other critical customers	C D E	Y
7	Sufficient resource allocation for execution	6	6	36	Flawed execution	Cino internal controllable	Focus Cino resources on availability for VPI programs, and identify core team responsible for project implementation	F G H	G
8	GM selection delay	6	6	36	Flawed execution	Cino internal controllable		I G	G
9	BU inertia - lack of experience with JVs	6	6	36	Flawed execution	Cino internal controllable	engage top management full support to leverage China based JV experience for negotiation and implementation phases. Also legal team in negotiations and structuring for final contract	A	G

**Graph 3: Risks and MCSs Articulated in the ATS JV**

### 7.3.1 Drafting and categorising mitigation actions

The experimentation process began by drafting possible actions that may have the potential to mitigate each risk in the proposed ATS JV. In drafting possible mitigation actions, the research collective focused on the effect of each risk on Cino's specific business functions. Focusing on the effect of risks enabled the research collective to target relevant action owners/teams to draft the possible mitigation actions for each risk. Each targeted action owner/team was required to propose a mitigation action to deal

with the respective risk. After all mitigation actions were proposed, three terms (internal, uncertain and external) were used to code and categorise the proposed mitigation actions. This coding and categorisation process helped determine the method and timing to execute different mitigation actions. Internal mitigation actions were treated as those that could be controlled by Cino itself, which were operated immediately. The mitigation actions to deal with unanswered risk<sup>18</sup> were categorised as ‘uncertain mitigation action’. Accounting numbers were used to quantify the predicted effects of the uncertain mitigation actions on risks, which were then built into accounting models (scenario, NPV and break-even analyses) to calculate the corresponding accounting outcomes. The drafting and enactment of external mitigation had to be negotiated with the partner firm during the formation and ongoing management of the JV. These external mitigation actions laid the foundation to produce a new inscription, called an ‘initial term sheet’ (see Graph 4) that was intended to guide Cino’s future negotiation with Delink to structure the proposed ATS JV.

	Delink proposed	Cino final desired	Starting pos.	Walk-away	Criticality
Ownership structure	51:49	50:50	50:50	Still evaluating Delink claim for 51:49 benefits	Medium
Partnership Scope	All vehicles, engines, markets, regs	All vehicles, engines, markets, regs	All vehicles, engines, markets, regs	All vehicles, engines, markets, regs	Low
Management structure	Delink Chairman 3-3 Board	3-3 Board	3-3 Board	3-3 Board	Medium
Operational structure	Cino GM	Cino GM, Purchasing, Ops/Mfg	Cino GM, Purchasing, Ops/Mfg	Cino GM, Purchasing	High
Supply structure	Cino kits to JV	Cino kits to JV	Cino kits to JV	Cino kits to JV	High
Land ownership	DFI land	JV owns land	JV buys land	JV owns land	Medium
Profit structure	Cost+	Cost+	Cost+	Cost+	Medium
Engineering Licenses & royalty	2%	Amortized engineering costs & 2%	Amortized engineering costs + 2% on system	2% on system	Medium
R&D/Engineering	R&D in JV (AE/VI)	No core R&D (AE/VI OK)	No core R&D (AE/VI OK)	No core R&D (AE/VI OK)	Critical
Non-partner sales	Board decision	No non-partner sales	No non-partner	No non-partner	Critical
Branding	Delink branded	Delink branded	Delink branded	Delink branded	Low
Warranty	Only manufacturing warranty	JV owns all warranty	JV owns all warranty	All warranty borne by Cino	Medium

**Graph 4: Initial Term Sheet**

### 7.3.2 Constructing an initial term sheet and signing the ATS JV contract

When constructing the initial term sheet, the research collective discussed and listed Cino’s preferred management structure for the proposed ATS JV. The collective also

<sup>18</sup> The unanswered risk is the risk for which Cummins was really not sure about the likelihood about their occurrence.

used their past JV operation experience to predict Delink's preferred management structure to be used in the proposed ATS JV. This management structure included ownership structure, partnership scope, operational structure, supply structure, land ownership, profit structure, engineering licenses and royalties, R&D/engineering, branding, and warranty and risk management. Further, when constructing the initial term sheet, the research collective simulated possible consensus and conflicts that might appear in future negotiations between partner firms regarding the choices of the management structure in the proposed ATS JV. They also highlighted Cino's bottom line for each management structure option, and distributed efforts in elaborating strategies to solve possible conflicts between partner firms. The logic of preparing the initial term sheet was explained by the CEO of Cino:

Basically, the term sheet was guidance for our negotiations with Delink. It provided us an instruction or checklist in the negotiation with Delink. It provided a hypothetical negotiation scene that more or less depicted what would happen in real negotiations. By looking at the term sheet, we were able to know the specific items on which we and Delink would most likely have divergence. This made it possible for us to think about possible strategies and methods of convincing Delink to accept our proposal prior to the real negotiation process, and to fully understand and bear our bottom lines for different items in our mind in the real negotiation process. You know, the negotiation process somehow was like an auction. You might be temporarily convinced by the auctioneer who had good auctioning skills for bidding very high price. But later on, when you went back home, you realised that the price you offered in the auction was not rational. It was the same thing here in the negotiation process. Once you said 'yes' and signed the agreement, it would be hard to turn it around later on. By having the term sheet in advance, it would put us at an advantaged position in the negotiation process.

In short, the research collective constructed the initial term sheet with the aim of helping Cino prepare and practice its future official negotiations with Delink for the formation and management structure choices of the proposed ATS JV.

Delink was enrolled to finalise the management structure to be used in the proposed ATS JV. Delink was successfully enrolled in the proposal to form an ATS JV because the research collective considered Delink's interest—Delink was eager to develop its own ATS. Cino and Delink reached agreement without much debate on most items listed in the initial term sheet, and both parties felt that it was time to sign the JV

contract because the main direction of the potential JV had been oriented based on the agreed items. This was explained by the manager of the strategy department of Cino:

Given that the most controversial items in the term sheet had been settled and agreed upon by both parties, it was time to sign the JV contract. We wanted to close the deal as soon as possible in case Delink would change its mind on the agreed items later on. Delink was also eager to put the ATS JV into production as soon as possible to cope with its already-started ATS researching and developing process, which were aiming to match with its own engines that would meet NS4. Both parties thought that signing the JV contract and starting JV operation as soon as possible was the first priority after the big directions of the JV had been oriented, and the detailed stuff for which both parties had not agreed upon could be solved later on.

Thus, the contract for the potential ATS JV was constructed and signed by both parties. However, there were different opinions on the appointment of three key management positions (the accounting manager, procurement manager and engineering manager) in the potential ATS JV. These items were not settled in this meeting, and both partner firms decided to leave these issues to be discussed and resolved in the future.

### **7.3.3 Settling conflicts on key management positions in the ATS JV**

After the JV contract was signed, yet prior to the actual operationalisation of the ATS JV, the controversies between Cino and Delink on key management positions (the managers of the procurement, engineering and accounting departments) in the ATS JV were settled in different ways. First, it was agreed between the partner firms that Cino would appoint the engineering manager in the ATS JV. Cino highlighted the importance of beginning operation of the ATS JV as soon as possible by using both partner firms' existing strengths, challenged Delink's lack of experience and knowledge in engineering and making world-leading ATSs, and highlighted the role of Cino-appointed personnel in helping Delink acquire resources from Cino. These arguments convinced Delink to accept Cino's proposal to use a Cino-appointed engineering manager in the JV.

Second, the controversies between Cino and Delink on procurement manager in the JV were settled with the agreement to establish a procurement committee. Delink exemplified the past practice of the engine JV (between Cino and Delink), and highlighted their ability to access low-price engine supplies. However, by drawing on past experience in the engine JV (where Delink used its position of leading the



procurement department to gain private benefits at the cost of the JV and Cino), Cino learnt that it was important not to give full procurement power in the ATS JV to Delink. Rather, Cino proposed to establish a procurement committee in the potential ATS JV that included three Cino-appointed personnel and three Delink-appointed personnel, if a Delink-appointed staff member was the procurement manager in the ATS JV. The use of a purchasing committee was explained by the general manager of the ATS JV:

After several rounds of contacts with Delink and field trips to its manufacturing plant, I thought Delink had its own strength in procurement [such as large supplier networks], which could be utilised to bring benefits to the JV. That was why I compromised to take Delink's proposal of making Delink-appointed personnel as the procurement manager. However, taking into consideration of Cino's past JV experience [DECIE], where the Delink-appointed procurement manager selected higher-than-average market price raw materials from Delink-related suppliers, I thought we should not give the entire procurement power to Delink. Thus, the idea of a procurement committee came. Basically, each partner assigned three personnel as the committee members, and all key procurement decisions would have to be approved by the procurement committee. This would balance Cino's and Delink's powers in key procurement decisions.

In short, Cino sought to mobilise the procurement committee to balance the power of Delink in unilaterally making procurement-related decisions.

Third, it was agreed that two accounting managers would be appointed in the ATS JV—one Cino-appointed deputy manager and one Delink-appointed manager. Initially, Delink hoped to have only one accounting manager in the ATS JV. However, Cino argued that, since Cino's financial statements, budget and other financial documents needed to be prepared in English, it would be very important for Cino to access timely information about costs, revenues and other accounting information. This argument caused Delink to accept Cino's proposal of adding one deputy accounting manager position in the ATS JV. Further, Cino hired one previous Delink accounting person, and appointed that person as the Cino-appointed deputy manager in the ATS JV. Drawing on past engine JV experience, Cino learnt that Delink might resist providing accounting information about the ATS JV to Cino in the future. Hiring a previous Delink accounting person would allow Cino to at least obtain some accounting-related information (such as the original filtration cost when Delink purchased filtrations from

Booth), which would enable Cino to avoid becoming completely ‘blind’ to such information. This was explained by the general manager of the ATS JV:

In case the same thing might happen again [Delink resisting providing accounting information about the JV/DECIE to Cino] in DECIATS that would make us totally become blind about what was happening in the JV, we had to think about alternative ways that would allow us to access those accounting information. The hiring of Delink’s previous accounting manager was the quickest and easiest way that would ensure that we would have some basic accounting information about Delink [such as suppliers, material purchasing price and the cost of manufacturing engines by Delink].

As can be seen from above, by drawing on past engine JV experience, Cino learnt that Delink might resist providing accounting information about the ATS JV to Cino in the future. To mitigate this risk, Cino hired a previous Delink accounting person, and appointed this person as the deputy accounting manager in the ATS JV to implicitly ‘monitor’ the actions of the Delink-appointed accounting manager in the ATS JV.

In summary, Cino learnt lessons from its past JV cooperative experience with Delink. These lessons made the research collective initiate semi-innovative solutions in three key management positions (the accounting manager, procurement manager and engineering manager) in the proposed ATS JV. These solutions were semi-innovative in the sense that they combined the research collective’s willingness to replicate counterpart management models in the medium-duty engine JV, and added new components to these counterpart management models to avoid Delink’s possible opportunistic behaviour in the future operation of the proposed ATS JV. This finding is similar to prior research (e.g., Anderson et al. 2015; Ding, Dekker & Groot 2013) that highlighted the importance of past experience between partner firms in designing and selecting MCSs in inter-firm alliances.

## **7.4 Some Further Matters of Concern**

When the proposed ATS JV models were enacted, both partner firms acted strictly according to the JV contract. In addition, to ensure the survival of the ATS JV in its first few years of operation, the medium-duty engine JV promised a high penetration rate of ATSS made in the ATS JV, with the hope of giving significant financial support to the ATS JV. Cino invested its most recent world-leading technology to make core ATS components. These core components were supplied to the ATS JV to ensure the quality and competitiveness of the ATSS made in the JV. As a result, the ATS JV was quickly

put into production. However, the enactment and operation of the ATS JV model simultaneously became a conduit for internal conflicts between Cino and its multiple JVs. These internal conflicts were triggered by the Chinese government's unexpected 'harmonisation' process to upgrade the emission standard.<sup>19</sup> The government's 'harmonisation' process made Delink's commercial vehicles (equipped with Cino technology-based engines) lose significant price competitive advantage in the Chinese market. It took Cino four years to research and develop the ATSs used in the engines (that would meet NS4) made in the engine JV. A large amount of money had been invested in this R&D process, which made Cino technology-based ATSs more expensive than those of its competitors in the Chinese market. The expensive ATSs partially contributed to the high costs of engines made in the engine JV (between Cino and Delink). Cino expected to recover the large amount of ATS R&D costs through increasing engine sales. However, it was expected that upgrading the emission standard would limit the total number of engines that would be available in the Chinese market, as engines that did not meet NS4 would be gradually eliminated. This was expected to increase the market share of Delink's commercial vehicles that were equipped with Cino technology-based engines. However, due to the Chinese government 'harmonisation' process, engines and commercial vehicles that did not meet NS4 were still allowed to be used and sold in the Chinese market. This made Delink's commercial vehicles much more expensive than those of Delink's competitors that used 'unqualified'

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<sup>19</sup> The Chinese government's 'harmonisation' process occurred when the date of implementing the NS4 was unexpectedly postponed from its pre-specified date by the government. Due to the 'harmonisation' process, engines that did not meet the NS4 standard could now be sold in the Chinese market.

The 'harmonisation' process happened for two reasons. First, the Chinese government wished to protect local commercial vehicle and engine companies. A large number of Chinese engine and commercial vehicle companies did not have the capacity to independently research and develop engines that could meet NS4 by the original deadline. If commercial vehicle and engine firms that did not have the capacity to meet the NS4 were still forced to meet the NS4, they would need to outsource engines or ATSs (the key component in the engine that had a primary role in determining whether the engine met NS4) from other companies. The price of the outsourced engines or engine technology to meet NS4 would be significantly higher. That is, strict enforcement to implement NS4 would significantly (i) reduce Chinese local firms' motivation to research and develop independent ATS technology and (ii) increase the price of engines and commercial vehicles in the Chinese market, which a large number of consumers would be unable to afford. To support the development of the local Chinese ATS industry and increase the affordability for Chinese commercial vehicle consumers, the Chinese government decided to harmonise the compliance of meeting NS4.

Second, the Chinese government wished to avoid potential market turmoil. The diesel oil available in the Chinese market had not yet achieved a quality that would match NS4-compliant engines. The diesel oil available in the Chinese market was monopolised and supplied by China Petroleum Group and Sinopec. These two companies were not active in researching and developing a new generation of oil product, as there was no competition in the Chinese diesel oil market. The diesel oil supplied by China Petroleum Group and Sinopec was not qualified to match NS4-compliant engines. If this 'unqualified' diesel oil was used in NS4-compliant engines, it would damage or reduce the lifespan of the engines. Thus, avoiding potential market turmoil was another factor that led the Chinese central government to 'harmonise' the implementation of NS4-compliant engines.

engines (engines that did not meet NS4). The effects of the government's harmonisation process on Cino were as follows:

We started to research and develop ATS technology that would make engines [made in DECIE] meet NS4 as soon as the Chinese government released its intention of adopting NS4. That is, it took us almost four years, from the time when the intention of adopting NS4 was informed to the time when the NS4 was originally supposed to be implemented, in researching and developing ATS technology. You know, we could not wait until the last minute to research and develop ATS technology! The research process did take time, as we had to do all the preparation work in advance. The postpone of implementing NS4 destroyed our plans, as it would mean that it would take a longer time to recover R&D costs as no customers in China were willing to pay a higher price for commercial vehicles that met NS4 when there were much cheaper ones available in the market (chief secretary of DECIE's general manager).

It was clear that Delink's commercial vehicles (equipped with engines made in the engine JV) lost a price competitive advantage in the Chinese market because of the high costs of ATSs and engines. This loss of a competitive advantage significantly reduced sales of Delink's commercial vehicles, and Delink started to press Cino to reduce the cost of engines made in the engine JV.

The pressure from Delink to reduce engine price was initially imposed on the engine JV between Cino and Delink. In particular, Delink requested further reduction of the penetration rate of engines made in the engine JV to be adopted in Delink's commercial vehicles. This was explained by the strategy manager of Cino:

Delink raised the point that the engine [made in DECIE] price was too high for them, in the DECIE annual board meeting. Delink was thinking to use more and more engines made by itself [engines made by Delink's own independent engine factory] in those commercial vehicles to be digested internally within the Chinese market, and to equip engines made in DECIE in those commercial vehicles to be exported overseas. This would mean that Delink would rely more and more on engines made by itself, while reducing the dependence on Cino technology-based engines made in DECIE. This would have significant negative impacts on Cino's China engine business, given that Delink was our largest OEM customer in China.

As can be seen, in response to the decreased sales of medium-duty commercial vehicles in the Chinese market, Delink planned to replace engines made in the engine JV with engines made by itself in its medium-duty commercial vehicles. That is, Delink thought

that the price of engines made in the engine JV was much higher than those made by local Chinese engine manufacturers. Given that the majority of engine technology, management and operation culture in the engine JV was adopted from Cino, Delink thought that Cino should have the primary responsibility of lowering the engine cost. Delink's intention to reduce the penetration rate of engines made in the engine JV to be adopted in Delink's commercial vehicles placed pressure on Cino and the engine JV to consider possible ways to lower the overall engine cost.

The engine JV transferred the pressure (from Delink) to reduce engine cost to the ATS JV. The ATS JV supplied ATSs to the engine JV. In the engine JV, the ATS was one of the most expensive engine components, yet contributed least to the overall engine performance and stability. In addition, the engine JV believed that the ATS JV, in its early years of operation, lacked experience in making ATSs, which led to the high ATS cost. This was explained by the chief strategy manager of the engine JV:

When we [DECIE] sold engines to Delink, it was a whole package. The whole package included everything, including the engine base and technology, ATS, fuel system, so on and so forth. Delink did not care how different components were made and assembled. What they cared was the price of these engines that we supplied to them. I mean, it would not help at all if we told Delink that it was the government requirement of making NS4-complied engines that raised the overall engine prices. Delink would think it would be our own business and we would handle it ourselves. The best thing we could do was to find ways to reduce the overall cost of the engines supplied to Delink. Given that we [DECIE] had been operating for more than 15 years and had mature practice and management experience of making engines, I thought that the best thing to do was to lower down the cost of ATSs purchased from DECIATS. The ATS was a non-value added component in the engine, which was one of the most expensive components in the engine. Also, you know, this year was only DECIATS's second year of operations. I doubted whether they had done its best of controlling the cost of making ATSs. If you look at other ATSs available in the Chinese market, the prices of those ATSs were much cheaper than those made in DECIATS.

For the engine JV, the ATS JV's lack of experience was the major reason for the high cost of ATSs, and the ATS JV should act to reduce the cost of making the ATSs. Thus, the engine JV told the ATS JV that if the cost of the ATSs could not be reduced to a level that was similar to the average market price, the engine JV might outsource the ATSs to other companies.

The ATS JV believed that it was not its own responsibility to lower ATS costs to reduce the overall engine cost. First, the identity of Cino as the major component supplier of the ATS JV made it difficult for the ATS JV to reduce the cost of making ATSSs. In particular, Cino supplied core ATS technology to the ATS JV, and Cino always aimed to sell the core ATS technology to the ATS JV at as high a price as possible so that Cino could earn a high profit margin:

The core ATS technology used in DECIATS was supplied by Cino. Cino, as a worldwide and publicly listed firm, was always pursuing to maximise its profits. They had many indicators to meet each year, and they had to meet those key indicators to obtain more resources from Cino's head office for sustaining its future operations in China. The pressure of meeting those indicators was one reason why they supplied ATS technology to us at the highest sales price that they thought appropriate. But, you know, the cost of purchasing core ATS technology took up about 30% of the overall cost of making ATSSs, which was one of the biggest costs to us (general manager of the ATS JV).

Unfortunately, the ATS JV had no choice but to purchase core ATS technology from Cino. This was because the ATS JV was a 50%-owned subsidiary of Cino, and Cino took it for granted that the ATS JV would eventually purchase core ATS technology from Cino, regardless of how this component was charged by Cino:

Our [DECIATS's] relationship with Cino was like the relationship between a father and son. Cino was the father and DECIATS was the son in such relationship. Given that DECIATS was still in its early years of operations, the JV relied heavily on Cino. For example, the annual working capital was contributed and shared by both partner firms; some operational, management and strategic decisions needed the support from Cino. It was like DECIATS, the son, did not have independent decision-making capacity. And Cino, the father, was making decisions on behalf of the son. In turn, Cino thought DECIATS would do whatever was required by Cino. So, we had no choice but accept whatever price was being quoted by Cino (general manager of the ATS JV).

Cino's use of performance-driven indicators and the parent-subsidary relationship between Cino and the ATS JV made it difficult for the ATS JV to reduce the cost of making the ATS.

The ATS JV believed that the engine JV should have the major responsibility of reducing overall engine costs. From the ATS JV's perspective, the engine JV had been

operating for more than 20 years and should be more experienced than the ATS JV in the Chinese environment (such as knowing how to negotiate with suppliers, deal with JV partners, and streamline cost control and the manufacturing process). In addition, engines made by the engine JV comprised different components, including fuel systems, ATSS, turbo systems, filtration and other components. The ATS JV believed that the engine JV would have more flexibility (than the ATS JV) to reduce the cost of making engines. This was explained by the general manager of the ATS JV:

DECIE had been operating in China for more than 15 years, while we [DECIATS] just started our operation one year ago. They knew pretty much everything here ... Who do you think is more experienced and should take the leading role of lowering costs? I think they should streamline their manufacturing process in putting different components together. They should exert efforts to negotiate with all its suppliers to lower down the costs of purchasing different engine components. They have much better opportunities than us to do this. You know, how would you expect us [DECIATS] to bargain against our parent company [Cino] to lower down costs of purchasing components? DECIE has many external suppliers outside of Cino systems. Also, I think they should streamline their manufacturing process. I visited their manufacturing plant twice, and I think I would only need half of the employees than what they did to complete the same amount of workload.

The ATS JV believed that the engine JV should consider ways to reduce the cost of making engines, rather than pressing others to achieve this target.

Further, the ATS JV believed that the existing manufacturing and management control procedure in the ATS JV was overly tedious, which made it difficult to reduce costs. All manufacturing and management practices undertaken in the ATS JV had to follow those pre-set standard procedures. Two examples of these tedious manufacturing and management controls were explained by the general manager of the ATS JV:

After the time when the Chinese government released the plan of implementing NS4, all ATSS made in DECIATS were required by Cino to strictly achieve the standard and quality that would make engines meet NS4. Even when almost all the rest of local engine companies kept on making ATSS that would only allow relevant engines to meet NS3, Cino still insisted in making ATSS that would satisfy NS4-compliant engines. This would, of course, reduce the sales of Delink's commercial vehicles that were equipped with ATSS made by us, as the cost of making those ATSS was much more expensive ... It was not until the Chinese government officially announced the

postponed implementation of NS4 that DECIATS was allowed by Cino to come back to make ATSs for NS3-complied engines.

The general process for researching, developing and making a new ATS product was concept design and approval, VPI, engineering application and road testing. The concept design and approval and VPI were done in the US head office. And the VPC/engineering application and road testing were done locally in China. Once a standard ATS product was designed, all variations, no matter how big or small, as required to be customised by customers would trigger the re-starting of all these processes. Re-going through the whole process would also mean more costs, which would eventually be added in the final products. If you look at Weecai [Cino's competitor], they were quite quick and flexible in adjusting their manufacturing process to tailor customers' needs. If the same situation happened to Weecai, they would address the variation within three days without re-going through the whole process [from design to road testing].

That is, the ATS JV believed that the manufacturing and management control procedures used in the ATS JV (as required by Cino) limited the JV's ability to lower the cost of manufacturing ATSs. Thus, the ATS JV believed it had limited capacity and flexibility to reduce the cost of making ATSs, and the engine JV and Cino should take the major responsibility for reducing engine costs. The continuous transfer of responsibility for lowering costs among Cino and its subsidiaries became a new problem to Cino.

## **7.5 Discussion**

This section discusses how the findings of the data analysed in this chapter addressed the research questions of this thesis. First, we found that the risk of losing trust with Delink was articulated as the outcome of an experimentation process. This experimentation process involved seeking the causes of the problem (Delink's uncooperative behaviour) that Cino encountered in the macro world (the daily operation of the JV portfolio) and constituting a research collective (comprising A-review participants) in the micro world (a manageable virtual environment) to hypothesise the potential effects of this problem. Second, the articulation of risks led the research collective to draw and connect a set of management control actions (such as accounting calculation, open discussion, mobilising the A-review document and brainstorming) with the hope of seeking and developing solutions to these risks. This led to the development of the proposal to form an ATS JV to mitigate the risk exposure of losing



trust with Delink, and crafting theoretical management control models (mitigation actions, JV contract and key management positions) to deal with risks in the proposed ATS JV.

Third, this chapter showed that, in crafting an ATS JV model to mitigate the risk exposure of losing trust with Delink, new risks associated with future negotiations (with Delink) and operation of the proposed ATS JV were simultaneously articulated. This chapter also demonstrated that implementing the proposed ATS JV model in the macro world for operation unexpectedly generated conflicts between the organisation's own subsidiaries and JVs.

The above findings revealed four themes: (i) the construction of risk management models, (ii) the mutually constitutive relationship between risk and risk management practices, (iii) the use of JV to rebuild trust between partner firms and (iv) the connection between corporate business relationships and personal *guanxi*. These four themes are discussed below.

### **7.5.1 Constructing risk management models**

This chapter has demonstrated that forming an ATS JV with Delink, mitigation actions, a JV contract and key management positions were the theoretical models used by Cino to manage risks. Similar to Chapters 5 and 6, these risk management models were constructed as the outcome of an experimentation process. Different to Chapters 5 and 6, the focus of the experimentation process was testing the feasibility of forming an ATS JV and crafting a management control model to deal with foreseeable risks in the proposed ATS JV. The feasibility of the proposal to form an ATS JV as a solution to mitigate the risk exposure of losing trust with Delink was tested through four accounting calculations (scenario, NPV, break-even and probability analyses). The management model (mitigation actions, JV contract and key management positions) for risk management of the proposed ATS JV were crafted as the outcome of a set of sequential actions, including initiating and categorising possible mitigation actions for risks, constructing an initial term sheet, drafting and signing an ATS JV contract, and settling debates between Cino and Delink on key management positions in the ATS JV. Thus, the proposal to form an ATS JV with Delink and relevant risk management models to be used in the proposed ATS JV were not prescribed based on theoretical principles or alliance transaction characteristics, as suggested in prior research (e.g., Das

& Teng 1998; Dekker 2004), but constructed as the outcome of an organised experimentation process.

It is also worth mentioning that the experimentation process found in this chapter differed to that in Chapters 5 and 6 in two ways. First, the research collective that undertook the experimentation process included a broader range of actors than those in Chapters 5 and 6. In Chapters 5 and 6, the research collective primarily consisted of the directors of Cino's different departments. This chapter shows that a number of 'laypersons' (from Cino's top management team), such as employees in Cino's different departments, were also enrolled in the research collective to construct the ATS JV model. Second, the experimentation process in this chapter became more standardised than that in Chapters 5 and 6. This is because the experimentation process was guided by an inscription (the A-review document). The A-review document set out detailed procedures that the research collective should follow when constructing the ATS JV model, even though the determination of specific content needed in each procedure might require open discussion and brainstorming in the research collective.

### **7.5.2 Mutually constitutive relationship between risk and risk management practices**

Similar to the findings in Chapters 5 and 6, this chapter found that there is a mutual co-constitutive relationship between risk and risk management practices. It has been shown that the mobilisation of a collection of management control actions (informal engagements, grouping and quantifying opinions on Delink's uncooperative behaviour, self-reflection and researching into partner firms and imagination) and inscriptions (a summary report, numbers and engine penetration rate) helped the research collective identify the source and predict the possible effects of the problem of Delink's uncooperative behaviour. This lay the foundation for developing the hypothesis of the existence of the risk exposure of losing trust with Delink. The risk exposure of losing trust with Delink prompted the research collective to undertake the management control action of conducting and connecting four accounting calculations (scenario, NPV, break-even and probability analyses), through which forming an ATS JV was proposed as the risk management practice to mitigate this risk exposure.

Crafting a theoretical model that was intended to make the proposed ATS JV function involved the mutual construction of management control actions and risks. On the one hand, the combined use of management control actions (following the A-review

document, brainstorming and open discussions between A-review participants, mathematic calculations and rankings) helped source and rationalise potential challenges that may appear in the future operation of the proposed ATS JV. This led to the articulation of nine risks associated with the future operation of the proposed ATS JV. On the other hand, the nine risks articulated in the process of crafting the ATS JV model made the research collective undertake a few management control actions (drafting and categorising mitigation actions, constructing an initial term sheet and signing an ATS JV contract, and settling conflicts on key management positions in the ATS JV), which became the basis of constructing risk management models to be used in the proposed ATS JV. As can be seen, risk management practices were both the outcome and conduits for risks. Thus, in this sense, risk and risk management practices co-constitute each other.

Further, similar to the finding in Chapter 5, the co-constitutive relationship between risk and risk management practices found in this chapter suggests that new risk (concern) may be created as the outcome of managing risk. Continuing Chapter 6, this chapter shows how the risk exposure of losing trust with Delink was hypothesised as the outcome of enacting the JV portfolio model to deal with the risk of over-reliance on Delink in the Chinese market. That is, managing one risk associated with operating the engine JV between Cino and Delink led to the creation of a new risk related to operating the same engine JV. In addition, this chapter shows that, in crafting the ATS JV model to mitigate the risk exposure of losing trust with Delink, the risk of non-value adding and risks associated with the future operation of the proposed ATS JV were created. This finding resembles the finding in Chapter 5 that risk in JV may arise in the process of crafting the JV model, before the actual formation and operation of this JV. However, this finding differs from that in Chapter 5 by showing how managing risk in one JV may led to the creation of new risks in a different JV.

### **7.5.3 Using alliances to rebuild trust between partner firms**

Cino formed an ATS JV with Delink to mitigate the hypothesised risk of losing trust with Delink. Cino's formation of heavy- and light-duty engine JVs with non-Delink related local Chinese OEMs damaged trust between Delink and Cino. To repair the damaged trust between Cino and Delink, Cino formed an ATS JV with Delink. By forming an ATS JV with Delink, Cino hoped to show its sincerity to help Delink develop ATSs to break away Delink's dependence on Booth. In other words, Cino was

helping Delink reduce its dependence on Booth by forming an ATS JV with Delink, and, in this manner, Cino aimed to repair the torn tie with Delink. Repairing this torn tie with Delink even drove Cino to go against the economic rationality of forming the ATS JV, as the accounting calculations suggested that the ATS JV had a high probability of not adding value to Cino. Rather, the rationality of forming the ATS JV was to sacrifice the ATS JV with the hope of strengthening the overall JV network with Delink.

#### **7.5.4 Connection between corporate business relationships and personal *guanxi***

Personal *guanxi* has implications for corporate business relationships. The personal *guanxi* relevant here was that between Cino- and Delink-appointed employees in the engine JV, and Cino's and Delink's CEOs. Different to personal face based on personal social prestige or bureaucratic power (as discussed in Chapter 6), this personal *guanxi* was developed through personal social activities (such as talking during dining, having coffee or tea, attending karaoke and playing mahjong) between these people, which were based on the implicit hope of reciprocating each other. Similar to personal face, personal *guanxi* can lead to reciprocal behaviour. This personal *guanxi* facilitated the informal engagements between Cino- and Delink-appointed personnel in the engine JV, and Cino's and Delink's CEOs. During these informal engagements, the corporate-level issue relating to Delink's uncooperative behaviour was discussed. This helped Cino obtain some private and internal information from Delink, which helped the company diagnose the reasons for Delink's uncooperative behaviour, and find an angle to tackle this issue. As a result, the idea of forming an ATS JV was proposed. The implication is that personal ties based on *guanxi* are important in driving business ties between JV partner firms.

### **7.6 Conclusion**

In summary, this chapter has shown the three stages of the experimentation process through which risk and risk solutions were articulated. The first stage of the experimentation process identified the two plausible causes of the problem of Delink's uncooperative behaviour (Cino's formation of JVs with non-Delink related OEMs and inflexibility to make engine products suited to the Chinese market). In the second stage, a research collective was formed to make sense of the potential effects of the two causes of Delink's uncooperative behaviour on Cino's Chinese business. This led to the development of the hypothesis of risk of a loss of trust with Delink. The hypothesised risk exposure led the research collective to experiment the proposal of forming an ATS

JV with Delink as a solution to mitigate this risk exposure. In crafting a theoretical model for the proposed ATS JV, an A-review document guided the research collective to articulate risks in the proposed ATS JV, and respective risk management models were simultaneously constructed. However, the enactment and operation of the proposed ATS JV model became a conduit for internal conflicts between Cino and its own multiple JVs, which became a new problem for Cino.

## **Chapter 8: Summary and Conclusion**

### **8.1 Introduction**

This chapter summarises and concludes this thesis. In particular, this chapter reviews the major themes of this thesis and the connections among these themes. It highlights the articulation and complex dynamics of risks as the outcome of an ongoing experimentation process involving interactions between actors, events and activities in the daily operations of inter-firm alliances, and how MCSs are implicated in these processes. This chapter also discusses how future research may extend the present thesis. This chapter is organised as follows. Section 8.2 summarises this thesis, Section 8.3 discusses the major contributions of this thesis to theory and practice, Section 8.4 discusses directions for future research, and Section 8.5 concludes this chapter.

### **8.2 Summary of the Thesis**

This thesis provided accounts and analysis of the interacting processes and practices through which risks are articulated and evolve in inter-firm alliances, and how MCSs may be implicated in these practices and processes. In doing so, this thesis also examined how management controls contribute to these interacting processes and practices.

Chapter 1 discussed the motivating factors and aims of this thesis. This chapter highlighted the paradoxical relationship between risk and inter-firm alliances, where inter-firm alliances are treated as both the solution and source of risks. In doing so, this chapter also discussed how MCS are theorised in a very constrained way to deal with risks in inter-firm alliances by existing accounting research, thereby locating the present thesis within the wider accounting literature.

Chapters 2 and 3 discussed the theoretical foundation to address the research questions of this thesis. Chapter 2 reviewed the extant literature on risks. This chapter also discussed the predominant accounting literature that examines the relationship between risk and inter-firm alliances, and the design choice of MCSs for risk management of inter-firm alliances. In doing so, this chapter drew on the social science and sociological literature on risks, and the accounting literature on accounting/MCSs in intra-organisations to critique the predominant accounting literature on risk and MCSs in

inter-firm alliances. This chapter argued that most existing accounting literature has a number of limitations on understanding the relationship between risk and MCSs in inter-firm alliances. First, most accounting studies tend to treat risk as an objective reality ‘out there’ that can be measured and captured *a priori* to the practice of interacting and relating between actors, events and activities occurring in alliances’ daily operation. This is done with the mobilisation of particular inter-firm alliance characteristics (such as alliance transactions, alliance environments and partner firms) (Anderson & Dekker 2005; Das & Teng 1998, 2001; Dekker 2004; Ding, Dekker & Groot 2013; Van der Meer-Kooistra & Vosselman 2000). Contrary to this view, this chapter showed (by drawing on the social science and sociology literature and a few accounting studies) that risks are empirical phenomenon because they are constructed as the outcome of relations and interactions between people, events and activities occurring in people’s daily lives (Beck 1992; Douglas 1992; Lupton 1999; Mahama & Ming 2009; Miller, Kurunmaki & O’Leary 2008; Power 2007, 2013). That is, risk is *a posteriori* to the interacting practices occurring in the daily operation of inter-firm alliances.

Second, most of the accounting literature’s treatment of risk as predetermined phenomenon tends to limit understandings of risk in inter-firm alliances as something purely caused by activities and events that occur after the formation of alliances (Anderson & Dekker 2005; Das & Teng 1998, 2000, 2001; Dekker 2004; Ding, Dekker & Groot 2013; Van der Meer-Kooistra & Vosselman 2000). However, research in the management literature tends to suggest that activities (such as risk) that are prior and lead to the formation of inter-firm alliances may have implications for risks in inter-firm alliances (Das & Teng 2003; Narasimhan & Nair 2005). Including these pre-alliance formation activities and connecting them to post-alliance formation activities may improve understandings of how risks are constructed in inter-firm alliances. Third, the static nature of risk presented in much accounting literature disguises and subsequently does not consider the dynamic nature of risks in inter-firm alliances. This is because the identity, meaning or object of risks may constantly change as alliances develop in their daily practices and operations.

Fourth, in treating risk as predetermined and static phenomena in inter-firm alliances, a large number of accounting studies have devoted profound effort to designing and categorising different types of MCSs, and prescribing them with fixed properties and structural forms (Anderson & Dekker 2005; Dekker 2004; Ding, Dekker & Groot 2013;

Van der Meer-Kooistra & Vosselman 2000). For different types of risk, the extant accounting research has argued that there always exists an ‘optimal’ or ‘ideal’ MCS that can be used to manage certain types of predetermined risk in inter-firm alliances. The review of more recent accounting studies (mainly in a non-inter-firm alliance context) showed that MCSs, such as accounting controls, do not have predetermined fixed properties or functions (Ahrens & Chapman 2007; Chua & Mahama 2007; Miller & O’Leary 2007; Mouritsen & Thrane 2006). Rather, these researchers have argued that the ways MCSs obtain various forms and perform varying functions are the outcomes of interactions and translations between heterogeneous entities in locales. Thus, most accounting research limits understandings of the ‘fragile’ nature of MCSs in the risk management of inter-firm alliances. Prescribing MCSs that ‘should’ be used to manage risk in inter-firm alliances limits understandings of how MCSs may actively contribute to the articulation and evolution of risks.

Chapter 3 discussed how an emerging theoretical perspective (the three-stage experimentation process) in ANT would be useful to provide an alternative view (to extant accounting literature on risk management in inter-firm alliances) on risk and MCSs for risk management of inter-firm alliances. ANT focuses on examining how heterogeneous entities, events and activities interact via a three-stage experimentation process in the daily practice of inter-firm alliances, through which risks and MCSs are articulated and evolve. Applying ANT in this study:

1. enabled analysis of the constructivist and dynamic nature of risk and MCSs in the practice of operationalising and managing inter-firm alliances
2. provided opportunities to study how the use of alliances to address risk may lead to new risks
3. facilitated examination of the ‘fragility’ of MCSs in the practice of risk management in inter-firm alliances
4. made it possible to study how MCSs may affect and be affected by risks in inter-firm alliances.

While applying ANT to study risks and MCSs in inter-firm alliances, the possible roles of accounting, accounting inscriptions and other inscriptions were also discussed.

Following ANT and the research questions of this thesis, this research conducted a field study on one international JV. The details of this JV were presented in Chapter 4. This chapter discussed the reasons for using the field study method, the processes and logic



of selecting the research site, the description of the JV studied, and the methods of collecting and analysing the data collected from the field.

Data collected from the field were analysed based on the theoretical framework explicated in Chapter 3. The analysis of data collected from the field led to the elaboration of three empirical chapters (Chapters 5, 6 and 7). Chapter 5 focused on an experimentation process through which risk was articulated as the outcome of making sense of a problem (the unusual number and frequency of customer claims for engine repairs) that Cino encountered in its technology licensing agreement with Delink. This chapter also showed how this risk led to crafting a proposal to form a medium-duty engine JV and respective MCS models as solutions, and how enactment of this risk management model created a new problem. This new problem was associated with Cino's failure to expand the target customer range of the medium-duty engine JV. Following Chapter 5, Chapter 6 discussed how the new problem triggered a second round of experimentation process, which led to the articulation of a new risk in the medium-duty engine JV, and respective risk solutions (the formation of a JV portfolio). Chapter 6 also discussed how the enactment of the JV portfolio model created a new problem (relating to Delink's uncooperative behaviour). Chapter 7 discussed the third round of experimentation process, which involved making sense of Delink's uncooperative behaviour. It showed how this sense-making process led to developing a hypothesis about the existence of the risk exposure of losing trust with Delink, and how an ATS JV model was crafted to mitigate this risk exposure. Chapter 7 concluded by showing how internal conflicts between Cino and its multiple JVs arose when an ATS JV model was implemented. The third round of experimentation involved a broader range of actors and more sophisticated inscriptions than did the previous two rounds.

Overall, the three empirical chapters found that JVs and MCSs for risk management of these JVs were (re)constructed as the outcome of an ongoing experimentation process. This process was executed by a network of actors, which involved interactions among people within and outside Cino, a few local Chinese commercial vehicle firms, Cino's competitor and supplier firms, professional automobile institutions and the Chinese government to craft and test solutions to risks. In the experimentation process, complex economic issues encountered in Cino's daily operations (macro world) were attributed or simplified to representative problems in a manageable virtual environment (micro world). In the micro world:

- the plausible causes and effects of these problems on Cino's Chinese and global business were hypothesised, leading to the articulation of risks
- competing options for managing these risks were compared, and JV was selected
- the feasibility of the proposal to form JVs was tested
- the potential partner firms of the proposed JVs were sourced, targeted and engaged with
- items leading to drafting the JV contract were discussed
- potential problems and challenges in the future operation and management of the proposed JVs were predicted, leading to the hypothesis of the existence of risks in the proposed JVs
- plausible MCS models were created to manage the hypothesised risks in the future operation
- management of the JVs was initiated, discussed, converged, categorised and organised.

When the JV and respective MCS models were enacted in Cino's daily operation (macro world), a new economic issue emerged. This triggered another round of the experimentation process. Different sets of MCSs (management control activities/actions, inscriptions and material devices) and personal feelings, experiences and beliefs were related to each other in each round of the experimentation process. These findings have significant implications for the literature on risk management and management control of inter-firm alliances.

## **8.3 Major Contributions**

This thesis sought to contribute to the accounting and management control literature on the risk management of inter-firm alliances by examining the processes and practices through which risks become articulated, and how MCSs may be implicated in these processes and practices. This section summarises the major contributions of this thesis, while the following section presents avenues for future research.

### **8.3.1 Risk and risk management**

This thesis found that risk management models (the proposal to form JVs and respective theoretical models hypothesised to be used for risk management of the proposed JVs) were constructed as the outcome of an ongoing experimentation process. This experimentation process involved crafting solutions that could plausibly manage risks in

a micro world (a manageable virtual environment constituted by partner firms' top management teams) and enacting these hypothetical risk management models in the macro world (JV partner firms' daily operations). Crafting risk management models involved:

- comparing and choosing between competing economic arrangements that could plausibly manage risk
- examining the feasibility of undertaking the proposal to form JVs
- sourcing and selecting (potential) partner firms
- enrolling the targeted partner firms in the proposed JV
- testing the suitability of the targeted firms as JV partners
- analysing problems or challenges that may arise in the future operation of the proposed JV
- articulating theoretical solutions for those foreseeable problems or challenges
- discussing within and between partner firms to negotiate a JV contract.

Enacting the risk management models required implementing these models in the JV partner firms' daily operations to address risks. However, enacting the risk management models always created new problems (Cino's failure to enlarge the target customer range of the engine JV, Delink's uncooperative behaviour, and internal conflicts between Cino's and its subsidiaries) for partner firms' daily operations, which triggered new rounds of the experimentation process. This meant that the construction of the risk management model was an ongoing process.

This finding about the ongoing experimentation of the risk management model has implications for the constructivist nature of the risk management model. The first implication is that the risk management model is constructed. This is consistent with a few accounting studies' (primarily in the intra-organisation context) views on the constructivist nature of MCS (Lupton 1999; Mahama & Ming 2007; Miller et al. 2008). This thesis extends the constructivist view of MCS to the context of inter-firm alliances. Instead of prescribing a risk management model that 'should' be used in the everyday business of inter-firm alliances, based on alliance transaction characteristics (such as transaction costs, the frequency of alliance transactions and value creation), alliance partner characteristics (such as inter-partner market commonality and partner firms' resource alignment complementarity) and environment characteristics (such as uncertainty and the number of alternative companies in the market) (Das & Teng 1998,

2001, 2002; Dekker 2004), attention should focus on how risk management models are constructed through a set of interacting and relating practices.

Further, this thesis extends prior accounting research by showing how risk management models and practices are (re)constructed through the practice of experimentation. Most prior accounting research has tended to treat risk management models and practices as the outcome of a set of relating and interacting practices occurring exclusively in one of two opposing scales (a laboratory type of environment/microcosm and the real market outside the laboratory type of environment/macrocsm). That is, risk management models and practices are either treated as a theoretical model that can be designed in the microcosm or as an empirical phenomenon that only emerges as the outcome of everyday practices in the macrocosm. However, this thesis found that the risk management model was continuously moving between the macrocosm and microcosm, (re)crafting the model in the micro world and (re)testing the model in the macro world. In addition, the construction of the risk management model itself involved interactions between activities and practices in the macrocosm and microcosm. This finding supports and links the two opposing views of prior accounting research on risk and risk management models and practices. As such, the findings of this thesis highlight the need to bridge the gap between activities in the macrocosm and microcosm, and examine how they overlap and support each other to (re)construct risks and risk management models and practices.

The second implication is that, instead of treating the risk management of inter-firm alliances as a one-time practice that is characterised by the successful design or implementation of a certain MCS, this thesis found that the risk management of inter-firm alliances is an ongoing and never-ending process, requiring regular maintenance and redesign of models. In this ongoing process, existing risk management models (such as forming JVs) continued being translated into new patterns, and new risk management models were continuously devised, practised and tested to manage emerging risks. This finding reflects Power's (2007) argument of 'risk management of everything'. Thus, this thesis has a practical contribution because it suggests that the risk management of inter-firm alliances require organisations' long-term efforts, and managers responsible for the risk management of inter-firm alliances must continue monitoring the dynamics of the alliance and the corresponding changes needed for the risk management model and practices.

### **8.3.2 Mutually constitutive relationship between risk and risk management practices**

This thesis found that risk and risk management practices (the mobilisation of management control actions and inscription, and crafting and enacting JV models) co-construct each other in the dynamics of inter-firm alliances. Crafting, enacting and operating the JV model created problems, which became the conduit for articulating risks in the JVs. In addition, the combined use of management control actions helped:

- attribute and simplify complex economic problems encountered in the macro world to problems and relevant matters of concern that could be acted upon in the micro world
- initiate and draw relationships between entities that were connected to the problems
- diagnose plausible causes of the problems
- hypothesise possible effects if these problems were left unresolved
- formulate and objectify risk perceptions.

A variety of inscriptions were mobilised to guide and limit the choices of management control actions, enable the operationalisation of different management control actions, and objectify the outcomes of operating different management control actions. In addition, these management control actions and inscriptions and the ways they were related to each other were performed differently, depending on alliance local practices. This led to different methods and processes of articulating risks. Different MCSs and connections between them are listed in Appendix 3. However, the point here is that these risk management practices played a central role in articulating risks in inter-firm alliances. In contrast, the articulated risks triggered the drawing, selecting and relating of an array of management control actions and inscriptions, through which risk management models (such as the proposal to form JVs, JV contracts and key management positions) were (re)constructed. In other words, risk influenced the selection of management control actions for (re)constructing the risk management model in inter-firm alliances. As such, it can be concluded that risk management practices were both the outcome and conduits of risks.

This finding of the co-constitutive relationship between risk and risk management practices contributes to the prior research in the following ways. First, it challenges the implicit assumption widely immersed in the accounting literature (e.g., Anderson et al.

2015; Dekker 2004; Van der Meer-Kooistra & Vosselman 2000) that there always exists an ‘optimal’ MCS that can be designed and used to manage risks in inter-firm alliances, and if an MCS fails to manage these risks, the MCS must be inappropriately designed or used. This thesis extends this view by finding a bidirectional relationship between risk and MCSs—that is, the MCS not only acts to manage risk, but also actively participates in articulating risk.

Second, the finding of the co-constitutive relationship between risk and risk management practices suggests that managing risks leads to the creation of new risks. This finding is not only consistent with Vinnari and Skærbæk’s (2014) argument of the uncertainties of risk management, but also extends their argument to an economic context (JVs), which increases the generalisability of their findings. In addition, prior research by Das and Teng (1998), Langfield-Smith and Smith (2003), Dekker (2004) and Anderson et al. (2015) generally treated risk in inter-firm alliances as a pure post-alliance formation phenomenon. This creates the impression that risk in inter-firm alliances can only be caused by activities or events (such as partner firms’ opportunistic behaviour) that occur after these alliances are formed. The findings of this thesis extends prior research by showing that risk in inter-firm alliances can arise in the process of crafting the JV model, prior to the actual formation of the JV.

### **8.3.3 Practice of using an alliance portfolio for risk management**

This thesis found that Cino continued building JVs, thereby forming a JV portfolio to deal with the dynamics of risks. The prevalent view in prior research has been that forming an alliance portfolio will help organisations create a competitive advantage (such as obtaining and synergising resources from different alliances in the portfolio), which is critical for managing risk. While the findings of this thesis align with this opinion, this thesis also extends prior research by showing different rationalities and practices for forming and expanding the alliance portfolio to achieve risk management. For example, Cino formed a medium-duty engine JV with Delink in order to obtain management control power in the engine manufacturing process. Obtaining this power helped Cino manage financial and reputational risk under the technology licensing agreement. In order to become competitive in the Chinese market, a filtration JV with Delink was formed by Cino to cut the ties between Cino’s partner firm (Delink) and competitor firm (Booth), and simultaneously strengthen the ties between Cino and Delink. This helped Cino mitigate risk exposure in the uncertain Chinese market. To

mitigate the risk of over-dependence on Delink in the Chinese commercial vehicle market, Cino formed heavy- and light-duty engine JVs with non-Delink related OEMs to exploit the benefits of other segments in the same market. In response, an ATS JV was formed with the aim of repairing the damaged trust between Cino and Delink. As can be seen, different types of JVs were enacted to fulfil different rationalities of risk management, depending on the *in situ* relationships between multiple partner firms and local activities, and the events in Cino's daily operations. Showing different rationalities and practices of forming and expanding the alliance portfolio to achieve risk management reflects on Ahrens and Chapman's (2007) call to study the 'situated functionality' of risk management practices.

#### **8.3.4 Connection between the corporate business relationship and personal reciprocal behaviour**

This thesis found that personal reciprocity plays a critical role in risk management of inter-firm alliances. Inter-firm alliances were generally treated by prior research as reciprocal corporate-level behaviour, in which resources were shared and cooperative activities were undertaken between partner firms with the hope of achieving certain objectives (Ring & Van de Ven 1992). As such, sharing, mitigating or managing risk was one of the objectives of forming inter-firm alliances. This thesis extends prior research by demonstrating that personal reciprocal behaviour may have implications for the alliance relationships between partner firms. For example, after Cino planned to exit its negotiation with Sag to form a heavy-duty engine JV, Sag sent the provincial governor of Shanxi province to lobby Cino's CEO to return to the negotiation. The governor asked Cino's CEO to give him a personal favour/'face' to resume Cino's negotiation with Sag for the formation of the heavy-duty engine JV. In return, the governor would reciprocate Cino's CEO by offering preferable accounting policies to the JV. The reciprocal behaviour between the governor and Cino's CEO was based on the exchange of personal 'face', which was underpinned by the bureaucratic power that each had in their own organisations.

This thesis has also demonstrated that, when Delink started acting uncooperatively against Cino, the informal engagements between Cino- and Delink-appointed personnel in the medium-duty engine JV and Cino's and Delink's CEOs provided conditions to diagnose the possible reasons for Delink's uncooperative behaviour. These informal engagements were based on personal *guanxi*, which was enacted through working

relationships and further developed through mutual social activities. Delink's current progress and strategic plan (to develop its own ATSs) were disclosed by Delink's CEO to Cino's CEO in their informal engagement. This information was critical in driving Cino to develop the proposal to form an ATS JV to mitigate the risk of losing trust with Delink. These two examples clearly show that personal reciprocal behaviour was practised in two different paths ('face' and *guanxi*), which saved or enhanced the business relationships between Cino and its partner firms. This laid the foundation to form the heavy-duty engine JV and ATS JV. Thus, personal ties can have a significant effect on the alliance relationship between partner firms.

## **8.4 Directions for Future Research**

While this thesis provides insights to the constructivist and dynamic nature of risks in inter-firm alliances and how MCSs may be implicated and practised in the risk management of inter-firm alliances, there are at least three additional issues that future research could examine.

First, besides JVs, there are many different forms of inter-firm alliances that could be studied, such as strategic supply alliances, licensing agreements, outsourcing, research consortia and franchising (Ring & Van de Ven 1992). It is possible that the relationships between risk and MCS could play out differently in these other inter-firm settings. Future research could apply the analytical framework used in this thesis (the three stages of the experimentation process) to study risk and MCSs in these other forms of inter-firm alliances. This would allow researchers to understand how the experimentation and articulation of risk and MCSs in these other forms of inter-firm alliances may be similar or different to the practices and processes discovered in this thesis, and how accounting inscriptions and devices and other inscriptions may be implicated therein.

Second, the findings of this thesis are based on one JV in automotive industry. As in most field studies, the focus on only one JV in a single industry may limit the generalisability of the findings of this thesis. This thesis can be extended by examining JVs in industries other than the automotive industry. Doing this may enhance the generalisability of the findings of this thesis by eliminating the effects of factors particularly pertinent to the automotive industry (such as the requirement to meet the emission standard) on the findings of this thesis. Further, future research could apply the analytical framework of this thesis to study smaller JVs. The JVs studied in this thesis



generally had a large initial investment and annual turnover. Future research could examine smaller JVs to see whether the findings of this thesis still hold. Finally, the JVs studied in this thesis were all cross-culture JVs, in which the parent firms were from countries with a different culture (China and the US). Future research could examine JVs whose parent firms are from the same country or countries with a similar culture.

Third, the analytical framework used in this thesis (the three stages of the experimentation process) could be applied in intra-organisations. Instead of (i) treating risk as a theoretical phenomenon that can be predetermined outside a set of interacting and relating practices that lead to such risks and (ii) prescribing MCSs that ‘should’ be used to manage risks independent of practical actions, risks and MCSs (as a fragile assemblage) could be theorised as the outcome of a set of iterative and innovative experimentation processes that mutually participate in the (re)construction of each other, embedded in organisations’ daily practices. Studying risks and MCSs as the outcome of ongoing experimentation processes and practices would enhance understandings of the constructivist and dynamic nature of risks, and how MCSs may be implicated and practised in these processes and practices. By doing so, researchers could gain alternative ways of understanding risks and MCSs to the views offered by rationalist-cognitive, functionalist, social constructivist, structuralist and post-structuralist approaches (Themsen 2014).

## **8.5 Conclusion**

This thesis has focused on examining the processes of how risks are articulated and evolve in inter-firm alliances, and how MCSs may be implicated and practised in these processes. An emerging area of ANT (the three-stage experimentation process) was employed to examine the research questions of this thesis. The findings of this thesis have usefully extended and made theoretical contributions to the existing literature. Finally, this thesis has also indicated how its findings can be extended by future research.

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## Appendix 1: Definition of Major Concepts

**Risk:** A large number of studies have taken a positivist view on risks (Gephart et al. 2009; Lupton 1999; Power 2009; Renn 1990). These studies have tended to define risk as the probability of occurrence of some unexpected outcomes. In this regard, risk is generally treated as a pre-existing reality ‘out there’ that is waiting to be measured or perceived by people. The focus of these positivist studies is on (i) identifying the risk events, (ii) developing statistical tools to calculate or analyse human behaviour (such as mental heuristics) that contributes to the subjective perception of the probability of the occurrence of risk and (iii) elaborating measurement models to capture the financial or non-financial effects of risks. This positivist view on risks has led to some accounting researchers’ tendency to define different types of risks, such as audit risk, client risk, operational risk, financial risk, performance risk and relationship risk (Das & Teng 1998, 1999, 2001; Houston 1999; Woods 2009).

Another group of research has adopted a constructivist approach to study risk (Kalthoff 2005; Mahama and Ming 2009; Miller et al. 2008; Millo & MacKenzie 2009; Rocher 2011). These studies believe that risk is not a pre-existing reality, but is the outcome of the practice of constructing. The research focus is examining the social norms, events, actions, activities, practices and possible interactions between them in people’s and organisations’ everyday business. According to these researchers, the collective effects of these everyday practical activities lead to the perception of something as risky, and thus the labelling of it as risk. In other words, risk is only the outcome of the collective effects of everyday practices. This thesis adopts the constructivist approach to study risk in inter-firm alliances. Risk is defined in this thesis as an *a posteriori* outcome of a set of interacting and relating practices in the daily operations of inter-firm alliances. This thesis does not predefine what risk is and the type of risk that is under investigation. Rather, how the idea of risk is created, what constitutes risk, and the meaning of risk are empirical issues that are discussed in the empirical analysis chapter.

**Management control systems:** MCSs have traditionally been studied as (a set of) control mechanisms or systems with certain structural forms, properties and presumed functions (Bruns & Waterhouse 1975; Chenhall 2003; Shields & Yound 1994; Simons 1995; Van der Stede 2000). For these researchers, MCSs are passive tools that are adopted by organisations to achieve certain managerial purposes. The focus of this previous research was on the ‘optimal’ design of the structural forms of MCSs, and the

‘appropriate’ use of MCSs to deliver the satisfied outcomes. The structural forms or use of MCSs are said to depend on contextual variables, such as the external environment, technology, structure, size, task difficulty and uncertainty, strategy and culture.

Some recent researchers have adopted a practice of understanding MCSs that is embedded intimately in the context in which the MCS operates. These researchers understand MCSs as a bundle of activities, technology, material devices and inscriptions that are systematically applied in practice to generate a certain social order (Ahrens & Chapman 2007; Chua 1995; Mouritsen & Thrane 2006). These researchers treat MCSs as an ‘actor’ that actively acts on and is simultaneously acted on by other organisational practices. The structural forms of the MCS are only the temporary outcome of the interplay between the MCS and other organisational practices, which are often vulnerable and subject to changes. This thesis adopts the practice view of MCSs. In this regard, MCSs are defined in this thesis as a bundle of activities, actions, processes, systems, models and technology material devices that are practised in the everyday business of inter-firm alliances to achieve a certain managerial intent.

**Risk management models and practices:** Risk management models include strategies (such as the proposal to form inter-firm alliances) and structural forms of MCSs and other functional methods that have the possibility to manage risks. Constructing, systematically using and reconstructing these risk management models in organisations’ daily operations are risk management practices.

**Inter-firm alliances:** Inter-firm alliances are voluntary cooperative relationships between two or more independent firms in which joint activities are undertaken to achieve common goals. Four characteristics distinguish inter-firm alliances from other organisational arrangements. First, partner firms share resources or contribute resources to the inter-firm alliance. These resources can be, but are not limited to, brand names, knowledge of technology, collaborators, procedures/processes, special services, financial assets and employees (Furrer et al. 2008; Hart 1995; Penrose 1959; Wernerfelt 1984). The combination of resources from partner firms may create synergy or competitive advantages that would not be possible if the partner firms operated alone (Miller & Friesen 1983; Stevenson & Jarillo 1990; Thornberry 2003). Second, inter-firm alliances require joint activities between partner firms. That is, all partner firms participate in the decision-making process of inter-firm alliances or cooperate with each other in undertaking tasks and practices in the daily operations of the alliances. Third,

inter-firm alliances are formed by partner firms to achieve mutual objectives (such as gaining competitive advantages in the market) or their own strategic goals (such as gaining entrance to a particular market). Finally, inter-firm alliances are generally formed with a long-term orientation (Mahama 2000). Unlike the one-time discrete market transactions between different parties, inter-firm alliances involve repetitive and iterative transactional arrangements between partner firms. Often, the benefits of inter-firm alliances are gradually realised in the long term.

There are different types of inter-firm alliances, including horizontal strategic alliances, vertical strategic alliances, intersectional alliances, JVs, equity alliances and non-equity alliances. See Culpan (2002) for a comprehensive review of the different types of inter-firm alliances.

**Material devices:** Material devices are instruments for arranging, processing and working on inscriptions. Through material devices, multiple inscriptions may be gathered and combined, through which the original content may be translated to something new. Material devices include, but are not limited to, equipment, machines, accounting formula, accounting technology and software.

**Inscriptions and accounting inscriptions:** Inscriptions are textual materials, such as reports, memos, numbers, written words, colours, pieces of paper, Microsoft Excel spreadsheets, interview scripts, graphs, charts and tables. Accounting inscriptions (such as accounting numbers and accounting reports) are one type of inscription that involves the mobilisation of accounting information. Given its nature of materiality, inscriptions are generally immutable, mobile and combinable (Robson 1992). This equips inscriptions with the potential power to stimulate translations and changes, or trigger actions (Mahama 2000). Equally possible, the construction or selection of inscriptions may be the outcome of certain actions (Callon 1991; Mouritsen et al. 2008).

## Appendix 2A: Coding Categories and Concepts and Their Descriptions

Category	Description	Subcategory
<b>Matters of concern</b>	Something that occurs in practice (the real world) with an initial shock, for which there is no precise knowledge about the nature, causes and consequences	Risks JV's productivity falling far behind demand JV's independence Partner firm's dissatisfaction with focal firm Government 'harmonisation' process
<b>Experimentation</b>	The process of tentatively and iteratively creating new models or developing existing models, with the aim of increasing understanding and finding solutions to matters of concern encountered in the macrocosm	From macrocosm to microcosm Research collective in microcosm Return from microcosm to macrocosm
<b>From macrocosm to microcosm</b>	The process of reducing matters of concern encountered in the macrocosm to a set of problems at a manageable scale (in the microcosm) with available action, expertise and knowledge	Physical inspection Using personal feelings and experiences Reviewing historical documents Collecting information from an independent third party Interviews Corroborating information collected from different sources Calculating accounting indicators Categorising Meeting Informal engagement between personnel
<b>Research collective in microcosm</b>	The tentative list of a variety of entities and the simulation of possible patterns and effects of interactions between these entities, through which (i) solution(s) to manage problems, (ii) potential risks associated with the solution(s) and (iii) plausible MCSs that are intended to manage such risks are experimented and hypothesised	Brainstorming in departments Calculating Categorising Negotiating between partner firms Drawing on past practice and experience Goodwill Hypothesising potential effects of certain actions Meeting between director of Cino Non-JV related activities Open discussion between departments Estimating probability Making assumptions Physical inspection
<b>The object of research collective in microcosm</b>	The items or objects that are experimented in the research	Cino's own problem



	collective in the microcosm	Partner firm's actions Partner firm's culture or customs of doing business Competitor firm's actions Government intervention Market changes
<b>Return from microcosm to macrocosm</b>	The enactment or operationalisation of MCSs (hypothesised in the microcosm) in the macrocosm, which might create or encounter new matters of concern	Implementing Using Emerging Enacting Signing contract Setting up Adopting Forming
<b>The dynamics of risk</b>	In the process of enacting or operationalising MCS that are supposed to manage certain hypothesised risks, new matters of concern emerge that lead to the articulation of new risks	Matters of concern Experimentation
<b>Interactions</b>	The process of how a variety of entities facilitate, constrain or affect each other to produce certain outcomes	Brainstorming Meeting Negotiating Effects Discussing Physical inspection Communicating Contacting Engaging Coordinating Showing Checking Influencing
<b>Uncertainty encountered in interactions</b>	The emergence of a set of actions or entities (such as resistant forces) in the interactions between different entities in the process of experimenting with risk and MCS, which were not expected prior to such interactions	Competitor actions Government intervention Market uncertainty
<b>Controversies</b>	One special case of interactions where actors dispute or debate with each other, which might result in agreement or disagreement	Compromising Arguing Questioning Different ideas or opinions Disagreeing Learning Creating
<b>The object of controversies</b>	The items or objects that are debated in the research collective in the microcosm	Key management positions Supplier of the JV Potential value of investments

		Ownership of intellectual property Target customer range Accounting items Qualitative challenges Stability of partner firm's leading position
<b>Inscriptions</b>	Textual materials, technical software or oral expressions that assist actors in the three stages of the experimentation processes	Interview scripts Contract Document Delegation of authority Report Word Label Graph Technology device Microsoft Excel
<b>Accounting inscriptions</b>	Accounting information, accounting number or accounting technology mobilised in the experimentation process	Accounting numbers Break-even analysis NPV Pricing Scenario analysis Sensitivity analysis VPI analysis The use of multiple accounting inscriptions
<b>Management control systems</b>	A variety of mechanisms, processes and practices proposed to be used in the risk management of inter-firm alliances	Accounting analysis Contract Exit strategy Organisational restructure Partner selection Personnel control Trust Post-contract control Relationship control Collect alternative information control sales channel Hiring partner firm's personnel The establishment of 100% subsidiary
<b>Government intervention</b>	The activities undertaken or policies released by the Chinese central or local government that trigger the experimenting and hypothesising of risk and MCS, and the encountering of matters of concern	Government harmonisation Government support Policy changes Government regulation Social consideration
<b>Competitors' actions</b>	The activities undertaken by JVs' or JV partner firms' competitors that trigger the experimenting and hypothesising of risk and MCS, and the encountering of matters	Acquiring a potential partner firm and limiting the engine penetration rate Controlling the market price

	of concern	Cooperating with Cino's partner firm Quicker R&D and management control process than Cino Offering cheaper products The self-development of competitor firms Using lower-than-standard products Working with multiple local commercial vehicle companies
<b>Market changes</b>	The activities occurring in the market that trigger the experimenting and hypothesising of risk and MCS, and the encountering of matters of concern	Downward pricing pressure from customers Low market demand and high market competition Performance or effectiveness lower than expectation Unpredictability of the market
<b>Other intervening variables</b>	The specific conditions based on which experimenting and hypothesising of risk and MCS are undertaken	Culture Strategy Feeling Learning JV lifecycle stage Relative power Trust

## Appendix 2B: Paradigm Model

<b>Causal Conditions</b>	<b>Phenomena</b>	<b>Context</b>	<b>Intervening Conditions</b>	<b>Action/Interaction Intermediaries</b>	<b>Consequence</b>
Matters of concern	From macrocosm to microcosm	Cino	Uncertainty encountered in interactions	Inscriptions	Risk
The object of research collective in microcosm	Research collective in microcosm	DECIE	Government intervention	Accounting inscriptions	MCS
The object of controversies	Return from microcosm to macrocosm	DECIATS	Competitor actions		Matter of concern
	The dynamics of risks		Market changes		
	Interactions		Other intervening variables		
	Controversies				
	Experimentation				

### **Appendix 3: Relationship between Risk and MCS\* in the Formation of the Engine and ATS JV between Cino and Delink**

(\*including management control activities, inscriptions and material devices, and management control models)

	<b>Management Control Activities/Actions</b>	<b>Inscriptions and Material Devices, and How They Related to Management Control Activities</b>	<b>The Outcomes* of the Interplay between Management Control Activities and Inscriptions and Material Devices</b> (*including construction of management control models)
<b>Articulating reputational and financial risks for Cino</b>	Technical inspection of partner firm's manufacturing plant	<b>Inspection report:</b> Simplify and depict the partner firm's organisational structure and operational practice, and the inspection team's diagnosis Circulate such information back to Cino's head office Be the object of discussion between executives of Cino	The articulation of an engineering problem associated with partner firm's manufacturing plant
	Relate partner firm's manufacturing practices to its own practices in US		
	Sample US customers to predict other countries' customers' reactions Link historical statistics with the results of informal interviews about the company's regular customers' personal feelings and experience, and the company's public image	<b>Interview script:</b> Depict and record the company's regular customers' opinions Link other sources of information Rationalise personal feelings	The development of a hypothesis about the possible consequences of the engineering problem
<b>Hypothesising engine JV as solution to risks under the technology licensing agreement</b>	Compare possible competing options	<b>A piece of paper:</b> List the conditions, benefits and constraints of each option Allow comparison of the benefits and constraints of each option	The selection of JV as the solution to deal with risk under the technology licensing agreement
<b>Constructing</b>	Select partner firm	<b>The sales volume of</b>	The selection of Delink

<b>engine JV model</b>		<b>potential partner firm:</b> Screen and target potential partner firm	as the engine JV partner firm
	Follow company's business tradition and philosophy	<b>The sales volume of potential partner firm:</b> Align company's business philosophy and partner selection	
	A pre-JV formation audit on partner firm	<b>Audit report:</b> Depict information about partner firm Circulate such information back to the company's head office Be the object of discussion between the company's executives	The arise of concerns about partner firm's organisational structure and operating practices
	Relate the company's concerns on partner firm's social responsibility and operating practices to the company's own and general corporate practices in the US	<b>Engine production costs and legal costs:</b> Help hypothesise and objectify the potential effects of partner firm's organisational structure and operating practices on the engine JV	The development of the hypothesis of risk concerns about Cino's global reputation and financial performance
	Draw on the company's world-leading engine technology and management experience to persuade partner firm to change its organisational structure and operating practices		The promise of partner firm to change its organisational structure and operating practice
	Draw on the company's past JV experience in other countries Pursue and 'fight for' key management positions in the engine JV		The dominance of JV contract negotiation The draft of JV contract
	Rely on executives' personal feelings to project (i) possible cooperation between the company's partner and competitor firm in the future and (ii) the bargaining power between the company and partner firm		The development of the hypothesis of potential danger of using Booth as the competitor firm of the engine JV

	<p>Form a filtration JV to remove and replace competitor firm</p> <p>Build trust between partner firm</p> <p>Draw on world-leading filtration technology and management experience</p> <p>Propose to pair Cino technology-based filtration to Cino technology-based engines</p>	<p><b>(Potential reduction of engine production costs:</b></p> <p>Seduce partner firm to form a filtration JV</p>	<p>The construction of a proposal to form a filtration JV between the same partner firms</p>
	<p>Form a filtration JV</p> <p>Adapt the contract drafted for the engine JV</p>		<p>The formation of the engine JV between partner firms</p>
<p><b>The arise of new matters of concern (the failure to enlarge the target customer range of the engine JV) when the engine JV model was enacted and operated</b></p>	<p>Voluntarily share cost information</p> <p>Expand the engine JV's sales</p>	<p><b>(The continuous increase of) engine sales for the first five years:</b></p> <p>Lead the company to form the view that action should be taken to expand sales</p>	<p>The introduction of a B series engine to the engine JV</p>
	<p>Enlarge the target customer range of the engine JV</p> <p>Seduce partner firm by (i) showing financial benefits and (ii) exemplifying US practices</p>	<p><b>Potential financial benefits:</b></p> <p>Persuade partner firm to accept the company's proposal to enlarge the target customer range of the engine JV</p>	<p>The failure to enlarge the target customer range</p> <p>The arise of a new matter of concern</p>
<p><b>Articulating the risk of over-dependence on Delink in the Chinese market</b></p>	<p>Collect accounting information from independent professional local institution</p> <p>Calculate and estimate the sales growth rate and market share of partner firm</p> <p>Calculate and estimate the sales growth rate and market share of partner firm's competitor firms</p> <p>Compare the sales growth rate and market share of partner firm and its competitor firms</p> <p>Interview the sales agents of partner firm's commercial</p>	<p><b>Accounting numbers (sales and market share):</b></p> <p>Allow the company to conduct some accounting calculations to help the company obtain information that the company needs</p> <p><b>Sales growth rate and market share:</b></p> <p>Allow the company to compare partner firm's and competitor firms' future performance and market share</p> <p><b>Interview scripts:</b></p> <p>Depict and record the opinions of sales agents of partner firm's commercial vehicles about partner firm's future performance</p> <p>Link the interview results to the results of accounting</p>	<p>The conclusion of partner firm's absolute leading position in the Chinese market</p> <p>The formation of the view of the company's unaffordability to lose the partner firm</p> <p>The articulation of the problem of the company's exclusive dependence on Delink in the Chinese market</p>

	<p>vehicles</p> <p>Link the results of accounting calculations and interviews</p> <p>Qualitative cost and benefit analysis of the loss of partner firm</p>	<p>calculations</p> <p><b>Numbers:</b></p> <p>Allow the company to quantify, count, categorise and rank different opinions</p>	
	<p>Relate the projection of partner firm's market share and performance to the company's own performance</p>		<p>The formation of the view on the saturation of partner firm's sales in the long term</p>
	<p>Analyse the sales volume and growth rate of other engine segments (the light- and heavy-duty engine) in the Chinese market, where the company has the possibility of entering</p> <p>Compare the sales volume and growth rate of Chinese engine market to those of other countries</p> <p>Refer Chinese local competitor firms' sales behaviour</p>	<p><b>The sales growth rate:</b></p> <p>Allow the company to quantify and compare the performance and growth of the Chinese engine market to those of other countries</p>	<p>The potential of China becoming the largest commercial vehicle sales market in the world</p> <p>The projection of the likely loss of the opportunity to enlarge the company's sales to non-Delink related commercial vehicle companies in the Chinese market</p> <p>The articulation of the risk of over-dependence on Delink in the Chinese market</p>
	<p>Exemplify partner firm's past activities in the collaborative relationship</p>	<p><b>Engine component production costs:</b></p> <p>Inscribe/represent partner firm's appropriation behaviour</p>	<p>The articulation of the risk of partner firm's appropriation behaviour</p>
<p><b>Hypothesising and crafting an alliance portfolio model to deal with the risk of over-dependence on Delink in the Chinese market</b></p>	<p>Select partner firm</p> <p>Follow company's business philosophy</p> <p>Adapt the medium-duty engine JV model to the heavy- and light-duty engine JVs</p> <p>Draw on the company's world-leading engine technology and management experience to dominate JV negotiation</p> <p>Draw on past engine JV experience</p> <p>Draft JV contract</p>		<p>The company's dominance in the negotiation of heavy- and light-duty engine JV contracts</p>



	<p>Open discussion between executives</p> <p>Project the effect of changing relationship between partner firm and competitor firm on the company</p> <p>Draw on personal feelings and business philosophy</p>	<p><b>Competitor firm's engine sales price and cost:</b></p> <p>Enable the projection of competitor firm's likely actions</p> <p>Deny 'implausible' arguments</p> <p><b>Engine penetration rate:</b></p> <p>Objectify the potential effects of competitor firm's likely action</p> <p>Objectify the effects of unexpected activity</p> <p>Allow executives to attach executives' risk perception</p>	<p>The articulation of the problem of suppressed engine penetration rate</p> <p>The formation of a heavy-duty engine JV with non-Delink related Chinese local commercial vehicle manufactures</p>
	<p>Select partner firm</p> <p>Follow company's business philosophy</p> <p>Competition analysis</p> <p>Compare the light- and medium-duty commercial vehicle markets</p> <p>Refer the company's existing partner firm's leading position in a certain market to project potential partner firm's leading position in a different market</p>	<p><b>The number of competitor firms:</b></p> <p>Enable competition analysis</p> <p>Allow the company to compare different markets</p> <p><b>Sales volume of existing partner firm's commercial vehicles:</b></p> <p>Establish an equivalence between the leading positions of two partner firms, so that the leading positions of two partner firms can be compared</p>	<p>Articulation of the problem of the stability of potential partner firm's leading position in the Chinese light-duty commercial vehicle market</p>
	<p>Predict Futong's next five years' performance</p> <p>Open discussion between executives from different departments</p> <p>Draw on personal feelings</p> <p>Draw on the company's world-leading engine technology and management experience to dominate JV negotiation</p> <p>Draw on past engine JV experience</p> <p>Draft contract</p>	<p><b>Future sales volume of potential partner firm's commercial vehicles:</b></p> <p>Be the object of discussion</p> <p>Trigger the joint efforts between different departments</p>	<p>Mitigate the Cino executives' perception of potential partner firm's unstable leading position</p> <p>The formation of a light-duty engine JV with non-Delink related Chinese local commercial vehicle manufactures</p>
	<p>Express the intention to quit negotiation to form a heavy-duty engine JV (led to the management control</p>		<p>The pulling back of the negotiation on the proposal to form a heavy-duty engine JV</p>

	<p>struggles in partner firm)</p> <p>Promise from partner firm (independence to make management-related decisions)</p> <p>The enrolment of local provincial governor to lobby partner firm</p>		
			<p>The company's dominance in the negotiation of JV contract</p> <p>The formation of a heavy-duty engine JV with non-Delink related Chinese local commercial vehicle manufactures</p>
<p><b>The arise of new matters of concern (partner firm's uncooperative behaviour) when the alliance portfolio was formed</b></p>		<p><b>The engine penetration rate of the engine JV:</b></p> <p>The decrease of the engine penetration rate partially led the company's notification of partner firm's uncooperative behaviour</p> <p><b>The accounting, procurement and engineering information:</b></p> <p>Partner firm's resistance to provide accounting, procurement and engineering information partially led to the company's belief in the partner firm's uncooperative behaviour</p>	<p>The realisation of partner firm's uncooperative behaviour</p>
<p><b>Articulating the risk of mistrust between partner firms</b></p>	<p>The company-appointed personnel in the engine JV's informal engagement with partner firm-appointed personnel in the engine JV</p>	<p><b>Talk:</b></p> <p>Provide the intermediary for informal engagement between partner firm-appointed personnel in the engine JV</p> <p><b>Summary report:</b></p> <p>Depict and record the opinions of partner firm-appointed personnel in the engine Delink about possible causes of partner firm's uncooperative behaviour, which enables the reduction of matters of concern</p> <p><b>Numbers:</b></p> <p>Help code, group, count</p>	<p>The projection of possible causes of partner firm's uncooperative behaviour</p>

		and rank the number of frequencies of opinions mentioned by partner firm–appointed personnel in the engine JV	
	The company CEO's personal informal engagement with Delink's CEO		The confirmation of projected causes of partner firm's uncooperative behaviour
	Self-reflexivity on appearance of Delink's uncooperative behaviour		
	Project Delink's actions against Cino	<b>Penetration rate of engines made in the engine JV and revenues:</b> Objectify the effects of Delink's likely actions	The development of the hypothesis of the existence of risk exposure of losing trust between Cino and Delink
<b>Hypothesising an ATS JV as the solution to the risk of mistrust between partner firms</b>	Obtain private information about partner firm from partner firm Follow a framework Open discussions Link multiple accounting calculations Rely on the company CEO's personal preference, faith, feelings and tendency Rebuild trust with partner firm	<b>A-review document:</b> Provide a framework for selecting a business model among a few alternatives Help standardise and formalise the processes and practices of articulating JV model <b>Scenario, NPV, break-even and probability analysis:</b> Help quantify the outcomes of the ATS JV model and estimate the probability of occurrence of the outcomes <b>Accounting numbers:</b> Be the object of discussion between multiple people in the company <b>Microsoft Excel and @risk software:</b> Enable the calculation of NPV and probability of the occurrence of NPV	The articulation of the risk of non-value adding of the ATS JV The formation of an ATS JV under the risk of non-value adding
<b>Constructing the ATS JV model</b>	Follow a framework Brainstorming, open discussion and debate among the company's employees within and between different departments Code and prioritise different mitigation actions Combine the top-	<b>Written word, accounting formula and calculations, circle, colour, mathematic numbers, table, charts and graphs:</b> Draw together people from different departments and with different background Quantify risk and risk effects Be the object of discussion	The articulation of risks in the ATS JV The construction of MCS to deal with risks in the ATS JV

	<p>down and bottom-up approaches in brainstorming, open discussion and debate</p> <p>Cost and benefit analysis of competing options</p> <p>Draw on personal and corporate past experiences</p> <p>Construct ATS JV contract</p> <p>Strive for key management positions</p> <p>Demonstrate Cino's significant technical contribution in the JV and refer to past JV experience</p> <p>Make clear the company's attitude</p> <p>Put aside disagreed items</p> <p>JV contract</p> <p>Form a procurement committee and hire partner firm's previous accounting manager in the ATS JV, based on past engine JV experience</p>	<p>and controversies between employees</p> <p>Provide a common language that allows people from different departments and with different knowledge backgrounds to talk</p> <p>Accommodate and converge different qualitative opinions into quantitative numbers</p> <p>Rank potential challenges and allow the articulation of risks</p> <p>Allow people to situate potential challenges within their past experience and to quantify the probability of occurrence and effect of the challenges</p> <p>Visualise and objectify risk perceptions</p> <p>Prioritise the time and efforts of executing MCS</p> <p><b>Initial term sheet:</b></p> <p>Provide a handy base for the company's discussion and negotiation with partner firm on the possible management control mechanisms for the ATS JV</p> <p>Simulate the potential controversies and conflicts between partner firms in negotiations; MCS to be used in the ATS JV</p> <p>Distribute efforts in preparing the company's negotiations with partner firm</p>	
<p><b>The arise of new matters of concern (internal conflicts between the company, the company's engine JV and ATS JV) when the ATS JV was formed</b></p>		<p><b>Production cost of the engine, ATS and core components of ATS:</b></p> <p>The object of shifting responsibility for reducing cost</p>	<p>The arise of internal conflicts between the company, the company's engine JV and ATS JV</p>

## **Appendix 4A: Interview Protocol**

### **A list of interview protocol**

#### *A. Questions about antecedents to the formation of Delink Cino Engine (DECIE)*

1. Could you please explain the reasons for forming DECIE?
2. How important were risks in your consideration to engage DECIE?
3. How were these risks identified?
4. Could you please explain the nature of these risks?
5. Why these risks were not managed internally through your existing management control systems?
6. Why did you consider international joint venture as a solution for these risks?

#### *B. Questions about the process of negotiating and forming DECIE*

1. Could you please explain how potential international joint venture partners were sought and identified?
2. Could you please explain the process by which you selected Delink among a set of potential partner firms?
3. Could you please explain how a joint venture agreement was negotiated with a selected potential partner?
4. Could you please explain the challenges and difficulties in negotiating the joint venture agreement, and how these challenges and difficulties were managed?
5. How important were risks and management control system considerations in the negotiation of the joint venture relationship?
6. Could you please explain the details of the joint venture contract, with a specific focus on risk and management control system implications?
7. Could you please explain the management control system design choices that you had to make in negotiating the operational form of Delink (and why)?

8. Could you please explain why the partner firm's management control systems were used or not used in DECIE?

*C. Questions about the ongoing management of DECIE*

1. Could you please explain the threats you have encountered in the management of DECIE?
2. Could you please explain how these threats are connected or not connected to each other?
3. Could you please explain the process through which risks are identified?
4. Could you please explain whether you are facing the same or different risk at different stages of DECIE?
5. Could you please explain how risks in DECIE are related or unrelated to risks in the focal organisation?
6. Could you please explain how you track risks at different stages of DECIE?
7. Could you please explain the process by which the management control systems you had designed were enacted in practice?
8. Could you please explain the challenges and/or opportunities that arose as a result of implementing management control systems?
9. Could you please explain how these management control systems operate in relation to risks?
10. Could you please explain your level of satisfaction with the management control systems in place, and indicate how management control systems have performed differently to expectation?
11. Could you please explain whether and how you implemented the initially designed management control systems if they did not perform as expected?

**Note:**

- a. The above are just an interview protocol, and not all questions may be asked in the real interview.

- b. Questions may not necessarily be asked following the above order in the real interview.
- c. Additional questions may be asked in the real interview.

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## **Appendix 4B: Invitation Letter and Information Sheet**

28 June 2012

Dear Sir/Madam,

### **A STUDY OF RISKS AND MANAGEMENT CONTROL SYSTEMS IN INTER-FIRM ALLIANCES**

You are invited to participate in an academic study that examines the uses of management control systems in the risk management of international joint ventures.

#### **THE STUDY**

The aim of this study is to examine how risks are articulated and transformed in international joint ventures, and the implications of that on management control systems' design choices and operations. As a manager/key staff member of an international joint venture, your participation in this study has a vital role to play in improving our understanding of risks in international joint ventures that will better serve the management control needs of yourself and other managers.

This field study will be administered using multiple data collection methods, including interviews, observations and archival documents. The interview will last for one hour, during which themes around the risk management of international joint ventures will be discussed. The researcher would like to review relevant written documents (e.g., joint venture contract and company meeting minutes) and observe activities or operations (e.g., meetings and similar interactive events) only when the researcher is allowed to do so. There will be no interruption during the observation and review of archival documents and, therefore, there will be no impacts on your normal business operations. Although your response to this study would be greatly valued, your participation is



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voluntary. You are free to withdraw from the study at any stage and, if you choose to do so, all collected data will be destroyed.

## CONFIDENTIALITY AND ETHICS

Any information obtained from this study will be treated in strict confidence and will be used only for the purpose of this study. Data obtained will be stored in a locked filing cabinet in the researcher's office. Electronic copies of transcripts will always be password protected. Please be assured that the information you provide in this study will not be distributed to any third parties. Your responses to this interview are confidential, and the interview is not labelled, so they cannot be traced to any individual. The identity of each international joint venture will be kept confidential. All data gathered will be destroyed after five years, in accordance with The Australian National University's data management research protocol.

Should you have questions regarding the study or the content of the interview, or if you require summarised results of this study, please do not hesitate to contact:

Mr Zhichao Wang

or

Dr Habib Mahama

Telephone: + 61 2 6125 7374

Telephone: + 61 2 6125 4875

Email: [alex.wang@anu.edu.au](mailto:alex.wang@anu.edu.au)

Email: [habib.mahama@anu.edu.au](mailto:habib.mahama@anu.edu.au)

If you have any concerns regarding the way the research was conducted, you can also contact:

Human Research Ethics Committee at The Australian National University

Telephone: +61 2 6125 3427

Email: [human.ethics.officer@anu.edu.au](mailto:human.ethics.officer@anu.edu.au)

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Thank you very much for your participation and contribution to this important research.

Yours sincerely,

Zhichao Wang

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## Appendix 4C: Consent Form

### Consent Form

I ..... (please print) consent to take part in the project *Risks and Management Control Systems in Inter-firm Alliances*.

1. I understand that if I agree to participate in the research project, I will be asked to participate in interviews and may be observed directly in my work practices by the researcher.
2. I have read and understood the information sheet, and any questions I have asked have been answered to my satisfaction.
3. I agree to participate in the project, realising that I may withdraw at any time and that I do not have to provide a reason if I do so, and that there will be no adverse consequences to me if I do so. If I request this, any information I have shared will be destroyed if I withdraw participation.
4. I am aware that participation in this study will not be linked to my name. I understand the study will not have my name or any other identifying information on it and a research code number will be used instead.
5. I agree that interviews may be audio recorded and transcribed for further analysis. I understand that any personal, sensitive or potentially incriminating data will be kept confidential as far as the law allows. I understand that this form and other any other relevant data will be stored securely by the researcher. Data will be stored on a locked computer accessible only by the researcher.

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6. I agree that research data provided by me or with my permission during the project may be included in a thesis, presented at conferences or published in journals on condition that neither my name nor any other identifying material is used.

7. I understand that, although comments will not be attributed to me in any publication (unless I specifically request this), it may be possible for third parties to guess the origin of data and I should therefore avoid making any defamatory statements or disclosing confidential information.

8. I understand that I may request a copy of the result of the research project.

Signed ..... Date .....

**Researcher to complete**

We, ....., certify that we have explained the purposes and procedures of the research to ....., and consider that s/he has understood these and given informed consent to participate in the interview.

Signed ..... Date .....