Doctoral Thesis

Counterparty risk in procurement transactions: Contractual, financial, operational, and strategic risk mitigation

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Counterparty risk in procurement transactions: 
Contractual, financial, operational, and strategic 
risk mitigation

A dissertation submitted to 
ETH ZURICH 
for the degree of Doctor of Sciences

presented by

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2014
... to my beloved parents.
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Moritz Alexander Peter
Zurich, April 2014
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## Acronyms

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVOB</td>
<td>Annual Volume of Business</td>
</tr>
<tr>
<td>CAPEX</td>
<td>Capital Expenditure</td>
</tr>
<tr>
<td>CAS</td>
<td>Complex Adaptive Systems</td>
</tr>
<tr>
<td>EBIT</td>
<td>Earnings before Interest and Taxes</td>
</tr>
<tr>
<td>Ed.</td>
<td>Edition</td>
</tr>
<tr>
<td>E.g.</td>
<td>Exempli gratia [for example]</td>
</tr>
<tr>
<td>Et al.</td>
<td>Et alii [and others]</td>
</tr>
<tr>
<td>EVLN</td>
<td>Exit, Voice, Loyalty, Neglect</td>
</tr>
<tr>
<td>I.e.</td>
<td>Id est [that is]</td>
</tr>
<tr>
<td>IP</td>
<td>Intellectual Property</td>
</tr>
<tr>
<td>IT</td>
<td>Information Technology</td>
</tr>
<tr>
<td>N.a.</td>
<td>Not applicable</td>
</tr>
<tr>
<td>OEM</td>
<td>Original Equipment Manufacturer</td>
</tr>
<tr>
<td>OLS</td>
<td>Ordinary Least Squares</td>
</tr>
<tr>
<td>RDT</td>
<td>Resource Dependence Theory</td>
</tr>
<tr>
<td>TCE</td>
<td>Transaction Cost Theory</td>
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Abstract

The effective management of undependable partners (e.g. financially distressed suppliers) in procurement transactions is an antecedent of widespread lean practices such as outsourcing, just-in-time deliveries, or supply network downsizing. Although a high degree of efficiency can be achieved through lean practices, it comes at the cost of greater dependence on the supply base.

This is particularly true of industries that manufacture and rely on customized pre-products. In the presence of switching barriers, dependent buyers can easily find themselves locked into a supplier relationship and vulnerable to opportunistic behavior by the supplier or its share- and stakeholders.

This concern has resulted in a growing interest in supply chain risk management research, as buyers must compete on their procurement markets for dependable supply at the lowest possible costs. As competition among buyers tends to intensify when suppliers are in financial distress, this dissertation answers the following research question: How can a buying firm protect its supply chain, if a supplier is financially distressed?

Based on the notion that a financially distressed supplier might not be able to meet its contractual obligations, this dissertation takes a comprehensive approach to the managerial problem of supplier financial distress. To advance supply chain literature on the topic of counterparty risk in terms of supplier financial distress, three related articles have been written.

The first article investigates factors that influence the supplier’s decisions to design and enter a contractual relationship. An important contribution of this work is the development of a contract acceptance model, validated with data pertaining to long-term buyer-supplier relationships, to explore the scholarly and managerial implications of contract design and acceptance.

The second article investigates a buyer’s response options to supplier financial distress and identifies a significant relationship between a buyer’s dependence on a distressed supplier, the support effort shown by the buyer and the supplier’s restructuring success. Factors that influence the buyer’s response strategy are identified. The effectiveness of each response strategy is tested by tracking the financial performance of distressed suppliers over a period of four years.

The third article presents a novel framework to study and manage supplier financial distress by incorporating research insights from publications on supply chain risk management, complex adaptive systems, and stakeholder management. With action-based research, a twofold research gap is addressed. First, since most
publications on supply chain disturbances concentrate on dyadic supplier-buyer relationships, the negative effects of conflicting stakeholder interests in cases of supplier financial distress have not been sufficiently taken into consideration. Second, as most publications on supply chain disturbances have a preventive focus, we add an analytical and managerial framework for reactive supplier financial distress management.

As this research project is one of the few large-scale investigations of supplier financial distress, it advances literature on supply chain risk management on this important topic. The major research contribution is its systematic approach to the management of financially distressed suppliers. Since preventive measures come at a cost (e.g. redundancy through second sources, inventories) and supplier financial distress cannot be excluded ex ante, this reactive approach is of high practical and scholarly value, as it allows buying firms to minimize supply chain redundancy and maximize efficiency.
Zusammenfassung


Dies betrifft insbesondere Industrieunternehmen mit kundenspezifischen Vorprodukten. Sofern Barrieren für einen Lieferantenwechsel bestehen, könnte ein abhängiger Einkäufer dem opportunistischen Verhalten des Lieferanten oder dessen Anspruchsgruppen ausgesetzt sein.

Diese latente Gefahr hat zu einem steigenden Forschungsinteresse an Lieferkette-risikomanagement geführt, da Einkäufer auf den Beschaffungsmärkten um eine verlässliche Versorgung zu minimalen Kosten konkurrieren. Die Konkurrenzsituation der Einkäufer auf den Beschaffungsmärkten spitzt sich zu, wenn Lieferanten finanziell kritisch sind. Daraus ergibt sich folgende Forschungsfrage: Wie kann eine Einkaufsorganisation die Belieferung von einem finanziell kritischen Lieferanten möglichst effektiv sicherstellen?


Dieses Forschungsprojekt ist eines der wenigen empirischen Untersuchungen von finanziell kritischen Lieferanten und trägt daher zur Fortentwicklung der Literatur über Risikomanagement von Lieferketten bei. Der entscheidende Forschungsbeitrag ist die Entwicklung eines systematischen Ansatzes zum reaktiven Management von kritischen Lieferanten. Da die meisten präventiven Maßnahmen kostspielig sind (Redundanz durch zweite Quelle, Sicherheitsbestände etc.), trägt unser reaktiver Bezugsrahmen zur besseren Balance von Lieferketten Redundanz und Effizienz bei und erweist sich daher als nützlich sowohl für die Forschung als auch für die Praxis.
Chapter 1
Introduction

Crisis is a productive state provided you do not associate it with catastrophe.
Max Frisch

1.1 Motivation and Research Objectives
As Frisch claims, crises and chances are not mutually exclusive. The Greek root (decision point) and the Chinese symbol (combination of danger and opportunity) of the word “crisis” hint at a symbiotic understanding of crisis and opportunity. But even if corporate crises have potentially positive outcomes, the prevention of supply chain disturbances triggered by distressed suppliers remains one of the most challenging tasks for supply chain risk management (Bode et al., 2011; Oehmen et al., 2009).

Due to the uncertain outcome and potential supply chain disturbance, supplier financial distress constitutes a severe inbound supply chain risk for any buying firm (Chopra and Sodhi, 2004; Wagner et al., 2011; Zsidisin and Wagner, 2010). Particularly in the advanced stages of financial distress, complex decisions have to be taken under time pressure and with limited resources left available (Asquith et al., 1994). These considerations lead to the main research question of this dissertation:

*How can a buying firm protect its supply chain, if a supplier is financially distressed?*

A definitive answer to this question is of scholarly interest and great practical relevance. In large manufacturing industries, such as the automotive industry, suppliers usually produce parts, components, modules, and systems that account for more than 50% of the value of the final product (Richardson and Roumasset, 1995). The need for productivity improvement (Razzaque and Sheng, 1998) and the desire to focus on core competencies (Arnold, 2000; Boyson et al., 1999; Quinn and Hilmer, 1994) have resulted in outsourcing and thus “reliance on external sources for manufacturing components and other value adding activities (often capital-intensive)” (Lei and Hitt, 1995, p. 836). While a great degree of efficiency can be achieved through outsourcing, it comes at the cost of greater dependence (Kannan and Tan, 2002; Van Damme and Ploos van Amstel, 1996; Zsidisin, 2003), and of exposure to unforeseen events with suppliers (Zsidisin et al., 2000). Under these circumstances, supplier financial distress is likely to cause logistical disturbances (Riddalls and Bennett, 2002) or even to trigger supply
chain disruptions resulting in severe financial damage for the buying firm (Blackhurst et al., 2005). Hence, the objective of this dissertation is to provide scientific and yet practical advice for risk-oriented supply base management. Enhancing supply security with a risk-oriented supply base management can provide a competitive edge if rival firms compete on their sales as well as on their procurement markets. Even if the body of research with regard to supply chain vulnerability is fairly extensive (Peck, 2006; Svensson, 2004; Wagner and Bode, 2006; Wagner and Neshat, 2010), little of the empirical work on reactive countermeasures to supplier financial distress that has taken governance mechanisms between firms in supply networks into consideration. Given the threat of supply disruption caused by a financially distressed supplier, this lack of research belies the high practical relevance of the topic. To advance both the academic discussion and risk management practices, this dissertation contributes to close the research gap. In sum, the research objectives of this dissertation are two-fold. The first objective is to make a research contribution to the supply chain risk management literature with regard to the severe procurement risk of supplier financial distress. This is complemented by the second objective of providing practical recommendations for buying firms on how to manage financially distressed suppliers.

Extending previous research, this dissertation takes a reactive perspective to supplier financial distress. Recent publications indicate that these research objectives are beneficial to both researchers and practitioners. For instance, Sodhi, Son, and Tang (2012) identified “a process gap in terms of inadequate coverage of response to risk incidents.” Likewise, Bode et al. (2011, p. 833) are aware that “little attention, however, has been devoted to the strategic behavior that firms employ in the wake of supply chain disruptions” and point out that a firm’s ability to respond effectively to adverse events is critical to its competitiveness. Not surprisingly, Thun and Hoenig (2011) find that firms using reactive supply chain risk management have a higher average value in terms of disruptions resilience. Hence, the research objectives of this dissertation address a fruitful field of research for both researchers and practitioners.

A problem well stated is a problem half-solved.
John Dewey

1.2 Structure of the Dissertation

To achieve both the scholarly and practical objectives of this dissertation, three interlinked articles have been written, as illustrated by Figure 1-1. The first article focuses on contractual aspects of buyer-supplier relationships. The second article investigates the supply market to identify and analyze response alternatives to supplier financial distress. The third article elaborates on the other two by
proposing a holistic response framework to supplier financial distress. Each article examines a research question that contributes to answering the main research question: How can buying firms protect their supply chains, if a supplier is financially distressed?”

Figure 1-1: Structure of the dissertation

The research objectives and connectors among them are depicted in Figure 1-2. The connectors are contractual, financial, operational, and strategic counterparty risk mitigation approaches found in complex procurement transactions. Two research models and one research framework have been developed as shown below.

Figure 1-2: Interrelation of research questions

The three articles that make up the body of this dissertation apply a range of theories and empirical methods. The following chapter summarizes the multi-method research approach of this dissertation.
1.3 Research Approach

1.3.1 Research Methods

Unique data enabled an empirical test of the hypotheses as access to financial and contract data of the supply base of a major German automotive OEM was granted on the condition that anonymity of the analyzed suppliers was assured. Sufficient supplier and case study data was available, since this company started to monitor the financial performance of all its first-tier suppliers in 2008. The constant financial performance measurement of its supply base mitigates supply risk, as it enables the OEM to act in case of supplier financial distress in time and to monitor the supplier’s turnaround activities. Based on this unique data, the three articles that comprise the body of this dissertation use a range of theoretical and empirical methods. The articles follow Okhuysen and Bonardi’s (2011) call for multiple lens explanations, which can counteract the creation of isolated silos of knowledge within and across disciplines. Okhuysen and Bonardi (2011) regard multiple lens research as an opportunity to reflect the reality of management in theorizing, which is crucial for the endeavor to enhance relevance and to conduct “research that matters”. Likewise, Sanders and Wagner (2011) exemplify how multidisciplinary and multi-method research potentially increases the insight and influence of research contributions, when “supply chain decision makers must manage complex, multifaceted, and nuanced issues” (Sanders and Wagner, 2011, p. 317). To help decision makers, and advance the supply chain discipline, a framework for financially distressed supplier management is developed in this dissertation.

The first article uses a Dirichlet multivariate regression method for modeling components (contract states) as a percentage of a total (contractual buyer supplier relations). The resulting contract acceptance model is motivated by an empirical investigation of the decision process to design and enter a contractual relationship. Compositional data consists of non-negative proportions with unit-sum. According to Hijazi and Jernigan (2009), these types of data arise whenever objects are classified into disjointed categories measuring their resulting relative frequencies into percentage contributions from its various parts. Hijazi and Jernigan (2009) emphasize that under the unit-sum constraint (100%), working with covariance and correlation might be distorting. They conclude that “compositional data are rarely analyzed with the usual multivariate statistical methods” (Hijazi and Jernigan, 2009, p. 77). Hence, the log-ratio analysis to model compositional data was introduced by Aitchison (1986). Campbell and Mosimann (1987) suggest the Dirichlet covariate model for such data. We follow...
Gueorguieva et al.’s (2008) study that demonstrates how Dirichlet models of multivariable linear regression can address a more complex set of relationships. Hence, the Dirichlet multivariable regression method was chosen to reduce the dimensionality of the data to produce interpretable and coherent results.

A system of two equations (models) was specified in the second article for data analysis purposes using separate ordinary least squares (OLS) regression for precise and unbiased estimation. The increment in variance explained was significant in both cases. For each regression model, we scrutinized influence diagnostics and verified that the assumptions underlying OLS estimation were met. Although not an element of the developed theory, the two specified equations could be interpreted as a simple mediation model. For this reason and to see whether the effect of cooperativeness of response on EBIT margin could be explained simply by dependence (i.e., no mediation), a mediation analysis was conducted using the bootstrapping procedure suggested by Preacher and Hayes (2004).

The third article uses a conceptual approach to develop a novel analytical and managerial framework to study and manage supplier financial distress. Fulmer’s (2012) review of articles published in the Academy of Management Review reveals that there is no single best way to structure conceptual papers. However, the reviewed award-winning articles match the manuscript form and theoretical purpose, which allows a successful communication of insightful conceptual work. Building on supply chain risk management, complex adaptive systems, and stakeholder theory seminal works, a reactive approach to financial distress management is developed in the third article. Hence, the third article derives novel theoretical and managerial insights from reviews of existing theory and research. Therefore the contribution resides in synthesizing recent advances and ideas to produce a fresh new approach. Le Pine and Wilcox-King (2010) point out that publications making this kind of contribution often integrate theoretical perspectives to provide a new theoretical (or in our case conceptual) structure. This suggestion is the guiding principle of the third article.

To explore new aspects of a discipline and to support decision making, case study based research has been found to generate creative insights in a real-life context (Eisenhardt, 1989a). Hence, a case study can be described as an “empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context” (Yin, 2009, p. 189). The third article is dedicated to the investigation of the complex, real-life phenomenon of supplier financial distress based on case research. In order to make it a persuasive case study, it was conducted to meet conceptual requirements, as over-simplification, ex-post obviousness, and small sample sizes have made the case study a controversial research approach.
Moreover, the third article (like the first and second ones) is based on widely accepted theoretical foundations as explained in the next section.

1.3.2 Theoretical Foundations

As companies in the automotive industry continue to move towards inter-firm cooperation to gain competitive advantage through such means as outsourcing, supply chain risk management researchers need to examine risk at the level of inter-firm relationships, supply chains and supply networks (Harland et al., 2003). With the emergence of intricate supply chain networks, competition has shifted from the single company to supply networks as “networks of allied firms have begun competing against each other” (Dyer and Singh, 1998, p. 675). Therefore, this dissertation takes into account that “supply chains are not linear chains but complex systems of networks” (Peck, 2006, p. 128). It applies complex adaptive systems, responses to unsatisfactory relationships and resource dependence as well as stakeholder and agency theory. Figure 1-3 depicts the objectives, instruments and theoretical framework of distressed supplier management. The conceptualization of cooperative and uncooperative response options to achieve the objective of continuous supply, maximum quality and minimum costs is applied throughout the three articles that comprise the body of this dissertation.

The conceptualization of supply networks as complex adaptive systems (CAS) can be an insightful framework for analyzing the relationship that ties the structure of a firm with its (supply) environment. The concept of CAS enhances the understanding of how automotive supply networks evolve, adapt and change according to their internal mechanisms, environment and co-evolution. In their description of complex adaptive systems, Choi et al. (2001) refer to agents, connectivity and dimensionality as internal mechanisms of CAS. In addition to these internal mechanisms, the environment of CAS is described as a dynamic and rugged landscape. Based on these concepts, Choi et al. (2001) describe the development of CAS with non-linear changes and predict a non-random future.
An important research stream that focuses on the interdependent exchange of resources, is resource dependence theory (RDT) as formulated by Pfeffer and Salancik (1978). According to RDT, no firm is completely self-sufficient, as firms depend on each other for the resources they require. Therefore, firms have linked their environments through inter-dependent relationships leading to (inter) dependencies. Consequently firms have to limit dependence and uncertainty in order to survive. RDT provides predictions about various actions that firms can take in response to resource dependencies. Hence, RDT brings to this study an insightful framework for understanding supply networks and the ways in which firms stabilize their supply environment by reducing their dependence on external sources.

Recognition of the response options to unsatisfactory relationships can be credited to Hirschman's (1970) pioneering suggestion of exit, voice, and loyalty responses. After other authors such as Rusbult et al. (1982) added “neglect” as a response, the EVLN responses to dissatisfaction can be summarized as:

- **Exit**: Terminating the relationship
- **Voice**: Actively attempting to improve conditions
- **Loyalty**: Waiting for conditions to improve
- **Neglect**: Passively allowing the relationship to deteriorate

The EVLN responses have been used to analyze declining job satisfaction (Withey and Cooper, 1989) and dissatisfaction in romantic relationships (Rusbult et al., 1986). These studies indicate that the EVLN responses are useful categories to analyze how people respond to dissatisfaction. Therefore, we use this typology of responses to categorize and to understand, for instance, a buyer’s reaction to a supplier's financial instability.

Stakeholder theory (Freeman, 1984) can explain and predict the ways in which firms function under the influence of their environment (Rowley, 1997). According to Cornell and Shapiro (1987), a firm is a bundle of explicit and implicit contracts with stakeholders. If stakeholders anticipate that contracts might not be fulfilled as a consequence of financial distress, the firm is likely to depreciate in value. Arogyaswamy et al. (1995) conclude that favorable relationships with external stakeholders that provide the firm with resources are critical to the survival of the firm. Based on this assumption, they stress that stakeholder relationships are a critical factor in recovery, as “the deterioration of a declining firm’s image and relationships with external stakeholders can pose the survival threatening effects of further decreasing firm revenues, increasing costs or reducing management’s flexibility in combating decline” (Arogyaswamy et al., 1995, p. 499). This overwhelming indication of stakeholder importance in successful financial recovery is a core assumption of this dissertation.
It is often difficult for a buyer to predict the restructuring chances of a financially
distressed supplier as suppliers might place their own interests first. This
phenomenon is known as opportunistic behavior and is facilitated by information
asymmetry and uncertainty (Carson et al., 2006; Zsidisin et al., 2004; Eisenhardt,
1989b). According to RDT, conflict in inter-firm relations derives from resource
scarcity (Pfeffer and Salancik, 1978). In this context, interdependence might lead
to conflicts if the actors do not have similar preferences. When there is
information asymmetry within complex automotive supply networks,
opportunistic hazards might be the result. Agency theory (Eisenhardt, 1989b;
Schmalensee, 1988) has been applied by Zsidisin et al. (2004) to buyer-supplier
relationships, as agency theory variables such as outcome uncertainty, goal
conflict, adverse selection and moral hazard influence supplier-buyer
relationships. Based on this theoretical foundation, the main research findings of
this dissertation are described in the next section.

Things do not get better by being left alone.
Winston Churchill

1.4 Research Findings

1.4.1 Scholarly Implications
This dissertation follows a stream of research that focuses on supply chain risk
management within automotive supply networks (Blackhurst et al., 2008; Hallikas
et al., 2004; Svensson, 2000; Thun and Hoenig, 2011; Wagner and Bode, 2009).
However, it is one of the very few large-scale investigations on supplier financial
distress and thus enriches the supply chain management literature on the important
topic of supplier financial distress.

This research is based on the notion that the network is an essential part of
effective supply chain risk management (Oehmen et al., 2009) or as Christopher
and Peck (2004, p. 9) point out: “Since supply chain vulnerability is by definition
a network-wide concept, the management of risk has to be network wide, too”.
Hence, our research implies that the overall risk position of an automotive OEM is
increasingly determined by its unstable and competitive supply market.

The resulting evolution of purchasing into a success-critical process with strategic
relevance has been well noted in research literature and comprehensively
summarized by Cousins and Spekman (2003). Thus purchasing can be regarded as
a value-adding function (Ellram et al., 2002), while supply chain risk management
has become a research field with high practical relevance (Manuj and Mentzer,
The first key contribution is the provision of an empirical analysis of a variety of buyer responses to supplier financial distress, or in terms of the third chapter’s research question: “Which market oriented response options facilitate an effective distress management?” Our guiding idea is to investigate the reciprocal relationship between the cooperativeness of the buyer’s response to the supplier’s financial distress and the success of the financially distressed supplier’s recovery. Our results demonstrate that the power-dependence theory of Pfeffer and Salancik (1978) can also be applied to supplier financial distress management.

Our results are in line with resource dependence theory, which predicts that when the dependence is high, the focal firm is willing to bear costs for the benefits of predictable and certain exchanges of resources (Pfeffer and Salancik, 1978). Our research revealed that the greater the dependency on a supplier, the greater the uncertainty of supply in case of supplier financial distress and the higher the chances that the supplier is supported by a dependable buyer. The task of management, as developed from the RDT, is the management of inter-firm transactions to acquire and maintain resources, as survival of the firm depends on its ability to cope with environmental contingencies and dependencies. This objective is central to the management of financially distressed suppliers and leads to the conclusion that Pfeffer and Salancik (1978) anticipated the growing interest in supply chain risk management.

Especially in the short run, a high level of dependence on the supplier implies that the “captive” firm is forced to accept the locked-in relationship, because of its incapacity to change the current situation (Bourantas, 1989; Caniëls and Gelderman, 2005). Hence, the financial distress of a supplier on which the buying firm is dependent will push the focal firm to invest in the relationship in order to gain resilience.

Additionally, this dissertation takes competing stakeholder interest into consideration, as the competitiveness of a supplier depends on its ability to provide simultaneously value to multiple supply chains, since a supplier usually has more than one buyer. Based on this notion this dissertation presents a novel theoretical and managerial insight from reviews of theory and research by building on supply chain risk management, complex adaptive systems, and stakeholder theory seminal works. As a result, the second key contribution of this dissertation is in synthesizing recent advances and ideas into a fresh new approach to reactive distress management in response to the fourth chapter’s research question: “How should a buyer protect its supply chain if a key supplier is financially distressed?” This dissertation therefore strives to comprehend the causes and effects of conflicting stakeholder interests in the context of competitive automotive supply networks by building on insights from stakeholder research and by conceptualizing supply networks as CAS. It shows that inbound supply
management should consider network effects rather than the dyadic interactions of isolated firms in the network. The managerial implications of this finding are presented in the next chapter.

The third contribution of this dissertation is its investigation of factors that influence the decision of contract counterparties to enter a contractual relationship. Previous research has neglected the factors that influence the buyer’s and supplier’s decisions to enter a contractual relationship, as most contract-related research takes a mutual contract signature as a standard assumption and starting point for analysis (e.g. dispute resolution). From the contract acceptance model, we first find that increasing dependence of the supplier on the buyer leads to higher rates of contract acceptance. Second, we discover that an increasing dependence of the buyer on the supplier induces lower contract acceptance by the supplier. Based on our findings, we identify contractual leverages to minimize hold-up risks in procurement relationships characterized by asymmetric dependence. Consequently, contractual relationships between the buyers and suppliers merit closer attention from a risk management perspective in large manufacturing industries with substantial contributions of value from the supply base by answering the second chapter’s research question: “Which factors influence contract acceptance and how can counterparty risk be minimized?”

This dissertation is in line with Pfeffer and Salancik’s (1978, p. 94) claim that “the dominant problems of the organization have become managing its exchanges and its relationships with the diverse interests affected by its actions.” The managerial implications are as follows.

1.4.2 Managerial Implications

Since supply disturbances and disruptions in supply networks are costly (Hendricks and Singhal, 2005), this dissertation improves the understanding of risk-oriented supply base management in case of supplier financial distress. The harmful consequences of supplier financial distress and default call for a responsive approach to supplier financial distress in order to ensure continuous supply and stable supply processes.

An enhanced response to supplier financial distress can bring a competitive advantage as the trade-off between savings and security (or efficiency versus redundancy) has become a strategic issue in supply chain management (Christopher and Peck, 2004; Hauser, 2003; Spekman and Davis, 2004). Kleindorfer and Saad (2005, p. 56) observe “while many writings […] emphasize the importance of leaness […], much less attention has been given to the trade-off between leaness on the one hand, and systems’ reliability and supply chain robustness on the other hand.” Supply chain practices that incorporate redundancy, such as carrying buffer stock or using alternative sources of supply,
reduce the immediate impact of a supply chain disruption by buying time (Zsidisin and Wagner, 2010). The exposure to the harmful impact of supply chain disturbances (Riddalls and Bennett, 2002) and supply chain disruptions (Blackhurst et al., 2005) are thereby reduced. However these tactics to minimize the impact of a supply disruption are superficial fixes that fail to resolve the more fundamental issues (Spekman and Davis, 2004) and lead to additional costs as the incremental costs of additional sources or safety stock can be seen as an insurance fee (Sheffi and Rice, 2005).

To avoid the “hold-up risk” of procurement relationships with dependence asymmetry in favor of the supplier, the buyer can internalize the activity in order to control the risk (Nooteboom et al., 2000). However, this option is expensive. Likewise, private and possible court enforcement can also be seen as a costly alternative and the ideal of creating a purely self-enforcing procurement relationship is often not feasible. In order to respond to buyer dependence on the supplier, the buyer must ensure the right choice of contractual legal entity. If the supplier rejects a contractual relationship with the highest legal entity, a letter of comfort might ensure potential claims of the buyer against the supplier in the future. Moreover, a buyer should try to assume as many intellectual property (IP) rights as possible in order to lower switching barriers. Supplementary special agreements might lead to covenant agreements which allow the buyer to cancel the supply under certain circumstances and ensure the support of moving the business to another supplier. Likewise, the supplier has the contractual leverage to minimize its risk position against the buyer. The supplier should try to balance its sales among its customers (buyers) to avoid overdependence. In the case of sales independence, the supplier can reduce its dependence on the buyer by negotiating favorable payment terms, contract duration, and safeguards for its capital expenditure (CAPEX). In addition, the supplier should protect its intellectual property rights to increase the buyer’s dependence.

With the evolution of intricate supply chain networks, competition has shifted from the single company to the supply network as “networks of allied firms have begun competing against each other” (Dyer and Singh, 1998, p. 675). Therefore, this research project has to take into consideration that “supply chains are not linear chains but complex systems of networks” (Peck, 2006, p. 128). The developed reaction framework to supplier financial distress therefore takes a variety of stakeholder groups into consideration and intensifies the competitive situation among buyers of the distressed supplier.

The dynamics within competitive resource environments are ignored by considering only the dyadic perspective between a distressed supplier and a single buyer. Despite recent supply chain risks research activities, “there is a growing recognition that corporate risk management has failed to keep pace with the
realities of networked organizations in a networked world” (Peck, 2006, p. 140). This also accounts for suppliers in financial distress, as a distressed supplier usually acts prior to filing bankruptcy, and as buyers typically protect themselves if a shared supplier is threatened by financial distress (Hertzel et al., 2008). In this situation, each buyer tries to avoid positive external effects that are beneficial for its competitors who share a supplier.

Thus we provide a set of supplier financial distress responses to buyers, as the delivery reliability and delivery performance of suppliers are key success factors within inherently risky and complex automotive supply networks. For this reason, it is important to keep in mind that firms compete not only in their sales markets, but also in their procurement markets. Therefore a switch, phase-out and neglect reaction to financial distress offers protection from free riders. However, cooperative responses, such as the support of an investor search, liquidity support or even the award of new business, run the risk of also being beneficial to the buyer’s competitors who source from the same supplier. Hence a buyer should protect itself in advance of its support effort by specific contracts and by closely monitoring the development of the supplier relationship.

Thomas and Tymon (1982) identify five critical properties or components of research relevance. Each of their following properties comprises a dimension for evaluating the relevance of a research project: descriptive relevance, goal relevance, operational validity, non-obviousness and timeliness. According to their understanding, this dissertation exhibits high practical relevance in the following ways.

• It is based on accurate data suitable for research on supplier financial distress (descriptive relevance);
• Its theory framework corresponds with the management of supplier financial distress, which practitioners wish to enhance (goal relevance);
• It allows practitioners to manipulate supplier financial distress (operational validity);
• It exceeds the complexity of common sense already used by practitioners (non-obviousness); and
• It provides a theoretical framework for practitioners in time to handle the problem of supplier financial distress (timeliness).

In summary, better identification and management of contractual, financial, operational and strategic risks on the upstream supply side will allow buying firms to balance the short-term effects of costs savings against the security of supply (Kleindorfer and Saad, 2005). Since the dependency on the supply base made supply chain interruptions costly for automotive OEMs, supply chain interruptions related to supplier financial distress need to be better understood to be prevented.
and controlled. This will translate into both improved financial performance and competitive advantage. In this context the practical relevance orientation of this dissertation is meant to contribute to the two-way interaction between researchers (“knowledge producers”) and practitioners (“knowledge users”) (Thomas and Tymon, 1982). Even though the focus of this research is the automotive industry, the findings are intended for application to other manufacturing industries that are exposed to supplier distress risks.

A goal without a plan is just a wish.
Antoine de Saint-Exupéry

1.5 Research Directions

1.5.1 Research Limitations

Unique data enabled the development of a more detailed understanding of contractual, financial, operational, and strategic counterparty risk management. We hope that our study brings more attention to the role of risk management in dealing with critical suppliers. However, as no research is without limitations, the findings here need to be considered in that light. One obvious limitation pertains to the data collection. The rather small number of cases from a single industry is a potential weakness and an extension across other industries would augment the ability to generalize the results. The data set was focused on the automotive industry and derived from a single (but major) company in that industry. This data origin helped in the estimation and interpretations of results, as it allows the application of accurate and context-specific measures. However this concentration on a single industry imposes clear limits on generalizing the results.

Another limitation might be the dynamic market environment of the analyzed time horizon with slumping sales in 2008-2009 and surging sales in 2010-2011. One might therefore question the generalization of the research results to a more stable market environment. However, the volume volatility of those years applied to all first-tier automotive suppliers in the sample.

1.5.2 Future Research

An avenue for further research might be the investigation of turnaround success factors in other manufacturing and service industries, since dependent buyer-supplier relationships are not restricted to the automotive industry. A particularly fruitful undertaking might be an analysis of supply base management practices across multiple industries. Since the mature practices of outsourcing and other forms of external value contribution (e.g. technological transfer) are irreversible,
much still remains to be explored and understood about dynamic buyer-supplier relationships.

Evidently the dynamics within competitive resource environments are overlooked by considering only the dyadic perspective between a distressed supplier and a single buyer. Hence, there is still a need for research into competing stakeholder interests in cases of supplier financial distress, as this conjecture of adverse effects in such cases merits further exploration.
1.6 References


Chapter 2

Influence of Dependence on the Counter-party on Supplier Contract Acceptance

Abstract

Reaching a mutually satisfactory contractual agreement is an essential part of the sourcing process. However most contract-related research takes a conjoint contract signature as standard assumption and starting point for analyzing contractual relationships (e.g. dispute resolution). With this study we go one step beyond this assumption to investigate the factors that persuade a buyer and a supplier to form a contractual relationship. For this reason, a contract acceptance model with a unique dataset is developed and tested.

Our analysis reveals that increasing dependence of the supplier on the buyer leads to higher rates of contract acceptance. Furthermore, a buyer's increasing dependence on the supplier makes the supplier less likely to accept a contract with that buyer immediately. Based on our findings, we identify contractual leverages to minimize hold-up risks in procurement relationships characterized by asymmetric dependence.

Keywords: procurement, buyer-supplier relationships, contracts, contractual relationships, contract acceptance, dependence, resource dependence theory, automotive industry
2.1 Introduction

Reaching a conjoint contractual agreement is an essential part of the sourcing process. Entering a contractual agreement seals the business award process for a specific item or service to a selected supplier and has crucial implications both for the entire delivery phase and for the future buyer-supplier relationship. Not surprisingly, contracting has been a fruitful research field with increasing practical relevance in times of outsourcing and global sourcing. Thus contractual governance of interfirm relationships has turned out to be an important research field (Antia and Frazier, 2001; Argyres and Mayer, 2007; Kalnins and Mayer, 2004; Lumineau and Henderson, 2012; Lumineau and Malhotra, 2011; Weber and Mayer, 2011). However, previous research has neglected the factors that influence a buyer’s and a supplier’s decision to enter a contractual relationship, as most contract-related research takes a mutual contract signature as standard assumption and starting point of analysis (e.g. dispute resolution). With this study we go one step beyond the signature assumption to investigate the factors that influence the decision of contract counterparties to enter a contractual relationship. In order to analyze the formation of contractual relationships, we develop a contract acceptance model, and then test it with a unique dataset from the supply base of a major German automotive original equipment manufacturer (OEM).

Choi and Krause (2006) define a supply base as the portion of a supply network that a buying company actively manages. The buying company manages its suppliers through contracts (Choi and Krause, 2006). In order to gain competitive advantage, automotive OEMs must develop, manage and rely on a capable supply base (Dyer, 1996; Wagner and Johnson, 2004). This requires managing the success-critical supply base on a global scale with effective contracts and leads us to the following research questions: How do suppliers react to contracts offered by a buying firm? How is the reaction of the supplier influenced by counterparty dependence (i.e., the supplier’s dependence on the buyer and the buyer’s dependence on the supplier)? By answering these questions our study adds significant and novel knowledge to the contract design literature and to the literature on contractual relationships between buyers and suppliers.

The paper proceeds as follows. In order to find conclusive answers to these two research questions, we begin with an overview of the literature on contractual relationships in section 2. In this way we identify the research gap with regard to contract acceptance; we fill this gap with the contract acceptance model that we develop in section 3. Section 4 discusses the methodology and data collection. The analysis of our contract acceptance model presented in section 5 identifies
factors that influence mutual contract acceptance. The paper ends with a discussion of the findings, limitations and a conclusion in sections 6 and 7.

2.2 Contractual Relationships in Procurement

Contracts as manifestations of legally enforceable agreements play a central role in the relational governance of interfirm collaborations such as business alliances, strategic partnerships, and arm’s-length supply relationships (Kalnins and Mayer, 2004; Mouzas and Blois, 2008; Ryall and Sampson, 2009). Due to this central role of contracts, researchers have used contracts to study interfirm relationships for three decades. As a consequence of outsourcing and the implied dependence on the supply network, procurement contracts are essential in today’s supply chain management practice. The relevance of contracts is reflected in the recent scholarly interest in the topic. Table 2-1 depicts an overview of the empirical contract-related research. Research on procurement contracts focuses on high-tech industries, which might be related to the complexity of procurement transactions in that field. In addition, the overview shows popular themes in contractual research such as “relational governance,” “contract design and choice,” “contract enforcement and dispute resolution,” and “contractual learning and capabilities.” Because of the considerable number of contract-related publications we restrict the overview to recent research on procurement.
Table 2-1: Recent research perspectives on procurement-related contracts

<table>
<thead>
<tr>
<th>Focus</th>
<th>Approach/Data</th>
<th>Contribution</th>
<th>Publication</th>
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<tbody>
<tr>
<td><strong>Relational Governance</strong></td>
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<tr>
<td>Relationship between trust and formal contracts in the management of inter-firm relations</td>
<td>Four longitudinal case studies, which dealt with collaborative and involved complex transactions</td>
<td>Trust and contract can be both complements and substitutes</td>
<td>Woolthuis, Hillebrand, &amp; Nooteboom, OS (2005)</td>
</tr>
<tr>
<td>Effects of contractual hazard and technological capabilities on transaction governance</td>
<td>Integration of resource-based and transaction cost perspectives; 405 service contracts from one firm</td>
<td>Contractual hazards encourage internalizing transactions and weak techn. capabilities subcontracting</td>
<td>Mayer &amp; Salomon, AMJ (2006)</td>
</tr>
<tr>
<td>Alliance governance</td>
<td>Structural (transaction cost theory) and relational perspective (social exchange theory)</td>
<td>Multilevel process model of collaboration dynamics (contract formalization, application, and trust)</td>
<td>Fauss, Jussems, Madfis, &amp; Van Looy, AMJ (2008)</td>
</tr>
<tr>
<td>Safeguards and coordination in the context of hazardous buyer-supplier relationships</td>
<td>Survey data from 239 suppliers, building on transaction cost economics</td>
<td>How safeguard / coordination mechanism prevail varies with asset specificity and complexity</td>
<td>Mesquita &amp; Brush, AMJ (2008)</td>
</tr>
<tr>
<td>Contract structure effect on control and coordination, good-will- and competence-based trust in disputes</td>
<td>Control and coordination function of contracts, longitudinal data set concerning 102 interfirm disputes</td>
<td>Control provisions increase competence trust, but harm goodwill trust and continuation after disputes</td>
<td>Malhotra &amp; Luminenea, AMJ (2011)</td>
</tr>
<tr>
<td>Opportunism (weak/strong) and contracting mechanisms</td>
<td>Files of 102 buyer supplier disputes, transaction cost economics</td>
<td>Relationship between forms of opportunism, contractual mechanisms, and level of legal fees</td>
<td>Luminenea &amp; Quelin, SO (2012)</td>
</tr>
<tr>
<td><strong>Contract Design and Choice</strong></td>
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<tr>
<td>Incomplete contractual arrangements in the context of or of hold-up risk exposure</td>
<td>Single case of General Motors outsourcing the production of automotive bodies</td>
<td>The rigidity costs of long term contracts increase with its relationship, specific investments increase (hold up)</td>
<td>Klein, IJE (2000)</td>
</tr>
<tr>
<td>Contract types (fixed fee, cost plus, hybrid) and their choice</td>
<td>394 contracts from the information technology service industry</td>
<td>Cost plus contracts preferred when cost estimation of rate is difficult and measuring quality</td>
<td>Kalims &amp; Mayer, JIE (2004)</td>
</tr>
<tr>
<td>Complexity of outsourcing contracts</td>
<td>Resource-based view and transaction cost economics, 82 outsourcing contracts</td>
<td>To restrict opportunism contracts must contain incentives, penalties, pricing, and monitoring clauses</td>
<td>Barthelmy &amp; Quelin, JMS (2006)</td>
</tr>
<tr>
<td>Contract design with regard to relational enforcement mechanisms</td>
<td>Sample of 52 joint technology development contracts in the high-tech electronics industry</td>
<td>Contracts tend to be more detailed and likely to include penalties when they cover frequent deals</td>
<td>Ryall &amp; Sampson, MS (2009)</td>
</tr>
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<td>Effective contract design</td>
<td>Regulatory focus theory, expectation violation theory</td>
<td>Promotion- prevention contracts induce different emotions &amp; behaviors and lead to different outcomes</td>
<td>Weber &amp; Mayer, AMR (2011)</td>
</tr>
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<td><strong>Contract Enforcement and Dispute Resolution</strong></td>
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<tr>
<td>Negotiation strategy (cooperative/competitive) in buyer-supplier disputes</td>
<td>128 disputes handled by a French law firm (across industries), relational &amp; contractual governance</td>
<td>Control governance weakens the effect of relational experience on cooperative negotiation strategy</td>
<td>Luminenea &amp; Henderson, JOM (2012)</td>
</tr>
<tr>
<td>Influence of contract structure/ level of detail on the dispute resolution process and outcomes</td>
<td>Documents of 102 business disputes (over 150,000 pages)</td>
<td>Level of contract detail affects the type of resolution approach (positive effect on interest-based negotiation)</td>
<td>Luminenea &amp; Malhotra, SMJ (2011)</td>
</tr>
<tr>
<td>Litigation and private (out-of-court) dispute resolution</td>
<td>Documents of 102 business disputes involving 178 firms provided by a French law firm</td>
<td>Expectations of additional business in the future and not relationship history lead to resolution</td>
<td>Luminenea &amp; Osley, OS (2012)</td>
</tr>
<tr>
<td><strong>Contract Learning and Capabilities</strong></td>
<td></td>
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<tr>
<td>Contractual learning processes</td>
<td>380 contracts from a supplier of information technology services and computer related hardware</td>
<td>Repeated exchange leads to greater effort at contingency planning / task description in subsequent contracts</td>
<td>Argues, Bercovitz, &amp; Mayer, OS (2007)</td>
</tr>
<tr>
<td>Contract design capabilities</td>
<td>Integration of learning and transaction cost perspectives</td>
<td>Contract design capabilities involve learning how much and what kinds of contract detail to include</td>
<td>Argues &amp; Mayer, AMR (2007)</td>
</tr>
</tbody>
</table>

Inspired by research on psychological contract breach between employees and employers (Robinson, 1996) researchers have extensively studied the relationship between trust and contracts. Researchers wonder if formal contracts undermine trust and encourage opportunistic behavior (Poppo and Zenger, 2002) or if legal regulation is an important precondition for trust (Zucker, 1986). In an attempt to advance the trust-contract relation debate, Woolthuis, Hillebrand, and Nooteboom (2005) suggest that trust and contract are both substitutes and complements. We regard contracts as instruments of formal control and follow Weber and Mayer
(2011), who observe that promotion- and prevention-framed contracts induce particular behaviors. They also argue that promotion contracts enhance flexibility and creativity to reach a maximum goal. In contrast, preventive contracts are meant to ensure a minimum goal adherence in arm’s length relationships.

Recent contractual research identifies control and coordination attempts as key drivers for engagement in contractual relationships (Malhotra and Lumineau, 2011; Reuer and Ariño, 2007; Ryall and Sampson, 2008). According to Lumineau and Quelin (2012), control devices create adherence to a desired outcome through power mechanisms, while coordination features aim at goal congruence through linkages among contractual parties. The contract controlling function has been intensively investigated with special attention to opportunism. As the risk of opportunism is often seen as an inherent feature of interfirm (supply) relationships, it still plays a crucial role in contract-related research (Lumineau and Quelin, 2012; Mesquita and Brush, 2008; Woolthuis et al., 2005). For example, Hill and Jones (1992) attribute information asymmetry between the management and stakeholders of a supplier to management’s control of critical information. Management’s ability to filter information makes it difficult for stakeholders to know whether or not management is acting in their interests.

The self-interested behavior that is embodied in contract parties is a central assumption of contract research based on transaction cost economics by Williamson (1975, 1985). Transaction cost economists argue that relationships that require specific investments create dependence and therefore are vulnerable to opportunistic hold-ups. Despite the consensus on exposure to hold-up risks, a key recognition in contractual research is that contracts are often incomplete and imperfect in the sense that contracting parties’ obligations might be ambiguous (Bernheim and Whinston, 1998). If performance is difficult to verify (and therefore impossible to assess) self-enforcing contract design through incentives should come into play (Levin, 2003). With this in mind, it is not surprising that contracts become more complex when asset specificity increases (Barthélemy and Quelin, 2006).

Klein (2000, 1996) uses the example of an incomplete Fisher-General Motors contract for automobile body supply to demonstrate that contract features should outweigh opportunistic behavior. The case’s imperfect contractual arrangement nullified the self-enforcing range and allowed Fisher to take advantage of General Motors’ contractual obligation to purchase bodies exclusively on a cost plus basis. As a consequence the supplier (Fisher) was able to hold up the buyer (General Motors), and this enabled Fisher to increase its short-term profit by neglecting efficiency promoting investments. The Fisher-General Motors case reveals that contracts should be flexible enough to respond to environmental changes. In addition, the parties to a procurement contract should avoid over-dependence on
the contractual counterparty. Even a buyer with extraordinary market power, such as General Motors, can be held hostage to opportunism and hold-up risks by a small supplier when the buyer is bound by an imperfect and disadvantageous contract (Klein, 1996).

Contractual counterparties in the automotive industry are aware of opportunistic hazards and therefore address controversial issues such as exclusivity, confidentiality, liability, volume, prices, terms of payment, property rights (intellectual, tools), and termination rights. Previous research has postulated that contractual measures deserve future research as some contract clauses might be more important than others and suspect interaction effects between some sets of clauses (Lumineau and Quelin, 2012).

2.3 Theory and Model Development

2.3.1 Contract Acceptance Model

Standardized and well-established phases and processes are at work when it comes to sourcing (Webster and Wind, 1972). The buyer’s decision to award a certain business volume to its supplier of choice follows the supplier search and negotiation phase. At this point our research model steps in. The desired supplier has several response options. Recognition of the response options to relationship formation can be credited to Hirschman’s (1970) suggestion of exit, voice, and loyalty. After researchers such as Rusbult, Zembrodt, and Gunn (1982) added “neglect,” the following responses can be observed:

- **Exit:** Contract rejection by the supplier
- **Neglect:** Contract, which is left for 18 working days without response by the supplier, which leads to acceptance by performance after delivery sets in
- **Voice:** Supplier reports that the contract is under closer examination and therefore requests more than 18 working days for its response
- **Loyalty:** Straight contract acceptance by the supplier

Previous research (Rusbult et al., 1986; Withey and Cooper, 1989) has shown that this set of responses categorizes how people tend to react to dissatisfaction. Therefore we use this typology of responses to categorize and understand the supplier’s responses to the buyer’s contract offer.

In order to predict the supplier’s acceptance behavior, our research model takes not only the dependence of the supplier on the buyer into consideration, but also the dependence of the buyer on the supplier. An important research stream, focusing on the dependent exchange of resources, is resource dependence theory.
(RDT) formulated by Pfeffer and Salancik (1978). According to RDT, no firm is completely self-contained; firms depend on each other for resources. Therefore firms have linked their environments through inter-relationships leading to dependencies. RDT makes predictions about the actions that firms can take in response to resource dependencies. Hence RDT provides a useful framework for understanding supply networks and how firms strive to stabilize their supply environment.

Our model is therefore rooted in RDT and in Hirschman’s relationship theory. Our theoretical model, presented in Figure 2-1, links a buying and supplying firm’s mutual dependence and studies a variety of contract acceptance options (ELVN responses). With the help of Hirschman’s response typology we arrive at a comprehensive theory-based understanding of reactions to mutual contract acceptance.

**Figure 2-1: Contract acceptance model**

### 2.3.2 Determinants of Contract Acceptance

We use Hirschman’s relationship theory to understand the response spectrum of the focal firm and, using resource dependence theory, develop a theory about the formation of a contractual relationship. According to RDT, resources are a basis of power, since the resources that one firm needs are often controlled by other firms. These firms will be powerful insofar as they control resources needed by others and can reduce their own dependence on others for resources. Power relationships become asymmetrical when an exchange is not equally important to both firms. This asymmetry gives one firm power over the other and may be used
to shape the behavior of the more dependent firm. Suppliers, for instance, might possess technological expertise and/or production capacity that buyers urgently need in order to serve their sales markets. This situation is in line with RDT that predicts that dependence leads to vulnerability as a firm depends on certain types of exchange for its operation. According to RDT, dependence on a resource is determined by the importance of the resource (captured as technology position), discretion over resource allocation, and use and concentration of resource control (captured as alternative suppliers).

In addition to RDT we refer to Hirschman’s (1970) theory of exit, neglect, voice, and loyalty, in order to theorize the response options of the supplier to the buyer’s contract offer by describing how the supplier’s motivation to act is produced.

Exit. Contract rejection is most likely when the supplier’s costs of exit are low. In such a case the commitment of the supplier likewise tends to be low, as the supplier has few ties with the buyer and considers leaving (or renegotiating) easier than being locked into the contractual relationship.

Neglect. We expect neglect to be chosen when exit, voice, and loyalty seem risky or unnecessary. Hence the passive strategy of neglect tends to be chosen when the supplier regards the action of entering or renegotiating a contractual relationship as costly or unnecessary.

Voice. Suppliers are likely to choose the voice option when the costs of exit and loyalty are high. Suppliers exercising the voice option are interested in keeping the buyer as customer, but avoid the risk of loyalty through straight contract acceptance. Hence, suppliers ask for extra time to examine the contract proposition in more detail in order to keep the option for a renegotiation of certain contractual aspects open.

Loyalty. We expect the buyer to choose loyalty when the buyer is too important for the supplier to be switched (exit) or ignored (neglect). Therefore the supplier prefers to accept the contract directly.

As Rusbult, Johnson, and Morrow (1986) point out, the EVLN responses can be differentiated in terms of constructiveness/destructiveness and activity/passivity. In our setting, loyalty is intended to maintain or even revive a relationship, and is therefore seen as constructive; whereas voice might turn out to be as destructive as exit and neglect the response options of the supplier. In predicting the constructiveness of the supplier’s response to a buyer’s contract offer, the buyer’s dependence on the supplier needs to be taken into consideration. This is necessary as the supplier knows how many competitors are relevant in its domain and how strong its technology position is relative to this peer group. Therefore the supplier has an accurate estimation of the buyer’s dependence to base its response strategy on. RDT and Hirschman would predict that when dependence of the buyer on the
supplier is high, the risk of a destructive reaction by the supplier through contract reaction, neglect, or further examination is relatively low for the supplier. This increases the likelihood of a destructive supplier reaction when buyer dependence is high, leading to the following two hypotheses:

**Hypothesis 1a.** Buyer dependence on the supplier increases the likelihood that the supplier responds in a destructive manner (through exit, neglect or voice) to a contract offered by the buyer.

**Hypothesis 1b.** Buyer dependence on the supplier decreases the likelihood that the supplier responds in a constructive manner (through loyalty) to a contract offered by the buyer.

Likewise high supplier dependence on the buyer increases the risk for the supplier of a destructive reaction through contract reaction, neglect, or further examination. In line with Hirschman and RDT predicting when the dependence is high, the focal firm is willing to bear the costs for the benefits of predictable and certain exchanges of resources (Pfeffer and Salancik, 1978), we see supplier dependence on the buyer as promoting the constructiveness of the supplier’s response. This leads to the following two hypotheses:

**Hypothesis 2a.** Supplier dependence on the buyer decreases the likelihood that the supplier responds in a destructive manner (through exit, neglect, or voice) to a contract offered by the buyer.

**Hypothesis 2b.** Supplier dependence on the buyer increases the likelihood that the supplier responds in a constructive manner (through loyalty) to a contract offered by the buyer.

### 2.4 Data

#### 2.4.1 Research Setting and Data Collection

The empirical context of our study is the automotive industry, as effective procurement contracts are essential for an automotive OEM due to the large, complex and success-critical transactions. A major German automotive OEM granted us access to its IT-based (1) procurement system and (2) contract documentation. Furthermore, the suppliers’ financial data which the OEM regularly gathers from its first-tier suppliers was also made available on the condition that we protected the anonymity of those suppliers.

A central tool for the standardized assessment of the suppliers’ financial situation (and therefore risk exposure of the OEM) is self-administered questionnaire known as the “financial quick check”. The OEM also provided us with the data on the supplier relationship data to test our hypotheses on an empirical basis. Our
data collection yielded a heterogeneous sample covering all procurement commodities (powertrain, electronics, interior, exterior, chassis and raw material) derived from international first-tier suppliers of all sizes. Our data sample revealed no systematic bias. The starting point of our analysis is the year 2008. In total we analyzed 656 supply contract offers to 164 suppliers applying the measures described in the next section.

2.4.2 Measures

2.4.2.1 Independent Variables

Previous contract-focused research was framed by transaction cost economics (TCE) based on the consideration that relationship-specific investments create dependence, which an opportunistic partner might exploit to appropriate a higher share of the value creation. This “hold-up risk” is inherent to procurement relationships characterized by dependence asymmetry. Automotive supply chains are tightly coupled due to the high degree of dependence due to outsourcing, low safety stocks, and various forms of switching barriers. Even without significant relationship-specific investments, a buyer can be dependent on its supplier if that supplier has exceptional technological expertise and/or faces very little competition. Hence, we capture buyer dependence with two measures, obtained through questioning the responsible buyer or risk manager.

First, the number of alternative suppliers (or partner scarcity) is indicative of the concentration of resource control. In this context, “concentration of resource control” is the extent to which the buyer can replace suppliers by awarding or shifting business volume. The number of alternative suppliers was an estimation of the responsible buyer or risk manager based on current suppliers’ capabilities and idle capacities as well as potential legal obstacles (e.g. intellectual property). It is noteworthy to point out that only current alternative suppliers were meant to be taken into consideration as opposed to speculatively counting potential suppliers of the future, as the identification and qualification of new suppliers tends to be time-consuming and capital-intensive. The result of the expert estimation of currently available alternative suppliers was a discrete number ranging in most cases from 0 to 5.

Second, a supplier’s technology position may serve as a source of power if it is used with discretion to allocate scarce resources (Pfeffer and Salancik, 1978). If a supplier possesses a competitive edge through an extraordinary technological or procedural capability, the buyer is more dependent on this supply relationship – especially if that capability is related to a technology search field, which brings perceptible benefit to the buyer.
We obtained an assessment of the technological capabilities as approximation from the responsible buyer or risk manager based on a grading scale ranging from 1 for excellent to 5 for very poor. For its assessment the buyer or risk manager takes not only the innovation capability of the supplier into account (first to market), but also the supplier’s flexibility in implementing change requests and the quality of the supplier’s performance, including the reliability of delivery.

A supplier might be dependent on its business with the buyer, especially when the buyer accounts for a large portion of the supplier’s revenues. Hence, we measure supplier dependence as follows: buyers have the revenue that the supplier needs (Pfeffer and Salancik, 1978). With this in mind, we measure the annual volume of business (AVOB) with the buyer in relation to the total sales of the supplier (revenue share). This objective data was from the focal OEM’s procurement system.

2.4.2.2 Dependent Variables
To obtain the supplier’s response to the buyer’s contract offer, we operationalized the dependent variables as follows. A direct contract rejection by the supplier was labelled as exercising the “exit” option. Likewise a direct contract acceptance was interpreted as the “loyalty” response of the supplier. Both response options, direct contract acceptance or rejection, are labelled in the contract documentation as “contractually binding” or “provisional contract”.

As a third option the supplier can respond after receiving the contract with the request for time in order to analyze the contract further. In that case the contract is labelled as “contract under examination” by the IT-based contract documentation. If the supplier did not respond within 18 workdays, the procurement department regards the contract as “open – without response” and understands a start of delivery as an indirect “acceptance by performance.” We consider the supplier's failure to offer a timely response as “neglect”. We calculated the number of neglected contracts by deducting the “contracts under examination” from the “open” contracts.

2.4.2.3 Control Variables
We included (1) purchasing categories and (2) the calendar year as control variables in the hypothesis testing procedure. First, the general market environments of different purchasing categories (PCAT) of the buying firm differ significantly (e.g. with regard to intensity of competition) and influence the supplier’s general profitability. Hence this control variable is motivated by market characteristics. Major purchasing categories of the buying firm were powertrain, electronics, interior, exterior, chassis, and raw material.
The 164 suppliers in our sample engaged in 656 supply contracts with the OEM from 2008 until 2011. Out of the 656 contractual relationship offers, 116 belonged to the supplier lead category “powertrain,” 76 to “electronics,” 88 to “interior,” 128 to “exterior,” 120 to “chassis,” and 128 to “raw materials.” We created five dummy variables, accounting for the effect of the six purchasing categories within our sample.

Second, in our analysis it is critical to consider the calendar year, as the starting year of our analysis; the year 2008 was marked by a slumping vehicle market as a consequence of the world economic and financial crisis. At that time every customer order was much more appreciated by the suppliers suffering from idle capacity, unlike in the years 2010 and 2011, which were characterized by a sharp market recovery. With regard to contract acceptance, the supplier’s response choice might therefore be influenced by a calendar year’s macro-economic situation. Therefore we included the calendar year control variable in addition to the control variable purchasing category.

2.5 Analysis and Results

For every contract, the supplier’s decision process contains a menu of four options: exit, neglect, voice, and loyalty. Let \( \pi_i, \text{exit} \) be the probability that supplier \( i \) decides, for any given contract, to pursue the exit option; in the same vein, the other probabilities are \( \pi_i, \text{neglect}, \pi_i, \text{voice}, \text{and } \pi_i, \text{loyalty} \). Each probability is bounded in \([0, 1]\) and \( \pi_i, \text{exit} + \pi_i, \text{neglect} + \pi_i, \text{voice} + \pi_i, \text{loyalty} = 1 \) (unit-sum constraint). Given these probabilities and when the number of decisions increases, the proportions of the total decisions for each option \( Y_i = (Y_i, \text{exit}, Y_i, \text{neglect}, Y_i, \text{voice}, Y_i, \text{loyalty}) \) can be assumed to follow a Dirichlet distribution with positive, but unknown (shape) parameters \( (\lambda_i, \text{exit}, \lambda_i, \text{neglect}, \lambda_i, \text{voice}, \lambda_i, \text{loyalty}) \) (Gueorguieva, Rosenheck, and Zelterman, 2008). By allowing the parameters of the Dirichlet distribution to change with a vector of covariates \( X_i \), a Dirichlet component regression can be derived as suggested by Campbell and Mosimann (1987).

Dirichlet regression can be viewed as a generalization of beta regression for cases with more than two components. We follow Gueorguieva, Rosenheck, and Zelterman (2008) and model each of the parameters as a separate linear function of covariates using a log link, e.g. \( \log(\lambda_i, \text{exit}) = X_i \beta \) for the exit option. The resulting regression model can be estimated by numerical maximization of the corresponding likelihood function (see Hijazi and Jernigan, 2009). With the obtained \( \beta \) parameters, we were able to test our hypotheses. The regression results are shown in Table 2-2 and plotted in Figure 2-2. Table 2-3 contains the corresponding marginal effects.
### Table 2-2: Results of regression analysis

<table>
<thead>
<tr>
<th></th>
<th>Exit</th>
<th>Neglect</th>
<th>Voice</th>
<th>Loyalty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Est</td>
<td>z-value</td>
<td>p-value</td>
<td>EST</td>
</tr>
<tr>
<td>(Intercept)</td>
<td>-1.249</td>
<td>-0.1059</td>
<td>0.000</td>
<td>-1.026</td>
</tr>
<tr>
<td>(0.118)</td>
<td></td>
<td></td>
<td></td>
<td>(0.121)</td>
</tr>
<tr>
<td>Year 2009</td>
<td>0.007</td>
<td>0.0644</td>
<td>0.949</td>
<td>-0.085</td>
</tr>
<tr>
<td>(0.113)</td>
<td></td>
<td></td>
<td></td>
<td>(0.112)</td>
</tr>
<tr>
<td>Year 2010</td>
<td>0.040</td>
<td>0.3600</td>
<td>0.719</td>
<td>-0.025</td>
</tr>
<tr>
<td>(0.112)</td>
<td></td>
<td></td>
<td></td>
<td>(0.111)</td>
</tr>
<tr>
<td>Year 2011</td>
<td>0.126</td>
<td>1.1180</td>
<td>0.263</td>
<td>-0.166</td>
</tr>
<tr>
<td>(0.113)</td>
<td></td>
<td></td>
<td></td>
<td>(0.111)</td>
</tr>
<tr>
<td>Electronics</td>
<td>-0.053</td>
<td>-0.351</td>
<td>0.725</td>
<td>-0.125</td>
</tr>
<tr>
<td>(0.151)</td>
<td></td>
<td></td>
<td></td>
<td>(0.149)</td>
</tr>
<tr>
<td>Interior</td>
<td>0.221</td>
<td>1.5130</td>
<td>0.130</td>
<td>0.539</td>
</tr>
<tr>
<td>(0.146)</td>
<td></td>
<td></td>
<td></td>
<td>(0.145)</td>
</tr>
<tr>
<td>Exterior</td>
<td>-0.085</td>
<td>-0.642</td>
<td>0.521</td>
<td>0.040</td>
</tr>
<tr>
<td>(0.133)</td>
<td></td>
<td></td>
<td></td>
<td>(0.129)</td>
</tr>
<tr>
<td>Chassis</td>
<td>0.015</td>
<td>0.1080</td>
<td>0.914</td>
<td>0.091</td>
</tr>
<tr>
<td>(0.134)</td>
<td></td>
<td></td>
<td></td>
<td>(0.132)</td>
</tr>
<tr>
<td>Raw material</td>
<td>-0.079</td>
<td>-0.601</td>
<td>0.548</td>
<td>-0.012</td>
</tr>
<tr>
<td>(0.132)</td>
<td></td>
<td></td>
<td></td>
<td>(0.129)</td>
</tr>
<tr>
<td>Buyer dependence</td>
<td>0.307</td>
<td>6.946</td>
<td>0.000</td>
<td>0.300</td>
</tr>
<tr>
<td>(0.044)</td>
<td></td>
<td></td>
<td></td>
<td>(0.043)</td>
</tr>
<tr>
<td>Supplier dependence</td>
<td>0.100</td>
<td>2.415</td>
<td>0.0161</td>
<td>0.081</td>
</tr>
<tr>
<td>(0.041)</td>
<td></td>
<td></td>
<td></td>
<td>(0.040)</td>
</tr>
</tbody>
</table>

Note: Number of observations (n) is 656. Dirichlet regression was used (log-likelihood: 5748 on 44 degrees of freedom). Standard errors are shown in parentheses.

† \( p < 0.10 \), \* \( p < 0.05 \), \** \( p < 0.01 \), \*** \( p < 0.001 \) (two-tailed).

### Table 2-3: Discrete changes and marginal effects of the two dependence variables on exit, neglect, voice, and loyalty

<table>
<thead>
<tr>
<th></th>
<th>Exit</th>
<th>Neglect</th>
<th>Voice</th>
<th>Loyalty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \hat{\epsilon} / \hat{\epsilon} x )</td>
<td>( SE )</td>
<td>( \hat{\epsilon} / \hat{\epsilon} x )</td>
<td>( SE )</td>
</tr>
<tr>
<td>Buyer dependence</td>
<td>-0.018</td>
<td>0.023</td>
<td>-0.044</td>
<td>0.024</td>
</tr>
<tr>
<td>(0.043)</td>
<td></td>
<td></td>
<td>(0.043)</td>
<td></td>
</tr>
<tr>
<td>Supplier dependence</td>
<td>-0.003</td>
<td>0.004</td>
<td>-0.007</td>
<td>0.004</td>
</tr>
<tr>
<td>(0.043)</td>
<td></td>
<td></td>
<td>(0.043)</td>
<td></td>
</tr>
</tbody>
</table>

Note: Discrete changes and marginal effects indicate the change in exit, neglect, voice, and loyalty when the independence variable changes (from min to max or marginally), while keeping all other explanatory variables at their mean values.
Figure 2-2: Regression plots
First, our results indicate that increasing dependence of the supplier on the buyer leads to greater contract acceptance rates (probability for “loyalty” increases while the probability for “exit” and “neglect” decreases). The marginal effect of supplier dependence is positive for loyalty, but negative for all other components (exit, neglect, and voice). This provides support for Hypotheses 1a and 1b.

Second, an increasing dependence of the buyer on the supplier induces lower contract acceptance by the supplier. Figure 2 highlights that as the buyer’s dependence increases (in terms of partner scarcity and technological supplier expertise), the supplier will decide to decline more contracts and be less loyal to the buyer. Accordingly, the marginal effects are positive for all components (exit, neglect, and voice) with the exception of loyalty. These findings support for Hypotheses 2a and 2b.

### 2.6 Discussion

#### 2.6.1 Scholarly Implications

The importance of explicit contracts in the management of business relationships has been recognized for three decades. A large body of research has confirmed the benefits of a powerful bargaining position. This consensus should, however, not lead to the neglect of mutual dependence as firms in the automotive industry follow the logic of embeddedness arising from joint dependence (Gulati and Sytch, 2007). In line with this notion, Gulati and Sytch (2007, p. 34) argue that “current and future relationships between automotive manufacturers and suppliers are no longer seen merely as bargaining tugs-of-war driven solely by value appropriation motives; rather, they […] aim for superior joint value creation”.

Partners in such relationships should focus on joint success with regard to a long-term relationship horizon of their business relationship. In this context, trust is believed to play a key role. Trust is the expectation that another organization may fulfill its obligation to behave fairly and predictably even if there is a possibility of opportunism (Zaheer et al., 1998). Zucker (1986) has identified three forms of trust. Characteristic-based trust is formed within a group on the basis of factors such as ethnicity. Process-based trust results from past and expected future exchanges. Finally, institutional-based trust stems from embedded social practices. Our study goes one step further by indicating that the conclusion of contract negotiations is driven not by trust, but by (mutual) dependence.

The previous research on procurement relationships in the automotive industry has shown that joint dependence (embeddedness) enhances the performance of procurement relationships mediated by the level of joint action and information exchange quality by the partners (Gulati and Sytch, 2007). According to Gulati and Sytch (2007, p. 41) ‘joint dependence fosters a culture of ‘mutual reliance’ in
which exchange partners exhibit a decreased proclivity for opportunistict behaviour.” We show that dependence is a key driver in the formation of a contractual relationship. Therefore we agree with Pfeffer and Salancik’s (1978, p. 94) claim that “the dominant problems of the organization have become managing its exchanges and its relationships with the diverse interests affected by its actions”. The managerial implications are presented in the next section.

2.6.2 Managerial Implications

Pfeffer and Salancik (1978) describe intra-firm power as the ability of a subunit to influence organizational decisions. To avoid the hold-up risk of procurement relationships with dependence asymmetry in favor of the supplier, the buyer can internalize the activity in order to control the risk (Nooteboom et al., 2000). This option, however, is costly. Likewise private and possible court enforcement can be seen as a costly alternative and the ideal of creating a purely self-enforcing procurement relationship is often not feasible.

In response to its dependence on the supplier, the buyer must choose the correct contractual legal entity. If the supplier rejects a contractual relationship with the highest legal entity, a letter of comfort might ensure potential claims of the buyer against the supplier in the future. Moreover a buyer should try to assume as many intellectual property (IP) rights as possible in order to lower switching barriers. Supplementary special agreements might lead to covenant agreements which allow the buyer to cancel the supply under certain circumstances and ensure the support of moving the business to another supplier.

Likewise the supplier has the contractual leverage to minimize its risk position against the buyer. The supplier should try to balance its sales among its customers (buyers) in order to avoid overdependence. In case of sales independence, the supplier can reduce its dependence on the buyer by negotiating favorable payment terms, contract duration, safeguards for its capital expenditure (CAPEX). In addition, the supplier should try to protect its intellectual property rights in order to increase the buyer’s dependence.

2.6.3 Limitations and Future Research

Our unique data set has enabled us to arrive at a more detailed understanding of contractual relationship formation. We hope that our study calls more attention to the role of contractual relationship formation in terms of risk management. However, our study is limited to the automotive industry and our measures did not capture the growing role of trust. Moreover we focused on the contracts that were necessary to protect outsourcing engagement, and not on the rationale for outsourcing, which might be another worthwhile area for further research on contracts.
2.7 Conclusion
Contractual relationships consist of the side of contracts that are not legally enforceable or non-formal; these relationships are supported by non-legal sanctions such as exit costs, hold-ups and hostages, or reputation damage (Barthélemy and Quelin, 2006). In this paper we focus on explicit, legally binding contracts which are offered by the buyer (OEM) to its selected supplier (first-tier).

Our analysis shows that increasing dependence of the supplier on the buyer leads to greater cooperativeness with contract acceptance. Furthermore, we discover that an increasing dependence of the buyer on the supplier induces higher uncooperativeness of the supplier when the supplier responds to a contract offered by the buyer. Based on our findings, we identify contractual leverages to minimize hold-up risks in procurement relationships characterized by asymmetric dependence.
2.8 References


Lumineau, F., Oxley, J.E., 2012. Let’s work it out (or we’ll see you in court): litigation and private dispute resolution in vertical exchange relationships. Organization Science 23 (3), 820-834.


Chapter 3

Financially distressed Suppliers: Neglect, Exit, Voice or Loyalty?

Abstract

Contracting with suppliers that are prone to financial distress is a common problem for decision makers in procurement. However, scientific recommendations for supplier financial distress management remain sparse. Thus we empirically investigate buyers’ responses to supplier financial distress and find a significant relationship between a buyer’s dependence on a distressed supplier, the support shown by the buyer and the supplier’s restructuring success. We identify factors that influence the buyer’s response strategy and test the effectiveness of each strategy by tracking the financial performance of the distressed suppliers over several years.

This study adds to the supply chain management knowledge by proposing a reactive approach to supplier financial distress. As supplier financial distress cannot be excluded ex-ante and prevention comes at a cost (e.g. second source), this reactive approach has great practical value in preventing supply chain redundancy and disturbances caused by supplier financial distress.

Keywords: supply chain risk management, financial distress, resource dependence theory, procurement, automotive industry
3.1 Introduction

When a supplier is performing poorly, how should the buyer respond? As this question plays a crucial role in procurement, much has been written about supply chain risks from a general perspective (Christopher and Lee, 2004; Zsidisin, 2003; Zsidisin and Wagner, 2010). Additionally, the mitigation of supply chain risk exposure through supplier selection (Choi and Hartley, 1996), supplier relationship building (Carr and Pearson, 1999; Hallikas et al., 2005; Liker and Choi, 2004), supplier development (Humphreys et al., 2004; Krause, 1997; Krause and Ellram, 1997; Wagner, 2006), supply contracts (Swinney and Netessine, 2009), and order allocation through multiple sourcing (Berger et al., 2004; Treleven and Schweikhart, 1988) have been covered by researchers. Publications related to these ex-ante supply chain risk management measures now comprise the body of supply risk management research.

However, since mitigating supply chain risk exposure through preventive measures comes at a cost, and since not all supply chain risks can be eliminated in advance, a reactive response to supply chain risk management needs to be developed. Despite its practical relevance and benefits, a reactive approach to supplier financial distress seems to have been largely neglected by researchers so far. An effective response to supplier financial distress can optimize the trade-off between savings and security (or efficiency versus redundancy) and might therefore be seen as a source of competitive advantage (Christopher and Peck, 2004; Spekman and Davis, 2004; Hauser, 2003). Moreover, the increased number and cost of supply chain disruptions (Hendricks and Singhal, 2005) highlights the necessity of protecting the upstream supply chain from operational and financial damage.

Taking these benefits into consideration, this study proposes a reactive approach to supplier financial distress. We will follow a stream of research which focuses on supply chain risk management within automotive supply networks (Blackhurst et al., 2008; Hallikas et al., 2004; Svensson, 2000), as automotive supply networks are prone to detrimental impact of financial distress due to outsourcing (Kannan and Tan, 2002; Zsidisin et al., 2000; Van Damme and Ploos van Amstel, 1996), low safety stocks (Wagner and Silveira-Camargos, 2012; Lieberman and Demeester, 1999; Waters-Fuller, 1995) and switching barriers as complex customer- and model-specific parts, components, modules or systems can usually not be bought on a spot market in the automotive industry (Lonsdale, 1999; Monteverde and Teece, 1982). As a consequence, a supplier is likely to be put in an advantageous bargaining position, while the buyer finds itself locked into a supplier relationship. In this situation, the buyer might be exploited by the supplier or by other stakeholders. An effective response to supplier financial distress can prevent such a situation.
In order to provide a meaningful answer to the question of how a buyer should respond when its supplier is performing poorly, we structure our paper into six sections. Section 1 presents the theoretical foundation with regard to financial distress. Subsequently, section 2 develops a response model based on resource dependence theory and Hirschman’s response options to unsatisfactory relationships. In the section 3, we describe the research setting, data collection and measures used before analyzing and interpreting the results in section 4. In section 5 we discuss the scholarly and managerial implications of our findings as well as research limitations and opportunities for future research before drawing final conclusions in section 6.

3.2 Background

3.2.1 Supplier financial Distress

Financial distress results from prolonged periods of strategic and operational decline. Based on Wruck’s (1990, p. 421) definition of financial distress “as a situation where cash flow is insufficient to cover current obligations,” we understand “supplier financial distress” as the threat of an upstream supply chain member not being able to cover current or future obligations because of insufficient cash flows and cash reserves. Unless countermeasures are taken and the situation deteriorates, a distressed firm is threatened by financial default and a consequent suspension of operations.

Both practitioners and researchers are aware that supplier financial distress constitutes a severe inbound supply chain risk for any buying firm due to its uncertain outcome and potential supply chain disturbances (Wagner et al., 2011; Zsidisin and Wagner, 2010; Chopra and Sodhi, 2004). Hertzel et al. (2008) for instance see the potentially detrimental impact of supplier financial distress as a loss of product quality, reduction of warranty value, lack of serviceability, disruption of supply and costs of shifting business volume to existing or new suppliers. Other researchers have noted that supplier financial distress can lead to logistical disturbances such as late deliveries, quality problems, absence of workforce (Riddalls and Bennett, 2002) or can even trigger supply chain disruptions resulting in stock-outs, inability to meet customer demands and severe financial damage (Blackhurst et al., 2005). These financial and operational consequences add to the vulnerability of the supply chain (Svensson, 2000) and call for an effective response.
3.2.2 Responding to financial Distress

From the buyer’s perspective it is often difficult to judge the restructuring chances of a financially distressed supplier, as suppliers might not always seek mutual benefits and might follow their own interests instead. This phenomenon is known as opportunistic behavior and is facilitated by information asymmetry and uncertainty (Carson et al., 2006; Zsidisin et al., 2004; Eisenhardt, 1989). According to resource dependence theory (RDT), conflict in inter-firm relations derives from resource scarcity (Pfeffer and Salancik, 1978). In this context, interdependence might lead to conflicts if actors do not have similar preferences. In cases of information asymmetry within complex automotive supply networks, opportunistic hazards might be the result. Agency theory (Eisenhardt, 1989; Schmalensee, 1988) has been applied by Zsidisin et al. (2004) to buyer-supplier relationships, as agency theory variables such as outcome uncertainty, goal conflict, adverse selection and moral hazard influence supplier-buyer relationships. Agency theory is suitable for studying supply chain risk management when a principal (buyer) and an agent (supplier) are involved (Zsidisin and Ellram, 2003). The explanatory power of agency theory is high in the context of supplier financial distress and default due to three circumstances.

First, the competitiveness of a supplier depends on its ability to provide value to multiple supply chains simultaneously, since a supplier usually delivers to more than one buyer. The divergent interests of affected stakeholders accompany financial distress, if several buying firms compete for continuous delivery in order to avoid a disruption of their supply chains. In addition, other stakeholder groups such as creditors claim their interest and may thereby restrict the operational latitude of the distressed supplier.

Second, a high degree of uncertainty and mistrust result when shareholders and management of the distressed supplier have an incentive to present greater chances for turnaround success in order to gain stakeholders’ support. Given the complexity of corporate crises, not all countermeasures can be monitored by the buyers. Hence the supplier’s management might behave opportunistically (moral hazard) and harm with certain decisions or actions (hidden action) buyers, who are poorly informed (hidden information).

Third, the resultant asymmetric information is almost unavoidable in case of supplier financial distress as the management of the distressed supplier as well as some privileged stakeholders are likely to obtain an information advantage. These stakeholders have an incentive to keep this information asymmetry in order to take advantage of their information edge.

As a consequence of information asymmetry and potential opportunistic behavior, the buyer must carefully choose whether to show a cooperative or an
uncooperative response to supplier financial distress. The strategy chosen by the buyer and the consequences for the turnaround of the distressed supplier are analyzed in the following chapters.

3.3 Model Development

3.3.1 The Buying Firm’s Response Spectrum

Recognition of the response options to unsatisfactory relationships can be credited to Hirschman’s (1970) pioneering suggestion of exit, voice, and loyalty. After researchers such as Rusbult et al. (1982) added neglect, the following generic responses to dissatisfaction can be observed:

- **Exit:** Terminating the relationship
- **Neglect:** Passively allowing the relationship to deteriorate
- **Voice:** Actively attempting to improve conditions
- **Loyalty:** Waiting for conditions to improve

Previous research used exit, neglect, voice, and loyalty as responses to investigate declining job satisfaction (Withey and Cooper, 1989) and dissatisfaction in romantic relationships (Rusbult, Johnson, and Morrow, 1986). These studies categorize how people respond to dissatisfaction in various domains (Withey and Cooper, 1989). We use this typology of responses to categorize and to understand a buyer’s reaction to a supplier’s financial instability.

Moreover our research model takes the financial strength and the dependence on a distressed supplier into consideration. The network aspect plays a crucial role in this, and has become an important research topic covering a range of theoretical perspectives. An important research stream, focusing on the interdependent exchange of resources, is resource dependence theory formulated by Pfeffer and Salancik (1978). According to RDT, no firm is completely self-contained; firms depend on each other for the resources they require. Therefore firms have linked their environments through inter-dependent relationships leading to (inter-) dependencies. Consequently firms have limit their dependence and uncertainty in order to survive. RDT can predict the actions firms can take in response to resource dependencies. Hence RDT offers this study an insightful framework for understanding supply networks and how firms stabilize their supply environment by reducing their dependence on external sources.

Therefore our model is rooted in resource dependence theory and in Hirschman’s relationship theory. Our theoretical model (Figure 3-1) links a buying firm’s dependence on a supplier with the buying firm’s response to the financial distress of this supplier and addresses both response content and the financial consequences for the supplier. With the help of Hirschman’s response typology
we arrive at a comprehensive theory-based understanding of reactions to the declining financial performance of first-tier automotive suppliers.

Figure 3-1: Conceptual framework

We use Hirschman’s relationship theory to understand the response spectrum of the focal firm and, based on resource dependence theory, theorize 1) the response processes (how motivation to act is produced and affects what is decided); and 2) the response outcome (how the response decision affects the health of the supplier). In the second part of our research, we investigate the financial performance of the distressed suppliers in three consecutive fiscal years. We track their operational performance to compare the development of the suppliers according to the response option chosen by the buyer. Even though it might be a single buyer, the response of a major customer sends an important signal to other stakeholders such as other customers or creditors.

3.3.2 Determinants of the Response

We theorize the response processes by describing how motivation to act is produced. As Rusbult et al. (1986) point out, these responses can be differentiated in terms of constructiveness/destructiveness and activity/passivity. Since voice and loyalty are intended to maintain or even revive a relationship, they are considered to be constructive; exit and neglect are evidently destructive, which leads to the following predictions based on Withey and Cooper (1989).

**Exit.** We expect that terminating a supplier relationship is most likely when the costs of exit are low due to low logistical dispensability as a result of only a few part numbers supplied by the distressed supplier. Moreover the commitment of the
buyer tends to be low, as the technological expertise of the distressed supplier is poor and an alternative supplier can be found. Hence the exit tendency is likely when the buyer has few ties to the distressed supplier and considers leaving to be easier and more convenient than staying.

**Neglect.** We expect neglect to be chosen when exit, voice, and loyalty seem risky or unnecessary and when the technology position of the distressed supplier is moderate. At the same time, the buyer sees a likelihood of improvement. Hence the passive strategy of neglect tends to be exhibited when the buyers deem the action costly or unnecessary.

**Voice.** We expect buyers to choose the voice option when the costs/risk of exit and loyalty are high and when prior satisfaction with a superior technology position is high. Hence buyers exercising the voice option are interested in keeping the distressed supplier, but avoid the effort and the risk of loyalty. If an investor can be found, the distressed supplier can profit from its industry and/or restructuring experience and gain access to the additional capital resources.

**Loyalty.** We expect loyalty to be chosen when no investor can be found and the distressed supplier is too important to be switched (exit) or ignored (neglect). Hence if a distressed supplier delivers many parts to the buyer and/or has outstanding technological qualities, the distressed supplier may count on the support of the buyer.

A more dependent buyer is likely to exhibit a constructive response to supplier financial distress. Titman (1984, p. 149) for instance observes “an agency relationship between a firm (as the agent) and its customers (as principals) who suffer costs if the firm liquidates” and concludes that an unconstrained value-maximizing firm will “choose to liquidate whenever its liquidation value exceeds its operating value.”

Likewise Titman and Wessels (1988) find that a firm’s debt load is negatively related to the uniqueness of its business line. Hence Titman and Wessels (1988) conclude (consistent with Titman, 1984) that firms which can in the event of liquidation impose high costs on their customers, workers, and suppliers have lower debt ratios. This implies that “transaction costs may be an important determinant of capital structure choice” (Titman and Wessels, 1988, p. 17).

Building on Titman (1984), Banerjee, Dasgupta, and Kim (2008) examine how buyer supplier relationships affect the capital structure decisions of firms, as stakeholder relationships often involve relation-specific investments that affect a firm’s value. Based on a large sample, Banerjee et al. (2008, p. 2549) find evidence that the economic magnitude of nonfinancial stakeholder relations on capital structure is substantial and identify thereby a worthwhile area for further research.
These insights lead to the assumption that the more dependent the buyer is on a distressed supplier, the more constructive the buyer’s response will be. We summarize this prediction in our first hypothesis.

**Hypothesis 1.** Dependence on a financially distressed supplier has a positive effect on the cooperativeness of the buying firm’s response.

This prediction is consistent with RDT, which predicts that when the dependence is high, the focal firm is willing to incur costs for the benefits of predictable and certain exchanges of resources (Pfeffer and Salancik, 1978). Thus the greater the dependence on a supplier, the greater the uncertainty of supply in cases of supplier financial distress and the greater the chances that the supplier is supported in an inter-firm effort by the options voice or loyalty.

This prediction is also in line with Hirschman (1970), who recognizes two principal determinants of voice when exit is possible were shown: 1) the extent to which customers are willing to trade the certainty of exit for the uncertainties of improvement; and 2) the estimate they have of their ability to influence the deteriorated product/firm.

As relationships between OEMs and first-tier suppliers industry are often characterized by high asset-specificity (e.g. model-specific tools and their periphery), our hypothesis is in line with Titman (1984), Titman and Wessel (1988), and Banerjee et al. (2008), who find evidence that firms that purchase goods from suppliers who deliver unique goods or use relationship-specific assets face significantly higher switching costs in the event of supplier bankruptcy.

Moreover this prediction is in line with Bensaou’s (1999) concept of buyer-supplier relationships portfolios, which have the potential to enhance the effectiveness of supply chain management when relationship practices are appropriate to product and market conditions. According to Bensaou, high relationship specific investments should be restricted to strategic partnerships in order to avoid the inefficiencies of overdesigned relationships. At the same time, under-designed relationships are prone to ineffectiveness. Hence the buyer has to choose the appropriate amount of support effort according to the product, technology and market conditions.

Having described the response processes, we will now look at the response outcome (how the response decision affects the health of the supplier).

### 3.3.3 Financial Consequences of the Responses

The task of management, as developed from the RDT, is the management of inter-firm transactions to acquire and maintain resources, as survival of the firm
depends on the ability to cope with environmental contingencies and dependencies. Hence the objective of a dependent buyer is the financial stabilization of the distressed supplier. We expect that the more cooperative the buyer’s response is, the greater the improvement in the financial performance of the distressed supplier, as a supportive buyer sends a positive signal to other stakeholder groups and provides access to financial resources through investors, advantageous payment conditions or even through the award of new business by him or other buyers. Conversely, the exit option will lead to a deterioration of trust and resources for recovery.

Exit. If the buyer chooses “exit” as a response, RDT would predict that the financial strength of the supplier is weakened, as the supplier failed to negotiate exchanges in a way that ensures the continuation of needed revenue resources (Pfeffer and Salancik, 1978). Hirschman therefore sees the availability of the exit option and customer’s frequent resort to it as characteristic of competition leading to declining sales. Hence the management needs to search for ways and means to correct whatever faults have led to exit (Hirschman, 1970). If the management of the distressed supplier fails to do so, other buyers might withdraw future business from the supplier, who risks falling into a vicious cycle as a result of stigmatization. Since buyers tend to buy safety stock before moving the business in order to bridge the switching time, orders might even temporarily increase, but this effect is nullified by the long range of our study. We therefore hypothesize that the “exit” option leads to a significantly weaker financial performance in the subsequent fiscal years than all other response options.

Neglect. According to RDT the financial strength of the supplier tends to be weakened, if the buyer chooses the “neglect” option, as the supplier was not able to negotiate exchanges to acquire additional resources to enhance stability and certainty. However the chances of regaining financial stability are significantly higher than they are with exit, as no sales volume is lost and stigmatization can be avoided.

Voice. If an investor solution can be found, the financial strength of the supplier is likely to improve as an investor provides access to additional capital resources and restructuring. If a strategic investor can be found, the financial strength is likely to improve, as both suppliers can bundle their market power and resources, including industry know-how. Investors contribute to a turnaround by guaranteeing restructuring experience and additional funds. In both cases financial performance is likely to be enhanced.

Loyalty. If the buyer chooses the loyalty option “support of supplier,” the financial strength of the supplier is likely to improve. According to RDT the supplier would be able to acquire additional resources to enhance stability and certainty. If the buyer grants a temporary change of payment terms, the distressed
supplier receives earlier payments to break financial bottlenecks. A more long-term support of a financially distressed supplier is the award of new business, which is also in the short run a strong indication of trust in stakeholder groups such as other buyers, employees and creditors. Therefore we expect that the commitment to the supplier relationship, as shown by a loyalty driven response, will enable the supplier to recover financially.

These predictions are in line with RDT as Pfeffer and Salancik (1978, p. 258) claim that the “survival of the organization is partially explained by the ability to cope with environmental contingencies, negotiating exchanges to ensure the continuation of needed resources is the focus of much organizational action.” As for a financially distressed supplier the by the revenue resource is of vital importance, we hypothesize that distressed suppliers who are able to ensure a continuation or expansion of the needed revenue resources are likely to improve their financial performance as the “survival of the organization is partially explained by the ability to cope with environmental contingencies, negotiating exchanges to ensure the continuation of needed resources” (Pfeffer and Salancik, 1978, p. 258).

Additionally, stakeholder theory (Freeman, 1984) offers explanations and predictions of how firms function under the influences of their environments (Rowley, 1997). According to Cornell and Shapiro (1987) a firm is a bundle of explicit and implicit contracts with stakeholders. If stakeholders anticipate that contracts might not be fulfilled as a consequence of financial distress, the value of the firm is likely to depreciate. Arogyaswamy et al. (1995) conclude that favorable relationships with external stakeholders that provide the firm with resources are critical to the survival of the firm. Based on this assumption, they insist that stakeholder relationships are a critical success factor for recovery, as “the deterioration of a declining firm’s image and relationships with external stakeholders can pose the survival threatening effects of further decreasing firm revenues, increasing costs or reducing management’s flexibility in combating decline” (Arogyaswamy et al., 1995, p. 499). We base our second hypothesis on the overwhelming indications of stakeholder importance of successful financial recovery.

**Hypothesis 2.** The higher the level of cooperativeness of the buyer’s response to supplier financial distress, the higher the chances for financial recovery in the following financial years.

We now test our hypothesis to determine whether or not there is a positive link between the dependence of the buyer, the intensity of support granted by the buyer and the financial recovery of the distressed supplier.
3.4 Data

3.4.1 Research Setting and Data Collection
The empirical context of our study is the automotive industry. We gained access to financial data of first-tier suppliers from a major German automotive OEM on condition that we protect the anonymity of the analyzed suppliers. Sufficient supplier data is available, since the German automotive OEM started in 2008 to monitor the financial performance of all its first-tier suppliers. The constant financial performance measurement of its supply base mitigates supply risk, as it enables the OEM to act promptly in case of supplier financial distress and to monitor turnaround activities. The central tool for the OEM’s standardized financial risk assessment procedure is the “financial quick check,” which is a self-administered questionnaire. The “financial quick check” provides an overview of the supplier’s past and current financial status. Hence the risk management department of the OEM is at the intersection of finance and procurement department. All decisions pertaining to distressed suppliers are made in a weekly cross-functional meeting with members of procurement, finance, legal and logistics. This weekly meeting is called “supplier risk board” and is convened under the leadership of the procurement department, to which all functions are subordinated. Therefore we here to the OEM’s response to supplier financial distress as a decision by the buyer (buyer’s response).

Furthermore not only was the OEM’s response choice disclosed to us, but supplier relationship data was also provided to test our hypotheses on an empirical basis. Our data collection yielded a heterogeneous sample covering all typical automotive procurement commodities (powertrain, electronics, interior, exterior, chassis and raw material) deriving from international first-tier suppliers of all sizes. The starting point of our analysis is the financial quick check data which was submitted by the first-tier suppliers for the fiscal year 2008. We then identified suppliers which reported negative earnings before interests and taxes (EBIT) and traced their financial performance during the 2009, 2010 and 2011 fiscal years. Actual data from the subsequent fiscal periods allowed us to conduct an analysis over variation in time to exclude short-term effects. In total we analyzed 61 suppliers with a mean EBIT margin in 2008 of $−3.53\%$ (SD = 0.040). The total annual revenues of the firms ranged in 2008 from 8.13 million to 10.39 billion Euro (M = 522.15 Million Euro, SD = 1,390.34 million Euro). Our data sample revealed no systematic bias.

3.4.2 Measures
Zsidisin et al. (2004) point out that the assessment, perception and severity of an inbound supply risk depends on its probability and its impact. This accounts also
for the strong inbound supply risk of supplier financial distress. Evidently the probability of financial distress related to supply chain disturbances depends on the financial strength of the supplier. For the buyer, the impact of supplier financial distress and default depends on several factors, such as the number of alternative suppliers, the ability of the stock range to cover the switching time or a potential loss of technological expertise. Hence we use these variables to investigate a buyer’s dependence in order to predict the cooperativeness of the buyer’s response. Figure 3-2 depicts the variables.

**Figure 3-2: Timeline and data**

Descriptive statistics and first-order correlations are shown in Table 3-1.

<table>
<thead>
<tr>
<th>Variables</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Buyer sales proportion (t = 2008)</td>
<td>1</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(2) Buyer dependence (t = 2008)</td>
<td>-0.209</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.106)</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(3) Cooperativeness of response (t = 2008)</td>
<td>-0.067</td>
<td>0.766***</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.066)</td>
<td>(0.000)</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>(4) EBIT margin (mean over 2009 – 2011)</td>
<td>-0.349**</td>
<td>0.612***</td>
<td>0.636***</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
<td>(0.000)</td>
<td>(0.000)</td>
<td>-</td>
</tr>
</tbody>
</table>

Mean ($M$) 0.183 -0.105 3.934 -0.017
Standard Deviation ($SD$) 0.186 0.527 2.024 0.085
Min 0.002 -1.17 1 -0.354
Max 0.826 1.159 7 0.121

*Note. $n = 61$. Pearson product-moment correlation coefficients are shown with standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ (two-tailed), (equals |$r$| > 0.252, 0.327, and 0.411, respectively)

Table 3-1: Descriptive statistics and bivariate correlations

3.4.2.1 Dependence

A firm’s essential need for scarce external resources creates a dependence on its exchange partners according to resource importance, discretion, and concentration (Pfeffer and Salancik, 1978). Based on Pfeffer and Salancik (1978) we conceive
the buying firm’s dependence (DEPD) on a supplier as a formative construct and used four formative indicators to measure it: number of alternative suppliers, switching costs, number of parts delivered, and technology position.

The number of alternative suppliers indicates the concentration of resource control. For the degree of buyer dependence it is critical for the organization to have access to additional suppliers (resources), as multiple sources provide the buyer with better information about the supplier’s costs, performance capabilities, and innovation opportunities (Richardson, 1993). Hald et al. (2009, p. 966) observe that “there is a great difference in single sourcing when the buyer chooses one of several firms to work with on an exclusive basis – versus when there is only vendor that can supply the products or services needed. In such a case, the buyer will feel quite dependent.”

In this context, concentration of resource control is the extent to which the buyer can substitute suppliers by awarding or shifting business volume to alternative suppliers. The number of alternative suppliers is an estimation of the responsible buyer or risk manager with the regard to comparable suppliers in commodities and capabilities.

Likewise we obtain a switching cost approximation from the responsible buyer or risk manager based on a credible threat to switch the supplier according to supply market idle capacity, potential legal obstacles (e.g. intellectual property), set-up time and effort for the new supplier set (e.g. quality audits, new tools) according to the asset- and relationship-specific investments with the existing supplier. In addition to this, accumulating safety stock to bridge the switching time might be difficult, as complex customer- and model specific parts can usually not be bought on a spot market and other buyers are likely to increase safety stock of a distressed supplier in order to bridge their supplier switch. Hence existing and alternative suppliers might be put in an advantageous bargaining position and the buyer can find itself locked into an existing supplier relationship to avoid losing serial production.

Another indicator of the importance of the source is the number of parts delivered from that supplier. The quantity serves as an indication for the criticality of a supplier with regard to the buyer’s ability to function in case of source absence. Moreover a large number of supplied parts tends to lead to the logistical indispensability of the supplier, as a few parts can easily be shifted to a new supplier than a large quantity of parts. We obtain the number of supplied parts from the OEM’s system that documents contracts with its first-tier supply base.

Finally, a supplier’s technology position may serve as a source of power if it is used for discretion over allocation of scarce resources (Pfeffer and Salancik, 1978). The conceptualization is in line with Ganesan (1994) who describes relationship
dependence in terms of the degree to which a buyer (or supplier) needs to maintain the relationship with a certain supplier (or buyer) in order to achieve a desired goal. If a financially distressed supplier possesses a competitive edge through an extraordinary technological or procedural capability, the buyer is more dependent on this supply relationship – especially if the specific capability is related to technology search field, which brings perceptible benefit to the buyer. We obtain an assessment of the technological capabilities as approximation from the responsible buyer or risk manager based on a German school grading system ranging from 1 for excellent to 6 for very poor. For its assessment the buyer or risk manager takes not only the innovation capability of the supplier into account (first to market), but also the supplier’s flexibility in implementing change requests and the supplier’s quality performance, including the reliability of delivery.

3.4.2.2 Cooperativeness of Response

To measure the cooperativeness of the response, we created a new quasi-continuous variable (COOP) by sorting the responses according to their level of cooperativeness (ranging from 1: immediate supplier switching to 7: award of new business). Not surprisingly, the least cooperative response of the buyer is an immediate “supplier switch.” This leads not only to an immediate loss of sales for the distressed supplier, but also to negative stigmatization with regard to other stakeholders such as other customers, creditors or tier-n suppliers. Hence we consider a more discreet “phase out” of a distressed supplier as slightly more cooperative since the stigmatization of a public supplier switch is avoided and the distressed supplier gets to keep its existing business and use it for capacity utilization.

The response option of “neglect” is less destructive for a distressed supplier as there are no signs of losing a customer. Thus stigmatization can be avoided. In contrast, a cooperative buyer response for a distressed supplier is the support for or even the arrangement of an investor solution. Thereby we consider a strategic investor solution to be more helpful than an equity investor solution as the distressed supplier profits from the automotive industry experience and market power of its strategic investor. We subsumed “liquidity support” and the award of “new business” as the most cooperative buyer responses to supplier financial distress. As “liquidity support” is often just prompt payment (instead of at the end of the following month) it is less risky for the buying firm than awarding new business for future car models to the supplier. For the distressed supplier, however, the award of new business can ensure future capacity utilization and send a positive signal to other stakeholders of the distressed suppliers.
Often the borders between the buyer’s response options are fluid. For this reason, we conceive the variable cooperativeness of response as a continues variable in the range of switch (1), phase out (2), neglect (3), private equity investor solution (4), strategic investor solution (5), liquidity support (6), and the award of new business (7).

3.4.2.3 Performance
Operationalization of a supplier’s financial performance and turnaround success is achieved by measuring the earnings before interest and taxes (EBIT) for the fiscal years of 2009, 2010, and 2011. Previous research has indicated that a significantly larger fraction of financially distressed firms has reported negative earnings than non-financially distressed firms, if “financial distress is defined as an inability to meet the fixed payment obligations on debt” (Gilson, 1989, p. 243).

Consequently EBIT is considered to be a reasonable indicator for cash shortfalls to meet financial obligations (Johnson, 1970). We analyze the EBIT margin on sales as a comparable indicator for operating profitability and utilize the data from the years 2009, 2010, and 2011. Specifically, we use the average EBIT margin over the years 2009, 2010, and 2011:

\[
\bar{EBITM} = \frac{1}{3} \sum_{t=1}^{3} EBITM_{2008+t} = \frac{1}{3} \sum_{t=1}^{3} \frac{EBIT_{2008+t}}{Sales_{2008+t}}
\]

3.4.2.4 Control variables
We included (1) purchasing categories of the buying firm and (2) the buying firm’s proportion of a supplier’s total annual sales variables in the hypothesis testing procedure.

First, the general market environments of different purchasing categories (PCAT) of the buying firm differ significantly (e.g. with regard to intensity of competition) which might affect the buying firm’s response choices and on a supplier’s general profitability. Major purchasing categories of the buying firm were powertrain, electronics, interior, exterior, chassis, and raw material. Of the 61 suppliers in our sample, 11 belonged to the category “powertrain,” 4 to “electronics,” 9 to “interior,” 22 to “exterior,” 8 to “chassis,” and 7 to “raw materials.” We created five dummy variables, accounting for the effect of the six purchasing categories within our sample.

Second, in our analysis it is critical to consider how important the buyer is for the sales of a supplier. With regard to Hypothesis 1, the buyer’s response choice might be influenced by its proportion of the supplier’s sales. This consideration is
driven by competition among buyers. The firms who share a distressed supplier usually compete on their sales- and procurement markets. Therefore their buyers have an incentive to avoid support efforts for a distressed supplier in order to minimize the risk of cross-subsidizing their competitor’s production. As a consequence, the buyer that is most likely to be forced to support the supplier (first) is the buyer with the largest procurement volume with the distressed supplier. With regard to Hypothesis 2, a supplier’s EBIT margin in the aftermath of the buyer’s response will be influenced by the buyer’s share of sales. In order to control for these effects, we use the variable buyer sales proportion (SPROP) which is the buyer’s proportion of the supplier’s total annual sales measured as the sum of the obtained purchases from a supplier divided by the supplier total annual sales.

3.5 Analysis and Results

Given our two hypotheses, we specified the following two equations (models) and used ordinary-least squares (OLS) regression to estimate the parameters:

\[
(1) \ COOP = a_0 + \sum_{k=1}^{5} a_{1,k} \text{PCAT}_k + a_2 \text{SPROP} + a_3 \text{DEPD} + \epsilon_1
\]

\[
(2) \ EBITM_3 = b_0 + \sum_{k=1}^{5} b_{1,k} \text{PCAT}_k + b_2 \text{SPROP} + b_3 \text{COOP} + \epsilon_2
\]

In the first equation, cooperativeness of the buying firm’s response is regressed against the buying firm’s dependence on the supplier and the control variables (five dummy variables for purchasing category and buyer sales proportion). OLS regression assumes metric variables which might be an inadequate assumption for the dependent variable cooperativeness. For this reason and to verify the robustness of the OLS results, we also estimated ordered response models (ordered logit). The obtained results (shown in appendix 1) were entirely identical to the OLS solution. In the second equation, the supplier’s average EBIT margin over the three subsequent years after the response is regressed against the cooperativeness of response and the control variables. Appendix 2 shows separate estimations for the individual years, i.e., where the dependent variable is EBITM2009, EBITM2010, and EBITM2011.

A step-wise estimation was used, where the control variables are entered as a block in a first step, followed by the main effect variables in the second. The increment in variance explained (\(\Delta R^2\)) was significant in both cases. For each regression model, we scrutinized influence diagnostics and verified that the assumptions underlying OLS estimation were met. Residuals appeared to be approximately normally distributed and neither the scrutinized influence...
diagnostics nor the Bonferroni-adjusted outlier test raised concerns over outliers. No indications of multicollinearity were found: zero-order correlations were relatively large (Table 3-2) but within acceptable ranges (i.e., $|r| < 0.8$) and the variance inflation factors (maximum: 2.76) and the condition numbers (maximum: 8.05) were substantially below the commonly suggested thresholds for all models (Cohen et al., 2003). In summary, these analyzes did not give reason to assume that the chosen method was inappropriate. The results appear in Table 3-2.
Table 3-2: Regression results

<table>
<thead>
<tr>
<th></th>
<th>Cooperativeness of response (H1)</th>
<th>EBIT margin (H2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model 1a</td>
<td>Model 1b</td>
</tr>
<tr>
<td>Intercept</td>
<td>4.182</td>
<td>3.728</td>
</tr>
<tr>
<td></td>
<td>(0.618)</td>
<td>(0.407)</td>
</tr>
<tr>
<td>Electronics (purchasing category)</td>
<td>0.319</td>
<td>-0.453</td>
</tr>
<tr>
<td></td>
<td>(1.193)</td>
<td>(0.785)</td>
</tr>
<tr>
<td>Interior (purchasing category)</td>
<td>0.929</td>
<td>0.78</td>
</tr>
<tr>
<td></td>
<td>(0.916)</td>
<td>(0.599)</td>
</tr>
<tr>
<td>Exterior (purchasing category)</td>
<td>-0.728</td>
<td>0.199</td>
</tr>
<tr>
<td></td>
<td>(0.766)</td>
<td>(0.512)</td>
</tr>
<tr>
<td>Chassis (purchasing category)</td>
<td>-0.431</td>
<td>0.307</td>
</tr>
<tr>
<td></td>
<td>(0.951)</td>
<td>(0.627)</td>
</tr>
<tr>
<td>Raw material (purchasing category)</td>
<td>-0.755</td>
<td>0.082</td>
</tr>
<tr>
<td></td>
<td>(1.021)</td>
<td>(0.674)</td>
</tr>
<tr>
<td>Buyer sales proportion</td>
<td>0.002</td>
<td>0.199</td>
</tr>
<tr>
<td></td>
<td>(0.287)</td>
<td>(0.189)</td>
</tr>
<tr>
<td>Dependence</td>
<td>1.602</td>
<td>***</td>
</tr>
<tr>
<td></td>
<td>(0.187)</td>
<td></td>
</tr>
</tbody>
</table>

| R²                   | 0.088    | 0.618    | 0.193    | 0.515    |
|                      | 1.18     | 77.12    | 2.71     | 37.30    |
| F on ΔR²             | –        | 73.53    | ***      | 35.10    |

Note. n = 61. OLS estimation was used. In Model 1a and 1b, the dependent variable is “cooperativeness of response”; in Models 2a and 2b, the dependent variable is the EBIT/Sales margin. Except for the categorical control variable Purchasing category (with “powertrain” as the baseline category), reported estimates refer to standardized regression coefficients. Standard errors are shown in parentheses.

* p < 0.05, ** p < 0.01, *** p < 0.001 (two-tailed).

Hypothesis 1 suggests that the cooperativeness of the buying firm’s response increases with dependence on the supplier. The results obtained from the estimation of equation (1) provide strong empirical support this prediction (standardized regression coefficient a3 = 1.602, p < 0.001, ΔR² = 0.530). All else being equal, the more dependent the buying firm is, the more likely it is to select a cooperative response. A scatterplot including the regression line is shown in Figure 3-3.
Hypothesis 2 suggests that the cooperativeness of the buyer’s response positively affects financial health (measured as EBIT margin). This is supported by the obtained regression results which suggest that the more cooperative the buying firm’s response at the time a supplier’s financial distress, the more likely the supplier is to attain favorable financial health in subsequent periods ($b_3 = 0.025$, $p < 0.001$, $\Delta R^2 = 0.322$). Again, we plotted the corresponding slope and scatter plot (Figure 3-4A).
Figure 3-4A

Figure 3-4B

Figure 3-4: The effect of cooperativeness of response on supplier performance (Hypothesis 2)
Although not an element of our theory, the two specified equations could be interpreted as a simple mediation model. For this reason, and to see whether the effect of cooperativeness of response on EBIT margin could be simply explained by dependence (i.e. no mediation), we also conducted a mediation analysis using the bootstrapping procedure suggested by Preacher and Hayes (2004). The results (indirect effect = 0.031 with Normal-based p = 0.004 and bootstrapped percentile CI = [0.012, 0.053]; direct effect c' = 0.015 with Normal-based p = 0.255 and bootstrapped percentile CI = [−0.009, 0.043]) suggest that the cooperativeness of response fully mediates the relationship between the buyer’s dependence and the supplier’s EBIT margin. Hence, cooperativeness of response plays the key role in explaining how the observed suppliers recover from their financial distress.

<table>
<thead>
<tr>
<th></th>
<th>Non–Cooperative (Control)</th>
<th>Cooperative (Treatment)</th>
<th>Differences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean EBIT margin pre response (2008)</td>
<td>0.005 (0.013)***</td>
<td>−0.018 (0.013)***</td>
<td>−0.023 (0.010)***</td>
</tr>
<tr>
<td>Mean EBIT margin post response (2009–2011)</td>
<td>−0.041 (0.011)***</td>
<td>0.059 (0.011)***</td>
<td>0.100 (0.012)***</td>
</tr>
<tr>
<td>Change in mean EBIT margin</td>
<td>0.124 (0.016)***</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. n = 244 (non–cooperative: 116 = 29 [Pre] + 87 [Post]; cooperative: 128 = 32 [Pre] + 96 [Post]). Means and standard errors (robust) were estimated via OLS regression (R² = 0.299).

Table 3-3: Differences–in–differences: EBIT margin

Finally, in addition to the OLS regression and to scrutinize the effect of different responses, we applied a simple difference-in-difference estimation. Specifically, we compared two groups: suppliers who received a non-cooperative response – in the form of either Exit or Neglect (switching or phase out) – and suppliers who received a cooperative response – in the form of either Voice (PE investor or strategic investor) or Loyalty (liquidity or new business).

The results, shown in Table 3-3 and plotted in Figure 3-4B, suggested that three years after the buying firm’s intervention, the EBIT margin of suppliers who received a cooperative response is on average 12.4% higher than that of suppliers who received a non-cooperative response.

3.6 Discussion

3.6.1 Scholarly Implications

The core of our contribution lies in providing an empirical analysis of buyer responses to supplier financial distress. Our guiding idea is to investigate the reciprocal relationship between the cooperativeness of the buyer’s response to supplier financial distress and the turnaround success of the financially distressed

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supplier. The results of our research clearly indicated that the power-dependence theory of Pfeffer and Salancik (1978) can also be applied to supplier financial distress management. Our results are in line with RDT, which predicts that when dependence is high, the focal firm is willing to bear costs for the benefits of predictable resource exchange (Pfeffer and Salancik, 1978). Our research revealed that the greater the dependence on a supplier, the higher the uncertainty of supply in case of supplier financial distress and the greater the chances that the distressed supplier will be supported in an inter-firm effort by the options “voice” or “loyalty.”

The task of management, as developed from the RDT, is the management of inter-firm transactions to acquire and maintain resources, as survival of the firm depends on its ability to cope with environmental contingencies and dependencies. Hence the objective of a dependent buyer is the financial stabilization of the distressed supplier at the least cost. Thus Pfeffer and Salancik (1978, p. 225) state “that to understand organizations, it is necessary to understand the external constraints they face. These constraints, deriving from the organization’s interdependence with other organizations, both influence organizational actions and create a need to manage the environment.” This awareness is central for the management of financially distressed supplier and might even lead to the conclusion that Pfeffer and Salancik (1978) anticipated the growing interest in supply chain risk management.

With regard to Hirschman’s (1970) famous Exit, Voice, and Loyalty framework for unsatisfactory relationships, Rusbult et al. (1982) argue that the three variables influence the tendency to show an either cooperative or uncooperative reaction: (1) the degree of satisfaction prior to the emergence of problems, (2) the magnitude of investment in the relationship, (3) the quality of the best alternative to the current relationship. Especially in the short run, a heavy dependence on the supplier implies that the “captive” firm is forced to accept the locked-in relationship, because of its incapacity to change the current situation (Bourantas, 1989; Caniëls and Gelderman, 2005). Hence, the financial distress of a supplier on which the buying firm is dependent will compel the focal firm to invest in the relationship in order to gain resilience, with the following managerial implications.

3.6.2 Managerial Implications
According to researchers, a common ex-ante strategy to safeguard against supply shortfalls is to buffer strategic items through multiple sources (Berger et al., 2004; Treleven and Schweikhart, 1998) to bridge supply shortfalls temporarily (Zsidisin et al., 2000). Buffer strategies through inventories or alternative sources of supply are meant to provide time to take actions against unforeseen detrimental events. However these tactics to minimize the impact of a supply disruption are rather
superficial fixes and fail to address the more fundamental issues (Spekman and Davis, 2004). Moreover, redundancy through additional sources, safety stock and the like leads to additional costs and can therefore be seen as an insurance fee (Spekman and Davis, 2004). Therefore in this study we seek a new way to manage financially distressed suppliers. If support for a financially distressed supplier is seen as an investment in the buyer-supplier relationship, we suggest, in line with Bensaou (1999), that the strategic selection of relationship types should match the product, technology and market conditions in order to avoid the ineffectiveness and inefficiencies of under- and overdesigned relationships. Moreover it is important to keep in mind that firms compete not only on their sales markets, but also on their procurement markets. As a consequence of information asymmetry and potential opportunistic behavior, the buyer must carefully choose whether to show a cooperative or a rather uncooperative response to supplier financial distress. The switch, phase-out and neglect response option protects from free-riders. The cooperative responses of voice and loyalty run this risk of also benefitting competitors of the buyer, who source from the same supplier. Hence a buyer should try to protect itself in advance of its support by specific contracts and carefully assess the supplier relationship. As stated in the next chapter, we see a need for further research.

3.6.3 Limitations and Future Research Directions

This study’s findings need to be considered in light of its limitations. A few obvious limitations pertain to our data collection: the rather small number of cases is a potential weakness. A replication of this study across other industries might therefore augment the generalizability of the results.

For providing scientifically based and yet practical advice, a multi-period examination of the turnaround process is required. Hence more studies adding to the turnaround literature would be useful, as empirical evidence on factors contributing to the effectiveness of turnaround strategies, based on large-scale, multi-period analysis, is limited. Furthermore the potential conflict among stakeholder groups should be analyzed. Underlining the resulting importance of purchasing and supplier management, supply chain risk management has become a research field with high practical relevance. The core of our contribution lies in providing an empirical analysis of a variety of buyer responses to supplier financial distress.
3.7 Conclusion

A great deal of research has focused on means of preventing and forecasting supplier distress, but the question “What happens after a supplier is identified as financially distressed?” has not received much attention. More specifically, why and how do buyers respond to the threat of supply chain disturbances as a consequence of supplier financial distress? What are the performance outcomes? Driven by these questions, this study extends the literature by establishing a model for buyer’s response options to supplier financial distress.

The proposed model provides insights into the creation of motivation to act and the outcomes of the (cooperative and uncooperative) responses. In doing so, we present the first empirical investigation of a buyer’s responses to the threat of supply chain disruptions related to supplier financial distress. The findings lead to new insights into how financial distress might affect buyer-supplier relationships. Specifically, a buyer tends to choose its response’s level of cooperativeness according to its dependence on the distressed supplier. Moreover we find evidence that the buyer’s cooperativeness corresponds with the turnaround chances of the distressed supplier in following years. Thus, distressed suppliers should carefully consider how they can best leverage this potential, and buyers should carefully choose which suppliers to support.
3.8 References


### 3.9 Appendix

#### Model 1a

<table>
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<tr>
<th>Category</th>
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#### Model 1b

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#### Note

- n = 61. Ordered logit estimation was used. The dependent variable is “cooperativeness of response.” Except for the categorical control variable Purchasing category (with “powertrain” as the baseline category), reported estimates refer to standardized regression coefficients. Standard errors are shown in parentheses.
- * p < 0.05, ** p < 0.01, *** p < 0.001 (two-tailed).

### Appendix 1: Results of ordered logistic regression (Model 1)

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#### Log Likelihood

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#### Likelihood ratio

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#### Note

- n = 61. Ordered logit estimation was used. The dependent variable is the EBIT/Sales margin. Except for the categorical control variable Purchasing category (with “powertrain” as the baseline category), reported estimates refer to standardized regression coefficients. Standard errors are shown in parentheses.
- * p < 0.05, ** p < 0.01, *** p < 0.001 (two-tailed).

### Appendix 2: Regression results for individual years (Model 2)

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<td>Raw material (purchasing cat.)</td>
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#### Note

- n = 61. OLS estimation was used. The dependent variable is the EBIT/Sales margin. Except for the categorical control variable Purchasing category (with “powertrain” as the baseline category), reported estimates refer to standardized regression coefficients. Standard errors are shown in parentheses.
- * p < 0.05, ** p < 0.01, *** p < 0.001 (two-tailed).
Chapter 4

Securing Upstream Supply in Case of Supplier financial Distress

Abstract

We develop a novel framework to study and manage supplier financial distress by integrating research insights from supply chain risk management, complex adaptive systems, and stakeholder management. In addition, our case study-based research addresses two research gaps.

First, since supply chain disturbance analysis tends to concentrate on dyadic supplier-buyer relationships, the negative effects of conflicting stakeholder interests in cases of supplier financial distress have not been sufficiently taken into consideration. Second, as supply chain disturbance publications often have a preventive focus, we add an analytical and managerial framework for reactive supplier financial distress management. Since most preventive measures include redundancy (e.g. second source, inventory), our reactive framework allows a better balance of supply chain redundancy and efficiency. Thus, our work has high practical relevance and contributes to supply chain risk literature on the important, but largely neglected, topic of supplier financial distress.

Keywords: supply chain risk management, risk classification, financial distress, financial default, supply networks, stakeholder, opportunism, complex adaptive systems, automotive industry
4.1 Introduction

Practitioners and researchers alike have recognized that a high degree of efficiency can be achieved through outsourcing. Therefore, the need for productivity improvement (Razzaque and Sheng, 1998) and the desire to focus on core competencies (Arnold, 2000; Boyson et al., 1999; Quinn and Hilmer, 1994) induced the outsourcing trend. However, the widespread practice of outsourcing is based on “reliance on external sources for manufacturing components and other value adding activities” (Lei and Hitt, 1995, p. 836) and the outsourcing-induced efficiency gain comes at the expense of increasing dependence on the supply base (Kannan and Tan, 2002; Van Damme and Ploos van Amstel, 1996; Zsidisin, 2003). Due to the increased dependence on external sources, effective management of financially distressed suppliers can be seen as a prerequisite for outsourcing, especially in the case of just-in-time deliveries, or supply network downsizing. This is due to the threat of supplier financial distress triggering either logistical disturbances (Riddalls and Bennett, 2002) or supply chain disruptions resulting in severe operational and financial damage for the buyer (Blackhurst et al. 2005).

The potential detrimental impact of supplier financial distress accounts in particular for manufacturing industries involving highly customized pre-products without spot markets, as it is the case for most parts, components, and modules in the automotive industry. In the automotive industry, suppliers produce pre-products that contribute typically more than 50% of the value of the final product (Richardson and Roumasset, 1995). Hence the ability to form and utilize a financially reliable supply base has become a critical capability for automotive OEMs.

Based on this notion, our article will follow a stream of research that focuses on supply chain risk management within automotive supply networks (Blackhurst et al., 2008; Hallikas et al., 2004; Svensson, 2000). The detrimental impact of supply chain disruptions triggered by supplier financial distress plays a crucial role in the risk portfolio of any automotive OEM (Wagner et al., 2009). This is because automotive OEMs depend on supply networks that become increasingly complex and unstable, and hence more vulnerable. Automotive OEMs and suppliers are forced to reduce buffers to increase productivity and to reduce capital and handling costs (Lieberman and Demeester, 1999). The elimination of waste along the material flow is a core objective of just-in-time production (Sugimori et al., 1977) and just-in-sequence deliveries (Hüttmeir et al., 2009). However, the realization of potential cost benefits of just-in-time production evidently depends on reliable supplier relationships (Waters-Fuller, 1995).
This is because unreliable delivery performance of the supplier would weaken the delivery reliability of the buyer, since production is susceptible to interruption in the absence of inventory buffers (Hallikas et al., 2002). Wagner and Silveira-Camargos (2012) emphasize that deliveries characterized by high time dependency and minimal buffers bear substantial risk because the buyer’s production system is exposed to disruption caused by delayed or deficient delivery. One reason for delayed or deficient delivery might be supplier financial distress, which potentially leads to supply chain disruptions in the presence of switching barriers. Therefore, switching barriers add to supply chain vulnerability because complex customer- and model-specific parts, components, modules or systems cannot customarily be bought on a spot market, given the extent of customization in the automotive industry. If a buyer has no credible threat to switch its suppliers due to a deficient supply market, the buyer might find himself exposed to opportunistic behavioral hazards of existing suppliers (Cool and Henderson, 1998; Lonsdale, 1999; Monteverde and Teece, 1982). Consequently, a supplier might be put in an advantageous bargaining position and the automotive OEM can find itself locked into a supplier relationship and being taken advantage of by the supplier or its stakeholders, such as creditors. To avoid this trap and to mitigate supply chain vulnerability, an effective response framework to supplier financial distress is developed herein.

The rest of the article is structured as follows. Section 2 provides the conceptual background of our framework by elaborating on supplier financial distress as a supply chain risk and on supply chain risk management related research. Next, we define key concepts. In section 4, the framework is developed based on the notion of supply networks as complex adaptive systems and on insights from stakeholder management research. Our action based framework development is followed by a discussion of the scholarly and managerial implications as well as research limitations. In the last section, conclusions are drawn from the research findings.

4.2 Conceptual Background

4.2.1 Supply Chain Risk Management

Supply risks are related to the supplier portfolio of a buying firm and comprise events that might harm the interactions between two firms (Zsidisin and Wagner, 2010). The financial distress of the supplier might detrimentally affect the material flow between buyer and supplier. Hence, supplier financial distress constitutes a supply chain risk and according to supply chain risk literature it can be seen as a:

- supply risk (Zsidisin, 2003; Tang, 2006);
- business risk (Zsidisin et al., 2000);
external “supply risk” that leads to an internal “process risk” (Christopher and Peck, 2004);
• dependency risk (Hallikas et al., 2004);
• a risk outside of the focal firm and within its supply chain (Pfohl et al., 2011)

These characteristics of supplier financial distress and supply chain risks hint generally at a network aspect, which is an essential part of effective supply chain risk management. Hence a system-oriented supply chain risk management approach, developed by Oehmen et al., 2009 and Christopher and Peck (2004, p. 9), points out that “since supply chain vulnerability is by definition a network-wide concept, the management of risk has to be network-wide, too.” Wagner and Bode (2006) assume that the vulnerability of a supply chain is increased by buyer dependence (Hallikas et al., 2005), supplier dependence (Hendricks and Singhal, 2005; Spekman and Davis, 2004), supplier concentration (Norrman and Jansson, 2004; Zsidisin et al., 2000), and global sourcing (Bode et al., 2011; Oehmen et al., 2009). As all these characteristics apply to automotive supply networks, supply risks need to be controlled in order to avoid supply chain disturbances and disruptions triggered by supplier financial distress. Therefore, Hauser (2003) illustrates that in today’s complex environment, risk oriented supply chain management can lead to superior financial performance and provide a competitive edge through “network optimization, operational excellence, and customer satisfaction” (Hauser, 2003, p. 71).

An enhanced supply chain management bears the potential to provide competitive advantage as the trade-off between savings and security (or efficiency and redundancy) has become a strategic issue in supply management (Christopher and Peck, 2004; Hauser, 2003; Spekman and Davis, 2004). Kleindorfer and Saad (2005, p. 56) even observe “while many writings […] emphasize the importance of leaness […], much less attention has been given to the trade-off between leanness on the one hand, and systems’ reliability and supply chain robustness on the other hand.” The significant increase in the number and costliness of supply chain disruptions, as noted by Hendricks and Singhal (2005), underlines the importance of an effective response to financial distress to safeguard the delivery performance of the supply base. Typically a supply chain risk management process consists of four steps: 1) risk identification; 2) risk assessment; 3) risk management decisions and implementation; and 4) risk monitoring (Blackhurst et al., 2008; Hallikas et al., 2004). Once a risk has been identified and assessed, strategies such as risk transferring, risk taking, risk elimination or risk reduction can be used to manage that risk (Blackhurst et al., 2008; Hallikas et al., 2004).

Zsidisin, Panelli and Upton (2000) segregate activities that purchasing firms take in response to risks into proactive process improvements and reactive buffer
strategies. Process improvements focus on reducing the chance that a potential risk will occur, for instance, by forming alliances, increasing communications, building relationships, conducting quality audits or engaging in supplier development activities. Even though supply risks can be reduced from process improvements, they cannot be eliminated completely (Zsidisin et al., 2000). Therefore, buffer strategies through inventory or alternative sources of supply merely buy time to take action against unforeseen detrimental events.

However, these tactics to minimize the impact of a supply disruption are superficial fixes that fail to address the more fundamental issues (Spekman and Davis, 2004) and lead to additional costs as the incremental costs of additional sources, safety stock and the like are comparable to an insurance fee (Sheffi and Rice, 2005). Therefore, Sheffi and Rice (2005, p. 41) conclude that “redundancy […] represents sheer costs with limited benefit unless it is needed due to a disruption. Flexibility on the other hand, can create a competitive advantage in day-to-day operations.” Supply chain flexibility enables a buying firm to respond effectively and quickly to dynamic market changes, and thereby enhances the capability to cope with environmental uncertainty (Swamidass and Newell, 1987).

Hence in this article, supply chain risk management can be proactive or reactive. Proactive supply chain risk management aims at mitigating supply chain risk exposure before supplier financial distress and default become virulent. Proactive supply chain risk management involves supply network design, diligent supplier selection, supplier relationship building or a multiple sourcing strategy. Publications related to these ex-ante supply chain risk management activities make up the body of supply risk management research and it appears that a multi-supplier strategy is the most common approach for mitigating supply chain risk exposure in research and practice. However since mitigating supply chain risk exposure through multiple sources and other ex-ante measures comes at a cost, and since not all supply chain risks can ex-ante be eliminated, a reactive approach to supply chain risk management is necessary.

Despite the practical relevance and potential benefits of reactive supplier financial distress management, this research field seems to have been largely neglected. Based on their recent comprehensive literature review, Sodhi, Son, and Tang (2012) identify a research gap in terms of inadequate coverage of response to supply chain risk incidents. Likewise, Bode et al. (2011, p. 833) are aware that “little attention, however, has been devoted to the strategic behavior that firms employ in the wake of supply chain disruptions” and point out that a firm’s ability to respond effectively to adverse events is critical to its competitiveness. Thus a response framework to the supply chain risk of supplier financial distress will be developed.
4.2.2 Supplier Financial Distress

Before developing a framework for supplier financial distress management, there is a need to elaborate on supplier financial distress to ensure a common understanding of distress and default. In the United States, reorganization of firms under bankruptcy takes place under chapter 11 of the U.S. Bankruptcy Code. However, most firms try to restructure their debt and organization out of court first and file for bankruptcy only after these efforts have failed, because an out-of-court restructuring is usually less costly than a court-supervised reorganization (Gilson, 1995). The turnaround process can usually be divided into two stages: an internal efficiency-oriented retrenchment phase of decline-stemming, followed by an external entrepreneurial-oriented recovery phase (Robbins and Pearce II, 1992). Sudarsanam and Lai (2001) also speak of a multi-stage turnaround approach consisting of operational restructuring designed to generate short-term cash flow improvements, followed by strategic restructuring including portfolio and financial restructuring. Through comparison of the turnaround strategies of recovery and non-recovery firms, Sudarsanam and Lai (2001) test the effectiveness of turnaround strategies and identify the adoption of a forward-looking, expansionary, and external market focused strategies as critical to success. Further turnaround-related research concentrates on the prediction of financial distress (Smith and Graves, 2005) and on the board of director’s role (Daily and Dalton, 1994). Daily (1995) stresses that boards of successfully reorganized firms are run by outside directors. This observation hints at the importance of stakeholders and seems to be consistent with resource dependence considerations (Pfeffer and Salancik, 1978).

Based on Wruck’s (1990, p. 421) widely used definition of financial distress “as a situation where cash flow is insufficient to cover current obligations,” supplier financial distress is considered as the threat to an upstream supply chain member of not being able to cover current or future obligations due to insufficient cash flows and cash reserves. Unless effective countermeasures are taken, a distressed firm is in danger of default. Financial default occurs when a debtor misses a payment or violates a loan covenant (condition of the debt contract). In this study, the understanding of financial default exceeds the failure of debt service, as it refers to the failure of any scheduled payment due to insufficient liquidity. Financial default can therefore be broadly understood as the failure to cover obligations as a result of financial hardship. In this context it is noteworthy that the legal act of filing bankruptcy is not a necessary prerequisite for financial default. Based on this cash-based notion of financial default, we define financial supplier default as the suspension of operations of an upstream supply chain member due to financial circumstances. As supplier financial distress embraces supplier default, we use this higher notion of financial distress.
Supplier financial distress poses a severe inbound supply chain risk for any buying firm due to the uncertain outcome and potential supply chain disturbance (Chopra and Sodhi, 2004; Wagner et al., 2009; Zsidisin and Wagner, 2010). Hertzel, Li, Officer and Rodgers (2008), for instance, see the potentially detrimental impact of supplier financial distress for the buying firm as deviation from product quality, reduction of warranty value, lack of serviceability, disruption of supply and costs of shifting purchasing to existing or new suppliers. Other researchers have highlighted that supplier financial distress can lead to logistical disturbances such as late deliveries, quality problems, and absence of workforce (Riddalls and Bennett, 2002). It can even trigger supply chain disruptions resulting in stock-outs, inability to meet customer demands and severe financial damage (Blackhurst et al., 2005). These negative financial and operational consequences add to the vulnerability of the supply chain and require an effective response framework for the affected buyer.

4.3 Defining Key Concepts

4.3.1 Complex Adaptive Systems

Previous research has concluded that firms inevitably interact with their social environments to acquire vital resources (Pfeffer and Salancik, 1978). In this context, the conceptualization of supply networks as complex adaptive systems (CAS) can be an insightful framework for analyzing the relationship ties structure of a firm with its supply network. As such, Wycisk et al. (2008) reaffirm the understandings of Choi et al. (2001) and Surana et al. (2005) of contemporary supply networks as CAS. As discussed next, CAS enhances the understanding of how automotive supply networks evolve, adapt and change according to their internal mechanisms, environment and co-evolution. In their description of complex adaptive systems, Choi, Dooley, and Rungtusanatham (2001) refer to agents, connectivity and dimensionality as internal mechanisms of CAS.

Agents. Behavior in a CAS derives not from a single agent but rather from simultaneous actions of agents within the system. Therefore, behavior can be seen as emergent leading to new structures in a self-organizing system. In an automotive supply network, individual firms can be seen as agents or nodes of the network. Their actions affect the course of events as they select and deselect suppliers, move into new markets, change processes, etc. These agents thereby strive to increase “fitness” along the dimensions of delivery, costs, quality and flexibility.

Connectivity. Increases in connectivity derive from increasing interrelationship intensity. Interrelationships can potentially trigger chain reactions and lead to distant effects. Firms within automotive supply networks compete with each other
for resources and with firms in seemingly unrelated industries. Therefore, inbound supply management should focus on the entire network rather than on dyadic interactions of isolated firms in the network.

**Dimensionality.** The dimensionality of a CAS is defined as the amount of freedom that individual agents within the system have. Controls are a form of negative feedback, reducing dimensionality and through rules, regulations and restrictions, inducing the CAS to behave more predictably. In an automotive supply network, individual firms are difficult to control due to the high degree of dimensionality. Control attempts are typically imposed system-wide through institutional controls (e.g. quality norms) or in a dyadic supplier-buyer relationship through contracts (e.g. terms and conditions of procurement contracts).

In addition to these internal mechanisms, Choi, Dooley, and Rungtusanatham (2001) describe the environment of CAS in terms of dynamism and rugged landscape.

**Dynamism.** As a result of entering or leaving agents and through the changing connections among agents, the boundaries of the system and its interactions are constantly unstable. An automotive supply network can be so large, complex that it is impossible to see the boundaries around it. For example, dynamism became evident by the difficult estimation of the manifold impact of the Fukushima earthquake in the tier-n supply chain.

**Rugged Landscape.** If the system is regarded as a landscape with many hills and valleys, it is difficult to find the highest point (optimum) of the landscape (system). In these situations, optimization can be impossible. In complex automotive supply networks, it cannot be assumed that performance will improve if a single element contributing to it improves. For example, if supply chain members want to optimize their local costs, it may create a system-wide cost increase. One attempt of the OEMs to overcome these interdependencies is to reduce the number of first-tier suppliers and have the remaining tier-one suppliers deliver entire sub-systems or modules, rather than discrete parts (reducing the number of peaks and combining many small peaks into a few large ones).

Based on these insights, Choi, Dooley, and Rungtusanatham (2001) describe the development of CAS with non-linear changes and predict a non-random future.

**Non-Linear Changes.** As behavior within CAS derives from the interaction of many, the system behaves in a non-linear fashion. Consequently, large changes in input may lead only to small changes in outcome and vice versa. In practice a CAS can be extremely sensitive to tiny changes in its environment (“butterfly effect”). In an automotive supply network, subsystems exist. These subsystems depend on resources and organize themselves into a series of overlapping structures. If members of these subsystems are exposed to changes (e.g. radically
new and successful products), existing structures are destroyed and the affected part of the supply network is likely to be affected in a non-linear fashion. This non-linear operation is one of the reasons which make it almost impossible for one firm to control its operation in a deterministic fashion or even to control the entire system.

Non-Random Future. The difficulty to determine the future behavior of a CAS does not imply that the future is random. Even though in an automotive supply network an exact prediction of future behavior is difficult, patterns of behavior can be recognized. For instance in cases of financial distress, sub-suppliers are likely to restrict deliveries to the financially distressed supply chain member to limit their potential loss exposure, while buyers of the distressed supplier often compete for increased delivery to build safety stock. The outcome of these competing stakeholders’ interests is hard to predict, whereas it is not random.

Choi and Krause (2006) likewise studied the impact of supply base complexity on a focal company in terms of transaction costs, supply risk, supplier responsiveness, supplier innovation and conceptualized supply base complexity along three dimensions: number of suppliers in the supply base, degree of differentiation among these suppliers (suppliers vary in terms of culture, location, size, and the like) and level of inter-relationship among the suppliers (interrelation, interaction).

In short, automotive supply chain networks can be characterized as CAS and automotive OEMs therefore have to cope with supply base complexity. The internal mechanisms and environment of CAS lead to one of the major challenges of supply chain risk management: coordination of sourcing strategies in an adaptive and coherent fashion in case of supplier financial distress and default. Complex automotive supply networks are thereby characterized by the emergence of structured, collective behavior over time from the interaction of simple subsystems without any centralized control. In this context, Surana, Kumara, Greaves, and Raghavan (2005, p. 4235) point out that “one of the major challenges that we are facing in supply-chain management is the deployment of coordination strategies that lead to adaptive, flexible and coherent collective behavior in supply chains.” Consequently the coexistence of competition and cooperation is a dichotomy exhibited by automotive supply networks in the context of supplier financial distress management. Thus it is crucial to gain an understanding of the actors in a firm’s environment (stakeholders), and as Pfeffer and Salancik (1978, p. 257) point out in order to “understand organizational behavior, one must understand how the organization relates to other social actors in its environment,” which indicates the importance of stakeholders.
4.3.2 Stakeholder Management

Stakeholder theory provides explanations and predictions of how firms function with respect to stakeholder influences (Rowley, 1997). According to Freeman’s popular definition, stakeholders can be seen as any group or individual on which a firm depends for its survival (Freeman, 1984). Hence in addition to equity holders, employees, customers, suppliers, creditors, and the public can be classified as stakeholders (Hill and Jones, 1992). Stakeholder theory rapidly gained importance after Freeman’s landmark publication as it offers explanations and predictions of how firms function under the influences of their environments (Rowley, 1997). In line with this notion, Donaldson and Preston (1995, p. 67) assert that stakeholder theory can be seen as managerial, because it “does not simply describe existing situations or predict cause-effect relationships; it also recommends attitudes, structures, and practices that, taken together, constitute stakeholder management.” For instance, Oliver (1991) integrates resource dependence theory with institutional theory to investigate firm responses to stakeholder pressure, ranging from passive compliance (institutional theory) to active manipulation through strategies designed to gain control over exchange partners (resource dependence theory).

Hill and Jones (1992) integrate the stakeholder concept with agency theory, modeling relationships between stakeholders and management as principal agent relations. In their stakeholder agency theory, information asymmetry between managers and other stakeholders is emphasized along with the observation that stakeholders differ in their importance for the firm and influence (based on their specific investments). According to their stakeholder agency theory, markets are characterized by “power differentials” that can be influenced. Certain groups can take advantage of divergent interests. Therefore, Hill and Jones discuss ex-ante interest alignment mechanisms (e.g. through credible commitments) along with monitoring and enforcement structures through law, exit, and voice (publicity) as deterrents. Cornell and Shapiro (1987) make a distinction in financial stakeholder theory between investor-stakeholders (debt and equity lenders) and non-investor stakeholders (all others). According to their perspective, a firm is a bundle of explicit and implicit contracts with stakeholders. If stakeholders anticipate that contracts might not be fulfilled as a consequence of financial distress, the value of the firm is likely to depreciate. Likewise, resource dependence theory hints at the importance of stakeholder management as Pfeffer and Salancik (1978, p. 2) point out that “organizations survive to the extent that they are effective. Their effectiveness derives from the management of demands, particularly the demands of interest groups upon which the organizations depend for resources and support.”
Arogyaswamy, Barker, and Yasai-Ardekani (1995) conclude that favorable relationships with external stakeholders that provide the firm with the resources that are critical to the survival of the firm. Based on this assumption, they stress that stakeholder relationships are a critical success factor in recovery from a distress situation, as “the deterioration of a declining firm’s image and relationships with external stakeholders can pose the survival threatening effects of further decreasing firm revenues, increasing costs or reducing management’s flexibility in combating decline” (Arogyaswamy et al., 1995, p. 499).

Garnering stakeholder support is critical to success for corporate turnaround as shown clearly in Figure 4-1, which provides an overview of common stakeholder reactions to supplier financial distress and default.

![Figure 4-1: Reaction alternatives of stakeholders on financial distress based on Buschmann (2006)](image)

**4.4 Supplier financial Distress Framework**

**4.4.1 Research Approach**

Our framework development was based on an illustrative case from the automotive supply industry. The reason for our choice is twofold. First, our framework for supplier financial distress management is crucial for buying organizations and therefore exhibits high practical relevance. Second, even though CAS, RDT, and stakeholder theory can be related to supplier financial distress within supply networks, they do not directly address the topic of financial distress. Moreover, research to date has neglected to take a reactive perspective. Therefore
we opted for a methodology that resembles the case study approach. Yin (2009, p. 18) characterizes the case study as “an empirical inquiry, that investigates a contemporary phenomenon in depth and within a real-life context.” This definition hints at the objective of case study driven research for investigating complex, real-life phenomena to explore new fields of study and to support decision making. Thereby the research can follow an exploratory (entirely new research field), descriptive (what, who, where, how many) or explanatory (how, why) research path based on inductive reasoning to extend and develop theory or rather on deductive reasoning by using an existing theory (Eisenhardt, 1989a; Eisenhardt and Graeber, 2007; Yin, 2009).

According to Eisenhardt (1989a), case study research has a number of strengths and weaknesses. The real-life context (illustrative instrument), the likelihood of generating novel theory (creative insight) and the testability of emergent theory (hypotheses can be proven false) are arguments in favor of case study research. Problematic are the possibilities of a too complex real-life context, small sample size and ex-post obviousness. These pros and cons indicate that conducting case study based research is a controversial and delicate undertaking, and therefore needs to be conducted in a very systematic fashion, meeting strict conceptual requirement standards to present a persuasive case (Yin, 2009).

The step of case selection is a frequent concern and major challenge in case study research. While studies based on a single case can richly describe a specific phenomenon, multiple case studies are seen as a stronger base for theory building (Eisenhardt and Graeber, 2007; Siggelkow, 2007). Due to the strict confidentiality preferences of privately held companies, especially those in financial distress and default situations, it is no easy matter to gain access to relevant case-related data. Therefore we used a recent and illustrative example of a major first-tier supplier that had to file bankruptcy in 2010 after a period of financial distress. The distressed supplier employed over 3,000 employees generating an annual turnover of over 350 million Euros with the production of sealing systems for major automotive OEMs. Our case reveals a variety of stakeholder conflicts in the financial distress and default period, which makes this case insightful and relevant for the development of our framework. Moreover, this case was chosen because it follows the archetypical distress scheme of the economic crisis of 2008-2009 and the economic upswing in 2010-2011, combining a rich variety of typical distress causes, symptoms and countermeasures. We conduct our study by describing and analyzing the case to draw managerial and scholarly conclusions. The insights gained are compared with professional and academic state-of-the-art knowledge and flow back into our framework development.
4.4.2 Case Study: From Distress to Default

The financial distress and default incidents during the economic upswing period following the world economic crisis in 2008-2009 followed a congruent scheme. New project ramp-ups in addition to unexpectedly rising sales volumes could not be handled by suppliers if their financial and operational performance capabilities were depleted during the previous downturn. Consequently, weakened suppliers such as the focal supplier of our case could not profit from the sharp upswing. Instead they were threatened by it, which raises the question: how can this paradox be explained?

As in the case of the focal supplier, failed ramp-ups of new projects along with sharply increasing sales volumes turned out to be a stress test, taking weak suppliers to their operational and financial limits. Savings on maintenance, continuous improvement, and personnel, as well as the postponement of investment during the crisis, could easily lead to a critical liquidity trap in the upswing period if working capital was not managed carefully and expensive scrap production accompanied the ramp-up phase of new projects.

The production capacities of the focal supplier were limited and prone to breakdown as a consequence of the crisis. Its equity position in the balance sheet was also melting due to persistent losses and a considerable debt load accumulated by private equity ownership. As a further burden were liquidity forced price increases and tightened payment conditions of some powerful sub-suppliers. Disputes over quality and delivery exacerbated some sub-supplier relationships, especially after some sub-suppliers intended to limit their loss exposure by requesting prompt payments. Consequently, the focal supplier was in danger of slipping into a vicious downward spiral, especially after qualified employees started to hunt for new jobs and a potential “brain drain” intensified already weak performance.

Refinancing debt with other banks was not a feasible option, as the risk-awareness and risk-adversity of potential lenders increased after the lesson from the previous world credit and economic crisis. After tough negotiations, the consortium of banks agreed on a “hair cut” to reduce the debt load for the focal supplier. However, ongoing losses (mainly due to scrap production) and refused concessions by powerful automotive OEM customers made a filing of insolvency unavoidable at the end of 2010. Under German law, the management of a distressed supplier has to avoid becoming guilty of a delayed insolvency filling.

After filing insolvency, another key player entered the stage: the insolvency administrator, who is under German law obliged to reduce the losses of the creditors. Moreover, the insolvency filing raised public interest and from then on,
all parties involved were dancing in the spotlight of demanding politicians, a worried local community and an inquisitive press.

Under these circumstances a potential investor had to be found to provide additional financial resources and expertise. The search for an investor led to even more conflicts among stakeholder groups. The banks preferred the best paying investor, while the customers preferred the investor with the best strategic fit. During the search for an investor, all customers had to compete for continuous delivery to avoid supply chain disruptions. The unions initially rejected the first potential investor, fearing layoffs. Only after making significant concessions on job security did the unions agree to accept that investor. With the funds provided by the investor, the focal supplier was able to go through a period of operational optimization and start to operate profitably after more than a year of restructuring.

The case is summarized in Figure 4-2. This extreme example of financial distress and default reveals the manifold forms of stakeholder conflicts in such an incident. These potential conflicts have to be taken into consideration for the successful application of the framework for supplier financial distress management.

**4.5 Framework Development**

The case study provides valuable input for our proposed framework for reactive management of supplier financial distress as illustrated in Figure 4-3. Before
introducing each of the phases, each buyer should be aware that financial default is the result of a continuous process of decline (Hambrick and D’Aveni, 1988). Therefore it can be assumed that a timely counteraction significantly enhances the effectiveness of our framework and its countermeasures. Timely counteraction allows both the supplier and the buyer a greater latitude for action. Moreover, a timely counteraction reduces the detrimental impact of stakeholder competition. As individual buyers and other stakeholder groups tend to follow their own objectives and make their decisions independently, individual preferences and decisions that may be beneficial for one buyer or stakeholder group can harm others. According to the conceptualization of supply networks as CAS, this leads to a trade-off between local and global optimization. Even under normal conditions, it can be regarded as extremely difficult to optimize each and every supply chain simultaneously, since the fulfillment of the different supply chain requirements are likely to contradict and compete with each other.

In cases of supplier financial distress and default, the situation becomes even more difficult, as a bottleneck is likely to occur if all buyers increase their order volume to build safety stock. As captive buyers of the distressed supplier compete for continuous supply and try to minimize their financial support contribution, conflicting interests are unavoidable. Based on these notions, three phases to minimize the detrimental impact of supplier financial distress are illustrated in Figure 4-3.

![Figure 4-3: Supplier distress response framework](image)

The response framework is designed for a captive buyer, meaning that a supplier switch without substantial financial (cost) or operational (loss of production) risk is not a feasible option. During serial production, a large number of supplied parts and a small number of alternative suppliers are considered to be major switching barriers. In addition, intellectual property issues or other technological constraints might prevent a short-term switch from a distressed supplier. In this case, a captive buyer should follow three steps that are described in the next subsections.
4.5.1 Short-term Stabilization

As mentioned in the introduction, automotive OEMs and suppliers tend to reduce buffers in order to increase productivity through the elimination of waste along the material flow. As low buffer inventories increase supply chain vulnerability, procurement volume should be increased in order to build safety stock as soon as the buyer notices the financial hardship of its supplier. As other buyers usually follow the same strategy of building safety stock, a bottleneck is likely, especially if the distressed supplier has postponed maintenance expenses, lost key personnel or is set on pre-payment by its sub-suppliers. However, building safety stock is essential as it decreases vulnerability and increases latitude for the buyer’s countermeasures such as supplier switch.

After initiating the safety stock increase, a buyer should diligently check the property of the production tools and equipment. Even though production tools are often custom-made in order to manufacture highly customized products, buyers usually avoid taking production-specific tools on their books due to the required capital lockup. In the event of bankruptcy, an insolvency administrator may take advantage of such tools to force concessions from a captive buyer. In any case, detailed tool documentation is an important prerequisite for supplier switch or for merging a distressed supplier with a strategic investor.

If the buyer opts for providing short-term funding to support the distressed supplier and to safeguard production in the near future, the purchase of production tools and equipment is an adroit way to provide liquidity to the distressed supplier. Moreover, by assuming ownership of the production tools, the buyer is less exposed to the insolvency administrator. Moreover, the buyer is also in a more comfortable negotiating position should there be a change of suppliers. Another option for immediate liquidity relief is prompt payment or if necessary, direct payment to the tier-n suppliers. The advantage is that only production of the paying buyer is secured and no funds are set aside for the potential benefit of the buyer’s competitors. Whenever financial support is granted, the buyer must ensure that no cross-subsidies for a competitor’s production are paid. Positive external effects should be avoided as buyers who share a distressed supplier usually compete in their sales markets as well.

With regard to the countermeasures, Pfeffer and Salancik (1978, p. 108) point out that “while buffering may provide the organization with the capability to survive periods of uncertainty or instability, buffering does not remove the basic source of the vulnerability.” Therefore long-term countermeasures based on a thorough situation analysis should be considered and implemented.
4.5.2 Situation Analysis

Suppliers expect dependable buyers in return for their deliveries (Hill and Jones, 1992). However, every captive buyer should be careful about providing a disproportionate amount of financial aid to its distressed supplier. Disproportionate financial support bears the risk of being beneficial for the buyer’s competitors, who share a distressed supplier. Such support might also induce an exaggerated risk appetite of the supplier’s management or creditors in reliance on bail-out efforts by one or more captive buyers. Before taking and implementing any decision, a buyer should carefully analyze the situation.

O’Neill (1986) lists various turnaround success factors including a match of the turnaround strategy with the causes of distress. As a possible cause of distress, he identifies increasing competition, changes in the habits of customers and supplier arrangements. This hints at the importance of the stakeholders’ role in financial distress, turnaround and recovery. Accordingly, Choi, Dooley, and Rungtusanatham (2001) point out that behavior in a CAS, such as automotive supply networks, is not induced by a single entity but rather by simultaneous agent actions within the system itself. They describe the development of CAS with reference to non-linear changes and predict a non-random future. Based on these insights, the captive buyer should initially make a comprehensive analysis of the distress causes, the market development and the financial outlook. The booked business ratio to total capacity or break-even illustrates the relationship among these factors, which are critical to judging the recovery outlook of the distressed supplier.

4.5.3 Decision Making

The inability to determine the future behavior of a CAS precisely does not imply that the future is random. Even though in CAS the exact prediction of future behavior is difficult, patterns of behavior can be recognized. Every buyer can choose either to terminate the relationship with a distressed supplier or attempt to improve conditions. The latter can be done by the buyer (e.g. through long-term financial aid or the award of new business) or by an investor who is supported by the buyer and acts as its agent.

Terminating a supplier relationship is most likely when the costs and risk of exit are low. Hence a buyer is inclined to switch the supplier if the buyer has few ties with the distressed supplier and considers leaving easier and more efficient as staying. The decisive prerequisite for terminating a supplier relationship is that an alternative supplier can be found to take over the business quickly. Moreover, terminating a supplier relationship is an option if the buyer sees no likelihood of improvement and if the technological differentiation of the supplier is low.
Terminating a supplier relationship sends a negative signal to other stakeholders of the distressed supplier – employees, creditors or sub-suppliers. Consequently a vicious circle might be triggered or accelerated, which can be risky for the buyer if the buyer is too slow to shift all of its business to the alternative supplier.

If a financial or strategic investor can be found, one who is willing to invest in the distressed supplier, the situation is much more comfortable for the buyer. Hence buyers supporting a takeover of the distressed supplier are interested in keeping the distressed supplier, but avoiding the effort and the risk of exit and direct support. If an investor can be found, the distressed supplier can profit from its industry and/or restructuring experience and gain access to additional capital resources, which makes it likely that the financial situation of the distressed supplier is likely to strengthen.

However if no investor can be found and the distressed supplier is too important to be switched, the captive buyer has to support the distressed supplier financially. For example, if a distressed supplier delivers many parts to the buyer and/or has outstanding technological qualities, the distressed supplier may receive support from the buyer. For the buyer, a support effort has the danger of also being beneficial for competitors of the buyer, who source from the same supplier. Hence a buyer should try to protect itself in advance of offering its support by specific contracts and carefully assessing the supplier relationship.

This leads to the connectivity characteristic of CAS, as the level of connectivity determines the complexity of the network. Increases in connectivity derive from intensifying the interrelationships. The number of interrelationships indicates the potential for chain reactions and leads to effects at a distance. Supporting a distressed supplier without helping competitors who have the same supplier and sub-suppliers is a delicate task for the risk management unit of the affected buyer. Therefore, each step of the framework requires careful application.

4.6 Framework Application

When analyzing the distress situation and the recovery outlook of the distressed supplier, the buyer must be aware of information asymmetry. According to Hill and Jones (1992), information asymmetry between the management and stakeholders of a distressed supplier derives from the management’s control of critical information. Management’s position to filter information makes it difficult for stakeholders to identify if management is acting in their interests. This is particularly likely if affected stakeholder groups consist of many individuals or entities. From the buyer’s perspective, it is often hard to judge the restructuring chances of a financially distressed supplier as the supplier and buyer do not always seek mutual benefits and might instead engage in self-interested behavior.
to protect their interests. This phenomenon is known as *opportunistic behavior* and is facilitated by information asymmetry and uncertainty (Carson et al., 2006; Eisenhardt, 1989b; Zsidisin, Ellram, Carter, and Cavinato, 2004). According to resource dependence theory, conflict in inter-firm relations derives from resource scarcity (Pfeffer and Salancik, 1978). In this context, interdependence might lead to conflicts if actors do not have similar preferences. In cases of information asymmetry within complex automotive supply networks, opportunistic hazards might be the consequence.

Accordingly, agency theory (Eisenhardt, 1989b; Schmalensee, 1988) is applied by Zsidisin, Ellram, Carter, and Cavinato (2004) to buyer-supplier relationships, as agency theory variables such as outcome uncertainty, goal conflict, adverse selection and moral hazard influence supplier-buyer relationships. Agency theory is an appropriate theory for studying supply chain risk management as a principal (buyer) and an agent (supplier) are involved (Zsidisin and Ellram, 2003). The explanatory power of agency theory is high in the context of supplier financial distress and default for three reasons.

First, the competitiveness of a supplier depends on its ability to provide value simultaneously to multiple supply chains, since a supplier usually delivers to more than one buyer. Highly divergent interests of affected stakeholders emerge in times of financial distress if multiple buying firms compete for continuous delivery to avoid a disruption of their supply chains. Additionally, other stakeholder groups protect their interests and thereby restrict the operational latitude of the distressed supplier.

Second, a high degree of uncertainty and mistrust result because the shareholders and management of the distressed supplier might have an incentive to present higher chances for turnaround success in order to gain the support of other stakeholders. If these stakeholders suspect that intention (hidden characteristics), they might refuse support for a turnaround actually worthy of such support (adverse selection). Due to the complexity of different corporate crises, not all countermeasures can be monitored by the buyers. The supplier’s management might behave opportunistically (moral hazard) and cause harm with certain decisions and actions (hidden action) to buyers who are poorly informed (hidden information).

Third, a high degree of asymmetric information is almost unavoidable in cases of supplier financial distress and corporate turnaround as both the management of the distressed supplier and some of its stakeholders are likely to have an information advantage. These stakeholders have an incentive to cultivate information asymmetry in order to take advantage of the power imbalances resulting from asymmetric information.
These considerations regarding the distress management framework have numerous scholarly and managerial implications, which are presented in the next section.

4.7 Discussion

4.7.1 Scholarly Implications
This article extends literature on supply chain risk management in two ways. First, it takes a reactive approach to supplier financial distress management. While several publications have taken a general view and preventive focus on supply chain risk management (Berger et al., 2004; Faisal et al., 2006; Smeltzer and Siferd, 1998; Zsidisin et al., 2004), very few publications provide insights to the effective management of financially distressed suppliers. We take this reactive perspective is unmanaged supplier financial distress and default is likely to lead to severe supply disturbances and disruptions (Blackhurst et al., 2005; Riddalls and Bennett, 2002). Despite the frequency and detrimental impact of supply chain disruptions caused by supplier financial distress, surprisingly few publications have focused on effective reactive countermeasures to supplier financial distress and default. For this reason, this research gap has been targeted.

Our second contribution is to take competing stakeholder interests into consideration, as most publications on supply chain risk management are based on a single-echelon system (i.e. one without supply network effects). They tend to analyze supplier defaults from the perspective of a dyadic buyer-supplier relationship (Sinha et al., 2004), or in cases of multiple sourcing, from a buyer-supplier-supplier relationship (Berger et al., 2004; Treleven and Schweikhart, 1988). However, the competitiveness of a supplier depends on its ability to provide value to multiple supply chains simultaneously, since a supplier usually has more than one buyer. Therefore a more realistic view would be a supplier-buyer-buyer relationship; in cases of financial distress, multiple buying firms compete for continuous delivery in order to avoid a disruption of their supply chains.

Hence this article presents a novel theoretical and managerial insight from reviews of existing theory and research by building on supply chain risk management, complex adaptive systems and stakeholder theory seminal works. Our contribution is in synthesizing recent advances and ideas into a fresh new approach to distress management. Le Pine and Wilcox-King (2010) point out that manuscripts aiming at this kind of novel contribution often integrate theoretical perspectives to provide a new theoretical (in this case conceptual) structure. Okhuysen and Bonardi (2011) accordingly call for multiple lens explanations, as these can countervail the creation of isolated silos of knowledge within and across
disciplines. Moreover, Okhuysen and Bonardi (2011) regard multiple lens research as an opportunity to reflect the reality of management in theorizing, which is crucial for the endeavor to enhance relevance and to conduct “research that matters.” In line with this goal, the framework for financially distressed supplier management is developed.

Therefore, the main contributions of this article are to take a reactive approach to supplier financial distress and to comprehend the causes and effects of conflicting stakeholder interests in the context of competitive automotive supply networks. By conceptualizing supply networks as CAS, it is postulated that inbound supply management should take network effects into consideration, rather than the dyadic interactions of isolated firms in the network. This awareness has the following managerial implications.

4.7.2 Managerial Implications

Despite the supportive body of supply chain risk management publications and increased supply risk awareness, large buying firms such as automotive OEMs may not be able to identify and eliminate all possible risks due to the complexity of the supply network and limited resources. As process improvement and buffering strategies are costly, automotive OEMs need to balance the trade-off between savings and security of supply with an effective reactive approach to supplier financial distress in order to gain competitive advantage through uninterrupted inbound supply at minimal costs.

Taking a network perspective is essential to achieve this goal since increased product complexity and outsourcing across international borders have led to increasing inbound supply risk exposure with shifting locations of risk in complex and dynamic supply networks. Because companies in the automotive industry tend to move towards inter-firm cooperation to gain competitive advantage through outsourcing, supply chain risk management research needs to examine risk at the level of inter-firm relationships, supply chains and supply networks (Harland et al., 2003).

As intricate supply chain networks evolved, competition shifted from the single company level to the supply network level as “networks of allied firms have begun competing against each other” (Dyer and Singh, 1998, p. 675). Therefore this research project has to take into consideration that “supply chains are not linear chains but complex systems of networks” (Peck, 2006, p. 128). Our reaction framework to supplier financial distress therefore takes a variety of stakeholder groups into consideration and stresses the competitive situation among buyers of the distressed supplier.

The dynamics within competitive resource environments are ignored by considering only the dyadic perspective between a distressed supplier and a single
buyer. Despite recent research into supply chain risks, “there is a growing recognition that corporate risk management has failed to keep pace with the realities of networked organizations in a networked world” (Peck, 2006, p. 140). This also accounts for suppliers in financial distress, as a distressed supplier usually takes actions prior to filing bankruptcy and as buyers typically take action to protect themselves if a shared supplier is threatened by financial distress (Hertzel et al., 2008). In this situation, each buyer tries to avoid positive external effects that are beneficial for its competitors who share a supplier. This indicates that there is still a considerable need for research on competing stakeholder interests in cases of supplier financial distress.

4.7.3 Limitations and Future Research Directions

We do not meet Yin’s (2009) rigorous requirements concerning case study research. However, building on rich professional experience in the financial supplier risk management department of the focal automotive OEM and the previously introduced literature, we are able to develop a preliminary distress management framework. The research objective of this article was the development of framework for financial distress management. According to Siggelkow (2007, p. 21) “[m]odels are always simplifications. If they were as complex as reality, they would not be useful.” Hence it appears likely to find instances in which theory does not hold precisely. Siggelkow (2007, p. 21), however, regards it as a challenge for conceptual papers “to come up with a new conceptual framework that does not overdetermine the phenomenon,” as the intricate details of a particular case make case study research vulnerable to overdetermination. Hence we had to allow for a certain amount of simplification to present a helpful case and to develop a useful framework. We are aware of the limitations of a single case study (e.g. lack of cross-case comparison). Therefore, we have tried our best to choose a case which contains a rich variety of stakeholder conflicts and comprehensively illustrates the potential escalation of a financial distress situation.

Our case-based development of our response framework to supplier financial distress opens avenues for further research. The following research efforts might be helpful for further analysis. To analyze and overcome divergent interests, Blecker, Kersten, Späth, and Koeppen (2009) suggest that with the help of a non-cooperative game theoretic approach, externalities can be identified that interfere with supply chain efficiency. This provides an information basis for the development of incentives to overcome these externalities to align supply chain objectives. As supply network participants are always (potential) competitors, incentives are a way to overcome the barriers of keeping firms from aligning their objectives. Brandenburger and Nalebuff (1996) coined the term coopetition to
describe the combination of cooperation and competition. Ross and Robertson (2007, p. 108) also speak of coopetition in social networks as a relationship between “two firms [that] is composed of multiple simple relationships: supplier to customer, and vice versa; competitor to competitor; and partners. This multiplicity of relationships can lead to both opportunities and challenges for each of the two firms in the dyad.” In addition to advancing theory application, empirical testing might also enhance the understanding of supplier financial distress management and inform supply chain management research and practice.

4.8 Conclusion

In summary, automotive OEMs and suppliers are faced with enormous price and cost pressure deriving from increasing competition and complexity of operations (Wagner and Silveira-Camargos, 2012) which leads to increasing supply-side risks. In order to gain competitive advantage, it is therefore essential for automotive OEMs to develop, manage and rely on a capable supply base (Dyer (1996) and to manage that supply base on a global basis with a risk oriented supply chain management approach (Hauser, 2003). Hence the framework developed in this article advances a risk-oriented supply base management within the setting of competitive and complex automotive supply chains.

From a buyer’s perspective the support provided by our proposed distress management framework is twofold. First our framework adopts a structured approach to tackle the procurement risk of supplier financial distress. It comprises three phases with clear goals. Second, a “tool box” is suggested for each phase to achieve these sub-goals and to guarantee a continuous flow of material.

Moreover, a general contribution of this work is the consideration of competing stakeholder interests in complex automotive supply networks. As our analysis focused on the automotive industry, an interesting area for further research would be how firms achieve and how stakeholders respond to turnarounds in other manufacturing and service industries.
4.9 References


Curriculum Vitae

PERSONAL

Name   Moritz Alexander Peter
Birthday  08.02.1981
Nationality   German
Family Status Single

EDUCATION

University

01/2011 – present  Eidgenössische Technische Hochschule Zurich, Zurich
  • Doctoral Candidate | Chair of Logistics Management

10/2001 - 04/2008  Universität Mannheim, Mannheim: Business Administration
  • Degree: Diplom Kaufmann [Grade 1.6 / 1.0]

08/2005 - 08/2006  California Lutheran University, Los Angeles: Business Administration
  • Degree: Master of Business Administration [GPA: 3.746 / 4.0]

School

08/1992 - 06/2001  Friedrichs Gymnasium Herford, Herford
  • Allgemeine Hochschulreife [Grade 1,9 / 1,0]

WORK EXPERIENCE

07/2013 - 01/2014  Porsche Consulting
  • Supply Chain Management

03/2012 - 01/2013  Procurement Mercedes-Benz Cars and Vans
  • Strategic Supplier and Material Group Management

01/2010 - 02/2012  Finance Mercedes
  • Financial Supplier Risk Management

03/2009 - 06/2009  Mercedes Benz Türk A.Ş.  [Istanbul / Turkey]
09/2008 - 03/2009  Mercedes Benz Cars  [Stuttgart / Germany]
Lebenslauf

PERSÖNLICHES  
Name       Moritz Alexander Peter  
Geburtstag  08.02.1981  
Nationalität   Deutsch  
Familienstand Alleinstehend

AUSBILDUNG  

Universität  
01/2011 - heute  Eidgenössische Technische Hochschule Zürich, Zürich  
  • Externer Doktorand | Lehrstuhl für Logistik Management

10/2001 - 04/2008  Universität Mannheim, Mannheim, Betriebswirtschaftslehre  
  • Abschluss: Diplom Kaufmann [Note 1.6 / 1.0]

08/2005 - 08/2006  California Lutheran University, Los Angeles: Business Administration  
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BERUFSERFAHRUNG  

07/2013 - 01/2014  Porsche Consulting  
  • Supply Chain Management

03/2012 - 01/2013  Procurement Mercedes-Benz Cars and Vans  
  • Strategisches Lieferanten- und Materialgruppenmanagement

01/2010 - 02/2012  Finance Mercedes  
  • Finanzielles Lieferantenrisikomanagement

03/2009 - 06/2009  Mercedes Benz Türk A.Ş.  [İstanbul / Türkei]  
09/2008 - 03/2009  Mercedes Benz Cars  [Stuttgart / Deutschland]