# Planning for Extending and Terminating Inter-Firm Relationships:

Bringing Psychology into the Study of Contractual Governance

Kyle J. Mayer University of Southern California Marshall School of Business Management & Organization Department Bridge Hall 306 Los Angeles, CA 90089-0808 E-mail: <u>kmayer@marshall.usc.edu</u>

Libby Weber University of Southern California Marshall School of Business Management & Organization Department Bridge Hall 306 Los Angeles, CA 90089-0808 E-mail: <u>libby.weber.2009@marshall.usc.edu</u>

> Jeffrey T. Macher Georgetown University McDonough School of Business G-04 Old North Washington, DC 20057 Email: jtm4@georgetown.edu

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# ABSTRACT:

We combine insights from economics and psychology to understand how firms strategically plan to extend and terminate their contractual relationships. In many economic respects, provisions that allow a buyer to terminate a project early and those that allow a buyer to extend a project have much in common. Psychologically, however, including and exercising extendibility and early termination provisions have very different effects on how people view the relationship and thus can inform when each would be most effective at managing inter-firm transactions. Examining extendibility and early termination provisions in a sample of 388 contracts from the information technology services industry, we find that relationship and cognitive factors from psychology play a big role in when one type of clause would be preferred over another and when either type might suffice. These results suggest that managers can use contracts strategically to manage inter-firm relationships and not just as enforcement mechanisms to mitigate opportunism.

## Planning for Extending and Terminating Inter-Firm Relationships: Bringing Psychology into the Study of Contractual Governance

While opportunism and bounded rationality are key aspects of contract design, firms must also consider how the negotiation and exercise of certain contract provisions may impact the relationship between the firms. Several scholars have argued that focusing on crafting governance in response to the threat of opportunism damages the relationship and precludes the development of trust between the firms (e.g., Ghoshal and Moran, 1996; Gulati, 1995; Malhotra and Murnighan, 2002). Other research, however, has shown that governance instruments, including contracts, are designed to overcome the hazards and risk in the transaction so as to enable the exchange to occur (e.g., see Macher and Richman, 2005 and Shelanski and Klein, 1995 for reviews of this literature). Thus there is no consensus on whether the use of formal contracts hurts relationship development, with economists tending to favor the view that they do not, and sociologists often taking the opposite position (Macaualey, 1963).

We seek to redirect the debate away from whether contracts hurt relationship development and towards how they might be able to effectively combine risk mitigation with relationship development. A contract is the result of a negotiation between two or more parties and the foundation of the relationship, as well as the contract, is shaped during that negotiation. We argue that contracts can help or hurt the development of a strong relationship between two firms; it all depends on how the contract is designed.

To address contract design in a way that incorporates relationship development and risk mitigation, we employ both economics and psychology. Economics provides excellent tools for examining risk mitigation (e.g., transaction cost economics, agency theory, property rights), while social and cognitive psychology provide tools for understanding relationship development

and how contracts may be perceived to help or hinder it. By drawing upon both economics and psychology, we can get a clearer picture of how some contract clauses, while mitigating risk, may hinder relationship development, while others may be equally effective at risk mitigation with less of a detrimental impact on the relationship. We draw on regulatory focus theory (Higgins, 1998) expectancy violation theory (Burgoon, 1986), and cognitive biases in risk taking (Kahneman and Lovallo, 1993) to analyze how certain types of contract clauses may affect relationship development.

To show the power of utilizing psychological tools, we need to investigate contract clauses with similar risk mitigation characteristics but very different psychological characteristics. We examine the use of two types of clauses that are closely related in an economic sense, but are very different psychologically: early termination and extendibility provisions. Early termination provisions give one party—typically the buyer—the right to terminate a contract prior to its completion, which serves as a safeguard against the supplier not performing well or environmental changes. Extendibility provisions give the buyer the opposite right—to extend the current contract.

While on the surface, these clauses seem very different, they are economically similar in that for both contracts the parties must specify the parameters of either one large project (that could be terminated early) or two smaller ones (where the buyer has the option to exercise the second one or not). Psychologically, however, these clauses are very different. Planning to terminate a contract early means the parties must plan for and focus on negative events and give one party the right to unilaterally terminate the other's work. Planning for extension, on the other hand, entails focusing on positive events, which leads to more interaction between the parties.

We seek to understand when each of these clauses will be employed by examining a sample of 388 contracts written by a large supplier (which we will call Compustar) in the information technology (IT) services industry. In these IT contracts, the supplier performs some type of service involving equipment in the buyer's data center or some other component of the buyer's IT networking infrastructure (e.g., mainframes, storage devices, servers). Each contract represents a separate project for which Compustar supplied a distinct service for the buyer. Examination of the contracts and other documents in the contract file, along with interviews with several of the firm's managers and engineers, allows us to analyze the determinants of early termination and extendibility provisions.

Our main contribution to strategy, economics and organization theory is in our integration of psychology and economics to understand how the framing of different clauses can impact relationship development. This has implications for how firms should design contracts in order to maximize opportunities to build a strong relationship and avoid the self-fulfilling prophecy of distrust that has often been associated with formal contracts. In addition, we also show how different types of prior relationships can impact the design of formal contracts. Finally, we enhance our knowledge of contract design by showing when early termination and extendibility clauses are used.

We will now proceed to briefly discuss economic theories of contracting and then discuss how social and cognitive psychology can be used to help the parties use the contract as a mechanism for developing the relationship as well as safeguarding against issues of bounded rationality and opportunism. We then go on to describe the role of early termination and extendibility provisions and develop hypotheses about the use of these provisions based on economic and psychological reasoning. Results, discussion, caveats and conclusions follow.

#### **Economics and Psychology: A Joint Approach to Contract Design**

Economists have been studying contracts for decades. Theoretical work on contract design has examined a wide variety of incentive mechanisms, investment sequencing decisions, and the granting of various decision rights to one or both parties to the exchange (Baker, Gibbons, Murphy, 1994, 2002; Laffont and Martimont, 2002). Empirical research on contract design has examined a variety of individual contractual clauses and attributes. Specific contract clauses that have been examined include take-or-pay provisions (Hubbard and Weiner, 1986; DeCanio and Frech, 1993; Masten and Crocker, 1985), price adjustments (Goldberg and Erickson, 1987; Joskow, 1988), exclusivity (Gallick, 1984), and contract duration (Crocker and Masten, 1988; Joskow, 1985, 1987). Other researchers have examined the use of different contract types, such as fixed fee contracts and cost plus contracts (Allen and Lueck, 1992a, 1992b, 1993, 1999; Cheung, 1969; Chisholm, 1997; Kalnins and Mayer, 2004). Crocker and Reynolds (1993) have shown that firms use more complete contracts when there is history of opportunism in the relationship. Other studies have shown that contract terms respond to institutional change and that these terms change over time within an industry (Pittman, 1991; Phillips, 1991).

Related work has analyzed the use of various types of control rights in contract design (Elfenbein and Lerner, 2003; Minehart & Neeman, 1999). In sum, this research has shed a great deal of light on how firms use different types of contractual devices to protect themselves and ensure that the exchange will take place.<sup>1</sup> What is missing from this literature, however, is an understanding of how different kinds of contract terms may be effective at safeguarding a

<sup>&</sup>lt;sup>1</sup> See Macher and Richman (2005) and Shelanski and Klein (1995) for more thorough reviews of the empirical contract literature that draws upon transaction cost economics.

particular transaction, but may have unintended consequences on the development of the relationship between the two parties. With a focus on creating proper incentive mechanisms and mitigating opportunism, firms may design contracts that foster a legalistic and potentially antagonistic relationship that rather a close, collaborative relationship.

Part of the reason why relationship development has largely escaped the attention of economists is that the tools and theories of economics are based on rational actors that have only profit in their production function and thus leave little room for emotional considerations. Psychologists, however, by focusing on how people perceive the world around, develop frames for interacting with others, and interact with other people, have many useful ideas for understanding human decision-making in ways that extend well beyond profit maximization.

In seeking to better understand contract design choices and the role that they may play in the development of the relationship between the firms, as well as setting proper incentives, mitigating opportunism and overcoming bounded rationality, we seek to apply some theories and insights from social and cognitive psychology to the study of contract design.

Regulatory focus theory suggests that situations can either be promotion-focused or prevention-focused (Higgins, 1998). If it is promotion-focused, there is a direction of attention to the positive aspects of the situation, leading to the promotion of potential gains and assisting in the development of positive relationships. Additionally, if it is prevention-focused, the situation leads to a focus on the negative factors in an exchange and ways of avoiding potential losses. Since differential language in contracts can be used to set entirely different expectations about the relationship (Rousseau & Parks, 1993), using clauses that accomplish the same thing from an economic viewpoint (i.e., similar incentive properties and governance attributes), but are framed differently from a psychological viewpoint can be used strategically to set different expectations

that could impact the execution of the transaction and the evolving relationship between the parties.

Second, expectancy violations theory suggests that if an expectation is violated, information processing deepens (Burgoon, Dunbar & Sengrin, 2002). As a result, whether the violation is positive or negative is very important and will significantly modify the initial expectation. If the violation is determined to be negative, the initial expectations will be negatively affected. However, if the violation is determined to be positive, the initial expectations can be impacted in a positive way. In contrast, if the initial expectations are supported, then they are always strengthened. Therefore, if a party to the contract knows with some certainty that they will be able to meet the expectations set in the contract, they will receive greater contribution to the relationship if they set lower (more negative) expectations and then exceed (positively violate) them. This would suggest that using an early termination clause in this situation would be preferable.

Finally, two inter-related biases in risk taking are also applicable for understanding the use of these clauses. First, when facing risk, people tend to view the current exchange as an isolated incident, and do not consider it to be one of many exchanges. As a result, their choices in this narrowly conceived decision tend to be more timid than if they viewed it as a portfolio of decisions (Kahneman and Lovallo, 1993). As a result, when a feature of the transaction that is being contracted for increases the perceived risk for the buyer or supplier, there will be less of a chance that the choices made during the contract negotiation will be bold. As a result, the contract should tend to be shorter, but still require the inclusion of a clause as an option to continue the relationship if the original exchange goes well.

Contracts contain many clauses over which the parties must negotiate, but to make our analysis tractable we focus on two closely related clauses that are important and often controversial elements of many contracts: early termination and extendibility provisions.

#### **Early Termination and Extendibility Provisions**

Contract designers must consider the duration of the contract; when have the obligations of both parties been discharged? While most contracts have a predetermined start and end date, there are two clauses which can change the duration of the contract. The first is an early termination clause that gives one or both parties the right to terminate the contract prior to its original completion date. The second is an extension clause, which gives one or both parties the right to extend the contract under terms and conditions that are agreed upon during the initial negotiation. In practice, it is typically the buyer who will have the option to terminate or extend.

Economically, these clauses are quite similar. In the case of early termination, the parties plan for a large contract and then determine under what conditions to end it early. In the case of extendibility, the contract explicitly covers a smaller amount but there is an option to expand it to cover more. In both cases the buyer has an extra decision right—when to end the contract. Such decision rights, however, are typically not part of boilerplate contract language because the terms and conditions under which they will occur will be specific to the exchange.<sup>2</sup>

We see early termination provisions despite the fact that firms can mutually agree to terminate their relationship at any time because it is often the case that one party may wish to exit while the other wishes to continue the project (i.e., enforce the contract). A formal early termination provision provides some degree of insurance for one or both parties—i.e., that they

can extricate themselves from the agreement in the event of opportunistic behavior,

incompetence, or other specified circumstances. Early termination provisions lower the haggling costs that typically accompany the unexpected termination of a contract by specifying when and how one or both parties have the right to terminate the contract. For example, the buyer may terminate if the supplier fails to meet certain milestones but the buyer might have to pay \$X per hour for work already done. The following example of an early termination provision is from Compustar, an IT firm whose contracts are the subject of our empirical analysis.

If [Customer] terminates this Statement of Work prior to the time [Compustar] has sufficient information to prepare the Software Value Assessment Report, [Customer] agrees to pay [Compustar] a fee based on [Compustar]'s actual time spent working on the project at the rate of \$150.00 per hour per person, plus any reasonable travel expenses incurred by [Compustar] in performance of the work hereunder. If [Customer] terminates this Statement of Work at anytime after [Compustar] has sufficient information to prepare the Software Value Assessment Report, [Compustar] may, at its option, either (i) complete the Software Value Assessment Report and [Customer] will pay the fee as described in the Professional Fees section, or (ii) cease work and [Customer] will pay a fee based upon the hourly wage described in this paragraph.

While early termination provisions vary in their level of detail, they typically must the terms and conditions under which the customer may terminate the contract, but they do not always explicitly deal with payment issues.

There are four potential concerns with the use of early termination provisions. First, such a provision may signal distrust and thus increase the likelihood of problems developing during the execution of the contract. A second related issue is that an early termination provision may lead the supplier to work just hard enough to ensure he doesn't trigger the early termination provision rather than maximizing his effort on behalf of the buyer (i.e., working to the rule). Third, it may be time-consuming and costly to negotiate the contents of such a provision. The

<sup>&</sup>lt;sup>2</sup> One exception to this is early termination rights that specify either party can terminate the relationship with X days notice, but most contracts covering complex transactions will typically require additional negotiation to deal with

parties have to determine when such a provision could be invoked and how the termination will be effected (e.g., ownership of any newly developed intellectual property, fees owed to the supplier for work completed prior to termination). Fourth, it may be difficult to verify when an event that is supposed to trigger an early termination provision has occurred, such as whether the supplier's performance is actually inadequate. Hence, for an early termination provision to be justified there must be something about the exchange or the relationship between the parties that increases the risk that one party may need to prematurely terminate the exchange.

While an early termination provision is one way to adjust the duration of the contract, another option is an extendibility provision. Extendibility provisions provide the means for the buyer to extend the contract for a specified period at predetermined terms after the official termination date of the contract. That is, if the contract is set to end and the buyer wishes the supplier to do additional work on either the current project or a related project, then an extendibility provision can allow the supplier to do so without the negotiation of a new contract. Such a clause is not typically a boilerplate provision in a contract because the terms of the extension need to be negotiated. Some extendibility provisions involve the supplier providing virtually the same service for a longer period of time while others involve significant modification to the task the supplier is undertaking for the buyer; in either case there is negotiation over the terms of any extension.

An extendibility provision is typically exercised at the discretion of the buyer and gives her the right to continue the project. Both early termination and extendibility provisions limit the supplier's control because they give the buyer control of when the contract will end. An extendibility provision, however, can be thought of as a real option (much like a financial call option (Black & Scholes, 1973)) that gives the buyer the right to purchase an asset (or service)

issues of specific investment, asset reassignment, payment for work in process and other factors.

but does not obligate them to do so (Dixit & Pindyck, 1994). Creating an extendibility provision requires a relatively small initial investment (the ex ante cost of negotiating the provision in this case) that creates the opportunity to make a larger investment (exercising the clause) in the future. Although the extendibility provisions is part of the original contract, if the buyer does not exercise this option, the contract expires at the date originally agreed upon by the parties or when the supplier completes the agreed upon task and the initial cost of negotiating the option is lost.

In examining the inclusion of early termination and extendibility provisions in contracts, cues can be taken from the safeguard literature, which primarily draws upon transaction cost economics (Williamson 1975, 1985, 1996) and agency theory. Including an early termination or extendibility provision clearly involves a cost-benefit calculation. Tangible factors such as the likelihood of exercising the clause, the time and effort spend negotiating it, etc. will clearly affect the decision of whether to include each type of provision. These theories are not enough, however, to fully understand how clauses such as early termination or extendibility provision are used strategically to manage a relationship. Thus we also draw upon social and cognitive psychology to fully understand how an early termination or extendibility provision can be used to impact relationship development.

From a psychological standpoint, an extendibility clause is framed as a potential gain, in that its execution is a potential positive outcome for the buyer. This situational variable is promotion-focused because the parties would be doing additional work together, meaning that the clause directs the buyer and the supplier to focus on the potential positive aspects of the exchange; thus, allowing the development of a relationship based on this positive foundation. Additionally, since this clause directs attention to positive outcomes, it increases the expectation that the exchange will go well. If these expectations are met, then the clause is exercised and the

foundation for a good relationship between the firms based on their positive experience is further augmented.

In contrast, an early termination clause directs the attention of the buyer to the potential negative aspects of the exchange. Therefore, this clause is prevention-focused, as it is designed to prevent potential negative outcomes. With a primary focus on potential negative outcomes, using this clause could potentially harm the process of building a relationship as it creates negative expectations regarding the competence or the ethicality of the exchange. However, if these negative expectations are not met, but instead, the supplier exceeds the expectations and delivers a positive outcome in the exchange, this positive expectations violation can lead to a stronger reaction of trust and may lead to a stronger relationship between the parties. In contrast though, the exercise of an early termination provision implies a buyer's dissatisfaction with the supplier, which means that there was an actual negative experience during the exchange, so that if the relationship is to continue, it will have to overcome this trust eroding experience.

Drawing on theory from economics and psychology, we now turn to analyzing conditions under which firms would prefer either early termination provisions or extendibility provisions based on characteristics of the exchange, firm attributes, and the prior relationship between the firms.

#### Hypotheses

From an economic perspective, if the supplier has private information about its abilities, then this information asymmetry may influence the differential use of the extendibility and early termination provisions. While private information has been studied in the context of choosing between a fixed fee or cost plus contract (e.g., Baron & Besanko, 1987; Laffont & Tirole, 1999),

she is likely to influence many other aspects of an interorganizational relationship, such as early termination provisions. When the supplier has private information about its technology that is required for the project, the buyer may want an early termination provision as a safeguard in case the supplier's technology does not perform to expectations. In industries where proprietary technology is important to a firm's competitive advantage, suppliers will try to protect their technology and may be reluctant to share the details of their technology with buyers (Gulati & Singh, 1998; Oxley, 1997). The supplier will have private information about their ability to complete the project and may not be able to fully share that information with the buyer due to expropriation concerns. Buyers understand the need of suppliers to protect their proprietary technology and will typically be willing to accept some form of insurance clause, such as an early termination provision, in lieu of more direct access to the technology. The supplier views the early termination provision as a much more acceptable alternative than sharing their technology with the customer and thus the early termination provision loses its negative connotation with the firms because it is being used to avoid a bigger hazard—expropriation. Thus an early termination provision allows the supplier to provide a form of insurance regarding what the technology can do while protecting it from leaking to the buyer.

While the use of the supplier's proprietary technology for the project would increase the likelihood of using an early termination provision, there is no corresponding link between it and an extendibility provision. Since the abilities of the supplier's technology are less certain, the buyer will be unlikely to want to invest in an extendibility provision. As these provisions are often used to try and tie the buyer more closely to the supplier, a supplier that is confident in their technology may signal that confidence by showing the buyer how strong their technology is and charging even more the next time out, since the technology is proprietary and other firms

don't have it. While there may be some incentive for suppliers to try and lock in the buyer, we see no compelling link between the use of the supplier's proprietary technology for the project and the decision to include and extendibility provision in the contract.

From a psychological perspective, even though the early termination provision will set negative expectations regarding the competence of the supplier in the exchange, the supplier's superior knowledge in this area is likely to result in a positive violation of these expectations. A positive violation of these negative expectations will actually enhance the relationship building process more than simply meeting positive expectations. Therefore, because the supplier is confident that they can display competence in an exchange involving her proprietary information, she is going to get the best return on her provision and contract negotiation investment by using the early termination provision instead of the promotion-focused extendibility provision.

H1: When the supplier utilizes their proprietary technology for the project, then the contracting parties will prefer an early termination provision to an extendibility provision.

Another firm attribute that is likely to affect contract design has largely escaped prior analysis—distance. If the interaction between the two parties occurs over a long distance, then the costs of negotiation rise due to travel expenses, courier services and long distance phone calls. In addition, when buyers and suppliers are distant, the parties negotiating the deal are less likely to know one another because they operate in different business communities. Both the buyer and supplier will look for ways to economize on negotiation costs. Although distance increases the upfront costs of negotiating the extendibility provision, it also means that there is even greater savings in being able to avoid negotiating a new contract for additional work—thus increasing the value to the buyer because the cost savings from using an option are higher (i.e., there is a greater benefit in avoiding negotiating a whole new contract).. Exercising the extendibility

provision will negate the need for the higher negotiation costs that arise from the greater distance between the buyer and supplier. Therefore, if the extendibility provision is exercised, thus avoiding negotiating a new contract, geographically distant parties will benefit the most. This logic would suggest that the greater the geographical distance, the more likely the inclusion of the extendibility provision in the contract. This is especially important for the supplier, who is interested in future business with the buyer.

Another way to conceptualize the extendibility provision in a way that sheds light on its use over distance comes from the gift economy model (Akerlof 1982). In this model, if one party gives a gift to another, reciprocity may ensue. Reciprocity would suggest that the receiving party would then give a gift in return. Fehr, Gachter and Kirchsteiger (1997) have extended this idea to reciprocity as a contract enforcement device. They suggest that a gift given by one contracting party will induce the other to respond by being generous in meeting their obligations in the contract. In this context, the extendibility provision may be viewed as a gift that the supplier gives to the buyer, since the supplier is increasing his risk exposure to offer the buyer the extension. As monitoring is more difficult over larger distances, the buyer may feel less of a need to extensively monitor the supplier because of what she views as the supplier's commitment to the relationship.

In addition, by giving the buyer this gift, the supplier may also be attempting to signal his commitment to the relationship, thus helping to build the relationship. Additionally, by accepting the inclusion of the extendibility provision in the original contract and the associated negotiation costs that occur as a result, the buyer is also signaling her commitment to the relationship, as this gift is far less efficient for her than if the supplier had given her a price reduction instead (Camerer, 1988). Since relationships are more difficult to develop over long distances, the

inclusion of an extendibility provision as a gift may occur more frequently for buyers and suppliers that have greater geographical distance between each other.

Extendibility provisions are likely to be preferred when the firms are geographically distant because the contract (and the contracting process) must carry more of the weight in developing the relationship. Thus it is important that the contract be focused on the serving as a blueprint (Llewellyn, 1931) rather than solely on mitigating opportunism. An extendibility provision is a form of safeguard, but one with a positive connotation where the penalty if foregone gain rather than actual loss. An early termination provision, on the other hand, has a more negative connotation because it can terminate the contract the firms put so much energy into negotiating. The main reason for the buyer to include such a provision is that she is worried about shirking or opportunism on the part of the supplier, which is likely to have a negative impact on the development of a relationship because the parties don't have anything else, even possible local networking or interaction opportunities, to fall back on.

Greater distance between the parties provides few opportunities to build the relationship other than the one that arises during the contract negotiation. As a result, social psychology suggests that the impact the provisions have on the relationship must be carefully considered when the parties are more distant. The extendibility provision with its promotion focus leads to the establishment of positive expectations, which when corroborated lead to greater relationship and trust building. Therefore, both the buyer and supplier get more value for their negotiation costs when the parties are at a distance due to the fact that inclusion of the extendibility provision has more of an impact when the parties are at a distance than when they are close and have more opportunities to establish the relationship in person. Thus early termination provisions are less

likely when the parties are geographically distant; they would prefer an extendibility provision with a smaller initial contract.

H2: When the supplier and buyer are farther apart, the contracting parties will prefer an extendibility provision to an early termination provision.

While firm factors such as capabilities, proprietary technology and location may play important roles in choosing between early termination and extendibility provisions, transaction attributes will also play important roles. Agency theory (e.g., Holmstrom, 1979) suggests that the ability to measure quality is an important factor in providing an agent with proper incentives to exert high effort. When projects involve output that is difficult to measure, it may influence the use of early termination and extendibility provisions.

Difficulty measuring quality may give the supplier the opportunity to shirk, which would lead buyers to demand some control over the end date of the contract as a means of providing the supplier with additional incentive to work hard. However, when quality is difficult to measure, it may be difficult to negotiate early termination provisions because the parties may not be able to agree upon when the buyer should be able to terminate the agreement. In addition, it may be difficult to know when to exercise such provisions because there may be disagreement over whether the agreed upon event has occurred.

If the shirking is hard to verify but may be observable, the buyer's decision to exercise an early termination provision is likely to significantly impact the relationship and may lead to a legal challenge regarding whether the triggers for termination in the contract actually occurred. In addition, if the buyer is seen as unfairly hurting the supplier by exercising the provision, it could damage the buyer's reputation because the supplier may claim there was no cause since early termination provisions usually give the buyer the right to terminate only in certain

situations. In addition, having a buyer terminate a project early could also damage a supplier's reputation and when quality is hard to determine, it may be very difficult to determine if the buyer had cause to terminate or not.

Psychologically, when a situation is risky people tend to view an exchange as a single decision, not as one in a portfolio of many potential decisions. As a result of this narrow view, their choices become more timid. Under conditions in which there is measurement difficulty, the situation is perceived as riskier, and therefore, people will choose the more timid choice of a short-term contract with an extendibility provision over a longer contract. As a result, the early termination provisions will not be included in the contract because longer term interaction will be less likely overall when measuring quality is difficult (Kahneman & Lovallo 1993). However, because of the situation of risk created by the difficulty measuring quality and the timidity that arises in situations of risk, the buyer will also desire to have a possibility to extend the contract if it goes well. Therefore, the extendibility provision will be more likely to appear in a contract for an exchange when quality is difficult to measure than an early termination provision.

H3: When the quality of the project output is difficult to measure, then the contracting parties will prefer an extendibility provision to an early termination provision.

Another attribute of the transaction that may influence the choice between early termination and extendibility provisions is whether the transaction is expected to result in the creation of knowledge which the supplier could reuse with other customers. Transactions that generate reusable knowledge are very valuable for the supplier and thus any opportunity to extend them will be very attractive. While the buyer may not benefit directly from the reuse, and in fact may not even be fully aware of the extent to which the supplier can reuse the knowledge

being generated for the project, the supplier has strong incentives to keep the relationship going and an extendibility provision can be an inducement for the buyer to continue with the supplier.

The supplier would be very reluctant to agree to an early termination provision as the last thing she wants is to end such a profitable transaction. When a supplier is creating a product for the buyer that generates reusable knowledge, the supplier receives two different benefits from the exchange. Initially, the supplier receives the revenue payment required under the contract. However, she also receives new technology that she can use to attract additional customers and receive even more revenue. Under these circumstances, the supplier would like the buyer to extend the contract so that additional reusable knowledge can be created at the buyer's expense and would be very reluctant to include any right for the buyer to terminate the project early. The supplier wants to use the contract to develop a long term relationship with the buyer in the hopes of getting more projects that will involve the creation of reusable knowledge. Using positive, relationship-enhancing clauses such as an extendibility provision are much more suited to this purpose than is an early termination provision in that they provide a focus on promotion of the exchange and not on the prevention of potential losses that the early termination provisions create.

This situation is an extension of the ideas behind the power dynamics model as described above. However, instead of already being in a long-term relationship with the buyer, the supplier has identified that this relationship would be more beneficial to him on a long-term basis, since he is receiving two benefits instead of just the initial revenue payment. Therefore, in order to cultivate a continued relationship, the supplier would invest in it by offering the extendibility provision to the buyer in an effort to extract more overall value from the relationship even if he incurs a short-term cost from negotiating the provision (Kim, Pinkley and Fragale in press).

H4: When the project results in the supplier developing reusable technology, the contracting parties will prefer an extendibility provision to an early termination provision.

The final factor differentiating between early termination and extendibility provisions arises from a different look at the prior relationship between the parties. A relationship can arise from interaction outside the current line of business. For example, if IBM is negotiating a contract to provide software development services to UPS, then prior software development work between them may have a different effect on the current contract than a prior relationship that consists of UPS buying an IBM mainframe or server. When the prior relationship is in another line of business, then the parties involved in the contract are unlikely to fully understand how the other party operates in the current line of business. The subtle understanding and giveand-take that comes from working together on related projects has not been developed.

A prior relationship outside the current line of business supports ongoing exchange within the current line of business in two ways. First, it indicates that there is other business at stake beyond the current exchange. If the supplier acts opportunistically or in an incompetent fashion, the buyer could terminate the entire relationship and refuse to utilize the supplier for any future business, which could be very costly for the supplier (de Figueiredo & Teece, 1996). Thus a broad prior relationship may indicate a hostage that will serve to provide the supplier with strong incentives (Williamson, 1983).

Second, a broad prior relationship provides the supplier an opportunity to display competence and begin to establish a reputation with the buyer for being capable and delivering on its promises, thus establishing positive expectations for the current exchange. In other words, a prior relationship in other areas enhances the supplier's credibility and reputation, and indicates that the supplier may be a trustworthy trading partner—what Zaheer, McEvily & Perrone (1998)

refer to as interorganizational trust. Most markets are quite competitive, so if the supplier performed poorly it is highly unlikely that the buyer would return to that supplier for business in other areas. Assuming alternative suppliers exist, the fact that the parties are negotiating a new contract when they have worked together in the past indicates that the prior interaction was at least relatively positive.

Psychologically, using and possibly exercising an early termination provision could introduce tension into the relationship between the buyer and supplier because it creates a focus on negative expectations, even though positive expectations about both of these aspects have been communicated through the prior relationships in other business lines. Because these positive expectations have already been developed in the broader relationship between the parties, the exercise of an early termination provision could provoke anger on the part of the supplier, possibly threatening this broader relationship between the firms, resulting in an incentive to avoid early termination provisions when a broad prior relationship exists. In contrast, including an extendibility provision in the current contract is unlikely to cause negative emotions since it creates positive expectations that are in line with those already established by the prior relationship, and thus is much more likely to be used than an early termination provision when there is a need to give the buyer more control over the end date of the project. If the second part of the exchange is not needed, failing to exercise an extendibility provision will have far less of an impact on the relationship that exercising an early termination provision.

H5: When the parties have a prior relationship in another line of business, the contracting parties will prefer an extendibility provision to an early termination provision.

### **RESEARCH SAMPLE, DATA SOURCES AND MEASURES**

We test our hypotheses with data from Compustar, a provider of a variety of information technology (IT) services and computer-related hardware. The IT industry is an ideal one in which to test these hypotheses as it relies on rapidly changing technology and is a very large industry that is important to buyers in virtually all sectors of the world economy. The IT industry involves the storage, transfer and management of information, typically using mainframes, servers or related devices. IT service firms perform a variety of IT projects for their buyers that include, but are not limited to, designing customized software systems, updating and maintaining existing software or hardware systems, and assisting with network design and security. The technological areas included in this industry are many and include, but are not limited to, IBM-compatible mainframes, OS/390 programming, Sun systems, databases (e.g., Oracle, Informix), customized software support and development in a variety of languages.

IT work is predominantly performed on a project basis. Buyers will identify an IT project and then secure resources to complete it. Each project is sourced separately. A buyer may engage EDS for one project and CSC for another. Compustar, a producer of mainframes and related hardware since the 1970s, entered the platform-independent IT services business<sup>3</sup> in the mid-1980s, and by 1997 Compustar's IT services division accounted for revenues of approximately \$100 million worldwide.

Compustar provided access to IT service contracts and corresponding internal documentation in their corporate contracts library and one of the authors inspected contracts with North American buyers that span 1986-1998. From this library, a random sample of 405 contracts was taken—all of the contracts between Compustar and 141 buyers who were randomly selected based on the first letter of the buyer's name. Seventeen of the contracts could

<sup>&</sup>lt;sup>3</sup> Platform-independent means that the firm supplies services to firms using a variety of different types of hardware. These services included network support, programming, data migration, etc.

not be used in the analysis because of missing data and another eleven had to be removed because they were an unusual type of contract<sup>4</sup> that perfectly predicted one of the dependent variables, resulting in a final sample of 377 contracts. Each contract documents a discrete project for which Compustar supplied some type of IT service.

In addition to reading the contracts, one of the authors interviewed several Compustar managers, engineers and IT personnel from outside Compustar. The data were drawn primarily from the contracts between Compustar and their buyers, subcontractor invoices, and other records included in the contract file. The contract contains a detailed description of the project, including the type of service required and the responsibilities of the parties.

A typical contract is about five pages long and is designed to accomplish a specific task for the buyer. Some projects are fixed fee arrangements, while others stipulate an hourly wage (with or without a maximum number of hours to complete the task). Project duration can range anywhere from one week to over a year, and project value ranges from around a thousand dollars to several hundred thousand dollars.

#### **Dependent and Independent Variables**

The first dependent variable, EARLY TERMINATION, is a dichotomous variable that is coded as one if the contract allows the buyer to terminate the project prior to completion, and zero otherwise.<sup>5</sup>

<sup>&</sup>lt;sup>4</sup> The omitted contract type is a contract that calls for the supplier to be compensated as a percentage of the money that the supplier saves the buyer. None of these eleven contracts contain an extendibility clause.
<sup>5</sup> It is interesting to note that none of the contracts allow the supplier to terminate the contract early. When I asked about this, Compustar indicated that they were trying to grow a business and were competing in a competitive market, and thus were reluctant to put in clauses that would only be exercised if the buyer were acting opportunistically. Compustar managers indicated that the only thing that would lead them to terminate a contract was failure to pay, which they did not feel required an extra clause. Thus EARLY TERMINATION captures only instances when the buyer has the power to terminate the contract if certain conditions arise.

The second dependent variable, EXTEND, is dichotomous and coded as one if the contract allows the buyer the unilateral right to extend the contract on predetermined terms, and zero otherwise.<sup>6</sup>

Compustar engineers and managers created a list of proprietary technologies that are important elements of their competitive advantage in IT services (Hypothesis 1). No interviewees disagreed over the identity of the proprietary technologies. We code PROPRIETARY as one if one or more of Compustar's proprietary technologies is required for a project and zero otherwise. If one of Compustar's proprietary technologies is used, it is typically at the center of the project, thus this variable is not capturing projects where the technology is used in a peripheral way.

Hypothesis 2 examines the effects of geographic distance on the use of extendibility provisions. Compustar has five IT offices throughout the United States (including its headquarters). DISTANCE is a continuous variable and measures the distance between the customer's site and the closest Compustar office.

To capture the effects of difficulty measuring the quality of the supplier's work (Hypothesis 3) we use a variable called MEASUREMENT, which captures the cost of measuring quality after the project is complete based solely on the technological nature of the project. Due to the largely subjective nature of measurement costs, Compustar personnel would only code MEASUREMENT as a binary variable. MEASUREMENT is coded as one if quality is difficult to determine and zero if it is readily apparent. The question that determined the value of this variable was whether a brief, inexpensive test or inspection could determine the quality of the work done on the project.

<sup>&</sup>lt;sup>6</sup> Not surprisingly, none of the contracts allow the supplier the option to extend the contract.

Reusable knowledge (Hypothesis 4) is captured by REUSE, a dichotomous variable that captures projects that have the potential to produce knowledge that Compustar could reuse for projects with other customers. Compustar engineers coded this variable and several others based upon their expertise and records in the contract file. Compustar provided two engineers to help with coding variables that could not be directly coded from the contracts. REUSE was coded looking only at the description of the project in the contract. The engineers did not investigate to see what happened during the execution of the project.

Hypothesis 5 examines the effects of the prior relationship between the parties in other lines of business. BREADTH is a count variable that indicates the number of other lines of Compustar's business from which the buyer has purchased goods or services, which ranges from zero to nine (and does not include IT services). The greater the number of products that the buyer purchases from Compustar, the closer the links between the firms at a corporate level, thus making it an ideal proxy for a prior relationship outside our focal line of business: IT services.

We employ a variety of additional variables to control for other factors that might influence the use of early termination or extendibility provisions. Compustar's use of early termination and extendibility provisions may have changed over time, possibly as a result of learning how to write better IT contracts. Two variables are included to measure changes in the use of early termination provisions over time. TIMETREND is a linear time trend that is coded zero for 1986, one for 1987, and so on up to twelve for 1998. TIMESQUARED is a nonlinear variable that is coded as TIMETREND squared. TIMESQUARED is designed to allow a less restrictive functional form by allowing the use of early termination provisions to vary over time in a nonlinear fashion. Learning is likely to have been greatest during the beginning of the

sample period as Compustar was new to the IT services industry and may have leveled off as Compustar gained more experience in the industry.

Three types of contracts, used by many firms, are found in the data. FIXED FEE indicates a contract that calls for Compustar to complete a specific task in exchange for a predetermined total price. HYBRID CONTRACT is coded as one if the contract is an hourly wage contract that includes a ceiling, a maximum amount that Compustar can charge the buyer. Compustar must cover expenses above this amount, which introduces some features of a fixed fee contract. Finally, the omitted type is a standard hourly wage contracts that calls for Compustar to bill the buyer a specific amount per hour or per day plus expenses until the task is complete.

Compustar's capabilities, either better or worse than competitors, may also affect the desirability of early termination or extendibility provisions. Projects that draw upon capabilities in which Compustar has capabilities superior to those of competitors may lead to a preference for extendibility provisions, while weaker capabilities may lead to the buyer requesting an early termination provision in case Compustar can't complete the task as promised. Compustar has superior (relative to competitors) internal capabilities in two areas: (1) servicing hardware that they manufactured and (2) servicing mainframes. COMPUSTAR HARDWARE is a dummy variable that is coded as one if the project involves working on Compustar manufactured hardware and zero otherwise. Compustar is an acknowledged expert on their own machines, as they designed and manufactured them. In addition to working on their own machines, Compustar engineers were acknowledged experts at servicing mainframes from other vendors due to their experience and training in all aspects of mainframe technology, as Compustar has been designing and manufacturing mainframes, their primary product, since the 1970s.

MAINFRAME is coded as one if the contract involves working on a mainframe computer and zero otherwise.

There are two additional areas where Compustar's capabilities are acknowledged to be slightly weaker or best equivalent to their competitors. First, there are many firms that can service storage devices and other non-mainframe IT hardware, including the firms that manufactured the equipment. Compustar's capabilities in working on these machines are not superior to those of several other firms in the industry. OTHERHW is coded as one if project involves working on hardware from another vendor and zero otherwise. A second area in which Compustar lacked superior technological capabilities was in programming. Compustar was founded as a hardware firm and had only limited experience in programming.

PROGRAMMING is a dummy variable that is coded as one if the project involves programming and zero otherwise. One issue with the programming variable, however, is that customers would sometimes request an engineer for programming support and merely stipulate the skills the engineer should have and leave the exact project she would be working on indefinite. Such an open-ended assignment made crafting an extendibility provision very easy because all Compustar and the customer had to agree on was the hourly or daily wage of the programmer and the how much notice the customer had to give Compustar. Given these two conflicting effects of PROGRAMMING arising from capability and cost considerations, we have no prediction on how this variable will affect the likelihood of observing an early termination versus extendibility provision.

One factor that may influence the desirability of giving the buyer the option to terminate or extend the contract is interdependence between the buyer and supplier that is created by the project. Projects that require the buyer and supplier to depend upon one another allow them

opportunities to interact extensively and give the buyer more information about the abilities and character of the supplier. INTERDEPENDENCE is designed to capture the importance of the need to coordinate with the customer's personnel, and is coded as one if the customer's personnel are directly involved in the project in such a way that Compustar must depend upon them in order to complete their task(s). As such interdependencies are described in the contracts; the two Compustar engineers coded these variables from the deliverables and responsibilities sections of the contracts.

Another project attribute that may affect the decision to extend versus terminate early is the uncertainty created by the problem that Compustar has to solve for the buyer. To capture this project-specific level of uncertainty, we utilize a measure of the degree of innovation required by Compustar in order to complete the project. INNOVATION is an ordinal variable that ranges from 1 for projects that "require no innovation to complete" to 7 for projects that "cannot be completed without a technological breakthrough."<sup>7</sup> This does not merely capture complexity, but the need to push technology forward to successfully complete the project. When the need for innovation is high, there will be greater uncertainty surrounding Compustar's ability to successfully complete the task.

Finally, to capture the influence of the prior relationship between the buyer and supplier in IT services (i.e., prior transaction in which this buyer has engaged Compustar for IT services), we use the logged value of prior IT projects that Compustar has done for the buyer (LOG DOLLAR). This measure does more than merely count prior projects, which implies a linear relationship development path and fails to account for the fact that larger projects should have a

<sup>&</sup>lt;sup>7</sup> There were actually no projects that were coded by Compustar engineers as a 7. Thus the actual range was from 1 to 6.

great impact than smaller ones. By adjusting for the size of the project and the fact that early projects will play a greater role in relationship development than later projects (e.g., the difference between zero and two prior projects will be greater than the difference between eight and ten prior projects), we get a more accurate picture of the prior relationship between the parties, including opportunities for learning to work together.

Table 1 provides summary statistics of the dependent and independent variables used in the analysis, while Table 2 provides correlation statistics. Preliminary analyses of these tables provide some insights regarding the drivers of extendibility and early termination provisions. Table 1 indicates significant heterogeneity in both the dependent and independent variables. Both extendibility and early termination provisions are utilized relatively modestly (16 and 15 percent, respectively) in IT contracts. The majority of IT contracts in the sample are fixed fee (56%) or time and materials (31%), with the remainder of some hybrid type (10%).

Table 2 indicates our two measures of contract provisions vary positively with each other. In other words, early termination and extendibility provisions are more likely to be used in concert with each other, suggesting that they are complementary ways of managing inter-firm relationships. Table 2 moreover indicates that the use of a particular provision varies positively with some of the independent variables and negatively with others, and is different from the use of the other provision. This suggests that the use of contract provisions is driven by particular relation and cognition forces. Finally, correlations in Table 2 are generally low to moderate, which suggests that multicollinearity is not a problem.

Insert Tables 1 and 2 about here

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#### **Econometric Method**

Given the categorical nature of the dependent variables, a logit or probit model is the appropriate choice for an estimation technique. We employ the probit model, with its underlying assumption of a normally distributed error term, using maximum likelihood estimation as the most appropriate for dealing with this type of qualitative data. The results from a logit model are, however, virtually identical. The model estimated in this paper is drawn from Maddala (1983).

An important complication arises when analyzing firms' decisions related to inter-firm relationships. Both early termination and extendibility provisions represent decisions by firms using COMPUSTAR for IT services, but these firms might consider implementing these provisions either as complements or substitutes in any IT services contract. In other words, the use of an early termination provision in a given IT services contract might facilitate (or hinder) the use of a corresponding extendibility provision. This factor suggests that our dependent variables are potentially correlated with each other. Because our dependent variables are potentially correlated, it is unrealistic to expect that the errors are uncorrelated between and among these different logistical equations. We therefore employ Seemingly Unrelated Regression (SUR) in our analysis, which makes corrections to the standard errors of the estimates in each equation to adjust for this potential correlation.

We also employ the Huber/White/sandwich estimator of variance to achieve robust standard errors, as well as correct the variance-covariance matrix of the estimators to account for clustering (according to the particular customer). Clustering accounts for the fact that observations are independent across customers, but not necessarily within a given customer.

# **Econometric Results**

Tables 3 and 4 present the results of our empirical analysis. Table 3 presents the results of the SUR model in four distinct models for both early termination provisions (left hand side) and

extendibility provisions (right hand side). Model 1 includes the contract-level control variables for duration and type; the firm-level control variables related to COMPUSTAR; and the relationship-level control variables related to COMPUSTAR and the IT services buyer. Model 2 adds the independent variables of interest for the purposes of hypotheses testing. As Model 2 improves the fit in comparison to Model 1, we focus our attention on it.

Insert Tables 3 and 4 about here

The Model 2 results indicate changes over time by COMPUSTAR and its customers in the use of both early termination and extendibility provisions. In particular, the implementation of both provisions takes an inverted-U shape over time (p < 0.10 for early termination provisions and p < 0.05 for extendibility provisions). Contract type also influences the use of these provisions, as fixed fee contracts reduce the likelihood of early termination provisions (p < 0.01). The Model 2 results also indicate modest effects on contract provisions from the firm-level control variables. Early termination provisions are more likely if the IT services contract involves hardware from a vendor other than COMPUSTAR, while extendibility provisions are more likely if the contract involves programming. Finally, the relationship-level control variables show differential effects on the use of early termination and extendibility provisions. The greater the relationship between buyer and supplier-measured via the logged dollar value of prior IT projects COMPUSTAR has completed for the buyer—the more likely the use of extendibility provisions (p < 0.01), while the greater the need to coordinate—measured according to whether the IT buyer's personnel are directly involved in the IT services contract—the more likely the use of early termination provisions (p < 0.10). A prior relationship provides a foundation for the use of the more positively-oriented extendibility provision. The close interaction created by interdependence provides the opportunity for Compustar to exceed the buyer's initially lower

expectations that are created by the use of the early termination provision, which also provides a safeguard for the buyer.

In terms of hypotheses testing, we first argue that proprietary technologies are more likely to utilize early termination provisions than extendibility provisions (Hypothesis H1). We find strong support for this hypothesis as IT services contracts that involve one or more of Compustar's proprietary technologies increase the likelihood of early termination provisions (p <0.01) but have not statistically significant effect on extendibility provisions. Table 4 indicates a ttest comparison between the PROPRIETARY coefficients and their standard errors achieves statistical significance, which supports the proposition that early termination provisions provide better protection to the buyer when proprietary technologies are involved, in comparison to extendibility provisions.

We also argue that greater distance between the buyer and supplier is more likely to lead to extendibility provisions in comparison to early termination provisions (Hypothesis H2). We again find strong support for this hypothesis as proximity decreases the likelihood of extendibility provisions (p < 0.01) but has no statistically significant effect on early termination provisions. A t-test comparison between the ANY50 (capturing situations when the buyer and Compustar are within 50 miles of one another) coefficients and their standard errors as presented in Table 4 achieves statistical significance, and suggests a differential effect on these two dependent variables.

We next argue that the greater difficulty in measuring quality of the project output is more likely to lead to extendibility provisions than early termination provisions (Hypothesis H3). Strong support for this hypothesis is found, as greater measurement costs decreases the likelihood of extendibility provisions (p < 0.01) but has no statistically significant effect on early

termination provisions. A t-test comparison between the measurement coefficients and their standard errors as presented in Table 4 achieves statistical significance, and suggests a differential effect from measuring quality on these dependent variables.

Our next hypothesis suggests that reusable technologies on the part of the contracting parties are more likely to lead to extendibility provisions than early termination provisions (Hypothesis H4). We find little support for this hypothesis, however, as projects that have the potential to produce knowledge that Compustar could reuse for projects with other customers has negligible effects on both early termination provisions and extendibility provisions.

We finally argue that prior relationships in other lines of business are more likely to lead to extendibility provisions than early termination provisions (Hypothesis H5). We find strong support for this hypothesis, as greater breadth decreases the likelihood of early termination provisions (p < 0.01) but has no statistically significant effect on early termination provisions. A t-test comparison between the BREADTH coefficients and their standard errors (see Table 4) achieves statistical significance.

We thus find strong support for four out of our five hypotheses. An examination of economic significance helps to demonstrate the comparative effects of these factors on early termination provisions and extendibility provisions. The right-hand side of Table 4 shows how various levels of our independent variables differentially impact the likelihood of early termination provisions (ET) and extendibility provisions (EX). This table holds all variables at their respective means and then varies a particular variable of interest from low (mean less standard deviation) to high (mean plus standard deviation) levels. If this difference falls outside the variable range, it is reset to its respective minimum or maximum level.

Table 4 shows a substantial increase in the likelihood of early termination provisions as IT contracts involve more proprietary technologies. A one standard deviation increase<sup>8</sup> in PROPRIETARY increases the probability of utilizing early termination provisions by more than five percent but has a negligible effect on extendibility provisions, which supports Hypothesis H1. In contrast, a one standard deviation increase in distance between buyer and supplier substantially decreases the probability of extendibility provisions but has a negligible effect on the early termination provisions, which supports Hypothesis H2. A one standard deviation increase in the difficulty in measuring the quality of the supplier's work reduces the probability of early termination provisions by roughly three percent and increases the probability of extendibility provisions by more than seven percent. Measurement difficulty has by far the largest impact on the use of these contract provisions, with the effects working in opposite directions. These results again strongly support Hypothesis H3. As reusable technology had no effect on either early termination provisions or extendibility provisions and failed to support our hypothesis, we do not examine its economic significance. Finally, a one standard deviation increase in the breadth of the relationship between buyer and supplier decreases the probability of early termination provisions by more than four percent, but has a negligible impact on extendibility provisions—results that support Hypothesis H5.

Models 3 and 4 in Table 3 provide robustness tests of our main model of interest in Model 2. Model 3 replaces our dichotomous measure of proximity (ANY50) with a continuous measure of distance (MIN DIST)—thus we expect a reversal of the sign of the coefficient. The latter variable represents the actual minimum distance between the buyer and the nearest Compustar location (headquarters or major field office). The Model 3 results are strongly similar

<sup>&</sup>lt;sup>8</sup> While most of our independent variables are dichotomous we still use a change of one standard deviation (bounded by zero on the low end) for illustrative purposes.

to the Model 2 results, with no loss in statistical significance. Model 4, which removes the contract type variables, produces results that are very similar to Model 2 with no loss of statistical significance.

#### DISCUSSION

Our results suggest that we need to balance our focus on individual rationality with an understanding of human cognitive and social processes in order to gain a better understanding of the organization of economic activity. Many researchers have shown that exchange hazards often lead to contractual responses such as longer contracts (e.g., Joskow, 1987), more complete contracts (Crocker and Reynolds, 1993), more detailed contracts (Mayer, 2006), and a variety of specific clauses such as take-or-pay provisions (Masten and Crocker, 1985), etc. While this research has contributed significantly to our understanding of contract design and inter-firm governance, we know little about how such contractual choices may affect the relationship the firms seek to develop (Macaulay, 1963).

By incorporating psychology into economic analysis, we explore how contracts serve as blueprints or frameworks for a relationship (Llewellyn, 1931). It is not just that the document itself has determined how the relationship will unfold, but the actual contract that is signed sheds light on the process the parties went through in designing it. While similar contracts could have resulted from very different negotiations (i.e., different processes of designing the contract, including different levels of conflict and employee involvement), the contents of the final contract can shed some light on the relationship between the parties. Different clauses can have different psychological impacts on the parties and how they perceive their exchange and their relationship. Firms face a variety of choices in designing a contract and many clauses have similar incentive properties but very different psychological impacts. While we focus on early

termination and extendibility provisions here, another example of alternative framing is bonus payments versus penalty clauses. You can design a higher fixed payment contract with penalties for non-performance that provides the same remuneration as a lower initial payment with bonuses for on-time performance. Explaining the difference requires drawing upon psychology because the payoffs can be designed identically under the two different contracts. The issues, however, are often more complete than just the payments related to different outcomes. Designing more complex contracts that include clauses such as early termination or extendibility provisions provide even more room for psychological interplay between the actors that involves cognitive and social processes such as perceptions of the other party's actions, the creation and reassessment of expectations, and understanding your own (and your partner's) cognitive biases and frames.

Cognitive processes (framing, reassessment, etc.) affect interpretations of events and people; they play a key role in how individuals set their expectations. The decision of whether to include an early termination or extendibility provision helps the parties set their expectations of each other and of the interaction that will occur when executing the exchange. Early termination provisions create a negative focus by drawing attention to what could go wrong and allowing one party to end the relationship for reasons that are typically related to opportunism or shirking. Extendibility provisions, on the other hand, provide a positive focus by highlighting the circumstances under which the parties can extend their interaction.

All of this brings us back to one thing—the contract is more than just a tool for governing a particular exchange; it is the result of a social process (negotiation) between people from different firms who will almost certainly have different cognitive biases, different expectations of the situation and different expectations of how to negotiate the contract and what it should

contain. A contract really is a blueprint for the relationship, but in a way is richer than some prior studies have suggested. While the contract does contain the legal description of the exchange and the obligations of the parties, it is not just a process document that the firms will follow like manufacturing workers would follow a work instruction. If the contract is between firms that have not previously worked together, then each party will seek to gain information about the other during the process of designing it. If the parties have worked together, then the prior interaction has led to the development of some expectations and some type of relationship that will affect the design of the current contract. The parties will then adjust their expectations based on the outcome of the exchange.

Rather than simply taking a party's expectations as exogenous, we argue that the process of contract design (and the decision of what to include in the contract) can play a key role in framing the expectations of both parties in the exchange. Although two different clauses may accomplish the same goal, they may not be framed in the same way. As demonstrated here, however, this framing matters and must be a consideration when designing the contract. In fact, this framing can create positive or negative expectations around the core issue that led to the inclusion of the clause. Thus the contract plays a key role in developing expectations because the negotiation process involves decisions on whether to focus on positive or negative ways of dealing with different issues (e.g., bonus versus penalty clauses, early termination versus extendibility provisions) as well as revealing different cognitive biases in response to different perceived risks.

Social processes are also critical here as we examine how these perceptions and expectations play a role in relationship development. Contract negotiation is a social process involving actors from different organizations that come together with the objectives of designing

and completing a transaction, protecting the firm, and building some type of relationship. The vast majority of contracting research has focused on protecting the firm (contract as safeguard). There is an emerging literature that discusses how the contract is used as a blueprint for the exchange (e.g., Mayer and Argyres, 2004), but little has been done to examine how contract design choices affect relationship development. While we lack performance data, an issue we return to in the limitations section below, a future line of research could examine whether contracts with more "positive" provisions lead to superior performance compared to ones with more "negative" provisions that focus on opportunism and/or shirking. Let us be very clear on one point-we believe strongly in the underlying behavior assumptions of transaction cost economics—everyone is boundedly rationality and some people are prone to opportunism (but these people are not readily identifiable). One important function of a contract is and should be to protect the firms involved, but the contract can do a lot more based on the interaction it generates while the parties are negotiating its final form. Contract still are an important safeguard, but even safeguards can take different forms and some may have a different effect on the relationship than others. By incorporating insights from psychology, we can help predict when using different types of clauses might be most advantageous for the firms designing a contract

It is important to note that we do *not* state that firms should always use the more "positive" contractual provision—extendibility provisions in our empirical analysis. Psychological reasoning helps us understand when a more "negative" provision might be not only acceptable but preferred. One benefit of a negative provision is that it may set a lower level of expectation (or even a purely negative expectation) that the firm can exceed, thus raising their stature in the eyes of the exchange partner. This strategy, however, must be exercised with

caution as you need to ensure that the initial clause is acceptable to both parties so that one of them does not terminate the negotiation.

In addition, our study is one of the first to examine the role of distance in contract design. While the role of distance has been studied in terms of knowledge spillovers and work interaction, contract researchers have yet to analyze the effects of geographic distance on contract design. We find that when the parties are more distant, it puts more weight on the negotiation in establishing a foundation for the relation and thus contract clauses that do more to focus attention on positive outcomes should be preferred.

Another contribution of this study is differentiating between types of prior relationships. We examine prior relationships between the firms in the current line of business (i.e., the buyer has purchased these types of services from this supplier in the past) versus prior corporate relationships that consist of the buyer procuring other goods and services from the Compustar. When the buyer has purchased similar goods and services from the supplier in the past, the firms are learning to work together and write better contracts for their interaction and they are developing a relationship (and likely developing trust as well based on interviews with Compustar personnel). Relationships that exist outside the current line of business, and thus are unlikely to involve the same people, are unlikely to result in any applicable learning about how to work together, but the firms may have developed a strong internal reputation and respect for one another (what Zaheer, McEvily and Perrone (1998) referred to as interorganizational trust).

Two issues that could confound interpretation of the results need to be addressed. The first is the role of lawyers. It is important to note that these contracts were not negotiated by lawyers—they were negotiated by managers and engineers. Lawyers conducted a final stage review of the contracts and very rarely requested any changes. How the contracts might be

different if lawyers were directly involved is an interesting topic for future research. The second issue is the use of contract templates. Almost all the contracts were done using Compustar's basic contract template, so the results can't be explained by differences in whose contract template was used across different customers. In addition, Compustar's contract template is very sparse (basically consisting of a series of headings—task, timeline, etc.), and does not contain any reference to early termination planning. Thus the two parties must jointly decide when and how to plan for early termination separately for each project. The decision of what should be in a contract template and the effects of using different templates are productive avenues for future research.

One of the strengths of this study, the microanalytic data from within a single firm, is also a limitation. The detailed, transaction-level data enables me to offer insights into contractual choices that are rarely available with larger inter-industry studies. Given that the majority of the Compustar buyers are large companies that have many alternatives when selecting IT service suppliers we are confident that the negotiated contract does not solely reflect Compustar policy but also significantly integrates buyer concerns. Including an early termination or extendibility provision is not standard Compustar policy—someone must request it and each one is negotiated individually. The findings from this study are likely to generalize to variety of industries and exchange settings that involve complex exchanges. For example, exchanges in many high technology industries (e.g., aerospace, software, telecommunications, semiconductors and pharmaceuticals) involve firms with diverse capabilities undertaking a series of projects that leverage firm-specific intellectual property.

Future research is needed to more fully integrate economic and psychological analysis. Psychologists have learned a great deal about human cognition and behavior that can be applied

to the study of inter-firm relationships (and also to internal organization). Relationships between firms consist of relationships between individuals that represent each firm. Understanding how individuals frame issues, develop expectations and interact with and assess one another can be a powerful tool in helping understand how firms govern transactions and develop relationships that span multiple transactions.

#### CONCLUSION

This research suggests that it is important for both parties in the negotiation to carefully consider the psychological ramifications that a particular clause might have on the relationship before they decide to include it in the contract. This consideration is a very different one than determining which clause is the most efficient, as the impact of the clause will depend on the organizational cultures of the two firms involved, as well as the history between the parties. Finally, this study suggests that contract clauses can be used strategically to help build relationships, either by setting and meeting positive expectations or by setting and exceeding negative expectations. By using either strategy, a firm can build a strong relationship with her exchange partner. The results in this paper have important implications for research on contracts and the governance of inter-firm relationships more generally. As firms routinely conduct business through outsourcing, alliances and networks, the need to understand inter-firm relationships continues to increase. One significant aspect of these relationships is the written contract. While the features of these contracts that serve to safeguard the parties from opportunistic behavior have been investigated extensively, there has been little work examining contractual features that may serve other purposes (Mayer & Argyres' (2004) case study of software contracting is an exception). We go a step beyond considering the purpose of a

contractual clause and seek to understand its impact on the relationship the parties want to develop. In many situations, extendibility provisions are preferred to early termination provisions because the former induce a more positive (or promotion-focused rather than prevention-focused) frame that can aid in relationship development and should also help the transaction proceed more smoothly. Future research is required to dig more deeply into the psychological impacts of other clauses and to explicitly address the performance implications, both short-term (success of the specific project governed by the contract) and long-term (the development of the relationship between the parties and the success of their future projects together).

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# Table 1: Summary Statistics

N = 387	MEAN	ST DEV	MIN	MAX
EARLYTERM	0.16	0.36	0.00	1.00
EXTEND	0.15	0.36	0.00	1.00
TIMETREND	8.14	2.88	0.00	12.00
TIMESQUARED	74.57	39.68	0.00	144.00
FIXED FEE	0.56	0.50	0.00	1.00
HYBRID	0.10	0.31	0.00	1.00
TIME AND MATERIALS	0.31	0.46	0.00	1.00
MAINFRAME	0.26	0.44	0.00	1.00
COMPUSTAR HARDWARE	0.23	0.42	0.00	1.00
MEASUREMENT COST	0.44	0.50	0.00	1.00
PROPRIETARY	0.15	0.36	0.00	1.00
INTERDEPENDENCE	0.12	0.33	0.00	1.00
OTHER HARDWARE	0.09	0.29	0.00	1.00
PROGRAMMING	0.46	0.50	0.00	1.00
REUSE	0.39	0.49	0.00	1.00
INNOVATION	2.52	1.20	1.00	6.00
LOG DOLLARS - CORP	8.03	6.10	0.00	15.23
LOG DOLLARS - LOCAL	7.32	6.02	0.00	14.97
BREADTH	4.25	2.77	0.00	9.00
ANY50	0.44	0.50	0.00	1.00
MIN DIST	170.01	178.88	1.00	707.00

# **Table 2: Correlation Statistics**

	EARLY TERM	EXTEND	TIMETREND	TIMESQUARED	FIXED FEE	НҮВRІD	TIME AND MATERIALS	MAINFRAME	COMPUSTAR HARDWARE	MEASUREMENT COST	PROPRIETARY	INTERDEPENDENCE	OTHER HARDWARE	PROGRAMMING	REUSE	INNOVATION	LOG DOLLARS – CORP	LOG DOLLARS – LOCAL	BREADTH	ANY50	MIN DIST
EARLYTERM	1.00																				
EXTEND	0.10	1.00																			
TIMETREND	0.06	0.04	1.00																		
TIMESQUARED	0.03	0.02	0.97	1.00																	
FIXED FEE	-0.24	-0.24	-0.06	-0.06	1.00																
HYBRID	-0.01	-0.07	-0.16	-0.14	-0.38	1.00															
TIME AND MATERIALS	0.16	0.32	0.17	0.16	-0.76	-0.23	1.00														
MAINFRAME	-0.07	0.06	0.02	0.04	-0.10	0.07	0.10	1.00													
COMPUSTAR HARDWARE	-0.16	-0.11	0.09	0.09	0.29	-0.05	-0.24	0.35	1.00												
MEASUREMENT COST	-0.09	0.28	-0.13	-0.10	-0.24	0.03	0.30	0.06	-0.22	1.00											
PROPRIETARY	0.18	-0.04	0.09	0.07	0.03	-0.01	-0.17	0.01	-0.01	-0.14	1.00										
INTERDEPENDENCE	0.09	0.12	-0.06	-0.07	-0.08	-0.03	0.09	0.04	-0.10	0.19	0.03	1.00									
OTHER HARDWARE	0.17	0.01	-0.01	-0.04	0.09	-0.02	-0.07	0.01	0.07	-0.21	-0.09	0.01	1.00								
PROGRAMMING	0.09	0.27	0.02	0.00	-0.43	0.06	0.47	0.07	-0.26	0.27	-0.06	0.14	0.05	1.00							
REUSE	-0.09	0.16	-0.04	-0.02	-0.18	0.11	0.17	0.05	-0.19	0.38	-0.04	0.14	-0.20	0.24	1.00						
INNOVATION	-0.13	0.08	-0.09	-0.09	-0.16	0.17	0.14	-0.04	-0.22	0.37	-0.14	0.14	-0.11	0.28	0.57	1.00					
LOG DOLLARS - CORP	0.04	0.12	0.40	0.37	-0.08	-0.02	0.12	-0.08	-0.03	-0.10	0.06	-0.05	0.02	0.06	-0.03	0.01	1.00				
LOG DOLLARS - LOCAL	0.04	0.11	0.39	0.38	-0.07	-0.05	0.12	-0.06	-0.02	-0.07	0.01	-0.03	0.01	0.04	-0.01	-0.01	0.91	1.00			
BREADTH	-0.21	-0.07	0.13	0.11	0.16	0.06	-0.17	-0.07	0.12	-0.22	0.20	-0.07	-0.09	-0.09	-0.05	-0.01	0.40	0.26	1.00		
ANY50	-0.01	-0.18	-0.04	-0.06	0.20	0.03	-0.19	0.00	0.10	-0.09	0.08	0.02	0.15	-0.15	-0.05	0.00	0.08	0.09	0.12	1.00	
MIN DIST	0.00	0.25	0.00	0.01	-0.15	0.03	0.12	-0.03	-0.08	0.10	-0.05	0.02	-0.10	0.15	0.00	-0.03	0.02	-0.01	0.00	-0.77	1.00

Bold represents pair-wise significance at 0.05 level.

	EARLY TERMINATIONS (ET) EXTENDIBILITY PROVISIONS (E)								
	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 1	MODEL 2	MODEL 3	MODEL 4	
	β	β	β	β	β	β	β	β	
	(se)	(se)	(se)	(se)	(se)	(se)	(se)	(se)	
TIMETREND	0.635**	0.510	0.523*	0.631*	0.493	0.765**	0.782**	0.795**	
	(0.308)	(0.315)	(0.319)	(0.335)	(0.305)	(0.331)	(0.342)	(0.338)	
	-0.042*	-0.035	-0.036	-0.041*	-0.039*	-0.060***	-0.060**	-0.059***	
TIME SQUARED	(0.023)	(0.023)	(0.023)	(0.024)	(0.022)	(0.023)	(0.023)	(0.023)	
	-1.718***	-1.671***	-1.644***		-1.077*	-0.839	-0.962		
FIXED FEE	(0.429)	(0.417)	(0.418)		(0.561)	(0.556)	(0.592)		
	-0.506	-0.409	-0.376		-1.534***	-0.974	-1.182*		
I I BRID	(0.591)	(0.547)	(0.553)		(0.619)	(0.622)	(0.617)		
	-0.442	-0.452	-0.450	-0.129	0.521	0.354	0.384	0.408	
MAINFRAME	(0.487)	(0.507)	(0.518)	(0.499)	(0.339)	(0.388)	(0.400)	(0.386)	
	-1.089	-0.798	-0.805	-1.331 <sup>*</sup>	-0.135	0.364 <sup>′</sup>	Ò.441	Ò.120 ́	
COMPUSTAR HARDWARE	(0.695)	(0.700)	(0.699)	(0.700)	(0.489)	(0.570)	(0.621)	(0.507)	
	1.522**	1.076*	1.104*	0.795	0.151	0.603	0.500	0.461	
OTHER HARDWARE	(0.627)	(0.635)	(0.627)	(0.589)	(0.871)	(0.797)	(0.801)	(0.745)	
	-0 159	0 160	0 152	0.543	1 150***	0.909**	0.804**	1 138***	
PROGRAMMING	(0.377)	(0.395)	(0.385)	(0.366)	(0.347)	(0.369)	(0.357)	(0.363)	
	-0.007	0.037	0.038	0.049	0.058**	0.091***	0.078**	0.097***	
LOG DOLLARS – CORP	(0.027)	(0.037)	(0.037)	(0.035)	(0.027)	(0.034)	(0.033)	(0.034)	
	0.669*	0.735*	0.739*	0.767*	(0.027)	(0.03+)	0.203	(0.00+)	
INTERDEPENDENCE	(0.374)	(0.406)	(0.408)	(0.304)	(0 417)	(0.456)	(0.461)	(0.430)	
	0.577	0.348	(0.400)	(0.33+)	(0.417)	0.400	0.253	0.308*	
INNOVATION	-0.517	-0.340	-0.331	-0.323	(0.020)	-0.301	-0.255	-0.308	
	(0.100)	(0.221)	(0.222)	(0.204)	(0.140)	(0.181)	(0.104)	(0.107)	
		1 /10***	1 101***	1 105***		0.002	0 166	0.051	
PROPRIETARY		1.419	1.424	1.433		0.092	0.100	0.001	
		(0.353)	(0.351)	(0.334)		(0.595)	(0.522)	(0.010)	
ANY50		0.100		-0.102		-1.050		-1.100	
		(0.422)	0.000	(0.400)		(0.397)	0.000**	(0.375)	
MIN DIST			0.000				0.003**		
		0.000++	(0.001)	0.007*		4 -3-+++	(0.001)	4 0 4 0 * * *	
MEASUREMENT COST		-0.886***	-0.870**	-0.687*		1.575"""	1.528***	1.642***	
		(0.386)	(0.390)	(0.402)		(0.545)	(0.569)	(0.507)	
REUSE		0.087	0.085	-0.028		0.756	0.829	0.729*	
		(0.533)	(0.537)	(0.543)		(0.476)	(0.531)	(0.445)	
BREADTH		-0.258***	-0.255***	-0.286***		-0.014	-0.049	-0.041	
		(0.077)	(0.075)	(0.083)		(0.081)	(0.085)	(0.079)	
CONSTANT	-1.598*	-1.089	-1.058	-2.579**	-3.779***	-4.870***	-5.802***	-5.619***	
	(0.953)	(1.024)	(1.136)	(1.097)	(1.048)	(1.235)	(1.323)	(1.292)	
	<u> </u>	<u> </u>	o	o	<u> </u>	<u> </u>	<u> </u>	0.0-	
N	387	387	387	387	387	387	387	387	
LogL	-137.57	-122.63	-122.70	-131.05	-141.29	-121.18	-118.31	-123.59	
χ <sup>2</sup>	68.53***	88.60***	88.46***	71.76***	58.04***	88.42***	94.15***	83.61***	
Pseudo-R <sup>∠</sup>	0.199	0.265	0.265	0.215	0.170	0.267	0.285	0.253	

# Table 3: Seemingly Unrelated Regression Results

\*\*\* p<0.01 \*\* p<0.05 \* p<0.10 Standard errors are robust and clustered (by customer ID).

# Table 4: Economic Significance

PAIR-WISE T-TEST CC	MPARISONS	ECONOMIC SIGNIFICANCE									
VARIABLE	$\frac{(\beta_{\rm ET} - \beta_{\rm EP})}{\sqrt{\sigma_{\rm ET}^2 - \sigma_{\rm EP}^2}}$	VARIABLE	DV	MEAN – SD	MEAN	MEAN + SD					
PROPRIETARY	1.92**	PROPRIETARY	ΕT	0.056	0.090	0.141					
			EX	0.072	0.074	0.076					
ANY50	2.08**	ANY50	ET	0.084	0.090	0.096					
			EX	0.119	0.074	0.045					
MEASUREMENT COST	-3.69***	MEASUREMENT COST	ET	0.133	0.090	0.060					
			ΕX	0.035	0.074	0.149					
REUSE	-0.94										
BREADTH	-2.17**	BREADTH	ΕT	0.167	0.090	0.046					
			ΕX	0.077	0.074	0.071					

\*\*\* p<0.01 \*\* p<0.05 \* p<0.10