Sources and consequences of bargaining power in supply chains

T. Russell Crook [a,1], James G. Combs [b,*]

[a] College of Business Administration, Northern Arizona University, Flagstaff, AZ 86011-5066, United States
[b] College of Business, Florida State University, Tallahassee, FL 32306-1110, United States

Abstract

Research suggests that collaborative supply chain management (SCM) helps chain members create ''a rising tide that lifts all boats.'' Yet resource dependence theory suggests that when tides rise, some boats are lifted more than others; members who furnish important resources or resources where control is concentrated have bargaining power. Drawing on Thompson [Thompson, J.D., 1967. Organizations in Action. McGraw-Hill, New York], we argue that strong firms' bargaining power use is tempered by the type of coordination different types of task interdependencies demand. We also investigate how both strong and weak members benefit from SCM. Whereas strong members reap most of the direct benefits, weak members can often gain by building switching costs with strong members, leveraging SCM outside the focal chain, and increasing survival chances.
© 2006 Elsevier B.V. All rights reserved.

Keywords: Supply chain management; Bargaining power; Profit distribution

1. Introduction

Supply chains are groups of organizations that collectively process raw materials into finished goods (Frohlich and Westbrook, 2001; Hult et al., 2002). One tool that firms at successive stages of production use to manage reoccurring purchases is supply chain management (SCM). By efficiently integrating chain members' business processes, SCM has emerged as an important approach to reducing costs, improving quality, and enhancing innovation (Mabert and Venkataramanan, 1998). Because costs involved with purchased inputs can represent up to 75% of a firm's operating budget (Quinn, 1997) and firms that find ways to lower costs or increase value achieve competitive advantages (Porter,

1980), SCM has garnered increased attention in the operations management literature (e.g., Handfield, 1994; Hill and Scudder, 2002).

A growing body of empirical evidence suggests that effective SCM leads to improved performance (e.g., Vickery et al., 2003). Properly implemented, SCM tools increase coordination among firms at successive stages of production. The gains from such coordination include decreased costs through reduced inventory and shorter order cycle times (Hult et al., 2002; Wisner and Tan, 2000), improved quality through better design for manufacturability and faster delivery (Handfield, 1994), and enhanced innovation through more diverse intellectual inputs in the design process (Morgan and Monczka, 1995; Tan, 2002). Such gains can be large; one estimate suggests that SCM can reduce costs and/or increase value-added by up to 25% (Hughes, 2005). Although there is consensus that effective SCM decreases costs and enhances value, little attention has been paid to how the gains attributable to SCM are distributed.

* Corresponding author. Tel.: +1 850 644 7896.
E-mail addresses: russell.crook@nau.edu (T.R. Crook), jcombs@fsu.edu (J.G. Combs).
[1] Tel.: +1 928 523 4541.

Some have argued that successful SCM improves financial performance for *all* chain members (e.g., Tan, 2002; Wisner and Tan, 2000). This implies that chain members share the spoils of SCM equitably. Others raise doubts about this possibility. Ketchen and Giunipero (2004: 53), for example, suggest that while the SCM literature often seems to assume that "a rising tide lifts all boats... a chain member may exploit its partners for its own gain." Thus, effective SCM potentially creates a rising tide that lifts some, but not all, boats.

We draw on resource dependence theory (Pfeffer and Salancik, 1978) to describe the resource qualities that give some firms bargaining power. We then contribute to the literature by (1) predicting when stronger firms use their power and (2) describing the performance implications of bargaining power use for both strong and weak members. Specifically, based on Thompson's (1967) description of pooled, sequential, and reciprocal task interdependence, we argue that stronger firms forbear use of bargaining power when exercising it might create conflict that would threaten the chain's ability to coordinate. A key implication is that the benefits of SCM vary according to how bargaining power is used. Thus, we also describe the performance implications of bargaining power use for both strong and weak chain members, paying particular attention to the benefits of SCM, when they exist, for weaker firms. For researchers, our theorizing should help clarify the role of bargaining power and its influence over the creation and distribution of gains from SCM. For managers, knowing who has power and when it is likely to be used should aid in negotiations as well as help build realistic expectations about the potential benefits of SCM participation.

2. Sources of profits in supply chains

Understanding how gains from SCM are distributed requires some knowledge of how supply chain profits are generated. Supply chain profits can be thought of as having two major components: (1) the sum of individual members' profits, plus (2) some added profits generated by effective SCM. We refer to the former as pre-SCM profits and the latter as SCM gains.

The VPC framework provides a useful tool for decomposing profit sources (Hoopes et al., 2003). For a single firm, V_f is the value of a good or service to the buyer, P_f is the buyer's actual price, and C_f is the firm's total costs. The difference between value and price, $V_f - P_f$, is the consumer surplus, indicating that buyers typically purchase at prices below the value they

receive. A seller's total value-added is $V_f - C_f$, but its profit is only equal to $P_f - C_f$, which is a function of the seller's ability to create value and control costs (Hoopes et al., 2003).

As shown in Fig. 1, the VPC framework can be adapted to an entire supply chain, where V_c and P_c represent the perceived value and price paid by the end-user, and C_c equals the sum of the costs incurred by all chain members. Part of the difference between V_c and C_c can be thought of as the sum of all value-added from the individual supply chain members prior to SCM (i.e., $\sum(V_f - C_f)$). However, once the members begin to practice SCM, the gap between V_c and C_c should widen further. Assuming increases in $V_c - C_c$ translate into increased $P_c - C_c$, there are gains from SCM that we label SCM gains.

If a rising tide does indeed lift all boats, we would expect all supply chain members to appropriate their pre-SCM profits (i.e., $P_f - C_f$) *plus* a proportional share of SCM gains (i.e. $(P_c - C_c) - \sum(P_f - C_f)$). However, if bargaining power factors into the distribution of SCM gains (Gomes-Casseres, 1997), stronger firms might take a disproportionate share of SCM gains, all SCM gains, or even take all SCM gains plus some of the weaker firms' pre-SCM profits.

If bargaining power matters, three questions follow. First, who within supply chains has bargaining power? Second, when and how much will stronger members use their bargaining power? Third, are there benefits from SCM for weaker members when stronger firms take all SCM gains and even squeeze their pre-SCM profits? We draw on resource dependence theory as well as research

V_c | Value added by SCM

$\sum V_f$ | Value added by firms prior to SCM

P_c | Profits from increased price from SCM value gains

$\sum P_f$ | Profits from firms prior to SCM

$\sum C_f$ | Cost reductions due to SCM

C_c | Sum of costs after SCM cost reductions

SCM Gains = $(P_c - C_c) - \sum(P_f - C_f)$

Fig. 1. Value creation through use of collaborative SCM.

on bargaining power and task interdependence to shed light on these questions.

3. Resource dependence and bargaining power in supply chains

Resource dependence theory views firms as embedded in a web of exchange relationships within an uncertain environment and dependent on other entities for survival (Pfeffer and Salancik, 1978). A firm's power within the web resides in others' dependence on it for resources (Emerson, 1962). Since long-term cooperative agreements can buffer firms from hostile environments (Baker, 1990), entry into a supply chain might be viewed as an attempt to reduce uncertainty, attain input/output stability, and improve the probability of survival (Campbell, 1998). These are the most important organizational goals according to resource dependence (Pfeffer and Salancik, 1978). Accordingly, once a firm embraces SCM, other chain members become key elements of the firm's environment. This increases the firm's dependence on the chain wherein the relative need to acquire resources shapes each member's power.

Firms have power to the degree that others depend on them for resources. Resources create dependencies (1) when they are important, (2) when control over them is relatively concentrated, or (3) both (Pfeffer and Salancik, 1978). Two related factors affect resource importance–magnitude and criticality. Magnitude is the proportion of inputs or outputs that a resource represents for others. A resource is important via magnitude when firms lack other sustaining activities should access to the resource be severed.[2]

Criticality is defined by a firm's ability to function without the resource (Pfeffer and Salancik, 1978). Although high magnitude resources are often critical, it is possible for a resource to be critical without representing a large magnitude of purchases or sales. This occurs, for example, in restaurant franchise chains where food and labor are the highest magnitude inputs, but the franchisor's brand name and operating systems are also critical (Combs and Ketchen, 1999). Thus, the franchisor's control of these critical ingredients gives them power over franchisees (Hoy, 1994). Because supply chain value (V_c) would be substantially less without critical resources, chain members possessing

such resources create dependencies within the chain and thus amass bargaining power.

The final criterion that gives rise to resource dependence is the level of concentration of resource control (Pfeffer and Salancik, 1978). In supply chains, this means having control over resources where few competitors control similar resources. A key indicator of resource control is the level of industry concentration (Porter, 1980). Concentrated industries are those where a few competitors generate most sales. Firms in such industries have bargaining power due to their large volumes and the small number of alternatives (Benton and Maloni, 2005). Thus, supply chains that include members from highly concentrated industries, such as aircraft assembly and oil refining, cannot easily replace them, which creates a dependency.

Pfeffer and Salancik (1978) argue that while resource importance and concentrated control give rise to dependencies, the interaction between these creates the strongest dependencies and the most bargaining power. For example, many of Wal-Mart's suppliers sell virtually all of their output to the giant retailer (magnitude). Because general merchandise retailing has become concentrated in the hands of a few "big box" retailers, if Wal-Mart failed to renew a supply agreement, suppliers have few, if any, outlets to replace lost sales.

Overall, supply chain members offering high magnitude or critical resources who participate in highly concentrated industries are stronger. Weaker members, on the other hand, lack such resources. Whereas it is an important first step to understand how resources shape dependencies and hence bargaining power, it raises the question of when and to what degree stronger members use their power (e.g., Ketchen and Giunipero, 2004).

4. Use of bargaining power in supply chains

Firms seek to improve terms and conditions of exchange through bargaining (Hicks, 1932). Bargaining power enables stronger firms to gain favorable exchange terms from others, or more broadly, to coerce others to do what they would otherwise not do (Emerson, 1962; Pfeffer, 1981). Although some research suggests that competition has changed from one firm competing with another to one supply chain competing with another (Vickery et al., 1999), chain members often know the value of the resources they offer and the dependencies they create. Stronger members might calculate others' dependencies and exert their power during negotiations to appropriate a larger percentage, if not all, SCM gains. At the extreme,

---

[2] Predictions from resource dependence theory are similar to those found in Porter's (1980) five-forces model, though Porter's model is at the industry level and requires additional translation to apply to supply chains.

stronger members might even negotiate all SCM gains plus some of weaker members' pre-SCM profits. Yet in other situations, stronger members might forbear the use of power to instead share SCM gains.

We assert that stronger members' decisions to exercise versus forbear bargaining power are influenced by the type of coordination needed to create SCM gains, which is, in turn, shaped by task interdependence. Coordination has long been considered a key determinant of task accomplishment in organization theory (Barnard, 1938); it aligns actions of those performing different parts of a task (Gulati et al., 2005). The type of coordination required depends on the type of task interdependence faced by actors performing the task (Thompson, 1967).

Thompson (1967) described three types of task interdependence – pooled, sequential, and reciprocal – and linked these theoretically with three types of coordination–standardization, planning and scheduling, and mutual adjustment. Pooled interdependent tasks are those where "each part renders a discrete contribution to the whole and is supported by the whole" and coordination is accomplished by standardization (Thompson, 1967: 54). This might occur in a retail supply chain where separate suppliers do not need to coordinate with each other and SCM tools that facilitate standardization, such as using electronic data interchange to share forecast and purchasing information, sufficiently coordinate suppliers' inputs. Sequentially interdependent tasks occur in, for example, manufacturing supply chains where one member's task must be completed so another's can begin; coordination requires plans and schedules (Thompson, 1967). Finally, in reciprocally interdependent tasks, actors' tasks are related to, and dependent on, each other (e.g., joint project development—Gulati and Singh, 1998). Accordingly, such tasks require SCM tools that facilitate mutual adjustment, such as dedicated on-site personnel and integrated project development teams.

We contend that as task interdependence moves from pooled to sequential to reciprocal, and coordination demands increase correspondingly, stronger firms are more likely to forbear in their use of bargaining power. Exercising bargaining power generates resentment by those subject to it and reduces weaker actors' willingness to cooperate (Gaski, 1984). Indeed, the use of power increases conflict (Lusch, 1976), reduces satisfaction (Hunt and Nevin, 1974), and ultimately, decreases some firms' willingness to participate (Frazier and Summers, 1986). When SCM tools that coordinate via standardization, and to a lesser extent, plans and schedules, are sufficient, short of outright sabotage, conflict should not undermine the effectiveness of SCM. However, SCM tools that coordinate via mutual adjustment typically require active cooperation and intense communication. Our conjecture is that the effectiveness of such tools is easily undermined by conflict and resentment (Kumar and van Dissel, 1996). Assuming that the effective use of such tools translates to increased SCM gains, the decision to use bargaining power becomes critical for both the generation of SCM gains as well as their distribution.

The proposed linkage among task interdependence, coordination demands, and use of bargaining power is depicted in Fig. 2. The link between each type of task interdependence and bargaining power use is described below.

4.1. Bargaining power use under pooled interdependence

Pooled interdependent tasks are those where members render discrete contributions (Gulati et al., 2005). Anecdotal evidence suggests that strong firms use heavy-handed tactics in negotiations for such tasks. For example, by joining Wal-Mart's supply chain, pickle maker Vlasic experienced tremendous sales growth and reduced costs. However, they charged Wal-Mart such low prices on one particular product, the gallon jar, that they eventually declared bankruptcy (Fishman, 2003). In this case, Wal-Mart appropriated all SCM gains plus much of Vlasic's pre-SCM profits; the promotion cannibalized sales in other retail outlets.
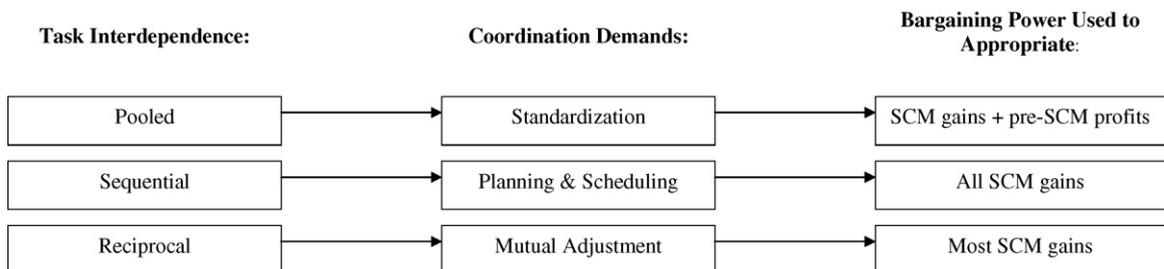

Fig. 2. Task interdependence, coordination demands, and bargaining power use.

Pooled interdependent tasks rely on standardized coordination. Once agreements are signed, forecasts, payments, and delivery procedures can be standardized to achieve sufficient coordination. Thus, stronger supply chain members can exercise bargaining power maximally because even if conflict results, coordination should not suffer. This suggests that where task interdependence is pooled, stronger members will fully exert bargaining power. Maximally applied bargaining power implies stronger firms appropriate all SCM gains plus some portion of weaker members' pre-SCM profits. Stated formally, we propose that:

Proposition 1. *When task interdependence among supply chain members is pooled, strong members use their bargaining power to appropriate all SCM gains plus a portion of weak members' pre-SCM profits.*

4.2. Bargaining power use under sequential interdependence

Not all strong supply chain members exercise maximal bargaining power. Dell Computer, for example, controls almost 20% of the computer market (Kothandaraman and Wilson, 2001) and is, like Wal-Mart, known for using heavy-handed negotiating tactics. When asked how suppliers benefit from working with Dell, Michael Dell responded that key supplier benefits are increased demand visibility and stability (Magretta, 1998). Implicit in Dell's response is that suppliers do not gain directly from SCM. However, Dell seems to stop short of appropriating suppliers' pre-SCM profits. In sequentially interdependent tasks, where one firm's outputs become another's inputs, there is an increased need for coordination. Downstream members must coordinate some design elements so different inputs function together and product performance issues requiring action must be regularly communicated.

We argue that as long as stronger firms do not exercise bargaining power to the point where participation in SCM lowers weaker members' pre-SCM profits, the level of conflict generated will not interfere with the plans and schedules needed to coordinate sequentially interdependent tasks. By capturing all SCM gains, strong firms might engender some resentment and conflict among weaker firms. However, as long as pre-SCM profits are not jeopardized, weaker firms still have a positive incentive to cooperate because they benefit from increased volume and greater input/output stability (Handfield, 1994). Thus, even though the plans and schedules needed to coordinate sequentially interdependent tasks might need frequent adjustment

and non-routine information exchange, weaker members should be willing to offer this level of cooperation because doing so improves their overall performance. Accordingly, we anticipate that:

Proposition 2. *When task interdependence among supply chain members is sequential, strong members use their bargaining power to appropriate all SCM gains, but not weak members' pre-SCM profits.*

4.3. Bargaining power use under reciprocal interdependence

Reciprocally interdependent tasks are those where each chain member sends outputs to and receives inputs from others. This type of interdependence occurs in joint project design (Gulati and Singh, 1998) or the manufacture of complex products with intricately related components like aircraft engines and fuselages (Scott, 1998). Because each part of a task is simultaneously dependent on how others are performed, coordination must be accomplished by mutual adjustment wherein members constantly react to each other. When mutual adjustment is needed, SCM tools such as dedicated on-site personnel, frequent face-to-face meetings, and inter-firm project teams are required (Gulati and Singh, 1998). Some supply chains even develop a shared culture (Hult et al., 2002). These SCM tools demand a spirit of active cooperation and open communication, which could easily be destroyed by conflict or resentment among members (Wilkinson, 1981). Thus, for reciprocally interdependent tasks, conflict that undermines effective mutual adjustment would likely eliminate most of the available SCM gains. We therefore expect stronger firms to forbear the use of bargaining power to avoid conflict and increase SCM gains.

Dyer (1996) describes how Toyota and its supply chain partners generated SCM gains. He also found that Toyota consistently outperformed its competitors (e.g., Ford or GM), suggesting that Toyota appropriates much of the gains. However, Toyota's suppliers also outperformed their competitors (Dyer, 1996), suggesting that Toyota offers suppliers a positive incentive to actively increase SCM gains through continued investment. We suggest that Toyota's use of bargaining power is due to reciprocal task interdependence. Toyota and its suppliers coordinate efforts to integrate thousands of complex parts (Kamath and Liker, 1994). To do so, key suppliers dedicate personnel, computer aided design systems, and prototyping facilities to the supply chain relationship (Kamath and Liker, 1994). Generalizing from this example, we assert that the mutual adjustment

demanded by reciprocally interdependent tasks requires minimum conflict. Thus, for such tasks, stronger supply chain members will forbear their use of bargaining power and share at least some SCM gains with weaker members. Stated formally:

Proposition 3. *When task interdependence among supply chain members is reciprocal, strong members will forbear their use of bargaining power and share SCM gains with weak members.*

5. Benefits of supply chain membership

We have argued that bargaining power and the influence of task interdependence on coordination demands determines the distribution of SCM gains. This raises questions regarding how stronger and weaker members gain from SCM under different task interdependencies.

5.1. Key SCM benefits for stronger members

The most obvious beneficiaries of SCM are stronger members who, at a minimum, appropriate a large share of SCM gains. These are the benefits typically described by SCM advocates: (1) profit gains from lower costs, (2) increased value, and (3) enhanced innovative capacity (Elmuti, 2002; Tan, 2002). They also benefit from increased bargaining power outside the focal chain. Lower costs are achieved through improved scale economies (Handfield and Nichols, 2002), reduced inventory (Tan, 2002), shorter cycle times (Handfield and Nichols, 2002) and lower coordination costs (Hill and Scudder, 2002). SCM increases value through more innovative new product development (Hult et al., 2000), improved component quality, and reduced new product development times (Primo and Amundson, 2002). Enhanced innovative capacity occurs when stronger firms learn and assimilate innovative practices from their smaller, often more entrepreneurial, partners (e.g., Hamel, 1991; Powell et al., 1996). A fourth SCM benefit for stronger members is that as volumes increase and bargaining power grows, suppliers or buyers outside the focal chain might make additional concessions (e.g., Porter, 1980).

Although there are many SCM benefits available to strong members, implicit in our argument is that these benefits are greatest when strong members match their use of bargaining power to the type of task interdependence. Indeed, failure to forbear when task interdependence is reciprocal might lead to unnecessary conflict and a reduction in cooperation when it is most

needed. Dyer's (1996) study offers a compelling example. His study showed that U.S. automobile manufacturers and their suppliers had higher procurement costs than their Japanese counterparts. Dyer argued that at least part of the difference was due to the use of bargaining power. Japanese firms adopted a cooperative approach and shared SCM gains; U.S. automobile manufacturers pitted prospective supply chain members against each other by auctioning supply contracts to the *lowest* bidder (Konrad, 2000; Smeltzer and Carr, 2002). Not surprisingly, GM's approach created contentious, not cooperative relationships (Beall et al., 2003) that appear to have reduced potential SCM gains. This suggests that failure to match bargaining power use to the type of task interdependence can have serious consequences; coordination is reduced, procurement costs increase, and SCM gains shrink. Fewer available SCM gains should translate into lower profits. Accordingly, we expect that:

Proposition 4. *Failure to match bargaining power use to the type of task interdependence reduces profitability for strong supply chain members.*[3]

5.2. Key SCM benefits for weaker members

Regardless of the type of interdependence, when strong firms forbear, weak members gain because they keep their pre-SCM profits plus accrue SCM gains. It is probably rare for strong members to forbear under pooled interdependence; sharing SCM gains would engender more cooperation than what is needed. Under reciprocal interdependence,[4] we proposed that strong firms forbear bargaining power so that effective coordination through mutual adjustment can be achieved and SCM gains maximized. Thus, regardless of why forbearance occurs, when it happens, the benefits of SCM for weaker firms mirror those of their stronger counterparts.

5.2.1. When strong members do not forbear under low task interdependence

If, as we assert, strong members under pooled task interdependence exercise their bargaining power to

---

[3] It is possible for a strong member to forbear bargaining power use under pooled interdependence and thus share SCM gains when it is not necessary. The proposition would still hold.

[4] For parsimony, we focus our discussion of weaker members' outcomes on the extreme positions of pooled and reciprocal task interdependence. Outcomes under sequential interdependence should fall somewhere between.

appropriate all SCM gains plus some portion of weak members' pre-SCM profits, an important question is: how do weak members benefit from chain membership? There are at least three potential benefits: (1) opportunities to increase future bargaining power by building switching costs, (2) leveraging supply chain membership outside the focal chain, and (3) increasing the probability of survival.

Bargaining power is dynamic and changes over time (Das and Teng, 2000; Inkpen and Beamish, 1997). One way weaker members can improve their bargaining position is by creating switching costs (e.g., Porter, 1980). Switching costs are created when a firm's customers become accustomed to its products or how they are delivered (Stratman et al., 2004). Once a buyer's employees adopt new software, for example, they often become reluctant to change because of product familiarity, efficiency of use, and retraining costs. For example, although office products are neither a large magnitude of purchases nor critical to most downstream buyers, Office Max builds some power for itself by training its customers on proprietary information systems that simplify transactions (Office Max and Incorporated, 2006).

Weaker chain members might also benefit by leveraging SCM outside the focal chain. Firms practicing SCM learn new skills and competencies (Hamel, 1991) that weaker members can then leverage to improve performance outside the chain (e.g., Mowery et al., 1996). A weak member, for example, may learn new manufacturing techniques that lower costs on products sold outside the focal chain where customers are less likely to bargain away the savings. Further, weaker members often grow in size through supply chain membership (Frohlich and Westbrook, 2001), which increases economies of scale. Although stronger members within the chain should appropriate cost savings derived from improved scale economies, this might not be the case with firms outside the focal chain. As weak members grow, so too does their bargaining power (Porter, 1980), which should enable them to gain volume discounts outside the focal chain.

Increased probability of survival is a third advantage of chain membership for weak members. Whereas entering a supply chain increases weaker firms' dependency on the chain, it reduces uncertainty in what might be a hostile environment outside the chain (Baker, 1990). Thus, from the perspective of resource dependence theory, entering a supply chain reduces uncertainty, increases stability of resource access (Campbell, 1998), and thereby increases the probability of survival, which is the most important organizational goal (Pfeffer and Salancik, 1978). Affiliation with

stronger chain members might also improve survival chances by increasing legitimacy (Wiewel and Hunter, 1985). Stronger members might be prestigious firms with reputations for innovation or high quality. Weaker members with ties to such firms increase their legitimacy (DiMaggio and Powell, 1983; Gulati et al., 2000), which allows weak members to attract new customers that were once beyond reach. Thus, supply chain membership increases survival chances for weaker members even though they do not appropriate SCM gains.

In sum, even though strong firms will likely appropriate SCM gains and also cut into weaker firms' pre-SCM profits, at least three benefits remain for weaker firms to continue participation in SCM under pooled interdependence. Stated formally, these are:

Proposition 5. *When task interdependence is pooled and stronger members appropriate all SCM gains plus some pre-SCM profits, weaker firms still benefit from chain membership by*: (1) *building switching costs that increase bargaining power over time*, (2) *leveraging membership outside the focal chain*, and (3) *increasing probability of survival*.

5.2.2. When strong members do not forbear under high task interdependence

As described in Proposition 4, the worst situation is when strong firms fail to forbear their use of bargaining power under conditions of reciprocal task interdependence. SCM gains are significantly reduced because weaker firms are unlikely to furnish the active cooperation needed to coordinate via mutual adjustment. For stronger firms, although they might capture all SCM gains plus some portion of weaker members' pre-SCM profits, the SCM gains that are captured are much less than the potential gains that might have materialized if they had secured their weaker partners' active cooperation. We would still expect some gains from SCM, such as efficiencies from using electronic data interchange, because such gains only require coordination through standardization. However, other potential SCM gains, such as value enhancing innovations and cost saving design for manufacturability, require mutual adjustment, which is unlikely to occur when strong firms fully exercise bargaining power.

Based on population ecology theory, which draws on the metaphor of natural selection from biology (Hannan and Freeman, 1977), we believe that failure to create available SCM gains jeopardizes the entire chain. Further, weak firms bear disproportional survival risks (Aldrich and Auster, 1986). Population ecology argues

that structural inertia caused by internal factors, such as communications structures and internal politics, and external factors, such as barriers to entry and perceived legitimacy, hinders adaptation to environmental change (Hannan and Freeman, 1977). Importantly, if the population of organizations is dense, meaning competition is strong, and a competitive innovation is introduced into the environment, such as SCM, firms that do not adapt are likely to fail (Haveman, 1992).

Population ecology models are typically applied to firms. However, if we adopt Vickery et al.'s (1999) argument that competition is between supply chains, the implication is that if the environment is competitive (or dense), chains that are unable to capture the full potential benefits of SCM will have greater mortality. From a population ecology perspective, structural inertia makes it difficult to switch from a competitive to a cooperative stance, even when task interdependence dictates that such a stance is necessary. Consequently, as the density of the competitive environment among chains increases, the greater the probability of chain-wide failure, and those chains most likely to be selected for failure are those that have been unable to capture available SCM gains. Thus, we expect that:

Proposition 6. *When task interdependence is reciprocal and stronger members appropriate all SCM gains plus some pre-SCM profits, both strong and weak firms have higher mortality rates than those in competing chains.*

Another outcome of population ecology research is that smaller firms have higher mortality (Aldrich and Auster, 1986). Stronger firms are often larger; they might be able to survive for some time by pressuring weaker firms to give up a greater portion of their pre-SCM profits. Weaker members might respond by attempting to build switching costs, but switching costs also increase weaker firms' ties to the declining chain. Further, the knowledge and reputational spillovers that are available to weaker firms in chains where forbearance is not expected are less beneficial if knowledge sharing is not on par with competitors and stronger firms' reputations are in decline. Consequently, where overexertion of bargaining power under conditions of reciprocal task interdependence leads to a loss of potential SCM gains, weak members should confront very high levels of mortality. Accordingly:

Proposition 7. *When task interdependence is reciprocal and stronger members appropriate all SCM gains plus some pre-SCM profits from weaker firms, mortality rates are highest among weak firms.*

6. Implications for future research

Our overarching objective was to predict the use of bargaining power in supply chains and draw a more realistic picture of SCM benefits for most members. Drawing on resource dependence theory to describe who within supply chains has bargaining power, we built a testable theory around Thompson's (1967) description of task interdependence that predicts when strong firms will exercise their power. Our theorizing suggests that the benefits of SCM vary according to bargaining power use. Thus, we also describe the benefits, when they exist, of SCM for both stronger and weaker members.

Beyond empirically testing the propositions, we believe that future research would benefit by investigating three issues that emerge from our analysis. The first involves the conceptual difference between value creation and bargaining power. According to the VPC framework (Hoopes et al., 2003), the total value created by a supply chain can be thought of as the sum of the value-added by each firm, which we call pre-SCM profits, plus SCM gains. Based on resource dependence theory, we argued that those firms that furnish important resources where control is concentrated have the most bargaining power and thus appropriate a disproportionate share of the chain's total value created.

However, value creation and bargaining power are closely linked (Gomes-Casseres, 2005). Not only do resources that are important or tightly controlled create bargaining power, they are valuable. Thus, rather than viewing bargaining power as the source of profit appropriation, the profits given up by weaker firms could be viewed as the market price for accessing stronger firms' valuable and scarce resources (Cox, 2001). Some effort is needed to clarify the degree to which a resource's value and its ability to confer bargaining power are distinct. Such an effort will necessarily address the efficiency of markets. Taking the Vlasic pickle example, the question is whether Vlasic offered nothing of value or whether Vlasic created value, but Wal-Mart used its market power to extract it all. The former assumes the market is efficiently delivering profits to those whose resources create value, whereas the latter assumes that a market inefficiency (i.e., power) keeps firms from claiming profits they generate.

A second question raised by our analysis pertains to how the benefits of SCM shift. We have suggested that weaker firms can build switching costs and concomitant bargaining power over time. If so, power imbalances should lessen as supply chain membership length

increases. Changes in bargaining power create instability in cooperative relationships (Inkpen and Beamish, 1997). Thus, an alternative explanation for forbearance might be that stronger firms attempt to maintain stability in anticipation of bargaining power shifts. However, if weaker firms are unable to establish some power, the implications of a long-term power imbalance remain unexplored. Only about one-half of inter-firm cooperative arrangements succeed (Barringer and Harrison, 2000) and one reason they fail is due to power imbalances (Lambert et al., 1999). Thus, it is possible that persistent tension among chain members might jeopardize even those SCM gains that require little coordination.

A third issue that warrants attention is the relationship between available gains from SCM and task interdependence. We have argued that stronger firms forbear their use of bargaining power to attain the type of coordination needed for a given type of task interdependence. In doing so, we have suggested that the amount of SCM gains that can be created grows with task interdependence. In pooled interdependent tasks coordinated by standardization, SCM gains appear mainly by reducing inventory, order processing, and distribution costs (Handfield and Nichols, 2002). As task interdependence moves from pooled to sequential to reciprocal, however, greater value creation is possible because there are more opportunities for members to actively coordinate to improve costs, quality, and the innovativeness of the supply chain's final products or services (Elmuti, 2002; Tan, 2002). Thus, future research might benefit from further exploring the relationship between task interdependence and available gains from SCM.

7. Conclusion

As SCM becomes increasingly important to firms competing in today's global economy, the need to understand how supply chains create and distribute value has increased (Ketchen and Giunipero, 2004). Much of the current literature is based on the normative premise that SCM implementation creates a rising tide that lifts all boats. However, resource dependence theory suggests that important differences in bargaining power exist among supply chain members. Building on Thompson's (1967) description of pooled, sequential, and reciprocal task interdependence, we propose that stronger chain members use their bargaining power when task interdependence is low, but forbear its use when task interdependence is high. Our hope is that knowledge about the presence

and appropriate use of bargaining power will not only help weaker firms develop realistic expectations about the benefits of SCM, but help stronger and weaker firms alike improve their performance over the long run.

References

Aldrich, H., Auster, E., 1986. Even dwarfs started small: liabilities of age and size and their strategic implications. In: Staw, B., Cummings, L. (Eds.), Research on Organizational Behavior. JAI Press, Greenwich, CT, pp. 165–198.

Baker, W., 1990. Market networks and corporate behavior. American Journal of Sociology 96, 589–625.

Barnard, C., 1938. The Functions of the Executive. Harvard University Press, Cambridge, MA.

Barringer, B., Harrison, J., 2000. Walking a tightrope: creating value through interorganizational relationships. Journal of Management 26 (3), 367–403.

Beall, S., Carter, C., Carter, P., Germer, T., Hendrick, T., Jap, S., Kaufmann, L., Maciejewski, D., Monczka, R., 2003. The Role of Reverse Auctions in Strategic Sourcing. CAPS Research.

Benton, W., Maloni, M., 2005. The influence of power driven buyer/seller relationships on supply chain satisfaction. Journal of Operations Management 23, 1–22.

Campbell, A., 1998. Cooperation in international value chains: comparing an exporter's supplier versus customer relationships. Journal of Business and Industrial Marketing 13, 22–39.

Combs, J., Ketchen, D., 1999. Explaining interfirm cooperation and performance: toward a reconciliation of predictions from the resource-based view and organizational economics. Strategic Management Journal 20, 867–888.

Cox, A., 2001. Understanding buyer and supplier power: a framework for procurement and supply competence. Journal of Supply Chain Management 37, 8–15.

Das, T., Teng, B., 2000. Instabilities of strategic alliances: an internal tensions perspective. Organization Science 11, 77–101.

DiMaggio, P., Powell, W., 1983. The iron cage revisited: institutionalized isomorphism and collective rationality in organizational fields. American Sociological Review 48, 147–160.

Dyer, J., 1996. Specialized supplier networks as a source of competitive advantage: evidence from the auto industry. Strategic Management Journal 17, 271–291.

Elmuti, D., 2002. The perceived impact of supply chain management on organizational effectiveness. Journal of Supply Chain Management 38 (3), 49–57.

Emerson, R., 1962. Power-dependence relations. American Sociological Review 27, 31–41.

Fishman, C., 2003. The Wal-Mart you don't know. Fast Company 77, 68.

Frazier, G., Summers, J., 1986. Perceptions of interfirm power and its use within a franchise channel of distribution. Journal of Marketing Research 23 (2), 169–176.

Frohlich, M., Westbrook, R., 2001. Arcs of integration: an international study of supply chain strategies. Journal of Operations Management 19 (2), 185–200.

Gaski, J., 1984. The theory of power and conflict in channels of distribution. Journal of Marketing 48 (3), 9–29.

Gomes-Casseres, B., 1997. Alliance strategies of small firms. Small Business Economics 1, 33–44.

Gomes-Casseres, B., 2005. How alliances shape competition. In: Shenkar, O., Reuer, J. (Eds.), Handbook of Strategic Alliances. Sage, Newbury Park, CA, pp. 39–54.

Gulati, R., Singh, H., 1998. The architecture of cooperation: managing coordination costs and appropriation concerns in strategic alliances. Administrative Science Quarterly 43, 781–794.

Gulati, R., Lawrence, P., Puranam, P., 2005. Adapting in vertical relationships: beyond incentive conflict. Strategic Management Journal 26 (5), 415–440.

Gulati, R., Nohria, N., Zaheer, A., 2000. Strategic networks. Strategic Management Journal 21, 203–215.

Hamel, G., 1991. Competition for competence and inter-partner learning within international strategic alliances. Strategic Management Journal 12, 83–103.

Handfield, R., 1994. U.S. global sourcing: patterns of development. International Journal of Operations and Production Management 14 (6), 40–51.

Handfield, R., Nichols, E., 2002. Supply Chain Redesign. Prentice Hall, Upper Saddle River, NJ.

Hannan, M., Freeman, J., 1977. The population ecology of organizations. American Journal of Sociology 83, 929–984.

Haveman, H., 1992. Between a rock and a hard place: organizational change and performance under conditions of fundamental environmental transformation. Administrative Science Quarterly 37 (1), 48–75.

Hicks, J.R., 1932. The Theory of Wages. Macmilan Press, London, UK.

Hill, C., Scudder, G., 2002. The use of electronic data interchange for supply chain coordination in the food industry. Journal of Operations Management 20 (4), 373–387.

Hoopes, D., Madsen, T., Walker, G., 2003. Guest editors' introduction to the special issue: why is there a resource-based view? Toward a theory of competitive heterogeneity. Strategic Management Journal 24, 889–902.

Hoy, F., 1994. The dark side of franchising. International Small Business Journal 12, 26–38.

Hughes, J., 2005. What is Supplier Relationship Management and Why Does it Matter. White Paper. Vantage Partners (http://www.vantagepartners.com).

Hult, G.T.M., Hurley, R., Giunipero, L., Nichols, E., 2000. Organizational learning in global purchasing: a model and test of internal users and corporate buyers. Decision Sciences 31 (2), 293–325.

Hult, G.T.M., Ketchen, D., Nichols, E., 2002. An examination of cultural competitiveness and order fulfillment cycle time within supply chains. Academy of Management Journal 45 (3), 577–586.

Hunt, S., Nevin, J., 1974. Power in a channel of distribution: sources and consequences. Journal of Marketing Research 11, 186–193.

Inkpen, A., Beamish, P., 1997. Knowledge, bargaining power, and the instability of joint ventures. Academy of Management Review 22, 177–202.

Kamath, R., Liker, J., 1994. A second look at Japanese product development. Harvard Business Review 72, 154–173.

Ketchen, D., Giunipero, L., 2004. The intersection of strategic management and supply chain management. Industrial Marketing Management 33 (1), 51–56.

Konrad, R., 2000. Old and New Economies Clash in Auto Industry Marketplace. CNET News.

Kothandaraman, P., Wilson, D., 2001. The future of competition: value creating networks. Industrial Marketing Management 30, 379–389.

Kumar, K., van Dissel, H., 1996. Sustainable coollaboration: managing conflict and cooperation in interorganizational systems. MIS Quarterly 20 (3), 279–300.

Lambert, D., Emmelhainz, M., Gardner, J., 1999. Building successful logistics partnerships. Journal of Business Logistics 20 (1), 165–181.

Lusch, R., 1976. Source of power: their impact on intrachannel conflict. Journal of Marketing Research 13 (4), 382–390.

Mabert, V., Venkataramanan, M., 1998. Special research focus on supply chain linkages: challenges for design and management in the 21st century. Decision Sciences 29, 537–552.

Magretta, J., 1998. The power of virtual integration. An interview with Michael Dell. Harvard Business Review 76, 73–84.

Morgan, J., Monczka, R., 1995. Alliances for new products. Purchasing 18 (1), 103–109.

Mowery, D., Oxley, J., Silverman, B., 1996. Strategic alliances and interfirm knowledge transfer. Strategic Management Journal 17, 77–91.

Office Max Incorporated, 2006. http://www.officemax.com. Accessed April, 2006.

Pfeffer, J., 1981. Power in Organizations. Pitman, Marshfield, MA.

Pfeffer, J., Salancik, G., 1978. The External Control of Organizations: A Resource Dependence Perspective. Harper and Row, New York.

Porter, M.E., 1980. Competitive Strategy. Free Press, New York.

Powell, W., Koput, K., Smith-Doerr, L., 1996. Interorganizational coollaboration and the locus of innovation: networks of learning in biotechnology. Administrative Science Quarterly 41, 116–145.

Primo, M., Amundson, S., 2002. An exploratory study of the effects of supplier relationships on new product development outcomes. Journal of Operations Management 20 (1), 33–52.

Quinn, F.J., 1997. What's the buzz? Logistics Management 36 (2), 43–46.

Scott, W.R., 1998. Organizations: Rational, Natural, and Open Systems. Prentice Hall, Upper Saddle River, NJ.

Smeltzer, L., Carr, A., 2002. Electronic reverse auctions: promises, risks, and conditions for success. Industrial Marketing Management 45, 47–52.

Stratman, J., Roth, A., Gilland, W., 2004. The deployment of temporary production workers in assembly operations: a case study of the hidden costs of learning and forgetting. Journal of Operations Management 21 (6), 689–707.

Tan, K., 2002. Supply chain management: practices, concerns, and performance issues. Journal of Supply Chain Management 38 (1), 42–53.

Thompson, J.D., 1967. Organizations in Action. McGraw-Hill, New York.

Vickery, S., Calantone, R., Droge, C., 1999. Supply chain flexibility: an empirical study. Journal of Supply Chain Management 35, 16–24.

Vickery, S., Jayaram, J., Droge, C., Calantone, R., 2003. The effects of integrative supply chain strategy on customer service and financial performance: an analysis of direct versus indirect relationships. Journal of Operations Management 21 (5), 523–539.

Wiewel, W., Hunter, A., 1985. The interorganizational network as a resource: a comparative case study on organizational genesis. Administrative Science Quarterly 30, 482–496.

Wilkinson, I., 1981. Power, conflict, and satisfaction in distribution channels—an empirical study. International Journal of Physical Distribution and Materials Management 11, 20–30.

Wisner, J., Tan, K., 2000. Supply chain management and its impact on purchasing. Journal of Supply Chain Management 36 (4), 33–42.