

Int. Studies of Mgt. & Org., Vol. 27, No. 4, Winter 1997–98, pp. 104–126.
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0020–8825 / 1998 \$9.50 + 0.00.

PIERRE DUSSAUGE AND BERNARD GARRETTE

Anticipating the Evolutions and Outcomes of Strategic Alliances Between Rival Firms

Being able to anticipate the likelihood of success of collaborative projects long before any joint activity is actually carried out is increasingly becoming a critical capability for many senior managers. Indeed, only very few firms today can afford to develop all the new technologies they need on their own, or can market their products globally without the assistance of partners. Even such industrial giants as Toyota, Philips, Daimler-Benz, IBM, General Electric, and Alcatel have in recent years chosen to enter into strategic alliances to expand their businesses.

Being able to predict the success or failure of an alliance is particularly difficult, however, and reliable tools or methods for doing so have yet to be developed. In addition, the very notion of success is, in the case of alliances, quite ambiguous: It is usually assessed on the basis of the performance of the joint project or venture, but very rarely takes into account the impact collaboration may have had on the situation of the various partner firms.

For instance, the alliance formed in the late 1970s by Rover and Honda was probably seen as very successful by the marketing managers of both companies, given the large market share achieved by the

Pierre Dussauge and Bernard Garrette are professors of strategic management at the HEC School of Management, 78351 Jouy-en-Josas, France. The authors are grateful to Anna Grandori, Georges Blanc, and Mark Ebers who organized the conference in which this paper was first discussed, and to J. Carlos Jarillo who helped and encouraged them in the revision process. Their research project was funded by Fondation HEC, whose support they gratefully acknowledge.

jointly produced cars that were actually sold under both brand names. However, the senior management of both corporations should have been—and maybe was—concerned about the long-term consequences of the partnership. Was Rover at risk of eventually becoming a mere subcontractor of Honda? Was Honda right to base its market penetration strategy in Europe primarily on its British partner, with most Hondas sold in Europe assembled in the United Kingdom? All in all, even though the automobiles produced in collaboration by Rover and Honda were commercially very successful, it is doubtful whether Rover sees its recent acquisition by BMW as a positive outcome of the alliance. As for Honda, they may now consider that penetrating the European market on their own would have been a better strategy. More generally, the two above-mentioned levels of concern can be found in most interfirm collaborations. The operational managers of an alliance assess its success based on short- or medium-term indicators such as the technical quality of the joint product, the impact of cooperation on costs, profits made by the joint venture, and the quality of collaboration between the teams from each partner firm. Senior managers at the corporate level, on the other hand, should look beyond such short-term results of cooperation and try to anticipate the longer-term impact an alliance may have on the company's competitive position. In academic research, the latter level of analysis has received less attention than the former (Hamel, 1991; Hagedoorn and Schakenraad, 1994; Mitchell and Singh, 1996).

This is why we have chosen to examine the issue of alliance success and failure, based on the way in which the relationship between the partner firms evolves over time and on the strategic consequences that cooperation has for each partner, deliberately setting aside the question of the success or failure of the joint endeavor. We have also tried to evaluate the impact of alliances on the intensity of competition in those industries where they are established.

The analyses and conclusions drawn up here are derived from a study of a sample of about 200 alliances set up in a wide variety of industries, and on a worldwide basis.

Defining strategic alliances

This paper focuses on strategic alliances set up by rival firms. These alliances are defined as collaborative projects implemented by firms

operating in the same industry. Although cooperating with one another, the partner firms in such alliances retain their strategic autonomy. This definition therefore excludes mergers and acquisitions that lead to loss of autonomy by at least one partner. It also excludes vertical partnerships set up by suppliers and buyers. This definition of alliances is consistent with that of many other authors on the subject (Urban and Vendemini, 1992; Lorange and Roos, 1992; Bleeke and Ernst, 1993; Faulkner, 1995; Yoshino and Rangan, 1995). However, most studies on interfirm cooperation concentrate only on equity joint ventures (Killing, 1983; Harrigan, 1985; Kogut, 1988a; Hennart, 1988), leaving out collaborative projects that have not led to the formation of a separate legal entity and thus ignoring a significant part of the entire population of alliances. We have chosen not to restrict our analysis to equity joint ventures and have considered all alliances, no matter what organizational structure was created to manage collaboration.

However, we have limited our research to alliances between competitors. Indeed, in such alliances, the partner firms inevitably have conflicting objectives and interests, and must nevertheless be able to collaborate well enough to carry out their joint activities effectively. This highly ambiguous nature of alliances between rival firms has led some analysts to view them as a means for one partner to strengthen its position at the expense of the other. Hence the metaphor of the "Trojan horse," which is often used to describe alliances between competitors. It should be noted that, far from being a rarely encountered oddity, alliances between rival firms account, according to available estimates, for about 70 percent of all interfirm collaborations (Hergert and Morris, 1987).

Prior research on the success of alliances

The issue of alliance success has been raised frequently in previous work (Harrigan, 1988; Killing, 1983, 1988; Geringer and Hébert, 1989; Koh and Venkatraman, 1991; Dussauge and Garrette, 1995). However, most of these studies only examine the case of equity joint ventures and ignore those alliances that have not led to the formation of a separate jointly owned and controlled subsidiary. Such studies have generally approached the question of joint-venture success by linking levels of JV performance, however defined and measured, to particular explanatory factors describing given attributes of the observed alliances.

In a large sample study, Harrigan (1988) examined the influence of

partner asymmetries on joint-venture (JV) success. Performance was measured on the basis of JV duration, survival, and managers' assessments. The results of this study suggested that alliances between similar firms tend to be more successful than asymmetrical partnerships. In his research on joint ventures in developed countries, Killing (1982, 1983) compared JVs in which one partner had a dominant position with those where all partners had an equal influence. He concluded that dominated joint ventures were more successful than balanced partnerships. On the same subject, Beamish (1984, 1985) examined joint ventures set up by multinational companies in less-developed countries and found that performance was favorably affected by shared or local-dominant control. In these studies, performance was assessed primarily on the basis of manager opinions.

Kogut (1988b) challenged most of the above-cited results in a study that used joint-venture stability to approach the issue of performance. The study tested the influence of partner-firm nationality, industry setting, functional scope (R&D, manufacturing, marketing), distribution of ownership and control, and relative size of parents on the stability of joint ventures and found joint ventures to be more unstable in highly concentrated industries and when the JVs included marketing and after-sales services.

Using an event-study perspective, several studies approached joint-venture performance by examining the stock market reaction to the announcement of JV formation. McConnell and Nantell (1985) as well as Woolridge and Snow (1990) showed that joint venture formation is value-creating for the parent companies. Koh and Venkatraman (1991), using a similar approach, confirmed these results and demonstrated that joint ventures associating partner firms with related businesses tended to outperform joint ventures uniting unrelated parents. This stream of research has been complemented recently by Mitchell and Singh (1996), who examined the survival of firms implementing alliance strategies.

In yet another vein, inductive studies, building on the in-depth knowledge of a few cases, have examined the outcome of "strategic alliances" by assessing their influence on the long-term strategic position of the parent companies rather than by evaluating the performance of the joint venture itself. All these studies have insisted on the importance of technology and capability transfers that occur between the allied firms (Berg and Friedman, 1978; Berg, Duncan, and Friedman, 1982; Doz, 1988; Hamel, Doz, and Prahalad, 1989; Hamel, 1991).

Overall, studies that have examined the issue of alliance performance can be classified in three major categories: (1) statistical studies that try to assess the performance of the joint venture itself, (2) event studies that use stock market fluctuations as an indicator of the expected impact an alliance will have on the partner firms, and (3) inductive studies extrapolating from a small number of observations, which examine the long-term strategic consequences of alliances for the partner firms.

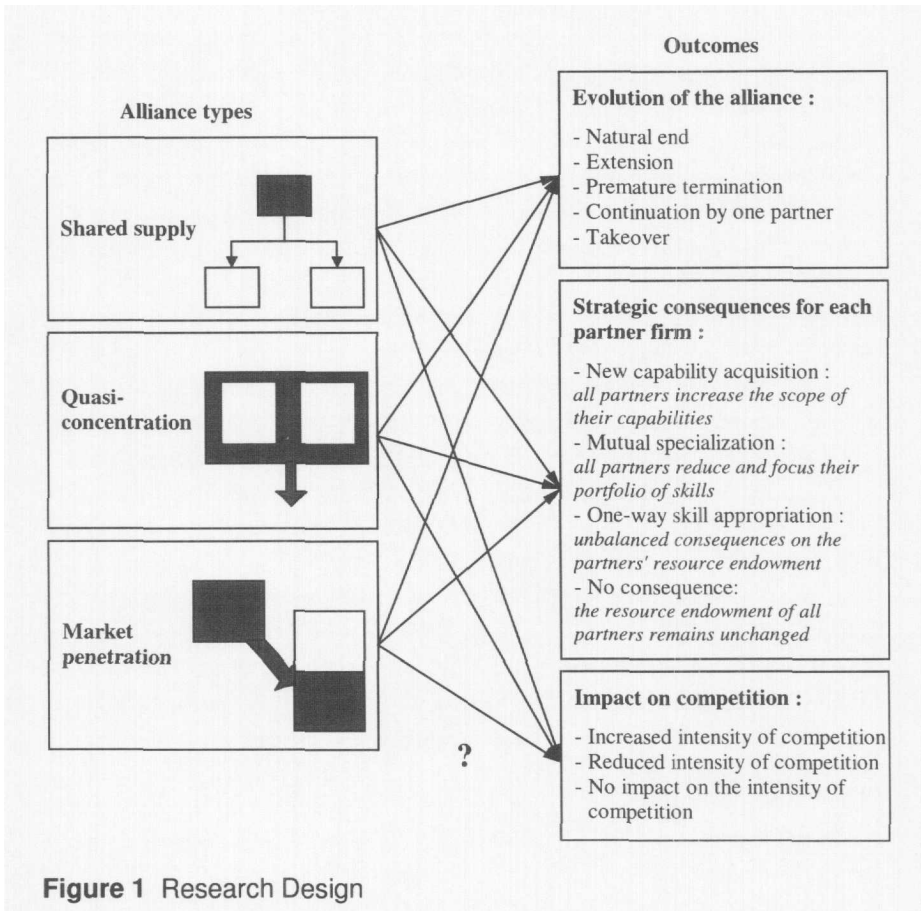
The research presented here has tried to overcome the major limitations of each of these three types of studies: (1) as mentioned earlier, we focus on analyzing the evolution of the relationship between the partner firms over time and on evaluating the impact of the alliance on each partner, rather than on measuring the performance of the joint project itself; (2) our conclusions are drawn from the statistical analysis of a large sample; and (3) we have based these conclusions on the observation of the actual outcomes of the examined alliances, rather than on anticipated outcomes or on subjective assessments made by managers involved in the alliances.

Research design and methodology

The overall design of our research is depicted in Figure 1. Our central hypothesis is that the evolution and outcome of strategic alliances between rival firms is contingent on the type of alliance the partner firms set up when they initiated their collaboration.

The typology of alliances between rival firms

The typology of alliances on which we based our research was presented in previously published work (Dussauge and Garrette, 1991; Garrette and Dussauge, 1995a). This typology was produced through the statistical analysis of a set of variables describing the main attributes of the 197 alliances in our sample. These attributes—which are often cited in the literature on the subject as having an influence on the evolution of collaboration, describe the alliance as it was originally set up by the partner firms—include the legal structure set up to manage the alliance, the functions covered by the collaborative agreement (R&D, manufacturing, marketing), the relative competitive positions of the partners, the organization of tasks, the geographic scope of the



joint activity, and the similar or different nature of the respective contributions of the two partners.

The alliances in the sample were clustered in such a way that cases with very similar attributes were allocated to the same group of alliances, while very different cases were allocated to separate groups. The resulting taxonomy reveals the existence of three very different types of alliances between rival firms.

Shared-supply alliances

Shared-supply alliances associate firms that choose to collaborate in order to achieve greater economies of scale on a particular component or on one stage in the production process. These alliances, thus, are

either R&D agreements or agreements for the development and manufacture of common parts and components that are then used separately by the various partners in their own product lines. At the final product stage, the partner firms compete with separate offerings. For example, DuPont de Nemours and Rhône-Poulenc have formed a joint venture, called Butachimie, that produces an intermediate chemical used in the production of nylon. Both partners procure this chemical from the JV at a lower cost—thanks to increased economies of scale—and use it to produce nylon separately in their respective plants. DuPont nylon and Rhône-Poulenc nylon then compete on the market in exactly the same way as if they had not been produced from the same raw material. In the automobile industry, Renault and Volkswagen produce automatic gearboxes together and then use them in their respective product lines.

These shared-supply alliances tend to associate partner firms that are quite similar in terms of size, geographic presence, and competitive position. When they are formed to share R&D activities, they do not lead to the creation of a separate entity because a simple coordination of the research work carried out in each partner's research facilities is sufficient to produce the desired benefits. However, when shared-supply alliances involve manufacturing, the common components must usually be produced in a single jointly owned facility in order to achieve increased economies of scale.

Shared-supply alliances are common in the automobile and computer industries and are often intra-North American or intra-European (i.e., formed by several U.S. or European firms).

Quasi-concentration alliances

Quasi-concentration alliances associate partner firms that contribute similar assets and capabilities in order to develop, manufacture, and market a common product. As in the case of shared-supply alliances, the main objective of quasi-concentration alliances is to achieve greater economies of scale, but, unlike in shared-supply alliances, a single product (or product line) common to all partners is produced and marketed. For example, in the case of the supersonic airliner Concorde, which was jointly designed, manufactured, and marketed by Aérospatiale and British Aerospace, the planes rolling off the assembly lines in France and in Britain were identical and could therefore not compete for the same markets without entering a mutually detrimental price war.

The scope of quasi-concentration alliances usually extends to all the main functions of R&D and manufacturing, as well as marketing. For R&D and manufacturing, the workload is often divided up among the partner firms. In the case of Airbus, for example, the cockpit is designed and built by Aérospatiale, while British Aerospace makes the wings, and DASA (the German partner) the fuselage.

Quasi-concentration alliances are found mainly in the aerospace and defense industries, where they account for about 90 percent of all alliances (Dussauge and Garrette, 1993). Most of these alliances are both intra-European and international, since they are formed by firms originating from different European countries.

Market-penetration alliances

Market-penetration alliances unite partner firms that contribute very different assets and skills to the joint project; such alliances are therefore set up to take advantage of the complementarity between the partners. They are generally aimed at marketing an existing product, previously developed by one partner, in new geographic markets in which the other partner firm has a privileged access. For example, Ford markets Mazda cars in the United States, while Chrysler relabels and sells Mitsubishi automobiles through its dealer network, and General Motors markets cars designed by both Suzuki and Toyota under its own brands. In Europe, Renault markets the Espace minivan under its brand, even though the vehicle was designed and is manufactured by a separate company, Matra. In this last example, the complementarity existing between the partner firms is obvious: Matra has no dealer network of its own and therefore cannot market or service the Espace, while Renault lacked a minivan design and, more important, the plastic-body technology that is critical for the product's economic viability.

Market-penetration alliances often associate partner firms with very different competitive positions. They tend to be purely commercial agreements but can, more rarely, entail some manufacturing. For example, the goal of the Chrysler-Mitsubishi cooperation was initially for Chrysler to import Mitsubishi cars from Japan and sell them under its own brands in the United States. It was only later, because of unforeseen changes in the economic environment, that a jointly owned facility was set up to assemble cars in the United States. No joint R&D was ever carried out in this alliance since all Mitsubishi cars sold by

Chrysler in North America had been designed previously by the Japanese partner, outside the scope of the alliance.

Market-penetration alliances are common in the automobile and telecommunications industries. In telecommunications, most major competitors have entered into such collaborative ventures (Garrette and Quélin, 1994): AT&T cooperated with Philips to enter the European market, while Ericsson teamed up with Matra's telecom division in order to penetrate the French market. More generally, market-penetration alliances often associate Japanese and U.S. firms, U.S. and European firms, or Japanese and European firms.

The evolutions and outcomes of strategic alliances

The typology of alliances we have just presented is the independent variable in our study. The dependent variables, which are meant to describe the outcomes of alliances, are: (1) the evolution of the alliance over time, (2) the strategic consequences of the alliance for each partner firm, and (3) the impact of the alliance on the intensity of competition.

The evolution of the alliance over time

Some authors have described alliances as a transitional phase before the outright acquisition of one of the partners by the other (Bleeke and Ernst, 1995). Other authors see alliances as a very unstable and temporary form of economic organization (Naulleau, 1993). Finally, another approach has been to view alliances as elementary linkages within the scope of broader and fairly stable cooperative networks (Lorenzoni and Ornati, 1988; Jarillo, 1988, 1993; Håkansson and Snehota, 1995). The variable used to describe the way in which alliances evolve over time is meant to shed some light on this issue. We have identified five major evolutions leading to a re-organization or the termination of the alliance:

1. The alliance comes to a "natural end" once the objectives for which it was created have been achieved. For example, Dassault and British Aerospace, which had jointly designed and manufactured the Jaguar fighter aircraft, terminated their alliance once the program was over and no more planes were being ordered.
2. The alliance is extended or expanded: The partner firms choose to prolong their collaboration over successive generations of the

joint product or expand it to new products or projects. Thus, Renault and Matra collaborated on three successive generations of the Espace minivan, while the Airbus cooperation has been expanded to include a complete family of airplanes.

3. Premature termination: The partner firms break up the alliance before the initial goals have been achieved. Matra-Harris and Intel, for example, broke up their Cimatel alliance in 1987, before any of the VLSI chips it was meant to produce were actually manufactured.
4. The joint project is continued by one partner alone, while the other partner pulls out before any tangible results have been achieved. Thus, Fairchild and Saab were designing a commuter aircraft (the SF-340) together when Fairchild, who was having problems of its own, decided to drop the project, which was continued by Saab (who renamed it the Saab 340).
5. Takeover of one partner firm by the other: The alliance comes to an end when one of the allies is acquired by the other. ICL, the British computer giant, was taken over by Fujitsu in 1990, after almost ten years of collaboration in the area of mainframe computers.

The strategic consequences for each partner firm

One of the most common interpretations of alliances between competing firms analyzes them as a means for one of the allies to capture skills and capabilities from the other partner firm, thus strengthening its own position and weakening the other's (Hamel, Doz, and Prahalad, 1989; Hamel, 1991; Bleeke and Ernst, 1993; Ramanantsoa and De Clercq, 1993). Such skill transfers are very difficult to observe directly, but it can be assumed that a firm that has been able to appropriate valuable capabilities from its partner will use these capabilities to introduce, on its own, products it collaborated to produce in the past, or will use them to enter its partner's home market on its own.

We have thus chosen to evaluate the strategic consequences of alliances on the basis of the changes produced in the skills and capabilities endowment of each partner firm. This was operationalized with a variable that describes how the scope of each partner's activities has changed over the duration of the alliance. The scope of a partner's activities was defined on the basis of the product lines it produced on its own and of the geographic markets in which it operated autonomously.

mously. We therefore observed whether a partner had expanded or shrunk the product lines it manufactured and marketed on its own while the alliance was being implemented; in a similar way, we examined whether each partner had entered new markets or exited existing markets during the same time frame. The activities we considered for this variable are those in which a firm operated autonomously, and we did not take into account activities that were carried out in cooperation. The basic assumption underlying the design of this variable is that new skills, capabilities, or resources acquired through an alliance will lead a firm to expand the scope of its business or its areas of operation. Conversely, the loss of skills or capabilities induced by the alliance will force a firm to reduce the scope of its business or exit particular geographic markets.

This strategic-consequences variable can take one of the following four categorical values:

1. *New capability acquisition*: When the alliance is over, all partners have expanded the scope of their resource portfolio, and they have developed new product lines or have entered new markets on their own. For example, Hitachi and Fujitsu formed an alliance in 1971, under the auspices of MITI, in order to develop a Japan-based mainframe computer business. The alliance was terminated in 1991 when both partners each had a market share in this business in the Japanese market that was larger than that of IBM. Cooperation thus helped both Hitachi and Fujitsu become credible competitors in the mainframe segment.
2. *Mutual specialization*: When the alliance is over, all partner firms have reduced the scope of their resource portfolio and no longer produce certain product lines on their own or no longer operate autonomously in certain markets. After having collaborated to produce the Tiger military helicopter, Aérospatiale and DASA decided to merge their helicopter divisions, creating a jointly owned subsidiary called Eurocopter. Hence, neither of the partners can continue producing helicopters on its own.
3. *One-way skill appropriation*: When the alliance is over, one of the partner firms has captured new skills and capabilities and has expanded its product line or has entered into new markets, but the other partner has not gained the same benefits from the alliance. By the time Chrysler and Mitsubishi terminated their Diamond

Star alliance in 1991, with Mitsubishi taking over the jointly owned automobile assembly plant, the Japanese partner had been able to develop an extensive distribution network in North America and could operate in that market alone, while Chrysler still relied on Mitsubishi to manufacture the small cars it was selling.

4. *No consequence*: When the alliance is over, the resource endowment of each partner remains unchanged, and none of the firms has either expanded or reduced the scope of its business.

The impact on competition

Several authors have pointed out that alliances between rival firms can have a strong anticompetitive impact (Pfeffer and Nowak, 1976; Jorde and Teece, 1989, 1990). Designed to capture the impact of alliances on the intensity of competition, our third dependent variable describes the way in which alliances affect the diversity of products competing in a particular market. This variable can assume the following categorical values:

1. *Increased diversity of competing products*: The number of competing products offered on the market by the partner firms has increased as a result of the alliance. The 1979 alliance formed by Ford and Mazda ultimately resulted in a greater diversity of products being made available to U.S. consumers, since Mazda now markets automobiles in North America under its own brand, with no help from Ford; and those cars even compete in many cases with Ford models.
2. *Decreased diversity of competing products*: For example, the Airbus alliance has limited competition in commercial aircraft to a three-way struggle between Boeing, McDonnell-Douglas, and Airbus; before the Airbus consortium was formed, the Airbus partners each produced their own aircraft.
3. *No impact on the diversity of competing products*: When the alliance is over, the number of competing products available on the market remains unchanged. The Philips-Whirlpool alliance in appliances, for example, ended with Philips transferring its entire appliance division to Whirlpool and withdrawing from the business entirely, while Whirlpool was able to enter the European market. For customers, the only change produced by the alliance was that former Philips products had been rebranded as Whirl-

pool products, but there were not more competing products to choose from.

Table 1 presents the distribution of our sample of alliances on the three dependent variables described above.

We statistically tested the link between the type of an alliance (shared integration, quasi-concentration, or market penetration) and its outcomes (evolution of the alliance, strategic consequences, impact on competition). Alliances from our sample were allocated to one or the other of the types using an agglomerative hierarchical clustering method, as described in previous publications (Dussauge and Garrette, 1991; Garrette and Dussauge, 1995a). The outcomes of alliances were observed for the same sample, which comprised 197 alliances set up by rival firms.

The sample included different forms of collaboration between firms operating in the same industry, provided this collaboration actually led to the implementation of some tangible project. It covered both alliances that gave rise to the formation of a separate-equity joint venture and collaborations based only on a contractual agreement. The data were gathered primarily from secondary sources (industry surveys, company profiles, annual reports, etc.), but these sources were often validated or complemented by interviews with industry analysts or company executives. The alliances in the sample were formed in manufacturing industries and united companies originating from one of the three following geographic areas: North America, Western Europe, and Japan; while alliances with companies from less developed countries were not considered. The sample was stratified by industries and reproduces the distribution reported in previous studies on the subject (Hergert and Morris, 1987; Ghemawat, Porter, and Rawlinson, 1986). The four industries most frequently encountered were automotive, aerospace, computers, and telecommunications.

The existence of a link between alliance types and outcomes was verified using a chi-square test.

Findings

Tables 2, 3, and 4 present the results of the tests we conducted. Table 2 reveals that the two most frequent outcomes of alliances between rival firms were either an extension of the alliance (23 percent of all cases in the sample, i.e., 33 percent of the cases for which the outcome has

Table 1
The dependent variables describing the outcomes of alliances

	Number of cases	Percentage
The evolution of the alliance over time		
Ongoing alliances (right-censored cases)	61	31
Natural end	18	9
Extension	45	23
Premature termination	32	16
Continuation by one partner	27	14
Takeover	14	7
The strategic consequences for each partner firm		
Ongoing alliances (right-censored cases)	61	31
New capability acquisition	1	1
Mutual specialization	8	4
One-way skill appropriation	51	26
No consequence	76	38
The impact on competition		
Ongoing alliances (right-censored cases)	61	31
Increased intensity of competition	25	13
Reduced intensity of competition	23	12
No impact on the intensity of competition	88	44

been identified) or premature termination (16 percent of the sample, and 23 percent of the cases with an identified outcome). Strangely enough, the outcome that might *a priori* be expected to be the most likely—that is, a natural end of the alliance once the objectives have been achieved—is in fact quite rare (9 percent of all cases). Similarly, the most dramatic outcome on which many analysts tend to focus—takeover of one partner by the other—is found in only 7 percent of all cases. Table 2 also shows that there are significant differences between the three types of alliances, thereby confirming the relevance of the typology presented earlier as a useful tool for better anticipating the evolutions and outcomes of alliances.

Table 3 indicates that, for almost half of the cases for which the outcome was identified, alliances had significant strategic consequences for the partner firms involved. This confirms that analyzing the success of alliances only on the basis of the performance of the joint venture or project only addresses the issue in a very partial man-

Table 2
The evolution of alliances between rival firms

	Shared- supply alliances 30% of the sample	Quasi- concentration alliances 30% of the sample	Market- penetration alliances 40% of the sample	All alliances whole sample
Ongoing alliances	36%	29%	29%	31%
Natural end	14	12	4	9
Extension	7	34	26	23
Premature termination	28	8	14	16
Continuation by one partner	7	10	21	14
Takeover	8	7	6	7
Total	100%	100%	100%	100%
Chi-square test	Value	Degrees of freedom	Significance	
Pearson	28.34	10	0.002	
Likelihood ratio	30.54	10	0.001	

ner. It is interesting that only very few alliances (1 percent of the sample) result in new capability acquisition for all partner firms. Alliances that lead to one-way skill appropriation outcomes (i.e., unbalanced consequences for the partners' resource endowment) are, on the contrary, quite common (26 percent of all cases, i.e., 38 percent of the cases with identified outcomes). Once again, a chi-square test of the data in Table 3 demonstrates the existence of a significant relation between the type of alliance and the strategic consequences they have for the partner firms.

The data in Table 4 indicate that alliances between rival firms did affect the intensity of competition in the industries where they were formed in about 36 percent of the cases. Alliances that increase competition were slightly more numerous than alliances that decreased the intensity of competition. The linkage between the type of an alliance and its impact on competition is statistically significant.

Discussion of findings

The fact that the chi-square tests performed on the data from Tables 3, 4, and 5 yielded highly significant results confirms the relevance of the typology of alliances used in our analysis; it also demonstrates its

Table 3
The strategic consequences of alliances between rival firms

	Shared-supply alliances 30% of the sample	Quasi-concentration alliances 30% of the sample	Market penetration alliances 40% of the sample	All alliances whole sample
Ongoing alliances	36%	29%	29%	31%
New capability acquisition	0	2	0	1
Mutual specialization	2	12	0	4
One-way skill appropriation	10	15	47	26
No consequence	52	42	24	38
Total	100%	100%	100%	100%
Chi-square test	Value	Degrees of freedom	Significance	
Pearson	41.19	8	0.000	
Likelihood ratio	41.81	8	0.000	

power to predict the evolutions and outcomes of alliances as well as their consequences for the partner firms. Building on the results of our study, we can try to identify evolution patterns specific to each type of alliance.

The evolutions and outcomes of shared-supply alliances

Shared-supply alliances that associate very similar partners that carry out R&D together or jointly produce parts and components are terminated prematurely more often than other types of alliances. Even when these alliances continue operating until their objectives have been achieved, they are rarely extended. This results from the difficult management problems raised by shared-supply alliances: The increased economies of scale they generate cannot compensate, in many cases, for the added complexity and cost of jointly managing R&D projects or manufacturing facilities. Over time, the partners tend to diverge on the exact specifications of the parts and components to be produced jointly or on the R&D programs to be performed. Such differences may become insurmountable and lead to the sudden termination of all collaboration, or, in less dramatic cases, they make managers reluctant to extend cooperation beyond what was initially agreed.

Shared-supply alliances also appear generally to produce similar

Table 4
The impact of alliances on competition

	Shared-supply alliances 30% of the sample	Quasi-concentration alliances 30% of the sample	Market penetration alliances 40% of the sample	All alliances whole sample
Ongoing alliances	36%	29%	29%	31%
Increased competition	0	3	29	13
Reduced competition	9	22	6	12
No impact on competition	55	46	36	44
Total	100%	100%	100%	100%
Chi-square test	Value	Degrees of freedom	Significance	
Pearson	38.99	6	0.000	
Likelihood ratio	42.98	6	0.000	

results for all partners involved and very rarely have any significant strategic consequences. Thus, shared-supply alliances seem to be fairly unimportant ventures, with a limited scope and impact, that do not affect the long-term strategy of the participating firms.

It is therefore not surprising that shared-supply alliances had practically no impact on the intensity of competition in the industries where they were formed. Indeed, they did not lead to either an increase or a reduction in the number of firms competing in a market and they had no impact on the diversity of products offered to consumers. Shared-supply alliances can thus be described as "precompetitive," both from the point of view of their initial objectives and from that of the actual outcomes they produced.

The evolutions and outcomes of quasi-concentration alliances

Quasi-concentration alliances, which associate similar partner firms to develop, manufacture, and market a common product, are very rarely terminated before the project for which they were created has been completed. Moreover, such alliances tend to be fairly frequently extended by the partners for the implementation of new projects. This stability of quasi-concentration alliances is produced by a set of converging factors. In the first place, the investment required to develop,

manufacture, and market the common product is so high that, once a significant portion of the resources has been committed, it becomes a barrier to exit for all the partner firms. In addition, in most cases the alliance was formed because the partner firms lacked the resources needed to launch a similar product on their own. Under such circumstances, pulling out of the alliance or terminating it altogether would imply, for the partners, giving up any presence in the considered business or product line. For example, none of the partners in the Airbus consortium could continue operating in the commercial aircraft business on their own if they pulled out of the alliance. Finally, extending quasi-concentration alliances to subsequent products or new projects is encouraged by the fact that, over time, the partner firms learn to collaborate with one another more efficiently. Therefore, it becomes less difficult and less costly to cooperate with the same group of partners on each new project.

In the long run, however, such reiterated collaborations will induce an increasing specialization of the allied firms: Each partner will develop its skills and capabilities in those areas of the joint projects for which it is responsible (those sections of the product it designs and manufactures, customer groups it sells to, etc.), but will lose its skills in those areas allocated to other partner firms. This loss of capabilities implies that each partner firm will see its ability to compete autonomously decrease over time as cooperation continues. The partner firms thus tend to become increasingly interdependent. This is why it is in quasi-concentration alliances that the mutual specialization outcome is most often observed—that is, all partner firms see the scope of their resource portfolio reduced and no longer produce certain product lines on their own, or no longer operate autonomously in certain markets. Although mutual specialization may appear to create an undesirable loss of autonomy for each partner firm, it is often the price to pay for survival and renewed competitiveness in the industry. Such quasi-concentration alliances can thus be interpreted as a milder and less painful form of restructuring the industry than mergers, acquisitions, or outright competitor elimination.

As far as industry structure is concerned, quasi-concentration alliances tend to induce the formation of oligopolistic situations. Indeed, even though the apparent number of competitors operating in the industry may not have changed, the number of competing products available to consumers is reduced by collaboration because several of the

existing competitors produce only one product (or product line) together. In most cases, such oligopolies lead to reduced levels of competition although, in some industries, the quasi-concentration alliances create stronger competitors able to challenge the dominant position of industry leaders. For example, Airbus has become the only competitor capable of resisting Boeing's domination.

The evolutions and outcomes of market-penetration alliances

Market-penetration alliances, which are formed in order for one partner to market a product previously developed by the other, are also quite frequently extended beyond what was stipulated in the original agreement. However, unlike the other two types of alliances, market-penetration alliances often end with one partner taking over the joint business alone. For example, AT&T eventually took over the APT (AT&T Philips Telecommunications) joint venture it had created a few years earlier with Philips in order to market switching equipment in Europe that AT&T had originally developed for the North American market. Such an outcome, which is typical of market-penetration alliances, results from the fact that the complementarity that initially existed between the allies, and that justified the very formation of the alliance, had progressively disappeared. When one of the partners develops the capabilities that were originally contributed by the other partner, cooperation is no longer needed, and the joint activity can be taken over by one of the partners.

Unlike shared-supply or quasi-concentration alliances, market-penetration alliances often produce asymmetrical consequences for the partner firms: through the alliance, one of the firms captures new skills from its partner in such a way that it can expand the scope of its business, while the partner sees its position unchanged. Indeed, regardless of the fate of the joint project itself, one of the partners often manages after some time to develop a similar business on its own, side by side with the cooperative venture. For example, most Japanese automobile manufacturers that formed alliances with their American counterparts in order to market their cars in North America took advantage of these agreements to set up their own distribution networks and even, in some cases, their own manufacturing facilities.

Market-penetration alliances thus tend to have an impact on competition that is the opposite of quasi-concentration alliances. By easing

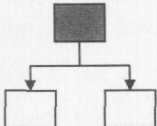
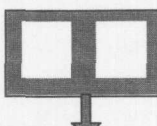
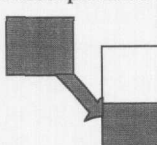
Alliance type	Evolution of the alliance	Strategic consequences for each partner firm	Impact on competition
Shared supply 	Natural end or Premature termination	No consequence	No impact on the intensity of competition
Quasi-concentration 	Extension	Mutual specialization	Reduced intensity of competition
Market penetration 	Extension or Continuation by one partner	One-way skill appropriation	Increased intensity of competition

Figure 2 The Evolutions and Outcomes of Strategic Alliances Between Competitors

the entry of new competitors into the market and by increasing the number of products made available to consumers, they tend to increase the intensity of competition. Market-penetration alliances are, because of their strategic consequences and their impact on competition, the only type of alliances between rival firms to which the “Trojan horse” metaphor actually applies.

Figure 2 summarizes our conclusions on the outcomes of alliances between rival firms by contrasting the evolutions, the strategic consequences, and the impact on competition of shared-supply, quasi-concentration, and market-penetration alliances.

Concluding remarks

Our findings must be interpreted with caution. Indeed, they contrast the evolutions and outcomes of different types of alliances, but they do not make it possible to compare the impact of alliances with the consequences of other strategic options. Thus, our data can help managers

anticipate the likely evolutions of alliances in which they may be engaging but will not allow them to figure out whether an alliance is the best possible move. This is why those outcomes that may appear detrimental to the firm (mutual specialization, one-way skill appropriation, or increased intensity of competition, to cite just a few) may nonetheless be more desirable than the consequences of avoiding alliances altogether. And correctly anticipating what to expect from a given alliance may make it possible for managers to minimize its undesired effects while taking best advantage of its positive consequences.

From a methodological point of view, the main limitation of our study is that, although it establishes the existence of a link between the typology of alliances and each set of outcomes, it does not actually demonstrate that a particular type of alliance leads to a specific outcome. To overcome this limitation, hypotheses on the particular evolution of each type of alliance should be formulated on the basis of our findings and tested one by one. Future research on this topic could also try to operationalize interpartner skill transfers more accurately. Indeed, changes in the scope of the partner firms' activities may not perfectly reflect changes in their resource endowment produced by alliances.

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