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Alliances and corporate governance ☆

Andriy Bodnaruk [a], Massimo Massa [b,c,*], Andrei Simonov [c,d,e]

[a] University of Notre Dame, USA
[b] Finance Department, INSEAD, Boulevard de Constance, 77305 Fontainebleau, France
[c] CEPR, United Kingdom
[d] Michigan State University, USA
[e] Gaidar Institute for Economic Policy, Moscow, Russia

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ABSTRACT

We study the link between a firm's quality of governance and its alliance activity. We consider alliances as a commitment technology that helps a company' Chief Executive Officer overcome agency problems that relate to the inability to ex ante motivate division managers. We show that well-governed firms are more likely to avail themselves of this technology to anticipate ex post commitment problems and resolve them. The role of governance is particularly important when the commitment problems are more acute, such as for significantly risky/long-horizon projects (''longshots'') or firms more prone to inefficient internal redistribution of resources (conglomerates), as well as in the absence of alternative disciplining devices (e.g., low product market competition). Governance also mitigates agency issues between alliance partners; dominant alliance partners agree to a more equal split of power with junior partners that are better governed. An ''experiment'' that induces cross-sectional variation in the cost of the alliance commitment technology provides evidence of a causal link between governance and alliances.

1. Introduction

The question of how firms determine their boundaries remains central in the economics of organization. Oftentimes, rather than execute a project internally, a firm acquires it from another firm or cooperates on a project by forming an alliance.[1] Why would some projects be conducted within a firm's boundaries while others involve several different firms?

To answer this question we must recognize that projects are not allocated exogenously across firms. In fact, the activities conducted between firms rather than within firms are endogenous outcomes that reflect how firms construct their boundaries. We focus on one factor affecting boundaries: firm governance. In particular, we ask whether well-governed firms, i.e., firms where managerial incentives and corporate actions are aligned well, construct their boundaries in a different way from poorly governed firms.

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* Corresponding author at: Finance Department, INSEAD, Boulevard de Constance, 77305 Fontainebleau, France. Tel.: +33 1 60724481; fax: +33 1 60724045.
E-mail address: massimo.massa@insead.edu (M. Massa).

[1] Between 1990 and 2007, 48,997 mergers and acquisitions (M&As) and 66,554 alliances were concluded in the US. The numbers are based on data reported by Securities Data Corporation Platinum ™ by Thomson Reuters.

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We address this question by looking at alliances. Because engaging in alliances is one way to manipulate firm boundaries, and well-governed companies are supposed to do this in an optimal way, we would expect variation in governance to be helpful in explaining alliance activity. We therefore investigate whether there is a link between the alliance activity of a firm and the quality of its corporate governance.

We adopt the view that alliances represent a form of "commitment technology" that can be utilized to address agency problems (Robinson, 2008). Multidivisional firms face problems in motivating division managers. Value-maximizing headquarters (HQ) would like to commit ex ante to provide ex post payments to division managers even if a project fails; however, this is not dynamically consistent. Once the profitability of a project is established, HQ has incentives to move resources ex post from low- to high-productivity projects, i.e., to engage in "winner-picking." Managers, aware that HQ will reallocate resources ex post, whatever their efforts, will shirk (Stein, 1997; Brusco and Panunzi, 2005; Robinson, 2008).

Engagement in alliances is a commitment technology available to HQ that addresses this problem. In projects undertaken within an alliance, HQ will be less able to reallocate resources ex post, engendering stronger managerial incentives ex ante. When the gains from reallocation of funds dominate the negative effects of reduced managerial incentives, the company will prefer the internal capital market solution. Conversely, when the costs of reduced managerial effort outweigh the gains from winner-picking, alliances are the optimal solutions to the commitment problem (e.g., Brusco and Panunzi, 2005).[2]

In the case of good governance, a value-maximizing CEO chooses the best strategy to execute a project. Sometimes this will be through alliance, sometimes not. The case is different, however, for bad-governance firms. For these firms, the constraints that alliances impose upon the CEO in terms of the ability to transfer resources freely will always be perceived as too binding. Therefore, even if such a commitment may be optimal for the firm, the CEO of a poorly governed firm will not engage in an alliance. He would either execute a project internally, but with little motivation for personnel and hence reduced chances of success, or would not undertake the project at all.

In other words, an alliance always involves a commitment that ties the hands of the CEO. A good-governance company will accept this commitment when it is the best strategy, while a bad-governance company will never do so. There should thus be a positive correlation between alliance creation and the quality of governance of a firm.

The role of governance should be more important when ex ante agency problems are more severe, i.e., when it is more difficult for the CEO to credibly commit long term. In these cases, the agency costs of managerial shirking are so high that alliances become the undisputed solution. Therefore, good-governance firms are even more likely to engage in alliances, while bad-governance firms will avoid them. Agency problems can be more acute either because some projects are particularly risky/long-horizon ("longshot" projects) or firms are more prone to inefficient internal redistribution of resources (e.g., conglomerate firms). We would also expect governance to play a larger role when firms are less subject to alternative (market) disciplining devices (e.g., firms operating in low-competition industries).

As the cases in which alliances are the optimal solutions expand, for example, because of a reduction in the opportunity costs of entering an alliance, the incentives to form an alliance should grow stronger. But again, this will apply only to good-governance firms; bad-governance firms will again avoid them. We thus expect to see a stronger link between governance and alliance creation when the opportunity costs of engaging in alliances decrease.

Finally, if alliances are initiated by good-governance firms, we expect these firms to be willing to share power in the alliance only with other equally good-governance firms. That is, a firm should be more willing to form an alliance with another firm that is more similar to it in size—and hence agree to a more equal division of power—if the governance of the potential partner is better. We therefore expect a positive relation between the relative quality of alliance members and their relative size.

We test these hypotheses by looking at alliances in the U.S. over 1990–2007. We start with the stylized fact that alliances create value (McConnell and Nantell, 1985; Chan, Kensinger, Keown, and Martin, 1997; Robinson, 2008). We then ask whether this value creation is related to the quality of firm governance. We show that firms with higher quality of governance are better able to reap the benefits of alliances. Firms with better governance (both internal and external) enter more alliances. Firms with a one standard deviation better internal governance (*G*-index) engage in three times more alliances per year than the sample mean. They also engage in alliances even more if good internal governance is coupled with good external governance, i.e., there is larger institutional ownership.

Moreover, alliances conducted by better-governed firms create more value. A one standard deviation better governance is related to a 73 basis points (bp) higher alliance announcement abnormal return (or 22.70% higher return relative to the sample mean of alliance announcements). Both internal and external governance contribute to enhance the return.

A portfolio strategy of buying good-governance firms and selling bad-governance ones (conditional on firms undertaking alliances) delivers an abnormal return of 0.57% (0.70%) per month, or 6.88% (8.71%) per year in the case of equal- (value-) weighted portfolios. Most of this abnormal positive performance comes from the outperformance of the good-governance firms rather than the weak performance of the poor-governance ones. All of these results are consistent with alliances being a good avenue of potential value creation, mostly exploited by good-governance firms.

[2] Alliance is not the only mechanism to overcome a commitment problem by HQ. A firm can use other alternatives, e.g., tracking stock; but, as long as these prove to be either more costly or less efficient or both, alliances may be a preferred solution.

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We then investigate whether good-governance firms use alliances to address their agency problems, especially when these are acute—i.e., winner-picking is non-contractible—as well as when there are no other disciplining devices. We consider two proxies for agency problems: conglomerate status, and "longshotness" of a project (Robinson, 2008), i.e., the riskiness of a potential project compared to the riskiness of the firm's main line of business. We also argue that in less competitive industries, managers enjoy the benefits of the "quiet life" and therefore are able to get away with suboptimal decisions. We expect good governance to play a greater role in these cases.

We find that governance has a stronger positive effect on alliance creation in conglomerate firms (55.12% stronger) and in longshot projects (23.22% stronger). The role of alliances is also related to the availability of other disciplining devices. As expected, the relation between governance and alliances is 68.17% stronger in concentrated industries where the disciplining role of product market competition is weaker.

Next, we use a natural "experiment" to help pin down the direction of causality. We consider situations where the opportunity costs of doing alliances differ for exogenous non-firm-specific reasons, and ask how the differential reaction to this variation is related to the quality of governance. To do so, we rely on the differences in corporate income reporting rules across U.S. states.

There are two types of corporate income reporting for the purpose of state-level taxation: combined reporting and separate reporting. Under separate reporting rules, a multistate corporate group can reduce its taxable income by isolating highly profitable parts of its business in an affiliate that is not subject to state taxes. Combined reporting rules, however, require firms to report the overall income of the corporate group generated in the United States and pay state corporate income tax on the basis of the proportion of income attributable to activity in the state. This reduces the benefits of non-arm's-length transactions between the subsidiaries of a firm located in different states and mitigates against the use of internal capital markets to reduce tax burden. This implies that combined reporting, by reducing the opportunity cost of "ring-fencing" the assets, makes it less costly to engage in alliances.

We expect that firms engage in more alliances in states with combined reporting and in these states there is a stronger link between governance and alliances. And indeed, we find that firms in states with combined reporting engage in between 26.5% and 51.4% more alliances. Even more important, the effect of governance on alliance formation is concentrated in combined reporting states. That is, better-governed firms react to the lower cost of alliances by initiating more alliances.

Good governance is also helpful in reducing agency issues between alliance partners. The better the governance of junior alliance partners, the larger they are relative to the dominant alliance member.

Overall, these results support the view that good governance induces firms to engage in alliances to overcome agency problems. In the course of the analysis, we consider alliances as well as compare alliances to M&As and to organic growth. The role of governance appears strong and consistently significant across analyses.

Alliances are traditionally seen as intermediate structures that provide an optimal trade-off between coordination and incentive intensity (Teece, 1996). Allen and Phillips (2000) show that M&A transactions preceded by alliances or joint ventures between target and bidder firms lead to a better performance of the merging firms. Rey and Tirole (2001) point out the trade-off between vertical integration and alliances. The former increases incentives to monitor, but generates biased decision making, while the latter "yields unbiased decision making, but may provide too few incentives to monitor and generate foot-dragging and deadlocks, especially when the users' objectives are quite divergent." Fulghieri and Sevilir (2003) study a spectrum of organizational alternatives available for research and development (R&D) as efficient responses to the contracting environment. Robinson (2008) argues that alliances help a firm to commit resources better than a divisional structure.

Alliances can also be helpful in overcoming incentive problems that arise when headquarters cannot precommit to particular capital allocations. The arm's-length relation with another firm also allows the ring-fencing of resources for a specific project, enabling a firm to commit resources more effectively than a divisional structure (Robinson, 2008). Seru (2011) demonstrates that M&A acquirers increase alliance intensity to account for the reduced research incentives in acquired targets. Lerner and Merges (1998), Elfenbein and Lerner (2003), Lerner, Shane, and Tsai (2003), and Robinson and Stuart (2007) focus on the allocation of control rights in strategic alliance agreements between pharmaceuticals and biotechnology research firms, and show how formal and informal control mechanisms substitute for one another. McConnell and Nantell (1985), Chan, Kensinger, Keown, and Martin (1997), and Johnson and Houston (2000) study value creation in alliances. Boone and Ivanov (2012) study bankruptcy spillover effects between alliance partners. Mathews (2005) and Mathews and Robinson (2008) focus on the entry deterrence role of alliances.

We integrate these results from a new and different perspective: corporate governance. We relate the process of engaging in alliances and their ability to create value to the quality of the governance of the firms involved.

Our results provide new insights on the debate on governance. Our first contribution is to extend the analysis of governance (e.g., Gompers, Ishii, and Metrick, 2003). The finance literature has focused on the corporate governance dimension of M&As. It has been argued that poor governance or CEO overconfidence may dispose firms to M&As (see, e.g., Roll, 1986). The underlying assumption is that good CEOs are less likely to initiate M&As. The flip side may be that good CEOs are more likely to engage in alliances.

Second, we show that better internal governance in the sense of Gompers, Ishii, and Metrick (2003) has direct implications for the ways firms choose to grow. Poorer governance not only protects firms from takeover and

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guarantees managers a quiet life, but it also affects the way firms grow. Poor governance not only induces more M&As (Cremers, John, and Nair, 2009), but also stifles value-creating alliances.

Finally, our findings have strong implications for the relation between the management of a firm and its investor base. We show that the quality of governance is ameliorated by the shareholder structure of the firm. The higher the institutional investor ownership—i.e., the better the quality of external governance—the more a firm will engage in alliances and the higher the value-enhancing implications.

The remainder of the paper is articulated as follows. Section 2 lays out our main testable hypotheses. Section 3 describes the data and the variables. Section 4 examines governance and value creation in alliances. Section 5 studies the link between engagement in alliances and quality of governance. Section 6 considers the effect of cross-sectional variation in the cost of entering the alliance on the relation between governance and alliance activity. Section 7 explores the relation between alliances, and M&As and organic growth. Section 8 studies cross-sectional variation in the cost of alliance technology. A brief conclusion follows.

2. Main hypotheses and testable restrictions

We consider corporate governance as a proxy for the degree to which a CEO maximizes firm value and look at how it affects a firm's willingness to engage in alliances. We focus on alliances as a way to reduce agency problems. We rely on Brusco and Panunzi (2005) and Robinson (2008). Both papers build on Stein (1997) and argue that multidivisional firms face problems in motivating division managers.

Division managers exert effort for projects that will either succeed or fail. Managers recognize that headquarters have incentives to reallocate resources ex post, not as a function of their efforts, but either to maximize ex post efficiency or for some other purposes, e.g., to derive private benefits for a CEO. Once funds are generated, headquarters would like to exercise "winner-picking" to the highest extent possible. "However, this ex post (utility) maximizing behavior by headquarters will reduce ex ante incentives at the divisional level, and it may cause a loss of value for the corporation" (Brusco and Panunzi, 2005).

A value-maximizing HQ may want to commit ex ante not to withhold resources from a division ex post even if a project fails. However, this sort of a commitment is not credible if made within the firm as this "would essentially be a contract between the firm and itself" (Robinson, 2008). Such contracts have little enforceability since courts usually refuse to hear disputes arising within a firm as they consider them to be a matter of business judgment (Williamson, 1996).

Alliances as long-term contracts between legally distinct organizations reduce the ability of HQ to transfer resources ex post. This makes an alliance a viable solution to the commitment problem.

What is the link to governance? In the presence of good governance, managers are less entrenched and more likely to be value-maximizers. Therefore, if the losses from reduced managerial effort are larger than the gains from the reallocation of resources across divisions, the HQ commits, and an alliance is the optimal strategy. In contrast, if the gains from winner-picking outweigh the reduced managerial effort, a project will be executed internally. In the presence of poor governance, e.g., the CEO derives positive utility from the ability to reallocate funds to a favorite project or values the opportunity to divert resources for personal use, the cost of commitment is too high, and an alliance will not be pursued.

This implies that in some cases, when the benefits of ex post reallocation are lower than the ex ante agency costs of managerial shirking, good-governance firms will find it optimal to take ex ante actions to limit the scope of the ex post reallocation and engage in alliances, while bad-governance firms will never do this. Henceforth, we expect to see alliances more likely to happen in good-governance firms.[3] This allows us to formulate the first hypothesis:

H1. Companies with better governance are more likely to form alliances.

The trade-off between alliances and internal capital markets depends on the severity of the agency problems. As we have argued, in the presence of good governance, this trade-off will be tilted in the direction of alliances when the agency costs of shirking by division managers outweigh the benefits of internal capital markets. This effect is reinforced when there are greater ex ante agency problems. A higher likelihood of ex post redistribution would discourage a division manager ex ante and requires a stronger long-term commitment from the HQ. Good-governance firms will recognize this and, thus, engage in more alliances.

Bad governance firms, however, would disfavor stronger long-term commitment as it puts more constraints on the CEO. These firms will thus continue to avoid alliances. These considerations suggest that the more severe the agency problems are, the stronger the link between alliances and quality of governance. This leads to the second hypothesis:

H2. Alliance creation is more sensitive to governance when agency issues are more severe.

Ex ante agency problems may get worse in different cases. For example, it may be because some projects are particularly risky/long-horizon (i.e., "longshot") or because a firm is more prone to inefficient internal redistribution of resources (like conglomerates). We therefore consider two proxies for the severity of agency problems: the riskiness of a potential project compared to the riskiness of the firm's main line of business ("longshot projects") and whether the firm is a conglomerate.

[3] In Appendix A1 we provide a formal description of this intuition by considering a simple extension of the Brusco and Panunzi (2005) model.

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According to Robinson (2008), "because winner-picking is non-contractible, incentive problems arise for certain types of projects, "longshots." Longshot projects have low success probabilities, but high payoffs conditional on success. Even though the longshot has the same expected value as its peer project, managers may be unwilling to supply effort: since the probability of success is relatively low for the longshot, the probability that resources will be diverted away from it is relatively high." As HQ cannot credibly commit over the allocation of implementation resources, we expect agency problems to be more severe in longshot projects.

We also expect to see more severe agency problems in conglomerate firms. Indeed, managers of good divisions are afraid of ex post poaching by other less successful divisions (e.g., Rajan, Servaes, and Zingales., 2000) which undermines their incentives to exert effort ex ante.

The link between governance and alliances should also be related to the availability of other disciplining devices. Firms in less competitive industries lack the disciplining influence of product market competition, while "firms in competitive industries are under constant pressure to reduce slack and improve efficiency" (Giroud and Mueller, 2010). This implies that competition forces firms to make optimal decisions whatever the quality of internal governance; i.e., competition supersedes governance. This destroys the link between measures of governance and firms' policies. In non-competitive industries, however, a certain amount of inefficiency is tolerated, and governance has a role to play. The third hypothesis is:

H3. Alliance creation is more sensitive to firm governance in ess competitive industries.

As the situations in which alliances are the optimal solutions expand, for example, as a consequence of a reduction in the opportunity costs of engaging in alliances, the incentives to engage in alliances get stronger. But again, this will apply only to good-governance firms. Bad-governance firms will instead refrain from entering an alliance. We thus expect to see a lower cost of engaging in alliances to affect mostly good-governance firms. This leads to the fourth hypothesis.

H4. Good-governance firms are more likely to initiate alliances if the cost of alliances is lower.

Finally, if alliances are initiated by good-governance firms, we would expect these firms to be willing to share power within an alliance only with other equally good-governance firms. That is, the dominant partner should be more willing to form an alliance with a firm that is more similar to it in size (as measured by assets)—and hence agree to a more equal balance of power—if this potential partner has better governance. This suggests that the difference between the size of the dominant alliance partner and the average size of other alliance members should be related to their relative quality of corporate governance. The better the governance of junior alliance partners, the larger they should be relative to the dominant alliance member. Hence, the fifth hypothesis is:

H5. There is a positive relation between the relative quality of governance of the alliance members and their relative size.

What is the counterfactual in the analysis? Either not enter an alliance or engage in a merger or acquisition. Therefore, in our analysis we consider alliances in general, as well as alliances compared to M&As and organic growth.

3. Data

The data on alliances come from the Securities Data Corporation Platinum (SDC Platinum) database, from which we extract all alliances involving U.S. firms for the period between 1990 and 2007. We then relate these data to accounting information about the firms in Compustat.

We consider both alliances and joint ventures. We define as alliances all agreements where two or more entities combine resources to form a new, mutually advantageous business arrangement to achieve predetermined objectives. These include joint ventures, strategic alliances, research and development agreements, sales and marketing agreements, manufacturing agreements, supply agreements, and licensing and distribution agreements. We focus on three alternative sets of alliances. The first considers all the alliances involving a firm (including those formed by subsidiaries). The second excludes alliances formed by non-listed subsidiaries. The third is alliances only (excluding joint ventures).

In terms of the quality of governance, democracy takes the value of one if $G \leq 7$, and zero otherwise. Dictatorship takes the value of one if $G \geq 13$, and zero otherwise. Institutional ownership (IO) is the fraction of a firm's shares outstanding owned by institutional investors. High IO (Low IO) is a dummy equal to one if the firm's institutional ownership is above (below) the median institutional ownership for all firms in the current year, and zero otherwise.

The main characteristics of the sample are reported in Table 1. The variables are defined in Appendix B. On average, firms engage in 1.28 new alliances per year; but a majority of firms do not form new alliances every year. Most of the alliances are setup on the level of a parent firm or a listed subsidiary. Announcement about the formation of an alliance is, on average, met with a positive abnormal market return of 3.10%. Overall, the characteristics of our sample are consistent with those in recent studies (e.g., Robinson, 2008).

4. Alliances, value creation, and governance

We know that alliances in general create value. Appendix C reports evidence showing that in our sample as well there is a positive relation between alliance activity and firm value. We consider two measures of value creation: Announcement premium and Long-term return. By both measures there is a consistent pattern of value creation following alliance initiation. We build on this result by linking the value-creation process of alliances to the quality of governance of the firm. We ask whether firms

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Table 1
Descriptive statistics.

We report summary statistics for the variables used in the study. Our sample covers the period between 1990 and 2007. *N*(alliances+jv) is the number of alliances and joint ventures that the firm has formed in the following year. *N*(alliances+jv: subs) is the number of alliances and joint ventures involving a firm, but excluding those formed by non-listed subsidiaries. *N*(alliances) is the number of alliances (excluding joint ventures). *N* is the number of firm-year observations. All variables are defined in Appendix B.

Variable	*N*	Mean	Median	Stdev
Log(alliances+jv)	17,760	0.407	0.000	0.696
Log(alliances+jv: subs)	17,760	0.327	0.000	0.619
Log(alliances)	17,760	0.308	0.000	0.620
Log(jv)	17,760	0.157	0.000	0.411
N(alliances+jv)	17,760	1.278	0.000	4.380
N(alliances+jv: subs)	17,760	0.943	0.000	3.412
N(alliances)	17,760	0.922	0.000	3.573
Premium	19,041	0.031	0.025	0.220
G	17,760	8.961	9.000	2.793
Institutional ownership (IO)	17,760	0.530	0.552	0.189
Democracy × High IO	17,760	0.129	0.000	0.335
Dictatorship × Low IO	17,760	0.045	0.000	0.207
Total assets	17,760	4291.750	900.056	16,207.530
B/M	17,760	0.541	0.470	0.725
TobinQ	17,760	1.888	1.461	1.336
SalesGrowth	17,760	0.081	0.073	0.241
R&D/Sales	17,760	0.061	0.000	0.365
Cash	17,760	0.215	0.055	0.568
Capex	17,760	0.065	0.052	0.054
ROE	17,760	0.081	0.120	0.469
D/*E*	17,760	0.661	0.412	1.489
P/*E*	17,760	17.668	15.707	43.388
Industry concentration	17,760	0.067	0.045	0.072
Comment-Schwert	17,760	−0.002	−0.002	0.002
Guay-Harford	17,760	−0.010	−0.008	0.095
Asset liquidity	17,760	0.094	0.059	0.133

with better governance are better able to reap the benefits of alliances.

First, we regress the announcement abnormal return on measures of governance and a set of control variables. The announcement abnormal return is the four-factor adjusted abnormal return of the stock of the firm in the time window (−63; +42) days around the announcement date, similar to Schwert's (2000) definition of Target abnormal return premium.

The results are reported in Table 2. Specifications (1)–(3) present results for all alliances and joint ventures. Specification (4) considers the subsample of alliances and joint ventures that excludes those undertaken by non-listed subsidiaries. Specification (5) presents results for the subsample of pure alliances. We focus on governance; we consider the Governance index as well as interactions with high and low institutional ownership—i.e., Democracy × High IO and Dictatorship × Low IO.

The results show a positive and significant relation between governance and stock abnormal return that is robust across different specifications and economically significant. A one standard deviation better governance is related to a 73 bp higher abnormal return (or a 22.70% increase relative to the sample mean). This suggests that investors recognize the relation between governance and formation of alliances.

Both internal and external governance combine to enhance the return. The difference in abnormal returns is greatest—369 basis points—when we compare firms that display both higher quality of internal governance ("democracy," according to the Gompers, Ishii and Metrick – or GIM – index) and better external governance (higher ownership by institutional investors) and firms that display both lower quality of internal governance ("dictatorship," according to the GIM index) and poorer external governance (lower ownership by institutional investors).

Next, we look at long-term portfolio analysis. Our approach is similar to that of Gompers, Ishii, and Metrick (2003), but conditioned on the quality of governance and the fact that a firm actually formed an alliance. That is, each year we eliminate firms that did not enter into an alliance in the previous 12 months and consider only the firms that engaged in alliances. Then, we separately identify firms that formed alliances and have good corporate governance and firms that formed alliances and have poor corporate governance. We define good (bad) governance as high (low) quality of internal governance and high (low) institutional ownership, and build portfolios on this basis. Portfolios are then held for 36 months.

We perform a time-series regression of the excess returns of the portfolio of interest—either the alliance portfolio, or the benchmark portfolio composed of the other similar firms or the difference between the latter two—using the Fama and French (1992) and Carhart (1997) factors. Abnormal performance is measured by the intercept α of this time-series regression. We consider both equal- and value-weighted portfolios as well as the subsamples as defined above.

The results in Table 3 show that firms that have engaged in alliances and have good governance outperform those

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Table 2
Corporate governance and alliance announcement premium.

We report the results of the relation between measures of corporate governance and announcement premium in alliances and joint ventures. Specifications 1–3 present the results for all alliances and joint ventures. Specification 4 presents the results for a subsample of alliances and joint ventures excluding those by non-listed subsidiaries. Specification 5 presents the results for a subsample of alliances. The dependent variable is the four-factor adjusted abnormal return on the company stock over the $(-63; +42)$ day time window around the announcement date. G is the Gompers-Ishii-Metrick governance index. Democracy takes the value of one if $G \leq 7$ and zero otherwise. Dictatorship takes the value of one if $G \geq 13$ and zero otherwise. Institutional ownership (IO) is the fraction of company's shares outstanding owned by institutional investors. High IO (Low IO) takes a value of one if the company's institutional ownership is above (below) the median institutional ownership for all companies in the current year. All variables are defined in the Appendix B. All estimates are multiplied by 100. Standard errors are clustered at time and industry level. t-Statistics are reported in parentheses. The F-test tests the hypothesis that the coefficient on Democracy × High IO is equal to the coefficient on Dictatorship × Low IO.

Variable	(1)	(2)	(3)	(4)	(5)
G	−0.272		−0.273	−0.300	−0.315
	(−2.06)		(−1.88)	(−2.23)	(−2.09)
Inst. Ownership	9.205		13.056	8.345	10.875
	(4.47)		(5.58)	(3.78)	(4.69)
Democracy × High IO		2.277			
		(2.92)			
Dictatorship × Low IO		−1.415			
		(−1.14)			
Log(Assets)	−0.597	−0.675	−0.480	−0.600	−0.682
	(−2.40)	(−2.57)	(−1.60)	(−2.18)	(−2.36)
Log(B/M)	−5.840	−5.990	−6.141	−5.999	−6.258
	(−9.38)	(−9.07)	(−8.33)	(−9.24)	(−9.30)
Sales growth	0.688	0.647	0.731	2.047	0.643
	(0.42)	(0.38)	(0.37)	(1.09)	(0.36)
R&D/Sales	−1.464	−1.756	−1.475	−0.719	−1.496
	(−1.69)	(−1.93)	(−0.97)	(−0.79)	(−1.73)
Cash	3.070	3.143	3.657	2.970	2.622
	(2.97)	(2.75)	(3.07)	(2.70)	(2.47)
Capex	6.127	8.919	9.776	2.883	2.873
	(0.79)	(1.13)	(1.00)	(0.34)	(0.29)
ROE	1.222	0.918	0.195	2.046	0.979
	(0.93)	(0.69)	(0.14)	(1.37)	(0.70)
D/E	−0.167	−0.038	−0.148	−0.203	−0.121
	(−0.60)	(−0.13)	(−0.49)	(−0.63)	(−0.37)
P/E	0.011	0.010	0.018	0.012	0.012
	(1.56)	(1.29)	(2.04)	(1.66)	(1.66)
Herfindahl index	−5.583	1.246	−13.182	−4.425	−8.194
	(−0.55)	(0.11)	(−1.03)	(−0.37)	(−0.68)
Comment-Schwert	−464.604	−468.003	−508.675	−421.711	−439.532
	(−2.83)	(−2.71)	(−2.95)	(−2.41)	(−2.61)
Guay-Harford	11.427	13.347	13.594	10.701	12.726
	(3.48)	(3.52)	(3.38)	(2.73)	(3.42)
Asset liquidity	−9.299	−11.000	−10.667	−9.693	−9.467
	(−2.13)	(−2.29)	(−1.93)	(−2.24)	(−1.78)
EBC			−2.704		
			(−1.13)		
Managerial ownership			13.506		
			(0.68)		
Industry, year dummies	Yes	Yes	Yes	Yes	Yes
Clustering	Industry+Year	Industry+Year	Industry+Year	Industry+Year	Industry+Year
Adj R^2	0.073	0.073	0.078	0.075	0.076
Nobs	19,411	19,411	15,136	14,461	14,267
F-test		6.83			
(p-Value)		(0.01)			

that have engaged in alliances and have poor governance. A strategy consisting of buying good-governance alliance-engaging firms and selling bad governance alliance-engaging firms delivers an abnormal return of 0.56% (0.70%) per month, or 7.03% (8.70%) per year in the case of equal- (value-) weighted portfolios.

5. Alliance formation and corporate governance

Our findings provide a starting point that shows a direct link between value creation in alliances and the quality of governance of a firm. We now investigate this link in more detail.

5.1. Alliances and corporate governance

We start by testing the first hypothesis relating alliance formation to the quality of corporate governance (H1). We first look at the overall relation between measures of corporate governance and number of alliances entered into in the subsequent year. We estimate a set of Tobit regressions in which we regress the (log of

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Table 3
Long-term performance of firms forming alliances.

We report the abnormal return (α), loadings on four-factor Fama-French (1992)-Carhart (1997) coefficients, and the corresponding *t*-statistics of equal- (Panel A) and value-weighted (Panel B) portfolios of firms that formed alliances and have both good corporate governance and high institutional ownership; firms that formed alliances and have both bad corporate governance and low institutional ownership; and the difference between the two. Portfolios are formed on January 1 of the year after an alliance was announced and are held for 36 months. Subsamples are defined in Table 1.

Panel A: Equal-weighted portfolios						
	α	MKTRF	SMB	HML	UMD	Adj R^2
Alliances+jv						
Democracy, high IO	0.509	1.187	0.430	−0.026	−0.260	0.760
	(2.20)	(18.86)	(6.37)	(−0.31)	(−5.36)	
Dictatorship, low IO	−0.053	0.968	0.366	0.503	−0.222	0.595
	(−0.22)	(14.83)	(5.22)	(5.88)	(−4.41)	
Long Democracy, High IO	0.562	0.219	0.065	−0.528	−0.038	0.244
Short Dictatorship, Low IO	(1.87)	(2.68)	(0.74)	(−4.92)	(−0.61)	
Alliances+jv: subs						
Long democracy, high IO	0.439	0.275	0.105	−0.598	−0.040	0.307
Short dictatorship, low IO	(1.43)	(3.29)	(1.18)	(−5.46)	(−0.62)	
Alliances						
Long democracy, high IO	0.516	0.234	0.050	−0.563	−0.031	0.244
Short dictatorship, low IO	(1.64)	(2.72)	(0.54)	(−5.00)	(−0.47)	
Panel B: Value-weighted portfolios						
	α	MKTRF	SMB	HML	UMD	Adj R^2
Alliances+jv						
Democracy, high IO	0.571	1.190	0.076	−0.121	−0.058	0.641
	(2.05)	(15.69)	(0.93)	(−1.21)	(−0.99)	
Dictatorship, low IO	−0.127	0.844	0.174	0.445	−0.154	0.500
	(−0.53)	(13.06)	(2.51)	(5.25)	(−3.09)	
Long democracy, high IO	0.698	0.346	−0.098	−0.566	0.096	0.242
Short dictatorship, low IO	(2.06)	(3.75)	(−0.99)	(−4.68)	(1.35)	
Alliances+jv: subs						
Long democracy, high IO	0.601	0.375	−0.037	−0.629	0.127	0.283
Short dictatorship, low IO	(1.73)	(3.96)	(−0.36)	(−5.07)	(1.74)	
Alliances						
Long democracy, high IO	0.658	0.338	−0.081	−0.560	0.065	0.223
Short dictatorship, low IO	(1.87)	(3.53)	(−0.79)	(−4.46)	(0.88)	

one plus) number of alliances the firm enters in the following year on governance measures and a set of control variables. As before, we consider the full sample of all alliances and joint ventures, the subsample of alliances and joint ventures excluding those undertaken by non-listed subsidiaries, and the subsample of pure alliances.

The results, reported in Table 4, show that firms characterized by better governance engage in more alliances. This result is robust across different specifications as well as economically significant. Firms characterized by a quality of internal governance one standard deviation higher than average engage in 2.23 times more alliances per year than average. Moreover, alliance-engaging is even stronger if good internal governance is coupled with good external governance, i.e., more institutional ownership.

Among the other variables, we see that larger firms, firms with higher R&D expenditures and growth of sales, and firms with larger cash reserves are more likely to engage in alliances. More levered firms engage less in alliances.

5.2. Alliances, corporate governance, and agency

We now move on to the second hypothesis and investigate the link between the quality of governance and alliance creation in the presence of large agency issues (H2). We consider two proxies for the severity of agency problems: the longshot nature of projects and the conglomerate status.

As we have argued, the more "longshot" the projects are, the worse the agency problems and the larger the need for a CEO to commit to exert effort from division managers (Robinson, 2008). We construct a firm-industry matrix of alliance intensity counting the number of alliances that a firm in industry *i* formed with a partner in industry *j* in the following year. If there has been no alliance in industry *j*, the observation is assigned a value of zero.[4] We use two measures of alliance intensity: (1) a dummy variable indicating whether at least one alliance by a given firm in industry *i* has been created in industry *j*, and (2) the logarithm of one plus the number of alliances that a firm in industry *i* has created in industry *j*.

We use the two proxies of project riskiness ("longshotness") suggested by Robinson (2008): Initial public

[4] We report findings for all firm-industry pairs. The results are similar when we exclude all observations involving industry *j* if there were no alliances created between industries *i* and *j* in the year *t*+1.

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Table 4
Corporate governance and alliance activity.

We report the results of the relation between measures of corporate governance and the number of alliances and joint ventures that companies announce over the subsequent year. Log(alliances+jv) is the logarithm of one plus the number of all alliances and joint ventures involving a company. Log(alliances+jv: subs) is the logarithm of one plus the number of alliances and joint ventures excluding those by non-listed subsidiaries. Log(alliances) is the logarithm of one plus the number of all alliances. All variables are defined in Appendix B and Table 1. We report the results of Tobit regressions with year and industry dummies. Standard errors are adjusted for heteroskedasticity. *t*-Statistics are reported in parentheses. The *F*-test tests the hypothesis that the coefficient on Democracy × High IO is equal to the coefficient on Dictatorship × Low IO.

Variable	Log(alliances+jv)	Log(allian.+jv)	Log(allian.+jv)	Log(allian.+jv: subs)	Log(alliances)
G	−0.012		−0.013	−0.014	−0.020
	(−2.76)		(−2.45)	(−3.12)	(−3.97)
Institutional ownership	0.156		0.335	0.154	0.144
	(2.13)		(3.50)	(1.95)	(1.66)
Democracy × High IO		0.091			
		(2.74)			
Dictatorship × Low IO		−0.082			
		(−1.46)			
Industry Concentration	−1.696	−1.674	−2.083	−1.592	−2.387
	(−6.17)	(−6.09)	(−6.05)	(−5.43)	(−6.71)
Log(Assets)	0.538	0.540	0.506	0.495	0.520
	(62.97)	(64.61)	(47.82)	(54.15)	(52.46)
TobinQ	0.141	0.141	0.096	0.157	0.166
	(16.16)	(16.17)	(9.62)	(17.28)	(17.43)
Sales growth	0.300	0.305	0.131	0.354	0.345
	(5.83)	(5.94)	(2.18)	(6.44)	(5.75)
R&D/Sales	0.290	0.291	0.259	0.298	0.306
	(6.73)	(6.75)	(4.37)	(6.46)	(6.63)
Cash	0.132	0.135	0.096	0.164	0.167
	(5.06)	(5.19)	(3.36)	(5.85)	(5.76)
Capex	0.578	0.604	0.041	1.371	0.822
	(2.37)	(2.48)	(0.14)	(5.36)	(2.90)
ROE	−0.141	−0.140	−0.075	−0.158	−0.157
	(−5.23)	(−5.18)	(−2.05)	(−5.37)	(−5.00)
D/*E*	−0.061	−0.061	−0.073	−0.068	−0.079
	(−6.74)	(−6.75)	(−6.27)	(−6.81)	(−7.00)
P/*E*	0.000	0.000	0.000	0.000	0.000
	(−0.39)	(−0.35)	(0.43)	(−0.62)	(−0.55)
Comment-Schwert	−26.167	−25.760	−8.183	−34.349	−29.191
	(−4.45)	(−4.39)	(−1.17)	(−5.43)	(−4.41)
Guay-Harford	−0.007	−0.011	−0.376	0.042	0.169
	(−0.05)	(−0.07)	(−2.07)	(0.27)	(0.99)
Asset liquidity	0.004	0.002	0.107	−0.083	−0.035
	(0.04)	(0.02)	(0.73)	(−0.76)	(−0.29)
EBC			0.669		
			(11.45)		
Managerial ownership			−4.922		
			(−6.27)		
Industry, year dummies	Yes	Yes	Yes	Yes	Yes
Adj R^2	0.159	0.159	0.165	0.151	0.157
Nobs	17,760	17,760	12,264	17,760	17,760
F-test		7.59			
(*p*-Value)		(0.01)			

offering (IPO) return skewness and IPO return volatility. The first is measured by the skewness and the latter by the standard deviation of IPO returns in the two-digit industry (Standard Industry Classification code, hereafter SIC code) over the previous 60-month window. If projects in industry *j* are more risky than in industry *i* (longshot projects), executing such projects internally is not efficient. As winner-picking within the firm is non-contractible, managers would be loath to exert effort; the probability that resources will be diverted away from them is relatively high. Alliances, on the other hand, are legally binding contracts between two separate legal entities. A contract guarantees that a project will be allocated promised resources, so resource allocation concerns are alleviated. "Longshot projects are the natural choice for alliance partners, since their ex ante incentives are the most compromised by winner-picking" (Robinson, 2008).

The difference in risk measures between industries *j* and *i*, i.e., ΔIPO return skewness and IPO return volatility – should therefore be positively related to the alliance intensity. We evaluate the impact of governance on alliance intensity by interacting these variables with dummies for the quality of governance. The low *G* (high *G*) dummy equals one if governance is below (greater than or equal to) 9.0 (which corresponds to a sample median). We use the standard controls. We also include a dummy variable, Secondary SIC2 representation, which takes the value of one if industry *j* is listed among a firm's secondary two-digit industry codes.

The results are reported in Table 5. Specifications (1) and (2) are probit estimations. Specifications (3) and (4)

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Table 5
Corporate governance, alliance intensity, and project riskiness.

We relate a firm's corporate governance to its alliance intensity across SIC2 industries. The dependent variable in specifications (1) and (2) is a dummy variable that takes the value of one if a firm formed an alliance or a joint venture in SIC2-industry j in year $t+1$, zero otherwise. The dependent variable in specifications (3) and (4) is the logarithm of one plus the number of alliances and joint ventures that the firm formed in industry j in year $t+1$. Alliance activity in the primary SIC2 industry of the firm is excluded from the analysis. We use two measures of project "longshotness" (Robinson, 2008): IPO return skewness and IPO return volatility. IPO return skewness is skewness of IPO returns in industry j over the previous 60-month window. IPO return volatility is the standard deviation of monthly stock returns of all companies that went public in industry j over the prior 60-month window. ΔIPO return skewness (volatility) is the difference in IPO return skewness (standard deviation) for industry j and industry i, the primary SIC2 industry of the company. Low (High) G takes a value of one if G is below (above) nine, which corresponds to a sample median. Secondary SIC2 representation takes a value of one if a firm is reported to have industry j as a secondary SIC2 code. All variables are defined in Appendix B. Specifications (1) and (2) are probits with time and industry dummies and standard errors clustered at the firm level. Specifications (3) and (4) are Tobits with industry and year dummies and standard errors clustered at the industry level. The F-test tests the hypothesis that the coefficient on ΔIPO return skewness × Low G (ΔIPO return volatility × Low G) is equal to the coefficient on ΔIPO return skewness × High G (ΔIPO return volatility × High G). Marginal effects (ME) are multiplied by 100. t-Statistics are reported in parentheses.

Variable	(1) Estimate	ME	(2) Estimate	ME	(3) Estimate	(4) Estimate
ΔIPO return skewness × Low G	1.744	1.247			6.639	
	(13.84)				(4.27)	
ΔIPO return skewness × High G	1.469	1.012			5.255	
	(20.57)				(3.76)	
ΔIPO return volatility × Low G			0.063	0.053		0.252
			(9.98)			(5.55)
ΔIPO return volatility × High G			0.050	0.042		0.194
			(13.95)			(3.47)
Log(Assets)	0.222	0.189	0.222	0.188	0.967	0.972
	(18.70)		(18.50)		(6.86)	(6.76)
Log(B/M)	−0.103	−0.088	−0.098	−0.083	−0.634	−0.615
	(−5.68)		(−5.34)		(−5.87)	(−5.64)
Sales growth	−0.054	−0.046	−0.059	−0.050	−0.145	−0.167
	(−1.57)		(−1.68)		(−1.03)	(−1.20)
R&D/Sales	0.109	0.093	0.106	0.090	0.505	0.494
	(3.50)		(3.46)		(4.42)	(4.28)
Cash	0.043	0.037	0.045	0.038	0.216	0.219
	(2.03)		(2.04)		(1.63)	(1.62)
Capex	1.484	1.260	1.600	1.354	3.675	3.905
	(5.95)		(6.40)		(1.88)	(1.86)
ROE	−0.091	−0.077	−0.091	−0.077	−0.508	−0.510
	(−3.04)		(−2.97)		(−2.65)	(−2.66)
D/E	−0.047	−0.040	−0.044	−0.037	−0.301	−0.289
	(−3.50)		(−3.22)		(−2.83)	(−2.78)
P/E	0.000	0.000	0.000	0.000	0.000	0.000
	(−0.08)		(−0.22)		(0.15)	(0.05)
Industry concentration	0.271	0.230	0.315	0.266	−0.387	−0.402
	(0.77)		(0.90)		(−0.20)	(−0.21)
Secondary SIC2 representation	1.052	3.881	1.056	3.907	4.731	4.787
	(27.19)		(26.92)		(7.08)	(6.82)
Managerial ownership	−1.972	−1.674	−1.856	−1.570	−8.804	−8.489
	(−2.95)		(−2.76)		(−2.15)	(−2.11)
EBC	0.164	0.139	0.149	0.126	0.930	0.866
	(3.45)		(3.13)		(2.12)	(2.00)
Industry, year dummies	Yes		Yes		Yes	Yes
Clustering	Firm		Firm		Industry	Industry
Pseudo R^2/ Adj R^2	0.146		0.147		0.112	0.113
N	617,224		604,786		623,152	611,654
F-test	3.33		3.20		3.92	4.54
(p-Value)	(0.07)		(0.08)		(0.05)	(0.04)

report the results of Tobit regressions. In the main results we find support for the Robinson (2008) findings that more risky projects are more likely to be organized through alliances. At the same time, this effect is amplified in the presence of good governance. Marginal effects and point estimates indicate that the relation between risk difference measures and alliance intensity is at least 23.22% stronger in the presence of good governance.[5]

We have also argued that agency problems are also presumably more severe in conglomerate firms. We therefore look at the effects of governance on alliance activity in conglomerate and non-conglomerate firms. The literature (e.g., Rajan, Servaes, and Zingales, 2000; Scharfstein and Stein, 2000) argues that conglomerate firms are plagued by higher managerial agency issues because of suboptimal

[5] We also investigate the effect of managerial incentives on the relation between riskiness of the project and alliance activity (*footnote continued*) (untabulated). When we interact measures of project riskiness with managerial ownership and equity-based compensation, the results show no consistent pattern.

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Table 6
Corporate governance and number of alliances: Conglomerates vs. non-conglomerates.

We report the results of the relation between measures of corporate governance and the number of alliances and joint ventures that companies announce over the subsequent year for conglomerate and non-conglomerate firms. Conglomerate (Non-conglomerate) dummy takes a value of one if a firm operates in more than one (exactly one) Compustat segment, and zero otherwise. Controls 1 include Industry Concentration, Log(Assets), Tobin's Q, Sales growth, R&D/Sales, Cash, Capex, ROE, D/E, P/E, Comment-Schwert, Guay-Harford, and Asset liquidity. Controls 2 include Equity-based compensation (EBC) and Managerial ownership. All variables are defined in the Appendix B. We report the results of Tobit regressions with year and industry dummies. Standard errors are adjusted for heteroskedasticity. t-Statistics are reported in parentheses. The F-test tests the hypothesis that the coefficient on $G \times$ Conglomerate dummy is equal to the coefficient on $G \times$ Non-conglomerate dummy.

Variable	Log(alliances+jv)	Log(alliances+jv)	Log(allian+jv: subs)	Log(alliances)
$G \times$ Conglomerate dummy	−0.014	−0.018	−0.021	−0.029
	(−3.19)	(−3.08)	(−4.45)	(−5.70)
$G \times$ Non-conglomerate dummy	−0.009	−0.011	−0.003	−0.007
	(−2.00)	(−1.69)	(−0.68)	(−1.28)
Institutional ownership	0.160	0.391	0.147	0.133
	(2.17)	(3.59)	(1.85)	(1.53)
Controls 1	Yes	Yes	Yes	Yes
Controls 2		Yes		
Industry, year dummies	Yes	Yes	Yes	Yes
Adj R^2	0.159	0.165	0.151	0.157
Nobs	17,760	12,264	17,760	17,760
F-test	3.22	5.08	38.63	53.28
(p-Value)	(0.08)	(0.03)	(0.01)	(0.01)

resource allocation across divisions and/or the inability of the CEO to credibly commit resources to the best use. Alliances, by ring-fencing assets, help to address this commitment problem of the CEO vis-à-vis its division managers. If alliances are related to good governance, we would expect alliance creation to be more sensitive to governance in conglomerate firms.

We therefore re-estimate the Tobit regressions reported in Table 4 and interact firm governance with two dummy variables. Conglomerate (non-conglomerate) dummy takes the value of one if the company is a multisegment firm; zero otherwise. The results reported in Table 6 show that governance has a greater impact on alliance creation for conglomerate firms than for non-conglomerate firms. For non-conglomerates, the link between governance and alliance formation is economically weaker and often statistically insignificant. The effect of governance on alliance creation is at least 55% stronger for conglomerate firms than for non-conglomerates.

5.3. Alliances, corporate governance, and other disciplining devices

The role of alliances in solving agency problems should also be related to the availability of other disciplining devices (H3). The argument that product market competition motivates managers to pursue value-optimizing strategies can be traced back to Adam Smith (1979).[6] Giroud and Mueller (2010) demonstrate empirically that product market competition is a good disciplining device in its own right. Therefore, we posit that governance should have a more significant impact on alliance formation in the absence of competitive pressure.

To test this hypothesis, we re-estimate the Tobit regressions reported in Table 4 and interact firm governance with two dummy variables. A low (high) concentration dummy takes the value of one if the company's primary SIC2 industry Hirschman-Herfindahl index is larger (lower) than the sample median for a given year, and zero otherwise. The results, reported in Table 7, demonstrate that governance has a greater impact on alliance creation in the presence of low product market competition (i.e., high industry concentration). The effect of governance on alliance creation is at least 68% stronger in less competitive industries.

Overall, these findings provide evidence of a positive relation between governance and alliance creation that is related to agency issues. They suggest that good corporate governance motivates the use of alliances when it comes to resolving agency issues. Additionally, our results support the idea that governance matters primarily in less competitive industries.

6. Variation in costs of alliances

We now move on to the fourth hypothesis and explore the effect of variation in the costs of doing alliances on the relation between governance and alliances (H4). We use differences in corporate income reporting rules across U.S. states as a source of exogenous variation in the (opportunity) cost of forming an alliance.

Under separate reporting rules, a multistate corporate group can reduce its taxable income by isolating highly profitable parts of its business in an affiliate that is not subject to state taxes. Combined reporting rules instead require companies conducting business in a state to combine the profits from all related subsidiaries before determining what portion of their profits are taxable in that state. Under combined reporting, the state determines the size of the profits that have to be "apportioned" to it. To determine how much of its total earnings are

[6] For work in this area, see Alchian (1950), Winter (1971), and Bertrand and Mullainathan (2003).

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Table 7
Corporate governance and number of alliances: By industry concentration.

We report the results of the relation between measures of corporate governance and the number of alliances and joint ventures that companies announce over the subsequent year for high and low concentration industries. High (low) concentration dummy takes a value of one if the Hirschman-Herfindahl index of company's primary three-digit SIC code industry is above (below) sample median. Controls 1 include Log(Assets), Tobin's Q, Sales growth, R&D/Sales, Cash, Capex, ROE, *D*/*E*, *P*/*E*, Comment-Schwert, Guay-Harford, and Asset liquidity. Controls 2 include Equity-based compensation (EBC) and Managerial Ownership. All variables are defined in Appendix B. We report the results of Tobit regressions with year and industry dummies. Standard errors are adjusted for heteroskedasticity. *t*-Statistics are reported in parentheses. F-test tests the hypothesis that the coefficient on $G \times$ Low concentration dummy is equal to the coefficient on $G \times$ High concentration dummy.

	Log(alliances+jv)	Log(alliances+jv)	Log(allian+jv: subs)	Log(alliances)
$G \times$ Low concentration dummy	−0.011	−0.014	−0.013	−0.019
	(−2.47)	(−2.33)	(−2.78)	(−3.84)
$G \times$ High concentration dummy	−0.020	−0.031	−0.025	−0.032
	(−3.17)	(−3.25)	(−3.36)	(−3.80)
Institutional ownership	0.163	0.389	0.158	0.147
	(2.25)	(3.58)	(1.98)	(1.69)
Industry concentration	−1.316	−1.738	−1.106	−1.863
	(−4.48)	(−3.05)	(−2.78)	(−3.76)
Controls 1	Yes	Yes	Yes	Yes
Controls 2		Yes		
Industry, year dummies	Yes	Yes	Yes	Yes
Adj R^2	0.159	0.157	0.150	0.156
Nobs	17,760	12,264	17,760	17,760
F-test	2.93	4.49	3.55	2.86
(*p*-Value)	(0.09)	(0.04)	(0.06)	(0.10)

subject to a state's corporate income tax, a multistate company must apportion its profits according to a formula that is based on objective factors that help to determine the taxable income such as the fraction of the company's total property, total payroll, and total sales attributable to the state. This makes it harder for a multistate corporation to report profits only in states where it would be taxed at the lowest rates.

Consequently, combined reporting increases the cost of non-arm's-length transactions between subsidiaries of a firm located in different states. Effectively, under combined reporting, groups that are similarly situated generally end up paying similar amounts of state tax, regardless of their corporate structure. This eliminates the tax advantage of a multistate enterprise.

This reduces the ability of firms to exploit the internal capital markets to optimize their tax burden. Mazerov (2002) argues that "the combined reporting requirement would severely limit the ability of corporations to use tax planning techniques such as creating nowhere income and establishing passive investment companies to avoid state corporate tax liability".

One of the more popular ways of tax minimization in separate reporting states is the establishment of tax-haven affiliates. In this case, the affiliate company is domiciled in a state that has no or a low corporate income tax rate. Value trademarks and trade names are transferred to the affiliate, which then allows the company to use the transferred property for a significant royalty. This reduces the taxable income of the company as under separate reporting each unitary business is taxed separately; so the income transferred to a tax-haven affiliate is not taxed. Combined reporting mitigates this problem as it accounts for the total income derived by the group. This reduces the cost of not having in place a structure that allows the transfer of resources from one member of the group (division) to another.

We have argued that one major cost of engaging in alliances is the ring-fencing of the assets to specific projects (subsidiaries). Ring-fencing reduces the ability of a firm to transfer resources from one member of the group (division) to another. Combined reporting, by reducing the opportunity cost of ring-fencing the assets, makes it less costly to engage in alliances.

The implication is that firms in states with combined reporting should engage in more alliances—as the cost of ring-fencing the assets is lower—and that in the presence of combined reporting, there is a stronger link between governance and alliances. In other words, combined reporting reduces the relative cost of doing alliances, and firms with better governance respond more to these lower costs.

We therefore look into whether the corporate income tax law of the state of location of the firm applies combined reporting rules. In our sample, 16 U.S. states (Alaska, Arizona, California, Colorado, Hawaii, Idaho, Illinois, Kansas, Maine, Minnesota, Montana, Nebraska, New Hampshire, North Dakota, Oregon, and Utah) have had combined reporting rules since the early 1980s, while seven others (New York, Massachusetts, Michigan, Texas, Vermont, West Virginia, and Wisconsin) introduced them over our sample period.

Fig. 1 presents the geographic distribution of combined reporting law states (Mazerov, 2009).[7] Historically, combined reporting has been implemented mostly by Western and Midwestern states. Recently, the movement toward combined reporting has also gained momentum on the East coast.

About 33.34% of firms in our sample are located in states that require combined reporting of corporate

[7] Lack of corporate income taxes makes combined reporting irrelevant in four states: Nevada, South Dakota, Washington, and Wyoming.

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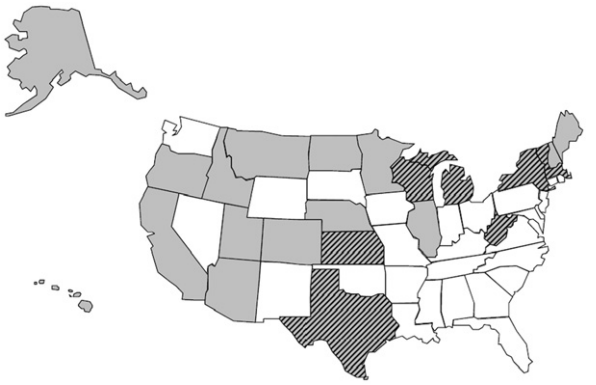

Fig. 1. This figure presents the geographic distribution of states requiring combined reporting of corporate income (Mazerov, 2009). Sixteen US states (in grey) have introduced the combined reporting rule prior to 1990. Seven states (in striped pattern) introduced them over 1990–2008.

profits. On average, these firms formed 1.52 alliances and joint ventures per year (1.20 alliances and joint ventures excluding those done by non-listed subsidiaries, and 1.23 pure alliances). Firms in separate reporting states have been involved in alliance activity much less. On average, they did 1.15 alliances and joint ventures per year (0.82 alliances and joint ventures excluding those done by non-listed subsidiaries and 0.80 pure alliances). The corresponding differences are significant at the 1% level.

To confirm our results in a multivariate setting and investigate the relation between governance and alliance activity conditional on the state tax code, we re-estimate our main regressions by relating alliance creation to a dummy measuring whether a state has a combined reporting rule in place, its interaction with the quality of governance, and a set of control variables.

The results are reported in Table 8. In Panel A, we relate the logarithm of (one plus) the number of alliances and joint ventures to the quality of governance interacted with dummies for the corporate income tax code of the state of the company HQ—combined or separate reporting.

Firms in states with combined reporting engage in 26.5–51.4% more alliances than firms in separate reporting states. We also see that the effect of governance on alliance activity is concentrated in combined reporting states. The relation between governance and alliance creation for firms in combined reporting states is about 60% stronger than the pooled estimate reported in Table 4. At the same time, the relation between governance and alliance activity is never statistically significant for companies in separate reporting states.[8]

We have argued that combined reporting reduces the opportunity costs of engaging in an alliance vis-à-vis executing a project internally. We investigate this trade-off in Panel B of Table 8. Given that we do not have information on the value of the assets that are shared in the alliance, we standardize alliance activity by scaling it by capital expenditures (in millions of dollars). The dependent variable in specifications (1) and (2) is the logarithm of one plus the ratio of the number of alliances and joint ventures to the Capital expenditures (CAPEX), $\log(1+((alliances+jv)/CAPEX))$.[9] The dependent variables in specifications (3) and (4) are $\log(1+((alliances+jv:subs)/CAPEX))$ and $\log(1+(alliances/CAPEX))$. This helps us control for the alternative choice of investing in organic growth.

The results show that the role of governance is concentrated in firms in combined reporting states. The results are as expected and consistent with findings in Panel A: in states with combined reporting, firms tend to favor alliances over internal investment, particularly so if firms' governance is good.

One potential objection to this analysis is that we are using the state in which the firm is headquartered, while the incentives related to combined reporting are more likely to relate to the location of all firm' activities. To address this issue, we consider the average combined reporting of all the states in which the company operates.

Given that Compustat does not contain information on the geographic distribution of firm activities, we need to find an alternative route. We therefore collect data on the location and assets of the firm's subsidiaries and then re-aggregate at the firm level. We get this information from Dun & Bradstreet's (D&B) Million Dollar Database. This data source contains information on the identity of each subsidiary, its position in the corporate structure, number of employees, SIC code, and location. D&B also contains information on their parents and ultimate parents (headquarters). This allows us to reconstruct the geographic spreads of the activities of the companies. We then define the degree of combined reporting of the firm engaging in the alliance as a function of the weighted average of the degree of combined reporting of the states in which the firm operates (i.e., a dummy equal to one if combined reporting and zero otherwise). The weights are given by the number of establishments a firm has in the state.

Of course, it may be the case that we are capturing only the main independent subsidiaries and not the fully owned divisions. To address this issue, we establish a link between segment-level data available in Compustat and D&B and we assess the quality of our identification, testing whether our way of matching covers most of the assets in Compustat. Details of the match are provided in Appendix D.

We find that the quality of the matching is good: matching subsidiaries are found for 47% of the total number of Compustat segments, representing 60% of segment asset value. Of the remaining, about 26% of the number of segments are "unusable" (they refer to corporate headquarters, have missing or zero sales, or have missing segment SIC codes); 11% refer to companies with no information in D&B; and 17% of segments could not be matched because of ambiguous or missing segment business descriptions. These represent 32%, 0%, and 9% of assets values, respectively.

[8] In order to verify that our results are not driven by Delaware firms, we performed a robustness check and removed them from analysis. The results are not affected.

[9] We thank an anonymous referee who brought our attention to this topic.

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Table 8
Role of combined reporting.

We investigate the effect of the state corporate income taxation rule in the US on the relation between governance and alliance activity. The dependent variables in Panels A and C are Log(alliances+jv), Log(alliances+jv: subs), and Log(alliances), and are defined in Tables 1 and 4 and Appendix B. In Panels B and D the dependent variable in specifications (1) and (2) is the logarithm of one plus the ratio of the number of alliances and joint ventures to the capital expenditures (in mlns) that the company undertook over the subsequent year: $\log(1+((alliances+jv)/CAPEX))$; the dependent variable in specification (3) is $\log(1+((alliances+jv:subs)/CAPEX))$; the dependent variable in specification (4) is $\log(1+(alliances/CAPEX))$. Panels A and B consider the corporate income taxation of the state of company head-quarters location. Combined reporting (Separate reporting) dummy takes the value of one if a state of company's headquarters location required (did not require) payment of corporate income taxes according to combined reporting rules. Panels C and D consider the corporate income taxation of all the states where the company conducts business activity according to the Dun & Bradstreet database. Fraction of combined reporting is a ratio of companies reporting states to the total number of states where the company does business. Controls 1 include Industry concentration, Log(Assets), Tobin's Q, Sales growth, R&D/Sales, Cash, Capex, ROE, *D*/*E*, *P*/*E*, Comment-Schwert, Guay-Harford, and Asset liquidity. Controls 2 include Equity-Based Compensation (EBC) and Managerial ownership. All variables are defined in Appendix B. We report the results of Tobit regressions with year and industry dummies. Standard errors are adjusted for heteroskedasticity. *t*-Statistics are reported in parentheses. The *F*-test in Panels A and B tests the hypothesis that the coefficient on $G\times$ Combined reporting is equal to the coefficient on $G\times$ Separate reporting.

Panel A: Governance and number of alliances conditional on corporate income taxation of the state of company HQ

	(1)	(2)	(3)	(4)
$G\times$ Combined reporting	−0.019	−0.017	−0.030	−0.030
	(−2.57)	(−2.30)	(−3.65)	(−3.43)
$G\times$ Separate reporting	−0.005	−0.004	−0.003	−0.006
	(−0.91)	(−0.37)	(−0.49)	(−0.83)
Institutional ownership	0.153	0.304	0.159	0.130
	(2.07)	(3.17)	(1.99)	(1.52)
Combined reporting	0.343	0.265	0.491	0.514
	(4.15)	(3.21)	(5.33)	(5.27)
Controls 1	Yes	Yes	Yes	Yes
Controls 2		Yes		
Industry, year dummies	Yes	Yes	Yes	Yes
Adj R^2	0.159	0.165	0.158	0.158
Nobs	17,760	12,264	17,760	17,760
F-test	2.72	2.81	7.36	6.05
(*p*-Value)	(0.10)	(0.10)	(0.01)	(0.02)

Panel B: Governance and choice between alliances and organic growth conditional on corporate income taxation of state of company HQ

	(1)	(2)	(3)	(4)
$G\times$ Combined reporting	−0.005	−0.004	−0.006	−0.005
	(−3.54)	(−2.72)	(−4.06)	(−3.47)
$G\times$ Separate reporting	0.001	0.000	0.000	0.000
	(0.67)	(0.29)	(0.37)	(0.01)
Institutional ownership	−0.009	−0.004	−0.000	−0.014
	(−0.67)	(−1.27)	(−0.01)	(−0.90)
Combined reporting	0.076	0.052	0.087	0.084
	(4.60)	(3.11)	(4.94)	(4.62)
Controls 1	Yes	Yes	Yes	Yes
Controls 2		Yes		
Industry, year dummies	Yes	Yes	Yes	Yes
Adj R^2	0.237	0.165	0.214	0.229
Nobs	15,209	10,519	15,209	15,209
F-test	11.16	2.94	13.07	8.05
(*p*-Value)	(0.01)	(0.10)	(0.01)	(0.01)

Panel C: Governance and number of alliances conditional on corporate income taxation of the states where the company does business

	(1)	(2)	(3)	(4)
G	0.018	0.051	0.002	0.002
	(0.29)	(0.62)	(0.32)	(0.23)
$G\times$ Fr. of combined reporting	−0.024	−0.027	−0.037	−0.026
	(−1.75)	(−1.82)	(−2.52)	(−1.92)
Institutional ownership	−0.107	−0.118	−0.113	−0.068
	(−1.26)	(−1.58)	(−1.22)	(−0.70)
Fr. of combined reporting	0.564	0.749	0.732	0.645
	(4.47)	(5.12)	(5.47)	(4.52)
Controls 1	Yes	Yes	Yes	Yes
Controls 2		Yes		
Industry, year dummies	Yes	Yes	Yes	Yes
Adj R^2	0.170	0.168	0.159	0.166
Nobs	17,760	12,264	17,760	17,760

Panel D: Governance and choice between alliances and organic growth conditional on state corporate income taxation of the states where the company does business

	(1)	(2)	(3)	(4)
G	0.001	−0.001	0.001	−0.001

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Table 8 (*continued*)

Panel D: Governance and choice between alliances and organic growth conditional on state corporate income taxation of the states where the company does business

	(1)	(2)	(3)	(4)
	(0.77)	(−0.71)	(0.57)	(−0.51)
$G \times$ Fr. of combined reporting	−0.005	−0.003	−0.006	−0.004
	(−2.12)	(−1.70)	(−2.55)	(−2.00)
Institutional ownership	−0.004	−0.005	0.001	−0.001
	(−0.34)	(−1.12)	(0.04)	(−0.07)
Fr. of combined reporting	0.076	0.042	0.092	0.068
	(3.40)	(2.02)	(3.95)	(3.07)
Controls 1	Yes	Yes	Yes	Yes
Controls 2		Yes		
Industry, year dummies	Yes	Yes	Yes	Yes
Adj R^2	0.336	0.165	0.288	0.301
Nobs	15,209	10,519	15,209	15,209

Next, we re-estimate the previous specifications using the average degree of combined reporting of the firm. The results are reported in Table 8, Panels C and D. As before, in Panel C, the dependent variable is the logarithm of the number of alliances and joint ventures, while in Panel D, we standardize the number of alliances (joint ventures) by CAPEX.

The results confirm that the role of governance is concentrated in firms in combined reporting states. The effect, even if statistically weaker, is economically relevant. There seems to be no relation between governance and alliance creation in companies that conduct business solely in separate reporting states. However, the larger the presence of the company in combined reporting states, the stronger the relation between governance and alliance activity.[10]

Overall, these findings are consistent with the hypothesis that combined reporting requirements reduce the relative cost of doing alliances and that better-governed firms react to this by initiating more alliances.

7. Corporate governance and alliances: the role of size

So far our results support the idea that corporate governance is useful for resolving agency issues within the firm and that good governance results in more alliance creation. A natural extension of this result would be to expect good governance to also mitigate agency issues between alliance partners (H5). We would expect firms to agree to a more equal split of balance of power within an alliance if the prospective partner is relatively well-governed. That is, the better the governance of the junior alliance partners, the larger they should be relative to the dominant partner.

We explore this conjecture in Table 9.[11] From the descriptive statistics reported in Panel A, we see that the dominant partner is, on average (median), about 179% (148%) larger (in terms of total assets) than the average junior partner. Governance measures on average are similar, however. There is also a wide dispersion both in relative size and in relative governance across alliance partners.

In Panel B of Table 9, we relate the relative size [$\Delta Log(assets)$] of the dominant partner to its relative governance, ΔG, and a set of control variables that are also expressed as the difference between corresponding variables for the dominant and junior alliance partners. The results indicate that the better governed the junior partners, the larger they are relative to the dominant alliance member.

Improvement in the relative governance of the junior partners by one standard deviation increases the average size of the junior partner relative to the dominant partner by about 6.1% (in terms of total assets) across all three measures of alliance creation. To put this result into perspective, a one standard deviation increase in relative R&D intensity by the junior partners is related to a 12.5% decline in their relative size. This also corroborates a stylized fact that many alliances are formed between a large firm and a small, but R&D-intensive firm.

8. Robustness check: alliances, M&As, and organic growth

So far we have found that better corporate governance increases alliance creation, and that alliances formed by better-governed firms create more value. Pursuing alliances, however, is not the only way a firm can grow. Alternative ways are through mergers and acquisitions or through an organic growth. All of them allow the firm to grow; at the same time, these alternatives also generate commitment problems. Alliances "can sometimes dominate integration by offering some of its benefits with fewer strategic costs" (Mathews and Robinson, 2008).

We start with the choice between alliances and organic growth. Organic growth allows the firm to internalize production, eliminating the costs of co-managing a project with an outside partner such as day-to-day management of the relationship with partners as well as the danger of sharing sensitive production technologies. Alliances by contrast help mitigate internal agency issues

[10] Our results are not affected if we eliminate from the analysis firms located in Delaware.

[11] As we require availability of governance, total assets, and accounting information on both the dominant partner and at least one junior alliance partner, the number of observations we consider here shrinks significantly.

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Table 9
Corporate governance and size of alliance partners.

We report the results of the relation between the relative governance of alliance partners and their relative size. The dependent variable, $\Delta Log(assets)$ is the difference in the logarithm of book value of assets of the dominant (largest) alliance partner and the logarithm of the average book value of the assets of the junior partners. ΔG is the difference in governance of dominant partner and the average governance of junior partners. All other control variables are expressed in changes and are defined in a similar way. Panel A presents the descriptive statistics of the relative size and relative governance of alliance partners. Panel B reports regression results. Specifications (1) and (2) provide the results for firms involved in any type of alliances or joint ventures. Specifications (3) and (4) report the results for alliances and joint ventures excluding those by non-listed subsidiaries. Specifications (5) and (6) report the results for alliances only. We use time and the dominant partner primary SIC2 industry dummies. Standard errors are clustered at the dominant partner primary SIC2 level. See Appendix B for variable definitions.

Panel A: Descriptive statistics

		N	Mean	Median	Stdev	Q1	Q3
Alliances+jv	Δlog(assets)	1749	1.789	1.4826	1.434	0.635	2.681
	ΔG		0.002	0.000	3.408	−2.000	2.000
Alliances+jv: subs	Δlog(assets)	1692	1.794	1.483	1.438	0.635	2.692
	ΔG		−0.029	0.000	3.390	−2.000	2.000
Alliances	Δlog(assets)	1434	1.859	1.582	1.445	0.697	2.748
	ΔG		0.062	0.000	3.369	−2.000	2.000

Panel B: Relative governance and relative size of alliance partners

	(1)	(2)	(3)	(4)	(5)	(6)
ΔG	−0.018	−0.018	−0.017	−0.018	−0.015	−0.016
	(−2.31)	(−2.09)	(−2.06)	(−2.16)	(−2.39)	(−2.21)
ΔInstitutional ownership		−0.347		−0.359		−0.480
		(−1.62)		(−1.49)		(−2.93)
ΔIndustry concentration		−1.418		−1.179		−1.814
		(−3.02)		(−2.43)		(−2.83)
ΔTobinQ		0.007		0.007		0.005
		(0.73)		(0.62)		(0.54)
ΔSales growth		−0.080		−0.073		−0.082
		(−0.78)		(−0.66)		(−0.71)
ΔR&D/Sales		−0.243		−0.310		−0.248
		(−1.50)		(−2.29)		(−1.76)
ΔCash		−0.192		−0.203		−0.166
		(−3.98)		(−3.51)		(−4.06)
ΔCapex		−0.048		−0.196		0.428
		(−0.14)		(−0.55)		(1.07)
ΔROE		0.238		0.251		0.228
		(3.75)		(3.21)		(4.04)
$\Delta D/E$		0.073		0.076		0.060
		(5.07)		(4.68)		(3.77)
$\Delta P/E$		0.001		0.001		0.001
		(2.46)		(2.07)		(2.14)
ΔComment-Schwert		6.415		5.595		17.584
		(0.66)		(0.68)		(2.02)
Industry, year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Clustering	Industry	Industry	Industry	Industry	Industry	Industry
Adj R^2	0.058	0.119	0.061	0.121	0.064	0.127
N	1749	1695	1692	1576	1434	1395

when division managers are engaged in a contest for the allocation of the resources.

Undertaking projects internally leaves the firm exposed to a number of agency issues. Division managers will fight for the allocation of the resources and the lack of clearly defined constraints on the transfer of resources inside the firm across different divisions will exacerbate this problem. Alliances, however, by ring-fencing investment and pre-committing pools of resources, reduce the free-cash flow agency problems of the firm (Jensen, 1986) and help to address the commitment problem of the CEO vis-à-vis division managers. We therefore anticipate that better governance should encourage more alliance creation than internal investment.

We investigate the role of governance by directly comparing choices to engage in an alliance or organic growth. We estimate a set of Tobit regressions similar to those reported in Table 4. Given that we do not have information on the value of the assets that are shared in an alliance, we standardize alliance activity by scaling it by capital expenditures (in millions of dollars). As in the previous cases, we separately consider pure alliances and alliances and joint ventures.

We report the results in Table 10. The dependent variable in specifications (1) and (2) is the logarithm of one plus the ratio of the number of alliances and joint ventures to the Capital expenditures, $\log(1+((alliances+jv)/CAPEX))$.[12] The dependent variables in specifications (3) and (4) are $\log(1+((alliances+jv:subs)/CAPEX))$ and $\log(1+(alliances/CAPEX))$.

[12] We thank an anonymous referee who brought our attention to this topic.

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Table 10
Governance and choice between alliances and organic growth.

We report the results of the relation between corporate governance and the relative choice between alliances and capital expenditures in the subsequent year. The dependent variable in specifications (1) and (2) is the logarithm of one plus the ratio of the number of alliances and joint ventures to the capital expenditures (in mlns) that the company undertook over the subsequent year: $\log(1+((alliances+jv)/CAPEX))$. The dependent variable in specification (3) is $\log(1+((alliances+jv:subs)/CAPEX))$. The dependent variable in specification (4) is $\log(1+(alliances/CAPEX))$. Controls 1 include Industry concentration, Log(Assets), Tobin's Q, Sales growth, R&D/Sales, Cash, Capex, ROE, *D*/*E*, *P*/*E*, Comment-Schwert, Guay-Harford, and Asset liquidity. Controls 2 include Equity-based compensation (EBC) and Managerial ownership. All variables are defined in Appendix B. We report the results of Tobit regressions with time and industry dummies. Standard errors are adjusted for heteroskedasticity. *t*-Statistics are in parentheses.

Variable	(1)	(2)	(3)	(4)
G	−0.001	−0.002	−0.002	−0.002
	(−2.05)	(−2.38)	(−2.73)	(−2.95)
Institutional ownership	−0.005	−0.058	0.003	−0.013
	(−0.42)	(−3.48)	(0.19)	(−0.84)
Controls 1	Yes	Yes	Yes	Yes
Controls 2		Yes		
Industry, year dummies	Yes	Yes	Yes	Yes
Adj R^2	0.252	0.178	0.225	0.246
N	17,109	11,148	17,109	17,109

The results are consistent with other results so far. Firms with better governance favor alliance formation over internal investment. This result is not only statistically significant, but also economically relevant. A one standard deviation improvement in governance increases alliance-to-CAPEX activity by between 19.9% and 50.7% relative to the sample mean. It is interesting to notice that institutional ownership is not significant.

We then consider the choice between alliances and M&As. Both alliances and M&As are alternative ways of pursuing non-organic growth. While the choice between organic and "non-organic" growth is a fundamental one, the choice between M&As and alliances is more subtle. Indeed, both alliances and M&As allow building up production capacity in a way similar to the one of organic growth. The assumption is that in the case of alliances, both partners already have the capacity production in place and just team-up together.

In general, alliances tend to be smaller investments than direct M&A transactions. Effectively, alliances provide the firm with more flexibility, endowing it with an option to scale up if they need. However, once we control for size, the major value of alliances is related to agency problems. Indeed, alliances do not require a big integration cost (e.g., Kogut and Singh, 1988; Doz, 1996; Hennart and Reddy, 1997), nor do they impose a tie-up with other firms that can lead to value destruction. Such advantages are especially valuable in the presence of an organizational structure that suffers from agency problems. Consider, for example, a firm whose CEO is unable to control divisional managers, who engage in a fight over the allocation of resources. In this case, alliance is a more valuable choice as it does not require the integration between different entities, but allows firms "to experiment with the target's resources; and shared ownership and control induce knowledge sharing over time" (Balakrishnan and Koza, 1993). In the case of unbridgeable differences, alliances also "can be terminated at low cost" (Balakrishnan and Koza, 1993). Therefore, most of the literature considers alliances as alternatives to M&As (e.g., Kogut and Singh, 1988; Mathews and Robinson, 2008).

While an overall analysis based on direct comparison between alliances and M&As can be misleading because of differences in firm size and intrinsic characteristics between the two forms of aggregation, we still attempt it for two reasons. First, it provides a useful robustness check. Second, and more important, it also provides valuable insights into the way firms choose to grow in general. A full-fledged analysis of the financial implications of different ways of growing has not been addressed in the finance literature.

Therefore, we directly compare alliances to M&As and we ask how governance affects the choice. We estimate a set of Tobit regressions similar to the previous ones, but with a different dependent variable that aims to capture a trade-off between alliances and M&As.

We report the results in Table 11. We scale down the measures of alliance creation used before by the M&A activity of the firm. The dependent variable in specifications (1) and (2) is the logarithm of one plus the ratio of the number of alliances and joint ventures to the number of M&A bids a company announced in the subsequent year, $\log(1+((alliances+jv)/M\&As))$. The dependent variables in specifications (3) and (4) are $\log(1+((alliances+jv:subs)/M\&As))$ and $\log(1+(alliances/M\&As))$.

The results lend strong support to the idea that better governance moves a firm's choice of a growth strategy from M&As to alliances. The result is also economically significant. Indeed, a one standard deviation better

Table 11
Governance and choice between alliances and M&As.

We report the results of the relation between corporate governance and the relative choice between alliances and M&As announced over the subsequent year. The dependent variable in specifications (1) and (2) is the logarithm of one plus the ratio of the number of alliances and joint ventures to the number of M&A bids a company has announced over the subsequent year: $\log(1+((alliances+jv)/M\&As))$. The dependent variables in specifications (3) and (4) are $\log(1+((alliances+jv:subs)/M\&As))$ and $\log(1+(alliances/M\&As))$, correspondingly. Controls 1 include Industry concentration, Log(Assets), Tobin's Q, Sales growth, R&D/Sales, Cash, Capex, ROE, *D*/*E*, *P*/*E*, Comment-Schwert, Guay-Harford, and Asset liquidity. Controls 2 include Equity-based compensation (EBC) and Managerial ownership. All variables are defined in Appendix B. We report the results of Tobit regressions with time and industry dummies. Standard errors are adjusted for heteroskedasticity. *t*-Statistics are in parentheses.

	(1)	(2)	(3)	(4)
G	−0.020	−0.013	−0.026	−0.025
	(−3.31)	(−2.17)	(−4.06)	(−3.63)
Institutional ownership	−0.168	−0.242	−0.177	−0.021
	(−1.50)	(−2.29)	(−1.48)	(−0.16)
Controls 1	Yes	Yes	Yes	Yes
Controls 2		Yes		
Industry, year dummies	Yes	Yes	Yes	Yes
Adj R^2	0.159	0.135	0.150	0.156
N	4854	4659	4854	4854

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governance is related to an increase in alliance-to-M&A activity by between 11.9% and 19.2% relative to the sample mean.

Once again, we can see that institutional ownership is not significant. This confirms our intuition that institutional investors are not able to differentiate between the value-improving features of alliances and those of other forms of growth.

9. Conclusion

We study the link between the quality of governance of a firm and its alliance activity. We argue that good-governance firms are more likely to engage in alliances and to generate value through undertaking them. We show that the relation between governance and alliance creation is helpful in resolving agency issues within the firm.

The relation between governance and alliances is stronger in firms (conglomerates) and projects (longshots) where agency issues are more severe. Governance mitigates agency issues between alliance partners, i.e., dominant alliance partners agree to a more equal split of power (as evidenced by the relative market size) when junior partners are better governed. We use exogenous variation in the cost of forming an alliance brought about by cross-state variations in state corporate income tax reporting rules to provide evidence of a causal link between governance and alliances.

Appendix A. Model

Our starting point is Brusco and Panunzi (2005). Like theirs, our model has three agents: headquarters (HQ) and two divisional managers, M_1 and M_2. Each division has assets in place and new investment opportunities. Divisional managers derive their private benefits from the assets in their division only. HQ is interested in total returns. We also assume that HQ derives additional utility from its ability to select the project it favors despite the signal it observes. This is an additional twist that separates us from Brusco and Panunzi (2005). The timing of the model is as follows:

1. At $t=0$, based on its preferences, HQ chooses the level of corporate governance π (defined later) and if it chooses to enter into alliances or to do internal capital markets. The utility function of HQ is

   $U=\Pi(\{\text{A,ICM}\},\pi)+\lambda\pi$,

   where Π is the profit of the overall firm, which depends on the choice of the form of the interaction between HQ and divisions (alliances or internal capital markets), and λ is the taste parameter that describes the preference for distortion on the part of HQ.We do not model alliances explicitly, but rather assume that an alliance provides HQ with a commitment device, that avoids the redistribution of funds between projects. In this case, a division is treated as a stand-alone project. Manager M_i has a project that can either succeed (and pay 1) or fail (and pay 0). The probability of success depends on managers' level of effort e_i, $Prob(Success)=e_i$. The effort is costly for the manager, with disutility of effort $(k/2)e_i^2$.
2. At $t=0.5$ there is a signal s_i that can take two values and provides information on the quality of investment projects. If $s=s_1$, then

   $$\mathrm{E}(R_1|s=s_2)=\mathrm{E}(R_2|s=s_1)=\underline{R}\geq 1, \text{ and } \mathrm{E}(R_1|s=s_1)=\mathrm{E}(R_2|s=s_2)=\underline{R}+\Delta\geq R.$$

   We define $p=Prob(s=s_1)$, and $Prob(s=s_2)=1-p$.
3. At $t=1$, HQ observes the cash flow produced by the two divisions, C_1 and C_2, and redistributes funds to the divisions. The old assets in place are fully depreciated, and no external finance is available. HQ has the power to allocate funds across divisions. We denote by K_i the funds assigned to division i. We assume that headquarters allocates all funds to the divisions, so that $K_1+K_2=C_1+C_2$. In the case of internal capital markets, funds are reallocated to one division. We assume that if a high signal for division 1 is realized, the funds are always allocated to this division. However, if a low signal for division 1 is realized, with probability π funds are still going to be reallocated to division 1. This favoritism is the way we model the effect of quality of corporate governance on individual managers' decisions.
4. At $t=2$ the investment in division i yields cash flow K_iR_i. Managers of this division are compensated as a percentage of this amount, ϕK_iR_i.

Further, we assume for simplicity that $\underline{R}=1$.[13] The decision tree is given in Fig. A1.

The problem of the manager at time $t=0$ is dependent on the choice of the organizational structure (internal capital markets vs. stand-alone committed solution). For the case of internal capital markets (ICM), (e_1+e_2) is redistributed towards the division winner picked by HQ. Division managers solve the problem:

$$\mathrm{Max}_{\{e1\}}\phi[p(1+\Delta)+(1-p)\pi](e_1+e_2)-(k/2)e_1^2,$$

$$\mathrm{Max}_{\{e2\}}\phi[(1+\Delta)(1-p)(1-\pi)](e_1+e_2)-(k/2)e_2^2, \quad \text{(A1)}$$

and the necessary and sufficient conditions for the maximum are

$$e_1{}^{\mathrm{ICM}}=(\phi/k)[p(1+\Delta)+(1-p)\pi], \text{ and } e_2{}^{\mathrm{ICM}}=(\phi/k)[(1+\Delta)(1-p)(1-\pi)] \quad \text{(A2)}$$

One can see that the provision of incentives worsens as corporate governance deteriorates:

$$e_1^{\mathrm{ICM}}+e_2^{\mathrm{ICM}}=(\phi/k)[(1+\Delta)-(1-p)\pi\Delta]$$

It also affects HQ profits:

$$\Pi^{\mathrm{ICM}}=(\phi/k)[(1+\Delta)-(1-p)\pi\Delta]^2 \quad \text{(A3)}$$

If HQ enters into alliances with outside firms and through this mechanism commits itself not to redistribute funds, the managers' problem becomes

$$\mathrm{Max}_{\{e1\}}\phi[1+p\Delta]e_1-(k/2)e_1^2,\ \mathrm{Max}_{\{e2\}}\phi[1+\Delta(1-p)]e_2-(k/2)e_2^2, \quad \text{(A4)}$$

[13] This is definitely just a simplification. The cost of it is the assumption that we assume that at $t=1$, if needed, reinvestment in the project with expected returns of 1 will happen (i.e., management is not allowed to close down the project).

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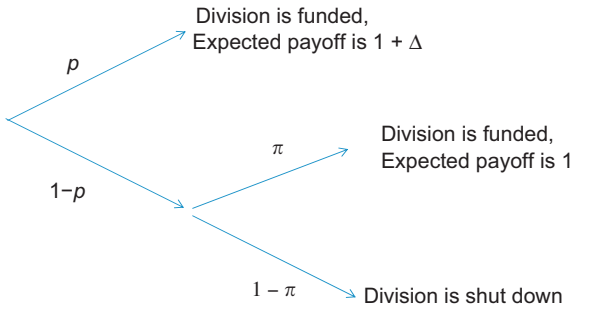

Fig. A1. The figure represents the sequence of events in the model for division 1.

and first order condition gives us

$e_1^A = (\phi/k)[1+p\Delta]$ and $e_2^A = (\phi/k)[(1+\Delta(1-p)]$

Profit of HQ is

$$\Pi^A = (1+p\Delta)e_1^A + (1+(1-p)\Delta)e_2^A = (\phi/k)\{(1+p\Delta)^2 + [1+(1-p)\Delta]^2\} \quad \text{(A5)}$$

We assume that the utility of HQ is given by Π^A if an alliance is chosen, and $\Pi^{ICM}+\lambda\pi$ if internal capital market is chosen. The differences in utilities is given by

$$U^{ICM} - U^A = (\phi/k)\{(1-p)[2(p-\pi)+\pi^2(1-p)]\Delta^2 - 2\Delta\pi(1-p) - 1\} + \lambda\pi$$

HQ would prefer alliances to ICM if $U^{ICM} - U^A < 0$.

Proposition 1. Conditional on the choice of ICM regime, there exists λ^* such that if $\lambda > \lambda^*$, HQ will choose $\pi = 1$ and if $\lambda < \lambda^*$, HQ will choose $\pi = 0$.

This follows from the expression for $\Pi^{ICM}+\lambda\pi$.The solution of provides us with global minimum for π.

$$\partial[P^{ICM}+\lambda\pi]/\partial\pi = -(\phi/k)\{2(1+\Delta)(1-p)\Delta\} + \lambda + 2\pi(\phi/k)[(1-p)\Delta]^2 = 0$$

$$\pi* = \{\Delta(1-p)(1+\Delta) - (k/2\phi)l\}/[(1-p)\Delta]^2$$

If $\pi^* > ½$, then the maximum on interval [0,1] is at 0 (no distortion), otherwise it is at 1 (HQ will always prefer project 1). Since π^* is strictly decreasing in λ, then there exists λ^* such that $\pi^* < 1/2$.

Proposition 2. For any given value of p and Δ, there existsλ^{**} such that if $\lambda > \lambda^{**}$ HQ would choose ICM solution with bad corporate governance. If $\lambda^* < \lambda \leq \lambda^{**}$, then HQ will choose alliance solution. Finally, if $\lambda \leq \lambda^*$, then the solution is equivalent to the Brusco-Panunzi (2005) solution: there exists Δ^*, such that if Δ HQs choose alliances instead of ICM.

If management chooses the regime in which π 1, then

$$U^{ICM} - U^A = \lambda^{**} - (\phi/k)[1+(1-p)\Delta]^2 = 0,$$

and

$$\lambda^{**} = (\phi/k)[1+(1-p)\Delta]^2.$$

This can be interpreted as the increase of ex post difference in divisional profits Δ is translated into higher threshold between alliance regime and bad corporate governance ICM regime. Finally, Proposition 1 of Brusco and Panunzi (2005, p. 666) tells us that there exists such Δ^*, such that if ΔHQs choose alliances instead of ICM. This solution would be valid if λ λ^*. One can show that $\lambda^{**} > \lambda^*$ for any p and Δ.

Table C1
Announcement premium.

We report univariate statistics on the announcement premium in alliances and joint ventures. We present the results for the full sample (all alliances and joint ventures) as well as for subsamples of companies without unlisted subsidiaries and for alliances only. The announcement premium is calculated as the four-factor adjusted abnormal return on the company over the time window (−63; +42) days around the announcement date. Factor loadings are estimated over the preceding year.

	N	Mean	Median	Stdev	*t*-Stat	Prob
Alliances+jv	19,041	0.031	0.025	0.220	19.44	(0.00)
Alliances+jv: subs	14,142	0.035	0.028	0.230	18.10	(0.00)
Alliances	14,096	0.038	0.032	0.231	19.53	(0.00)

Appendix B. Variable definitions

Variable	Description of variable and source of data
Log(alliances+jv)	Logarithm of one plus the number of all alliances and joint ventures involving a company in the following year.
Log(alliances+jv: subs)	Logarithm of one plus the number of alliances and joint ventures excluding those involving non-listed subsidiaries in the following year.
Log(alliances)	Logarithm of one plus the number of all alliances involving a company in the following year.
Corporate governance index, *G*	Gompers, Ishii, and Metrick (2003) index: sum of the number of provisions restricting shareholder rights. Data obtained from Investor Responsibility Research Center.
Democracy	Dummy that takes the value of one if $G \leq 7$ and zero otherwise.
Dictatorship	Dummy that takes the value of one if $G \geq 13$ and zero otherwise.
Institutional ownership	Year-end fraction of shares outstanding owned by institutional fund managers: Spectrum 13f.
Premium	Four-factor adjusted abnormal return on a company stock over the (−63; +42) day window around an alliance or joint venture announcement
Total assets	Year-end book value of total assets: Compustat data 6
Book-to-market, B/M	Ratio of book value of equity to its market value: Compustat data 60/ data (24 × 25).
Sales growth	Percentage growth in sales (Compustat item 12) from the past year.
R&D/Sales	Ratio of R&D to sales, set to zero when missing: Compustat data 46/ data 12
Cash	Ratio of cash holdings to total assets: Compustat data 1/ data 6
Capex	Ratio of capital expenditures to total assets of the firm: Compustat data 128/data 6.
ROE	Ratio of earnings to average equity for prior fiscal year: Compustat data 20/(data 60+data 60($t-1$))/2).
Debt-to-equity, *D*/*E*	Ratio of long-term debt to the total equity of the firm: Compustat data 9/ data 60.
Price-to-earnings, *P*/*E*	Ratio of year-end stock price to earnings per share for the prior fiscal year: Compustat data 24/data 58.

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Industry concentration	Sum of squared market share of each firm in the same industry during a year. Market share is defined as the total sales of the firm in a given year divided by the total sales of the industry in the year. The industry is defined at the three-digit SIC code level, where the SIC codes have been obtained from Center for Research in Security Prices (CRSP) Monthly Stocks (SICCD). The sales data come from Compustat: data 12.
Comment-Schwert	Cumulative abnormal return, measured relative to a CRSP value-weighted market model and estimated using the third year prior to the forecast year, of the firm's stock for the two previous years (see Palepu, 1986; Comment and Schwert, 1995).
Guay-Harford	Following Guay and Harford (2000), permanence of cash flow shock is [Average (CFO/Total assets) in years +1 to +3] – [Average (CFO/Total assets) in years −4 to −2], where Cash flow from operations (CFO) is defined as: Cash flow from operations=Operating income before depreciation$_t$ – Interest$_t$ – Taxes$_t$ - Δ Working capital$_t$. This measure is designed to capture the degree to which the future cash flows settle above or below their pre-shock value.
Asset liquidity	Following Schlingemann, Stulz, and Walking. (2002), asset liquidity is defined as the ratio of the value of all M&A announcements to the total asset value of an industry (defined by two-digit SIC code). The value of M&A announcements is retrieved from the Security Data Corporation (SDC) Mergers database, and excludes repurchases and self-tender offers; the asset value of industries is the sum of the total assets (Compustat item 6) of all companies in the same two-digit SIC group.
Equity-based compensation, EBC	Proportion of total compensation to the management officers of the firm paid in the form of stock options. Estimated from Thomson Reuter Insider Database.
Managerial ownership	Fraction of shares outstanding owned by top five company executives. Estimated from Thomson Reuters Insider Database.
Effective spread	Trade-weighted average bid-ask spread adjusted by the mid-point of bid-ask range estimated on daily basis and averaged over the year. Estimated from Trade and Quote (TAQ) Database.

Appendix C. Alliances and value creation

We confirm a stylized fact that alliances increase value. We consider two measures of value creation: Announcement premium, and long-term return.

First, we focus on the average announcement abnormal return around the announcement of an alliance. We use the abnormal return with respect to a four-factor adjusted abnormal return of the stock of the firm in the time window $(-63;\ +42)$ days around the announcement date. This variable is similar to Schwert's (2000) definition of Target abnormal return premium. The results are reported in Table C1. We present the results for all alliances and joint ventures, a subsample of alliances and joint ventures excluding those undertaken by non-listed subsidiaries, and a subsample of pure alliances. The results show a positive and significant abnormal return around alliances. On average, alliances generate an abnormal return of 3.10% for the entire sample; 3.52% if we eliminate alliances by non-listed subsidiaries; and 3.84% if we consider only the alliances.

To examine the long-run returns, we construct alliance-based portfolios. Our approach is similar to that of Gompers, Ishii, and Metrick (2003). Each year, we see whether a firm formed an alliance in the previous 12 months, and we build portfolios on this basis. Portfolios are held for 36 months. We are interested in knowing whether being involved in an alliance impacts long-term performance.

We also construct portfolios of similar firms that did not engage in alliances. We select these other firms using a propensity score matching on the basis of: log of assets, ratio of operating income before debt (OIBD) to assets, profit margin, return on assets (ROA), OIBD/sales, CAPEX+R&D/sales, market/book ratio, and industry dummies. Then, we perform a time series regression of the excess returns of the portfolio of interest $R_{p,t}$—either the alliance portfolio, or the benchmark portfolio composed of the other similar firms, or the difference between the latter two—on the three Fama and French (1992) factors. Abnormal performance is measured by the intercept α of this time-series regression. We consider both equal- and value-weighted portfolios as well as the subsamples defined above. The results are reported in Tables C2 and C3.

In Table C2, we compare the firms that engage in alliances to others, i.e., all the other firms that have not engaged in alliances. In Table C3, we report the results for the matched sample.

There are two main findings. First, firms that engaged in alliances outperform those that did not. A portfolio strategy of buying firms that have engaged in alliances in the prior 12 months and selling other similar firms exhibits positive abnormal returns of 0.47% (0.38%) per month for an equal-weighted (value-weighted) strategy, or 5.78% (4.62%) per year. If we compare alliance-engaging firms to all the other firms, the positive abnormal return is 0.16% (0.16%) per month for a value-weighted (equal-weighted) strategy, or 1.90% per year. Second, most of this abnormal positive performance comes from outperformance of the alliance-initiating firms as opposed to poor performance of the matched firms.

It is interesting to note that the results are not driven by an omitted growth factor. In Table C4, we report the results of a two-dimensional sorting along growth and alliance dimensions. The difference between returns of firms engaged in alliances versus the rest exists also within the growth category. For those firms, the α of the strategy of going long in firms engaged in alliances and shorting the matched firms is 25 bps per month for both equal- and value-weighted portfolios.

Appendix D. The merge of the data sets

We aggregate data from several sources. The first source is the result of the merge of the annual CRSP-Compustat Merged (CCM) database files containing firm-level accounting data, and the Compustat Segment files. The second source is Dun & Bradstreet's (D&B) Million Dollar Database, which contains information on location,

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Table C2
Alliances vs. the rest.

We report the abnormal return (α), loadings on four-factor Fama-French (1992) and Carhart (1997) coefficients, and the corresponding *t*-statistic of equal- and value-weighted portfolios of firms that formed alliances, all other firms, and the difference between the two. Portfolios are formed on January 1st of the year after the alliance was announced and are held for 36 months. Panel A reports the results for alliances and joint ventures formed either by listed companies, or their unlisted subsidiaries. Panel B reports results for alliances and joint ventures excluding those formed by non-listed subsidiaries. Panel C reports the results for alliances only.

Panel A: Full sample	α	MKTRF	SMB	HML	UMD	Adj R^2
EW						
Firms forming alliances	0.282	1.086	0.375	0.234	−0.222	0.914
	(2.66)	(37.69)	(12.12)	(6.19)	(−9.96)	
Other firms	0.124	0.997	0.532	0.494	−0.189	0.907
	(1.24)	(36.53)	(18.15)	(13.79)	(−8.98)	
Long alliances, short others	0.158	0.089	−0.157	−0.260	−0.032	0.474
	(2.07)	(4.29)	(−7.03)	(−9.53)	(−2.01)	
VW						
Firms forming alliances	0.275	0.935	−0.145	−0.297	−0.026	0.928
	(3.20)	(39.80)	(−5.76)	(−9.65)	(−1.46)	
Other firms	0.114	0.989	0.117	0.176	−0.062	0.898
	(1.19)	(37.93)	(4.20)	(5.16)	(−3.06)	
Long alliances, short others	0.161	−0.054	−0.263	−0.473	0.035	0.392
	(1.32)	(−1.62)	(−7.37)	(−10.88)	(1.37)	
Panel B: Subsample without non-listed subsidiaries						
	α	MKTRF	SMB	HML	UMD	Adj R^2
EW						
Firms forming alliances	0.307	1.093	0.375	0.187	−0.220	0.909
	(2.77)	(36.18)	(11.57)	(4.72)	(−9.43)	
Other firms	0.116	1.000	0.522	0.496	−0.191	0.910
	(1.18)	(37.39)	(18.20)	(14.13)	(−9.27)	
Long alliances, short others	0.191	0.093	−0.147	−0.309	−0.029	0.514
	(2.40)	(4.28)	(−6.31)	(−10.82)	(−1.70)	
VW						
Firms forming alliances	0.287	0.941	−0.145	−0.321	−0.030	0.923
	(3.16)	(38.02)	(−5.48)	(−9.90)	(−1.57)	
Other firms	0.091	0.966	0.076	0.168	−0.053	0.900
	(1.00)	(38.71)	(2.85)	(5.15)	(−2.76)	
Long alliances, short others	0.196	−0.025	−0.222	−0.490	0.023	0.401
	(1.58)	(−0.75)	(−6.12)	(−11.07)	(0.89)	
Panel C: Full sample, alliances only						
	α	MKTRF	SMB	HML	UMD	Adj R^2
EW						
Firms forming alliances	0.405	1.110	0.383	0.155	−0.234	0.897
	(3.30)	(33.23)	(10.69)	(3.54)	(−9.08)	
Other firms	0.094	1.006	0.505	0.501	−0.189	0.910
	(0.96)	(37.66)	(17.61)	(14.30)	(−9.18)	
Long alliances, short others	0.311	0.104	−0.122	−0.346	−0.045	0.487
	(3.25)	(4.00)	(−4.35)	(−10.11)	(−2.22)	
VW						
Firms forming alliances	0.312	0.932	−0.157	−0.341	−0.035	0.918
	(3.32)	(36.37)	(−5.69)	(−10.13)	(−1.76)	
Other firms	0.052	0.963	0.044	0.180	−0.034	0.904
	(0.59)	(40.36)	(1.71)	(5.76)	(−1.86)	
Long alliances, short others	0.261	−0.030	−0.201	−0.521	0.000	0.432
	(2.13)	(−0.91)	(−5.60)	(−11.91)	(−0.02)	

number of employees, and manager identity for more than 23 million U.S. companies and their subsidiaries. Observations in D&B are at the "subsidiary" level. D&B also contains information on their Parents and Ultimate Parents (headquarters). We collect data on the top subsidiaries per sales, approximately 33,000 observations per year.

To link the D&B subsidiaries to Compustat segments, we proceed as follows. First, we match Compustat firms with all Ultimate Parents in D&B using a name-recognition algorithm. Each Ultimate Parent will have several subsidiaries as "children." Second, we match Compustat segments with the children, or subsidiaries, of each Ultimate Parent. This match is done sequentially by: four-digit SIC code of the segment and of the subsidiary; three-digit SIC code of the segment and of the subsidiary; a keyword match between the segment's Compustat name and the subsidiary's D&B name and business description. We repeat these two matching procedures iteratively after checking manually for unaccounted parent-subsidiary relationships, unmatched large firms due to differences in designation, etc.

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Table C3
Alliances vs. the rest, matched sample.

Alliances vs. the rest, matched sample.We report the abnormal return (α), loadings on four-factor Fama-French (1992) and Carhart (1997) coefficients, and the corresponding *t*-statistic of equal- and value-weighted portfolios of firms that formed alliances, matching firms, and the difference between the two. Portfolios are formed on the first of the month following the month the alliance was announced and are held for 36 months. Panel A reports the results for all alliances and joint ventures. Panel B reports results for alliances and joint ventures excluding those formed by non-listed subsidiaries. Panel C reports the results for alliances only. Matching was done as in Hillion and Vermaelen (2004) using log of assets, OIBD/assets, profit margin, ROA, OIBD/sales, CE+RD/sales, market/book ratio, and industry dummies.

Panel A: Full sample	α	MKTRF	SMB	HML	UMD	Adj R^2
EW						
Firms forming alliances	0.438	1.233	0.563	−0.313	−0.340	0.924
	(3.13)	(32.33)	(13.74)	(−6.25)	(−11.54)	
Other firms	−0.031	1.080	0.464	0.250	−0.255	0.952
	(−0.39)	(49.73)	(19.92)	(8.76)	(−15.20)	
Long alliances, short others	0.469	0.153	0.098	−0.562	−0.085	0.723
	(4.35)	(5.20)	(3.11)	(−14.58)	(−3.75)	
VW						
Firms forming alliances	0.336	1.024	−0.151	−0.428	−0.071	0.885
	(2.61)	(29.24)	(−4.01)	(−9.33)	(−2.61)	
Other firms	−0.042	0.996	−0.163	−0.014	0.019	0.910
	(−0.46)	(40.41)	(−6.17)	(−0.43)	(0.99)	
Long alliances, short others	0.377	0.027	0.012	−0.414	−0.089	0.488
	(3.47)	(0.92)	(0.39)	(−10.65)	(−3.90)	
Panel B: Subsample without non-listed subsidiaries	α	MKTRF	SMB	HML	UMD	Adj R^2
EW						
Firms forming alliances	0.448	1.246	0.566	−0.331	−0.340	0.924
	(3.15)	(32.11)	(13.60)	(−6.50)	(−11.37)	
Other firms	0.095	1.092	0.482	0.187	−0.283	0.947
	(1.09)	(45.81)	(18.84)	(5.99)	(−15.40)	
Long alliances, short others	0.353	0.154	0.085	−0.518	−0.057	0.717
	(3.48)	(5.57)	(2.85)	(−14.29)	(−2.67)	
VW						
Firms forming alliances	0.339	1.027	−0.151	−0.434	−0.076	0.882
	(2.58)	(28.73)	(−3.92)	(−9.25)	(−2.75)	
Other firms	0.154	0.980	−0.176	−0.098	−0.062	0.909
	(1.64)	(38.22)	(−6.41)	(−2.92)	(−3.11)	
Long alliances, short others	0.184	0.047	0.026	−0.336	−0.014	0.453
	(1.87)	(1.76)	(0.90)	(−9.52)	(−0.69)	
Panel C: Full sample, alliances only	α	MKTRF	SMB	HML	UMD	Adj R^2
EW						
Firms forming alliances	0.517	1.250	0.569	−0.363	−0.349	0.918
	(3.44)	(30.49)	(12.92)	(−6.76)	(−11.03)	
Other firms	0.097	1.097	0.515	0.176	−0.301	0.950
	(1.11)	(46.33)	(20.27)	(5.66)	(−16.44)	
Long alliances, short others	0.420	0.153	0.053	−0.539	−0.049	0.677
	(3.76)	(5.02)	(1.63)	(−13.50)	(−2.07)	
VW						
Firms forming alliances	0.356	1.025	−0.155	−0.440	−0.075	0.880
	(2.69)	(28.45)	(−4.00)	(−9.32)	(−2.70)	
Other firms	0.127	0.987	−0.161	−0.132	−0.030	0.901
	(1.28)	(36.40)	(−5.53)	(−3.72)	(−1.45)	
Long alliances, short others	0.229	0.038	0.006	−0.308	−0.045	0.444
	(2.55)	(1.55)	(0.25)	(−9.60)	(−2.37)	

The quality of the matching is very good: matching subsidiaries were found for 47% of the total number of Compustat segments, representing 60% of segment asset value. Out of the remaining, about 26% of the number of segments were "unusable" (they refer to corporate headquarters, have missing or zero sales, or have missing segment SIC codes); 11% refer to companies with no information in D&B; and 17% of segments could not be matched due to ambiguous or missing segment business descriptions. In terms of asset value, these numbers are 32%, 0%, and 9%, respectively.

It is sometimes the case that the headquarters themselves are allocated to a given segment if there is evidence that the segment's operations are effectively taking place at the headquarters. This evidence is usually given by a large number of employees working at the headquarters' location as well as a perfect match between the segment and the headquarters SIC codes.

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Table C4
Alliances and growth, matched sample.

We report the abnormal return (α) of a strategy that is formed based on market-to-book and engagement in alliance activity. We report the results for 36-month holding periods of the difference between portfolios of firms that belong to the same M/B portfolio and either engaged in alliance creation (long position), or not engaged in alliance creation (short position). We report alpha and the corresponding t-statistic for both value weighted and equal weighted portfolios. For brevity, only the results for Growth and Value portfolios are reported.

M/B portfolio (out of 5)	α of spread between Alliance (Y/N)		M/B portfolio (out of 5)	Equally weighted Alliance (Y/N)	α	(t-stat)	Value weighted α	(t-stat)
Full Sample								
5 (Growth)	Y	and	5 (Growth)	N	0.252	(2.18)	0.247	(1.66)
1 (Value)	Y	and	1 (Value)	N	0.054	(0.43)	−0.013	(−0.06)
Subsample v/o non-listed subsidiaries								
5 (Growth)	Y	and	5 (Growth)	N	0.292	(2.47)	0.256	(1.72)
1 (Value)	Y	and	1 (Value)	N	0.123	(0.84)	0.188	(0.72)
Full sample, alliances only								
5 (Growth)	Y	and	5 (Growth)	N	0.427	(3.22)	0.296	(1.88)
1 (Value)	Y	and	1 (Value)	N	0.282	(1.78)	0.275	(1.13)

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