

Legal Systems, Information Asymmetry, and Firm Boundaries: Cross-Border Choices to Diversify Through Mergers, Joint Ventures, or Strategic Alliances

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We examine how the organizational structure for diversification decisions involving firms from different countries is affected by the institutional context of the target country. Our theoretical analysis suggests that as legal systems improve and information asymmetry is reduced, a transition from relational, “firm-like” arrangements to arms-length, “market-like” arrangements takes place. If institutions continue to improve, eventually a threshold is crossed after which arms-length deals edge out internal firm contracting. We provide an empirical test of the model using the sample of international strategic alliances, joint ventures and cross-border mergers involving US firms. Our empirical findings support the predictions of the theory. In addition, we document that US companies entering organizational structures predicted by our model are associated with greater abnormal returns around deal announcements.

JEL classification: G34, K22

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1. Introduction

Interest in the boundaries of the firm has been recently reinvigorated by the unprecedented levels of mergers and acquisition activity of the past decade, together with the globalization of this activity as firms from developed countries such as the U.S. have sought to enter new markets in emerging and transition countries.

Recent studies have documented large differences among countries in terms of shareholder and creditor rights (concluding that common-law countries provide greater investor protection than civil-law countries, see La Porta et al., 1998), the extent of required accounting disclosure (Rajan and Zingales, 1998a; Ali and Hwang, 2000), approaches toward capital market regulation (Glaeser et al., 2001), and the overall quality of law and tradition of order (measured by various agencies, e.g. International Country Risk Guide). The general conclusion of this stream of research is that countries providing stronger investor protection, better law enforcement, and stricter disclosure requirements and regulation are associated with bigger, more liquid, and more informative capital markets (La Porta et al., 1997). On the other hand, countries with a lack of protection and poor financial and disclosure laws suffer frequent investor expropriation (Johnson et al., 2000) and moribund financial markets generating substantial information asymmetries (Glaeser et al., 2001). Not surprisingly, high information asymmetry, as well as the fear of being expropriated leads to higher cost of capital and lower asset valuation in such countries (La Porta et al., 2002).

Legal differences among countries diminish over time through convergence and/or learning (Kaplan et al., 2004). However, Coffee (1999) argues that the pace of such changes is slow, since convergence among legal systems is functional (mergers, listing on exchanges of countries with better legal systems, etc.), rather than institutional (mandatory legal adjustments), and often generates political and even investor resistance. Consequently, differences in financial laws and disclosure still significantly influence the shape of inter-firm financial contracts, as well as firm boundaries, especially among

companies operating in substantially different financial markets.

Fauver et al. (2003) show that diversified companies trade at a premium in countries with less developed financial markets with poor investor protection, suggesting that internal markets, rather than arm-length contracts, generate greater values in such markets. Khanna and Palepu (2000) find supporting evidence for this claim, studying diversified firms in India, a country with relatively inefficient capital markets. In a paper directly examining institutional arrangements, Rossi and Volpin (2004) find that the volume of M&A activity is significantly larger in countries with better accounting standards and stronger investor protection. Also, targets of cross-border deals are typically from countries with poorer investor protection, suggesting that M&A transactions play a governance role and improve investor protection in target firms.

Our paper is related to the “law and finance” literature, summarized above and in La Porta et al. (2000), as well as to that on the benefits and costs of diversification (Campa and Kedia, 2002; Rajan et al., 2000; Shin and Stulz, 1998; Berger and Ofek, 1995). However, rather than the *extent* of diversification (i.e. problems of whether or not to diversify and why), our focus is on the *strength* of cross-border diversification. That is, once firms from different countries, operating in different capital markets, and subject to different legal and disclosure systems decide to combine their assets, how should this combination be undertaken? Do multinationals prefer more arms-length arrangements such as strategic alliances and joint ventures or closer ties such as mergers? How are these choices affected by inadequacies in legal and accounting institutions of the host country? How do intermediation problems arising from legal differences and the existence of informational asymmetries, based on moral hazard and adverse selection (particularly serious for many developing countries) affect firm boundaries? In this paper, we attempt to provide answers to these questions by means of a theoretical framework and an empirical analysis using cross-country data on alliances, joint ventures, and mergers.

In our theoretical framework, we associate institutional development with a better ability to objectively measure performance and thus support arms-length contracts between the parent firm and a potential subsidiary. The development of a robust and sophisticated legal system and financial intermediation sector that is better able to process

and interpret firm performance is along the lines of what we have in mind here. While this is a specific interpretation of institutional development, it comes under the rubric of institutions as rules, enforcement mechanisms, and organizations¹.

The goal of our theoretical framework is to understand how contractual arrangements between firms are affected by differences in the severity of the information asymmetry between the parent firm in a developed country (such as the United States) and the host-country based subsidiary. In order to do this, we consider the possibility of two modes of contractual governance between the parent firm and a potential subsidiary, arms-length explicit contracts reliant on formal institutions and relational, implicit contracts that depend on repeated game, reputational considerations.²

Following Demsetz' (1993) interpretation of Coase (1937), we consider relational contracts to be more "firm-like" and formal arms-length contracts to be more "market-like". We believe therefore that this assumption is consistent with the extensive literature on the theory of the firm that emphasizes incentives within the organization being less market-like than those across organizations. Simon (1951), among others, argued that relational contracts are at the center of the employment relations while Williamson (1975) argued that relational contracts are the key differentiator of firms and markets. Consequently we associate relational contracts with stronger ties and formal arms-length contracts with weaker ties.

We allow both modes of contracting to co-exist and examine how the mix between the two changes as institutions improve. We find that, starting from very low levels of institutional development, as institutions improve, the two modes of contracting complement each other. The intuition for this is that, even though the reliability of arms-length contracting improves as institutions improve, until such contracts are able to stand on their own, the improvement in their reliability serves to increase the value of the ongoing repeated relationship. Relational contracting is therefore strengthened over this range of institutional development. However, if institutional development continues,

¹ The World Development Report, 2002, "Building Institutions for Markets" devotes an entire section on the financial intermediation sector as a set of institutions that support markets. See Section 4, pp 75-96 of this report.

² Recent finance studies (e.g. Desai et al., 2004) have linked the international organizational structure choices to the level of optimal ownership. Since optimal ownership structure is often selected to mitigate information asymmetry (e.g. Jensen and Meckling, 1976, Jensen and Meckling, 1995) we consider our study complementary to that stream of finance research.

eventually a threshold is crossed after which arms-length contracts edge out relational contracting. The two modes of contracting become substitutes after this point.

We test our model implications empirically by examining diversification choices of US firms. We study how contractual arrangements between a US based business entity and a foreign firm vary across countries with different institutional quality. Our main focus is on analysis of choices between international strategic alliances or joint ventures (reflective of more “market-like” relationships between firms) and cross-border mergers involving US bidders (representing more “firm-like” relationships).³ Our empirical results support the predictions of our theoretical model. We measure the quality of a foreign country’s legal systems by the “Rule of law” index (Kaufmann et al., 1999) that was shown by La Porta et al. (1997) to be the most significant determinant of the capital market development. The extent of information asymmetry is measured by the quality of accounting index generated by Center for International Financial Analysis and Research (CIFAR). Rajan and Zingales (1998a) find that this variable is significantly positively related to the growth of country economies. Our results show that firms from countries with law and accounting systems of either high or low quality enter primarily market-like contractual arrangements (joint ventures or strategic alliances) with their US counterparts. On the other hand, firms from countries with average-quality law or accounting standards are more likely to form firm-like contracts (mergers) with US firms. Our results are significant both statistically and economically – other factors equal, firms with average-quality law (accounting) standards enter mergers about 14 (13) percent more likely than firms with poor-quality law (accounting) standards, and about 4 (5) percent more likely than firms with high-quality law (accounting) standards. As a robustness check, we find qualitatively similar results analyzing contractual choices between strategic alliances (“market-like” structures) and joint ventures (“firm-like” structures).

Our model of contractual choices has significant economic consequences for the

³ Both types of organizational structures have the potential to achieve asset synergies. However, intra-firm deals in merged entities are less likely to be influenced by legal and accounting standards of target foreign countries’ systems (Rossi and Volpin, 2004; Coffee, 1999). Since US business laws, investor protection, and disclosure requirements are stricter than those in many other countries, the decision to merge can be viewed not only as an attempt to establish more firm-like relationships based on internal capital markets, but also as an effort to improve corporate governance and decrease information asymmetry due to inefficient legal and accounting systems in countries of US firms’ counterparts.

US participants. We do not find significant differences between abnormal returns generated by US firms around announcements of mergers, joint ventures, and strategic alliances. However, we document that US firms entering organizational structures predicted by our model generate significantly greater shareholder gains around deal announcement. These findings suggest that for each potential deal, there indeed exists an optimal organizational structure maximizing shareholder value.

The rest of the paper is organized as follows: Section 2 outlines the theoretical framework for our model. Section 3 presents the model analysis. Our empirical analysis is described in Section 4. Section 5 concludes.

2. Theoretical Framework

In the theoretical literature, Coase's (1937) insight that the choice between locating transactions within a firm and in the market depends on the transaction costs of each form of economic organization continues to influence the recent resurgence of interest in the boundaries of the firm.⁴ The work of Williamson (1975, 1985), by identifying more precisely the nature and sources of transaction costs, has enabled the focus of attention to shift from the coordination problems originally emphasized by Coase toward the role of firm boundaries in providing incentives. The research program that dominated the question in the last decade, the property rights approach, pioneered by Grossman and Hart (1986) and Hart and Moore (1990), has most recently led to a broader view of the firm as a complex mechanism for coordinating and motivating individual activities (Holmstrom and Milgrom, 1994; Rajan and Zingales, 1998, 2001; Holmstrom 1999). This most recent strand of research is characterized by a reassertion of the importance of measurement costs of the kind stressed by Alchian and Demsetz (1972), and a recognition that ownership of critical resources, reminiscent of the resource-based view of the firm (see Penrose, 1959; Wernerfelt, 1984 and Montgomery, 1994), is an important source of power for the entrepreneur. Measurement problems and ownership of critical resources are both important ingredients of the framework we present here. Our framework is based on Kali (2002), which combines the subjective performance evaluation model of Baker, Gibbons and Murphy (1994) with the resource based view of

⁴ See Holmstrom and Roberts (1998) for an excellent survey.

the firm (see Penrose, 1959; Wernerfelt, 1984; and Montgomery, 1994).

The starting point for our theory is the notion that at the root of many diversified conglomerates is a “core” firm or entrepreneur with a unique critical resource that is an essential component in a wide variety of activities.⁵ Examples could be access to funds, ownership of critical raw materials, access to restricted licenses, privileged access to the seat of political power, a reputation for superior quality, or a superior management technique. Ownership of the critical resource enables the core firm to expand into different areas by establishing relationships with other subsidiary firms whose capabilities are situated in these areas. Since our context is that of international diversification, the core firm is considered to be U.S. based multinational while the subsidiaries are foreign firms located in target countries.

There is moral hazard between the U.S. based key firm and the foreign subsidiaries. In contracting with them for their outputs the U.S. core has at its disposal subjective and objective measures of performance evaluation. Contracts involving the subjective measure are what we refer to as relational contracts while those involving the objective performance measure are referred to as explicit contracts. The further away the subsidiary activities are from the location of the "core" of the conglomerate, the more costly it is to subjectively assess performance under relational contracts. We thus use a spatial metaphor to represent the idea that it is easier for the core to obtain subjective data on activities or individuals who are less disparate from or "closer" to the core. However, the quality of the subjective performance assessments is assumed not to degenerate with distance from the core. For the same reason, relational contracts are assumed to be less "noisy" instruments of performance evaluation than explicit contracts. The objective performance measure is noisy, but the cost of obtaining it does not vary with distance from the core. In our model, the U.S.-based core chooses the scope (distance from the core), which in turn determines the scale (number of subsidiaries) and the pattern of explicit and relational contracts between himself and the foreign subsidiary firm (the

⁵ This follows the usage in the management literature on the core competence of a firm such as in Hamel and Prahalad (1990).

strength of integration) so as to maximize net profits.⁶

As our empirical application is geared toward examining the mode of contractual governance in the international diversification decisions of US companies, we are particularly interested in how the extent of information asymmetry affects the mode and mix of contractual governance between the U.S.-based core and foreign subsidiaries.

2.1. Technology

A US-based core firm possesses a unique critical resource that he wants to exploit. This resource can be combined with N other activities, which can be thought of as corresponding to N other foreign subsidiary firms in order to produce final output. The core has to give the subsidiary agents access to the critical resource for them to produce effectively (as in Rajan and Zingales, 2000).

The final good is produced using a continuum of intermediate goods, measured on the interval $[0, N]$, according to the technology,

$$Y = A \int y_j dj, \quad 1 \leq j \leq N \quad (1)$$

where y_j denotes the amount of intermediate good j used by the conglomerate and A is a productivity parameter associated with the U.S. core's ownership of the critical resource that is an essential component for the production process. Intermediate good y_j is in turn produced by a foreign subsidiary firm whom we index by j .

The specialized subsidiary activities (and corresponding firms) are distributed with density δ along a line of infinite length with the origin being the location of the U.S. core with the critical resource. The distance of a foreign intermediate firm from the U.S. core, which we call x , is important because the cost of obtaining a subjective evaluation on the performance of the firm is proportional to the distance from the core. The objective performance measure does not depend on distance from the core (more on these measures below).

Final output is owned by the U.S.-based core firm. All prices are measured in units of the final good.

⁶ We have decided to adopt the terminology of strength of integration as opposed to degree of integration because degree of integration is often used to connote how vertically integrated a firm is with regard to inputs and outputs. This is quite a different focus from the one we have here.

2.2. Performance Measures

There are two types of performance measures that the core can use to evaluate firms producing the intermediate good, a subjective measure and an objective measure. The transfer from the core to the foreign subsidiary associated with the subjective measure is what we call the relational contract while the transfer associated with the objective measure is the explicit contract. To capture the notion of trust inherent in productive relationships we consider a repeated game between the U.S.-based core that possesses the critical resource and the foreign subsidiary firms who produce the intermediate input.

2.2.1. Subjective measure

There is moral hazard at the level of the intermediate input. In each period the foreign subsidiary firm j chooses an unobservable action e_j , which stochastically determines the intermediate output y_j . For simplicity, we assume that y_j equals either zero or one and $\text{Prob}[y_j = 1 | e_j] = e_j$, where $e_j \in [0, 1]$. We assume that y_j cannot be objectively measured. However, it can be subjectively assessed. This subjective assessment forms the basis for the relational contract.

Consequently we can rewrite the U.S.-based conglomerate's aggregate production function⁷ (1) as:

$$Y = A \int e_j dj, \quad 1 \leq j \leq N, \quad (2)$$

2.2.2. Objective measure

The subsidiary's action also affects a second performance measure p_j which equals either zero or one. However, p_j can be objectively measured, and so can be the basis of an explicit contract.

The objective performance measure p_j is an imperfect proxy for the subsidiary's contribution to overall conglomerate value, in the following sense. Before choosing an action, the subsidiary receives private information (denoted by $\mu_j > 0$) about the difference between the effect of the subsidiary's action on y_j and its effect on p_j . $\text{Prob}[p_j = 1] = \mu_j e_j$. (we assume $\mu_j e_j < 1$). Given μ_j and e_j , the events that $y_j = 1$ and that $p_j = 1$ are independent.

⁷ We refer to the U.S.-based core and the foreign subsidiaries that are associated with it as a conglomerate.

High values of μ_j (say around one) are situations when actions increase both y_j and p_j , small values of μ_j (say around zero) are situations when actions increase y_j but not p_j , and values of μ_j greater than one are situations when small actions increase p_j but not y_j . Assume $E(\mu_j)=1$. Thus, on average, the performance measure p_j is an unbiased measure of contribution y_j .

2.3. Contracts

Contracts between the U.S. core and a foreign subsidiary are a combination of relational and explicit contracts. These contracts consist of three parts: a base transfer s_j , a relational-contract component b_j paid when the subjective assessment is $y_j=1$, and an explicit-contract component β_j paid when the objective measure is $p_j =1$. The total transfer between the core and subsidiary is therefore $s_j + b_j + \beta_j$.

We associate higher values of the relational component of compensation (b) with stronger ties between the U.S.-based core and the foreign subsidiary firm, in accordance with the notion that this is a more "firm-like" arrangement. We interpret higher powered explicit contracts (β) as being a more "market-like" arrangement.

2.4. Timing of Events

The sequence of events is as follows:

(1) The U.S.-based core chooses the scope of the conglomerate by determining the distance x from the core of the most disparate intermediate activity that will be the boundary of the firm. This in turn determines the number of foreign subsidiaries $N=\delta x$ in the conglomerate. N is what we refer to as the scale of the conglomerate.

(2) The core offers contracts (s_j, b_j, β_j) to the foreign subsidiaries located at different distances from the core.

(3) Each subsidiary accepts the contract if it satisfies his participation constraint.

(4) If the subsidiary accepts, then the subsidiary observes μ_j and chooses an action e_j at cost $c(e_j)=\gamma e_j^2$. The core does not observe μ_j or the subsidiary's action.

(5) The U.S.-based core observes the realization of the subsidiary's subjective contribution y_j by incurring a cost tx , where x is the distance of the foreign subsidiary from the core's location and $t \geq 0$ is the per unit distance cost of gathering the subjective assessment. The subsidiary's observation of y_j is costless.

The U.S. core and the foreign subsidiary (and, if necessary, a court) costlessly observe

the realization of the objective performance measure.

(6) If $p_j=1$, then the U.S.-based core transfers to the foreign subsidiary β_j dictated by the explicit contract. If y_j , then the U.S.-based core chooses whether to pay the foreign subsidiary the amount b_j specified in the implicit contract.

3. Analysis

Given a relational contract b_j and an explicit contract β_j , if the foreign subsidiary believes the U.S.-based core will honor the implicit contract, then the subsidiary's problem after observing the realization of μ_j is

$$\text{Max}_e s_j + b_j + \mu_j e_j \beta_j - \gamma e_j^2 \quad (3)$$

which yields the subsidiary's optimal action/effort

$$e_j^*(\mu_j, b_j, \beta_j) = ((b_j + \mu_j \beta_j)) / (2\gamma) \quad (4)$$

The subsidiary will work with the core if his expected payoff (before observing μ_j) exceeds the opportunity cost w , i.e., the individual rationality/participation constraint is satisfied,

$$E_\mu [s_j + e_j^*(\mu_j, b_j, \beta_j) b_j + \mu_j e_j^*(\mu_j, b_j, \beta_j) \beta_j - \gamma e_j^*(\mu_j, b_j, \beta_j)^2] \geq w \quad (5)$$

Now suppose foreign subsidiary j is located at a distance x from the core. The U.S. core's expected profit per period from his relationship with this foreign subsidiary, given a relational contract b_j and an explicit contract β_j but before the subsidiary observes the realization of μ_j is,

$$E_\mu [e_j^*(\mu_j, b_j, \beta_j) - (s_j + e_j^*(\mu_j, b_j, \beta_j) b_j + \mu_j e_j^*(\mu_j, b_j, \beta_j) \beta_j) - tx] \quad (6)$$

The optimal base transfer s_j will be the lowest amount satisfying the participation

constraint. Substituting this into the expected profit above yields the subsidiary's expected profit per period as a function of the relational component b_j , the explicit component β_j and the distance from the core x , which we denote $V(b_j, \beta_j, x)$.

$$V(b_j, \beta_j, x) \equiv E_\mu [e_j^*(\mu_j, b_j, \beta_j) - \gamma e_j^*(\mu_j, b_j, \beta_j)^2 - w - tx] \quad (7)$$

3.1. Relational and Explicit contracts

We now consider the combination of an explicit contract based on an objective performance measure with a relational contract based on a subjective performance assessment. For simplicity, we assume that the subjective assessment is noncontractible but otherwise perfect.

To formalize the notion of trust in enforcing implicit contracts we consider an infinitely repeated relationship. We consider equilibria in which both parties play trigger strategies such that any betrayal destroys the relationship forever. The parties begin by cooperating and then continue cooperating unless one side defects, in which case they refuse to cooperate forever after. If the foreign subsidiary's contribution to the firm is $y_j=1$, the U.S.-based core must decide whether to pay the bonus b_j . The core should pay the bonus if and only if the present value of the expected profit beginning next period exceeds the size of the bonus: $V(b_j, \beta_j, x) \geq b_j r$.

The optimal relational contract sets b_j to maximize expected profit per period $V(b_j, \beta_j, x)$ subject to the reneging constraint $V(b_j, \beta_j, x) \geq b_j r$. As we demonstrate in the appendix, the reneging constraint is quadratic in b_j . The reneging constraint therefore binds for values of the interest rate r high enough that the first best b_j is not attainable. The solution to this constrained optimization problem then becomes the highest value of b_j satisfying the reneging constraint.

Also, when explicit contracts are available, they are available both before and after the core reneges. We assume that if the U.S.-based core were to renege, then the foreign subsidiary would refuse to participate in any future relational contracts but would be willing to consider explicit contracts and would accept an explicit contract if it were sufficiently attractive. In order to derive the reneging constraint in this case we therefore need to characterize the payoff when only explicit contracts are used.

In this case, from equation (4), the subsidiary's optimal action will then be $e_j^*(\mu_j, \beta_j) = (\mu_j \beta_j) / (2\gamma)$. The optimal fallback contract for the core sets the base transfer at the minimum value that satisfies the participation constraint and β_j at the value that maximizes the expected profit per period,

$$\text{Max}_{\beta} E_{\mu} [e_j^*(\mu_j, \beta_j) - \gamma e_j^*(\mu_j, \beta_j)^2 - w - tx] \quad (8)$$

Solving the first-order condition implies that the optimal explicit-contract bonus in the fallback situation is,

$$\beta_j^* = (E_{\mu} [\mu_j]) / (E_{\mu} [\mu_j^2]) = 1 / (1 + \text{var}(\mu)) \quad (9)$$

and,

$$V(\beta_j^*) = (1 / (4\gamma(1 + \text{var}(\mu)))) - w \quad (10)$$

In the absence of relational contracts, the expected profit per period from the optimal contract is $V(\beta_j^*)$ as defined in (10), which can be positive or negative depending on the agent's opportunity cost and the level of noise in the objective performance measure, $\text{var}(\mu)$. The fall back position for a core reneging on relational contracts is $V(\beta_j^*)$. So we consider two subcases, when $V(\beta_j^*) > 0$ and $V(\beta_j^*) < 0$.

3.1.1. Case 1: $V(\beta_j^*) > 0$

The reneging constraint is now,

$$V(b_j, \beta_j, x) - V(\beta_j^*) \geq rb_j \quad (11)$$

If this constraint is satisfied, the subsidiary's effort decision is $e_j^*(\mu_j, b_j, \beta_j)$ as in (4). The optimal contract sets b_j and β_j to maximize expected profit $V(b_j, \beta_j, x)$ as in (7)

subject to this reneging constraint. Going through this constrained optimization problem yields the optimal β_j for a given value of b_j ,

$$\beta_j^{**}(b_j) = (1 - b_j) / (1 + \text{var}(\mu)) \quad (12)$$

For parameter values such that the first-best relational contract $b_j^{**} = 1$ is not feasible, the optimal b_j^{**} is determined by substituting $\beta_j^{**}(b_j)$ into the reneging constraint, which becomes,

$$\begin{aligned} V(b_j, \beta_j, x) - V(\beta_j^*) &\geq r b_j \\ V(b_j, \beta_j^{**}(b_j), x) - V(\beta_j^*) &= ((b_j(2 - b_j)) / (4\gamma)) \cdot ((\text{var}(\mu)) / (1 + \text{var}(\mu))) - t x \geq r b_j \end{aligned} \quad (13)$$

The optimal relational-contract b_j^{**} is the largest value of b_j solving this constraint. Equation (13) yields a quadratic equation in b_j from which we can obtain the function $b_j^{**}(r, x, t, \text{var}(\mu))$. The derivation of b_j^{**} can be found in the appendix. The function is decreasing in the first three arguments. In addition it is increasing in the noise parameter $\text{var}(\mu)$.

For given values of the other parameters, the distance from the core beyond which relational contracting will break down can be obtained by solving for the value of x (call this \bar{x}) at which $b_j^{**}(r, t, \text{var}(\mu); x) = 0$. This implies that the set of optimal relational contracts $\{b_j^*(x) | V(b_j, x) \geq b_j r\}$ is empty for $x > \bar{x}$.

3.1.2. Discussion

If objective performance measures are sufficiently reliable, relational contracts are not feasible. The value of the optimal relational contract $b_j^{**}(r, t, \text{var}(\mu); \bar{x})$ becomes 0 when $\text{var}(\mu) < ((2\gamma r) / (1 - 2\gamma r))$. Consequently scope, and hence scale of the U.S.-based conglomerate will become extremely small. Contractual arrangements take the form of arms-length contracting through purely explicit contracts in this event.

But so long as $\text{var}(\mu) \geq ((2\gamma r) / (1 - 2\gamma r))$ subjective contracts will be feasible and

scope and scale will be positive. Scope increases as the objective performance measure becomes more noisy, i.e., x increases as $\text{var}(\mu)$ increases. Also, b_j^{**} rises and β_j^{**} falls. Thus we can say that as the objective performance measure becomes more noisy, scope and scale expands and relational ties become stronger. Relational and explicit contracts are substitutes in this situation.

3.1.3. Case 2: $V(\beta_j^*) < 0$

This situation can arise when the incentive distortions in the objective performance measure are sufficiently high. In this case the fallback position after renegeing on a relational contract is to shut down. The renegeing constraint is now,

$$V(b_j, \beta_j, x) \geq r b_j \quad (14)$$

$$\text{or, } E_\mu [e_j^*(\mu_j, b_j, \beta_j) - \gamma e_j^*(\mu_j, b_j, \beta_j)^2 - w - tx] \geq r b_j$$

$$\text{or, } (1/(4\gamma))[2(b_j + \beta_j - b_j \beta_j) - b_j^2 - \beta_j^2(1 + \text{var}(\mu))] - w - tx \geq r b_j.$$

The first order conditions are the same as above and we can then write the renegeing constraint as,

$$V(b_j, \beta_j^{**}(b)) = (1/(4\gamma))[2 b_j k - b_j^2 k + 1 - k] - w - tx \geq r b_j \text{ where } k = ((\text{var}(\mu))/(1 + \text{var}(\mu)))$$

Again, the optimal relational-contract bonus b_j^{**} is the largest value of b_j solving this constraint, which is a quadratic equation from which we can obtain the function $b_j^{**}(r, x, t, \text{var}(\mu))$. The derivation is contained in the appendix. As in the previous case the function is decreasing in the first three arguments. For given values of the other parameters, the distance from the core beyond which relational contracting will break down can be obtained by solving for the value of x (call this \bar{x}) at which $b_j^{**}(r, t, \text{var}(\mu); \bar{x}) = 0$. However, in contrast to the previous case, it is decreasing in the noise parameter $\text{var}(\mu)$. In this case if $\text{var}(\mu)$ increases, scope falls. The effect of a change in $\text{var}(\mu)$ on β_j^{**} is ambiguous.

3.2.3. Discussion

In contrast to case 1, in this situation, starting from a situation where the noise in

the objective performance measure is sufficiently high, a decrease in the noise causes relational contracts to become stronger and the scope and size of the conglomerate expands. What happens in this case is that though the objective contract by itself is not a viable fallback, its improvement (through the decline in the noise) enhances the effectiveness of the relational contract by increasing the value of the ongoing relationship between the U.S.-based core and the foreign subsidiary. In the previous case however, a decline in the noise causes relational contracts to become weaker; scope and scale falls.

Combining the results of cases 1 and 2, we could summarize in the following manner: Starting from a situation where the distortion in the objective performance measure is sufficiently high, which could be due to poor institutional development as alluded to earlier, a decrease in the noise causes relational contracts to become stronger and the scope and scale of the conglomerate expands. This expansion in scale, scope and strength of relational ties continues until the distortion in the objective measure is reduced to the level at which explicit arms-length contracting becomes a viable fallback option ($V(\beta_j^*)$ switches from being negative to positive). After this point, the scope and scale of the conglomerate abruptly start moving in the opposite direction and become smaller, accompanied by a decrease in the strength of ties as the distortion in the objective measure decreases.

The empirical implications are as follows. Starting from a low level of institutional development, as institutions for reducing the noise in objective performance measures improve, both arms-length governance arrangements, such as international joint ventures or strategic alliances, and stronger closer forms of contractual governance, such as mergers between U.S.-based firms and foreign firms, should increase. This would be expected to be reflective of the range of institutional development over which both arms-length and relational contracting are complements. However, once institutional development crosses a certain threshold, arms-length type arrangements, such as joint ventures or strategic alliances should begin to crowd out relational contracting. International mergers should be less likely to be observed once institutional quality has sufficiently improved.

4. Empirical Analysis

4.1. Data

We searched *SDC Joint Ventures Database* and *SDC Worldwide Mergers&Acquisitions* (data collected by *Thomson Financial*) for all completed international strategic alliances, international joint ventures, and cross-border mergers (with US bidders) with announcement dates between 1985 and 2000.⁸ For Joint ventures and strategic alliances, we restricted our sample to deals involving two participants only. In addition, one of the participants had to be from the United States, while the other had to be from one of 43 countries that have data available on the quality of country's accounting system provided by the Center for International Financial Analysis and Research (CIFAR). We also required our deals to have data on industry classification of both of deal participants as well as of the deal itself. Last, we eliminated all the deals for which we could not find country statistics such as GDP/capita using *Penn World Tables*.

Table 1 provides details on sample distribution by countries and by years. The final sample consists of 17,442 business deals (10,551 international strategic alliances, 4,108 international joint ventures, and 2,783 cross-border mergers involving US bidders) between US firms and entities from 42 foreign countries.⁹ These countries represent a vast cross section in terms of quality of both legal and accounting systems. Most of the deals in our sample occurred in the middle of 1990's, which coincides with the period of boom in the US economy. We find that the incidence of firm-like, wholly-owned organizational structures (mergers in our sample) has been gradually increasing throughout the sample period – from 6 percent in 1985 to 26 percent in 2000. Desai et al. (2004) detect a similar trend in their sample and attribute it to the increased liberalization of restriction on asset ownership by foreigners in U.S. partnering countries.

⁸ The advantage of *SDC* databases is that they contain announcement and completion dates, identities of business partners, as well as the information on the industry of combined assets for virtually all completed business deals over the period of our study. However, some deal-specific information (such as deal size), as well as data describing operations of the business partners – especially of those from outside of the US – are often missing. Consequently, since we want to utilize information for the widest possible sample, most of our tests include only variables characterizing the deal's industry and the characteristics of countries of firms involved in *SDC*-covered deals. However, our results are very similar when we restrict our sample to include only business combinations where firm-specific Compustat data characterizing US firms can be added to our test specifications.

⁹ The lack of *Penn World Tables* data eliminates deals with United Arab Emirates firms from our sample.

4.2. Analysis of Determinants of Choice between “Market-like” Structures (Joint Ventures and Strategic Alliances) and Mergers

4.2.1. Binary Analysis

Table 2 contains comparison of subsamples of mergers and market-like structures (joint ventures or strategic alliances). Most importantly, our results for quality of both legal and accounting systems show lack of relationship between market development and incidence of arm-length transactions (such as joint ventures or strategic alliances). *Quality of Legal System* is an index representing the “Rule of Law” variable generated by Kaufman et al. (1999). This score was shown by La Porta et al. (1997) to be the most significant determinant of the capital markets development. *Quality of Accounting System* is an index generated by Center for International Financial Analysis and Research (CIFAR). Rajan and Zingales (1998a) show that this variable is significantly positively related to the growth of country economies.¹⁰ Both of the variables are an increasing function of the quality of legal (or accounting) system. Scores for both quality measures are generally greater for strategic alliances and joint ventures than for the mergers, based on means (suggesting more developed markets are associated with more arm-length transactions). However, medians are not statistically different between the two subsamples. Nevertheless, our findings leave for the possibility that there is a more complex *non-linear* relationship – as predicted by our theoretical model – between organizational structures and quality of legal and accounting systems.

Table 2 also shows that that deals involving counterparts from economically richer countries (in terms of GDP per capita) are more often finalized as joint ventures or strategic alliances, suggesting that partners in more developed countries rely more on free market. Mergers also involve significantly greater portion of deals involving participants from related industries. Financial research has shown that high information asymmetry generates substantial value losses between divisions and headquarters in firm-like business settings (Jensen and Meckling, 1995). Consequently, vertical firm-like

¹⁰ In addition to the *Quality of Legal System* and *Quality of Accounting System* variables, we performed the empirical analysis utilizing an inverse measure of *cost of debt recovery* for various countries (Djankov et al., 2002) as a measure of institutional quality. While this variable is not the most appropriate for our model because the Djankov et. al. measures are more indicative of barriers to entry rather than information asymmetry or the costs of contractual governance, the results utilizing this measure are similar to those presented in Tables 2-5, and are available from the authors upon request.

diversifications are, on average, value destroying (Rajan et al., 2000; Shin and Stulz, 1998; Berger and Ofek, 1995). Our results suggest that these potential value losses induce US firms to enter more likely market-like deals (joint ventures or strategic alliances) rather than to bid for and later firmly integrate unrelated foreign assets.¹¹

Size of the US deal participant does not appear to be clearly linked to either of the organizational types. On the other hand, mergers are, on average, undertaken by significantly more profitable US firms. Since bidders usually take over target's operating, organizational, and governance structures, it is not surprising that such firms are more successful and profitable. There are no significant differences in industry growth opportunities between the two subsamples, but our data suggest that deals involving operations with greater research intensity are finalized more often as "market-like" business structures (strategic alliances or joint ventures).¹² Deals with greater research intensity are more likely to involve intangible, hard-to-value assets, subject to greater probability of hold-up costs due to asset-specific investment by business partners (Klein et al., 1978). Our results suggest that more intangible assets are combined through joint ventures or strategic alliances, because such business combinations allow easier break-up in case the deal becomes disadvantageous for any of the participants (and/or when one of the participants attempts to hold up the other partner).

4.2.2. Multivariate Probit Analysis

Table 3 presents the results of Probit analysis of the determinants of choice to form joint ventures or strategic alliances as opposed to forming mergers. Most importantly, we show that the quality of both legal and accounting systems is significantly related to the probability of observing a particular type of an organizational structure. The coefficients of both quality indices are positively related to the likelihood of a market-like deal, suggesting that deals are more likely to be closed as arms-length

¹¹ In addition, our findings are also consistent with Blomstrom and Zejan (1991) who show that vertically-diversifying U.S. firms tend to more likely enter organizational structures with shared ownership in order to acquire expertise of their foreign partners and minimize costs of information asymmetry associated with managing assets that do not belong to the core business of the U.S. firm.

¹² *Industry Growth Opportunities* are measured as median M/B ratio of assets $[(MV \text{ of Equity} + \text{Total Assets} - BV \text{ of Equity}) / \text{Total Assets}]$ for all US companies with the same 2-digit industry SIC code as the code of the joint venture (or strategic alliance), measured during the year of deal completion. *Industry Research Intensity* is measured as median R&D expenses normalized by Total Assets for all US companies with the same 2-digit industry SIC code as the code of either the US bidder (in case of mergers) or the joint venture or strategic alliance, measured during the year of deal completion.

transaction if legal and accounting systems in the country of the foreign participant are of high quality, leading to lower information asymmetry, and small probability of expropriation of the US business partner. However, as Model 1 shows, this relationship changes its strength for countries from different parts of the spectrum of system quality scores. We show that the coefficients for countries between 50th and 80th sample percentiles, and for those above 80th percentile are all significantly lower than the coefficient for countries from the bottom 50 percents of the quality spectrum.¹³ Since the coefficients are gradually lowered, while the scores rise, our results suggest that there is a more complex, non-linear relationship between quality of legal and accounting systems and the probability of combining assets via a market-like business transaction.

Models 2-5 analyze the non-linear relationship between quality scores and probability of observing certain business organization type. Our results suggest that the overall probability of observing a strategic alliance or a joint venture is significantly smaller (and the probability of observing a merger is significantly greater) for the countries from the middle of the quality spectrum than it is for the countries that have either relatively undeveloped (quality score below 50th sample percentile) or very developed (quality score above 80th percentile) legal (accounting) systems. These results are significant both statistically and economically. Estimating at independent variables' means, the coefficients of quality score-related variables from models 2-5 suggest that other factors held equal, firms with average-quality law (accounting) standards enter mergers about 14 (13) percent more likely than firms with poor-quality law (accounting) standards, and about 4 (5) percent more likely than firms with high-quality law (accounting) standards. Models 6 and 7 show that our results remain unchanged for the

¹³ We measure potentially non-linear impact of legal (accounting) standards on organizational structure choices by several dummy variables. DLAWMI (DACTMI) is a dummy variable equal to one for observations with value of the *Quality of Legal System (Quality of Accounting System)* greater than sample's 50th percentile. DLAWHI (DACTHI) is a dummy variable equal to one for observations with value of the *Quality of Legal System (Quality of Accounting System)* greater than sample's 80th percentile. Consequently, DLAWMI (DACTMI) measures the impact for firms between 50th and 80th percentiles, whereas DLAWMI+DLAWHI (DACTMI+DACTHI) measure the impact for firms with values exceeding 80th percentile. We selected these percentiles to have roughly the same number of deals in all three groups. If we used lower than 50th percentile to identify the group with the lowest legal and accounting standards, this group would be relatively underrepresented. However, our findings are not critically dependent on choices of 50th and 80th percentiles as model thresholds, and even alternative choices (such as terciles) lead to qualitatively similar results.

restricted sample of deals with available Compustat data for US participants.^{14, 15}

Our results are consistent not only with our theoretical model, but with the existing empirical literature as well. The deals in countries with high-quality law or accounting standards are likely associated with a significantly smaller degree of transaction costs due to low likelihood of hold-up (Klein et al., 1978) and small chance of expropriation of the U.S. deal partner. Thus, our results suggesting higher likelihood of “market-like” structures in such countries are consistent with studies claiming firms select organizational structures to minimize transaction costs (Beamish and Banks, 1987; Gatignon and Anderson, 1988; Gomez-Casseres, 1989; Asiedu and Esfahani, 2001; Baker et al., 2002). On the other hand, countries with poor-quality law or accounting standards are also likely associated with the least efficient and most restricted financial markets (La Porta et al., 2000, 2002). Therefore, our findings of lowest incidence of mergers in those countries support results of Desai et al. (2004) who show that the likelihood of U.S. firms’ creating a wholly-integrated as opposed to partially owned affiliate relationship (mergers as opposed to joint venture or strategic alliance in our case) depends significantly positively on the degree of the liberalization of foreign country’s ownership restrictions during 1980s and 1990s.¹⁶ Countries with the poorest legal and accounting standards may simply not allow for full ownership of country’s assets by U.S. firms.

Most of our other independent variables have coefficients with signs suggesting the same impacts on organizational structures as those discussed in Table 2. Namely, we show that deals between unrelated partners, as well as deals with greater research intensity, and those involving less profitable US firms and firms from richer foreign countries all are more likely to be consumed as market-like structures (joint ventures or strategic alliances). In addition, in the multivariate framework, we also show that higher growth opportunities, and asset size of US deal participant both increase the likelihood of

¹⁴ The drop in the numbers of observations utilized in models 1-5 and 6-7 is caused by the fact that many sample events tracked by SDC database involve private U.S. entities with data unavailable on Compustat.

¹⁵ Our results appear to be neither time-, nor country-specific. We re-estimated the results for the sub-periods 1986-1993 and 1994-2000 (roughly dividing the sample in half).. Also, we re-estimated the results controlling for potential clustering of errors on country levels. The significance of the results generated under those alternative specifications was similar to that reported in Table 3.

¹⁶ Unlike our sample that consists of newly formed mergers, joint ventures and strategic alliances, Desai et al. (2004) use panel data describing wholly versus partially owned affiliates of U.S. companies.

combining assets through a market-like organization.

4.3. Analysis of Determinants of Choice between Joint Ventures and Strategic Alliances

Even though both joint ventures and strategic alliances were treated as “market-like” organizational structures in the previous section, we predict that these two types of contracts still differ from each other. Namely, joint ventures are an example of a tighter, more “firm-like” contract compared to relatively weaker, more arms-length-like strategic alliances. Thus, as a robustness test of our model, we repeat the analysis presented in the previous section to analyze the determinants of contractual choices between joint ventures and strategic alliances.

4.3.1. Binary Analysis

Table 4 contains comparison of subsamples of joint ventures and strategic alliances. Both T-test and Wilcoxon test show that legal and accounting system quality scores are greater for the sample of market-like contracts (strategic alliances), suggesting that more developed markets allow greater incidence of arms-length contracts. Nevertheless, the magnitudes of differences between the subsamples do not seem to be economically significant, again leaving the possibility of a more complex link between quality of legal and accounting systems and the type of an organizational structure.

Our results also again suggest that cross border combinations of assets with greater growth opportunities and associated with greater research intensity are more often finalized as arms-length organizational structures (joint ventures). This conclusion is further supported by our finding that strategic alliances have significantly greater proportion of deals involving cross technology transfers.¹⁷ Contracts between US firms and companies from countries with high GDP per capita are more often consummated as arms-length structures, once again suggesting that environments in more developed countries are associated with market based contractual arrangements. Also, similarly to our results for the broader sample, bigger and more profitable US firms enter more likely firm-like contracts (joint ventures). Our findings suggest that the ability to enter closer contracts and to utilize internal markets is confined to more successful, more reputable

¹⁷ The deal involves *Cross Technology Transfer* if one of the participants transfers technology to another participant or to the alliance (this information is collected from the *SDC* database).

companies. Joint ventures also involve greater proportion of related business participants' deals, but the difference between the subsamples does not appear to be economically significant.

4.3.2. Multivariate Probit Analysis

Table 5 presents the results of Probit analysis of the determinants of organizational structure choices between strategic alliances and joint ventures. Our results are qualitatively identical to those presented in Table 3. All determinants of choices between mergers ("firm-like" structures) and joint ventures or strategic alliances ("market-like" structures) appear to have the same impact on the choices between the more narrowly defined types of tighter (joint ventures) and arms-length (strategic alliances) contractual types.

Model 1 again uncovers significantly non-linear relationship between quality scores and contract types. Models 2-7 show that similarly to the results presented in Table 3, the probability of observing an arms-length contract is the smallest for the firms from countries belonging to the middle of legal and accounting systems quality spectrum (i.e. those between 50th and 80th sample percentiles). Only differences in accounting systems quality, though, appear to be economically significant to determine the choices between joint ventures and strategic alliances. Estimating at independent variables' means, the coefficients of quality score-related variables from models 2-5 suggest that other factors held equal, firms with average-quality law (accounting) standards enter joint ventures about 1 (8) percent more likely than firms with poor-quality law (accounting) standards, and about 3 (10) percent more likely than firms with high-quality law (accounting) standards.¹⁸

4.4. Analysis of Deal Announcement Abnormal Returns to Equity of US Participants

Table 6 presents the results of the analysis of abnormal returns to equity of US participants surrounding deal announcements. Our definition of abnormal returns is:

$$AR_i = R_i(-5,+5) - E[R_i(-5,+5)]$$

where $R_i(-5,+5)$ and $E[R_i(-5,+5)]$ refer to actual and expected returns for firm i from five

¹⁸ Similarly to the robustness checks performed in Table 3, our analysis yields qualitatively similar results if the sample is split into time-dependent subsamples or if the model specification controls for potential error clustering on country levels.

days before to five days after the deal announcement date. The expected return for firm i is measured using market model: $E[R_i(-5,+5)] = \alpha_i + \beta_i * R_M$, where R_M denotes return on market portfolio (proxied by S&P 500 index) from five days before to five days after the deal announcement date.¹⁹

Panel A shows that announcement abnormal gains are generally positive. In case of joint ventures and strategic alliances, the mean abnormal return of 0.54% is statistically significantly different from zero (for business deals involving US firms, financial literature has uncovered similar positive valuation effects – e.g. McConnell and Nantell, 1985; Chan et al., 1997). Nevertheless, this return is not significantly different from the average bidder abnormal return surrounding the announcement of mergers equal to 0.33% (the insignificance of this mean abnormal return is consistent with previous literature on bidder gains in acquisition – e.g. Rossi and Volpin, 2004; Moeller and Schlingemann, 2005, Jensen and Ruback, 1983; Bradley et al., 1988, Andrade et al., 2001).

We expect that if there exist an optimal organizational for each cross border deal (as implied by our theoretical model), announcements of deals with expected organizational structures should be associated with significantly greater gains. We define a deal to have an expected organizational structure, if its form is correctly predicted by Probit model 4 (based on the quality of accounting disclosure) in Table 3.²⁰ This model correctly predicts 62% of deal structures. The results in Panel A support our predictions – deals with expected organizational structures generate a mean abnormal return of 0.67%, and significantly outperform deals with unexpected structures (with mean abnormal return of 0.24%).

The financial literature has documented that announcement abnormal returns are related to the size and profitability of participants, growth opportunities of the deal, as well as to industry-relatedness of the deal partners. Therefore, we specifically control for those factors, utilizing regression analysis. The results presented in Panel B show the even after controlling for other determinants of abnormal returns, there is no significant

¹⁹ Parameters α_i and β_i are estimated from linear regression utilizing returns from day -220 and -20 before the deal announcement date.

²⁰ The results based on models utilizing the quality of law are similar, though they have lower statistical significance.

difference between gains to mergers and joint ventures or strategic alliances. However, deals with expected organizational structures significantly outperform asset combinations with unexpected structures by approximately 0.9%, affirming our prediction that each cross border deal is associated with an optimal, value maximizing form.²¹

5. Conclusion

Recent financial and economic research has documented significant differences in development of legal and accounting systems of various countries. The flaws of those systems increase information asymmetry among economic actors, and decrease efficiency of capital markets and arms-length contracts in general. As a result, legal and accounting system quality has been linked to economic growth, asset values, as well as to the overall benefits of diversification and the reliance on internal capital markets.

In this study, we present a theoretical model designed to explain the impact of information asymmetry and institutions on the choice of organizational structures for combinations of assets of firms from different countries. That is, rather than the problems of *whether* to diversify, our focus is on the issue of *how* to diversify. Our model suggests that as the legal systems improve, and information asymmetry diminishes, both market (arms-length) and firm (internal market) contracts can co-exist together. As institutional development continues even further, eventually a threshold is crossed after which arms-length contracts edge out firm internal contracting. Consequently, market based contractual arrangements become again prevalent in economies with high quality of legal systems and low information asymmetry.

We test the implications of our model empirically, using a sample of international joint ventures and strategic alliances with US firms as one of the participants (considered

²¹ Other coefficients have generally anticipated signs (though only those for size and industry growth opportunities are significantly different from zero). The significantly negative coefficient for size is expected, since the total synergies are typically spread over greater equity base in case of large deal participants. There is also some evidence suggesting that at least in case of mergers, bigger bidders are associated with greater returns to targets (e.g. Billett and Ryngaert, 1997; Jarrell and Poulsen, 1989), possibly due to overpaying. A positive coefficient for the return on assets suggests that better performing firms are associated better business decision. A positive coefficient for related participants is consistent with the literature suggesting that vertical diversification destroy comparatively greater value (Rajan et al., 2000; Shin and Stulz, 1998; Berger and Ofek, 1995). A positive coefficient for the industry growth opportunities is consistent, for example, with the hypothesis that high-growth assets benefits from acquisition thanks to additional access to financing (Smith and Kim, 1994).

more open “market-like” contracts) and cross-border mergers involving US bidders (considered more close “firm-like” contracts) announced between 1985 and 2000. We measure the quality of foreign countries’ legal systems by the “Rule of law” index designed by Kaufmann et al. (1999). The extent of information asymmetry is measured by the quality of accounting index generated by Center for International Financial Analysis and Research (CIFAR).

Our empirical findings support the predictions of our theoretical model and are consistent with the literature suggesting that U.S. firms enter deals minimizing hold-up transaction costs (Beamish and Banks, 1987; Gatignon and Anderson, 1988; Gomez-Casseres, 1989; Asiedu and Esfahani, 2001; Baker et al., 2002), as well as with Desai et al. (2004) who provide evidence that organizational structure choices of U.S. firms are driven by the degree of liberalization of foreigners’ ownership restrictions in U.S. partnering countries. International diversification deals involving firms from countries with low quality of legal and accounting systems are more likely to be consummated as formal arms-length contracts (strategic alliances or joint ventures). As the systems quality improves, closer “firm-like” contracts (i.e. mergers) become more prevalent. However, for countries with the best legal and accounting systems, market-like contracts again tend to slightly edge-out mergers. As a robustness check, we repeat our empirical analysis to determine the choices between the two types of contract that we characterize to be “market-like” – the stronger, more relational joint ventures and the weaker, more arms-length strategic alliances. We find qualitatively identical results compared to the broader sample analysis that included mergers.

Our theory appears to have important valuation consequences as well. We document that US firms entering organizational structures predicted by our model are associated with significantly greater abnormal stock returns around deal announcements. This finding suggests that each deal indeed has an optimal organizational structure maximizing shareholder value.

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Table 1
Sample Distribution

Sample of international strategic alliances and joint ventures and cross-border mergers with US bidders is generated using *SDC Joint Ventures* and *SDC Mergers&Acquisitions* databases. *Quality of Legal System* is an index representing “Rule of Law” index generated by Kaufman et al. (1999). *Quality of Accounting System* is an index generated by Center for International Financial Analysis and Research (CIFAR).
Panel A: Distribution of Sample by Participant Countries

<i>Participant Nation</i>	<i>Joint Ventures</i>	<i>Strategic Alliances</i>	<i>Mergers</i>	<i>Quality of Legal System</i>	<i>Quality of Acct. System</i>
Argentina	28	20	102	0.32	45
Australia	187	270	102	1.60	75
Austria	13	26	14	1.81	54
Belgium	23	92	26	0.80	61
Brazil	94	57	98	-0.22	54
Canada	319	1357	447	1.55	74
Chile	23	19	35	1.09	52
Colombia	10	8	15	-0.78	50
Denmark	17	61	29	1.69	62
Egypt	8	4	8	0.13	24
Finland	22	51	24	1.74	77
France	214	507	202	1.08	69
Germany	236	695	288	1.48	62
Greece	7	9	3	0.50	55
Hong Kong	110	99	64	1.33	69
Iceland	0	4	0	1.47	41
India	225	141	47	0.16	57
Israel	51	145	48	0.97	64
Italy	106	201	86	0.86	62
Japan	867	3497	63	1.42	65
Luxembourg	7	42	5	1.62	44
Malaysia	79	47	14	0.83	76
Mexico	158	112	81	-0.47	60
Netherlands	111	278	69	1.58	64
New Zealand	41	23	28	1.82	70
Nigeria	3	1	1	-1.10	59
Norway	28	50	26	1.83	74
Peru	10	6	18	-0.52	38
Philippines	26	31	9	-0.08	65
Portugal	8	12	8	1.08	36
Singapore	75	82	3	1.94	78
South Africa	41	36	33	-0.35	70
South Korea	137	300	25	0.94	62
Spain	51	109	67	1.03	64
Sweden	39	152	57	1.62	83
Switzerland	46	183	38	2.00	68
Taiwan	61	121	8	0.93	65
Thailand	78	28	16	0.41	64
Turkey	27	7	6	-0.01	51
United Kingdom	476	1654	547	1.69	78
Uruguay	3	0	3	0.27	31
Venezuela	43	14	20	-0.66	40
Total	4108	10551	2783		

Table 1 (contd.)
Sample Distribution

Panel B: Distribution of Sample by the Year of Deal Announcement

<i>Announcement Year</i>	<i>Joint Ventures</i>	<i>Strategic Alliances</i>	<i>Mergers</i>
1985	33	376	27
1986	82	364	31
1987	61	441	31
1988	122	349	31
1989	68	399	85
1990	274	674	67
1991	394	924	90
1992	275	950	130
1993	295	972	160
1994	467	1016	187
1995	626	808	253
1996	326	498	299
1997	395	646	305
1998	228	701	408
1999	232	677	339
2000	230	756	340
Total	4108	10551	2783

Table 2**Descriptive Statistics: Joint Ventures or Strat. Alliances vs. Mergers**

Table 2 contains key sample descriptive statistics for the sample of 14,659 completed cross-boarder joint ventures, strategic alliances, and 2,783 mergers that were announced between 1985 and 2000. *Industry Growth Opportunities* are measured as median M/B ratio of assets [(MV of Equity + Total Assets – BV of Equity)/Total Assets] for all US companies with the same 2-digit industry SIC code as the code of the joint venture (or strategic alliance), measured during the year of deal completion. *Industry Research Intensity* is measured as median R&D expenses normalized by Total Assets for all US companies with the same 2-digit industry SIC code as the code of the joint venture (or strategic alliance), measured during the year of deal completion. *Participant country GDP* is the Gross Domestic Product of the non-US deal partner during the year of deal announcement, as reported by *Penn World Tables*. *Quality of Legal System* is an index representing “Rule of Law” variable generated by Kaufman et al. (1999). *Quality of Accounting System* is an index generated by Center for International Financial Analysis and Research (CIFAR). The deal is between *Related Participants*, if both the US and the foreign participant share the same 2-digit SIC code.

Panel A: Descriptive Statistics

<i>Variable</i>	<i>Mergers</i>			<i>Joint Ventures and Strategic Alliances</i>		
	<i>Median</i>	<i>Mean</i>	<i>St. Dev</i>	<i>Median</i>	<i>Mean</i>	<i>St. Dev</i>
Industry Growth Opportunities	1.513	1.644	0.569	1.511**	1.639	0.515
Industry Research Intensity	0.000	0.024	0.032	0.030***	0.030***	0.030
Participant Country GDP/Cap. (\$1,000s)	20.71	18.79	6.15	21.12***	19.55***	5.43
Quality of Legal System	1.483	1.193	0.667	1.421	1.313***	0.503
Quality of Accounting System	65.00	67.58	10.01	65.00	67.82*	7.33
US Firm’s Assets	0.92 (N=1,330)	10.49	38.68	0.69*** (N=6,018)	12.97**	39.69
US Firm’s Return on Assets	0.0907 (N=1,330)	0.0663	0.1789	0.0733*** (N=6,018)	-0.0049***	0.2762

Panel B: Sample Proportions

<i>Variable</i>	<i>Mergers</i>	<i>Joint Ventures and Strategic Alliances</i>
Related Participants	50.59%	32.77%***

***, **, *: statistical difference between the two subsamples significant at 1%, 5%, and 10% levels, respectively, using Wilcoxon test (median) and T-test (mean).

Table 3

Probit Analysis of Determinants of Joint Ventures or Strat. Alliances vs. Mergers

The dependent variable is equal to one, if the business deal is a joint venture or a strategic alliance, zero if the deal is a merger involving a US bidder. *Industry Growth Opportunities* are measured as median M/B ratio of assets [(MV of Equity + Total Assets – BV of Equity)/Total Assets] for all US companies with the same 2-digit industry SIC code as the code of the joint venture (or strategic alliance), measured during the year of deal completion. *Industry Research Intensity* is measured as median R&D expenses normalized by Total Assets for all US companies with the same 2-digit industry SIC code as the code of either the US bidder (in case of mergers) or the joint venture or strategic alliance, measured during the year of deal completion. *US Firm's Assets* are total assets of the US deal participant in \$bil. *US Firm's Return on Assets* equal EBIT/Total Assets of the US deal participant. *Participant country GDP* is the Gross Domestic Product of the non-US deal partner during the year of deal announcement, as reported by *Penn World Tables*. *Quality of Legal System* is an index representing “Rule of Law” variable generated by Kaufman et al. (1999). *Quality of Accounting System* is an index generated by Center for International Financial Analysis and Research (CIFAR). The deal is between *Related Participants*, if both the US and the foreign participant share the same 2-digit SIC code. The deal involves *Cross Technology Transfer* if one of the participants transfers technology to another participant or to the alliance (this information is collected from SDC database). DLAWMI (DACTMI) is a dummy variable equal to one for observations with value of the *Quality of Legal System* (*Quality of Accounting System*) greater than sample's 50th percentile. DLAWHI (DACTHI) is a dummy variable equal to one for observations with value of the *Quality of Legal System* (*Quality of Accounting System*) greater than sample's 80th percentile. P-values in parentheses.

Table 3 (contd.)

Probit Analysis of Determinants of Joint Ventures or Strat. Alliances vs. Mergers

Indep. Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intercept	-1.3707 (<.001)	0.7888 (<.001)	0.7983 (<.001)	0.8514 (<.001)	0.8555 (<.001)	0.8720 (<.001)	0.8424 (<.001)
Related Participants	-0.3973 (<.001)	-0.4213 (<.001)	-0.4236 (<.001)	-0.4231 (<.001)	-0.4255 (<.001)	-0.4781 (<.001)	-0.4804 (<.001)
Ind. Growth Opportunities	0.0825 (<.001)	0.0469 (0.034)		0.0395 (0.074)		-0.0071 (0.825)	
Ind. Resrch. Intensity			2.9776 (<.001)		2.7019 (<.001)		0.7404 (0.175)
US Firm's Assets						0.0008 (0.101)	0.0009 (0.079)
US Firm's Return on Assets						-0.8994 (<.001)	-0.8946 (<.001)
Participant's GDP/Cap.	0.0335 (<.001)	0.0287 (<.001)	0.0278 (<.001)	0.0241 (<.001)	0.0231 (<.001)	0.0355 (<.001)	0.0351 (<.001)
Qual. of Legal Sys.	0.7502 (<.001)						
Qual. of Legal Sys.*DLAWMI	-0.4190 (<.001)						
Qual. of Legal Sys.*DLAWHI	-0.0102 (0.683)						
DLAWMI		-0.5208 (<.001)	-0.5110 (<.001)			-0.4425 (<.001)	-0.4423 (<.001)
DLAWHI		0.0903 (0.005)	0.0818 (0.012)			0.1299 (0.037)	0.1271 (0.041)
Qual. of Act Sys.	0.0417 (<.001)						
Qual. of Act Sys.*DACTMI	-0.0093 (<.001)						
Qual. of Act Sys.*DACTHI	-0.0021 (<.001)						
DACTMI				-0.4905 (<.001)	-0.4734 (<.001)	-0.4856 (<.001)	-0.4802 (<.001)
DACTHI				0.1202 (<.001)	0.1104 (0.001)	0.1626 (0.010)	0.1614 (0.011)
N=	17,442	17,442	17,442	17,442	17,442	7,348	7,348

Table 4
Descriptive Statistics: Joint Ventures vs. Strategic Alliances

Table 4 contains key sample descriptive statistics for the sample of 4,108 completed cross-boarder joint ventures and 10,551 strategic alliances that were announced between 1985 and 2000. *Industry Growth Opportunities* are measured as median M/B ratio of assets [(MV of Equity + Total Assets – BV of Equity)/Total Assets] for all US companies with the same 2-digit industry SIC code as the code of the joint venture (or strategic alliance), measured during the year of deal completion. *Industry Research Intensity* is measured as median R&D expenses normalized by Total Assets for all US companies with the same 2-digit industry SIC code as the code of the joint venture (or strategic alliance), measured during the year of deal completion. *Participant country GDP* is the Gross Domestic Product of the non-US deal partner during the year of deal announcement, as reported by *Penn World Tables*. *Quality of Legal System* is an index representing “Rule of Law” variable generated by Kaufman et al. (1999). *Quality of Accounting System* is an index generated by Center for International Financial Analysis and Research (CIFAR). The deal is between *Related Participants*, if both the US and the foreign participant share the same 2-digit SIC code. The deal involves *Cross Technology Transfer* if one of the participants transfers technology to another participant or to the alliance (this information is collected from SDC database).

Panel A: Descriptive Statistics

Variable	Joint Ventures			Strategic Alliances		
	Median	Mean	St. Dev	Median	Mean	St. Dev
Industry Growth Opportunities	1.421	1.576	0.506	1.545 ^{***}	1.664 ^{***}	0.516
Industry Research Intensity	0.000	0.022	0.031	0.041 ^{***}	0.033 ^{***}	0.030
Participant Country GDP/Cap. (\$1,000s)	20.11	17.71	6.87	21.31 ^{***}	20.26 ^{***}	4.56
Quality of Legal System	1.421	1.139	0.661	1.421 ^{***}	1.381 ^{***}	0.428
Quality of Accounting System	65.00	66.59	8.30	65.00 ^{***}	68.29 ^{***}	6.85
US Firm’s Assets	2.03 (N=1,644)	20.17	53.80	0.37 ^{***} (N=4,374)	10.27 ^{***}	32.45
US Firm’s Return on Assets	0.0858 (N=1,644)	0.0469	0.2045	0.0642 ^{***} (N=4,374)	-0.0244 ^{***}	0.2965

Panel B: Sample Proportions

Variable	Joint Ventures	Strategic Alliances
Related Participants	34.68%	32.02% ^{***}
Cross Technology Transfer	7.86%	10.32% ^{***}

***, **, *: statistical difference between the two subsamples significant at 1%, 5%, and 10% levels, respectively, using Wilcoxon test (median) and T-test (mean).

Table 5

Probit Analysis of Determinants of Strategic Alliances vs. Joint Ventures

The dependent variable is equal to one, if the business deal is a strategic alliance, zero if the deal is a joint venture. *Industry Growth Opportunities* are measured as median M/B ratio of assets [(MV of Equity + Total Assets – BV of Equity)/Total Assets] for all US companies with the same 2-digit industry SIC code as the code of the joint venture (or strategic alliance), measured during the year of deal completion. *Industry Research Intensity* is measured as median R&D expenses normalized by Total Assets for all US companies with the same 2-digit industry SIC code as the code of the joint venture (or strategic alliance), measured during the year of deal completion. *US Firm's Assets* are total assets of the US deal participant in \$bil. *US Firm's Return on Assets* equal EBIT/Total Assets of the US deal participant. *Participant country GDP* is the Gross Domestic Product of the non-US deal partner during the year of deal announcement, as reported by *Penn World Tables*. *Quality of Legal System* is an index representing “Rule of Law” variable generated by Kaufman et al. (1999). *Quality of Accounting System* is an index generated by Center for International Financial Analysis and Research (CIFAR). The deal is between *Related Participants*, if both the US and the foreign participant share the same 2-digit SIC code. The deal involves *Cross Technology Transfer* if one of the participants transfers technology to another participant or to the alliance (this information is collected from SDC database). DLAWMI (DACTMI) is a dummy variable equal to one for observations with value of the *Quality of Legal System (Quality of Accounting System)* greater than sample's 50th percentile. DLAWHI (DACTHI) is a dummy variable equal to one for observations with value of the *Quality of Legal System (Quality of Accounting System)* greater than sample's 80th percentile. P-values in parentheses.

Table 5 (contd.)
Probit Analysis of Determinants of Strategic Alliances vs. Joint Ventures

Indep. Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Intercept	-1.3215 (<.001)	-0.6148 (<.001)	-0.5049 (<.001)	-0.6550 (<.001)	-0.5274 (<.001)	-0.6800 (<.001)	-0.5023 (<.001)
Related Participants	-0.0554 (0.020)	-0.0676 (0.004)	-0.0605 (0.011)	-0.0651 (0.006)	-0.0570 (0.017)	0.0280 (0.452)	0.0234 (0.530)
Ind. Growth Opportunities	0.2102 (<.001)	0.1797 (<.001)		0.1901 (<.001)		0.1758 (<.001)	
Ind. Resrch. Intensity			6.8135 (<.001)		6.6821 (<.001)		4.0566 (<.001)
US Firm's Assets						-0.0028 (<.001)	-0.0027 (<.001)
US Firm's Return on Assets						-0.5608 (<.001)	-0.5372 (<.001)
Participant's GDP/Cap.	0.0190 (<.001)	0.0476 (<.001)	0.0468 (<.001)	0.0511 (<.001)	0.0501 (<.001)	0.0550 (<.001)	0.0540 (<.001)
Cross-tech. Transfer	0.0750 (0.058)	0.1104 (0.005)	0.0215 (0.591)	0.0963 (0.014)	0.0131 (0.744)	0.1440 (0.012)	0.1006 (0.083)
Qual. of Legal Sys.	0.4075 (<.001)						
Qual. of Legal Sys.*DLAWMI	-0.0498 (0.030)						
Qual. of Legal Sys.*DLAWHI	-0.1033 (0.001)						
DLAWMI		-0.0356 (0.215)	-0.0080 (0.781)			-0.0628 (0.168)	-0.0415 (0.363)
DLAWHI		0.0940 (0.006)	0.0820 (0.018)			0.0862 (0.127)	0.0865 (0.126)
Qual. of Act Sys.	0.0124 (0.001)						
Qual. of Act Sys.*DACTMI	-0.0040 (<.001)						
Qual. of Act Sys.*DACTHI	0.0029 (<.001)						
DACTMI				-0.2143 (<.001)	-0.1673 (<.001)	-0.2033 (<.001)	-0.1719 (<.001)
DACTHI				0.2957 (<.001)	0.2717 (<.001)	0.2295 (0.006)	0.2239 (0.008)
N=	14,659	14,659	14,659	14,659	14,659	6,018	6,018

Table 6**Analysis of US Firms' Abnormal Stock Returns Around Deal Announcements**

The abnormal returns are measured as the difference between stock returns and expected returns measured using market model over the period from five days before to five days after the original deal announcement. *Industry Growth Opportunities* are measured as median M/B ratio of assets [(MV of Equity + Total Assets – BV of Equity)/Total Assets] for all US companies with the same 2-digit industry SIC code as the code of the joint venture (or strategic alliance), measured during the year of deal completion. *US Firm's Assets* are total assets of the US deal participant in \$bil. *US Firm's Return on Assets* equal EBIT/Total Assets of the US deal participant. The deal is between *Related Participants*, if both the US and the foreign participant share the same 2-digit SIC code. *Expected Deal Structure* is a dummy variable equal to one if the US company entered the deal predicted by Probit model utilizing the quality of accounting disclosure (Model 4 in Table 3). T-statistics are in parentheses.

Panel A: Abnormal returns (-5,+5)

Sample	N	Mean Abnormal Return	p-value
Mergers	1,158	0.33%	0.238
Joint Venture or Strat. Alliances	4,977	0.54%	0.002
Expected Deal Structure = 0	2,367	0.24%	0.228
Expected Deal Structure = 1	3,768	0.67%*	<.001

* Difference between sub-samples based on Expected Deal Structure value significant at 10% level

Panel B: Regression analysis of determinants of abnormal announcement returns (-5, +5)

Independent Variable	(1)	(2)	(3)
Intercept	-0.0087 (-1.35)	-0.0093 (-1.64)	-0.0147 (-2.15)**
Ln(US Firm's Assets)	-0.0024 (-3.55)***	-0.0024 (-3.58)***	-0.0024 (-3.56)***
US Firm's Return on Assets	0.0043 (0.65)	0.0033 (0.50)	0.0041 (0.63)
Related Participants	0.0029 (0.87)	0.0047 (1.36)	0.0054 (1.56)
Ind. Growth Opportunities	0.0055 (2.00)**	0.0051 (1.83)*	0.0051 (1.85)*
Joint Venture or Strat. Alliance	0.0059 (1.38)		0.0061 (1.41)
Expected Deal Structure		0.0089 (2.58)***	0.0090 (2.60)***

***, **, *: Coefficient statistically significantly different from zero at 1%, 5%, and 10% levels, respectively.

Appendix

Case 1

When the renegeing constraint binds we have,

$$V(b_j, \beta_j^{**}(b_j), x) - V(\beta_j^*) - tx - rb_j = 0$$

$$\text{or, } \frac{b_j(2 - b_j)}{4\gamma} \bullet \frac{\text{var}(\mu)}{1 + \text{var}(\mu)} - tx - rb_j = 0$$

$$\text{or, } -b_j^2k + (2k - 4\gamma r)b_j - 4\gamma tx = 0$$

$$\text{or, } -b_j^2k + Yb_j - Z = 0, \text{ where } k = \frac{\text{var}(\mu)}{1 + \text{var}(\mu)}, Y = 2k - 4\gamma r \text{ and } Z = 4\gamma tx.$$

The solution to the optimization is the largest value of $b_j \in [0,1]$ that satisfies the quadratic equation,

$$\text{yielding } b_j^{**} = \frac{Y + (Y^2 - 4kZ)^{1/2}}{2k}.$$

$$\frac{\partial b_j^{**}}{\partial k} = \frac{1 + ((Y^2 - 4kZ)^{-1/2})(Y - Z)}{k} - \frac{Y + (Y^2 - 4kZ)^{1/2}}{2k} > 0. \text{ Thus } b_j^{**} \text{ increases with } \text{var}(\mu).$$

Case 2

When the renegeing constraint binds we have,

$$V(b_j, \beta_j^{**}(b_j)) - w - tx = rb_j, \text{ where } k = \frac{\text{var}(\mu)}{1 + \text{var}(\mu)}$$

$$\text{or, } \frac{1}{4\gamma} [2b_jk - b_j^2k + 1 - k] - w - tx \geq rb_j$$

$$\text{or, } -b_j^2k + Gb_j + H = 0, \text{ where } G = 2k - 4\gamma r \text{ and } H = 1 - k - 4\gamma(w + tx).$$

The solution to the optimization is the largest value of $b_j \in [0,1]$ that satisfies the quadratic equation,

$$\text{yielding } b_j^{**} = \frac{G + (G^2 - 4kH)^{1/2}}{2k}$$

Since G decreases with r , and b_j^{**} increases with G , b_j^{**} decreases with r . As H decreases with w and tx , and b_j^{**} increases with H , b_j^{**} decreases with w and tx . And since k increases with $\text{var}(\mu)$, b_j^{**} decreases with $\text{var}(\mu)$.

$$\text{Thus, } \frac{\partial b_j^{**}}{\partial r} < 0, \frac{\partial b_j^{**}}{\partial w} < 0, \frac{\partial b_j^{**}}{\partial (tx)} < 0 \text{ and } \frac{\partial b_j^{**}}{\partial \text{var}(\mu)} < 0.$$