MNC SUBSIDIARIES AND COUNTRY RISK: INTERNALIZATION AS A SAFEGAURD AGAINST WEAK EXTERNAL INSTITUTIONS

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Abstract

Literature on how multinational corporations (MNCs) deal with country risk has focused almost exclusively on how such risk affects the design of entry strategies. It tells us that, other things being equal, country risk reduces foreign direct investment (FDI) and also leads MNCs to hold a lower equity stake in the focal subsidiary. Notwithstanding these findings, considerations such as rapid economic growth and lower factor costs are driving MNCs to significantly increase FDI into high risk countries. These developments make it imperative that we also address the question of how MNCs deal with country risk on an ongoing basis after they have established majority or wholly owned operations in a high risk country. In this study, analyses of panel data on a large sample of subsidiaries of U.S. headquartered MNCs spanning the period 1983-1996 support our prediction that MNCs will respond to high country risk by increasing the extent to which the focal subsidiary sells its goods and services within the MNC's internal global market rather than externally. Our analyses also support the prediction that trade internalization as a response to country risk will be weaker in the case of MNCs which have greater prior experience at operating in high risk countries.

> "A surge in activity by multinationals in the developing world has opened a new chapter in globalization…..In 2002 they invested $162 billion in the developing world, up from just $15 billion in 1985……Yet even as developing nations dole out lucrative incentives to attract foreign investment, they are often wary of multinational companies." (Farrell, Remes, & Schulz, *The McKinsey Quarterly*, 2004)

It is well accepted that, all else being equal, country risk dampens inbound FDI and also leads MNCs to minimize their exposure by holding lower equity stakes (Gatignon & Anderson, 1988; Henisz & Delios, 2001; Kobrin, Basek, Blank, & La Palombara, 1980; Markusen, 2001; Uhlenbruck, Rodriguez, Doh, & Eden, 2006). However, driven by the fact that all else is not always equal, an increasing number of MNCs are choosing to make large investments in developing countries, many of which continue to experience significant policy hazards and weak legal institutions. As noted above, since 1985, FDI into developing countries has grown at a compounded annual rate of 15%, well above the GDP growth rate in these economies. Given this trend towards engagement rather than avoidance, it is noteworthy that current literature is almost totally silent on how MNCs deal with country risk on an ongoing basis *after* they have established majority or wholly owned operations in higher risk countries. The primary goal of this paper is to help redress this important gap in our knowledge.

Aside from its practical significance, the question of how MNCs deal with country risk *after* they have established operations in a host country is also of considerable theoretical interest. It provides a novel opportunity to broaden our perspective regarding how MNCs internalize various activities and the reasons why they choose to do so. As is well-known, the notion of internalization *via ownership* is central to theories of the multinational enterprise (Buckley & Casson, 1976; Campa & Guillen, 1999; Caves, 1982; Gatignon & Anderson, 1988; Hennart, 1991; Kogut & Zander, 1993; Rugman, 1981). According to internalization theory (Dunning, 1988; Rugman, 1981), the multinational organizational form exists because of imperfect markets

for firm-specific capabilities and know-how. Firms can more efficiently exploit these capabilities internationally through internal organization – e.g., wholly or partially-owned subsidiaries – than through external markets. Internalization is a multidimensional construct, and ownership is only one of several mechanisms through which any specific subsidiary may be more or less integrated with the MNC's global network. Other dimensions of internalization include intra-firm flows of goods, services and knowledge, and convergence in organizational routines and business processes (Feinberg & Keane, 2001, 2006a; Gupta & Govindarajan, 2000; Zhao, 2006). These deeper dimensions of internalization require ongoing commitment and engagement between geographically dispersed MNC units, as opposed to the relatively infrequent choices MNCs make about foreign market entry and ownership. Clearly, even among subsidiaries with the same level of ownership stake by the parent, there can exist significant differences in the extent to which the subsidiary is integrated along one or more of these other dimensions.[1] Focusing on the question of what happens *after* the MNC has already established majority or wholly owned operations in a country, we analyze variations in integration of markets for goods and services within the MNC.

More specifically, in this study, we examine the impact of variations in country risk on the extent to which a focal subsidiary will be integrated into the MNC's global production and trading network i.e., the extent to which the subsidiary will sell its goods and services within the MNC instead of relying on the external markets. We predict that the greater the magnitude of country risk, the greater would be the extent of such integration. Paralleling Zhao (2006), our arguments center around the potential of trade internalization to serve as an immune system against the threat of expropriation and related institutional risks within the host country. We also examine the moderating impact of the MNC's past experience at dealing with high levels of

country risk across countries. We predict that greater relevant experience on the part of the MNC will dampen the impact of country risk on the subsidiary's product-market integration within the global network.

Our empirical data come from the Benchmark and Annual Surveys of U.S. Direct Investment Abroad, administered by the Bureau of Economic Analysis (BEA), U.S. Department of Commerce. Containing many years of detailed financial and operating data on the entire population of US-based MNCs and their foreign affiliates, the BEA data is the most comprehensive data available on MNCs. We focus on the period 1983-1996 and analyze data on all subsidiaries in the Americas region of all U.S. headquartered MNCs.

Besides extending the literature on how MNCs deal with country risk, our research also makes a significant methodological contribution. Specifically, we use a technique suggested by Wooldrigde (2005) to deal with an "initial conditions" problem that arises in our analysis. Initial conditions problems are common in many settings where researchers use random effects panel data estimators. Because random effects coefficients are identified from both the cross-section and the panel (i.e., across firms and over time), it may be the case that unobserved features of the pre-sample environment and firm behavior in the pre-sample environment will be correlated with the firm effects. This correlation violates a basic assumption of random effects estimation. Worse yet, the uncontrolled initial conditions may create a spurious correlation between the contemporaneous dependent and independent variables of interest in a random effects regression. An obvious "fix" to this problem is to use a fixed effects panel data estimator; but, in many cases, this either cannot be implemented, or causes severe sample selection problems (see King, Lenox, & Terlaak, 2005). Wooldridge (2005) proposes a very simple and easily estimable solution to the initial conditions problem that can be used with most random effects panel data estimators.

Since panel data has come into much wider use in the empirical management literature, it is worthwhile to introduce a technique that deals with a very general problem and is gaining broad acceptance in the economics literature (e.g., Feinberg & Keane, 2001, 2006b).

THEORY AND HYPOTHESES

Salience of the Host Country Institutional Context

The term "country risk" is a multidimensional construct encompassing many types of country-specific political and economic hazards (Lessard, 1989). Such hazards originate from unpredictability regarding the substance and implementation of future government policies, the extent to which the country is governed by rule of law, the effectiveness and efficiency of the court system, outright or de facto expropriation, enforcement of contracts between the focal firm and its local partners, violation of intellectual property rights, and so forth (Henisz, 2000; Uhlenbruck et al., 2006) Although the content of the various types of country risk may appear somewhat distinct, many scholars have argued that the different types share common drivers such as a weakly constrained political structure and an institutional context that suffers from lack of credibility (e.g., La Porta, 1997; Sharpe, 1981: 629). Indeed, empirical studies have consistently demonstrated extremely high correlations among the various risk types (see La Porta, 1997). In this study, we use the terms country risk and institutional hazards interchangeably.

The potential of institutional environment to shape the decisions and actions of firms, whether domestic or foreign, is widely accepted and has been empirically documented (e.g., Borner, Brunetti, & Weder, 1995; Henisz, 2000; Knack & Keefer, 1995; Murtha & Lenway, 1994; North, 1990; North & Thomas, 1973; Olson, 1996; Rodrick, 1993). As summarized by Henisz (2000), the institutional environment affects firms' decisions and actions through two channels. First, investors respond to frequent and potentially arbitrary changes in economic

policy by investing less or not investing at all, or investing only in those projects which might yield higher and more immediate returns. Second, in the presence of institutional hazards, investors shift resources from economic to political activity. "Both of these channels lead to lower and less economically productive investment and, therefore, lower rates of economic growth" (Henisz, 2000: 2). Along the same lines, Murtha and Lenway (1994: 126) note that, "Markets operate imperfectly when many contracts are unenforceable and the titles to profit streams remain ambiguous." These arguments and findings build upon and reinforce North's (1990: 54) observation that "the inability of societies to develop effective low-cost enforcement of contracts is the most important source of both historical stagnation and contemporary underdevelopment in the Third World."

MNC Response to Institutional Hazards

Past research has devoted considerable attention also to the question of how country-specific policy hazards affect the strategic decisions of multinational corporations. Virtually all of this research has focused on the design of *entry strategies,* encompassing decisions such as whether or not to enter a country and the choice of entry mode. As expected, this literature tells us that, *ceteris paribus,* institutional hazards reduce the likelihood of entry (Gastanaga, Nugent, & Pashamova ,1998; Henisz & Delios, 2001; Root, 1968; Wei, 2000). Aside from the likelihood of entry, scholars have also looked at the impact of institutional hazards on the choice of entry mode as reflected in the degree of the MNC's ownership stake in the subsidiary. The prediction, supported empirically, is that greater levels of institutional hazards will be associated with lower MNC ownership stake in the foreign subsidiary (Brouthers, 1995; Burton & Inoue, 1987; Delios & Henisz, 2000; Doh, Teegen, & Mudambi, 2004; Rodriguez, Uhlenbruck, & Eden, 2005; Uhlenbruck et al., 2006). Two arguments underlie this prediction. First, lower ownership stake

by the MNC would reduce the amount of its own investment that is at risk in the host country. Second, ceding greater ownership stake to local partners is likely to reduce the risk of expropriation; this would be so because local partners are likely to have stronger political connections with the host country government. Thus, in the presence of greater country risk, the MNC can be expected to maintain a lower ownership stake in the focal subsidiary.

We accept the validity and salience of the findings pertaining to the impact of country risk on entry strategies. However, we argue that, as noted by Farrell et al. (2004), despite higher institutional risk in a host country, other considerations (e.g., lower factor costs and/or a growing domestic market) often lead MNCs to not only make substantial and growing investments in such countries but also to acquire a majority or complete ownership stake in the focal subsidiary. Thus, the question of how to deal with country risk does not end with entry decisions. In fact, despite high country risk, if the MNC chooses to make investments in a host country, then the question of how to deal with country risk on an ongoing basis actually becomes more salient. Notwithstanding the obvious importance of this question, it has remained almost entirely unaddressed. We now address this question, first theoretically and then empirically.

We start with the premise that once an MNC has established majority or wholly owned operations in a high risk country, it will attempt to reduce its exposure to such risk via mechanisms other than a reduction in ownership stake. The literature identifies political behavior as one such risk-reduction strategy (Boddewyn, 1988; Ring, Lenway, & Govekar, 1990; Rodriguez et al., 2005). Political behavior refers to actions such as lobbying, compliance with government corruption, and even outright intervention in the political process. Aside from moral considerations, it is important to note that, as a strategy option, political behavior is likely to suffer from serious constraints. First, home country regulations (such as the U.S. Foreign Corrupt

Practices Act) may prohibit certain types of political behavior. Second, given the vast institutional distance between the low risk environment of the home country and the high risk environment of the host country, developed country MNCs may have limited experience at deploying such strategies. Accordingly, we expect that political behavior is unlikely to be the dominant strategy for the vast majority of MNCs, the exceptions being those MNCs which have considerable experience at operating in multiple high risk countries.

If we rule out political behavior as the dominant strategy for an MNC that has established majority or wholly owned operations in a high risk country, the question of what the MNC might do in order to reduce its exposure to country risk remains largely unaddressed in the literature. We argue here that the answer lies in operational strategies that can immunize the MNC against institutional hazards without requiring a dilution of ownership stake. More specifically, we posit that a tighter integration of the subsidiary within the MNC's global production and trading network is likely to be the strategy of choice. We offer four arguments in support of this position.

First, we expect that the greater the subsidiary's reliance on the MNC's internal market to sell its goods and services, the greater would be the intra-firm specificity of the subsidiary's assets, both tangible and intangible. Intra-firm trade requires that there be complementarity in the assets of the mutually interdependent units. The focal subsidiary's output may consist of intermediate components which need to be integrated with complementary components and subsystems being produced by other units to create an end product. Even if the focal subsidiary is producing a finished good, in the presence of intra-firm trade, it would need to depend on the rest of the global network for access to knowledge about market needs, distribution channels, brand names, and support services (such as user training, maintenance, replacement parts, and upgrades). Following Teece (1986), we expect that tighter interdependence between the

subsidiary and the rest of the MNC (and the associated greater intra-firm specificity of the subsidiary's assets) will significantly reduce the economic value of these assets on a stand-alone basis. If the subsidiary's assets were to be expropriated, the host government would be left with an isolated asset, which would be of little value without the global network and the associated economies of scale, scope and learning. Thus, tighter intra-firm integration can serve as an immune system against expropriation thereby reducing the likelihood of such an event (Fagre & Wells, 1982; LeCraw, 1984). Our expectations are consistent with Sigmund's (1980) anecdotal evidence that, in many cases, host governments in Latin America had to rely on foreign management and technical support to continue operating the expropriated companies, leading often to a reversal of the expropriation decisions.

Second, the greater the intra-firm integration of the subsidiary into the MNC's global trading network, the greater would be the assurance of demand for the subsidiary's products and services. Such assurance can be expected to reduce the subsidiary's dependence on local distributors, co-marketing partners, as well as manufacturers of complementary products. This reduced dependence on local buyers and suppliers is likely to yield two benefits. One, it would reduce partner risks such as non-payment of receivables, appropriation of proprietary technologies, and so forth. Two, it would also reduce the risks associated with rent appropriation or economic volatility in the host country, as happened in many developing countries in the mid-to-late 1990s.

Third, the more integrated the subsidiary is within the MNC's global production and trading network, the greater would be the extent to which subsidiary's managers become socialized within the parent corporation's managerial network. Moran (2001), Rosenzweig and Singh (1991) and others have noted that managers within subsidiaries which are more tightly

integrated into the internal global production and trading network of the MNC tend to exhibit greater similarities in their value systems and business practices with the rest of the MNC. They are also more likely to be viewed as part of the MNC's global talent pool who could be promoted and/or transferred to other units of the MNC. Accordingly, they can be trusted to a greater degree to protect the MNC's welfare when dealing with the local government as well as other stakeholders. While such trustworthiness of local managers is not likely to eliminate the MNC's exposure to political risk and partner risk, it can be expected to reduce it on both fronts.

Finally, the subsidiary's integration within the MNC's global trading network can also be expected to enhance the ability of parent company executives to monitor the events and actions within the focal subsidiary as well as its external environment on an ongoing basis. It seems clear that the greater the intensity of production and trading linkages between a subsidiary and other units within the MNC's global network, the greater must be the intensity of information and knowledge exchange among the interdependent units, including corporate headquarters (Kobrin, 1991; Porter, 1986). This increase in information and knowledge exchange is likely to increase the effectiveness and efficiency of efforts by corporate headquarters as well as peer subsidiaries to monitor the decisions and actions of the focal subsidiary as well as developments in its external environment. While these gains in monitoring will not eliminate the MNC's exposure to country risk, they can be expected to mitigate it.

Our arguments are consistent with Delios and Henisz' (2000: 319) observation that MNCs may deploy a variety of hazard mitigation strategies, including exporting from the subsidiary "which serves the dual purpose of generating hard currency and creating dependence on tacit knowledge of the parent company regarding international distribution channels." To sum up, given the combined effects of greater intra-firm asset specificity, reduced dependence on

local partners, greater socialization, and more intensive monitoring, we argue that, when dealing with a subsidiary to which it must remain strategically committed, the global network of the MNC would find it advantageous to use intra-firm trade as a way to mitigate either the underlying risk or the negative consequences of such risk. Stated more formally:

> *Hypothesis 1: Holding other things equal, the greater the level of country risk facing a subsidiary, the greater will be the integration of the particular subsidiary within the MNC's global trading network as reflected in the extent to which the subsidiary's output is traded internally within the MNC's internal market rather than externally.*

We should note that country risk is not likely to be the only factor shaping the extent to which the subsidiary's production will be traded internally rather than externally. Other determinants include the cost of tariffs and transport, wage differentials, tax considerations and overall organization of production (Feinberg & Keane, 2001, 2006a; Hanson, Mataloni, & Slaughter, 2005; Yeaple, 2003). We control for these and other country and subsidiary level factors in our empirical tests.

The Role of Prior MNC Experience

While the notion of intra-firm integration of the subsidiary as a response to country risk has remained entirely unexplored, scholars have recently proposed that MNCs can build and deploy firm-level capabilities to manage institutional hazards. In an analysis of this question, Henisz (2003) has suggested that, building on prior experience at dealing with institutional hazards, MNCs may be able to "develop broader meta-level routines both to identify the idiosyncrasies in the institutional environment and to lobby or influence the actors who can best prevent an adverse policy change or promote a favorable policy change" (p. 174). Once developed, these routines can potentially be deployed across countries whose institutional environments are similar. Building on these arguments, we examine the possible moderating

impact of prior MNC experience on the predicted association between country risk and a subsidiary's trade internalization within the MNC.

Experience effects have been well documented across a large variety of domains ranging from the management of production operations (Yelle, 1979) to the management of acquisitions (Haleblian and Finkelstein, 1999). The effect of prior experience has also played a central role in research on the evolution of MNCs' global expansion strategies (Barkema, Bell, & Pennings, 1996; Johansson & Vahlne, 1977; Delios & Henisz, 2000; Vermeulen & Barkema, 2001, 2002). For example, Barkema et al. (1996) reported that prior foreign expansion experience had a stronger effect on the longevity of foreign ventures when they required double-layered acculturation (joint ventures or acquisitions) than when they required single-layered acculturation (wholly owned start-ups). In a theoretical analysis of the impact of prior experience on how MNCs might deal with legitimacy concerns, Kostova and Zaheer (1999: 71) have argued that operating in a larger and wider variety of countries gives the firm "extensive organizational experience in dealing with legitimacy issues and expertise in scanning different institutional environments, identifying important legitimating actors, making sense of their legitimacy requirements, and negotiating with them. It also suggests that the firm may have significant bargaining power with respect to the states and governments it deals with." The emerging body of research on how MNCs' entry strategies are affected by country risk has also reported a significant effect of prior experience (Delios & Henisz, 2000).

Consistent with and building on prior research, we anticipate that, within an MNC that operates in a larger number of high risk countries, corporate managers can be expected to have developed a stronger ability to anticipate and respond to the types and sources of country risks that a specific subsidiary may face. They can use this experience to deploy not just operational

but also political strategies for dealing with country risk. Organizing an MNC network to conduct intra-firm trade is not cost-free and may involve scheduling, tariff, and transport costs. As an alternative strategy, experienced MNCs may choose to engage in political behavior such as direct negotiation, lobbying, and cooptation efforts with host country stakeholders (Boddewyn, 1988; Moran, 2001; Ring et al., 1990; Rodriguez et al., 2005). The well-known case of IBM's breakthrough negotiations with the Mexican government to establish a wholly owned subsidiary in the early 1980s illustrates such a strategy (Weiss, 1990). Echoing Henisz (2003), we expect that MNCs with greater experience at dealing with high risk countries would be more likely to deploy such political strategies. Reliance on such strategies should reduce at least partially the need to use trade internalization as a mechanism for dealing with country risk. Thus:

> *Hypothesis 2: An MNC's prior experience at managing subsidiaries in high risk countries will act as a moderator on the predicted positive association in H1. Specifically, the positive association between country risk and the subsidiary's integration within the MNC's global trading network will be weaker in the case of MNCs with greater experience in high risk countries.*

METHODS

Sample

We use confidential panel data from the Benchmark and Annual Surveys of US Direct Investment Abroad, administered by the Bureau of Economic Analysis (BEA), United States Department of Commerce. Containing detailed financial and operating data on the entire population of US-based MNCs and their foreign affiliates, the BEA data is the most comprehensive data available on MNCs. In this study, we use BEA data disaggregated at the individual foreign affiliate level for each MNC from 1983 through 1996. We use the term "subsidiary" to denote "affiliate" throughout this paper.

To test our hypotheses on country risk and integration, we use a subset of the BEA data constructed in several steps. First, we limited our analysis to foreign subsidiaries in the "Americas." This region includes all of North and South America, Central America and the island nations of the Caribbean and Bahamas. We restricted our sample to the Americas for two reasons. First, computing limitations at the BEA premises prevented us from being able to estimate our model on the entire population of subsidiaries, comprising over 250,000 subsidiary-year observations. Second, the Americas was a better choice of region than Asia or Europe because, relative to the other regions, the Americas contains a large number of countries that vary considerably in size, distance to the U.S., and country risk. Dropping countries not in the Americas reduced our potential sample from approximately 256,000 to 72,473 subsidiary-year observations.

Our second data screen involved removing estimated data from the sample. An important feature of the BEA data is the fact that in the Benchmark Survey years (1989 and 1994 in this study), the BEA systematically updates the population of both parents and subsidiaries and requires a larger number of small parents and subsidiaries to report data (see Feinberg & Keane, 2001). However, in the Annual Surveys, many of the small subsidiaries and parents that report data in the Benchmark Survey are exempt from reporting, and the BEA carries them forward by estimating data. We removed these estimated observations, reducing our sample to 34,273 subsidiary year observations.

Third, we restricted our sample to majority-owned (i.e., >50% owned) subsidiaries, because minority-owned subsidiaries often provide less comprehensive data to the BEA. We then needed to remove from our sample subsidiaries in countries with no available data on country risk. After these four screens, our sample had 23,819 subsidiary-year observations.

Finally, since all our subsidiary and MNC variables are lagged, observations from the year 1983 were not included in the regression sample. We also eliminated from our sample parents or subsidiaries with missing data or without at least two consecutive observations needed to create lagged variables. These final screens left us with a sample of 16,686 subsidiary-year observations on 3289 subsidiaries of 1042 U.S. based MNC parents. Countries in our final sample include Canada, Argentina, Brazil, Chile, Columbia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Panama, Peru, Uruguay, Bahamas, Jamaica and Trinidad/Tobago.

All MNC and subsidiary variables are expressed in current U.S. dollars, which we deflate using the 1992 U.S. GDP deflator.

Hypothesized Variables

Subsidiary's intra-firm trade integration. This variable is measured as the ratio of a specific subsidiary's sales to the rest of the MNC in a particular year to the total sales of the subsidiary in the same year. This variable ranges from 0 (implying no intra-firm trade by the subsidiary) to 1 (implying exclusively intra-firm trade by the subsidiary).

Country risk. We operationalize country risk as the "risk of contract repudiation by the host government." Data on this variable were obtained from the International Country Risk Guide (the IRIS dataset published by countrydata.com). These data are available for the years 1982-1997 and have been used widely in empirical research (e.g., La Porta, 1997). The IRIS dataset also includes other measures of risk such as "risk of expropriation," "bureaucratic quality," "rule of law," and "ethnic tension". These different measures of country risk are highly correlated with each other, and with other widely used measures of risk such as those in Polity (Gurr, 1999) and POLCON (Henisz, 2000). In light of the fact that risk of contract repudiation

(range 0-10) has somewhat greater variance than risk of expropriation (range 0-6), in our analysis, we utilize data on the risk of contract repudiation as our primary measure of country risk. For robustness, we also report our results using risk of expropriation and discuss results using a risk measure from Polity (Gurr, 1999). In the IRIS dataset, higher values imply lower risk. In order to eliminate potential confusion in interpreting the results, we multiplied the IRIS data by -1 before conducting our analyses.

MNC's experience at dealing with high risk subsidiaries. To capture an MNC's ability to manage risk, we use the lagged number of "high risk" subsidiaries in each MNC network (by year). "High risk" subsidiaries are defined as those falling in the 25th percentile of Country Risk calculated from the population of subsidiaries (i.e., a risk level of below 8 on a 0-10 scale where higher values imply lower risk). We use the 25th percentile rather than the mean or the median because so much of MNC activity is in "safe" countries that the mean and median of country risk for the entire population of subsidiaries are very close to the highest possible value of the risk index. For example, the mean of contract repudiation risk is 8.5 and the median is 9.

Control Variables

Subsidiary and MNC characteristics. We use seven variables to control for possible confounding effects of other subsidiary and MNC characteristics. We start with controls for MNC strategy and subsidiary role. To measure MNC strategy, we use two variables to capture the extent of the MNC's globalization and integration, specificially, a measure of the MNC's foreign-to-U.S. assets and a measure of the MNC's total cross-border intra-firm trade. The MNC's cross-border intra-firm trade is measured as the sum of exports and imports between an MNC's U.S. operations and its foreign subsidiaries divided by the total sales of the U.S. operations.[2]

We control for subsidiary role using a measure of the MNC's ownership stake in the subsidiary and a measure of the subsidiary's value-added/sales (see Mataloni & Goldberg, 1994). The rationale behind the latter measure is that it should control for subsidiaries that trade intra-firm primarily for cost-related reasons such as taking advantage of cheap labor. These subsidiaries typically trade intra-firm but have very low value-added to sales, since they import components for assembly. We use a dummy variable to control for manufacturing subsidiaries. In results not shown here, we also used a dummy variable to control for subsidiaries in extractive industries such as mining and petroleum. Finally, we control for subsidiary size, and MNC size, both measured as the log of assets. All MNC and subsidiary variables are lagged.

Country, industry, and time effects. To obtain better estimates of the effect of country risk on subsidiary integration within the MNC, we needed to control for the confounding effects of country characteristics such as trade costs (e.g., tariffs and transport costs), distance to the U.S., market size, etc. Similarly, unobserved industry characteristics such as the need for certain natural resources, degree of regulation, or technological sophistication could be the real underlying causes of an observed association between intra-firm trade linkages and country risk. Indeed, in a multi-country multi-industry research design, it is quite likely that if country and industry effects are not controlled for, estimates of the effects of country risk would be biased up (Heckman, 1981). For example, an MNC in the petroleum industry might locate a subsidiary in Trinidad and Tobago, a small Caribbean country that is relatively risky but rich in petroleum. The subsidiary in Trinidad might trade with the network because of what it produces, irrespective of country risk.

To isolate the effect of country risk, we needed to control for the above noted "country effects" (e.g., abundance of petroleum), "industry effects" (e.g., the tendency of subsidiaries in

the petroleum industry to be have intra-firm trade linkages with the MNC network), and "country-industry effects" (e.g., the tendency of petroleum subsidiaries in Trinidad to trade intra-firm). Failure to control for these unobserved country and industry characteristics would likely generate a spurious correlation between country risk and network linkages, since country risk will "pick up" other unobserved country and country-industry characteristics. Because we cannot control for all possible country characteristics that could potentially cause this problem, we chose to include country fixed effects (dummy variables) in our model. We also estimate our model without country dummies, but including two country variables widely used in empirical studies of international trade (e.g., Bergstrand, 1985) - the log of per-capita GDP and the log of the distance from each country to the U.S..

We control for industry effects using a variable that measures the average intra-MNC trade in each subsidiary's specific industry (every year) for all subsidiaries in our sample excluding the focal subsidiary. We use a similar variable to control for country-industry effects. In the BEA database, all industry data are at the 2-3 digit SIC level. We also include year dummies to pick up the effects of changes in demand, growth, public policy, and other unobserved time-related variations. Because the country risk variables have strong trends, we also control for time using a trend in a secondary set of analyses reported in the Results section. Finally, our panel data estimator also controls for subsidiary effects.

Estimation

We use the following basic regression model in our analysis:

$$Y_{ict} = \beta o + \beta X_{it-1} + \Gamma Z_{ct} + \mu + \tau_t + \nu_{it}$$

where the subscripts i, c, and t refer to a specific subsidiary, a specific country, and a specific

time (year). Y_{ict} is the dependent variable: subsidiary's intra-firm integration. X_{it-1} contains the subsidiary-level and MNC-level predictor and control variables. ΓZ_{ct} contains the country risk variable and the control for average intra-firm trade within the industry and country-industry. μ contains the time-invariant country fixed effects, and τ_t are the year dummies. ν_{it} is the error term, which is equal to $u_i + \varepsilon_{it}$. The u_i are time invariant subsidiary-specific characteristics ("subsidiary effects") which are distributed $N(0, \sigma_u^2)$ and are independent and identically distributed over time and across firms. ε_{it}, the random error, is assumed to vary over time and across firms.

Because not all subsidiaries in our sample engage in intra-firm trade, the dependent variable has a value of zero in a large number of cases. Therefore, we use a random effects tobit model and estimate it using maximum likelihood. Feinberg and Keane (2001) used a similar estimation strategy on the BEA intra-firm trade data, since they also confronted the problem of many zero observations on the dependent variable. A tobit estimator allows us to obtain consistent estimates of regression coefficients when values of the dependent variable are frequently equal to zero. In order to obtain consistent regression estimates on this kind of data using an ordinary fixed effects estimator, we would have to discard data on subsidiaries with no intra-firm trade, inducing severe truncation of the sample.

Our choice of a random effects tobit estimator was motivated by two criteria. First, a fixed effects tobit is problematic when a sample contains a large number of firms and a relatively short time period (Baltaggi, 1995). Second, we wanted to include some time invariant regressors in our model (e.g., log of distance to the U.S.), something we would not be able to do with a fixed effects estimator. Using firm-specific regressors and dependent variables in panel data regressions usually violates the criterion of strict exogeneity (see Keane & Runkle, 1992). All of

the firm-specific regressors are lagged. This is an imperfect but commonly used technique for creating pre-determined (weakly exogenous) firm-specific regressors when estimating panel data regression models.

Random Effects Estimators And The Initial Conditions Problem

A potential issue arising from our use of a random effects estimator is the problem of initial conditions. Initial conditions are unobserved features of the pre-sample environment and pre-sample firm behavior that may influence estimates of random effects coefficients. In the worst case scenario, these unobserved and uncontrolled initial conditions can actually cause a spurious correlation between the contemporaneous variables of interest. Consider the following example. Our data begin in 1983; but, clearly, there are many prior years of country risk and subsidiary data that we do not observe. Assume that, at some time in the past, Trinidad and Tobago (TT) was a much riskier location and a new subsidiary establishing operations there was configured to trade intra-firm due to high *initial* levels of risk. Assume that, over the years, TT became considerably less risky, but the subsidiary, having *initially* been organized to trade intra-firm, remained that way. In a random effects regression, a key concern is that the estimated (post-1983) coefficients on the country risk variables will really be picking up the unobserved *initial* relationship between country risk and the subsidiary's initial configuration to trade intra-firm.

This problem arises in random effects regressions because random effects coefficients are identified from both cross-sectional ("between") and over-time ("within") variance. In contrast, fixed effects coefficients are only identified from variance within panel units over time, so we would not confront this problem if we estimated our model using fixed effects. However, due to the factors discussed earlier, we are using a random effects tobit estimator. As mentioned above,

a fixed effects tobit is often inconsistent with a large N and a small T, as is the case with our data. Accordingly, the simple fixed effects "fix" is not feasible here.

A recent paper by Wooldridge (2005) proposes a simple and practical solution to the initial conditions problem that is easy to implement when it may not be possible to use a fixed effects estimator. Wooldridge (2005) proposes specifying the distribution of the random effects conditional on the initial conditions. Specifically, in a random effects regression, one should include important covariates that characterize the initial condition. In our case, we include an indicator for whether the subsidiary traded intra-firm in the first year that it was observed, and we also include the level of the country risk variables in either 1982 or 1983 (depending upon data availability). We felt it was important to include both the t=0 country risk variables and variables characterizing firm behavior in t=0. The reasoning is as follows. The distribution of the subsidiary effect depends on whether the subsidiary traded intra-firm at time t=0, since the latter is a function of the subsidiary effect by construction (see Feinberg and Keane 2006b). It also may be the case that country risk in earlier years was affected by the importance of trade flows in that country. Countries that relied on trade may have had lower initial levels of risk. Including the initial country risk variable controls for this potential effect. Clearly, the actual data go back further than 1982 or 1983, but inclusion of these "initial" levels of risk and subsidiary intra-firm integration should nevertheless be a good proxy for the initial conditions. Feinberg and Keane (2001, 2006b) use the values of tariffs and trade flows in 1983 to control for initial conditions.

We use a similar strategy here, examining the effects of initial conditions using three different estimation strategies. First, similar to Feinberg and Keane (2001), we estimate a random effects tobit with the two t=0 variables included. Second, we estimate a fixed effects

regression with just the set of contemporaneous variable of interest. Estimating the fixed effects regression required restricting the sample to subsidiaries that were observed with at least one year of non-zero data on intra-firm trade. Needless to say, this caused severe truncation of the sample. This is analogous to using a sample of only "choosers" in a discrete choice model and excluding those who have never made a choice. Despite the sample truncation, the appealing feature of fixed effects is that it only identifies "within" variance, so it unambiguously shows the relationship between changing levels of risk and changes in a subsidiary's integration within the MNC. There is no potentially confounding "between" variance to worry about. Finally, we estimate a random effects regression using the same truncated sample as in the fixed effects regression. In this third regression, we control for an autoregressive error structure due to the inclusion of the t=0 variables.

RESULTS

Descriptive Statistics

Table 1 contains the descriptive statistics for our sample of subsidiaries and a correlation matrix. The average subsidiary's intra-firm trade with the MNC represents over 14% of the subsidiary's total sales. Similarly, the average intra-firm trade between the MNC's U.S. operations and the rest of the MNC is more than 7% of the total sales of the U.S. operations.

Insert Table 1 about here

For simplicity, we report the correlations for only one year, 1993, which has a slightly larger than average number of observations (number of observations in 1993 = 1481, average observations per year = 1284). Since we use panel data, we cannot use the standard cross-

sectional correlation matrix. The correlations do not differ significantly when other years are used. As can be seen, there appear to be no serious multicollinearity problems. The highest correlation is that between the total size of the MNC (a control variable) and the number of high risk subsidiaries. This is to be expected since larger MNCs are more likely to operate in a larger number of countries, making them more prone to operating in higher risk countries. The correlation between these two variables is .67 ($p<.001$). Although this correlation is high, our results were not significantly altered by excluding the control for MNC size (or including other even more correlated measures such as the total number of subsidiaries belonging to the MNC's global network).

Tests of Hypotheses

Table 2 presents our regression results. Following Cohen and Cohen (1983), we test for the significance of the interaction term in Hypothesis 2 by entering it into the regression hierarchically. We therefore present our regression results in two steps. First, in column 1, we show the regression results with only the main effects included. Second, in column 2, we show the full set of results including the main effects as well as the hypothesized interaction between country risk and the MNC's experience at managing high risk subsidiaries.

Insert Table 2 about here

The bottom seven lines of Table 2, under the regression results, indicate the following. Sigma_u (σ_u) is the subsidiary-specific part of the error. Sigma_e (σ_e) is the estimate of the idiosyncratic error. We then indicate whether the model includes country and year dummy variables and give the Wald Chi-Square statistic for the fit of the regression model, and the Log Likelihood statistic for the model.

As can be seen in column 1, our results support Hypothesis 1. The subsidiary's intra-firm trade integration is positively associated ($p<.001$) with risk of contract repudiation by the host country government. In Hypothesis 2, we predicted that an MNC's experience at managing high risk subsidiaries would dampen the positive relationship between country risk and the subsidiary's intra-firm trade integration. As can be seen in column 2, the interaction between risk of contract repudiation and MNC experience is significant at $p<.001$ and in the expected negative direction.

Turning to the control variables, MNC and subsidiary size are positive, and generally significant. It appears that, other things being equal, larger subsidiaries of larger MNCs tend to be more closely linked to the MNC network through intra-firm trade. As indicated by the positive and significant coefficient on MNC's total cross border intra-firm trade, a specific subsidiary's intra-firm trade integration is generally higher when the U.S. parent engages in more trade with all of its subsidiaries (see footnote 2). Subsidiaries in which MNCs have a higher ownership stake also have greater trade linkages with the rest of the MNC; the coefficient on ownership is positive and consistently significant at ($p < .001$). The controls for subsidiary role (value-added to sales) and MNC globalization (foreign-to-U.S. assets) are insignificant.

As indicated by the significant positive coefficient on the manufacturing dummy, subsidiaries in manufacturing industries are more likely to have intra-firm trade linkages with the rest of the MNC. Although we could have restricted our sample to only manufacturing subsidiaries, there is significant intra-firm trade in some industries not classified in manufacturing such as software, transportation, telecom and agriculture. Finally, the controls for trade in the subsidiary's industry and country-industry are also highly significant.

Robustness Analyses

To check the robustness of our results, we performed numerous additional analyses. First, we estimated the base model using country variables rather than country dummies (see columns 3-4, Table 2). The variables we included are the average intra-firm-trade in the subsidiary's country (in each year), the log of per-capita GDP in the subsidiary's country, and the distance between the subsidiary's country and the U.S.. These last two variables are standard in "gravity" models of international trade (see Bergstrand, 1985). As can be seen in columns 3-4, the magnitude and significance of the coefficients on country risk and the risk-experience interaction are virtually unaffected by this estimation.

Second, we estimated the same model as in columns 3-4, but we use the ICRG variable "expropriation risk" rather than "risk of contract repudiation by the host country government." Again, the results are nearly identical to our base specification (see columns 5-6, Table 2).

Third, in another specification not shown here, we used the variable "XCONST" from the Polity dataset (Gurr, 1999). This variable indicates "the extent of institutionalized constraints on the decision-making powers of chief executives." XCONST yielded similar results to those reported in columns 1-2, although it was only marginally significant in the main effects model.

Fourth, we tested our hypotheses using a different variable to capture MNC experience. Specifically, we used the total number of countries (rather than just the number of "high risk" countries) in which the MNC operates. This variable yielded results similar to those reported here. MNCs that have a larger number of "high risk" subsidiaries typically operate in a larger number of countries, so the correlation between these measures is very high.

Fifth, we tested the hypotheses using a dummy variable to control for mining and

petroleum industries. The coefficient for the dummy variable was significant and negative. Our main results remained unaltered.

Sixth, we estimated the models in columns 1-2 using only wholly-owned subsidiaries, rather than including ownership as a variable, as we do here. Again, our results were unchanged.

Seventh, as an alternative to the tobit, we estimated the model in columns 1-2 as a random effects probit, setting the dependent variable equal to 1 if it was greater than zero. We included in the probit the lagged choice (time t-1) and the choice at time t – the first year the subsidiary was observed in the sample. The predicted effects of country risk and MNC experience were robust to this estimation.

Insert Table 3 about here

Finally, we computed estimates while controlling for initial conditions. In Table 3, column 1 gives the fixed effects results, column 2 reports the random effects results controlling for AR(1) errors, and column 3 reports the random effects tobit results. In the latter two regressions, we include the t=0 risk and trade flow indicator variables. The common features in all three regressions are the following. First, the regressions are estimated with country variables, rather than country dummies. Second, the regressions are estimated with a time trend, rather than year dummies. As we can see in all of the regressions, the contemporaneous risk variables remain positive and significant, and they are significantly moderated by the MNC's prior experience in risky countries. The hypothesized results from Table 2 remain largely unchanged. In columns 2 and 3, we can see that the indicator for whether the subsidiary engaged in intra-firm trade at time t=0 is large and significant, and the inclusion of this variable does slightly reduce the size of the estimated coefficients on country risk and MNC experience. However, both

remain significant at the p>|.01| level. The time trend is also highly significant. Interestingly, the t=0 risk variables are insignificant in both the random effects tobit and the AR(1) random effects regression. Also, in the AR(1) regression, the coefficient on the t=0 intra-firm trade indicator variable is considerably smaller than in the tobit. However, since these regressions include different samples of firms, we cannot really draw any direct comparisons, other than to say that all three estimates in Table 3 give us considerable confidence that the results in Table 2 are robust to many alternate specifications and are not driven by unobserved initial conditions.

DISCUSSION

Research to date on the impact of institutional hazards on MNC strategies has focused primarily on entry strategies. It tells us that, all else being equal, country risk dampens inbound FDI and induces the MNC to hold a lower equity stake in the focal subsidiary (Henisz & Delios, 2001; Kobrin et al., 1980). However, as noted by Farrell et al. (2004), considerations other than country risk (e.g., lower factor costs) often lead MNCs to make large investments even in high risk countries. In such situations where the MNC chooses the path of engagement rather than avoidance, existing literature tells us little about how, subsequent to entry, MNCs deal with country risk on ongoing operational basis. In this study, we have attempted to fill this important gap in our knowledge about the impact of institutional hazards on MNC strategies.

We have argued that, in the post-entry context, a tighter integration of the focal subsidiary via intra-firm trade with the rest of the MNC is likely to serve as an immunizing mechanism against the threat of expropriation and other institutional hazards. Analyses of panel data on a large sample of subsidiaries of U.S. headquartered MNCs spanning the period 1983-1996 support our prediction that country risk will have a positive impact on the focal subsidiary's trade internalization. A unique feature of our study is the detailed data on

transactions within MNCs. This enables us to speak to important strategic dimensions of internalization that go beyond entry and ownership.

Our results parallel Zhao's (2006) arguments and findings about how internal technology linkages serve to immunize the MNC against the threats emanating from weak intellectual property regimes. Taken together, these two studies strongly suggest that an examination of linkages between exogenous risks and endogenous organizational mechanisms is likely to be a highly promising avenue for future research.

Our empirical results also support the prediction that the MNC's prior experience at operating in high risk countries matters. Specifically, greater levels of such experience dampen the need to deal with institutional hazards via trade internalization. Henisz (2003) as well as Rodriguez et al. (2005) have argued that MNCs can be expected to learn from prior experience at dealing with high levels of institutional risk. Our results provide empirical support to such expectations.

In conducting our empirical analyses, we controlled for many factors at the level of country, industry, country-industry, MNC, subsidiary, and time that might have a potential confounding effect on the subsidiary's intensity of intra-firm trade. Various robustness tests (alternative operationalizations of country risk, MNC's experience at dealing with risky subsidiaries, and many of the control variables) left the results largely unchanged. Accordingly, there exist reasons to accept the validity of our findings with a high degree of confidence. In conducting our robustness tests, we also utilized a relatively new econometric approach to address the potential issue of initial conditions when using a random effects estimator (Wooldridge, 2005). The problem of initial conditions in random effects estimation is widespread in empirical research in the field of strategy and organization. While Wooldridge's

solution has gained broad acceptance in the economics literature, this is not yet the case in the management literature. We hope that our utilization of Wooldridge's solution will promote its broader adoption in the field of management.

By design, the present study was relatively narrow in its scope. Even at the level of country risk associated with foreign subsidiaries, several questions remain unanswered. How does country risk affect the level of additional capital investments by the parent into that subsidiary on an ongoing basis? What is the impact of country risk on the ownership and governance structure implemented by corporate headquarters over the particular subsidiary? Do there exist evolutionary effects i.e., do subsidiary-MNC linkages change over time in response to temporal changes in country risk? Or, is this phenomenon characterized by inertia and strong "memory" effects?

Going beyond the specific case of MNCs, we note that the issue of how to deal with the risk faced by a subsidiary is widespread across all types of multi-unit organizations. Consider, for example, a company such as Intel Corporation whose venture capital arm Intel Capital makes investments into a number of risky new ventures. Which is the more effective approach to minimize the risk and maximize the payoffs from such investments – maintaining weak linkages between the young risky ventures and the more established business units or exactly the opposite? At a higher level of abstraction, these questions can be broadened also to the case of organizational networks in general. Our study suggests that a more comprehensive analysis of how networks deal with nodal risk requires paying attention to at least two salient factors. First, networks evolve through time, and the decision regarding whether or not to add a node to the network (e.g., enter a risky country) is different from how to deal with the node after it has been added to the network (e.g., deal with country risk on an ongoing basis). Second, node-network

linkages are multi-faceted and one type of linkage (e.g., trade internalization) may serve to reduce or amplify the risks and returns associated with another type of linkage (e.g., ownership internalization). These questions illustrate the richness of the domain that we have begun to explore in the current study. We hope that they also provide some valuable guidelines for future research.

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TABLE 1

Means, Standard Deviations and Correlations[a]

	Mean	S.D.	1	2	3	4	5	6	7	8	9	10	11	12
1. Subsidiary's Intra-Firm Trade Integration	0.14	0.28												
2. Country Risk	-7.77	1.85	0.05											
3. MNC's Experience at Dealing with High Risk Subsidiaries	17.30	22.21	0.09*	0.35*										
4. MNC's Total Cross Border Intra-Firm Trade	0.07	0.10	0.21*	-0.04	0.04									
5. MNC's Foreign-to-U.S. Assets	0.58	0.49	0.04	0.14*	0.45*	0.20*								
6. Subsidiary's Value-Added/Sales	0.34	0.26	0.06	-0.03	0.00	-0.06	0.02							
7. Subsidiary Manufacturing Dummy	0.57	0.49	0.08*	-0.11*	-0.02	0.02	0.06	0.17*						
8. MNC's Ownership Stake in the Subsidiary	97.26	9.36	0.07	-0.10*	-0.01	-0.03	0.03	0.02	-0.08*					
9. MNC Size	8102	19800	0.16*	0.14*	0.67*	0.32*	0.41*	-0.02	0.04	-0.04				
10. Subsidiary Size	163	714	0.03	-0.10*	0.10*	0.08*	0.04	0.09*	0.18*	-0.06	0.28*			
11. Mean IFT in the Subsidiary's Industry	0.13	0.11	0.44*	0.09*	0.06	0.11*	0.06	0.08*	0.16*	0.00	0.09*	0.03		
12. Mean IFT in the Subsidiary's Country-Industry	0.13	0.17	0.65*	0.05	0.08*	0.16*	0.08*	0.07*	0.18*	0.02	0.16*	0.03	0.56*	
13. Mean IFT in the Subsidiary's Country	0.13	0.08	0.19*	0.23*	0.22*	0.09*	0.15*	-0.04	0.04	-0.04	0.18*	-0.09*	0.14*	0.31*

[a]N=1481, year=1993 (correlation matrix). N for full-sample=16686 (mean and std. dev.). Subsidiary and MNC size are total sales revenues measured in millions of 1992 U.S. dollars. IFT denotes intra-firm trade.

* p<.001

TABLE 2
Random Effects Tobit Results for Subsidiary's Intensity of Intra-Firm Trade

Dependent Variable = Subsidiary's Intra-Firm Trade Integration	**Base Model (Country Risk = Risk of Contract Repudiation)**		**Base Model But Country Variables Instead of Country Dummies**		**Country Risk = Risk of Expropriation**	
	Main Effects (1)	Full Model (2)	Main Effects (3)	Full Model (4)	Main Effects (5)	Full Model (6)
Hypothesized Variables						
Country Risk (H1: +)	0.086***	0.149***	0.089***	0.188***	0.078***	0.220***
MNC's Experience at Dealing with high risk subsidiaries	0.002	-0.011**	0.003	-0.014***	0.004*	-0.019***
MNC's Experience at Dealing with high risk subsidiaries*Country Risk (H2: -)		-0.002***		-0.003***		-0.003***
Subsidiary and MNC Control Variables						
MNC's Total Cross Border Intra-Firm Trade	1.558***	1.670***	1.976***	2.046***	1.973***	2.071***
MNC's Foreign-to-U.S. Assets	-0.012	-0.047	-0.125	-0.017	-0.138	-0.019
MNC's Ownership Stake in Subsidiary	0.001**	0.001***	0.001***	0.001***	0.001***	0.001***
Subsidiary Value-Added-to-Sales	0.088	0.122	0.121	0.191*	0.122	0.186*
Subsidiary Manufacturing Dummy	0.396***	0.385***	0.370***	0.465***	0.378***	0.440***
Subsidiary Size	0.043*	0.052*	0.015	0.058*	0.006	0.069*
MNC Size	0.048*	0.024	0.121***	0.094***	0.109***	0.064*
Industry, Country Controls, Constant, Error Terms						
Average Intra-Firm Trade in Subsidiary's Industry	3.648***	3.840***	3.441***	3.455***	3.439***	3.575***
Average Intra-Firm Trade in Subsidiary's Country-Industry	6.845***	6.851***	7.325***	7.300***	7.320***	7.311***
Average Intra-Firm Trade in Subsidiary's Country			-1.102***	-1.237***	-0.959***	-1.332***
Log(Per capita GDP)			-0.339***	-0.300***	-0.320***	-0.307***
Log(Distance)			-0.858***	-1.071***	-0.778***	-1.024***
Constant	-3.117***	-2.663***	5.632***	7.289***	4.858***	7.590***
Firm-Specific Error (su)	2.506***	2.50***	2.468***	2.428***	2.472***	2.437***
Idiosyncratic Error (se)	1.529***	1.53***	1.542***	1.543***	1.543***	1.541***
Firm Variance Component (r)	7.29	7.27	7.192	7.123	7.197	7.143
Model Statistics						
Model includes country dummy variables	YES	YES	NO	NO	NO	NO
Model includes year dummy variables	YES	YES	YES	YES	YES	YES
Wald Chi^2 Model	7127.06***	6416.14***	6562.73***	7123.23***	6985.86***	6862.04***
Log-Likelihood	-635.67	-644.24	-643.13	-630.9	-647.46	-626.59

Note: Regression coefficients are multiplied by 10. Likelihood ratio statistic for the inclusion of the interaction term (base model) is k^2=17.14***. The N for each model is 16686 subsidiary-year observations on 3289 subsidiaries. There are 9987 non-zero observations on the dependent variable. ***p<.001, **p<.01, *p<.05. All z-tests are two-tailed.

TABLE 3
Tests of Hypotheses After Controlling for Initial Conditions

Dependent Variable = Subsidiary's Intra-Firm Trade Integration	**Fixed Effects (Within) Regression (1)**	**Random Effects GLS Regression with AR(1) Disturbances (2)**	**Random Effects Tobit Regression (3)**
Hypothesized Variables			
Country Risk (H1: +)	0.111***	0.108***	0.109***
MNC's Experience at Dealing with high risk subsidiaries	-0.006	-0.006	-0.007*
MNC's Experience at Dealing with high risk subsidiaries*Country Risk (H2: -)	-0.001*	-0.001*	-0.001**
Controls for Initial Conditions			
Country Risk at t=0		0.023	-0.043
Subsidiary's Intra-Firm Trade at t=0		0.842***	3.254***
Subsidiary and MNC Control Variables			
MNC's Total Cross Border Intra-Firm Trade	0.349	1.302***	1.175***
MNC's Foreign-to-U.S. Assets	-0.037	-0.148**	-0.041
MNC's Ownership Stake in Subsidiary	-0.000	0.001	0.000
Subsidiary Value-Added-to-Sales	-0.014***	0.044	0.168
Subsidiary Manufacturing Dummy		-0.642***	0.251***
Subsidiary Size	-0.032	-0.012	-0.042
MNC Size	0.008	0.118***	0.089***
Industry, Country Controls, Constant, Error Terms			
Average Intra-Firm Trade in Subsidiary's Industry	1.979***	2.994***	2.996***
Average Intra-Firm Trade in Subsidiary's Country-Industry	5.172***	6.616***	6.646***
Average Intra-Firm Trade in Subsidiary's Country	-1.486***	-0.745	-1.365**
Log(Per capita GDP)	-0.256	-0.128	0.041
Log(Distance)		-0.451***	-0.338***
Time Trend	0.070***	0.051***	0.067***
Constant	4.025	3.359**	-1.159
Firm-Specific Error (su)	2.394	1.749	2.249***
Idiosyncratic Error (se)	1.271	1.235	1.502***
Firm Variance Component (r)	7.802	6.671	6.913
Autocorrelation Coefficient (rho)		4.109	
Model Statistics			
Wald Chi^2 Model			6410.90
Log-Likelihood			89.805
R-square	0.381	0.438	
Subdiary-year observations	12,567	12,584	16,209

Note: Regression coefficients are multiplied by 10.
*** p<.001, **p<.01, *p.05. All z- and t-tests are two-tailed.

[1] Consistent with our premise that "internalization" is a multi-dimensional construct, we use the terms internalization and integration interchangeably throughout the paper.

[2] To some extent, this lagged MNC-level variable also captures the lagged intra-firm trade of the focal subsidiary since its trade with the parent is included in the sum of MNC-wide intra-firm trade. From an estimation standpoint, it is problematic only in the sense that it could induce autoregression. We deal with this by estimating our regression model assuming an AR(1) error distribution. Note also that it is quite common to include lagged choices in discrete choice models. Since tobit estimators combine discrete choice and continuous variable estimation, there is considerable empirical justification for including the lagged MNC intra-firm trade variable in our model.