
The Effects of Host Country Factors on the Internationalization of the U.S. Reinsurance Industry

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Abstract: Reinsurance premium receipts from overseas countries to firms domiciled in the United States increased 207% during the years 1987 to 1999. It is important to understand the characteristics of countries that exhibit a rapid increase in imports of U.S. reinsurance services. This study found that U.S. reinsurance exports take place to countries with large markets and a higher per capita income and insurance prices, wherein there exists bilateral trade, and where local firms operate internationally. Contrary to expectations, the cultural distance between the U.S. and the host country was not found to have significant influence on U.S. reinsurance operations.

INTRODUCTION

The market for insurance services has been growing rapidly worldwide. It has been estimated that the share of the world's Gross Domestic Product represented by insurance premiums doubled between the years 1984 and 1993 and has been growing at a rate of 10 percent annually since the 1950s (Browne, Chung, and Frees, 2000). Similarly, exports of goods and services worldwide, which were at \$3.42 trillion in 1990, had increased to \$5.59 trillion in 1999, according to the International Monetary Fund (IMF). It is expected that this trend in internationalization will continue to grow in coming years, owing to recent multilateral treaties (General Agreement on Trade in Services—GATS—and the Agreement on Trade-Related Aspects of Intellectual Property Rights—TRIPS), which provide a frame-

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work of legally enforceable rules covering trade and investment of services and intellectual property.

Needless to say, these trends have benefited the U.S. reinsurance industry significantly. Reinsurance premium receipts from overseas countries to firms domiciled in the United States increased 207 percent during the years 1987 to 1999. According to the U.S. Department of Commerce, premium receipts were \$2 billion in 1987. This figure increased to \$6.2 billion in 1999. A similar pattern of growth has been reflected in the growth of the insurance industry worldwide. Insurance firms gain significant financial and operational benefits through international operations. For instance, international operations provide opportunities for insurance companies to spread risk more effectively, increase benefits through economies of scale and scope, and also be able to offer services to their existing business customers who operate worldwide.

During the period of this study, the reinsurance industry went through several changes, three of which are notable. First, a continuous stream of acquisitions and mergers took place, wherein 10 of the top 25 reinsurers were involved in some form of consolidation. According to SwissRe, this resulted in a market wherein the top four players increased their combined global market share from 22 percent in 1984 to 41 percent in 1996 (Ostermiller, 1998). Second, the reinsurance market went through severe pricing cycles during this period. For instance, during the late 1980s, the reinsurance market faced a severe pricing downturn. In the early 1990s, significant price increases took place in this market, while the later part of the decade was characterized again by a severe pricing downturn because of excess capacity (Mooney, 1999). Third, there were several natural calamities (e.g., Hurricane Andrew in 1993) as well as other events around the world (e.g., the Gulf War in 1992) that had an influence on reinsurance operations (Kellogg, 1996) during these years. Despite these changes, the demand for U.S. reinsurance in overseas markets showed an upward trend, as indicated in Figure 1.

The topic of globalization and its impact on the insurance industry has received attention from other researchers and is reviewed in detail in the next section. This study differs from related studies on this topic in three important ways. First, the author could locate no study on the factors influencing the demand for reinsurance services in overseas markets. As early as 1983, Louberge stressed the need for more studies on reinsurance. Even though many studies have appeared in recent years, none of them have looked at international operations of reinsurance firms. Hence, this study will be unique in its incorporation of the demand for reinsurance services in its models. Second, previous research has focused on each country's market potential for insurance services. This

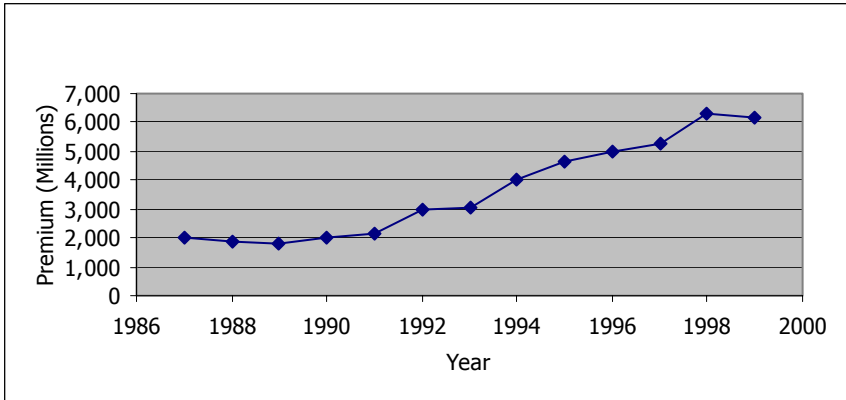


Fig. 1. U.S. Reinsurance Exports.

study focuses on U.S. exports to host countries. While previous studies looked at each country's market potential, this study looks at the factors influencing the demand for U.S. reinsurance services in host countries. Finally, empirical findings of various studies in the international business literature have identified bilateral trade between host and home country, the degree of difference between the host country's culture and the home culture of the firm, and the degree of host country firm's internationalization to be important factors influencing the extent of trade between countries (Grosse and Trevino, 1996). The author's review of the literature has shown that these variables have been ignored in past studies on the insurance industry. In testing the relationships, this study will incorporate these three variables as well as four related variables found in previous studies.

This study seeks to contribute to the insurance literature by asking the empirical question, "What factors influence the extent of U.S. reinsurance exports to host countries?" A twelve-year time period (1987 to 1999) is used to study the factors influencing the demand for U.S. insurance services. In comparison, Browne et al. (2000) used a seven-year period. This paper consists of five sections, inclusive of this introduction. In the second, previous literature in the topic is reviewed. In section three, the theoretical basis of this paper is explained and hypotheses are developed. Section four explains the research methodology used for testing these hypotheses and operationalization of measures. The final section presents the results of this study and concludes with implications for theory and practice.

LITERATURE REVIEW

For this study, an extensive review of the literature on international aspects of the insurance industry as well as relevant international business theories was conducted. As noted earlier, no study was found on the international aspects of the reinsurance industry. However, four streams of literature were identified related to the insurance industry. The first focused on international underwriting cycles in the insurance industry (Cummins and Outreville, 1987; Lamm-Tennant and Weiss, 1997). The second stream of research, which was largely qualitative, focused on the experience of the Dutch insurance industry in internationalizing operations (Eppink, 1987; Eppink and Van Rhijh, 1988, 1989). The third deals with an international perspective on insurance operations. The studies in this stream look at export credit insurance (Funatsu, 1986), international reinsurance operations (Louberge, 1983), and the various politics of rate discrimination in overseas countries (de Wit, 1986). The final stream of research focuses on demand, income, and barriers to internationalization (Beenstock, Dickinson, and Khajuria, 1988; Schroath and Korth, 1989; Browne and Kim, 1993; Browne, Chung, and Frees, 2000). This fourth stream of research is the one most relevant to this study and will be reviewed in detail in the following two paragraphs.

One of the first studies on this topic was by Beenstock, Dickinson, and Khajuria (1988). They analyzed the relationship between property-liability insurance premiums and income across twelve countries. This study used data from the Swiss Reinsurance Company (published in *Sigma*) during the years 1970 to 1981. They found that the marginal propensity to insure (the proportion of an increase in income spent on insurance) was higher than the average propensity to insure. They also reported that the premiums across these countries tend to vary directly with the real rates of interest. Using a questionnaire, Schroath and Korth (1989) surveyed 67 U.S. insurance companies involved in international operations. They reported that the abundance of opportunities for business growth in the United States and lack of knowledge of foreign markets were the major deterrents to foreign market entry. Managers also claimed that culture, language, regulatory knowledge, foreign exchange risks, and lack of skilled manpower were barriers to setting up international operations.

Two more studies were conducted by Browne in collaboration with others in this stream of research. Browne and Kim (1993) looked at the factors that led to variations in the demand for life insurance across countries during the years 1980 and 1987 using data published by the American Council of Life Insurance in the *Life Insurance Fact Book*. They identified dependency ratio, national income, government spending on

social security, inflation, the price of insurance, and whether Islam is the predominant religion in a country to be factors influencing demand. More recently, Browne et al. (2000) analyzed the reasons for the variation in property-liability insurance consumption across countries belonging to the OECD (Organisation for Economic Co-operation & Development). Using motor vehicle and liability insurance data published by the OECD in the *Insurance Industry Yearbook*, they analyzed for the factors explaining variation during the time period 1987 through 1993. The study's results found income level in a nation, wealth of a nation, percentage of a country's insurance market controlled by foreign firms, and type of legal system to be predictors of variations in insurance consumption.

On the basis of a review of the above streams of literature, the following conclusions can be made: The demand for insurance services in overseas markets is influenced by income levels in the country, age dependency, interest rates, inflation, legal system, religion, and the extent to which foreign firms control the local market. Barriers to internationalizing include lack of knowledge of culture and language, as well as lack of knowledge of regulations and growth opportunities available locally. It should be noted that all of the above studies focused on liability insurance or motor vehicle insurance, ignoring the reinsurance segment of the industry. Hence, there exists a need for a study that focuses on reinsurance operations, since the reasons to purchase reinsurance are quite different from those used by consumers or corporations to buy insurance. Insurance companies purchase reinsurance for several reasons, such as increasing underwriting capacity, stabilizing profits and cash flow, reducing unearned premium reserve, and protection against losses. On the other hand, a consumer's or a corporation's decision to buy insurance is based on other differential factors that are contingent on the type of policy sought. The following section will incorporate the findings relevant to reinsurance in the development of hypotheses.

THEORETICAL BACKGROUND AND DEVELOPMENT OF HYPOTHESES

The likelihood of U.S. reinsurance firms operating in a particular country is influenced by four sets of characteristics or dimensions: host country factors, reinsurance industry-related reasons, firm resources and characteristics, and temporal and dynamic factors pertaining to that time period. Each of these characteristics is briefly elaborated below. First, host country factors (e.g., endowments, cultural traits, and sociopolitical differences) constrain and influence preferences for operations by firms. Second,

factors relating to the reinsurance industry (e.g., pricing cycles, regulatory and other entry barriers, insurance risks in a particular country) offer market opportunities and impose operational constraints, thereby creating within-industry homogeneity in outcomes. Third, each firm's unique institutional history and specific resource profile may encourage a firm to operate in a particular country. Finally, temporal and dynamic factors such as unnatural and natural events, relative changes in currency values, multilateral and bilateral trade agreements, and the bilateral political relationship between host country and the United States also influence demand for U.S. reinsurance services. While all four dimensions are equally relevant to the bigger research question posed, this study will focus only on host country factors. The following paragraphs will review theories related to host country factors and develop the underlying rationale for this study.

Various theories have been developed in the international business literature to explain the phenomena of international trade and overseas operations by companies. Classical trade theories (e.g., Theory of Absolute Advantage, Theory of Comparative Advantage) cannot be used in explaining foreign trade in insurance services, mainly because they assume immobility of production factors. However, three theories [Dunning's "eclectic" theory (1980), Linder's "country similarity" theory (1961), and Graham's "exchange of threat" model (1990)] provide some useful insights into factors that could influence direction of trade in the insurance industry. These theories are reviewed briefly below.

Dunning's "eclectic" theory combines the elements of ownership, internalization, and location advantages to form a unified theory. This theory helps us recognize that companies seek locations that best allow them to exploit or enhance their ownership-specific advantages. According to the "eclectic" theory, firms go international when ownership advantages are exclusive to the home firm, but the factor endowments of the host country favor local operations and firms will benefit more by internalizing those advantages. The full usage of Dunning's theory for this study is constrained by the fact that "ownership" or "internalization" advantages and other firm-specific variables cannot be used, as *country* is the unit of analysis in this study, while *the firm* is the unit of analysis in Dunning's theory. Despite this limitation, this theory suggests that country endowments make it attractive for overseas firms to operate in the host country. These endowments include market size, income of individuals in the country, and the extent to which the market allows for profitability through pricing, among other factors.

Graham's (1978) "exchange of threat" model explains the competitive motivations of a firm to set up international operations. Graham proposed

that in response to invasion of home markets, firms would retaliate by investing in a foreign firm's home market, thus exchanging threats. Linder (1961) postulated that trade in goods and services is determined not by a cost differential (as traditional trade theories predict), but by the similarity in demand across countries. With respect to the flow of insurance trade, Linder's theory implies that the largest extent would be between countries with similar cultures, legal systems, levels of economic development, income levels, and demand patterns. While both these theories imply that large foreign operations would be between similar countries, the motive in Linder's and Dunning's theories is demand-pull, but in Graham's theory, it is a competitive response. Graham's model implies that insurance operations would be directed toward those countries that have large trade relationships and international insurance operations.

On the basis of the above theoretical review, one may propose that three groups of host country variables affect the direction of trade for the U.S. reinsurance industry. First, Dunning's theory suggests that *attractiveness of the host nation* is a critical influence on the decision of firms to set up international operations. Second, Graham's theory leads one to conclude that *competitive conditions in the host country environment* are a critical influence. Third, Linder's theory shows a similarity in the host country's *socio-cultural environment* to be a critical influence. Hence for each of these three groups, using previous research as a guide, we attempted to identify what we felt were the two or three variables representative of the thrust of the theory. Even though the decision to limit the number of variables was subjective, it was felt to be the best option in the interest of parsimony to test only a few of the most critical variables. Each of the three groups and corresponding hypotheses relating the independent variables to U.S. reinsurance operations are presented below.

Attractiveness of the Host Country

Attractiveness of the host country refers to the degree to which the particular country's home market is desirable for reinsurance operations by foreign firms. In this study, we seek to understand the relationship between attractiveness of the host country and reinsurance operations of U.S. firms through three variables: market size, per capita income, and price of insurance.

Market Size. Market size is perhaps the most important variable when a firm considers a particular market for overseas operations. A number of reasons have been proposed to explain why this may be the case: (1) Large markets offer a greater potential for growth and profit (Agarwal, 1994) as well as stability in operations. (2) Large markets tend to have strong domestic competitors and attract a large number of foreign competitors.

Firms geographically removed from these markets are competitively disadvantaged (Porter, 1980). (3) By locating operations in leading markets, firms are more keenly tuned to the changes in the market and are likely to respond to customer needs. Positive relationships between the host country's market size and insurance operations by foreign firms have been reported by previous researchers (Campbell, 1980; Lewis, 1989; Browne and Kim, 1993). Hence,

Hypothesis #1: *The market size of the host country will be positively related to the extent of U.S. reinsurance operations in the host country.*

Per Capita Income. Per capita income is a measure of similarities or differences among countries. Countries with similar per capita incomes tend to have similar levels of economic development and consumption patterns (Linder, 1961). Higher income levels result in higher standards of living, purchasing power, and demand for consumer and industrial goods and services. Needless to say, for any demand to be realized, it needs to be backed with the buying power of the population. Since the United States is a country with a relatively high per capita income and the highest per capita insurance penetration, it is proposed that countries with a high per capita income would attract U.S. insurance operations. Therefore,

Hypothesis #2: *A higher host country per capita income will be positively related to U.S. reinsurance industry operations in the host country.*

Price of Insurance in the Host Country. The price charged for insurance in a country is a factor that influences the extent of demand for reinsurance services. Insurance firms in host countries with relatively higher prices would have the capability and the willingness to buy reinsurance for several reasons. First, in countries with high insurance prices, profit motivation will lead to increased underwriting by insurance companies. As discussed in the previous section, insurance firms in these markets will also attempt to stabilize their profits and reduce the unearned premium reserve, and to protect themselves from catastrophic losses. While this is true for all markets, firms in countries with higher prices will have the capacity to pay more for reinsurance services. These conditions could make the local market desirable for overseas reinsurance firms. Hence, it is likely that U.S. firms will seek such markets, and we propose that,

Hypothesis #3: *The price of insurance prevalent in the host country will be positively related to the extent of U.S. reinsurance operations in the host country.*

Competitive Conditions in the Host Country Environment

We seek to understand the relationship between competitive conditions of the host country and insurance trade through two variables: bilateral trade between the United States and the host nation, and insurance and financial exports from the host country.

Bilateral Trade. Bilateral trade is the extent of trade that takes place between the host country and the United States. It is a good indicator of the extent to which U.S. firms have operations in the host country for three reasons. One, a large bilateral trade is indicative of a strong trade relationship and low level of trade barriers between the two countries. U.S. firms interested in overseas growth would therefore be likely to set up insurance operations in such countries. Two, when many U.S. firms have operations in a host country, many "spillover effects" in managerial knowledge are likely to take place, allowing other U.S. firms to gain expertise to operate in those markets. Three, when other U.S. firms have operations in a host country, they are likely to use U.S. firms for insurance services, as they are typically more familiar with them. This concept, referred to as "follow the customer," has been reported in the advertising industry and auto parts industry, wherein firms have followed their customers to various foreign markets. Hence, it is proposed,

Hypothesis #4: *The extent of bilateral trade between the host country and the United States will be positively related to U.S. reinsurance operations in the host country.*

Host Country Insurance and Financial Exports. When a firm from one country enters another firm's market, there is an immediate response from the host country firm(s), according to the "exchange of threat" hypothesis. Companies want to operate in one another's market to be able to retaliate if one seeks to gain a large market share in another's market (Graham, 1978, 1990). Once an industry rival expands in overseas markets, this pattern of behavior is replicated by other firms because of the "oligopolistic reaction" tendency of firms (Knickerbocker, 1973). Oligopolistic reaction refers to firms in oligopolistic industries diversifying overseas in a countermove to competitive actions of other firms. Foreign operations by one firm could trigger a similar investment by other leading firms in the industry to maintain competitive stability and deny competitive advantage to rivals (Knickerbocker, 1973). This could force remaining firms in an industry to "mimic" each other in response to the pressures of the institutional environment (Powell and DiMaggio, 1990). Hence, motivated by either offensive or defensive reasons, firms tend to opt for international operations. Therefore,

Hypothesis #5: *The extent of insurance and financial exports from the host country to overseas markets will be positively related to U.S. reinsurance operations in the host country.*

Similarity in the Host Country's Socio-Cultural Environment

Similarity in the host country socio-cultural environment refers to how a country's cultural, social, and political situation varies from that of the United States. In this study we seek to understand the relationship between similarity in the host country's socio-cultural environment and the insurance trade through two variables: cultural distance and legal system.

Cultural Distance. Culture is "the collective programming of the mind which distinguishes one group or category of people from another" (Hofstede, 1980, p. 266). Culture embodies specific learned norms, attitudes, values, and beliefs within a society. Some aspects of culture (such as language, self-reliance, social structure, trust, and work ethics) differ significantly across countries and have a profound impact on consumption patterns and how business is conducted. Numerous studies in the international business literature have identified culture to be one of the critical dimensions in explaining the success or failure of a firm's international operations. Schroath and Korth (1989), in a survey of 67 insurance firms, found culture to be a significant barrier in setting up international operations. Hence, U.S. managers are likely to be more comfortable in countries where the culture is similar to that of the U.S., leading U.S. firms to have larger operations in countries with similar cultures. Therefore, it is proposed that:

Hypothesis #6: *Small cultural distance between a host country and the United States will be positively related to U.S. reinsurance industry operations in the host country.*

Legal System in the Host Country. The legal system in a country is the body of law that governs contract enforcement and adjudicates responsibility as to who is at fault. The legal system (or contract laws) can be classified into two groups—civil law and common law. Common law is based on tradition, precedent, and custom. Countries where common law is prevalent include the United States, United Kingdom, and most former British colonies. Civil law is based on a detailed set of laws organized into codes. Countries where civil law is prevalent include Japan, Germany, and France (Hill, 2000). U.S. insurance companies are likely to be more familiar with common law than with civil law, since common law is practiced here. For this reason, it is likely that U.S. firms would prefer countries with common law when choosing overseas countries to set up operations, in order to simplify managerial demands and lessen business risk. This

assumption is reasonable, since when a firm goes overseas, it already needs to become familiar with the many nuances (e.g., language, culture, habits) of the host country and will seek to avoid unfamiliar legal systems so as to minimize new learning. Hence,

Hypothesis #7: *Host countries having differing legal systems will be negatively related to U.S. reinsurance industry operations in those countries.*

METHODOLOGY AND DATA SOURCES

The data used in this study are pooled time-series observations of U.S. reinsurance exports to 26 countries during the period 1987 to 1999, collected from U.S. Department of Commerce publications. Information about each of the countries was collected from IMF or World Bank publications. The operationalization of the variables is based on standard economic measures and/or previous usage in the literature. The operationalization of each of the variables and the sources of data is elaborated in Table 1. The impact of host country characteristics on U.S. insurance exports will be analyzed using multiple regression analysis. The model used to evaluate the hypotheses is shown here:

$$\text{U.S. Reinsurance Exports} = f\{\text{Market Size, Per Capita Income, Price of Insurance, Insurance \& Finance Exports, Bilateral Trade, Cultural Distance, Legal System}\}$$

To ensure that the assumptions of multivariate analysis are not violated, we conducted two tests. Our first test was related to multicollinearity, since we had seven independent variables in our model. A review of the correlation values in Table 2 indicated that multicollinearity is not a problem for this study. This conclusion was based on the fact that leading references in econometrics and statistical methodology have offered as a rule of thumb that collinear relationships under .7 should not create potential problems (or statistical confounds) related to multicollinearity (Anderson, Sweeney, and Williams, 1996; Griffiths, Hill, and Judge, 1993). Another common statistic used in this process of checking for multicollinearity is the variance inflation factor (VIF). The recommendation is that as long as VIF is less than 10, multicollinearity is not a concern (Burns and Bush, 2000). In the case of this study's variables, the VIF varied between 1.123 and 2.472. As a result, we concluded that multicollinearity is not an issue for this study.

Our second test was to check if there was heteroscedasticity in the data. The common approach used to check for heteroscedasticity is to plot the

Table 1. Variable Operationalization and Data Sources

Variable	Operationalization	Data Source
Dependent Variable		
Reinsurance Operations in the Host Country	Reinsurance receipts from the host country	U.S. Department of Commerce
Independent Variables		
Market Size	Market size is operationalized as the GDP of the host country. GDP measures the total output of goods and services for final use occurring within the domestic territory of a given country.	World Bank
Per Capita Income	Per capita income is operationalized in this study as the income of individual citizens in the host country, converted to international dollars using purchasing power parity rates.	World Bank
Price of Insurance	In this study, we use a proxy measure for price of insurance. The proxy measure used is the inverse of the loss ratio within the country studied. The need for a proxy is obvious, as it is hard to compare prices across countries for a differentiated product such as insurance services.	U.S. Department of Commerce
Bilateral Trade	Bilateral trade is operationalized as the average of imports and exports to and from the U.S. and the host country.	IMF
Host Country Insurance and Financial Exports	This variable is operationalized as the percentage of service exports by the host country represented by insurance and financial services. Though not perfect, this variable attempts to capture two critical competitive dimensions: the degree to which local firms are competitive in international markets and the extent of international competition in the industry.	IMF
Cultural Distance	Hofstede (1980) identified four dimensions of culture. He explained cultural variability in terms of power distance, uncertainty avoidance, individualism, and masculinity/femininity. This paper defines cultural distance as the sum of the absolute values of the differences between the host country and the U.S. with respect to these four dimensions (using the widely accepted operationalization of Kogut and Singh, 1988). Hence countries similar to the U.S. in terms of the four dimensions will have low cultural distance, while countries that are culturally different will have high cultural distance.	Hofstede (1980)
Legal System	For this study, each country’s legal system was classified as one of two types—civil law or common law. They were later dummy-coded into two categories wherein civil law countries were coded 1 and common law countries were coded 0. Appendix 1 provides a list of the countries and their corresponding classification.	Expert Opinion ^a

^aThe following procedure was used in classifying a country’s legal system into civil or common law. Initially, we classified each country as civil or common law according to Hill (2000). This process was repeated by two experts in the field—a professor of international business law and a professor of international business. Both individuals have about twenty-five years’ experience teaching and consulting in this field and have visited many of the countries in the sample. Later the three lists were compared and checked for consistency. One country, Saudi Arabia, was dropped from the list as it did not fit either of the above systems (it follows Islamic law, which is neither civil nor common law).

Table 2. Correlation, Mean, and Standard Deviations of the Independent Variables

Variable	Mean (std dev.)	1	2	3	4	5	6	7
1. Market Size	5.80E+11 (8.16E+11)	1						
2. Per Capita Income	14483.98 (7128.17)	.398**	1					
3. Price of Insurance	3.11 (3.02)	.027	-.269**	1				
4. Insurance & Finance Exports	6.1928 (6.77)	.013	.477**	-.108	1			
5. Bilateral Trade	17801.59 (28575.85)	.486**	.240**	.018	.074	1		
6. Cultural Distance	1.9280 (1.18)	-.209**	-.640**	.235**	-.462**	-.139*	1	
7. Legal System	.8073 (3.02)	.048	.016	.093	-.018	-.208**	.349**	1

** = $p < .01$; * = $p < .05$.

residuals versus the fitted values. A visual inspection of the data indicated the possibility of heteroscedasticity. We also conducted Levene's test for equality of variance and found that we had to reject the null hypothesis that the variances across the residuals were equal, indicating heteroscedasticity to be a problem with the data. To rectify this problem, we made a transformation of the dependent variable, as is commonly done in such circumstances. The transformation we chose (Hair, Anderson, Tatham, and Black, 1998), was the logarithm of the dependent variable, as the residuals show a pattern of proportional change. After we completed the transformation, we plotted the residuals again and found that the problem of heteroscedasticity was solved. To confirm our belief, we also conducted Levene's test with the transformed variables. This time, the test results failed to reject the null hypothesis, indicating that there was no heteroscedasticity in the transformed data. As a result, however, our model was modified in the following manner:

$$\text{Log (U.S. Reinsurance Exports)} = f\{\text{Market Size, Per Capita Income, Price of Insurance, Insurance \& Finance Exports, Bilateral Trade, Cultural Distance, Legal System}\}$$

Table 3. Regression Results for the Combined Models

Independent Variables	Dependent Variable—Reinsurance Operations in Host Countries	
	Model 1	Model 2
1. Market Size	.267**	.220**
2. Per Capita Income	.378**	.400**
3. Price of Insurance	.157**	.128**
4. Insurance & Finance Exports	.192**	.208**
5. Bilateral Trade	.271**	.340**
6. Cultural Distance	-.066	
7. Legal System	-.224**	
Adjusted R-square	.711	.662
F value	77.27**	82.89**

** = $p < .01$; * = $p < .05$.

The data used in this study consist of two types of independent variables. Two of these variables are time-invariant (legal system and cultural distance) and the others of time-variant. Hence, one could question the importance of (or need for) time-invariant effects in a time-variant model. In regard to this question, we followed the underlying logic presented by Cohen and Cohen (1983) with the “set-wise” regression procedure in multiple regression analysis. We chose set-wise regression analysis because it allows us to answer the research question for the need for time-invariant variables, given the many time-variant variables. In the set-wise procedure, a regression model is run with all the variables (time-variant and time-invariant) as one set. Later, another model is run with only the time-variant variables as a set. The difference in R-square between the two models and the resultant F value is used to decide if the time-invariant variables explain any meaningful variance.

The models are described below:

Model 1: *All variables are included (combined model).*

Model 2: *All variables except Cultural Distance and Legal System are included (time-variant model).*

As mentioned earlier, the above models were tested with the natural logarithm of reinsurance receipts received by U.S. insurance firms (reported in Table 3). To understand the relative importance of each of the three groups of variables discussed in the earlier section, we also ran

Table 4. Regression Results for Each of the Three Variable Groups

Independent Variables	Dependent Variable—Reinsurance Operations in Host Countries		
	Country Attractiveness		
1. Market Size	.303**		
2. Per Capita Income	.558**		
3. Price of Insurance	.130**		
	Industry Competitiveness		
4. Insurance & Finance Exports		.331**	
5. Bilateral Trade		.542**	
	Socio-Cultural Variables		
6. Cultural Distance			-.422**
7. Legal System			.163**
Adjusted R-square	.5	.433	.147
F Value	83.8**	113.38**	28.18**

** = $p < .01$; * = $p < .05$;

separate regressions for each the groups (reported in Table 4). We ran five sets of regressions, and all the models were significant at the .01 level. The results were largely stable across the various models. The difference in R-square between the combined model and time-variant model was .057 and had an F-value of 5.776 (significant at the .001 level), according to the formula provided by Cohen and Cohen (1983). This result indicated that time-invariant effects do contribute to our understanding of the dependent variable. The findings of the study are discussed in the following section.

FINDINGS AND IMPLICATIONS

Country Attractiveness. This study proposed three hypotheses regarding country attractiveness, all of which predicted a positive relationship with U.S. reinsurance operations. These relationships were statistically supported with a positive relationship in all models by which the variables were tested. This is consistent with the earlier findings reported by Browne, Chung, and Frees (2000) for various forms of insurance. U.S. reinsurance firms may be better off focusing on such markets for several reasons. Large

markets may allow for many firms to exist without intense competition and may also afford significant scale in operations that might not be possible in small markets. It is also apparent that the population of the host country needs to be wealthy to generate demand for reinsurance, even though the fact that reinsurance is not consumed by individuals. Thus, a wealthy population creates a demand for primary insurance services while allowing for higher prices, thereby stimulating demand for reinsurance services.

Industry Competitiveness. Hypotheses 4 and 5 of this study proposed that insurance and finance exports and bilateral trade have a positive relationship with U.S. reinsurance operations in host countries. These two relationships were supported in all the models where the variable was included. It is not surprising that U.S. reinsurance firms set up operations in countries with significant trade relationships. The rapid succession of Japanese auto parts manufacturers into the United States following the automobile manufacturers illustrates this pattern (Banerji and Sambharya, 1996). It makes sense to move to overseas countries where current customers have set up operations. Hence an existing trade relationship with a country facilitates entry to those markets. Graham's competitive rationale also received support, indicating that reinsurance firms do face competitive rivalry across international markets. Further supporting this hypothesis is Davidson's (1980) finding that firms in the same industry are likely to invest in the markets where their competitors invested previously. Such behavior for protecting market share can be found in many industries—e.g., Fuji and Kodak in photo films and Goodyear and Michelin in automotive tires (Hamel and Prahalad, 1985). Hence insurance exports from other countries are bound to attract U.S. firms to set up operations in the host country.

Socio-Cultural Variables. Two hypotheses were proposed to test the influence of socio-cultural variables on U.S. reinsurance operations abroad. Hypothesis 6 proposed a negative relationship between the cultural distance of the host country and U.S. reinsurance operations in the host country. This hypothesis was not supported in the models tested. However, when the two socio-cultural variables were regressed separately on the dependent variable, the cultural distance was statistically supported, with a negative relationship. It appears that the underlying logic of the hypothesis is supported, though cultural distance is not a critical variable when other factors are controlled for. This was a surprise, as culture is one variable that has been consistently supported in similar studies in the international business literature. Schroath and Korth (1989) also reported that difference in culture was one of the significant barriers to overseas entry, according to U.S. insurance managers. One may speculate that the

importance of culture could be potentially less for reinsurance operations than for primary insurance, wherein the U.S. firm needs to market to the host country's population directly. Hypothesis 7 proposed that countries with different legal systems would not attract U.S. reinsurance operations. This hypothesis was supported in the models tested, indicating that a country's legal system is a critical variable influencing a firm's decision to operate abroad. Hence U.S. firms seem to avoid markets with dissimilar legal systems. Browne et al. (2000) reported that insurance consumption is greater in common law countries than in civil law countries. However, it is not apparent if U.S. firms avoid countries with civil law for this reason.

Study Limitations. A study of this nature, by virtue of its design and use of country-level aggregate data over a 10-year time period, is not without limitations. First, events that took place in each of the countries studied over this period of time could not be controlled for. Replication of this study's findings with newer data in other contexts will lead to greater external validity in the reported findings. Second, as mentioned in Section III, four sets of characteristics influence the likelihood of international operations by firms. Only one set of characteristics was studied in order to increase focus and parsimony. Future studies in this area may also focus on other characteristics, leading to better understanding of this interesting phenomenon. Third, this study also relied on published reports from the U.S. Department of Commerce and other multilateral bodies, such as the World Bank and IMF. These sources of data are deemed reliable and valid considering the objectives of this study. However, an inherent problem with the data is that there is only limited scope of manipulation. The information provided by these sources is consolidated at an aggregate level, wherein individual companies are not identified, so analysis of specific lines of business within the insurance sector is not possible.

CONCLUDING COMMENTS

This study looked at the factors influencing U.S. firms' reinsurance operations in host countries. The results of the study indicate that U.S. firms consider: market size, extent of purchasing power, price of insurance in the particular market, extent of bilateral trade, degree of competition from host country firms, and type of legal system prevalent in the host country. The results also show that U.S. firms need to target attractive markets (large markets with high per capita income and low trade barriers) to succeed in overseas countries. A large market provides significant benefits for reinsurance firms. First, larger markets offer higher potential for economies of

scale. Second, larger markets may allow for greater learning from competitors and customers. Finally, larger markets may allow for a greater reduction in currency-related risks (Skipper, 1987) in international reinsurance operations, thereby allowing for greater profitability in the long run.

One other implication of this study is the need for companies to be active in countries in which competitors are active internationally or locally. One may cite the experience of the U.S. automobile industry to illustrate this point. Although automobile firms around the world have sought a global market presence, the "big-three" automobile firms in the U.S., for various reasons, ignored international markets. It should be noted that the reasons for U.S. auto firms to be home-market oriented are similar to those reported by insurance firms in the survey conducted by Schroath and Korth (1989). The failure to act early and learn to operate in other countries became a handicap when foreign firms assaulted the U.S. marketplace. As a result, local firms ceded market position to foreign rivals over the long run.

U.S. firms seem to avoid markets with dissimilar legal systems. While this approach may be appropriate in the beginning stages of internationalization, U.S. firms should make an effort to learn and operate in all markets. Those with dissimilar legal systems constitute roughly fifty percent of world economic activity, so a firm could dangerously limit itself in its globalization potential by ignoring such markets. It is in this regard that the role of state becomes apparent. In recent years, insurance firms have gained greater access to many international markets. However, many of the firms fear the procedural hurdles and restrictions they face in overseas operations (National Underwriter, 1999). Increased use of multilateral treaties and agreements such as the Financial Services Agreement reached under GATS would be helpful in this regard, bringing uniformity regarding regulations across countries (Brostoff, 1999). If governments push for standardization of rules, uncertainty for insurers in international operations could be reduced.

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Appendix 1. Countries Studied and their Legal Systems

COUNTRY NAME	LEGAL SYSTEM
Argentina	Civil Law
Australia	Common Law
Belgium-Luxembourg	Civil Law
Bermuda	Common Law
Brazil	Civil Law
Canada	Common Law
Chile	Civil Law
China	Civil Law
France	Civil Law
Germany	Civil Law
India	Common Law
Israel	Civil Law
Italy	Civil Law
Japan	Civil Law
Korea, Republic of	Civil Law
Malaysia	Common Law
Mexico	Civil Law
Netherlands	Civil Law
Norway	Civil Law
Philippines	Common Law
Spain	Civil Law
Sweden	Civil Law
Switzerland	Civil Law
Thailand	Civil Law
United Kingdom	Common Law
Venezuela	Civil Law