Assurances et gestion des risques
Insurance and Risk Management

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Volume 80, numéro 1, 2012

URI : https://id.erudit.org/iderudit/1092000ar
DOI : https://doi.org/10.7202/1092000ar

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Éditeur(s)

Faculté des sciences de l'administration, Université Laval

ISSN

1705-7299 (imprimé)
2371-4913 (numérique)

Découvrir la revue

Citer ce document

Outreville, J. (2012). The World's Largest Reinsurance Groups: A look at names, numbers and countries from 1980 to 2010. *Assurances et gestion des risques / Insurance and Risk Management*, *80*(1), 137–156. https://doi.org/10.7202/1092000ar

Résumé de l'article

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Assurances et gestion des risques, vol. 80(1), avril 2012, 137-156
Insurance and Risk Management, vol. 80(1), April 2012, 137-156

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by J. François Outreville

RÉSUMÉ

L'examen de la distribution des parts de marché des plus grand groupes de réassurance, en termes de primes nettes, permet de comprendre deux dimensions importantes du marché: les changements et tendances dans le niveau de concentration et la position relative des groupes par pays d'origine. Le papier examine également la répartition géographique des groupes de réassurance et les facteurs pouvant expliquer leurs préférences pour la localisation de leurs filiales.

ABSTRACT

By examining the distribution of the total net premiums written by the largest reinsurance groups in the world, this paper documents two dimensions of the change in market concentration: the trend in concentration in the world's largest groups, and the relative position of these groups by countries. The paper also examines the geographic distribution of the world's largest reinsurance groups and the factors explaining their preferred locations of activities.

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This paper is part of a research project which was financially supported by the International Center for Economic Research (ICER). The paper was finalized while the Author was visiting the University of Economics in Prague, Czech Republic, in spring 2012.

1. INTRODUCTION: AN HISTORICAL PERSPECTIVE

In 1980, eight of the twenty largest reinsurance companies in the world were German reinsurers, five were American reinsurers and others were originating from only six countries (Switzerland, United-Kingdom, France, Italy, Netherlands and Japan). In 2010, according to the latest publication of Standard & Poor's (S&P)[1] only two are German, five are American but four are headquartered in Bermuda and three in Japan. Among the twenty largest companies others are originating from 6 countries (Switzerland, France, Japan, Spain, Australia, The Republic of Korea and India). In fact the rising importance of Bermuda as a reinsurance center had already began at the end of the 90's and in 2000 they were already three groups in the top 20 (see table 1).[2]

London was traditionally the most important reinsurance center because of its unique organization "Lloyds". Germany and Switzerland developed their own reinsurance markets at the end of the 19th century and they still play an important role in the world's markets. For many years the United States depended on foreign reinsurance, however, the growth of the US reinsurance companies and the development of markets similar to that of Lloyds had a significant impact on the increase of reinsurance capacity in the United States. Fifteen years ago, a United Nations study[3] revealed that the United States was the single most important home country for all services industries including financial services. More recently, the rapid expansion of Bermuda as a reinsurance center and the growth of Japanese reinsurance companies have changed the leadership in some reinsurance activities at the expense of reinsurers from the United States and some European countries.

In response to foreign market opportunities made available by deregulation and globalization, many financial firms have increased their foreign direct investment (FDI) and acquired other companies to become more international. Market-seeking motivations and strategies dominate transnational companies activities in financial services, but integrated international production networks are also emerging as efficiency-seeking firms take advantage of the growing tradability of services.[4] The insurance industry has followed the general trend towards global markets and risks (BIS 2001, Swiss Re 2001).

In the insurance literature, Moshirian (1999) found that premium growth and strategic diversification was the basic motivation to seek international activities. Ma and Pope (2003) and Outreville (2008) have examined the determinants of international insurer's participation

in foreign markets. Cole, Lee and McCullough (2007) provided a comprehensive approach to the decision process of US reinsurers to assume from foreign insurers. The reinsurance activities are, by nature, more geographically diversified. Although the reinsurance market has long had a significant global component, the consolidation through mergers and acquisitions (M&As) during the 1990s has significantly increased the degree of globalization. The surge was originally motivated by the underestimation of insurance exposure to natural disasters as well as by an increase in the demand for reinsurance for non-catastrophic losses and vulnerability to the frequency and severity of claims. Cummins and Weiss (2000) explained that the covariability of risk in local markets can be reduced by diversifying internationally. Reinsurance companies have increased their foreign direct investment and acquired other companies in part because it is the fastest way to achieve meaningful diversification, but also because they believe that only very large players will have the cost advantages necessary to remain competitive in global markets.[5]

At the end of 2010, the leaders are still Munich Re (established in 1880) and Swiss Re (established in 1863) but the followers are closing up the gap (see table 1). Berkshire Hathaway as a group includes the activities of General Re since 1998. In 1994, General Re had already acquired Cologne Re, the world oldest reinsurance company established in 1846. Hannover Re, created only in 1966, moved up scale from the 18th place with several M&As including HIR (Hamburger International Re) in 1990, Eisen & Stahl in 1995, Skandia Re in 1996. The newcomers are not necessarily new entities. Everest Re founded as Prudential Re changed its name in 1996 to be incorporated in Bermuda. PartnerRe was created in 1993 and acquired SAFR in 1997 and Winterthur Re in 1998. NKSJ is the result of the recent merger of Nipponkoa Insurance with Sompo insurance, the former having already merged in early 2010 with Mitsui Sumitomo Insurance.

Looking at the top 20 list in 1980, it appears that Swiss Re was actively involved in the consolidation of the reinsurance business through successive M&As. The activities of Mercantile and General were merged in the group in 1996. Employers Re which had acquired Frankona Re (established in 1886) became part of GE Insurance Solutions in 1984 and was bought by Swiss Re in 2005. During the same period, Swiss Re also acquired in 1997 UIR (Unione Italiana Di Riassicurazione) and Bayerische Re was integrated into Swiss Re in 1998.

America Re, acquired by Munich Re in 1996, was fully integrated in its parent company in 2006. NRG from the Netherlands was taken over by HDI (Hafpflichverband der Deutschen Undustrie) which became

part of the Talanx group in 2000. When the Gerling Global group was put for sale in 2002, all the reinsurance activities were merged with Hannover Re and the Talanx group created an insurance division under the name HDI-Gerling. Finally, in 1981, the INA corporation and the Connecticut General Corporation combined their operations to become the Cigna Corporation which sold its property-casualty domestic and international business in 1999 to ACE-Tempest ranking 24th in 2010. Cigna today is only focussing on its global health, life and pension businesses.

The strategic decision to expand activities in several foreign markets is implemented at the group level and this paper examines the activities of the world's largest reinsurance consolidated groups rather than single reinsurance entities registered in one country but considered as affiliates of larger worldwide groups. Obtaining comparable data for reinsurance companies around the world is a difficult task because of different reporting procedures. The review ReActions had worked with the International Insurance Solvency (IIS) to collect data on the world's largest reinsurance companies since 1986. When IIS became part of Standard & Poor's (S&P) in 1991 a unique list of the largest reinsurance groups in the world was published each year. Until 2002 only 150 companies were surveyed and consolidated data was only available for 25 reinsurance groups but since 2003, consolidated data for the 40 largest groups is available. This unique set of data on consolidated reinsurance groups provides information on net reinsurance premiums written, loss and expense ratios and return on revenues. The set of net reinsurance premiums data is used in this study and complemented by data on the number of majority owned affiliates and host locations of these affiliates.

This paper has several objectives. The first is the documentation of the relative importance of the largest reinsurance companies in the world and changes that may have occurred in the past thirty years. The second objective is to document two dimensions of the change in market concentration: the trend in concentration in the world's largest companies, and the relative position of these companies by home countries. The third objective is to look at the present situation and to explain the choice of foreign locations of reinsurance groups in expanding abroad.

TABLE 1
THE TOP 20 WORLD'S LARGEST REINSURANCE GROUPS, 1980, 2000 AND 2010

	Name	Home country	Premiums US$
1980	Munich Re	Germany	3,836.00
	Swiss Re	Switzerland	2,896.30
	Gerlin Global Re	Germany	694.30
	General Re	USA	664.30
	Cologne Re	Germany	664.40
	Mercantile and General Re	UK	530.40
	SCOR	France	529.30
	Francona Re	Germany	476.40
	American Re	USA	363.70
	Prudential Re	USA	319.80
	Bayerishe Re	Germany	311.20
	Employers Re	USA	304.80
	NRG	Netherlands	290.20
	INA Re	USA	287.60
	H.I.R.	Germany	274.60
	Toa Fire and Marine	Japan	265.80
	U.I.R.	Italy	265.00
	Hannover Re	Germany	252.00
	Eisen & Stahl	Germany	191.80
	SAFR	France	189.20
2000	Munich Re	Germany	15,276.60
	Swiss Re	Switzerland	14,478.80
	Berkshire Hathaway	USA	8,574.70
	Employers Re	USA	7,924.00
	Hannover Re	Germany	4,994.30
	Gerlin Global Re	Germany	4,117.00
	Allianz Re	Germany	3,726.50
	SCOR	France	2,809.80
	Zurich Re	Switzerland	2,485.00
	Transatlantic Re	USA	1,658.60
	AXA Re	France	1,424.70
	Partner Re	Bermuda	1,380.30
	St Paul Re	USA	1,251.50
	Everest Re	Bermuda	1,218.90
	XL Re	Bermuda	1,022.20
	Korea Re	Rep of Korea	977.50
	CNA Re	USA	951.00
	Toa Re	Japan	942.40
	Hartford Re	USA	825.90
	Tokio Marine and Fire	Japan	705.30

	Name	Home country	Premiums US$
2010	Munich Re	Germany	29,269.10
	Swiss Re	Switzerland	19,433.00
	Berkshire Hathaway	USA	14,669.00
	Hannover Re	Germany	13,652.20
	SCOR	France	8,141.30
	Reinsurance Group of America	USA	6,659.70
	Partner Re	Bermuda	4,705.10
	Everest Re	Bermuda	3,945.60
	Transatlantic Re	USA	3,881.70
	Korea Re	Rep of Korea	2,757.40
	Tokio Marine	Japan	2,617.20
	NKSJ (Nipponkoa & Sompo)	Japan	2,526.10
	General Insurance Corp.	India	2,361.30
	QBE Insurance	Australia	2,184.00
	Mapfre Re	Spain	2,152.20
	Transamerica Re(AEGON)	USA	2,037.80
	XL Re	Bermuda	1,920.50
	Odyssey Re	USA	1,853.80
	AXIS Capital Holdings	Bermuda	1,815.30
	Toa Re	Japan	1,798.70

Note: To facilitate the comparison among these years, Lloyds (ranking 5th in 2010) is excluded from the list.

Source: 1980 = Argus International de l'Assurance, No14, March 1982.
2000 = Standard& Poors, Global Reinsurance Highlights 2001.
2010 = Standard & Poors, Global Reinsurance Highlights 2011.

2. THE GLOBALIZATION TREND OF THE LARGEST REINSURANCE COMPANIES

The total of net reinsurance premiums written by the largest groups in the world in 2010 is estimated by S&P to nearly US$160 billion. As mentioned in the introduction, prior to 2003 only 150 companies were surveyed by S&P to calculate the total amount of net premiums. It is therefore possible to observe a break in trends concerning the concentration of the reinsurance activities prior and after 2003.

Despite these limitations, calculating market shares remains the most accurate presentation of the relative position of the largest reinsurers in the world and this information can also be used to construct measures of the relative positions of countries as reinsurance centers. This section presents the results of static measures of concentration, all based on the market shares qi of each company derived from the proportion of total net premiums written.

The first static measure is the well-known Herfindahl-Hirschman index:

$$H = \Sigma[qi]^2.$$

The advantage of this measurement is that it makes it possible to calculate a "number equivalent" of companies ($N^* = 1/H$) where N^* is the potential number of companies of the same size which could exist on the market for a given degree of concentration.

The second measure is Kwoka's (1977) Dominance index:

$$D = \Sigma[qi - qi + 1]^2.$$

This emphasizes the gap between successive firms when they are ranked by size. The values of this measure range from 1 to 0, with the former value indicating a monopolistic market. Conversely, the closer to zero the measure is, the lower is the power of any single company.

Other dynamic measures of concentration reflecting changes have also been developed. Hymer and Pashigian (1962) developed an index of market share instability:

$$I = \Sigma[qi - qi,t - n].$$

The higher the value of I, the greater the degree of change in market shares over the period, and by implication, the greater the competitive turbulence and the amount of entry and exit.

Dynamic measures are not used in this paper but Outreville (1998) calculated these measures for the top reinsurance companies for the sub-periods 1987-1990, 1990-1993 and 1993-1995 and found an increase in market shares instability in the early 90s corresponding to the increased M&A activity during this period. In this paper the static concentration measures are calculated from 1995 to 2010 for the 25 largest reinsurance groups (table 2). These groups accounted for more than 90% of the world market (table 2).

Although the market share of the 3 largest groups has fluctuated over the period under study, it is interesting to look at the measures of concentration (k-firms ratios) for the top 5 and top 10 firms in table 2. It reveals that the market shares have significantly increased between 1995 and 2009. The last year 2010 contradicts this result and it may be interesting to wait one more year to verify if it is an exception in this trend or if a new phenomenon is arising. The value of the Herfindahl index as well as the number equivalent of companies also reflects this increased concentration. The Kwoka's dominance index, which was relatively stable until 2001, has slightly increased between 2003 and

TABLE 2
CONCENTRATION MEASURES FOR CONSOLIDATED GROUPS, 1980-2010
MEASURES BASED ON THE LARGEST 25 REINSURANCE GROUPS

Year	1980	1995	1999	2001	2003	2005	2007	2009	2010
K-firms concentration									
Top 3	51.80	38.5	45.7	44.9	45.9	47.0	50.8	48.5	43.9
Top 5	60.42	52.6	59.6	59.2	58.7	60.8	63.7	63.7	60.0
Top 10	75.87	69.0	79.9	79.9	75.9	73.7	80.1	81.5	79.0
Total net premiums (Mil.$US) of Top 25	14,338.0	68,700.0	78,412.0	95,577.0	143,630.0	128,857.0	148,184.0	145,478.0	144,462.0
Percentage of World Total (estimated)	..	..	94.5%	97.5%	87.8%	87.8%	91.0%	91.0%	91.0%
Herfindahl index	0.1275	0.0863	0.0928	0.0925	0.0967	0.1038	0.1075	0.1087	0.0937
Number equivalent	8	12	11	11	10	10	9	9	11
Dominance index	0.0284	0.0049	0.0046	0.0051	0.0096	0.0084	0.0087	0.0109	0.0070

Source: Standard and Poors', several years. For 1980, Argus International de l'Assurance.

2009, indicating a larger spread between the largest groups and the followers. The year 1980 is added as a reference point although the data used to calculate the different measures are drawn from another source and may not be directly comparable.

3. HOME COUNTRIES

The geographic distribution of reinsurance companies shows that since the early 2000s, only 5 countries accounted for more than 80% of the world reinsurance premiums, probably even more before if we take into account the situation in 1980 (table 3). During the past thirty years, reinsurance groups from only three countries (Germany, United States and Switzerland) have dominated the reinsurance business worldwide with more than 60% of total reinsurance premiums. Only since 2005, Bermuda has emerged as a major reinsurance center.

The rest of the world includes groups from Spain, Australia and emerging countries. Reinsurance originating from emerging economies only accounted for about 1.4% of the world reinsurance premiums in 2003, with the Korean Re. Three economies (Korea, India and Brazil) are host countries of a major reinsurance group listed in the top 40 since 2006 and accounted for 3.3% in 2006 and to a meagre increase in 2010 (3.6%).

TABLE 3
WORLD MARKET SHARE OF REINSURANCE GROUPS BY HOME COUNTRIES, 1980-2010

	1980	1999	2001	2003	2005	2007	2009	2010
Germany	46.1	29.8	32.5	27.1	22.5	26.4	30.2	28.4
United States	16.9	26.7	24.7	19.1	20.9	19.9	17.6	19.1
Bermuda	..	2.3	4.7	11.3	16.2	12.9	13.8	15.8
Switzerland	21.4	18.8	19.1	17.5	15.7	17.7	14.3	13.1
United Kingdom	4.8	4.8	6.1	4.8	4.5	5.6	6.7	6.7
France	5.0	5.9	7.4	4.4	3.8	5.8	6.3	6.2
Japan	2.0	2.3	1.9	6.1	5.9	6.2	4.7	4.4
Rest of the world	3.8	9.4	3.6	9.7	10.5	5.5	6.4	6.3

Source: Standard and Poors', several years. For 1980, Argus International de l'Assurance.

4. THE INTERNATIONAL PRESENCE OF THE LARGEST REINSURANCE GROUPS

The degree of international involvement of a firm can be analyzed from a number of perspectives: their operations, stakeholders and the spatial organization of management. Given the range of perspectives and dimensions that can be considered for each, the degree of internationalization of a firm cannot be fully captured by a single synthetic measure.[6] In this paper, the international dimension is captured by the existence of foreign affiliates and the number of host countries in which a reinsurance group is established.

Information on the number of majority owned foreign affiliates and number of host countries is provided by Dun & Bradstreet, *Who Owns Whom* database. The number of host countries is an average value over the period 2006-2008 and the largest groups are ranked by net premiums in 2008 (table 4). Casual observation of the top 25 groups, which accounted to 91% of the world business in 2008, seem to reveal a significant relationship between the size of the group and the number of host countries with majority-owned affiliates but the calculated Spearman rank correlation (rho, p-value) is only equal to (0.51, 0092) for the full sample. If we drop the last two groups from the list, it increases to (0.71, 00007).

The average number of host countries is 13 for the world's 25 largest groups. Japanese firms have, on average, a much lower number of host countries (6).

Research in different disciplines has sought to explain when and why firms invest in foreign countries. Conventional internationalization theory suggests that international expansion rise because firm possess ownership-specific and internalization advantages, which can be exploited profitably across national borders. Geographic and cultural distances have received a great deal of attention in the international business literature and have been identified as a key factor in explaining foreign market attractiveness (Kogut and Singh, 1998). Johansson and Vahlne (1977, 1990) argued that firms expand first in geographically proximate markets and as experiential learning is built up, firms venture into more distant markets. The case of Korean Re is a good validation of this hypothesis. Companies from the United States have a dominant presence in Europe and Asia. German and Swiss groups have the same pattern of investment in Europe, Latin America and Asia. Spain (Mapfre) has a network of branches or affiliates in almost all LAC countries for obvious ethnic and cultural ties reasons. Japanese groups are more present in Asia (table 5).

TABLE 4
NUMBER OF HOST COUNTRIES FOR FOREIGN AFFILIATES OF THE LARGEST GROUPS, 2008

Rank 2008	Group	Country	Number of host countries (Average 2006-2008)
1	Munich Re	Germany	34
2	Swiss Re	Switzerland	23
3	Berkshire Hathaway Re	United States	24
4	Hannover Re	Germany	14
5	SCOR	France	14
6	Lloyds	United Kingdom	16
7	Reinsurance Group of America	United States	10
8	Transatlantic Holdings (AIG)	United States	45
9	Partner Re	Bermuda	6
10	Everest Re	Bermuda	3
11	Tokio Marine (Millea Holdings)	Japan	15
12	XL Re	Bermuda	12
13	Korea Re	Korea Rep. Of	2
14	Odyssey Re	United States	8
15	Transamerica Re (AEGON)	United States	13
16	Mitsui Sumitomo Group	Japan	10
17	Mapfre Re	Spain	28
18	Sompo Insurance Group	Japan	5
19	Caisse Centrale de Réassurance	France	0
21	Toa Re	Japan	3
21	White Mountains Group	Bermuda	3
22	AXIS Capital Holdings	Bermuda	3
23	General Insurance Corp.	India	1
24	QBE Insurance Group	Australia	14
25	ACE Tempest Re	Bermuda	19

Source: Standard and Poor's for the names and Dun & Bradstreet Who Owns Whom database for host countries.

TABLE 5
GEOGRAPHICAL REPARTITION OF AFFILIATES OF THE LARGEST GROUPS BY HOME COUNTRIES

(based on the number of companies for which geographical breakdown is available)

Home Country	Host Region				
	Europe	CEE	Africa	LAC	Asia & Pacific
United States	43.8	1.8	5.3	10.5	38.6
Germany	45.5		4.5	18.2	31.8
Switzerland	44.1	2.9	2.9	17.6	32.5
Spain	42.8			50.0	7.2
Japan	34.0			11.6	54.4

LAC = Latin America and the Caribbean.
CEE = Central and Eastern Europe (the ex-USSR).

5. A SIMPLIFIED MODEL OF LOCATION-SPECIFIC ADVANTAGES

According to the literature on the determinants of foreign expansion, firms will prefer those countries that provide greater location-specific advantages. Institutional characteristics of the destination country also play a crucial role in the pattern of internationalization.[7] There have been only a few empirical studies about the determinants for home country firms in financial services to expand abroad[8] and recent empirical work applied to the insurance and reinsurance sector by Cole et al. (2007) and Outreville (2008) examine the relationship between location intensity (LI) and location-specific advantages[9] according to the following functional form:

LI = f (size of the market, growth, human capital, governance, trade barriers).

Location intensity (LI) is defined as the number of reinsurance groups having at least one affiliate in the country concerned, divided by 100, minus the number of groups originating from this country, i.e. a firm from country A cannot have foreign affiliates in country A (UNCTAD 2006). Based on this measure, the largest number of groups has foreign affiliates in the United Kingdom, followed by the United States. Among emerging economies, Singapore, Hong Kong (China) and Mexico are ranked in the top 10 (appendix 1).

The size of the host economy is usually measured by its GDP and population. Since the size of the insurance market is a major

determinant for a reinsurance company, insurance penetration (premiums as % of GDP) is also used in the model.

Labor is another factor important to foreign investors. Thus a high level of human capital would positively attract foreign firms. Human capital (or high levels of education) has not received any particular attention in the determinants driving FDI with the exception of Focarelli and Pozzolo (2005) and Outreville (2008). Following the results of the recent empirical literature on the determinants of growth, they assume that countries with highly skilled workers are more likely to attract FDI in financial services.

In recent years there has been a surge of interest in the consequences of governance or misgovernance for development and how a country risk could have an impact on global investment strategies by transnational corporations. The importance of good governance in the financial sector (both public and corporate) has been highlighted by crisis in Asia, Russia and some Latin American countries. Corruption is commonly defined as the abuse of public office for private gain.[10] Governance is a much broader notion, which is defined as the traditions, and institutions that determine how authority is exercised in a particular country. This includes (i) the process by which governments are selected, held accountable, monitored and replaced; (ii) the capacity of governments to manage resources efficiently and formulate, implement and enforce sound policies and regulations; iii) the respect of citizens and the state for the institutions that govern economic and social interactions among them (Kaufmann et al. 2000).

Beyond the simple decision of whether foreign entry is allowed or not, foreign reinsurance companies are more likely to establish subsidiaries or affiliates in locations with fewer restrictions on their activities. Research into the measurement of services trade barriers is fairly recent. In banking, Claessens and Glaesner (1998) calculate "degree of openness" indices for financial services in eight Asian economies. McGuire and Schuele (2001) construct trade restrictiveness indices for banking services. Both studies report a significant correlation between GATS measures of commitments and actual practices of countries.

5.1 The empirical analysis and results

Location intensity (LI) is calculated as an average value over the period 2003-05 for a cross section of 41 countries.[11] The estimation procedure is an ordered probit analysis, which is a generalization of the linear regression model to cases where the dependent variable is ordered. The dependent variable is also bounded between zero and

100 by construction. Results of the estimation are presented in Table 6. They suggest that the decision to select a location is impacted by the size of a country measured by its population and the relative size of the insurance sector. As suggested by Rossi and Volpin (2004), GDP growth is used as a control factor but shows a small negative and non-significant value.

TABLE 6
RESULTS OF THE ESTIMATION PROCEDURE, CROSS-SECTION ANALYSIS (SAMPLE SIZE = 41)

	Coefficient	z-Statistic	Spearman rank *Rho, P-value*
Penetration (Premiums as % GDP)	0.105	1.68	0.48, 0.0014
Log (Population)	0.676	4.01	0.28, 0.0754
GDP growth	-0.03	-0.31	0.14, 0.3667
Human Capital (HCI)	-0.989	-0.79	0.13, 0.4052
Good Governance	1.254	2.32	0.35, 0.0250
Trade Barriers	-0.111	-0.34	0.20, 0.1972

Note: Convergence was achieved after 8 iterations.

The Human Capital Index (HCI) used in this study is a weighted average of the literacy rate and enrolment ratios (secondary school and tertiary education) calculated in UNCTAD (2005). The variable exhibits the wrong sign and is not significant.

The Government effectiveness index published by the World Bank Institute combines perception of the quality of public service provision, the quality of bureaucracy, the competence of civil servants, the independence of the civil service from political pressures, and the credibility of the government's commitment to policies. It is one of the six indices published by WBI on governance.[12] Findings are consistent with the arguments presented in the literature and suggest that location-specific factors including good governance are important determinants in the choice of a location.

A rank correlation analysis using Spearman rank correlation estimations (rho coefficient of correlation and p-values for the level of confidence) confirms these results. Only the size of a country, the penetration of the insurance sector and the good governance index are significantly correlated with the location intensity measure (table 6, last column).

The higher is the index for regulatory barriers, the higher is trade efficiency or lower are the trade restrictions in the country. Due to the high correlation between governance (measured by government effectiveness) and trade efficiency, this variable is not significantly impacting on the choice of a location whereas the governance index remains significant. If only trade efficiency alone is left in the equation, it becomes significant as it pickups at the same time for trade efficiency and good governance.

5.2 Data limitation

Several other variables do affect the choice of a location by a reinsurance group including distance as defined before, historical reasons, tax and legal factors, portfolio analysis. The purpose of this analysis is to verify common location-specific factors. Furthermore, the small size of the sample reduces the ability to introduce too many variables at the same time in the model and data availability is limited for some countries. The correlation matrix among variables in appendix 2 shows a high level of correlation between these two variables.

6. CONCLUSION

Reinsurers' exposure to large catastrophe losses is one of the drivers behind the reduced financial strength of the industry and this is one argument in favour of M&As (Cummins and Weiss, 2000). This paper documents the relative importance of the largest reinsurance companies in the world and changes that have occurred in the past thirty years. By looking at the trend in concentration, it shows that the largest reinsurance groups have significantly increased their world market share and dominance over the past thirty years as part of the belief that only very large players will remain competitive.

Another objective of the paper was to look at the diversification aspect and to explain the choice of foreign locations of reinsurance groups in expanding abroad. The results indicate that location-specific advantages such as size, good governance and eventually cultural distance, do provide an explication for the choice of locations by the largest reinsurance groups in their internationalization process.

Internationalization theory suggests that international expansion is a growth strategy and arise because firm possess ownership-specific and internalization advantages. Several questions do remain: whether and how internationalization of activities impacts the performance of

reinsurance groups? Whether or not giants Munich Re and Swiss Re will manage to leverage their dominating market position to outperform the market?

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Notes

1. Standard & Poor's, Global Reinsurance Highlights, ReActions Publishing Group, London, 2011.

2. Lloyd's of London, ranking 5th in 2010, is excluded from the list to ease comparison with earlier years.

3. United Nations Centre on Transnational Corporations (UNCTC) (1989).

4. The increased M&A activity raises important research and policy questions about the causes and consequences of consolidation in the financial services industry. Berger et al. (2000) surveyed hundreds of papers on the causes and consequences of consolidation, covering the topics of efficiency, market power, managerial and government motives and consequences.

5. Diversification in the reinsurance industry is nothing new but several reasons have recently increased the focus on diversification: 1) the increased frequency and severity of catastrophic risks, 2) the sophistication of capital markets and, 3) regulatory developments concerning capital adequacy. On reinsurance, see also Weiss and Chung (2004).

6. For recent work on multidimensional measures of internationalization see, for instance Goerzen and Beamish (2003) and UNCTAD (2007).

7. Clarke et al (2001) provide a useful summary of some of the main determinants of bank FDI in emerging markets. See also a more recent paper by Wezel (2004).

8. Focarelli and Pozzolo (2005) are looking at the number of foreign affiliates of OECD banks.

9. See Rugman and Verbeke (2004) for a definition.

10. See Habib and Zurawicki (2002) for a survey of the literature.

11. Bermuda has been excluded from the original list of 42 economies for lack of information.

12. Available at www.worldbank.org/wbi/governance. This variable has been selected to differentiate government governance from political, financial or corruption risk. It is also considered by some authors as a dummy variable to determine the potential regulatory environment.

APPENDIX I
THE MOST PREFERRED LOCATIONS BY THE LARGEST GROUPS, 2003-2005

Rank	All economies	Location intensity
1	United Kingdom	92,6%
2	United States	87,0%
3	Canada	78,6%
--	Singapore	78,6%
5	Japan	69,5%
6	France	61,5%
7	Australia	59,2%
8	Hong Kong (China)	57,1%
9	Italy	53,6%
--	Mexico	53,6%
11	China	50,0%
--	Germany	50,0%
--	Malaysia	50,0%
14	Spain	48,1%
15	Belgium	46,4%
16	Brazil	42,8%
--	Taiwan, Prov. of China	42,8%
18	Korea Rep. Of	39,3%
19	Bermuda	36,4%
20	Argentina	35,7%
--	Ireland	35,7%
22	Switzerland	34,6%
23	South Africa	32,1%
24	Chile	28,6%
--	Colombia	28,6%
--	India	28,6%
27	Netherlands	25,0%
--	Sweden	25,0%
--	Thailand	25,0%
30	Austria	17,8%
--	Denmark	17,8%
--	Greece	17,8%
--	Indonesia	17,8%
--	New Zealand	17,8%
--	Poland	17,8%
--	Russia	17,8%
37	Vietnam	14,3%
38	Czech Republic	10,7%
--	Norway	10,7%
--	Peru	10,7%
--	Portugal	10,7%
--	Venezuela	10,7%

APPENDIX 2
CORRELATION MATRIX AMONG VARIABLES

	Location Intensity	Penetration	Log (Population)	GDP Growth	Human Capital	Governance	Trade barriers
Location Intensity	1.00	0.47	0.24	0.10	0.17	0.41	0.29
Penetration	0.47	1.00	-0.25	-0.03	0.47	0.65	0.55
Log (Population)	0.24	-0.25	1.00	0.17	-0.50	-0.54	-0.57
GDP Growth	0.10	-0.03	0.17	1.00	-0.20	0.06	0.07
Human Capital	0.17	0.47	-0.50	-0.20	1.00	0.70	0.54
Governance	0.41	0.65	-0.54	0.06	0.70	1.00	0.89
Trade barriers	0.29	0.55	-0.57	0.07	0.54	0.89	1.00