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Creating Value with a Captive Insurer in Europe

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I. Introduction and Background Information

"The global captive insurance market continued to grow in 2012, both in terms of new captive formations and new captive domiciles . . . Worldwide, the number of licensed captives increased to 6,052 at the end of 2012 from 5,807 a year earlier . . ." This statement appeared in an article of Business Insurance entitled *Captives Grow as Economy Recovers* published March 11, 2013. The news that the number of captives had steadily increased to 6,000 worldwide was surprising to Japanese insurance and risk management professionals (see Figure 1). The news is contradictory to recent reports from Japanese risk professionals who report that the total number of captives established and owned by Japanese corporations is approximately eighty and that the number of Japanese captives is actually decreasing. Why do Japanese corporations appear to be resistant to the establishment of captives? Considering the size of the Japanese economy, the expected number of Japanese captives should be over 1,000. There may be reasons that are not financially-related that explain this lack of motivation. This study hypothesizes that Japanese firms are capable of creating value using captives rather than purchasing traditional insurance. Using examples of Japanese captives that are established in European domiciles, we attempt to analyze this hypothesis. This is a significant research topic for Japanese risk management academics and professionals.

This manuscript first adopts a qualitative approach to discuss the unique features of European captive domiciles and the advantages of establishing captives in Europe. Using a scenario approach with realistic data, we quantify the level and the extent to which a Japanese firm can create value by establishing a pure captive insurer in a major European captive domicile. This study examines the domiciles of Guernsey, Luxembourg and Dublin, Ireland.

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Doherty (1985) defines a captive insurance company as a retention fund that possesses its own corporate identity as a subsidiary of a noninsurance parent firm. He then defines a captive insurance company as one that is owned by a noninsurance parent company or companies, and as a company that underwrites the insurance business of its parents directly or through the application of reinsurance contracts. Lenrow et al. (1982) identified the following advantages of establishing captive subsidiaries: 1) the investment income from reserve funds accrues to the parent company rather than to an unrelated insurer; 2) captives offer certain tax advantages over conventional insurance or other forms of retention; 3) captives offer certain types of coverage which are difficult or expensive to obtain from the conventional insurance market because of general market conditions or the poor underwriting experience of insurers; 4) captives can access the reinsurance market that is considered more competitive than the direct insurance market; 5) the underwriting costs are lower than those offered by the unrelated insurer's profit markup; and 6) captives provide the incentives that motivate a company to effectively control losses.

In response to Lenrow et al., Doherty (1985) stated that the incentives to form a captive outweigh those of conventional insurance and can be summered into two motivating factors. First, a captive may be formed with the purpose of obtaining insurance on advantageous terms. Owning a captive insurance company can improve a parent firm's ability to negotiate for terms and conditions of an insurance contract with an insurance company. Certain benefits include favorable reductions in premiums for large deductibles, competitive pricing, or coverage of difficult-to-place risks. Second, a captive may represent a genuine alternative to insurance. "Risk finance" has become a popular term for finance risk. Financial and insurance markets have created many ways to transfer or finance risk such as catastrophe bonds, contingent debt, finite risk, contingent equity, credit default swap, weather derivatives. A captive is an alternative financing scheme that allows corporations to retain risk and receive funding from corporate family members, thereby diversifying the financing risk and risk management.

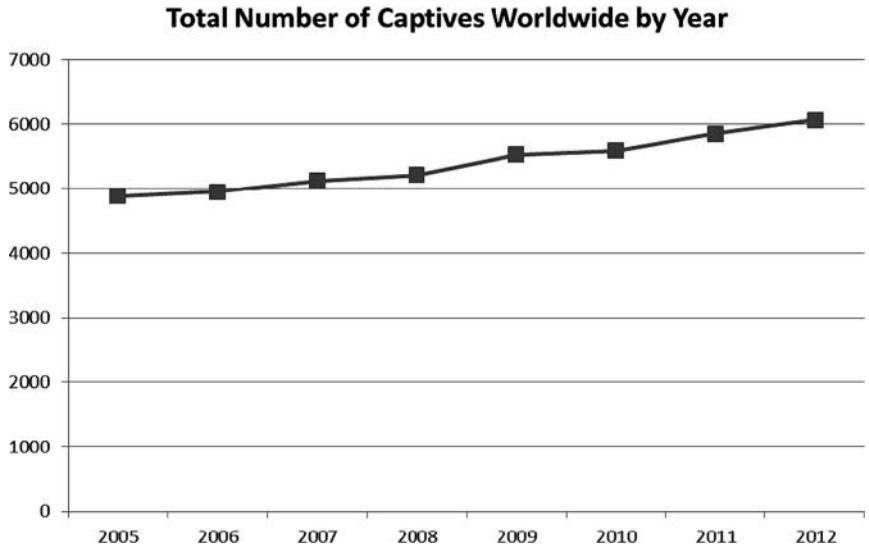
With respect to small to medium size enterprises, captives can protect operating business from higher taxation or creditors, where they provide wealth transfer transactions (Adkisson, 2006). The transfer of wealth from a business owner to family members can be achieved through the use of a captive. This feature is especially attractive in countries with a high level of inheritance tax, which can reach 50% in countries such as the United States (US) and Japan. As part of this study, we interviewed consultants attending the Captive Conference held in Chicago in 2012 and found a number of cases of captives functioning as conduits for wealth transfer. If the captive is formed and owned by the children of the business owner

and the children is over 21 years of age, the activities of the captive are not attributable to the owner of federal gift and then US taxes are not applicable. The insurance premiums that a firm pays to its captive are tax deductible. Therefore, the owners' wealth can be successfully transferred using premium transactions to offspring using the offspring-owned captive (Adkisson, 2006). The recent sharp increase in the number of micro- and mini-captives in such domiciles as the state of Utah and Anguilla is attributable to this wealth transfer function. According to Business Insurance statistics, Utah has 287 captives and is ranked the second largest captive domicile in the US and sixth in the world, and Anguilla has 291 captives and is ranked as the fifth largest captive domicile in the world. Tax avoidance with respect to wealth transfer and the use of captives will be a significant future political issue.

In addition to corporates captive demand, we posit that the increase in captives is a result of a favorable regulatory environment. Within the US, captives face inherent tax issues and challenges. The US tax laws concerning captives have been uncertain until recently. Many courts battles between IRS (Internal Revenue Service, the federal tax authority) and captive owners have argued the true meaning of "insurance." Courts rely on the US Supreme Court's explanation that states "Historically and commonly insurance involves *risk-shifting* and *risk-distributing.*" The subsequent issue then is the determination of the factors that constitute risk shifting and risk distributing. An unofficial safe harbor existed for many years that was established by the IRS and assured that captives would not be challenged if they underwrite at least 30% third-party risk. The revised safe harbor guidelines are set at 50% third-party risk. If a captive underwrites at least 50% third-party risk, the risk distribution requirement is satisfactory met. Captives are able to meet this requirement simply by accepting quality reinsurance risks or selling reinsurance to another insurance company and receiving a premium in return. The IRS would challenge a captive if it does not act as insurance company. Domicile states, however, offer rigid procedures or advice that captives be registered as insurance companies. Once a captive is officially registered in a domicile and is conducting genuine insurance business, the IRS will not initiate a challenge. We argue that a regulatory environment that allows corporations to comfortably run captive business without legal challenge from the IRS can explain the increase in US captives.

In summary, there are a number of rational reasons why corporations form captives onshore and offshore captives. Corporate demand has resulted in an increase in the the number of captives to over 6,000, with an additional 100 or 200 captives forming each year. Figure 1 presents the recent, worldwide total captive growth trend.

Figure 1 Total Number of Captives



(Source: Business Insurance, 2013)

II. A Summary of the Related Literature

Despite the existence of more than 6,000 captives worldwide, around 90 of which are of Japanese firms, there is a paucity of research on Japanese captives compared to US and European firms. The results from the studies of U.S. and European captives can be applied partially to Japanese captives. Differences exist in the Japanese business environment and there are pronounced differences in the legal liability exposure of Japanese corporations. Morimiya (1997), Hiyoshi (2000), Yoshizawa (2001) and Goto (2005) have examined the benefits and challenges of captives worldwide, the global trends that fuel captive growth, and the captive dynamic with respect to other financing methods. Maeda (2005) demonstrated through qualitative analysis the corporate demand for Japanese captives.

The lack of publically available data with respect to the performance of captives regardless of their nationalities may have resulted in conflicting conclusions from the empirical findings concerning the ability of captives to generate value for parent firms. Diallo and Kim (1989) and Adams and Hillier (2000) use event study methods to examine whether the establishment of a captive insurer creates value for its shareholders. The studies demonstrate that although the share value of the captive parent remains unchanged, the non-significant negative drift of the cumulative abnormal return on the parent's stock may indicate that an amount considered negligible to all stockholders might be significant for certain managers. They thus contend that the welfare gain derived from the creation of captives is likely to

benefit the managers of the parent firm rather than the shareholders. This conclusion is similar to the conclusion of Scordis and Porat (1998) who demonstrate that firms with captive insurers are more likely to experience manager-owner conflicts than firms that do not form captives. Adams and Hillier (2000) partially attribute their results to captive formation by managers for their own benefits. They provide evidence that the incorporation of captive insurers is somewhat detrimental to value. The study uses a sample of 120 captives of United Kingdom (U.K.) corporations. They find negative stock reaction to the news that a captive insurer has been formed, however, the reaction amounted to less than a percentage point.

The study of Scordis et al. (2007) employed Monte Carlo simulations on general captives in Bermuda and British Virgin Island to identify sustainable conditions where captives exhibit a high probability of creating positive shareholder value. The study finds that, on average, captives have a low probability of generating shareholders value. Well-managed captives, however, have a high probability of generating shareholder value. The study also finds that the captives of parents with low systematic risk have the highest probabilities of creating the value. Maeda et al. (2011) studied shareholder value creation by applying a similar methodology of Scordis et al. (2007) to a Japanese captive established in Guernsey, Bermuda and Hawaii but expanded further into enterprise risk management and finite risk schemes into captives. Maeda et al (2011) found a high likelihood that a captive generates economic value for its Japanese parent firm especially when it operated over multiple years. They find that when the captive reinsurers its entire book of business, thus acting as a vehicle for access the global reinsurance market, it delivers approximate break-even economic value. The captive can generate a high level of economic value but only by adopting a higher level of operating risk. They find that the value-maximizing strategy is for a Japanese corporation to establish its captive in Bermuda while the risk-minimizing strategy is to establish its captive in Guernsey. They also demonstrate that Bermuda offers favorable risk-return tradeoffs for Japanese captives compared to Hawaii.

Our study expands the methodology of Maeda et al. (2011) with respect to Japanese captives established in European domiciles, namely Guernsey, Luxembourg and Dublin, Ireland. This study describes the feasibility of Japanese firms expanding into European markets through a captive vehicle. All of the data used in this study are the most recent for the business environment and current tax and legal liability legislation in Japan. The following sections examine the characteristics of the European captive domiciles and our research methodology.

III. The European Captive Domiciles

We categorize the onshore and offshore global captive market into four regions: the US and Canada, the Caribbean, Europe and the Asia-Pacific region. According to Business Insurance (2013), the captive markets for the four regions are 36.9% for the US and Canada, 44.1% for the Caribbean, 16.8% for Europe, and 2.3% for the Asia-Pacific region. The Caribbean market is the largest, followed by the US and Canada, and Europe. The Asia-Pacific market is still in the infant stage. There are no captive domiciles within Japan, although Nago of Okinawa declared to be so in 2004 (Maeda and Sakai, 2007) during the *Koizumi* regime, but there are no captives established in the city. We conclude that the first domicile in Japan failed for many reasons.

Each domicile market possesses unique characteristics. The Caribbean market includes Bermuda and the Cayman Islands; the world's largest and second largest captive market in terms of numbers. These captive markets are composed mainly of offshore captive domiciles that offer a corporate income tax-free environment, a flexible and business-friendly regulatory environment, natural resources, and entertainments that attract substantial insurance companies, reinsurance companies, and financial institutions including banks, hedge funds, and various types of special purpose vehicles established for investment purposes. Because of the advanced business infrastructure, those domiciles provide conveniences such as "one-stop shopping," where all the services that captives require are provided within the boundaries of a small city, Hamilton in Bermuda for example (Maeda, 2012).

The US and Canada captive market attracts mostly US and Canadian firms. The market provides US companies visible state registrations, political stability, and a lower level of legal liability. Thus, safety, comfort, convenience, and easy access are provided for US and Canadian firms. The state of Vermont, for example, attracts captives by offering flexible registrations according to corporate need while holding captive seminars and annual conferences for the captive market. Vermont has committed to the institutionalization of captive registrations (Maeda, 2012). Risk Retention Groups are registered according to a state captive law.

Contrastingly, the European captive market initiated captive business in the early 1920s with the establishment of group captives (Bawcutt, 2001). Group captives are jointly owned by two or more parents and underwrite the risks of those parents (Doherty, 1985). Certain domiciles attracted protected cells, or rent-a-captives called "PCCs" (protected cell companies) or "ICCs" (incorporated cell companies) that resemble group captives. Certain domiciles focus on reinsurance captives and equalization reserve. Other domiciles accommodate direct captives and include Dublin in Ireland, Gibraltar and the Nordic nations such as Sweden and

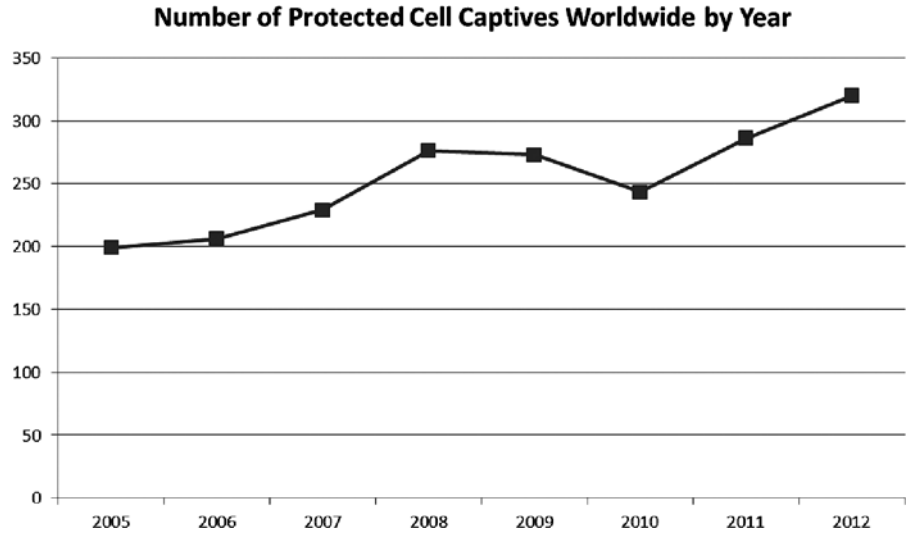
Norway. The following sub-section compares the benefits of the three major European captive domiciles, Guernsey, Luxembourg, and Dublin, Ireland.

1. Guernsey: A Domicile for PCCs and ICCs

Guernsey is one of the Channel Islands, dependent on the UK but not subject to UK taxes, or European Union (EU) legislation for insurance purposes (International Risk Management Institute. 2013). Among the European domiciles, Guernsey is the largest and oldest because it initiated captive business in 1922. Protected by the UK military, the island offers a flexible tax structure, well-established infrastructure, and close proximity to London and the European countries. One of Guernsey's characteristics is its popularity as a domain for PCCs and ICCs.

Guernsey first passed the Protected Cell Companies Ordinance in 1997 and amended it in 2002. Recent legislation for ICC was introduced in 2006. Protected cell companies or incorporated cell companies are essentially rent-a-captives that offer less expensive and easier captive formation than pure or group captive formation. Rent-a-captives are captives that are rented by various firms. There can be a number of cells in a PCC and each cell is rented out to an individual parent. PCCs possess a special provision that legally separates the assets and liabilities in each account or cell from other cells to ensure that a bankruptcy of one cell does not affect another. To further illustrate individual cells, incorporated cell companies are registered individually to retain certain benefits. The companies in Guernsey that have no experience of captive operations, or face significant difficulty such as high

Figure 2 The Number of Protected Cell Captives Worldwide



establishment costs may first use PCCs or ICCs in Guernsey. There were a total of 333 captives including PCCs and ICCs in Guernsey by 2012. Figure 2 presents the number of PCCs, which increased to 320 by the end of 2012. According to International Risk Management Institute (2013), Guernsey had over 300 total cells in PCCs alone in 2010, which represents a significant percentage of captive insurance market.

2. Luxembourg: A Domicile for Reinsurance Captives

A vibrant financial center surrounded by Germany, France and Belgium, Luxembourg has attracted many multinational corporations that established headquarters in Europe such as Amazon.com, Rakuten and Delphi. Luxembourg is also one of the world's foremost captive domiciles. The current number of captives is 238 and, according to Business Insurance (2013), the eighth largest in the world and the second among the European domiciles as of the end of 2012. Luxembourg initiated captive business in 1984 when its captive reinsurance market opened. It offers a number of benefits to captives including business-friendly regulations; a well-established infrastructure of banking, investment, actuarial, accounting and legal services; political stability; and close proximity to the London and European markets (International Risk Management Institute, 2013).

In the article *Captive Review, 2012,* Mr. Victor Rod, insurance commissioner at Commissariat aux Assurances, stated that Luxembourg initiated captive business to offer European captive owners a domicile in the EU that would allow them to do business onshore. The country has established an environment that offers captives normal tax policies and a favorable business environment in which to conduct transactions; Luxembourg has become a fully diversified international financial center.

A unique feature of Luxembourg's captive business is the predominance of reinsurance captives. Reinsurance captives typically utilize a fronting insurance company between the parent and the captive. Reinsurance captives, therefore, are influenced by the traditional insurance market or the fronting local insurance market. The advantage of this is that if the local insurance market is a smooth market with low premiums, the parent is less willing to transfer premiums into the captive. Conversely, if the local market is experiencing increasing premiums, the parent is more willing to transfer risk into the captive. This adjustment is facilitated by altering the amount of reinsurance that the captive sells to the fronting insurance company. When a Japanese firm located in Japan is to establish a captive overseas, the Japanese firm must use a licensed fronting insurance company that creates a reinsurance contract with the offshore captive. In Japan's case, the local insurance regulations require an insurance contract be made only with a licensed insurance

company; therefore, the use of reinsurance captive is the norm.

Additionally, captives can build equalization reserves. Captives can set up accounts that build a high tax suspended reserve. These extra reserves are tax exempt and accumulate capital in periods of scare claims that can fund larger claims later on. Equalization reserves thus permit captives to accumulate substantial capital without paying taxes.

3. Dublin of Ireland: The Financial Center for UK

Dublin is the capital of the Republic of Ireland and shares the island with Northern Island, a part of the UK. Ireland became independent of the British Commonwealth in 1949 and is a member of the European Economic Community (EEC). Ireland initiated captive business in 1987 at the same time that it opened the International Financial Services Centre in Dublin. Leading financial institutions including Zurich, Ace, XL, Generali insurance companies, Deutsch, Citi, Sumitomo banks, and Merrill Lynch are located in Dublin (Ikeuchi et al. 2012).

Dublin has developed advanced infrastructure and business-friendly regulations for financial institutions including captives. Dublin is recognized as an international financial center and invites internationally recognized companies primarily from Europe, the US and Japan (International Risk Management Institute, 2013). Currently, Ireland accommodates 141 captives and ranks fifteenth in the world and third among the European domiciles as of the end of 2012, according to Business Insurance (2013).

Table 1 Certain Important Regulatory Features and Statistics of Three Domiciles

	Guernsey	Luxembourg	Dublin, Ireland
Number of captives as of year-end 2012	333	238	141
World ranking by number	4	8	15
Minimum capitalization rate	£900,000	€1,225,000	€635,000
Licensing fees	Application fee £5,054; Annual fee £5,040.	Incorporation fee €1,500; Annual fee: €3,000–15,000.	Initial fee €5,709; Supervision fee €635–31,743.
Captive tax rate	0%	30%	12.5%
Note:	The value of minimum capitalization rate and licensing fee applies only to non-life business.	The value of minimum capitalization rate and licensing fee applies only to reinsurance captives.	The value of minimum capitalization rate applies only to reinsurance captives.

(Source: Captive Insurance Companies Association (2012), Business Insurance (2013) and International Risk Management Institute (2013))

Dublin is popular for captives because direct writing captives can be formed and they can issue direct insurance policies across borders into other EU countries (Bawcutt, 2001). A captive can underwrite insurance coverage that is related to its parent's European business without paying fronting fees or purchasing insurance from local insurers. Unlike Luxembourg where captives are mostly formed as reinsurance vehicles, those formed in Dublin can directly insure European-located risks without costly fronting arrangements. Therefore, many captives formed in Dublin have US corporations as parents (Ikeuchi et al., 2012).

Table 1 compares certain important regulatory features and statistics of the three domiciles examined in this study. The minimum capitalization rate, licensing fees and captive tax rates that were used for our study are discussed in the following sections.

IV. The Research Methodology

This section identifies the value that is from the formation of a captive in the three examined European domiciles by a Japanese firm using a scenario approach.

1. Regulations

Japanese Insurance Law requires that insurance coverage for Japan risks be purchased by an admitted and licensed insurance company. If an offshore captive insures Japanese-located risk, it must act as a reinsurance captive that sells reinsurance on the parent's risk with a licensed Japanese insurer. Additionally, if a subsidiary of a Japanese firm is located in a country where the income tax rate is equal to or below 20 percent, the country is considered "tax haven" according to the Japanese tax code. If the country is determined a "tax haven," the corporation must consolidate the net income in Japan and pay tax according to the Japan tax code. Therefore, a corporation cannot avoid tax by establishing a subsidiary in a tax haven country. This tax code also applies to a captive overseas. With respect to the three domiciles included in this study, Guernsey (zero tax) and Dublin (12.5% tax rate) are treated as "tax haven" countries, whereas Luxembourg (30% tax rate) is not.

The Japanese tax code was amended in 2009 with the addition of the "foreign dividend exclusion." The revised code allows a multi-national corporation to consider 95% of dividends paid by its foreign subsidiary as a nontaxable income (KPMG, 2012) when the subsidiary is owned at least 25% by a Japanese corporation. Only 5% of foreign income would be taxed in Japan if it is paid back as dividends.

2. The Base Case Scenario

We assume that a captive is formed as a reinsurance captive using a fronting arrangement in Japan, capitalized, and then operates as required for four years in domiciles such as Guernsey, Luxembourg, and Dublin. We calculate the values created by a captive in each domicile. The parent pays to the fronting insurer a fronting fee equivalent to 5% of net premium written. The fronting insurer does not cover any underwriting risks. The captive creates a loss reserve to manage the payment of losses independently. The captive does not purchase reinsurance coverage. The captive continues to operate insurance business until the fourth year and run off until the sixth year to pay out all liabilities when it liquidates in the seventh year.

Losses and Claim Payout: For simplicity, we assume that the parent's expected loss for a year is consistent at ¥40 million and the claim payout is also consistent at 25%, 50%, and 25%. This payout implies that the total loss accrued for a given year is ¥40 million, but the actual claim payments are its 25% for the year that the loss occurred, 50% for the next year, and 25% for the third year because many losses take time to settle. The claims are assumed to be paid out over three years. All the liabilities for claims that occurred over the four years of captive operation are therefore settled and all losses are paid through the sixth year before the captive is liquidated in the seventh year.

Net Premium Written: The parent pays insurance premiums to the local insurer at the Japanese rate. The premiums are calculated by combining expected loss amounts and underwriting expense. The underwriting expense we used for premium values is referenced in the *Statistics of Japanese Non-Life Insurance Business (2012),* which provides the industry-wide underwriting expense ratio of 33.8% for 2011. The net premium written (NPW) charged to the risk can be calculated given the underwriting expense ratio (UER) by the following calculation:

$$NPW = \frac{1}{1 - UER}$$

The net premium written for the expected loss of ¥40 million is approximately ¥60.4 million. This premium is assumed to be consistent over the period of the captive operation. The net premium written paid to the captive is translated into the local currency at the recent exchange rates: ¥131.22 per Euro and ¥155.11 per British pounds as of September 4, 2013 (*Yahoo Finance*).

Initial Capitalization and Costs of Captive Operation: For initial capital investments transferred into the captive, we used a minimum value for the required capitalization rate of domicile as presented in Table 1. The application fee, incorporation fee or initial fee in addition to maintenance fees for registrations are also presented in Table 1. Other operational expenses including management fees,

attorney fees, actuarial fees, other servicing costs are 15% of the net premium income, a practical best estimate.

Investment Return: The investment return as a percentage of investment income on an investment asset that we used in this study is referenced in the *Statistics of Japanese Non-Life Insurance Business (2012),* which provides the industry-wide interest income, dividend income and investment assets. We used an averaged value by dividing the total interests and dividend incomes by the total investment assets of the industry-wide values. The average value yields 1.91%.

Discount rate: To obtain a present value, a discount rate is required. The two major sources of risk in cash flows are derived from investment returns and the random occurrence of loss events (Doherty, 1985). We consider that insurance losses are uncorrelated with the market risk and therefore no systematic risk is present. Investment income with respect to a captive has a certain level of systematic risk and this increases the discount rate above the risk-free rate. The risk-free rate that we used is the Japanese Government 10-year maturity bond annual yield obtained by Thompson Reuters' *Data Stream.* Over the past ten years, this has yielded an annual average of 1.309%. The weighted average rate for discounting that we used is 2%.

Financial Forecasting and Net Present Values: Based on the base case scenario, but using different values for costs and regulatory requirements, we create pro-forma financial statements for a captive established in each domicile. First, we used identical expected loss values, claim payouts, and reserves but in the local currency units. A pro-forma income statement is created followed by a pro-forma cash flow statement for a captive and the parent. A terminal value is identified from the captive's cash flow statement and this is inserted into the parent's cash flow statement. We can determine the value by a captive based on the expected cash flows of the parent's cash flow statement. We also determine a net present value of the parent using traditional insurance. The net present value of the parent using traditional insurance is then subtracted from the net present value of a captive to obtain the incremental value being created by a captive.

IV. Results and Discussion

Tables 2 to Table 6 illustrate a comparison of the expected financial statements of a Guernsey captive and the cash flows of the parent with respect to the use of traditional insurance.

We found that in all cases that net present values become positive, which indicates that captives will bring the parent company positive net present values. We conclude that the establishment of captives results in incremental value creation that

Table 2 The Expected Value of Claim Payments by a Guernsey Captive

	The Year that the Claim was Paid in Pounds					
	1	2	3	4	5	6
The Year the Loss Ocurred:						
1	64,470	128,941	64,470			
2		64,470	128,941	64,470		
3			64,470	128,941	64,470	
4				64,470	128,941	64,470
Total Claims Paid:	64,470	193,411	257,882	257,882	193,411	64,470
Reserve:	193,411	257,882	257,882	257,882	64,470	0

Table 3 Pro-forma Income Statement of a Guernsey Captive

	Year (unit in pounds)			
	1	2	3	4
Premiums earned:	389,549	389,549	389,549	389,549
Expenses:				
Initial set–up cost	5,054			
Annual fee	5,040	5,040	5,040	5,040
Operating costs	58,432	58,432	58,432	58,432
Total costs	68,526	63,472	63,472	63,472
Incurred losses:				
Paid losses plus	64,470	193,411	257,882	257,882
Changes in reserve	–193,411	–64,470	0	0
Underwriting income:	**63,141**	**68,195**	**68,195**	**68,195**

cannot be achieved through traditional insurance.

The value that is created as a result of establishing a Guernsey captive rather than purchasing traditional insurance is calculated by subtracting the net present value of purchasing insurance from the net present value of a Guernsey captive. For example, in Guernsey, the net present value of the captive is negative £859,025 (see Table 5) whereas purchasing insurance is negative £993,366 (see Table 6). The incremental value is the subtraction of negative £993,366 from negative £859,025, which gives a positive value of £134,342 or ¥20,837,721.

A similar process is conducted for a Luxembourg captive and a Dublin captive to compare captives and traditional insurance. Several values in the tables reflect the differences in regulatory requirements, tax codes, and costs. The incremental values that are created by a Luxembourg captive and a Dublin captive are also positive, € 126,238 or ¥165,565,004 and €116,865 or ¥15,335,040, respectively.

We found that, of the three domiciles, the Guernsey captive provides the parent company with the highest expected value (¥20,837,721), followed by Luxembourg

Table 4 Cash Flows of a Guernsey Captive

	Year (unit in pounds)						
	1	2	3	4	5	6	7
Capital:							
From previous year		1,179,874	1,341,303	1,441,345	1,543,298	1,379,364	1,341,240
+ Premium	389,549	389,549	389,549	389,549	0	0	
+ Surplus	900,000	0	0	0	0	0	
Expenses:							
Initial set-up costs	5,054	0	0	0	0	0	
Annual fee	5,040	5,040	5,040	5,040			
Operational costs	58,432	58,432	58,432	58,432			
Total expenses:	68,526	63,472	63,472	63,472			
Investment funds at the beginning of year:	1,221,023	1,505,951	1,667,380	1,767,422	1,543,298	1,379,364	
Investment income:	23,322	28,764	31,847	33,758	29,477	26,346	
Losses paid:	64,470	193,411	257,882	257,882	193,411	64,470	
Capital at the year-end before tax:	1,179,874	1,341,303	1,441,345	1,543,298	1,379,364	1,341,240	
Taxes:							
On earnings	0	0	0	0	0	0	
On investment:	0	0	0	0	0	0	
Total Taxes	0	0	0	0	0	0	
Capital at the year-end after tax	**1,179,874**	**1,341,303**	**1,441,345**	**1,543,298**	**1,379,364**	**1,341,240**	

Table 5 Cash Flows of Parent in Japan for a Guernsey Captive and its Value

	Year (unit in pounds)						
	1	2	3	4	5	6	7
Premium to captive	–389,549	–389,549	–389,549	–389,549			
Fronting fee payments	–19,477	–19,477	–19,477	–19,477			
Surplus contribution	–900,000	0	0	0			
Value of tax shield on premium	136,342	136,342	136,342	136,342			
Consolidated tax to be paid in Japan	–22,099	–23,868	–23,868	–23,868			
Terminal value of captive							1,341,240
Total	**–1,194,784**	**–296,553**	**–296,553**	**–296,553**	**0**	**0**	**1,341,240**
NPV of a Guernsey captive @ the discount rate	**–859,025**						

Table 6 Cash Flows of Parent for Insurance Purchase and its Value

	Year (unit in pounds)			
	1	2	3	4
Insurance premium	–389,549	–389,549	–389,549	–389,549
Value of tax shield on insurance premium	136,342	136,342	136,342	136,342
Total	**–253,207**	**–253,207**	**–253,207**	**–253,207**
NPV of insurance @ a risk free rate	**–993,366**			
Value created by a captive	**134,342** pounds			
	20,837,721 JPY			

Table 7 The Value that is Created by a Captive

Domicile	Value created by a captive	
	in local currency	in JPY
Guernsey	134,342	20,837,721
Luxembourg	126,238	16,565,004
Dublin	116,865	15,335,040

Table 8 Sensitivity Analysis on a Guernsey Captive

1) Investment return	0.91%	1.91%	2.91%
Value added by captive	¥8,043,851	¥20,837,721	¥34,273,524
Difference	(¥12,793,870)		¥13,435,803
2) Operational costs % of NPW	14%	15%	16%
Value added by captive	¥22,353,760	¥20,837,721	¥19,321,683
Difference	¥1,516,039		(¥1,516,038)
3) Expected loss	JPY 39 million	JPY 40 million	JPY 41 million
Value added by captive	¥20,236,671	¥20,837,721	¥21,438,772
Difference	(¥601,050)		¥601,051

(¥16,565,004) and Dublin (¥15,335,040). Please see Table 7 for this comparison. Guernsey and Dublin are treated as "tax haven," while Luxembourg is not. A negative impact from the payment of consolidated tax in Japan on the net income of a Guernsey captive does not significantly affect the value in comparison with the Luxembourg captive, where the parent does not need to pay similar taxes. The result of our ranking based on the value creation is consistent with the world ranking of captives with respect to the number of captives (see Table 1).

We conducted a sensitivity analysis of value creation by a Guernsey captive by changing certain important factors: investment return, operational costs of a captive and expected loss. The sensitivity analysis is presented in Table 8. Similar results are obtained for a Luxembourg and a Dublin captive.

The sensitivity analysis in Table 8 demonstrates that a positive change in a single percentage point in investment returns brings a significant increase in positive value (about ¥13 million) to the company, whereas a single negative percentage change will have a significant negative impact. Lowering operational cost by a single percentage point will yield approximately ¥1.5 million. These two sensitivity results suggest that the captive creates more value by lowering the operational costs while maximizing investment returns. The results also demonstrate that investment performance has a more significant impact on value than a reduction in operational

costs.

The sensitivity results with respect to expected losses demonstrate that, unexpectedly, the larger the expected loss the more value is added. The reason for this might be because net premium written is calculated to be higher when the expected loss is higher. This reasoning is demonstrated by a comparison of the value added when we lower the loss amount while maintaining the premium levels. For example, if we maintain the premium and lower the loss amount to ¥39 million from ¥40 million, the value added at a Guernsey is approximately a positive ¥2.4 million, in contrast to the negative value in the aforementioned sensitivity result. We can therefore argue that the captive adds more value to the company if the premium volume is higher. A captive bring more value to a company if it collects larger premiums from its parents and/or sister companies.

V. Conclusion

This study investigated to what extent a Japanese corporation can create value by establishing a pure captive insurer in a major European captive domicile. The domiciles that were examined in this study were Guernsey, Luxembourg, and Dublin. We used recent data to develop a realistic base case scenario that considered regulatory requirements, costs, and taxes in Japan in addition to the domicile locations. We created expected values in pro-forma financial statements that spanned a seven-year time period assuming the loss amount is constant. We applied discount rates from recent Japanese market information to calculate net present values. We subtracted the net present value of purchasing insurance from the net present value with the captive to determine the value added from the establishment of a captive in Europe.

Our base case scenario for the captives in these domiciles demonstrates that the Japanese captives create incremental positive value to the parent. A Guernsey captive brings the largest net present value, followed by a Luxembourg captive, and then a Dublin captive. This study included a sensitivity analysis on investment returns and operational costs and losses. The sensitivity analysis demonstrates that the captive creates more value with respect to investment performance rather than by lowering operational costs. We also find that a captive bring more value if it collects large premiums from its parents and/or sister companies. The greater the premium the parent pays to a captive the greater the value the captive creates. Our results are consistent with the previous literature such as Maeda et al. (2011), which concludes that Japanese captives have the capability to generate value.

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References

Adams, M. and D. Hillier, "The Effect of Captive Formation on Stock Returns: An Empirical Test from the UK," *Journal of Banking and Finance,* 24(11), 2000, pp.1787–1807.

Bawcutt Paul updated by Colin Hadley, "European Captive Scene," *International Risk Management Institute's Risk Financing Volume I,* 2011, IV. J. I–11.

Business Insurance, *"Special Report: Captives Grow as Economy Recovers,"* March 11, 2013 issue, pp.19–24.

Captive Insurance Companies Association, *"CICA: 40 years of captive leadership,"* Newton Media Limited, 2012.

Diallo, A. and S. Kim, "Asymmetric Information Captive Insurers' Formation, and Managers' Welfare Gain," *Journal of Risk and Insurance,* 56(2), 1989, pp.233–251.

Doherty, Neil, *"Corporate Risk Management-A Financial Exposition,"* McGraw Hill, 1985.

Goto, Kazuhiro, "Risk Management and Insurance (in Japanese)," Songai Hoken Jigyou Kenkyusho, 2005.

Ikeuchi M., Y. Maeda and F. Sugino, *"Japanese Corporations and Captives: Theory and Practice of Risk Financing (in Japanese),"* Hoken Mainichi Shimbun, March 2012 to February 2013.

International Risk Management Institute Inc., *"IRMI's Risk Financing, Strategies for Insurance Cash Flow and Alternative Funding,"* Appendix B: Non-US Domiciles, 2013.

KPMG Japan, *"Foreign Dividend Exclusion,"* http://www.kpmg.or.jp/knowledge/glossary/tax_fde.html, Web Accessed Sept 3, 2013 10:53 AM.

Lenrow G. I., J. H. Brainerd, J. Hall and M. S. Heritz, "Captive Insurers: Pitfalls and Practicabilities," *Best's Review,* Vol.82, 12, 1982.

Luxembourg for business, http://www.luxembourgforbusiness.lu/headquarters, Web Accessed Sept 3, 2013 10:53 AM.

Maeda, Yuji, "Risk Financing through Captive Insurer (in Japanese)," *Journal of Insurance Science of Japan,* Number 590, 2005, pp 72–89.

Maeda, Yuji and Y. Sakai, "Risk Financing through Captive Insurer: Economic Influences of Captives on Corporations and the First Domicile in Japan," *Journal of Risk Research,* Vol.10, Issue 6, 2007, pp 793–803.

Maeda, Y., Y. Suzawa and N. Scordis, "Shareholder Value: The Case of Japanese Captive Insurers," *Asia-Pacific Journal of Risk and Insurance,* Volume 5 Issue 1 Article 3, 2011.

Maeda, Yuji. "Demand for Captives and Domiciles: Why are Countries and States Rushing into Captives?" *Kwansei Gakuin University Social Sciences Review,* Vol.17, 2012, pp 45–62.

Morimiya, Yasushi, *"Captive Research (in Japanese),"* Songai Hoken Jigyou Kenkyusho, 1997.
Scordis, N. and J. Barrese and M. Yokoyama, "Conditions for Captive Insurer Value: A Monte Carlo Simulation," *Journal of Insurance Issues,* 30(2), 2007, pp.79–101.
Scordis, N. and M. Porat, "Captive Insurance Companies and Manager-Owner Conflicts," *Journal of Risk and Insurance,* 365(2), 1998, pp.319–330.
Stewart, F. Hale, *"U. S. Captive Law: Insurance Law,"* iUniverse, 2010.
Yoshizawa, Takuya, *"Corporate Risk Finance and Insurance (in Japanese),"* Chikura Shobo, 2001.