

CORPORATE RISK MANAGEMENT: THE FINANCING OF INSURANCE RISKS

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Introduction²

Both as a concept and as a decision-making process within the corporation, risk management arose within an insurance context. It emerged in the 1950's from a need by companies to systematize their insurance buying. First, insurance markets have existed for many years and corporations have had a choice whether to transfer risks onto these markets or to retain the risks within the corporation (self-insure). Second, because the causes of insurable risks, or their potential severity of loss, often entailed human error or malfeasance, such losses were to some degree controllable and thus management began to consider systems for loss prevention and later systems for the economic control of losses if they should occur. There were incentives to do this, since insurance prices tended to reflect the claims experience of the corporation.

Development of corporate insurance products.

Over time, insurance markets have widened the range of products that they offer. If one looks at the dynamics of new product development in insurance, one sees that insurance brokers have played a key role, since as insurance risk

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intermediaries they provide an interface between corporate buyers of insurance and insurance suppliers. There has been a pattern in evolution of the types of risk that can be insured. Earlier types of insurance were mainly concerned with the protection of physical assets, such as buildings, plant and equipment, goods-in-transit and vehicles of transportation. Over time, insurance contracts broadened in their purpose, from protecting assets to protecting corporate income against certain causes of loss. One example of this product development has been the growth of business interruption (consequential loss) insurance, whereby corporations can insure against the loss of corporate income, and the associated expenses of continuing a disrupted operation, caused by physical damage, accidents or other insurable contingencies. Similarly, the development of credit insurance, whether relating to domestic or export sales, afforded a means of protecting, or stabilizing, the corporate income stream. With the growth of a more litigious society, reinforced by safety and environmental impairment legislation, liability insurances have grown in scale and scope, and the corporate income (and net worth) of a corporation could be protected from legal suits for negligence from customers, employees or a variety of third parties. In respect of liability of employers to their employees, legislation has been introduced in many countries which requires the compulsory purchase of insurance cover. There are clear limits to the extent that insurance can protect or stabilize income streams and this raises the issue of what types of risk are insurable, which will be discussed later.

One additional class of insurance that is purchased by the firm are group insurances for the benefit of employees, e.g. group pension schemes, group disability and accident schemes and group health insurance schemes. These insurances are not directly concerned with protecting the assets or the corporate income of the firm since they represent benefits to employees. Nevertheless, they are insurances purchased by the corporation and can be considered as providing an indirect benefit to the firm, since they are likely to encourage corporate loyalty and possibly encourage greater productivity.

The Table 1 lists the main types of insurance that a corporation can currently purchase.

Table 1

<u>TYPE OF CORPORATE RISK</u>	<u>AVAILABLE INSURANCE PRODUCTS</u>
<i>Property and financial risk exposures:</i>	
Loss or damage to buildings, inventories, machinery and equipment.	Property Insurance
Loss of business profits following physical damage or other accidents	Business Interruption Insurance (Consequential Loss Insurance)
Loss or damage to goods-in-transit	Marine Cargo Insurance
Loss of financial assets e.g. cash, securities, electronic transfers, internet transactions	Financial or Pecuniary Insurances
Losses due to non-payment by customers etc	Credit Insurances
Government expropriation of foreign assets, blocked currency etc.	Political Risk Insurance
<i>Liability risk exposures:</i>	
Injuries to employees at work	Employer's Liability (Workman's Compensation)
Faulty products and services	Product Liability Insurance
Legal actions taken by various third parties	Public Liability Insurance
Negligence of directors and senior management in performance of their duties	Directors and Officers Insurance
Losses resulting from negligence or omissions in providing professional advice	Professional Indemnity / Errors & Omissions Insurance
Payment of major legal expenses	Legal Expenses Insurance
Death of key executive(s) or employee(s)	Key-man Life Insurance

Other risk exposures:

Motor vehicles: individual or fleets	Motor Insurance
Ships, Boats etc	Hull Marine Insurance
Risks facing individuals as employees	Travel, Accident and Health Insurances
Kidnap of employees	Kidnap and Ransom Insurance

Continued growth of captive insurance companies.

A growing phenomenon since the 1960's has been for larger corporations to own their own in-house insurance companies or so-called captive insurance companies. A key impetus has been the need of multinational corporations to coordinate their insurance buying across the global enterprise. It is estimated that in 1999 there were over 4,200 captive insurance companies worldwide, with a great majority of the Fortune 500 corporations having captives. Most of these captive insurance companies are wholly owned subsidiaries, but some are organised on a group ownership basis. This growth of captives has also been stimulated from time to time by limitations in the supply of insurances in certain markets, or when the supply price of insurance has risen sharply. Centralized insurance buying allows corporations to exploit their buying power and access the greater flexibility of the international reinsurance market. Tax considerations have always played some role in the location of captives in off-shore locations, since a favourable tax regime allows the build-up of contingency reserves to fund self-insured losses more effectively. The less onerous regulatory and capital requirements to be found in many offshore locations have also been a factor. In the face of attempts by the tax authorities in North America, Europe and a number of other jurisdictions to reduce the general use of offshore tax havens, there has been some move towards the formation of captive insurance companies onshore. This can be seen within Europe with the growth of Dublin and Luxembourg, and in Vermont in the United States. However, off-shore locations still remain the main domicile for captives, with Bermuda being the largest.

Although demand driven, the growth of captives has also been stimulated by the active promotion of off-shore and on-shore locations themselves. One can observe a clientele effect between the country of origin of a head office of a multinational (or its corporate treasury headquarters) and particular captive domiciles. North American companies have tended to prefer locating their captives in Bermuda and the Caribbean; European corporations have tended to favour captives with a domicile in Europe, such as Guernsey, Isle of Man and Dublin; Pacific Rim corporations have a preference for Singapore, Hong Kong or Labuan. This clientele effect has arisen in part because of the physical proximity to head offices facilitating easier access for board meetings, but it is also because these captive locations have set up favourable double tax agreements with particular countries which have encouraged this clientele effect.

Limitations of insurance markets.

Although insurance markets have widened their product range over time, there are limits to the types of corporate risks that can be insured. Some are determined by regulatory factors, and some by the nature of insurance in itself. In the last analysis, what types of insurance can be supplied by an insurance company is determined by regulation. National insurance legislation in individual countries specifies the types of insurance or risk transfer products that an insurance company can offer. While insurance legislation has been widening the scope of what insurers can supply, in the face of greater deregulation of financial services, limitations still remain. For example, the supply of a derivative contract would not be perceived as being insurance under most national insurance regulations and hence could not be supplied directly by an insurance company. Similarly, commercial or business risks of an enterprise are usually considered as not being insurable.

Even within the scope of what insurance regulation allows, there are also market limitations. First, there must be clarity within the risk transfer relationship such that there is a clearly defined legal trigger of a potential loss at a point in time and the contract itself must be enforceable. Second, insurance can only be supplied in a sustainable way if it can be adequately priced: an insurer must have sufficient

information to estimate the underlying loss distributions. One particular aspect of a pricing problem is adverse selection, whereby the buyer has more information about the probability or severity of loss than the insurance company itself. This is more likely to exist in commercial insurance than personal insurances, since the corporate buyer is usually well informed. If the degree of adverse selection is high, then supply will be curtailed.

Third, insurance supply can be inhibited if there is undue moral hazard, since the buyer of the insurance has less incentive to take reasonable care or to invest in loss prevention measures. Moral hazard exists to some degree in all insurance contracts, but this is reduced in practice through contract design, such as the use of deductibles and profit share incentives.

At the level of the global insurance market, there is a limit to its capacity to absorb extremely large losses, mainly from natural catastrophes, earthquakes, windstorms etc. Even though the insurance industry has an effective international mechanism for risk sharing through reinsurance (insuring with other insurance companies), the capacity of the global insurance market is in the last analysis restricted by the size of its capital base. The capital base of the world's non-life insurance and reinsurance was about \$400 billion in 1999, which although large is still significantly smaller than the size of global capital markets.

Insurance buying and the cost of capital.

One constraint which the insurance industry faces in the supply of insurance, which affects the cost of insurance in the longer term, is the fact that regulation requires insurance companies to hold capital for solvency purposes. Apart from the additional value of services that insurance companies supply, such as risk assessment, loss prevention, engineering and claims management services, when a corporation purchases insurance it is in effect renting capital from the insurance company to cover the possibility that losses will be higher than expected. Insurance is thus a form of contingent capital. If a corporation did not buy insurance at all, it would have to hold a higher level of working capital to absorb major fluctuations in its cash flows or to hold extra lines of credit with the

banking system. The ability to transfer risks onto insurance companies which have more liquid capital and more diversified risk portfolios means that the cost of insurance is often lower than the cost of holding extra working capital. Similarly, when insurers themselves transfer risks to other insurers (i.e. reinsurance) they are in effect renting the capital of these reinsurers. However, there are diminishing returns to the efficiency of insurance as a form of contingent capital. This is because global reinsurance markets at the end of the risk transfer chain are required by regulation to hold capital just in case it is needed and this cost will over time be passed onto consumers in higher premiums. Moreover, the effective cost of holding capital against large potential losses increases as probability of loss decreases. This point can be illustrated by a simple example. Assume the cost of capital of a large reinsurance company is 12% and the rate of return earned on the investment of the capital funds that it holds to cover large potential losses is 8%. Thus its margin cost of holding capital is 4% per year. But if the probability of drawing down these capital to pay a large aggregate claim is low e.g. 0.1 (once year in every ten years), the effective cost of holding capital is much higher, i.e. it approaches 40% per year. More direct contingent claims on global capital markets through risk securitization may well be cheaper.

The emergence of ART.

During the 1990's, corporations were faced with new ways of financing their insurance risks. These alternative ways of financing these risks compared with conventional insurance contracts is generally referred to as ART, alternative risk transfer. If one excludes insurance placements through captive insurance companies, there are three types of alternative risk transfer: a) finite risk insurances and financial insurances; b) insurance derivatives; and c) securitization of insurance risks directly onto capital markets. The development of ART is attributable to a mixture of factors: a lack of capacity for larger scale risks from time to time, due to an imbalance between the supply and demand of insurance over the underwriting cycle; attempts by progressive insurers and brokers to introduce new types of product for the corporate sector; and investment banks wishing to enter the insurance market to exploit their product development expertise in derivatives and securitization.

Finite risk insurances and financial insurance (reinsurance) are extensions of conventional types of insurance. They differ from conventional insurances in that the contracts are longer, typically with a duration of three to five years, and they often involve a packaging of insurances, including some risks that are difficult to place. In addition, finite risk insurances usually possess a profit sharing feature, such that if the claims costs of the corporation differs significantly from the expected, there is some ex post adjustment in the premium cost. Because of their tailor-made character, finite risk insurances represented an attempt by insurance companies to develop longer term risk-sharing relationships with corporations. As the name implies, there are limits to the degree of risk transfer in finite risk programmes and thus they provide a mezzanine layer of risk financing between self-insurance and conventional insurances.

The second area of ART which evolved in the mid-1990's has been insurance derivatives. For a long time insurance has been seen as a potential area of product development for derivatives, in part because theoretically a conventional insurance contract can be viewed as a put option sold by an insurance company. However, the development of derivatives as a mechanism of risk financing for corporate insurance risks has not developed as hoped for. One key reason for this has been the lack of suitable indices on which derivatives can be based. But there is another reason. Derivatives require that the underlying economic variable being tracked is relatively homogeneous and this requirement is often not met for corporate insurance risks, since they represent a heterogeneous bundle of risks, often reflecting industry specific characteristics. Currently, the only actively traded derivative market is the property catastrophe options market at the CBOT which was set up in 1992. The Catastrophe Risk Exchange (CATEX) in New York was set up 1996 as a loss swap market for insurers, but it has since evolved more into an insurance exchange rather than as an active traded derivative market. These markets were mainly developed to assist US insurance companies to manage their claims experience in the event of large catastrophic losses. They have been of limited use to corporations, even to captive insurance companies of US corporations. More recently, weather derivatives have been introduced based on indices of rainfall, snowfall and temperature. The statistics to estimate the underlying probability distributions on which these indices are based are derived

from meteorological sources. It is clear that these derivatives, although useful, have appeal to only certain types of corporation.

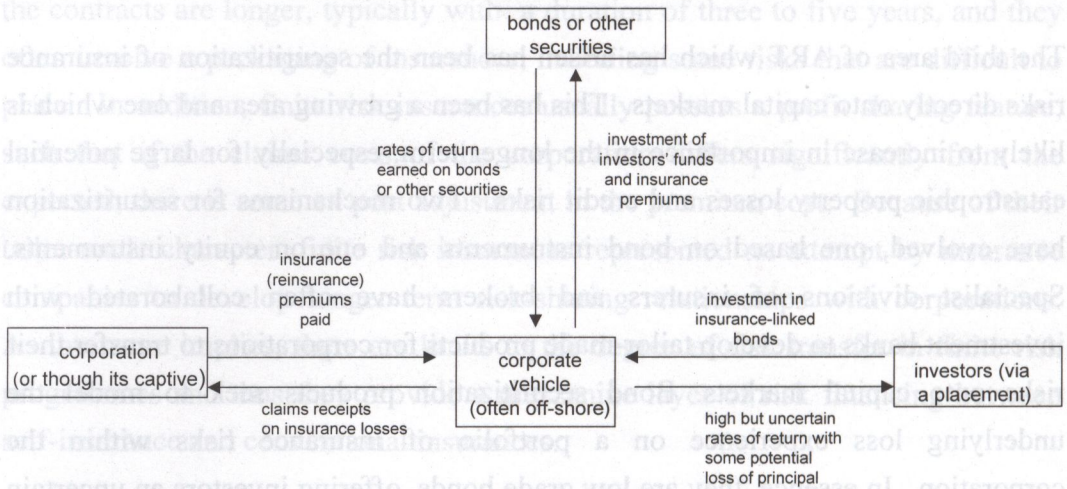
The third area of ART which has arisen has been the securitization of insurance risks directly onto capital markets. This has been a growing area and one which is likely to increase in importance in the longer term, especially for large potential catastrophic property losses and credit risks. Two mechanisms for securitization have evolved, one based on bond instruments and one on equity instruments. Specialist divisions of insurers and brokers have often collaborated with investment banks to develop tailor-made products for corporations to transfer their risks onto capital markets. Bond securitization products seek to model the underlying loss experience on a portfolio of insurance risks within the corporation. In essence, they are low grade bonds, offering investors an uncertain rate of return. Apart from their high expected rates of interest, an attractive feature of these bonds is that they possess a low systematic or 'market' risk since the underlying insurance losses are largely random in nature and hence this can assist in efficient portfolio diversification. Equity-based securitization products are a form of contingent claim on equity markets. Technically, they are a put option on the equity market since the issuer is selling equity onto the market. One theoretical advantage of equity-based instruments is that they are a form of 'just-in-time' capital, since capital is only raised when a large loss takes place. Equity-based products extend the concept of contingent capital which exists in conventional insurance and thus has the effect of removing the capital cost constraint imposed on insurance and reinsurance companies by regulation.

losses take time to crystallise. Moreover, even in the field of property and credit
An illustration of a typical mechanism of a risk securitization through a bond issue is given in Figure 1.

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distribution of potential losses by size. This is displayed in Figure 3. At lower
levels of loss (low severity and high frequency) there is likely to be self-insurance
and then possibly some form of finite risk insurance cover. At a higher level of
loss severity, a conventional insurance programme will continue to play an
important role, or a reinsurance programme if risk transfer is through a captive
insurance company. Risk securitization has its market position at the top end of
the loss severity spectrum.

Fig 1

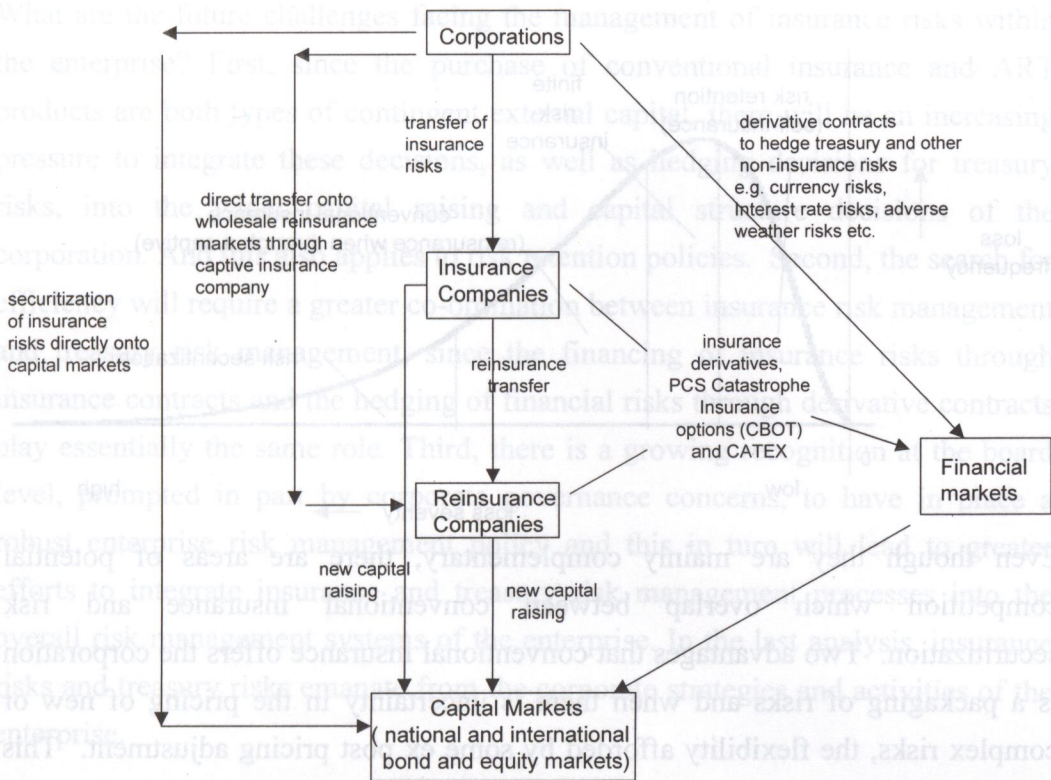
Example of an insurance risk securitization through a bond issue



Risk securitizations can be expected to grow in the future, with some switch from the bond-based instruments to the equity-based instruments, since the risk appetite of equity markets is higher than that of bond markets. One factor that has limited the growth of risk securitization has been the softness of the international insurance and reinsurance markets since the mid 1990's. The cost of insurance and reinsurance has been below its long term economic cost, mainly because of market oversupply. This has meant that the cost of risk securitization products have appeared high when compared to the cost of underpriced insurance and reinsurance contracts. A more appropriate balance between the risk securitization and conventional insurance will arise when insurance markets rise to their more economic level, as the cycle in insurance prices corrects itself.

The risk transfer network facing the corporation is depicted in Figure 2.

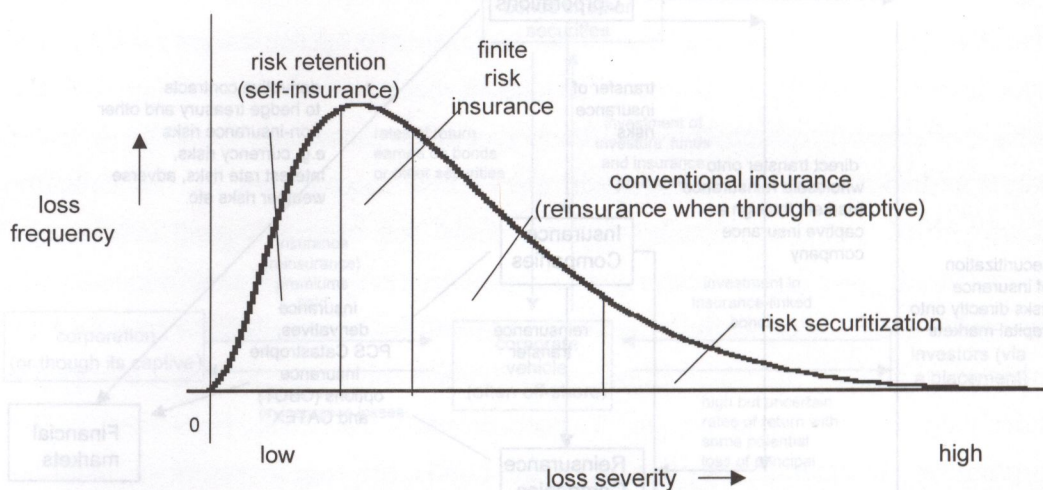
Fig 2
Risk transfer network for corporate risks



Links between conventional insurance and ART.

Alternative Risk Transfer (ART) is a misleading expression. From the standpoint of a corporation, conventional insurance and ART are more complementary than substitutes. Risk securitization products are relevant to property and credit risks but less so for liability insurances which are longer term in nature and where losses take time to crystallise. Moreover, even in the field of property and credit insurances, there are economies of scale in issuing capital market products. One can look at the optimal financing of a corporation's insurable risks as lying on a distribution of potential losses by size. This is displayed in Figure 3. At lower levels of loss (low severity and high frequency) there is likely to be self-insurance and then possibly some form of finite risk insurance cover. At a higher level of loss severity, a conventional insurance programme will continue to play an important role, or a reinsurance programme if risk transfer is through a captive insurance company. Risk securitization has its market position at the top end of the loss severity spectrum.

Figure 3
Spectrum of Risk Financing



Even though they are mainly complementary, there are areas of potential competition which overlap between conventional insurance and risk securitization. Two advantages that conventional insurance offers the corporation is a packaging of risks and when there is uncertainty in the pricing of new or complex risks, the flexibility afforded by some ex post pricing adjustment. This contrasts with the more clear-cut risk transfer through capital markets, where the pricing has to be done ex ante and there is no scope for any ex post adjustments. Moreover, insurance companies offer a range of value added services in terms of risk assessment, engineering services and claims management experiences. Capital products are pure risk transfer with little value added services. Hence, the corporation faced with a choice will at the margin have to make trade-offs on the relative importance of each. In general, corporations that for organisational reasons wish to outsource more of insurance risk financing management are more likely to look for a more conventional insurance solution. On the other hand, corporations with large risk management departments are more likely to wish to unbundle their risks and provide risk management services internally and thus are more likely to go for securitization solutions. The large international insurance and reinsurance groups are themselves developing hybrid products of conventional insurances and risk securitization which they can offer to corporate clients, especially smaller corporations that are too small to securitize their risk themselves or which do not have top credit ratings.

Conclusion

What are the future challenges facing the management of insurance risks within the enterprise? First, since the purchase of conventional insurance and ART products are both types of contingent external capital, there will be an increasing pressure to integrate these decisions, as well as hedging decisions for treasury risks, into the wider capital raising and capital structure decisions of the corporation. And this also applies to risk retention policies. Second, the search for efficiency will require a greater co-ordination between insurance risk management and treasury risk management, since the financing of insurance risks through insurance contracts and the hedging of financial risks through derivative contracts play essentially the same role. Third, there is a growing recognition at the board level, prompted in part by corporate governance concerns, to have in place a robust enterprise risk management policy and this in turn will lead to greater efforts to integrate insurance and treasury risk management processes into the overall risk management systems of the enterprise. In the last analysis, insurance risks and treasury risks emanate from the corporate strategies and activities of the enterprise.

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