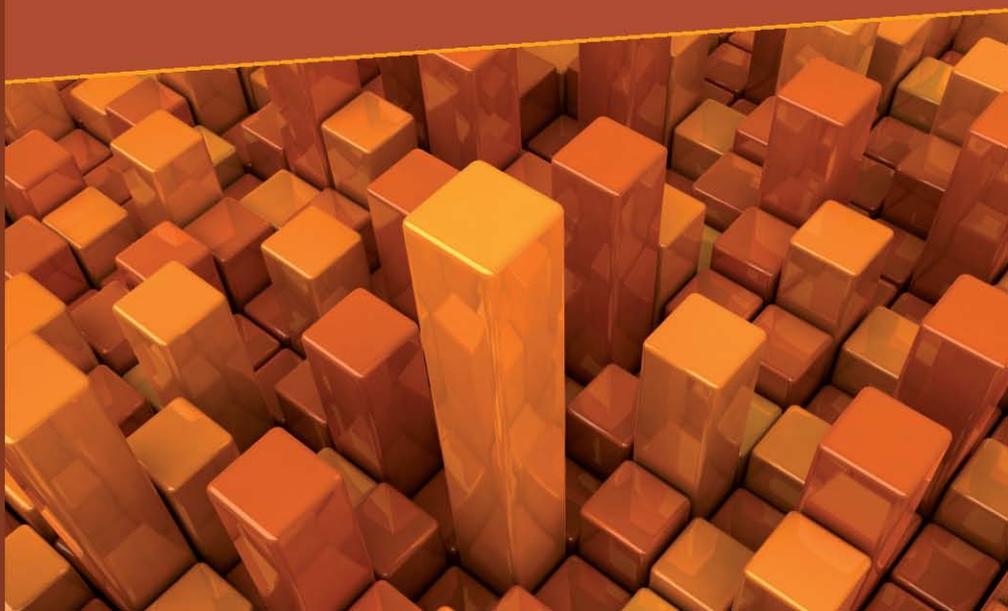


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Investing in Insurance Risk

Insurance-Linked Securities
— A Practitioner's Perspective

BY ALEX KRUTOV



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About the Author

Alex Krutov is managing director of Century Atlantic Capital Management, where he developed an investment strategy across all types of insurance-linked securities (ILS) and collateralised reinsurance, as well as portfolio optimisation and risk management techniques for ILS and reinsurance. Prior to joining the firm, he was president of Navigation Advisors LLC, a New York management-consulting firm focused on the insurance industry, capital markets, and general management. Prior to founding Navigation Advisors, Alex was employed in a variety of roles, including officer-level positions, at companies such as Transatlantic Reinsurance Company, American International Group (AIG), Reliance Group, UBS Warburg, and AXA Financial.

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Preface

The title of this book, *Investing in Insurance Risk*, might sound strange to an investor unfamiliar with securities linked to insurance. Any investment involves risk, so investors are not averse to accepting it; but risk is not what we generally want to invest in. We want to invest in securities that will likely generate healthy returns. When investing in a security, we pay for its probabilistically distributed future return. The uncertainty associated with the investment return, including the chance of the return being negative, is the risk we assume. In fact, many investors actively seek risky assets to invest in, as long as they believe they will be properly compensated for assuming those risks.

While risk is an integral part of investing, we generally do not think in terms of “investing in risk.” For securities whose performance is directly linked to insurance risk, however, the focus on the risk is so great and its nature so unusual, that it does make sense to speak in terms of investing in insurance risk. The insurance industry is concerned with measuring and managing risk, and so are the investors in securities with embedded insurance risk.

INSURANCE-LINKED SECURITIES

Any investment in traditional securities – such as common stock or bonds – of an insurance or reinsurance company may be seen as an investment in insurance risk, if we define insurance risk as simply any risk to which insurance companies are exposed. In addition, insurance securitisation has created a new asset class – referred to as insurance-linked securities (ILS) – that affords investors exposure to a more “pure” form of insurance risk. Examples include the risks of catastrophic insured losses, from hurricanes and earthquakes to those resulting from spikes in mortality rates due to pandemic events. This type of risk does not have to be associated with a catastrophic event, though; potential improvements in human longevity, for example, could have a severe financial impact on insurance companies selling annuity products. Longevity improvements are not a catastrophic event *per se*, but the financial consequences can be catastrophic. Such risks, although labelled

insurance risks, do not have to originate in the insurance industry. Pension plans are even more exposed to longevity risk than insurance companies. Furthermore, insurance risk transferred to the capital markets does not have to involve any catastrophic component at all; as is the case when an insurance company transfers some of its pure insurance risk to investors simply to use its capital more efficiently or to reduce earnings volatility.

Insurance risk lacks a clear, unambiguous definition, and so do insurance-linked securities. The best known types of insurance-linked securities – catastrophe bonds and life insurance settlements – are clearly in the ILS category, but some others, such as weather derivatives or collateralised reinsurance, can reasonably be seen as not belonging to this asset class.

Insurance-linked securities include a number of risks that can be highly correlated to traditional financial assets. At the same time, however, the “pure” insurance risk typically has low correlation with the rest of the capital markets. This low correlation is one of the primary reasons investors have been watching this asset class with interest. The overall degree of correlation of insurance-linked securities with the markets can vary; for example, the correlation of properly structured catastrophe bonds is much lower than that of embedded value securities.

INSURANCE INDUSTRY

Even though not all “insurance risk” originates with insurance companies, the vast majority of it does. Some of the very first types of insurance-linked securities were catastrophe bonds and catastrophe insurance derivatives. Their purpose, as is the purpose of most insurance-linked securities, is very simple: to transfer to the capital markets the risks that are too big for the balance sheets of insurance companies, or the risks that can be retained but whose transfer allows insurance companies to use their capital in the most efficient way. ILS such as reinsurance sidecars, value-in-force securities or securities designed to transfer excess reserves to the capital markets serve the same general purpose, with an emphasis more on capital management than on true risk transfer.

Insurance-linked securities serve as a link between the insurance industry and the capital markets. They provide insurance companies with new options in managing their risk and using their capital efficiently. Such direct transfer of insurance risk to the capital markets might not always be the best solution for insurance companies; however, it gives insurance companies another important tool that can be used in both risk management and capital management.

At the same time, most of the insurance industry has been unhappy with the development of such types of insurance-linked securities as life settlements and has seen this as “cannibalisation” of life insurance. Despite the initial negative reaction, it is likely that the industry will adjust to this development and might ultimately see it as a positive, since the transferability adds value to the life insurance product and can thus lead to growth in its sales. All insurance-linked securities make the markets more efficient, which is a positive for all parties.

INVESTORS

Investors never stop their search for yield. The search has intensified with the need to make up for the losses incurred during the 2008–2009 financial crisis and the realisation that traditional investment approaches are not going to accomplish this goal. The urgency of the search for sources of extra return is compounded by the growing emphasis on capital preservation and reduction in investment risk. These contradictory goals – maximising return and minimising risks – have always characterised the reality of investing. This duality has not changed, but the urgency of the first and the emphasis on the second have increased.

As unrealistic as it is, the desire to achieve high investment returns while taking low investment risks is as great as it has ever been. The Madoff affair demonstrated how very sophisticated investors might be willing to believe in the possibility of high returns delivered consistently, year after year, with very little volatility. People believe what they want to believe. The financial crisis of 2008–2009, however, brought fear to the markets, and the focus shifted from high returns to simple capital preservation. That fear remains, but we are now back to a situation where investors want high returns. The potential of high investment returns does exist, but in this quest there is a price to be paid in the form of greater risk. The choice of the right tradeoff between risk and return is as difficult as it has ever been.

In this environment, assets that have low correlation with the rest of the financial markets should be particularly attractive to an investor. Insurance-linked securities can serve the objective of capital preservation and contribute to portfolio diversification. While the common characterisation of insurance-linked securities as zero-beta assets is incorrect, many of them do have only weak correlation with the capital markets. The financial crisis demonstrated that for most types of ILS the relatively low degree of correlation with traditional financial assets stays low even under extreme circumstances, in the “tail” of the probability distribution where standard correlation assumptions tend to break down.

Insurance-linked securities, in particular those with a low degree of correlation with the financial markets, can be seen as a source of exotic beta. The exotic beta – the return associated with exposure to insurance as a risk factor only weakly correlated with the traditional markets – is really another form of alpha in the investment return. The ability to generate abnormal returns through this factor exposure should remain as long as the market inefficiencies exist. In insurance-linked securities, these inefficiencies are particularly great and likely to persist, in part due to the low level of investor expertise in the analysis of insurance risk. This situation makes insurance-linked securities all the more attractive to investors who currently do not have the required expertise, as they can expect to generate sizable excess returns.

BOOK SCOPE AND STRUCTURE

This book has the simple objective of describing insurance-linked securities and insurance risk transfer from a practitioner's perspective – a viewpoint that is particularly important in a market that is new and still evolving. The book is designed to be a resource to those active in the marketplace, while also aiding basic understanding of the topics for those new to the field.

The scope was chosen to be very broad and to include all types of insurance-linked securities. While some hold the view that certain types of the securities described here do not belong in this category, choosing the broadest possible definition can only help in understanding the investment potential of ILS.

The book consists of five parts. Part I, "Introduction to Investing in Insurance Risk", provides an outline of the ways to obtain insurance exposure in investment portfolios. Insurance risk in general is discussed, after which "pure" insurance risk is defined and described. A brief overview of direct investment in insurance risk then follows, outlining the main types of insurance-linked securities. Motivation of both transferors and transferees of securitised insurance risk is also examined.

The next part, "Investing in and Modelling Securities Linked to Property and Casualty Risk", looks at the main types of securities used for transferring property and casualty insurance risk to the capital markets. It starts with an overview of cat bonds, which are the most widely known type of insurance-linked securities. Part II also describes derivative and derivative-type products linked to catastrophic events. An introduction to modelling catastrophe risk embedded in these securities is provided to help the investor to better understand their risk profile. Other types of insurance-linked securities, such as reinsurance sidecars and industry loss warranties,

are examined. A brief overview of weather derivatives is provided. Credit risk and other issues relevant to the analysis of property and casualty insurance-linked securities are also analysed.

Part III, “Securities Linked to Value-in-Force Monetisation and Funding Regulatory Reserves”, deals with insurance securitisations where the primary purpose is other than the transfer of insurance risk. Some such securitisations monetise the expected future cashflows from a book of insurance business, while others have to do with regulatory or accounting arbitrage. Not all of them fall under the strict definition of securitisation; in many cases, monetisation is the proper characterisation.

The following part, “Investing in and Modelling Securities Linked to Mortality and Longevity Risk”, describes securities that transfer to the capital markets the risk of mortality and longevity being different from expectations. Extreme mortality bonds, for example, are tied to the risk of a sharp spike in mortality. Derivatives linked to mortality risk are introduced, with a focus on catastrophe risk. These securities have a strong resemblance to the catastrophe bonds and catastrophe insurance derivatives described in Part II. Life settlements are discussed next, and it is explained how a life insurance policy can be viewed as a tradable asset. Some of the legal and accounting considerations involving life settlements are also introduced as they are particularly important for investors in life insurance policies. Key concepts in the modelling of mortality and longevity are outlined, with a focus on the issues relevant to analysing insurance-linked securities. Issues that have to do with longevity improvements and stochastic modelling of longevity are also described. Valuation of mortality-linked securities is discussed, with a focus on life settlements. Finally, longevity-linked securities are examined, with consideration of the role they can play in hedging the longevity risk of pension liabilities, life annuities, and portfolios of insurance-linked securities. While the primary emphasis is on longevity derivatives, other longevity-linked securities are discussed as well.

Part V, “Managing Portfolios of Insurance Risk”, deals with portfolio issues in the investment management of insurance risk. This final section reviews key aspects that have been touched upon in the preceding parts of the book, and describes a number of tools for managing securitised insurance risk on a portfolio basis. The first part of the section deals with catastrophe insurance risk. This is followed by a broader analysis of managing portfolios of insurance-linked securities of multiple types. Investment portfolio optimisation is discussed in the context of managing securitised insurance risk.