

Catastrophe bonds term paper sample

[Economics](#), [Insurance](#)



The concept of disaster bonds: Overview of catastrophe bonds

Capital markets experience a number of risks that cause investors huge sums of cash. Catastrophe bonds (cat bonds) are a form of principal-at-risk debt securities issued by insurance companies to investors that allow direct transfer of low-frequency, high-sensitivity risk to capital markets.

Traditionally, debt securities only allowed insurance companies to repay full principal amount upon maturity of the bond. The introduction of catastrophe bonds solved this situation. Upon the occurrence of one or more catastrophe event, the outstanding principal of the insured reduces. Examples of catastrophe events covered by this bond include natural disasters (earthquakes, hurricane), deaths caused by an outbreak of an epidemic and terrorism. In the catastrophe bond, an investor receives a specific amount from holding bonds after a catastrophe incidence occurs within a specified period. Once a catastrophe happens, the investor's principal is passed on to the insurance company, which assists in paying for claims arising after the disaster (Kempler, 2010).

According to Carr and May (2011), investors seeking diversification from equities prefer catastrophe bonds because they have no relationship with macroeconomic variables. Lack of involvement of catastrophe bonds with macroeconomic factors creates greater advantages to investors because they stand a chance of enjoying return upon investments irrespective of the market situation or time of the year. Additionally, a person that invests in the catastrophe bonds enjoys better returns even in times of hard financial crisis. For example, during the 2008 financial crisis, catastrophe bonds offered

positive returns to investors as opposed to other common bonds. Another impressive feature of catastrophe bonds is their potential to control poor market performances through self-correction. When a destructive natural catastrophe occurs, many factors come in that inflate insurance premiums allowing investors recover some of their losses within a short time. Examples of factors include the inability of insurance companies to take on risks, increased demand for insurance, and a tremendous growth of insurance models that control insurance prices and catastrophe risk securities (Schroders, 2011).

Issuing of catastrophe bonds and market development over time

In the mid-1990s, the concept of securing insurance risks arose after the non-life reinsurance markets increased pressure and focused more on capital management in both non-life and life insurance industries. In the process, the catastrophe bond was introduced with the objective of extending reinsurance capacity after the hurricane disaster that took place in 1992. The hurricane caused a significant loss of properties to the extent that the insurance companies could not manage to compensate all their customers. Otherwise, they become bankrupt. Issuing of catastrophe bond aimed at facilitating direct transfer of insurance risks from reinsurers, corporations, and insurers to investors. Additionally, introduction of catastrophe bonds protected sponsoring firms from paying for losses caused by natural disasters or catastrophes in order to overcome some traditional insurance regulations (Spry, n. d.).

The first cat bond that ended in 1994 was issued to the Nationwide Insurance

Co. in Columbus, Ohio. Since the issuance of this first cat bond, the market for cat bonds has demonstrated desirable development over time. The cat bond grew tremendously with an average growth rate of one to two billion U. S. dollars of insurance annually between 1998 and 2001. After the attack of World Trade Center in New York the bonds annual growth increased to \$2 billion affecting other insurance bonds. Additionally, the occurrence of Hurricane Katrina in 2006 doubled the issuance of cat bonds to an approximate rate of \$4. The trend continued, and the demand has increased with time that currently stands at approximately \$10 billion. Figure 1 shows the development of catastrophe bond over time from 1997 to 2009 (Spry, n. d.).

Figure 1: The development of catastrophe bond from 1997 to 2009

Relationship between catastrophe bonds and different risks

Allocation of existing and new types of financial assets contributed to portfolio diversification contributing to systematic and non-systematic risks. Creation of financial instruments like catastrophe bonds promotes portfolio achievement because investors have the opportunity of achieving higher returns compared to investing in corporate bonds with same credit rating. Systematic bonds relate to catastrophe bonds in many ways as explained in this discussion. The insurance sector had been struggling to destabilize the entire financial system since the 2007-2009 financial crises. Catastrophe risks contribute to the decrease in systematic risks. One cat bond decreases the risk by approximately 3.2 percent. The following relationship contributes to the low exposure of issuers to systemic tail events. Systemic risks are measured using different concepts such as Marginal Expected Shortfall

(MES), Value-at-Risk measure, and Systemic Risk Index (SRISK). Insurers are more exposed to systemic risks when they take more debt upon issuing cat bond. Additionally, extreme events force insurer to issue cat bond in order to cover for severe losses that occur after the risk takes place. This relationship helps insurers understand the importance of cat bonds in catering for unforeseen risks (Weib, Bostandzic, & Irresberger, 2013).

Secondly, cat bonds experience a relationship with systemic risks on the aspect of cause of disaster. Most catastrophe events are caused by man or nature. The financial impact of catastrophe risks keep increasing globally as more areas get exposed to potential disasters. The amount of capital retained by the insurer plays a major role in retaining risk. Risks that occur above the expected level are directly transferred to the reinsurance.

Catastrophe bonds help in minimizing systemic risks where issuers cannot manage high capital requirements needed to cater for high losses caused by disasters. Additionally, catastrophe risks favor investors seeking diversification. Diversification cannot eliminate systematic (market) risks because almost every asset insured is exposed to systemic risk. Presence of cat bonds assists in promoting diversification in systemic risks making increasing the confidence of investors when it comes to compensation. The above relationship promotes return of security to the capita assets using the Pricing Model for people affected by systemic (market) risks (Njegomir & Ciric, 2012).

On the other hand, there exist the relationship between cat bonds and idiosyncratic risk. Idiosyncratic risks are risks unique to specific assets of organization. Examples of these risks include employees' strike or poor

salaries. This type of risk forms a small type of catastrophe that affects employees or organizations. Cat bonds play an important role in controlling the following risks. Firstly, cat bonds represent idiosyncratic risks by encouraging diversification at the world level. In most cases, reinsurance companies fail to cope with idiosyncratic risk. In order to overcome financial challenges introduced by these risks, investors take cat bonds in order to cover for idiosyncratic risks because other bonds take long to respond. Unfortunately, cat bonds do not compensate for idiosyncratic risks associated with investments in securities of insurance companies. However, investors can easily avoid principal-agent risks occurring in the organization. Examples of these risks include risk taken by equity holders in order to restructure debts or increase the level of risk in an organization. Secondly, the movement of bond markets correlates to the magnitude and occurrence of natural hazards. Insurance companies involve extensively in systematic risks whereby cat bonds offer the best diversification opportunities for investors to have minimal rates (Fabozzi, 2008).

Another type of financial related risk that is influenced by catastrophe bond is the interest-rate risk. Cat bonds provide a unique diversification potential capable of delivering risk-adjusted returns to investments. Cat bonds enable investors exist in the diversified market through decreasing the amount of interest rates charged on investments. The increasing regulatory pressure for insurers to strip catastrophe risk from their normal premiums, the supply and demand of goods and services determines the growth of cat bond markets. Cat bonds generate higher returns compared to other common bonds because they reduce interest risks. Additionally, catastrophe risks

have low chances of occurring, usually defined around 1 percent (1 occurrence in every 100 years). The limited cases of catastrophe risks offer higher risk-reward level for investors because of accumulated interests over years that insurance companies must pay upon maturity of the insurance premium.

On the other hand, cat bonds yield higher debts with more than three years of maturity. The limited number of interest rate risks occurring from cat bonds makes because of long-maturity period increases its demand from most investors. Moreover, money market components are changed as short intervals for cat bonds compared to conventional corporate bonds increasing the bond between cat bond and interest-rate risks.

Relationship between catastrophe bonds to the theory of Asset Demand

The Theory of Assets Demand assumes that the quantity demanded positively relates to wealth. In addition, the quantity demanded of an asset is inversely proportional to expected return relative to alternative assets.

Finally, the theory argues that the quantity demanded of an asset is positively related to its liquidity relative to alternative assets. The following theory shows strong relationship with catastrophe bonds. Several factors drive the demand for cat bonds from investors worldwide. The theory of Asset Demand demonstrates how the quantity of assets demanded relates to alternative assets. The decision-making process driving the demand for catastrophe bond is complicated and requires extensive research in order to determine bond-demand relationship. Investors investing in cat bonds insure their assets and the demand for cat bond depends on the quantity of assets

insured.

The theory argues that the quantity of demanded of an asset is directly proportional to wealth. Wealth people invest more assets to cat bonds because they are sure to benefit from higher returns and interest rates generated after the maturity period. The rare nature of catastrophe disasters happening reduced the amount of interest-rate risks and investors end up receiving a lot of money after the bond matures.

People from disaster-prone areas demand catastrophe bonds more compared to people from other areas. Disaster prone areas include regions susceptible to earthquakes, terrorism, or hurricanes. Investors in these areas insure all their assets against natural disaster under the cat bonds in order to receive compensation if the disaster strikes. According to The Economist (2013), more than \$40 million cat bonds have been issued in America over the last ten years for catastrophe related happenings. Most of these bonds cover natural disasters especially in developed economies where people invest more on businesses. In America and other developed countries in the West, insurance is prone to losses from natural disasters. Investor demand for cat bonds increases with the amount of assets to be insured relative to alternative assets. The rise of cat binds because of high demand in America affects the price of insurance, especially rein insurance prices. A 15 percent decrease of reinsurance premiums because of high flow of money into the capital markets has increased the demand for more investors to buy cat bonds (The Economist, 2013).

Investors on cat bonds enjoy a lot of benefits in terms of financial gains and assets management. Cat bonds offer potential long-term benefits because

they lack correlation with traditional investment plans like bonds and stocks. Natural disasters like hurricanes, tsunamis, earthquakes, and others occur regardless of the performance of capital markets. Including catastrophe bonds in the investor's portfolio creates an opportunity for diversification. Additionally, catastrophe bonds involve high nature of financial risks whereby the investor stands a chance of losing all their assets, the investment gives favorable returns. Cat bonds also accumulate more annual interest rates compared to other conventional corporate bonds, which is an advantage to the investor (Anonymous, 2014).

Catastrophe bonds are mostly issued by insurance companies. These companies enjoy many benefits from issuing these bonds. Firstly, the organization has the capability of shifting the risk of a natural disaster to a different group. Insurance companies take advantage of the situation and shift focus on disaster prone areas in order to receive more clients, and then relocate to other areas leaving all risks to investors. Additionally, insurance companies assure investors of total compliance with risk policies, but when the disaster strikes they offer half the compensation, or delay in compensating the affected firm (Anonymous, 2014).

Similarities and differences of catastrophe bonds to more common bonds

Catastrophe bonds bear some similarities and differences with other conventional corporate bonds. Additionally, they possess both advantages and disadvantages over other more common bonds.

Similarities

Firstly, cat bonds and common corporate bonds have similarities in bond pricing. Common corporate bonds must contain a pricing model that accounts for potential loss of principal value. The high potential of default leads to bonds earning higher returns. Similarly, cat bonds are issued at higher yields because they are unpredictable but use more advanced pricing models to cater for losses in their principal value. Secondly, both bonds offer similar applications to mortgage insurance because they provide a long-term contract that most investors admire because of expected higher returns on interests. Finally, both catastrophe bonds and common corporate bonds achieve some interest of given values depending on the quantity of assets insured and the amount of investment.

Differences

The main difference between cat bonds and common corporate bonds occurs on the concept of the type of insurance. Most common corporate bonds cater for a variety of insurance premiums whereas a cat bond only insures people and property for natural disasters. Additionally, most investors taking cat bonds invest more assets and capital because it is a long-term investment. The maturity time for cat bonds ranges between three and five years while the maturity time for other common corporate bonds can even take six months. On the other hand, the issue of modeling differentiates a cat bond from other common bonds. Development of cat bonds is poor compared to other common bonds because of the lack of transparency among institutions offering these bonds. Insurance companies offering cat bonds have been

accused of corruption and breach of contract that interferes with the development of bond markets (Burt & Goss, 2012).

Advantages of catastrophe bonds over common bonds

Catastrophe bonds promote multi-year commitments whereas most traditional stocks and bonds offer one year commitment coverage. Investors in other common corporate bonds must negotiate with their insurers for the renewal of the insurance but in the cat bonds, investors make an agreement for two to three years. Additionally, the multi-year capacity and pricing program offered to the market benefits both the insurer and the insured. Secondly, credit for reinsurance increases certainty. Cat bonds offer full collateralized risk transfer programs, with credit for reinsurance accepting collateral normality. Finally, cat bonds promote collection risk avoidance. Because cat bonds are fully collateralized, the insured person faces minimal collection risks upon maturity of the bond (Burt & Goss, 2012).

Disadvantages

The major difference between cat bonds and common bonds is on the maturity period. Common corporate bonds have less maturity time of one year compared to cat bonds that mature after two to five years. Additionally, cat bonds are only met for natural catastrophe like earthquakes, hurricanes, tsunami, and other natural disasters. Common corporate bonds insure people and properties for different insurance covers and can combine more than one area. On the other hand, catastrophe bonds are invested in those areas prone to high risks of natural disaster occurrences while common bonds have no specifications and can be issued to people in all locations.

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