ASPECTS OF DECISIONS IN THE FIELD OF INSURANCE

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Abstract

The objective of this presentation consists in combining theoretical notions relating to insurance, their role in the economy and forms of expression with a practical study on how action in order to adopt the best in this field. Aggregating multiple risks insurance policyholders, insurers can take advantage of the law of large numbers, as long as there is a strong correlation between the different risks insured in insurance policyholders. In this way, insurers can diversify their risk.

Keywords: insurance, according to the utility, insurance, marginal benefit, hedging, optimal decision

Introduction

Insurance occur when a counterparty agrees to pay an insurance premium to cover other counterparties risk of a random event, prespecified, generating a loss to him who will bear. The most encountered is the insurance policy the insurer is rewarded by a premium paid by the policyholder to cover possible risk of an occurrence. There are many types of contracts involving a form of insurance (Popa et al. 2006). For example, contracts to protect crops, a land owner may accept reduced rent for leased land in the event of a poor harvest. In contracts of "cost-plus", a buyer agrees to pay a higher price in case the producer suffers an unexpected rise costs in market economy. In the case of income tax, state taxpayers provide partial losses, reducing the amount of pay taxes if revenues are lower.

Theoretical regarding insurance

Knowledge, quantifying and hedging has considerable importance for the functioning of modern economies (Anghelache and Anghel 2014). Insurance provide cover investment decisions by knowing and taking risks. Without this management strategy, surely it would not have witnessed historical growth of the last century. Ford, Solvay, Rockefeller and others would not have assumed the risks of investing that and they have made into reality without the possibility of covering risks with shareholders and insurers. In a similar manner, many consumers would not be able to buy new and expensive goods it not be able to afford. Likewise, without a social network acceptable, young people would not engage in investment profitable but risky human capital, without the possibility to cover possible risks (Outreville 1997).

Usually, it is natural to think of the insurer as neutral in the face of risk. Indeed, the insurer may be considered an intermediary that collects and distributes funds among insurance policyholders (Athey 2002). We appreciate that constitute insurance policyholders funds for compensation of those who have registered insured damage. This concept is based on the principle of mutuality.

Insurance is a special case of risk transfer strategy, known as "hedging". Hedging strategy involves signing contracts whose relationship is inversely proportional to the change in value in connection with the general wealth of the person who has completed or a component of this wealth. So if wealth falls, the value of a contract increase, partly offsetting losing the wealth. For example, it may contract of "futures" market futures contracts to hedge currency risk hedging, if part of the revenue is in foreign currency. For example, you can use an option contract using the Standard and Poor (S & P) to protect pension funds against the falling value of outstanding shares. Such option contract and "futures" are usually based on data from financial markets. Moreover, they contain various standardized attributes that make them to be quite "fluid" as assets, allowing them to be quickly bought and sold on the market. Usually these hedging instruments involve risk another type called basis risk, such as when there is a risk that payment compensates total losses. For example, the value of a person's pension fund will probably not be perfectly correlated with the S & P, so options on this index will be a covering (hedge) imperfect.

Even if a policyholder has an insurance for his home, it will help not an insurance policy to cover the residence because it will make a payment only if you have a loss and not on your home insurance policy if the buyer has a loss on home. So there is no secondary market in insurance contracts. In other words, compared to options and futures "futures" are a class of insurance sometimes quite illiquid assets. Meanwhile, insurance is coverage (hedge) when providing perfect appearance is based on a prespecified loss. Insurance contracts do not contain basic risk prevailing in options and futures contracts "futures" (Gollier and Schlesinger 1995).

Study on optimal insurance decision

By ensuring there is added value for insurance policyholders because insurance policyholders aversion to risk, and which do not accept the risk that their property is subject (Protopopescu 2011). Consider a person who faces the loss of his wealth random $\tilde{x}$, where $\tilde{x} \geq 0$. An insurance contract stipulates a premium that must be paid by the policyholder P, plus a plan insurance premiums I (x), which shows the amount to be paid by the insurer in the event of loss of size x. There is full coverage if the insurer reimburses the policyholder full value loss, so I (.) Is the identity function I (x) = x (Anghelache 2011). The actuarial value of the contract is expected expense $EI(\tilde{x})$, ie gross overdue payments to the insurance contract. It is said that the insurance is actuarially fair from the point (or often just "fair") if it is equal to the actuarial value of the contract eg. $P = EI(\tilde{x})$.

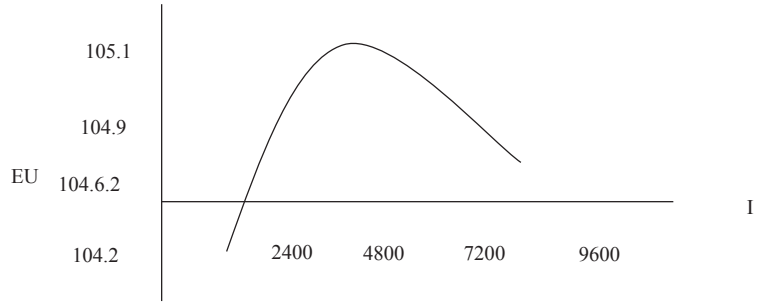
Luminarius function of insurance coverage

I	P	EU
0	0	103.674
1200	660	104.227
2400	1320	104.642
3600	1980	104.926
4800	2640	105.091
6000	3300	105.140
7200	3960	105.076
8400	4620	104.901
9600	5280	104.613

When the former fair, expected net payment of the contract is zero. The establishment of an insurance contract with a total first fair actuarial loss has the effect of replacing a random $\tilde{x}$, according to P = $E\tilde{x}$. The value of such private contract is equal to the value of a risk premium attached Arrow-Pratt risk $\tilde{x}$ by the policyholder. Indeed, if we accept Π to name this risk premium Arrow-Pratt, the first maximum that a person will pay for a full coverage policy is $P = E\tilde{x} + \Pi$. This first maximum likelihood increases with the risk of the policyholder and the risk of loss. In other words, buying insurance at a price just total policyholder provides additional value of Π, compared to if no other insurance.

When insurance premiums are actuarially fair in terms of the decision to ensure it simple for agents with risk aversion. Ensuring total is optimal, as we show below. But insurance contracts usually involve transaction costs in the real world. For example, many types of general liability insurance, transaction costs can reach up to 30% of the premium. When you add these costs to the overall picture, to ensure the best decision is less obvious because insurance policyholders with risk aversion should compare the marginal cost for insurance fringe benefits generated superior risk reduction contract (Spaeter şi Roger 1997). In other words, there is a tradeoff between risk and wealth ensured finals.

We examined the problem facing Luminarius insurance when you only have one good, "x". Suppose has an originally had 4,800 mu which would increase to 9600 u.m. only if the property "x" would arrive safely. Both insurers and assesses the probability of this event Luminarius as equal to $\frac{1}{2}$. It is assumed that insurers can diversify risk Luminarius in a lot of big shareholders are risk neutral.



The expected value of the utility's insurance coverage Luminarius

A specific policy is described in full, first, the expense of which is paid Luminarius I , if the property "x" and destroyed, and secondly, by P. Awaiting insurance premium, insurers will have to pay *I/2* Luminarius of the damage. *I/2* is called the actuarial value of the policy. In addition to damages, insurers incur various costs that have been evaluated as representing 10% of the actuarial value of the policy. Since insurance markets are competitive, a condition of equilibrium is expected to be zero profits. And this leads to the next price insurance (Anghelache 2015):

$$P(I) = (I/2) + 0.1(I/2) = 0.55(I.)$$

This situation attracts the wealth of Luminarius expected to decrease with insurance coverage:

Had expected = 9600 - 0.05 (I)

Luminarius must decide what kind of insurance policy to purchase. Suppose Luminarius has a utility function *u* square root type $(z) = \sqrt{z}$. The EU's Luminarius is calculated as a function of the damage I. It is equal to:

$$EU = \frac{1}{2}\sqrt{4800 + I - P(I)} + \frac{1}{2}\sqrt{1200 - P(I)}.$$

We see that the EU's insurance cost increases Luminarius. The positive effect of reducing the risk of reducing the negative effect of wealth dominates expected. A closer examination of the data shows that some insurance cover are better than others. When I is small, marginal growth through insurance coverage has positive net effect on the EU's Luminarius. But when I is high, the opposite happens.

EU is concave I. The graphical representation is concave curve has a peak (hump), with a maximum of I * = 5915.14 um.

If Luminarius buy an insurance policy (I, P (I)), the final version is equal wealth $(4800 - I/2)^2$. Using the Arrow-Pratt approximate cost of uninsured risk is proportional to this version. This implies that the marginal benefit of insurance - which is marginally reduce the size of uninsured risk - decreases linearly as insurance coverage increases. Marginal benefit is proportional to the derivative of the I variant, ie 4800 - I/2. When Luminarius is almost totally secured. When he is close to 9600, increasing coverage, does not have full insurance benefits. Risk aversion is a side effect.

Conclusion

EU is not a monotonous function through insurance coverage. The cost of risk is approximately proportional to the square of the size of risk. The marginal cost of insurance is therefore a constant independent of the level of coverage I. Combining these observations explain in what way the EU has a hump in terms of the coverage, as shown in the graphic representation highlighted.

Insurance is based on the individual and not the loss of a certain index. Because there is no single financial market for this loss, the insurance contracts are not easily tradable in secondary markets, and transaction costs are high.

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