GUARANTEED RENEWABILITY OF INDIVIDUAL HEALTH INSURANCE

by Pal Reddy Vishnu Vardhan

(I) Context

Cochrane (2009) in his article titled "Health-Status Insurance" argues that none of us has health insurance, really. If you are covered under group-health insurance scheme and you develop a long-term condition such as heart disease or cancer, and if you then lose your job or are divorced, you can lose your health insurance. You now have a pre-existing condition, and insurance will be enormously expensive-if it's available at all.

The same could happen to you if your insurer refuses to renew your policy or charges an exorbitantly high premium for the renewal. There were such instances in the Indian individual health insurance industry. IRDA, in response to this, came up with a circular stating that you can't deny renewal of individual health insurance on the grounds of deterioration in health status. IRDA also directed that any loadings on premium based on health deterioration should be stated upfront to the customer.

A cap, although not explicitly mentioned anywhere to the author's knowledge, is also imposed on the loading that can be applied. In effect, a person who contracts cancer or any chronic condition will be able to get his/her policy renewed for a reasonably low premium in comparison with his expected healthcare costs. That loading is minimal compared to the increased costs arising from deterioration in health-status.

IRDA also recently enforced portability of individual health insurance. A main implication is that a good risk can change insurers whilst retaining the same kind of coverage. A bad risk, even if he wants to change, may not find this useful because the new insurer will definitely subject him to underwriting in some form and most probably will get rejected.

(II) How does this affect the Insured?

Assurance that there will be availability of health insurance in future should s/he experience deterioration in her/his health status. Also the insured won't lose sleep over the possibility of an abrupt jump in the future premiums. Most customers understand that these assurances come at a price.

The consumers can broadly be classified into two types:

- *Unhealthy:* Unhealthy would not mind to pay the front-loading against this guarantee. In fact, they will prefer to stick with the insurer as long as possible as any other insurer will screen these guys out through underwriting
- *Healthy but Risk-averse:* Any healthy person who thinks of buying health insurance is very likely a risk-averse person. This is especially true given the kind of loadings used by Indian insurers. A good deal of premium paid goes towards commission and expenses

Mark V. Pauly (2006) argues that a person initially in good health who develops a chronic illness may expect to have above-average expenses in subsequent years. If the annual insurance premium is set proportional to expected expense in each year, someone who contracts a multi-year condition would face a substantial and unexpected jump in premiums— something public policy finds undesirable and something which a risk-averse person would prefer to avoid.

There have been instances where the renewal premium increased several times even for good risks in the Indian market. Therefore, this risk of premium jumps is not insignificant. A risk-averse customer will not like the possibility of jumps for no apparent reasons. The regulator is also very stringent on allowing abrupt jumps in premiums. If the jump is in line with inflation rate, that is alright.

(III) Why should the insurer bother?

Every guarantee comes at a cost. A few questions immediately spring up to the mind: How much to charge and, perhaps more importantly, when to charge? Another important question is whether there is there any need to keep some kind of reserves to fulfil this guarantee and, if yes, how to assess the reserves needed?

(IV) How to price this guarantee?

Most insurers price individual health insurance policy using burning-cost method. The only problem with this method is that it may drive away from the plan those who remain low-risk in future. That way, the proportion of bad risks will keep on increasing and further driving out the good risks till only really bad risks are left out. We will shortly see how this can happen.

Pauly et al. (2006) propose a solution to this problem:

Premium to be charged for a person aged x at time t for the time period (t, t+1)

= *Expected discounted future medical costs for a healthy person aged x at time t*

- *Expected discounted future medical costs for a healthy person aged x+1 at time t+1*

He calls the premium schedule based on this formula "Incentive-Compatible Guaranteed Renewability Premium Schedule" (ICGRPS). Note that the premium does not depend on the health status of the person. The assumption remains that only good risks are allowed insurance in the beginning. Also note that the premium charged does not depend on when the insured bought the policy for the first time with the company.

Let us illustrate how this incentive-compatible premium schedule out performs any other premium schedule. Assume that:

- Every person lives for 5 years and every person is a good risk at birth
- Cost per claim (Severity) is 100 for all years (Zero inflation)
- Zero investment return, expenses and zero profit loadings by the insurers
- A bad risk is 5 times more likely to make a claim when compared to a good risk in any year
- Claims frequency for a good risk progresses arithmetically from 1% at age 0 to 2% at age 4
- A person will suffer the loss event at most once in a year
- Once a person suffers a loss event, he will remain a bad risk till his death
- Every person is risk-averse and rational, if you can imagine
- Mid-term cancellations are not allowed. However, switching insurers at the end of any year is allowed.

Also assume that renewability is guaranteed

- Underwriters are capable of indentifying good risks during the underwriting and that every insurer declines insurance to a bad risk
- The biggest assumption is that insurers state their premium schedule upfront at the beginning and they stick to it

There are certain desirable features, some imposed by the regulator, of a premium schedule:

- Same premium for a good risk and a bad risk of the same age
- Total premium over the 5 years should be equal to the total estimated lifetime medical cost of a good risk starting at age 0
- A good risk should not have an incentive to switch the insurer at any point in time. Only the ICGRPS has this quality that no other premium schedule. In fact, the premium formula used in ICGRPS follows from this In the above table, premium schedule "A" refers to ICGRPS and premium schedule "B" is based on burning-cost method. Under the burning-cost method, premium is equal to the total loss projected divided by the exposure.

	Year	1	2	3	4	5
	Age of People	0	1	2	3	4
Count of Lives	Good Risk	1,00,000	99,000	97,763	96,296	94,611
	Bad Risk	-	1,000	2,238	3,704	5,389
Claims Frequency	Good Risk	1.00%	1.25%	1.50%	1.75%	2.00%
	Bad Risk	5.00%	6.25%	7.50%	8.75%	10.00%
Claims Count	Good Risk	1,000	1,238	1,466	1,685	1,892
	Bad Risk	-	63	168	324	539
	Total Loss	1,00,000	1,30,000	1,63,425	2,00,928	2,43,113
	Lifetime Cost for a Good Risk	8.37	7.12	5.61	3.89	2.00
Premium Schedule	A	1.25	1.51	1.72	1.89	2.00
	B	1.00	1.30	1.63	2.01	2.43
Lifetime Premium Cost	A	8.37	7.12	5.61	3.89	2.00
	B	8.37	7.37	6.07	4.44	2.43

The following conclusions could be made from the above table:

- Lifetime premium cost for a good risk at the beginning of year 1 is same under both "A" and "B". It is 8.37 units. So, a good risk is indifferent at this point in time
- A good risk at the end of year 1 sees a clear advantage in "A" as the lifetime premium cost is only 7.12 compared to 7.37 under premium schedule 'B". B loses now and never wins from now on!
- Bad risks, unfortunately, cannot switch the insurer from "B" to "A" at the end of year 1 as they will be screened out during underwriting. They will stick to the insurer using premium schedule "B"
- This implies that the book of an insurer using premium schedule "B" will consist entirely of bad risks. That means that the actual cost per person is the expected cost for a bad risk
- So actual cost per person under "B" for years 2, 3, 4 and 5 will be equal to 6.25, 7.50, 8.75 and 10 respectively. Notice the jump from 1.00 in year 1 to 6.25 in year 2
- Any established company using burning-cost method could face dire consequences if a new insurer comes along and uses premium schedule "A"
- Perhaps the most interesting observation is that insurer "A" will not suffer if good risks leave them as long as they don't let any bad risks in through underwriting. In the first place, a good risk has no incentive in leaving the company that uses the premium schedule "A"

(VI) How to provide for this guarantee?

From the derivation of ICGRPS, we know the amount of premium charged for the guarantee of renewability. These amounts should be maintained in a separate pool altogether. As the portfolio of an insurer grows, the money in the pool keeps increasing. Let us call this 'GR Pool' for the sake of convenience.

At the time of renewal / issuance of any policy, the insurer should classify the person as a 'Good Risk' or 'Bad Risk' according to the definition used in the derivation of ICGRPS. Now, the 'Bad Risk' business will cause losses almost every year and these losses have to be paid off using the funds in the GR Pool.

The overall profit to the insurer would just be the profit contributed by the 'Good Risk' business. Treatment of estimation errors in the reserves needed by the GR Pool is beyond the scope of this article.

This method is akin to keeping AURR (Additional Unexpired Risk Reserves). After a policy expires, the UPR (Unexpired Premium Reserve) is zero but the URR (Unexpired Risk Reserve) is not zero assuming that the person experienced a significant decline in his health status during the policy period.

What's more, the funds in the GR pool could be invested in securities that provide some form of hedging against unexpected rises in medical inflation. For instance, a significant proportion of the funds could be invested in the equity of health service providers, pharmaceutical companies etc.

(VII) Conclusion

Individual Health Insurance cannot be seen as a one-year policy. Liabilities pertaining to a single-year policy could spread over several decades. It is therefore not only important to price the right amount at the right time, but also to maintain the right amount of reserves. Incentive-compatible guaranteed renewability premium schedule is the ideal premium schedule and it is better than any other schedule.

Without any form of reserves, insurers will be forced to inject capital in future to cover more-than-ideal amount of losses arising due to increasing proportion of bad risks in the book. Investors may not be willing to pay for losses that occurred in the past. Yes, *in the past*, because the bad risks became bad risks sometime in the past. Currently, the market is highly focussed on middle-aged married

couples. The proportion of bad risks in the book is low but it will increase. The author believes that the industry needs up to 1000 crores to fulfil the guarantees that have been made.

Market has already witnessed some shocks in the premium rates. Further shocks may strain the faith of the customers in the market altogether. The rates should be reasonable for a good-risk lest good risks abandon the ship further exacerbating the problem. Portability makes it possible for good risks to do this without much hesitation.

(VIII) References

(1) Bradley Herring, Mark V Pauly. Incentive-compatible guaranteed renewable health insurance premiums. Journal of Health Economics (2006)

(2) John H Cohcrane. Health-Status Insurance. CATO's Policy Analysis No 633 (Feb 18, 2009)

(3) John H Cochrane. Time-Consistent Health Insurance. Journal of Political Economy, 103 (June 1995)

(4) Patel, Mark V Pauly. Guaranteed renewability and the problem of risk variation in individual health insurance markets. Health Affairs Web Exclusive 2 (2002)

About the author

P Vishnu Vardhan currently works for XL India Business Services Private Limited as a Senior Actuarial Analyst. He has three years of pricing experience in the Indian insurance industry.

vivard@gmail.com