

Rational Criterion of Suing and Labouring Charge in Marine Insurance

-Using Game Theoretic Approach*-

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Key Words: Suing and Labouring Charge, Rational Criterion.

Abstract

The purpose of this paper is to setup reasonable criterion for underwriters to reimburse the expenses of suing and labouring incurred by assured, using game theory. As for the upper limit for the reimbursement, MIA and ICC do not mention at all but stipulate that proper and reasonable expenses shall be reimbursed, while ITC-Hulls set the amount insured as the upper limit to compensate the sum of expenses and damage loss. And as for failed measures of averting and minimizing loss, MIA and ICC do not mention either, while ITC-Hulls stipulates underwriters shall compensate the expenses and damage loss within the amount insured.

The main results of this paper are as follows: First, it is for the benefit of underwriters to reimburse the expenses incurred to take such reasonable measures to avert or minimizing a loss which would be recoverable under the insurance. Second, the expenses of single measure should not be above the amount insured. Third, even if the measures failed, the expense should be reimbursed if it is less than the expected value of the subject-matter insured that could be recovered by the measures. Last, if the measures are taken several times individually, even if the sum of expenses might be above the amount insured, it should be reimbursed.

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I. Introduction

Principle of utmost faith is the unique character in insurance contract. Contrary to other contract, the Underwriter depends on the behavior of the Assured because of asymmetric information and moral hazard. The basic information -necessary to decide whether to accept contract offer or not, and to calculate insurance premium- belongs to the Assured, not to the Underwriter. The Underwriter should rely on only the information the Assured provides with. And after contract signing, the Assurer's position depends on the action of the Assured. The subject-matter insured is under control of the Assured. When the subject-matter insured is in peril, it is not the Assurer but the Assured who takes measures to prevent an impending loss, and it is not the Assured but the Assurer who indemnify for the loss.

In order to reduce the problem of moral hazard, insurance contract charges duty on the Assured to avert and minimize loss. However, it is not easy for the Assurer to observe whether the Assured performs the duty. Therefore, the contract provides incentive to the Assured to perform the duty: the Assurer, in addition to any loss recoverable under the contract, reimburses the Assured for any charge properly and reasonably incurred in pursuance of the duty. Especially in marine insurance, the types of peril become more various and the extent of loss becomes larger, and it is more difficult for the Assurer to observe the action of the Assured. So, there is more need to induce the Assured to avert and minimize loss actively.

Thus, Marine Insurance Act(MIA) 1906, Institute Cargo Clause(ICC), and Institute Time Clause-Hulls(ITC-Hulls) states the duty of the Assured to minimize and avert loss, and the Underwriter is to reimburse the Assured for any charges properly and reasonably incurred in pursuance of the duty. However, there is no further statement what kind of charge is proper and reasonable, and the criteria are different among MIA 1906, ICC, and ITC-Hulls.

When there is not a clear criterion, the Assured is not sure whether he/she could get the reimbursement of the expenses incurred, and he/she would hesitate. Thus the Assured should indemnify the loss which could have been prevented with small

charge. It is important to setup a reasonable criterion of to reimbursement for the charges of suing and labouring in order to induce the Assured to avert and minimize loss more actively when the subject-matter insured is in peril, by guaranteeing that the expenses could be reimbursed.

In the next section, the duty of the Assured is examined. Following the explanation of the duty, I will suggest discussions on the rational criterion of the reimbursement of the suing and labouring charge. Finally, I attempt to suggest a reasonable criterion using game theoretic approach.

II. Discussion

1. Duty of the Assured to avert and minimize loss

It was Tiger Policy 1613 that first mentioned the duty to avert and minimize loss in insurance policy.¹⁾ The Policy intended to preserve the rights of the Assured to abandon the subject-matter insured when the Assured averted and minimized constructive total loss. It was inherited by Lloyd's S.G. Policy and was legalized in MIA 1906.

The statement of Suing and Labouring Clause in Lloyd's S.G. Policy was replaced with Duty of Assured Clause in ICC Article 16, and ITC-Hulls Article 13. It seems to emphasize the aspect of duty of the Assured instead of the Assurer's reimbursement of charge.

The duty of Assured constitutes of two parts: i) to take measures for the purpose of averting and minimizing loss, and ii) to ensure that all rights against other parties are properly preserved and exercised. In this paper, the first part of the duty will be focused. It matters what the duty is on the Assured. It is important in two senses: i) When a loss happened, as a result of the violation of the duty, it

1) Ilhyun Yoon, "Study on the Suing and Labouring Clause in Marine Insurance", 『Journal of Insurance Association』, Vol.31, 1988

cannot be indemnified. So it matters whether there was duty of the Assured to prevent the loss. ii) When the subject-matter insured is in peril and the Assured paid expense to avert and minimize loss, if it was his/her duty, then the expenses can be reimbursed for, and vice versa. Thus, it matters whether there was duty of the Assured or not to determine that the Assurer would indemnify the loss to the subject-matter insured and the suing and labouring charge.

2. Whether to reimburse for the charge

Korean Commercial Law Article 680(Duty of averting loss) states Policy holder and Assured should try to avert and minimize loss. The Underwriters should reimburse the Assured for any cost necessary and useful to do so, even if the charges and compensation exceed the insured amount. However, in fire insurance, comprehensive house insurance, comprehensive commerce and industry insurance, the Underwriter is not to reimburse for the suing and labouring charges. British MIA 1906 Article 78(1), ICC Article 16, and ITC-Hulls Article 13(1) require the Underwriter to reimburse the Assured for any charges properly and reasonably incurred in pursuance of the duty of averting and minimizing loss.

MIA 1906 Article 1 states "A contract of marine insurance is a contract whereby the Assurer undertakes to indemnify the Assured, ..., against marine losses, ..." Since the marine insurance contract is intended to indemnify the loss in the insurable interest, it is not intrinsic for the Underwriter to pay for the expenses due to suing and labouring. The reimbursement for the charge could be thought as benefit to the Assured besides the claim to loss, and additional burden to the Assurer. So, somebody says it is not necessary for the Assurer to reimburse for the charge.

The arguments against reimbursement for the charge are²⁾

- i) suing and labouring is a natural duty to policy holder and the Assured,
- ii) criterion of reimbursement for the expenses is not clear and there may be conflict between the Assurer and the Assured whether to reimburse for the charge and

2) Jaehee Lee, "Some Problems of Suing and Labouring Charge- Way to Amend Korean Insurance Clause", 『Journal of Property Insurance』, Vol.70, 1973.

iii) insurance premium is calculated to cover the loss to the subject-matter insured by considering the probability of peril and the extent of loss, and it is hard to get the information about the probability and size of suing and labouring charge before signing contract.

On the other hand, the arguments for reimbursement for the charge are

i) since the purpose of insurance is to remove risks from the Assured- i.e. to stabilize the financial status by insurance- the Assurer is to pay the suing and labouring charge,

ii) since the insurance contract puts duty of suing and labouring on the Assured, the Assurer should reimburse for any charges incurred in pursuance of the duty, and

iii) it is advantage of the Assurer to give the Assured the incentive to avert and minimize loss.

3. Criterion to reimburse for the charge of averting and minimizing loss

In order for the Assured to request the reimbursement for the charge of averting and minimizing loss, it is said that the following conditions are required:³⁾

i) Factors, servants, and assigns: it should be the Assured, their factors, servants, and assigns who sue and labour. Unless the persons who sue and labour come under one or other of these designations, the Assurer will not be liable under the clause.

ii) Expense properly incurred: only the necessary and reasonable expense is recoverable.

iii) Necessity for existence of peril: expense payable under the 'sue and labour' clause must have been incurred to prevent an impending loss when the subject-matter of the insurance is actually in peril.

iv) Need for peril to be covered by policy: expenses should have been incurred for the purpose of averting or diminishing a loss covered by the policy.

However, there still remain questions about reasonability of expenses: what about if the Assured fails to keep the subject-matter of the insurance, and whether the

3) Ivamy, E R Hardy, *Marine Insurance, Butterworths*, London, 1985. pp. 442-452.

Assurer should reimburse for the charge above the amount insured.

1) Reimbursement for the failed suing and labouring

As for whether the Assurer should reimburse for the expenses when the Assured failed to preserve the subject-matter insured, Korean Commercial Law Article 680(1) states that the Assurer reimburse for the only expenses which was useful. It seems that the Assurer is not liable for the failed case. On the other hand, the ITC-Hulls Article 13(5) stipulates when a claim for total loss of the vessel is admitted under this insurance and expenses have been reasonably incurred in saving or attempting to save the vessel and other property and there are no proceeds, or the expenses exceed the proceeds, then the insurance shall bear its pro rata share of such proportion of the expenses, or of the expenses in excess of the proceeds, Therefore, according to ITC-Hulls, the Assurer is liable even though the Assured failed to preserve the subject-matter insured. The British MIA 1906 and ICC do not mention, and are interpreted such that the Assurer reimburses for the expenses even though the Assured failed to preserve, in order to induce suing and labouring more actively.

It may be good for the Assurer to reimburse for the failed expenses in order to induce the Assured to sue and labour more and more. However, it would be unreasonable to sue and labour with high cost and with low probability of success. Does it make sense to pay for \$50,000 to save \$100,000 when the probability of success is only 10%? It may result in another problem of moral hazard, so I would like to suggest a ex-ante criterion when it is reasonable to reimburse for the failed suing and labouring.

2) Upper limit of reimbursement of suing and labouring charge

Question arises regarding whether the Assurer's payment to the Assured -sum of the reimbursement for suing and labouring charges and indemnity for the loss in the subject-matter insured- can be above the amount insured, furthermore whether the reimbursement for suing and labouring only can be above the amount insured. Korean Commercial Law, British MIA, and ICC do not mention upper limit on the reimbursement of suing and labouring charge. In this matter, the interpretation is

such that any charge properly and reasonably incurred shall be reimbursed without limit in order to induce active suing and labouring from the Assured.⁴⁾ However, there is a problem to pay more expense than the value of the subject-matter insured. In practice, suing and labouring charge above the amount insured is regarded as unreasonable and is not reimbursed. Furthermore, ITC-Hulls Article 13(6) explicitly states that the sum recoverable under this clause 13 shall ... in no circumstances exceed the amount insured So, I would like analyze whether it is desirable to set the upper limit, or not, and reasonable criterion of upper limit of reimbursement of suing and labouring charge.

III. Reasonable criterion of reimbursement of suing and labouring charge

In this section, I will analyze whether it is in the interest of the Underwriter or not, and will suggest reasonable criterion to reimburse for the charges. In order to simplify, the following assumptions are made.

Assumption 1: The Underwriter cannot monitor the action of the Assured. So, the Underwriter cannot know whether the Assured did the duty of averting and minimizing loss.

Assumption 2: The Assured chooses to do the duty if it is indifferent between doing and not doing the duty.

1. The Underwriter's benefit to reimburse for the suing and labouring charge

In order to analyze whether it is in the interest of the Underwriter to reimburse for the suing and labouring charge, suppose the following situation.

<Situation 1>

1) In the stage of signing contract with insured amount L,⁵⁾ the Underwriter

4) Jong-Soon Koo, 「Marine Insurance」, Bakyoung-sa, Seoul, 2004, p.326.

chooses whether to commit or not to reimburse the Assured for any charges properly and reasonably incurred in averting and minimizing loss against perils insured.

2) When the subject-matter insured is in peril, the Assured chooses whether to take measures of averting and minimizing loss.

3) It needs fixed cost C to avert and minimize loss. With the action of the Assured, there is no loss at all in the subject-matter insured, however without the action, there is total loss.

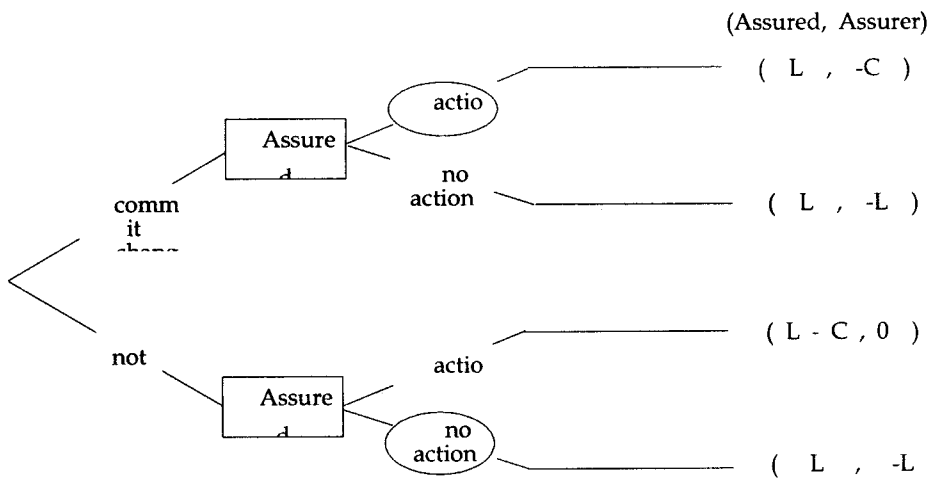


Figure 1. Whether to reimburse

Figure 1 shows game tree in which the Underwriter chooses to reimburse or not in the contract, and the Assured chooses to avert and minimize loss or not. When the contract says the Underwriter is to reimburse for the charge, the assured if the Assured chooses to avert and minimize the loss, he/she pays cost C that would be reimbursed for and the subject-matter insured is kept safe. Then, his/her payoff is L . And if he/she chooses not to avert and minimize the loss, then there is total loss with the subject matter insured, but totally indemnified. So, his/her pay off is L . So, his/her payoff is same whether or not he/she chooses to avert and minimize loss, and he/she chooses to do the action by the Assumption 2. Then the Underwriter's pay off is C (the reimbursement of the cost).

5) In order to simplify, I assume full insurance where amount insured is equal to insurable value.

When the contract chooses not to reimburse for the cost, if the Assured does the action of averting and minimizing loss, he/she pays cost C which is not reimbursed for, and his/her payoff is $L-C$. If he/she chooses not to do action, there is total loss L , which would be indemnified. His/her pay off is L , which is greater than that of doing the action. So, he/she would not do the action. Then, the Underwriter's pay off is $-L$, less than when the contract is to reimburse for the charge.

For the Underwriter, his payoff is $-L$ when he does not commit to reimburse for the suing and labouring charge, and $-C$ vice versa. So if and only if $-C > -L$, i.e. $L > C$ -the cost of suing and labouring is less than the amount insured, it is beneficial for the Assurer to induce the Assured to sue and labour by committing to reimburse for the charge. The most favorable payoff for the Underwriter is 0 when the Underwriter is not reimbursing for the suing and labouring charge and the Assured chooses to avert and minimize loss. But this case cannot happen, because if the Assurer is not to reimburse for the charge then the Assured would not chooses to avert and minimize loss. By committing to reimburse for the charge, the Underwriter can be free of indemnity for the loss. Therefore we can say that reimbursement for the suing and labouring charge is for the advantage of Assurer, not for charity, and the upper limit on the reimbursement is the amount insured if the suing and labouring is taken only once.

2. Whether to reimburse even if failed in preventing total loss

Suppose another situation in which the Assured's action of suing and labouring may fail in preventing total loss. It is assumed that the probability of succeed in preventing total loss is given p which is between 0 and 1. Then consider whether it is beneficial for the Underwriter to commit to reimburse for the charge even if the Assured fails to prevent total loss.

<Situation 2>

1) In the stage of signing contract with insured amount L , the Underwriter chooses whether to commit or not to reimburse the Assured for any charges properly and reasonably incurred in averting and minimizing loss against perils

insured, even if in failure.

2) When the subject-matter insured is in peril, the Assured chooses whether to take measures of averting and minimizing loss.

3) It needs fixed cost $C (< L)$ to avert and minimize loss. With the action of the Assured, there is no loss at all in the subject-matter insured with probability p (between 0 and 1), and total loss with probability $1-p$. Without the action, there is total loss.

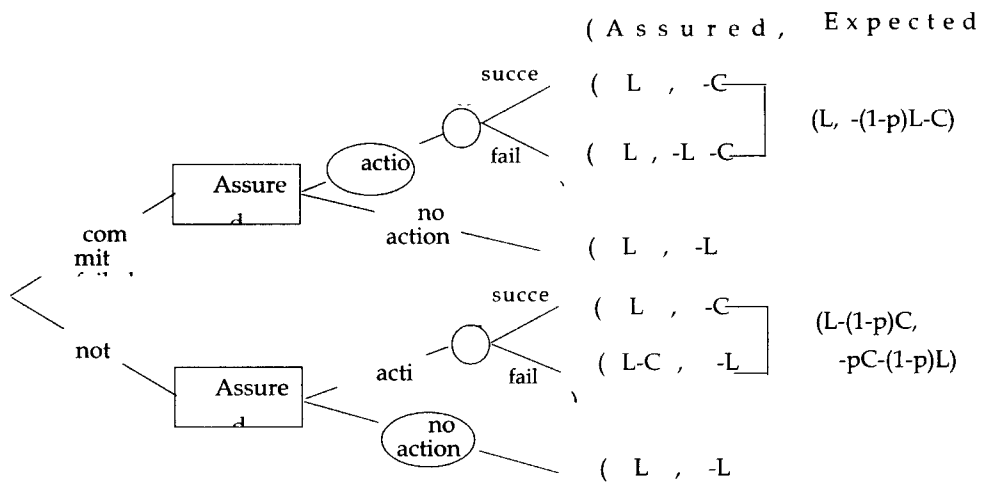


Figure 2. Whether to reimburse for failed suing and labouring

In this situation figure 2 shows game tree when the Underwriter chooses to reimburse or not for the failed suing and labouring charge. When the contract says the Underwriter is to reimburse for the failed suing and labouring charge, if the Assured chooses to avert and minimize the loss, he/she pays cost C that would be reimbursed for. If he/she succeed in averting and minimizing loss in probability of p , then he/she receives C for the reimbursement of suing and labouring charge, his/her pay off is L .⁶⁾ If he/she failed in prevent total loss, then he/she receives $L+C$, for the indemnity for the loss and reimbursement for suing and labouring charge.⁷⁾ Thus,

6) $L - C(\text{cost}) + C(\text{reimbursement for the cost})$

7) $L - C(\text{cost}) - L(\text{total loss}) + C(\text{reimbursement for the cost}) + L(\text{indemnity for the loss})$

whether or not he/she failed, his/her payoff is L . And if he/she chooses not to avert and minimize the loss, then there is total loss with the subject-matter insured, but totally indemnified. So, his/her pay off is L ,⁸⁾ he/she is indifferent to doing or not doing, and he/she chooses to do the action by the Assumption 2. The Underwriter's pay off is C (the reimbursement of the charge with probability of p , or $-L-C$ with probability of $1-p$, and expected payoff becomes $-(1-p)L-C$.

When the contract chooses not to reimburse for the cost, if the Assured does the action of averting and minimizing loss, cost C is incurred and is not reimbursed for. His/her payoff may be L in case of success with probability of p , or $L-C$ in case of failure with probability of $1-p$ and expected pay off becomes $L-(1-p)C$. And if he/she chooses not to do action, there is total loss L , which would be indemnified. His/her pay off is L , which is greater than the expected payoff of doing the action. So, he/she would chooses not to do the action. Then, the Underwriter's pay off is $-L$, less than when the contract is to reimburse for the failed suing and labouring charge.

For the Assurer, his payoff is $-L$ when he does not commit to reimburse for the failed suing and labouring charge, and $-(1-p)L-C$ vice versa. So if and only if $-(1-p)L-C > -L$, i.e. $pL > C$ -the expected value of the subject-matter insured by suing and labouring is greater than the cost-, it is beneficial to try to avert and minimize loss even if it may comes out failure. And it says that if the value of p is too small, -the probability of success is too low- then it is not reasonable to try averting and minimizing. And, we can say the upper limit of suing and labouring charge should be set as the expected value of the subject-matter insured by suing and labouring.

3. Whether to reimburse above the amount insured

Suppose another situation. After the Assured tried to avert and minimize loss, he/she may succeed or need another action. When another action is need if he/she does not, then there is total loss. Each cost incurred in the first and second action is less than the amount insured, but sum of both costs may be greater than the

8) $L - L(\text{total loss}) + L(\text{indemnity for the loss})$

amount insured. Then, the question is whether the Assurer should commit to reimburse the whole charge in the stage of signing contract.

<Situation 3>

1) In the stage of signing contract with insured amount L , the Underwriter chooses whether to commit or not to reimburse the Assured for any charges properly and reasonably incurred in averting and minimizing loss against perils insured, even though the total cost of suing and labouring taken several times is above the amount insured.

2) When the subject-matter insured is in peril, the Assured chooses whether to take measures of averting and minimizing loss.

3) It needs fixed cost C_1 , to avert and minimize loss in the first time. With the first action of the Assured, there may be no loss at all in the subject-matter insured with probability q (between 0 and 1), or it may need additional action with probability $1-q$. The second action needs fixed cost C_2 , where $C_1+C_2 > L$. With the second action of the Assured, there is no loss at all in the subject-matter insured, however without the action, there is total loss.

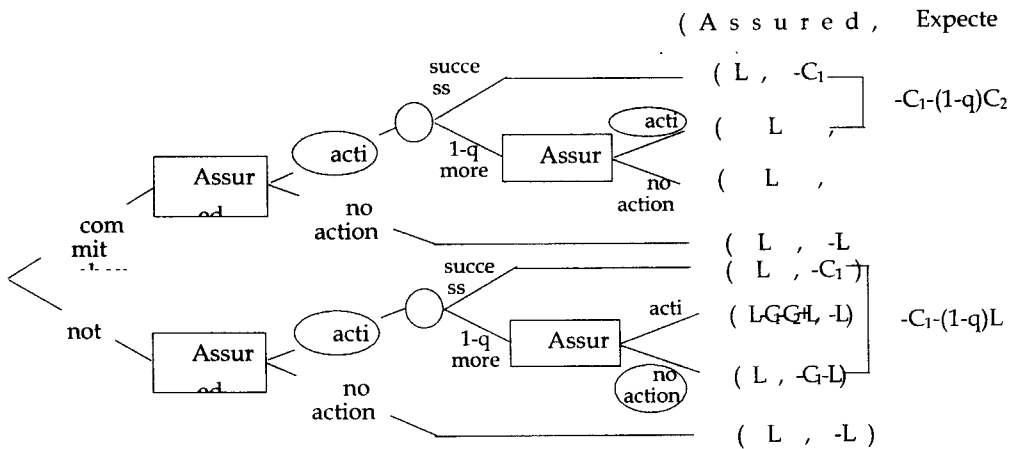


Figure 3. Whether to reimburse above the amount insured

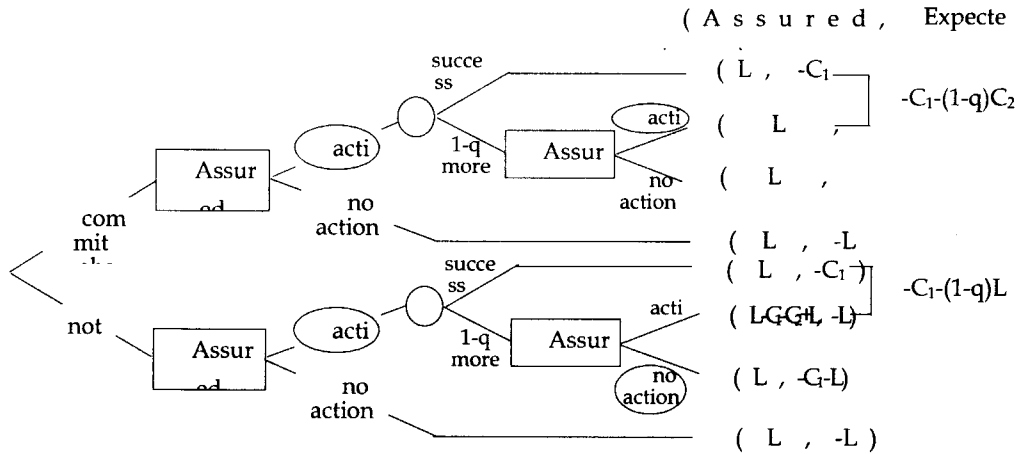


Figure 3. Whether to reimburse above the amount insured

Figure 3 shows game tree when the Underwriter chooses to reimburse or not for the suing and labouring charge above the amount insured when there needs additional action. When the contract says the Underwriter is to reimburse above the amount insured, if the Assured chooses to avert and minimize the loss first time, he/she pays cost C_1 that would be reimbursed for. If he/she succeeds in averting and minimizing loss with probability of q , then his/her pay off is L .⁹⁾ When there needs additional action, if he/she chooses to do, he/she pays additional cost C_2 and the subject-matter is kept safe, and his/her payoff is L .¹⁰⁾ But if he/she chooses not to do, there is total loss that would be indemnified. And his/her payoff is also L ,¹¹⁾ is indifferent to doing or not doing, and he/she chooses to do the action by the Assumption 2. The Underwriter's payoff may be C_1 with probability of q and $-C_1-C_2$ with probability of $(1-q)$ and expected payoff becomes $-C_1-(1-q)C_2$.

When the contract chooses not to reimburse above the amount insured, if the Assured does the action of averting and minimizing loss and end up with success, then his/her payoff would be L . But when there needs additional action, if he/she

9) $L - C_1(\text{cost}) + C_1(\text{reimbursement for the cost})$

10) $L - C_1(\text{cost}) - C_2(\text{cost}) + C_1(\text{reimbursement for the cost}) + C_2(\text{reimbursement for the cost})$

11) $L - C_1(\text{cost}) + C_1(\text{reimbursement for the cost})$

does, then total cost is $C_1+C_2(>L)$ but he/she is reimbursed only L , less than C_1+C_2 , and his pay off is $L-C_1-C_2+L$. If he/she does not do additional action, then his payoff is L that is greater than that of not doing additional action. So, he/she would not do the additional action. Then, the Assurer's payoff may be C_1 with probability of q , and C_1-L with probability of $(1-q)$, and expected payoff becomes $C_1-(1-q)L$, less than when the contract is to reimburse above the amount insured.

For the Assurer, his expected payoff is $-C_1-(1-q)L$ when he does not commit to reimburse for the suing and labouring charge above the amount insured, and $-C_1-(1-q)C_2$ vice versa. So if and only if $-C_1-(1-q)C_2 > -C_1-(1-q)L$, i.e. $C_2 < L$ cost of additional action is less than the amount insured-, it is beneficial to try to avert and minimize loss even if the overall cost is above the amount insured. It means, if the contract limits the reimbursement of suing and labouring charge below the amount insured, when the first suing and labouring needs additional action and the total cost is above the amount insured, then the Assured stops suing and labouring and there would be total loss which could be prevented by additional less cost.

IV. Conclusion

MIA, ICC, and ITC-Hulls states the duty of the Assured to avert and minimize loss, and the Underwriters shall reimburse the Assured for any charges properly and reasonably incurred in pursuance of this duty. However, it is not clear whether a charge is proper and reasonable

This paper used game theoretic approach to suggest the reasonable criterion of the reimbursement for the suing and labouring charge. The Assured has duty to avert and minimize loss. However, since the Assurer cannot observe the action of Assured, the Assured would not perform the duty if he/she bears cost. The Assurer induces the Assured to perform the duty by promising to reimburse for the reasonable cost. Questions are how to setup the reasonable criterion: whether to reimburse when the Assured failed to prevent loss, and whether to reimburse above the amount insured.

I found that

- i) It is Assurer's advantage to commit to reimburse for the suing and labouring charge below the amount insured,
- ii) Cost of failed suing and labouring shall be reimbursed for, but should be less than the expected value of subject-matter insured by suing and labouring,
- iii) If there needs suing and labouring additionally, then total cost above the amount insured shall be reimbursed for, but cost of each action should be less than the amount insured.

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