SOCIETY OF ACTUARIES

Article from:

The Financial Reporter

December 2004 – Issue 59

On the Fair Value of Insurance Liabilities

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There has been much written recently about the International Accounting Standards Board's (IASB's) position that insurance liabilities should be valued at fair market value. In particular, controversy has arisen over the IASB's directive that the fair value of liabilities be computed using a discount rate related to the insurer's credit risk. The implication is that insurer A and insurer B, making identical promises to policyholders but having different claims-paying capabilities, would hold different reserves. In fact, an insurer would be required to lower its reserves as its credit standing weakened.

There is no controversy, it seems, when fair value is applied to the asset side of the balance sheet. For example, if *A* and *B* both buy the same corporate bond, the fair value of the bond is the same for *A* and *B*. They both own the rights to identical sets of cash flows, so they value the bond the same. In other words, the value of a financial asset is not a function of who owns the asset.

If we view liabilities simply as negative assets, then fair value concepts must hold true on the liability side of the balance sheet. If *A* and *B* make identical promises, the liability they book must be the same. It is true that the owners of *A*'s liability and *B*'s liability (for example, debt investors) will not value the cash flows the same, even if the promises are identical. To examine this more closely, we need to look at the balance sheet of the owners of the financial instruments issued by *A* and *B*.

Let us denote the set of identical cash flows promised by *A* and *B* as **(CF)**. If I buy the rights to **(CF)** from *A,* I have actually done two things:

- Purchased the rights to **(CF)** from *A*, and
- Sold a credit derivative (namely, a default put) to the shareholders of *A*.

To clarify, in making my purchase, I will own the right to receive the set of cash flows denoted by **(CF)**. At the same time, I will have granted the shareholders the right, but not the obligation, to put the company to me if the company's net equity is less than zero. This is how shareholders limit their liability to the amount invested. As owner of **(CF)** (and therefore a creditor of *A*), I cannot make a claim against the shareholders for any excess of liabilities over assets.

Let us denote the credit derivative by P. After purchasing **(CF)** from *A*, my total asset is **(CF)**+(-P), where the minus sign indicates I am short the put. Since it is an option, the value of P is always positive or zero, so my net asset value is less than the value of **(CF)**. In this way, I reflect on my balance sheet the possibility that A will not be able to pay me the amounts due under the terms of the financial instrument. I value **(CF)** using the risk-free rate, since the risk of default is taken care of in (-P). (Let us denote the risk-free rate and the risk rate as j and k, respectively, and the net present value of **(CF)** at the risk-free rate and at the risk rate as NPV*j***(CF)** and NPV*k***(CF)**, respectively. Then the credit put P has value equal to NPV*j***(CF)**-NPV*k***(CF)**).

Continuing along these lines, we see that the shareholders of A have a long position in P, so the value of this credit derivative to the shareholders is +P, where the plus sign indicates they own the put.

It then becomes clear that the value of A's liability is NPV*j***(CF)**. It is easier to see this by summarizing all the balance sheets:

- I own financial instruments having value NPV*j***(CF)** and (-P) (which sum to NPV*k***(CF)**, as expected);
- The shareholders of *A* own P; and
- *A* owes NPV*j***(CF)**.

Note the sum of all the assets and liabilities is NPV*j***(CF)**+(-P)+(+P)-NPV*j***(CF)** = 0, as must be the case, since the act of making accounting entries doesn't create wealth. According to the IASB's position, though, the balance sheets will appear as follows:

- I own financial instruments having value NPV*j***(CF)**+(-P) = NPV*k***(CF)**;
- The shareholders of *A* own P; and
- A owes NPV*k***(CF)**.

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In this case, the sum of all the assets and liabilities is NPV*k***(CF)**+P-NPV*k***(CF)**=P! Thus the IASB's approach has created wealth in the system in an amount equal to the value of the credit default put. This happens because the value of this credit derivative has been double-counted. It appears simultaneously on the balance sheet of *A* and *A*'s shareholders. We know, of course, that only one credit derivative was written, so it can't appear both as an asset for the shareholders and as an offset to *A*'s liability. It can be seen that the credit derivative is owned by the shareholders. Let the equity of a company be denoted by E. Then E = Assets-Liabilities. The shareholders have a claim on E when Assets > Liabilities. If Liabilities > Assets, the shareholders give the company to the creditors, and are not responsible for the amount by which Liabilities exceed Assets. This is the virtue of limited liability. Stated another way, the shareholders intrinsic net asset value, denoted by **NAV**(LTD.), equals max {Assets-Liabilities,0}.

Notice that if the shareholders's liability is not limited, **NAV** = Assets-Liabilities. This is the case in a general partnership, for example. We can determine the financial value of limited liability, X, by solving for X such that one financial instrument, **NAV**+X, has the same value as another financial instrument, **NAV**(LTD.). We see that X has the following values:

- If Assets >= Liabilities, X = 0;
- If Liabilities > Assets, X = Liabilities – Assets.

X is clearly an option. When the company has positive net asset value, the intrinsic value of X is zero. When the company is insolvent, X has positive value equal to the amount by which liabilities exceed assets. This is the same payoff pattern as a put option on the net asset value with a strike price of NAV = 0. If NAV is positive, there is no intrinsic value to the put. If NAV is negative, the put has value, and is exercised by "putting" the company to the creditors and avoiding any responsibility for the excess of Liabilities over Assets.

This logic allows one to reach the conclusion that the credit derivative is owned by the shareholders of the company and not the company itself. The value of the derivative is embedded in the stock price. No shares of a corporation trade at negative values. (On the other hand, interests in a general partnership could conceivably trade at negative values, since the partners are liable for all the debts of the company.)

In short, then, I maintain that if insurer *A* and insurer *B* make identical promises (by issuing identical financial instruments), these promises must be valued at the risk-free rate, and the liability established by *A* and by *B* will be equal. The owners of these financial instruments, under the law, have no recourse to the shareholders of *A* or *B* in the event of insolvency, and so, in effect, implicitly write a credit derivative to the shareholders in order to own the financial instruments. Since *A* and *B* may have different credit standings, the value of the short puts issued by the owners of the financial instruments will differ, and so the value to the owner of *A*'s instrument versus *B*'s will differ. These credit derivatives are owned by the shareholders of *A* and *B*, and allow for the limited liability inherent in common stock.

The IASB's position forces both the shareholders of a corporation and the corporation itself to claim ownership of the credit derivative, thus double-counting the derivative and causing an unsound valuation of the liabilities. $

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