Cummins Capital

RAROC, EVA, EVAOC formulas

Friction Cost: (reason why insurers’ invested capital would not earn full fair market return required)

* Agency and Informational Costs: Opportunistic management that fails to maximize value for firm. Adverse selection and moral hazard generates unexpected costs.
* Double Taxation: Lower income if invested through insurers than invested directly due to the double taxation of income.
* Regulation constraints create limitation for investment or impose an option at companies when assets are less than liability.

CAPM model problems: (not an allocation method)

1. Reflects only systematic uw risk. Other risk like tail risk not included.
2. Difficult to determine beta for lines.
3. Not only beta influence the return.

\* another equation similar to the Leverage concept, ROE = ROA\* a/e + ROS\*p/s, this time expands to two line, but essentially same.

VAR Method Disadvantages:

1. Firms may not have enough capital to allocate.
2. No Diversification considered.
3. Does not reflect the magnitude of loss when loss exceeds threshold

Insolvency Put Option: EPD = put option = Max (0, L-A) if L is fixed and A is risky

Policy Holder can only get the smaller of L or A, which is L – Max(0,L-A)

Claims Value= PV(L)- Put option (k=L, s=A)

\* note that in Cummins Paper it calculates EPD as a ratio of Loss, which = Put option(k=1, s=A/L)

MP and MR

* MP: Add and remove one line to see the difference of capital requirement to achieve same EPD
* MR: Add or remove one DOLLAR to see the marginal difference of capital requirement
* Difference: MP doesn’t allocate all capitals, but MR does,
* Both takes diversification into account

Other Conclusions:

Cost of capital allocated to a line is Spread Cost—Cost over the cost of capital if directly invested in capital market instead of insurance company

Capital allocation should recognize both asset and liability risk and takes covariability into account.

Duration and Convexity of liability should be considered.

Decision-making system should drive the design of data system.