Financial Analysis Solvency Tools

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Agenda

- ***Overview of Financial Analysis Solvency Tools (FAST) Ratios***
- ***Explanation and calculation of ratios***
- ***Financial Analysis scoring system and implications***
- ***Supervisory Measures***

DuPont Formula

Return on Equity (RoE)

= Net income / Equity (NI/E)

= (Net income/sales)(sales/assets)(assets/equity)

= Net profit margin x asset turnover

x finance leverage multiplier

Sustainable Growth Rate = g

Risk Based approach

- ***Very basic risk assessment factor***

  $$g = RR \times RoE$$

- ***RR is the retention rate***

  $$RR = 1 - \text{Dividend declared} / NI$$

- ***RoE is the return on equity***

  $$RoE = NI / E$$

Financial Analysis of a Company

Four Major Areas of Financial Analysis

- ***Internal liquidity:*** *company's ability to pay its short-term liabilities*
  - *Current ratio = current assets/ current liabilities*
- ***Operating performance****: management performance*
  - *Equity turnover = Net sales / average equity*
  - *Gross profit margin = gross profit / net sales*
  - *Return on equity = net income / average total equity*

Financial Analysis of a Company
(continued)

- ***Risk**: uncertainty of company's income and profit*
  - *Sales variability = Δ sales / average sales*
  - *Business variability = Δ operating income / mean operating income*
  - *Debt-equity ratio = long-term debt / total equity*
  - *Operating leverage = % Δ operating earnings / %Δ sales*
- ***Growth analysis**: sustainable growth*
  - *G = RR x RoE, where RR is retention ratio and RoE is return on equity*

Overview of Financial Analysis Solvency Tools – Insurance

- ***Helps regulators target resources on more risky companies***
- ***To be supplemented by in-depth financial analysis and/or on-site examinations***
- ***22 ratios: within "normal range"- no score***
  - ***Outside normal range: graduated score from 0 to 175 (mostly to 100)***
  - ***The higher the score, the more risky the company***
- ***Ratios may be used to compare a company against national averages (peer to peer comparison)***
  - ***Detailed annual or 5-year analysis***
  - ***Simplified quarterly comparisons***

Ratios (Indicators)

- *Grouped into four areas*
  - *Profitability ratios*
  - *Leverage ratios*
  - *Asset and Liquidity ratios*
  - *Miscellaneous ratios*

Profitability Ratios

- ***Ratio P1 – Investment yield deviation***
- ***Ratio P2 – Change in combined ratios***
- ***Ratio P3 – Gross expenses and commissions to gross premium written***
- ***Ratio P4 – Change in gross expenses and commissions***

Leverage Ratios

- ***Ratio L1A – Gross premiums written to Equity***
- ***Ratio L1B – Net premiums written to Equity***
- ***Ratio L2A – Change in gross premiums written***
- ***Ratio L2B – Change in net premiums written***

Leverage Ratios (continued)

- ***Ratio L3 – Surplus aid to Equity***
- ***Ratio L4 – Reinsurance recoverable on paid losses to Equity***
- ***Ratio L5 – Reinsurance recoverable on unpaid losses to Equity***
- ***Ratio L6 - Reserves to Equity***
- ***Ratio L7 – Two-year reserve development to Equity***

Asset and Liquidity Ratios

- ***Ratio A1A – Affiliated investment to Equity***
- ***Ratio A1B – Affiliated receivables to Equity***
- ***Ratio A2 – Miscellaneous receivables to Equity***
- ***Ratio A3 – Non-investment grade bond/debt exposure***
- ***Ratio A4 – Other invested assets to Equity***
- ***Ratio A5 – Change in liquid assets***
- ***Ratio A6 – Change in gross agents' balance***

Miscellaneous Ratios

- ***Ratio M1 – Cash flow from operations***
- ***Ratio M2 – Change in Equity (Capital & Surplus)***

Ratio P1 – Investment Yield Deviation

- ***Compares the investment yield of insurance assets to industry average***
- ***Investment yield = Net investment income / average cash and invested assets***
- ***Too much deviation from the industry average may mean:***
  - ***Low yield: non-investment grade, non-performing assets, investment management needs improvement, home/branch/sales offices are recorded as invested assets, etc.***
  - ***High yield: non-investment grade, extraordinary dividend payments from parents, affiliate and subsidiaries; huge realized capital gains, booking income that are not yet realized, windfall profit from highly speculative investments, etc.***

<u>Calculation of Ratio P1</u>

Investment Yield Deviation from Industry Average

A – Net Investment Income

B – Cash and Invested Asset

C – Prior year Cash and Invested Asset

*D – **Investment Yield = 100A[(B+C)/2]***

E – Average Industry Average (source: market)

*F – **Investment Yield Deviation = D-E***

Ratio P2 - Change in Combined Ratio

- *The combined ratio measures underwriting profitability*
- *Combined ratio = loss & LAE ratio + expense ratio + policyholder dividend ratio*
- *Change in combined ratio is % increase of current (this) year's ratio over the prior (last) year's ratio*
- *Combined ratio < 100% indicates underwriting profit*
- *Decline in combined ratio indicates improvement in underwriting results*
- *Increasing trend of changes in combined ratio signals deterioration of profitability*

Calculation of Ratio P2

Change in Combined Ratio = CCR

A – Earned Premium; H – Prior Year's
B – Incurred Losses; I – Prior Year's
C – Incurred Loss Expenses; J – Prior Year's
D – Other Underwriting Expenses Incurred; K – Prior Year's
E – Aggregate Write-in for Underwriting Deductions; L- Prior Year's
F - Dividend to Policyholders; M – Prior Year's
G – Net Premium Written; N – Prior Year's

1 – Current year's Combined Ratio = 100[(B+C+F)/A+(D+E)/G]
2 – Prior year's Combined Ratio = 100[(I+J+M)/H+(K+L)/N]

CCR = 1-2 (1 minus 2)

Ratio P3 – Gross Expenses and Commissions to Gross Premium Written

- ***Gross expenses and commissions: costs of acquiring and underwriting business***
- ***This ratio is expense ratio relative to gross premium written***
- ***Normal range is 15% – 35%***
- ***High ratio indicates some degree of inefficiency in managing and controlling cost***
- ***High ratio may also indicate inadequacy of premium rates (deficient pricing)***

Calculation of Ratio P3

Gross Expense and Commission/Gross Premium Written

- ***A – Direct Commission***
- ***B – Reinsurance Assumed Commission***
- ***C – Contingent Commission, Direct and Indirect***
- ***D – Membership fees***
- ***E – General Expenses***
- ***F – A & H Reimbursements***
- ***G – Aggregate Write – ins***
- ***H - Rent Expenses (Sales/underwriting Offices)***
- ***I – Direct Premiums Written***
- ***J – Reinsurance Premium (Assumed from Affiliated companies)***
- ***K – Reinsurance Premium (Assumed from unaffiliated companies)***
- ***L– Gross Expenses = A+B+C+D+E+F+G+H***
- ***M – Gross Premium Written = I+J+K***
- ***N – Gross Expense/Gross Premium Written (P3) = 100 L/M***

Normal range: 15% – 35%

Ratio P4 – Change in Gross Expenses and Commissions

- ***This ratio is % increase in a company's gross expenses and commissions***
- ***Too big an increase is cause of concern; may indicate:***
  - *Inefficient cost management*
  - *Premium rates (pricing) are no longer adequate/competitive*
  - *Cash-flow underwriting*
  - *Abnormal management cost and service fees*
  - *Sales campaign, expansion & promotion*
  - *Other non-recurring costs*

Calculation of Ratio P4

Change in Gross Expenses & Commissions

A – Direct Commission; I – Prior Year's

B – Reinsurance Assumed Commission; J – Prior Year's

C – Contingent Commission, Direct and Indirect; K – Prior Year's

D – Membership fees; L – Prior Year's

E – Other Insurance Business Expenses; M – Prior Year's

F – A & H Reimbursements; N – Prior Year's

G – Aggregate Write – ins; O – Prior Year's

H - Rent Expenses (Own Offices); P – Prior Year's

Q – This Year's Gross Exp & Commissions = A+B+C+D+E+F+G+H

R – Prior Year's Gross Exp & Commissions = I+J+K+L+M+N+O+P

S – Change in Gross Expenses & Commissions = 100 (Q-R)/R

Ratio L1A – Gross Premium Written to Equity

- ***Equity = Capital and Surplus***
- ***Gross and net premium written: measures of the marketing & sales efficiency of the insurance company***
- ***Ratios: measure asset turnover***
  - ***Reflective of management effectiveness in using capital***
  - ***Also reflect on the quantum of risk management is willing to take (one of the ratios to consider in determining prudent level of the company's risk tolerance)***

Calculation of Ratio L1A

Gross Premium Written to Equity

A – Direct Premium

B – Reinsurance Assumed (Indirect) Premium, Affiliated Companies

C – Reinsurance Assumed (Indirect) Premium, Unaffiliated Companies

D – Capital and Surplus (Equity)

E – Gross Premium Written = A+B+C

F – Gross Premium Written/Equity = 100 (E/D)

- *It is prudent to separate business done with affiliates from unaffiliated companies because the risks inherent between these types of business activities are different.*

Ratio L1B – Net Premium Written to Equity

- ***Net premium written =***
  gross premium written – reinsurance ceded
- ***Ratio L1B also reflects on management's willingness to leverage its C & S to generate sales revenue***
- ***It is important that Ratio L1A does not exceed Ratio L1B by a wide margin***
  - ***This would indicate that an abnormal (large) amount of the company's capital and surplus comes from reinsurance***

Calculation of Ratio L1B

Net Premium Written to Equity

A – Net Premium Written

B – Capital and Surplus

C = Net Premium Written/Equity = 100 A/B

Ratio L2A – Change in Gross Premium Written

- *The change is expressed as a percentage of gross premium written in the prior year*
- *It measures sales variability*
- *Significant increase or decrease indicates instability in the company's operation*
- *It is normal to observe large increases during the first few years of introduction and marketing of a product*
  - *Such variability is covered by the surplus of the company*

Calculation of Ratio L2A

Change in Gross Premium Written

A – Gross Premium Written, Current Year (Period)

B - Gross Premium Written, Prior Year (Period)

C – Change in Gross Premium Written =

100 (A-B)/B

Ratio L2B – Change in Net Premium Written

- ***The change is expressed as a percentage of net premium written in the prior year***
- ***Similar to the L2A ratio, it measures sales variability***
- ***Significant increase or decrease indicates instability in the company's operation***
- ***In addition, significant increases may indicate that the company entered into unfamiliar territories***
  - ***Thus, ceding more and more insurance to reduce net premiums (and risk retention)***
  - ***Watch also for possible cash-flow underwriting practice***

Calculation of L2B

Change in Net Premium Written

A – Net Premium Written, Current Year (Period)

B - Net Premium Written, Prior Year (Period)

C – Change in Net Premium Written =

100 (A-B)/B

Ratio L3 – Surplus Aid to Equity

- ***Surplus aid is the estimated amount of commissions on unearned ceded reinsurance premiums***
- ***Technically, this amount belongs to the reinsurer***
  - ***But it may be retained by primary (ceding) insurer according to the terms of cession (Reinsurance)***
- ***If a large portion of Capital & Surplus depend on surplus aid***
  - ***Continued solvency of primary (ceding) insurer depends on the continued accommodation and co-operation of the reinsurer***
  - ***Financial distress of the reinsurer seriously threatens the solvency of the primary (ceding) insurer***

Calculation of Ratio L3

Surplus Aid to Equity

- ***A – Ceded Reinsurance Commission***
- ***B – Reinsurance Ceded Premium***
- ***C – Total Ceded Unearned Premium***
- ***D – Capital and Surplus***
- ***E – Surplus Aid = A x (C/B)***
- ***F – Surplus Aid to Equity = 100 E/D***

Ratio L4 – Reinsurance Recoverable on Paid Losses to Equity

- ***Reinsurance recoverables on paid losses and paid LAE include***
  - ***Current balances: arise due to timing difference between billing and settlement dates***
  - ***Aged (past due) balances indicate reinsurer's***
    - ***poor operating performance***
    - ***lack of credit worthiness***
    - ***differences in the evaluation of, or disputed, losses***
- ***High ratio raises concern of reinsurer's credibility***

Calculation of Ratio L4

RI Recoverables for Paid Losses to Equity

- ***A – RI Recoverable for Paid Losses from Affiliated Companies***
- ***B – RI Recoverable for Paid Losses from Unaffiliated Companies***
- ***C – Capital and Surplus***
- ***D – RI Recoverable for Paid Losses = A+B***
- ***E – RI Recoverable for Paid Losses to Capital & Surplus = 100 (D/C)***

- ***You may need to separately calculate the ratios applicable to affiliates and non affiliates in which case the formulae would be: 100 (A/C) for affiliates and 100 (B/C) for non affiliates, then add (combine) the 2 ratios to arrive at ratio E, above. (Reason: risks in collections differ)***

Ratio L5 – Reinsurance Recoverable on Unpaid Losses to Equity

- ***This ratio is another measure of the level of risk of primary (ceding) insurer related to reinsurance***
- ***High ratio raises credibility concern of reinsurer***
- ***Relatively higher level of this ratio may be acceptable for long-tail writer***
- ***For short-tail writer, high ratios indicate a build-up of ceded loss reserves***

Calculation of Ratio L5

RI Recoverable for Unpaid Losses to Equity

- ***A – RI Recoverable for Unpaid Losses from Affiliated Companies***
- ***B – RI Recoverable for Unpaid Losses from Unaffiliated Companies***
- ***C – Capital and Surplus***
- ***D – RI Recoverable for Unpaid Losses = A+B***
- ***E – Reinsurance Recoverable for Unpaid Losses to Equity = 100 (D/C)***

- ***Again separate calculation of ratio for affiliates and non affiliated reinsurers is suggested***

Ratio L6 – Reserve to Capital & Surplus

- ***This ratio concentrates on Reserves for losses and LAE in relation to capital & surplus***
- ***It measures the company’s exposure to errors in estimation of liabilities for losses and LAE***
- ***Especially critical if significant amount of net premium written is attributable to long-tailed business***
  - ***Due to long or prolonged time to settle claims***

Calculation of Ratio L6

A – Net Premium Written on Long-tailed lines
B – Total Net Premium Written
C - % of net long-tailed line = 100 (A/B)
D – Loss Reserves
E – Reserve for Loss Adjustment Expenses
F – Capital & Surplus
G – Reserve to Capital & Surplus = 100 (D+E)/F
H – Ratio for long tailed products = (G x C)

- ***Note: Ratio H (relates to long tailed products) = G*C. Ratio H will indicate the extent of leveraging reserves for long-tailed products to capital & surplus.***

Ratio L7 – Two-year Reserve Development to Capital & Surplus

- ***Losses outstanding for two years prior and up to the current statement date is the sum of***
  - ***Current reserves outstanding for losses incurred two years ago***
  - ***Loss payments made during last two year***
- ***Two-year reserve development is difference***
  - ***Updated loss estimate above, minus***
  - ***Reserve at the end of prior year***
- ***If two-year reserve development is***
  - ***Positive: reserves were deficient***
  - ***Negative: reserves were redundant***

Calculation of Ratio L7

First, calculate the 2 yr loss development; then Ratio L7
"2 year Reserve Development to Equity"

- ***A – Current reserves outstanding for losses incurred two years ago (last 2 years)***
- ***B -Loss payments made during last two year***
- ***C – Updated 2 year loss estimate = A + B***
- ***D - Reserve at the end of prior year***
- ***E - 2 Year Reserve Development = C – D***
- ***F – Capital & Surplus***
- ***G - 2 year Reserve Development to Capital & Surplus= 100 (E/F)***

Ratio A1A – Affiliated Investments to Capital & Surplus

- ***This ratio measures the company's investment in parent, subsidiaries, affiliates***
- ***Too high ratios indicate extra risk of the company due to risks faced by the parent, subsidiaries and affiliates***
- ***Measures the extent to which the capital & surplus of the insurance company is exposed or threatened by the solvency risks faced its parent, subsidiaries and affiliates companies***
- ***Calculation of ratio: 100 (A/B) where:***
  - ***A – Total investment in parent, subsidiaries or affiliates***
  - ***B – Capital & Surplus***

Ratio A1B – Affiliated receivables to Capital & Surplus

- *If Receivables are unsecured: risk of collection is high*
- *This ratio measures the company's risk due to large amount of unsecured collectibles from company's parent, subsidiaries, affiliates*
- *It measures the extent to which capital & surplus is leveraged in case of default by parent, affiliates and subsidiaries*
- *Calculation: 100 (A+B)/C, where:*
  - *A = Receivables from parent, affiliates and subsidiaries*
  - *B = Reinsurance recoverable from parent, affiliates, subsidiaries*
  - *C = Capital & Surplus*

Ratio A2 – Miscellaneous Recoverables to Capital & Surplus

- ***Recoverables from creditors other than reinsurers cause major risks to the financial stability of an insurance company***
  - ***Illiquid and non-income producing***
  - ***Include write-ins which may not be permitted or admissible assets***
- ***The higher the ratios = the higher is the risk of collection = the higher is the (potential) threat to C & S***
- ***Calculation: 100 (A+B+C)/D, where:***
  - ***A – Aggregate asset write-in other than invested assets***
  - ***B – Income tax and other taxes recoverable plus accrued interest***
  - ***C – Other non-trade related recoverables***
  - ***D – Capital & Surplus***

Ratio A3 – Non-Investment Grade Bond to Capital and Surplus

- ***This is commonly referred to as "Non Investment Grade Bond Exposure"***
- ***Non-investment grade bonds may be inadmissible or partially admissible assets***
- ***The ratio measures the extent to which C & S is exposed or leveraged to the credit risks of the bond and the issuer making payment of bond obligations as they fall due***
- ***Credit risk and liquidity risk are the major concerns associated with holding such bonds***
- ***The higher the ratios; the higher is the indication of management's decision to take more credit and liquidity risks, thus: higher risk exposure of C & S to credit risk of the bond issuer and the insurance company's own liquidity risk.***
- ***Calculation: 100 (A/B) where:***
  - ***A = Total of non investment grade bonds***
  - ***B = Capital & Surplus***

Ratio A4 – Other Invested Assets to Capital & Surplus

- ***Other assets include real estate, mortgage loans, shares in joint-ventures, partnerships, resource development or the like***
- ***Characterized with illiquidity and highly vulnerable to market risks***
- ***High ratios indicate potential asset risks; high level of risk to stable company's capital and surplus***
- ***Calculation: 100 (A+B+C)/D, where:***
  - ***A – Real Estate***
  - ***B – Mortgage Loans on Real Estate***
  - ***C – Other Invested Assets***
  - ***D – Capital and Surplus***

Ratio A5 – Change in Liquid Assets

- ***Liquid assets include***
  - ***Cash and tradable securities***
  - ***Receivables for securities plus accrued interest/dividends***
  - ***Investment in cash and tradable securities of affiliates***
- ***Insurer need liquid assets to meet obligations***
  - ***Poor liquidity: risk of forced sale of assets below market***
  - ***Excessive liquidity: poor investment performance***
- ***Stable, low ratios are ideal***

Calculation of Ratio A5

Change in Liquid Assets

- ***A - Bank and Cash Fund; F- Prior Year's***
- ***B- Bank Deposits; G- Prior Year's***
- ***C- Government Bonds; H – Prior Year's***
- ***D - Shares (available for sale); I- Prior Year's***
- ***E - Investment Certificates; J – Prior Year's***
- ***K- This year's Liquid Assets = A+B+C+D+E***
- ***L – Last Year's Liquid Assets = F+G+H+I+J***
- ***M - Change in Liquid Asset = 100 [(K – L)/L]***

Ratio A6 – Change in Gross Agents' Balances

- *Agents' balances are not easily converted to cash even in time of liquidation*
- *Significant increase in gross agents' balance spells liquidity problem*
- *Measures the extent by which C & S is leveraged to Agent's Balances*
- *Calculation: 100 (A-B)/B, where:*
  - *A – Agents' balances at end of current year*
  - *B – Agents' balances at end of previous year*

Ratio M1 – Cash Flow from Operation

- ***This is a ratio of the net cash flow from operation to net premium collected***
  - ***Measures the insurer's ability to generate cash from normal operation of the company***
  - ***Test of the profitability of the operation of the company***
- ***Cash flow is stated as outgoes - incomes***

Calculation of Ratio M1

Cash Flow from Operations

- A – Loss and LAE paid; I – Prior Year's
- B- Underwriting (Commission and Acquisition Cost) Expense paid; J – Prior Year's
- C – Dividends paid to Policyholders; K – Prior Year's
- D- General and Administrative Expense; L – Prior Year's
- E - Net Investment Income (loss); M – Prior Year's
- F - Other Income (expense); N – Prior Year's
- G - Recoverable taxes Received (Paid); O – Prior Year's
- H – Net Premium Collected; P – Prior Year's
- Q – Cash Flow from Operations, Current Year = 100 [(A+B+C+D) – (E+F+G)/H]
- R – Cash Flow from Operations, Previous Year = 100[(I+J+K+L) – (M+N+O)/P

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Ratio PM2 – Change in Capital & Surplus

- ***This is the ultimate measure of the financial condition of the company***
- ***A negative change shows deterioration: bad***
- ***Drastic increase shows instability***
  - ***It is sometimes related to a change of ownership***
  - ***Many insolvent companies have high surplus increases prior to insolvency of the company***

Calculation of Ratio M2

A – Capital & Surplus End of Current Year

B – Capital & Surplus End of Previous Year 1(Last Year)

C – Capital & Surplus End of Previous Year 2 (Year before Last Year)

D - Change in Capital & Surplus, this Year = 100 (A-B)/B

E – Change in Capital & Surplus, last Year = 100 (B-C)/C

– ***This is a 3 - year calculation. Changes to C & S for the lasts five (5) years or longer period gives you better idea about the developments (growth, stability or deterioration) of the company’s financial condition***

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FAST Factors Summary Sheet

		Normal Range		Outermost Range	
		Low	High	Low	High
PP1	Investment Yield Deviation from Industry Average	-1.5	1.5	-15	30
PP2	Change in Combined Ratio	-5	5	-25	25
PP3	Gross Expenses and Commissions / Gross Premium Written	15	35	5	70
PP4	Change in Gross Expenses and Commissions	-20	20	-100	100
PL1A	Gross Premiums Written / Policyholders' Surplus	0	300	0	900
PL1B	Net Premiums Written to Policyholders' Surplus	0	225	0	675
PL2A	Change in Gross Premium Written	-20	20	-100	100
PL2B	Change in Net Preiums Written	-15	20	-75	100
PL3	Surplus Aid to Policyholders' Surplus	0	5	0	25
PL4	Reinsurance Recoverable on Paid Losses to Policyholders' Surplus	0	5	0	25
PL5	Reinsurance Recoverables on Unpaid Lossess to Policyholders' Surplus	0	25	0	75
PL6	Reserve to Policyholders' Surplus	0	175	0	525
PL7	Two-Year Reserve Development to Policyholders' Surplus	0	5	0	25
PA1A	Affiliated Investment to Policyholders' Surplus	0	20	0	60
PA1B	Affiliated Receivables to Policyholders' Surplus	0	10	0	30
PA2	Miscellanious Recoverables to Policyholders' Surplus	0	5	0	25
PA3	Non-Investment Grade Bond Exposure	0	5	0	25
PA4	Other Invested Assets to Policyholders' Surplus	0	5	0	25
PA5	Change in Liquid Assets	-5	25	-25	125
PA6	Change in Gross Agents' Balances	-2.5	10	-12.5	50
PM1	CashFlow from Operation	0	95	0	142.5
PM2	Change in Policyholders' Surplus	0	25	0	50

FAST SCORES

- *No score is given inside the normal range*
- *Graduated score is given outside the normal range*
  - *From 0 to 100 at or beyond the maximum range*
  - *Some items have extra points up to another 70*
- *Average for each group is calculated and added together*
- *High FAST scores indicate need of more regulatory attention*

Thank you!

Discussions

Appendix 5

Exit Report of Edgar P Balbin

TAPR II – Component B, Insurance

May 29, 2008