21. (4.5 points)

The following financial information is available for an insurance company as at December 31, 2011. The company has no subsidiaries.

MCT Ratio	192%
Return on GAAP Equity	6.2%
Net Loss Reserves to Equity	185%
Return on Revenue	1.0%
One-Year Development to Equity	-3.5%
Overall Net Leverage	430%
Return on Assets after Tax	3.5%
AOCI to Equity	10%
Cash Flow from Operations to Net Premiums Written	-1.8%
Reinsurance Recoverables to Equity	6.5%
Net Underwriting Leverage Ratio	210%
Overall Diversification Score	56

a. (3 points)

Using three relevant ratios from the information given above, evaluate the profitability of the insurance company for 2011. In your evaluation, include a comparison to benchmark values as well as the insight that the ratios give to the underlying balance sheet and/or income statement accounts.

b. (0.75 point)

Given that the ratio of gross premiums written to net premiums earned is 1.1, calculate the insurance return on net premium earned.

c. (0.75 point)

Calculate the ratio of net claims liabilities to total liabilities.

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Examiner's report:
Common mistakes : maximum of $250,000 instead of $300, 000
Forgot to multiply by 70% or used wrong percentage
For part b), a lot of candidates forgot about unearned premium calculation

Question 21

Answer key:
a. (**Students may receive credit for any 3 of the following ratios)**
Return on GAAP Equity: Minimum recommended is 5.4%, so actual 6.2% is favorable. Calculated as net income / Equity. This higher-than-benchmark value for this ratio means that the shareholders are receiving a greater return per unit of invested capital. This can mean that net income was high for 2011, or alternatively, the company may have a smaller equity base that it is using to generate profits.

Return on Revenue: Minimum recommended is 6.2%. Calculated as underwriting income + investment income excluding gains + income from subsidiaries as a percentage of gross written premiums. The 2011 result for the company was less than the minimum recommended benchmark (1.0% < 6.2%). Since the ROE was favorable, it is possible that the company had significant investment income gains or other income in 2011 that would have been included in ROE, but excluded from ROR. It is also possible that the company had very high gross written premium in 2011, with a smaller equity base causing the conflicting result for these ratios.

Return on Assets after Tax: Minimum recommended is 2.6%. Actual 2011 result is higher than the benchmark at 3.5%. Calcualted as after tax net income / average assets. This favorable result is consistent with the ROE favorable result, and both include items like investment income gains and other income, reinforcing the possibility that 2011 net income is driven from at least one of these sources. Alternatively, the company could be generating moderate income from a smaller-than-average asset base.

Cash Flow From Operations to NPW: Minimum recommended is 0%. Actual 2011 result is less than the benchmark at 0%, so unfavorable result. The ratio is calculated simply as cash flow from operations / net premiums written. The company paid out cash from claims, expenses and other operations than it received from premiums, investment income (excluding gains/losses), and other operations. Given the favorable result from ROE/ROR and unfavorable ROA, this reinforces the possibility that 2011 net income is driven from investment income or other income sources that would flow through Cash Flow from Investment Activities or Cash Flow From Financing Activities.

Overall, the net income generated by the company in 2011 was positive and significant. However, it appears that the source of the income may have been from one-time sources such as investment gains or other income, and not from underwriting income. If true, then this income may not continue into the future.

b.
Insurance Return on Net Premiums Earned = (U/W income + investment income excl capital gains) / net premiums earned

Return on Revenue = (U/W income + investment income excl gains + income from subs) / GPW

Since the company has no subsidiaries, there is no income from subs in the Return on Revenue calculation.

Return on Revenue * (GPW/NPE) = (U/W income + inv income excl gains) / GPW * (GPW / NPE) = Insurance Return on Net Premiums Earned

Insurance Return on Net Premiums Earned = 1.0% * 1.1 = 1.1%

c.
Overall Net Leverage = (NPW + Liabilities) / Equity
Net Underwriting Leverage Ratio = NPW / Equity
Net Loss Reserves to Equity = Net Loss Reserves / Equity

Overall Net Leverage – Net U/W Leverage Ratio = (NPW – NPW + Liabilities) / Equity = Liabilities / Equity

(Net Loss Reserves / Equity) / (Liabilities / Equity) = Net Loss Reserves / Liabilities

So, Net Loss Reserves to Equity / (Overall Net Leverage – Net U/W Leverage Ratio) = Net Loss reserves / Liabilities = (185%) / (430% – 210%) = 84.1%

Actual candidate answer for full marks:

a) Return on revenue. Benchmark minimum is 6.2%
1% return is clearly outside the acceptable range.
This ratio measures ability to generate insurance profits from total insurance revenues.
= UW Income + Investment Income (excluding gains/losses) + Subsidiary Income/loss
GWP

Return on Equity. MSA minimum is 5.4% 6.2% is within the acceptable range.
This ratio reflects the company's ability to generate profits from shareholder's equity, and is useful for investors comparing across companies.
= Net Income
Avg Equity.

Return on Assets after Tax = Net Income — MSA minimum = 2.6%
Avg Assets — Company result 3.5% is acceptable.
reflects the ability to generate net income using the asset base.

b) Return on Revenue
= UW income + Investment Income excluding capital gains/losses + subsidiary income
GWP

Insurance return on NPE = Return on revenue x GWP/NPE = 1% x 1.1 = 1.1.%

c) Net UW Leverage Ratio = NPW/Equity = 210%
Overall Net Leverage = NPW + Liabilities = 430%
Equity

Liabilities/Equity = 430% - 210% = 220%

Net Loss Reserves to Equity = 185%

Claims/Total liabs
= (Net Loss Reserves/Equity)/(Total Liabilities/Equity)
= 185%/220%
= 84.1%

Examiner's report:
a.
A surprisingly large number of candidates failed to select three profitability ratios, selecting instead to use some solvency ratios like MCT. A smaller group of candidates also finished this part concluding that the company was in good financial condition (despite the fact that the question asks about profitability). Clearly, the candidates are not used to questions asking about profitability.
Many candidates also failed to provide genuine insight into the operations of the theoretical company from the profitability ratios, opting instead to explain the purpose of the ratio and/or providing the formula for the ratio. Whenever a candidate provided genuine insight, we gave that insight 0.5 points toward the insight of the relevant ratio.

b.
Most candidates did well on this part of the question, scoring the full 0.75 points.

c.
The majority of candidates scored 0 or 0.25 points on this question, either because it was too long to attempt or it proved too difficult for their attempt to solve. A small group of candidates discovered a second possible solution that involved taking ratio of ROE to ROA and using that solve for the ratio of Liabilities to Equity, which was then applied to the net loss reserves to Equity ratio to get the ratio of net claims liabilities to total liabilities. This alternate solution was given full marks.

Question 22

Answer key:
(a) Paid in 2012 = 1,800 * 0.35 / 0.6 = 1,050

Paid in 2013 = 1,800 * 0.25 / 0.6 = 750
PV = 1,050/1.03^0.5 + 750/1.03^1.5 = 1,752.07
PV with PFAD int rate = 1,050/1.025^0.5 + 750/1.025^1.5 = 1,759.85
APV = 1,752.07 * 10% + 1,759.85 = 1,935.05

(b) Undiscounted LR AY 2011 = (1,200 + 1,800) / 5,000 = 60%

Investment income = APV / 2 * yield = 38.7
Discounted LR AY 2011 = (1,200 + 1,935.05 – 38.7) / (5,000 + 14) = 61.75%

(c) [Rept Res – 95% * min(claims liab, rept res)] * tax rate * (1 – PV)