

EDUCATION AND EXAMINATION COMMITTEE
OF THE
SOCIETY OF ACTUARIES

COURSE 8 FINANCE STUDY NOTE

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Case Study
Exam 8 Finance – Fall 2000

Zest for Life (Zest) is a direct insurance writer located in a medium-sized city in the northeastern United States. This city contains five insurance companies, with Zest being the largest. Two medium-sized banks are also located in this city. The city's population is largely white-collar, and the majority of the workforce is employed in insurance, banking, and the city's one college.

Zest currently markets three product lines - Individual Life via independent agents, GIC's for pension plans via brokers, and Group Long Term Disability also through brokers.

Background and History

Zest is a stock insurance company, having been established in 1945. Zest's growth was modest up until 1993. At that time, in order to encourage greater growth, Zest established an incentive compensation plan for senior management that included stock options. Growth and profits increased rapidly over the next 5 years.

This growth began to attract the interest of institutional investors, and in 1995 several large mutual funds began accumulating shares of Zest. In 1997, Alpine Bank of Switzerland, a large foreign bank, acquired 30% of the outstanding shares of Zest. The shareholders of Zest at the end of 1999 consisted of the following:

- institutional investors – 40%,
- Alpine Bank of Switzerland – 30%,
- senior officers of Zest – 10%,
- general public – 20%.

No institutional investor owns more than 5% of Zest's outstanding stock.

In 1998, Alpine Bank acquired 100% of the outstanding shares of a medium-sized US bank.

Zest's current senior management has been in place since 1996, and are well liked by the employees. Senior management also has a good relationship with its sales force. In 1998, the most recent reporting year, management exceeded target production volumes by 20%, for which they were well compensated.

It is now January 16, 2000, and the finance department of Zest has just completed the draft financial statements for the year 1999 as attached. Risk based capital requirements (RBC) have been calculated based on a respected rating agency's formula.

Issues

The accounting firm of Young and Green (YaG) have been Zest's auditors since 1990. In the second half of 1998, YaG issued a letter to management expressing concern that the company's accounting practices were too aggressive. During the year end 1998 audit, YaG determined that if the accounting practices were not modified it would issue a qualified opinion for the next year end. The changes in accounting practices that were suggested by YaG would have reduced Zest's projected year end 1999 RBC ratio from 280% to 245%. Further, the projected RBC ratio at the end of 2000 would be reduced to 235%.

On June 27, 1999, the audit firm of YaG was dismissed and replaced with the audit firm Tick and Associates (Tick).

North American Rating Agency plc (NARA), a respected insurance company rating agency, noticed the change in audit firms, and scheduled a meeting with local management in the early fall of 1999. After these discussions, NARA put the rating of Zest, currently at AA, under review with negative implications. Zest was advised that there was potential for the rating to be reduced at the end of 1999.

The news of the rating action was seized upon by Zest's competitors and the media. As a result, Zest's 1999 fourth quarter sales dropped in all three lines and its stock price fell to three quarters of the 1998 level. Zest has now hired a public relations firm in order to work on managing the negative implications of its ratings review.

The attached draft financial statements for year end 1999 have been prepared based on accounting practices consistent with those in effect at 1997 year end. The preliminary 1999 RBC ratio, based on these draft financial statements, is 274%.

Products and Descriptions

Individual Life Insurance

Zest offers two main products: a variable life with minimum death benefit equal to the initial deposit but no minimum interest rate guarantee, and a competitive term product sold through its brokers.

Products are sold mostly through independent agents. Zest has a network of brokerage managers who recruit and develop these independent agents. These agents are extremely loyal to their customers and have frequent contact with them.

Growth in the term product has been rapid, due largely to Zest's desire to have its term plans rated in the top 10 with respect to price among its peer group of companies. As a result, Zest has been continuously repricing its product line. Because of the loyalty of the brokers to their customers, there has been evidence of higher-than-expected replacement activity as the brokers try to obtain the lowest price for their customers. This was

evidenced by the approximate 15% experience lapse rates in 1999, rather than the historic 10% experienced through the 1990's up to and including 1997.

Zest's variable life product credits interest based on the earnings of a separate fund of assets dedicated to this line. Policyholders can choose to allocate their investments to either a bond fund or stock fund. Investment income is credited at the fund earned rate less an investment management expense. The management expense is 150 basis points for the bond fund, and 225 basis points for the equity fund. This charge is based on the market value of the assets in the fund. Zest's variable life product allows policy loans up to 50% of the cash value. The rate charged on policy loans is variable, and is recomputed monthly based on 5-year treasury bonds plus 75 basis points.

Zest reinsures the mortality risk on its term and variable life product. Reinsurance is on an excess of retention basis; Zest's current retention is \$500,000 per life. This level of retention results in reinsurance of approximately 15% of Zest's business.

Guaranteed Investment Contracts (GIC's)

Zest issues GIC's to defined contribution pension plans. Most new sales are the result of marketing to brokers specializing in group benefits. These brokers are sensitive to the ratings of the insurance companies with whom they deal. The brokers have a responsibility to their clients, and prefer as a result to deal with companies that are rated AA or higher. They will deal with stable insurance companies that are rated A in order to obtain higher returns for their clients. However, only limited business is placed with insurance companies that are rated A, and no business is placed with insurance companies that are rated below A. It is not uncommon for brokers to recommend to their clients to move business away from insurance companies whose ratings are in decline, even if long-term relationships exist.

Zest allows book value withdrawals in order to satisfy plan obligations to participants. These obligations vary by pension plan, but can include paying out participant accounts (on a book value basis) upon death, disability and termination of employment of the participant, except in the rare situation of large-scale terminations.

Surrenders by the contract-holder (rather than the participants) are market value adjusted based on changes in interest rates.

Group Long Term Disability

Zest sells group long term disability coverage to large (500+) employers. Its competitive advantage has been high levels of customer service both towards the employer and plan members.

Zest's group long term disability is sold through brokers who specialize in group benefits. These brokers solicit offers from insurance companies for their clients. The brokers make recommendations to their clients that are based largely on price. Most brokers

prefer to deal with companies that are rated AA or higher. Insurance companies that are rated below A are virtually excluded from this market.

Brokers are responsible for the negotiation of all premiums, but claims are paid directly to the customer by the insurance company. Brokers are compensated based on commission that is calculated as a percentage of the premium remitted. Brokers regularly solicit insurance companies to bid for their clients' long term disability insurance business.

Zest currently reinsures its group long term disability on an excess of \$5,000 monthly income. This results in reinsurance of approximately 8% of Zest's group long term disability business. This retention was changed in 1995. Prior to 1995, Zest reinsured amounts in excess of \$2,500 monthly income, or approximately 25% of its business. Zest's current reinsurer has expressed concern with the profitability of Zest's long term disability.

Zest's group long term disability profits have been much lower than anticipated in aggregate in the years 1996 and later. In addition, earnings have tended to fluctuate.

Business Strategy

Zest's current business plan sees its future profits coming from lines of business which focus on wealth management, such as GIC's and to a lesser extent, variable life business. Zest management is contemplating developing a deferred annuity line in order to complement the Group GIC line of business.

Zest feels they can accomplish this by leveraging Alpine Bank of Switzerland's ownership of a US bank as a new distribution network.

Zest recognizes that independent agents are more loyal to the policyholders than to the companies with whom they deal, and therefore feels a career agency would create a greater bond between the company and its sales force.

Investment Policy

In its general account, Zest invests in public bonds (including CMO's), private placement bonds, commercial mortgages, equities and real estate.

Target investment allocations and asset qualities are outlined in the Appendix.

Asset/Liability Management

Zest's asset/liability management policy is to match asset and liability durations by line of business within +/- 0.25 years. Macaulay duration is used, based on the current level of interest rates and best estimate cash flows given that interest level.

Assets are segmented by line of business. Assets backing the company's GIC and Group LTD liabilities as well as the individual term liabilities are held in the general account. Assets backing the variable life business are held in two segregated funds – a bond fund and an equity fund.

The duration of Zest's liabilities is 3 for the GIC line, 4 for the Group LTD line, and 7 for the individual life line (excluding the variable life line of business).

Investments are managed externally using the investment management firm HRU Investors llp (HRU). Zest's corporate actuarial department provides liability cash flows to HRU on a semiannual basis.

Rating

Zest has stated it will maintain a minimum target capital ratio of 275%, based on the RBC formula of North American Rating Agency plc (NARA).

NARA uses the following rating categories: AAA, AA, A, BBB, BB, etc.

Zest was rated AA at the end of 1998, but its rating is currently under review with negative implications. NARA included the following rationale for putting Zest's rating under review:

NARA discussed with Zest the reason for the departure of the Zest' previous auditors. Zest disclosed that those auditors have expressed concern over its accounting policies. After more investigation, NARA felt that implications on current capital and future capital projections were negative.

Zest's targeted required capital ratio of 275% is slightly below the industry average of 300%.

Zest's target capital ratio may impair its ability to renew existing business and attract new business.

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Balance Sheet

	December 31, 1998	December 31, 1999
Assets		
<u>Private Bonds</u>		
Investment grade	1,104.2	1,218.1
Below investment grade	<u>470.0</u>	<u>520.0</u>
subtotal	1,574.2	1,738.1
<u>Public Bonds</u>		
Investment grade	1,421.3	1,567.2
Below investment grade	350.0	390.0
CMO (investment grade)	<u>590.0</u>	<u>650.0</u>
subtotal	2,361.3	2,607.2
<u>Commercial Mortgages</u>		
Investment grade	638.4	648.5
Non-investment grade	<u>159.0</u>	<u>162.0</u>
subtotal	797.4	810.5
<u>Equities</u>	848.5	859.2
<u>Real Estate</u>	431.9	437.3
<u>Cash and Short Term</u>	20.0	20.0
<u>Premiums Due and Unpaid</u>	10.0	10.0
<u>Deferred Acquisition costs</u>	85.6	87.3
<u>Assets held in separate account</u>	471.5	497.5
<u>Other Assets</u>	29.6	32.9
Total Assets	6,630.0	7,100.0
Liabilities		
<u>Policy Liabilities - General Account</u>		
GICs	2,200.0	2,550.0
Individual Variable Life	266.6	268.1
Individual Term Insurance	126.1	127.9
Group LTD	<u>1,852.2</u>	<u>1,918.4</u>
subtotal	4,444.9	4,864.4
Other Liabilities - General Account	59.6	63.0
Separate Account	471.5	497.5
Equity	1,654.0	1,675.1
Total Liabilities and Equity	6,630.0	7,100.0

Income Statement

LOB: ALL

	Actual		Projected
	1998	1999	2000
Income Statement			
Premiums	384.9	390.9	399.8
Investment Income	279.5	277.1	305.2
Total Revenue	664.4	668.0	705.0
Benefits including surrenders	389.2	392.0	401.0
Increase in reserves	69.6	69.5	75.0
Interest Credited	122.6	123.5	144.3
Commissions	49.0	50.1	51.6
Change in DAC	(2.4)	(1.7)	(4.3)
Other Expenses	25.0	24.5	24.4
Total Expenses	653.0	657.9	692.0
Transfers to separate account	(15.4)	(22.8)	(29.2)
Income before tax	26.8	32.9	42.2
Income Tax	9.3	11.6	14.7
Net income after tax	17.5	21.3	27.5

Income Statement
LOB: GIC

	Actual		Projected
	1998	1999	2000
Income Statement			
Premiums			
Investment Income	139.80	142.50	166.50
Total Revenue	139.80	142.50	166.50
Benefits			
Increase in reserves			
Interest Credited	122.60	123.50	144.30
Commissions			
Change in DAC			
Other Expenses	4.30	4.80	5.60
Total Expenses	126.90	128.30	149.90
Income before tax	12.90	14.20	16.60
Income Tax	4.50	5.00	5.80
Net income after tax	8.40	9.20	10.80
Opening Balance	2,100	2,200	2,550
Closing Balance	2,200	2,550	3,000
Net Investment income rate	6.50%	6.00%	6.00%
Tax rate	35%	35%	35%
Experience			
Rollovers	80%	75%	75%
% retained of maturing business			
Maturities	660.0	765.0	1,000.0
New Business	109.4	417.7	555.7
Rollovers	528.0	573.8	750.0
GICs written	637.4	991.5	1,305.7

Income Statement
LOB: Variable Life

	Actual		Projected
	1998	1999	2000
Income Statement			
Premiums	63.4	57.1	51.4
Investment Income	18.8	19.1	19.1
Total Revenue	82.2	76.2	70.5
Benefits	15.2	17.2	19.3
Surrenders	64.7	66.2	67.1
Increase in reserves	4.1	1.5	(0.7)
Interest Credited	-	-	-
Commissions	1.9	1.7	1.5
Change in DAC	-	-	-
Other Expenses	0.7	0.7	0.6
Total Expenses	86.6	87.3	87.8
Transfers to separate account	(15.4)	(22.8)	(29.2)
Income before tax	11.0	11.7	11.9
Income Tax	3.8	4.1	4.1
Net income after tax	7.2	7.6	7.8
Inforce volume	738.1	765.6	784.1
Opening Reserve	262.5	266.6	268.1
Closing Reserve	266.6	268.1	267.4
Separate Account end of year	471.5	497.5	516.7
Investment income rate	7.12%	7.13%	7.14%
Tax rate	35%	35%	35%

Income Statement

LOB: Term

	Actual		Projected
	1998	1999	2000
Income Statement			
Premiums	94.9	97.3	102.0
Investment Income	2.6	2.4	2.4
Total Revenue	97.5	99.7	104.4
Benefits	69.1	69.7	71.9
Increase in reserves	2.1	1.8	4.2
Interest Credited	-	-	-
Commissions	17.6	17.7	18.1
Change in DAC	(2.4)	(1.7)	(4.3)
Other Expenses	4.4	4.3	4.0
Total Expenses	90.8	91.8	93.9
Income before tax	6.7	7.9	10.5
Income Tax	2.3	2.8	3.7
Net income after tax	4.4	5.1	6.8
Inforce volume	34,616	33,800	34,108
New business volume	4,697	4,791	5,031
Opening Reserve	124.0	126.1	127.9
Closing Reserve	126.1	127.9	132.1
Opening DAC	83.2	85.6	87.3
Closing DAC	85.6	87.3	91.6
Investment income rate	6.50%	6.00%	6.00%
Tax rate	35%	35%	35%
Experience			
Lapse rate	16%	16%	14%

Income Statement
LOB: LTD

	Actual		Projected
	1998	1999	2000
Income Statement			
Premiums	226.6	236.5	246.4
Investment Income	118.3	113.1	117.2
Total Revenue	344.9	349.6	363.6
Benefits	240.2	238.9	242.7
Increase in reserves	63.4	66.2	71.5
Interest Credited	-	-	-
Commissions	29.5	30.7	32.0
Change in DAC	-	-	-
Other Expenses	15.6	14.7	14.2
Total Expenses	348.7	350.5	360.4
Income before tax	(3.8)	(0.9)	3.2
Income Tax	(1.3)	(0.3)	1.1
Net income after tax	(2.5)	(0.6)	2.1
Inforce premium	226.6	236.5	246.4
Opening Reserve	1,788.8	1,852.2	1,918.4
Closing Reserve	1,852.2	1,918.4	1,989.9
Opening DAC	-	-	-
Closing DAC	-	-	-
Investment income rate	6.50%	6.00%	6.00%
Tax rate	35%	35%	35%

Target Investment Allocation

	Individual Life	GICs	Group Health
Bonds - Public	48%	51%	54%
Bonds - Private Placements	32%	34%	36%
Total Bonds	80%	85%	90%
Commercial Mortgages	10%	13%	5%
Equities	5%	2%	5%
Real estate	5%	0%	0%
	100%	100%	100%

Target Investment Quality

	Maximum % of assets below investment grade
Bonds - Public	20.0%
Bonds - Private Placements	25.0%
Commercial Mortgages	20.0%

North American Rating Agency's Capital Requirements

Required Capital = square root of $\{C-2^2 + [C-1 + C-3]^2\}$

<u>C-1 Risk</u> % of asset value	Base	Investment grade	Non-investment grade
Private Bonds		1.0%	7.5%
Public Bonds		0.2%	5.0%
CMO		0.2%	5.0%
Commercial Mortgages		3.0%	6.0%
Stock - equities - affiliates	30.0% % owned x affiliate's RBC		
Real Estate	10.0%		
Cash and Short Term	0.3%		
Other assets	0.0%		
<u>C-2 Risk</u>			
Life Insurance	0.8%	% of net amount at risk	
Long Term Disability	25.0%	% of premiums	
	5.0%	% of reserves	
<u>C-3 Risk</u>			
Life Insurance	0.5%	% of reserves	
GICs within 1 year of maturity	0.5%	% of reserves	
Remaining GICs	2.0%	% of reserves	
Required Capital	December 31, 1998	December 31, 1999	
	Actual	Actual	
Components			
C-1	394.3	405.8	
C-2	422.1	421.1	
C-3	34.5	38.0	
Formula Requirement	601.7	611.8	
Available Capital	1,654.0	1,675.1	
Actual capital ratio	274.9%	273.8%	