

KEY RATIO ANALYSIS:
CALCULATING AND INTERPRETING THE NUMBERS
CORRECTLY!

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Key Ratio Analysis: Calculating and Interpreting the Numbers Correctly!

Section 1

Users of Key Ratio Analysis:

Various individuals use financial statements including bankers, bonding company underwriters, commercial real estate lenders, equipment lessors, and CPAs. For purposes of this seminar, we will focus on the following:

Creditor: Bank loan officers and bond rating analysts analyze ratios to ascertain a company's ability to pay its debts.

Investor: Stock analysts assess the company's efficiency, risk, and growth prospects through ratio analysis.

Manager: Business owners and managers use ratios to analyze, control, and improve their firm's operations.

Guarantor: Business owners are usually required to guarantee their various business obligations and use "related" ratio analysis to determine their personal position.

Key Ratio Analysis – What is it?

Credit/Investment/Management Decisions Based on Financial Analysis:

Creditors/investors/managers in particular can quickly assess a company's financial condition by identifying and calculating key ratios that reveal a company's financial health. Obviously, numbers taken from the “four financial statements” can make numerous calculations; however, some are not as important as others. In particular, financial professionals have found leading indicators of a company's operating performance in “five” vital business areas.

The areas of emphasis are:

- Liquidity**
- Activity**
- Leverage**
- Operating Performance**
- Cash Flow**

Section 2
Accounting Principles

Accounting Basics – Quick Review of the Four Financial Statements:

Income Statement

Revenue – Expenses = Net Income (Net Loss)

Statement of Retained Earnings

Beginning Retained Earnings + Net Income (-Net Loss) – Dividends = Ending Retained Earnings

Balance Sheet

Assets = Liabilities + Owner's Equity

Statement of Cash Flows

Operating, Investing & Financing Cash Flows

Direct versus Indirect Methods

Section 3

“Five Step” Financial Ratio Analysis

Financial Ratio Calculations:

Financial Ratio Analysis begins with identifying the five leading financial indicators of business:

Liquidity, Activity, Leverage, Operating Performance, and Cash flow.

Following are the formulas used to calculate key financial ratios:

A. Liquidity Ratios

Definition:

Working Capital = Current Assets – Current Liabilities

Current Ratio = $\frac{\text{Current Assets}}{\text{Current Liabilities}}$

Quick Ratio (Acid Test) = Current Assets-Inventory/ Current Liabilities

Adjustments: Prepaid Expenses, “Due From Officers, Shareholders & Employees”

Creditor:

To the creditor, liquidity is important as all loans are ultimately repaid by cash.

Investor:

To the investor, liquidity is important but too much liquidity may not be the most effective use of the company's assets, i.e. maintain the majority of the cash in the company's "non-liquid" assets in order to promote company growth.

Manager:

To the business owner/manager, liquidity is most important when it comes to payroll! If you cannot meet payroll, the firm is "history".

Guarantor:

To the guarantor (usually business owner), liquidity means backing up their business obligations and creating "life style." These are often in direct conflict with each other.

SNIDER CORPORATION:**Balance Sheet**

	2016	2017	2018E
Assets			
Cash	\$ 9,000	\$ 7,282	\$ 14,000
Short-term investments	48,600	20,000	71,632
Accounts receivable	351,200	632,160	878,000
Inventories	<u>715,200</u>	<u>1,287,360</u>	<u>1,716,480</u>
Total current assets	\$ 1,124,000	\$ 1,946,802	\$ 2,680,112
Gross fixed assets	491,000	1,202,950	1,220,000
Less: Accumulated depreciation	<u>146,200</u>	<u>263,160</u>	<u>383,160</u>
Net fixed assets	<u>\$ 344,800</u>	<u>\$ 939,790</u>	<u>\$ 836,840</u>
Total assets	<u>\$ 1,468,800</u>	<u>\$ 2,886,592</u>	<u>\$ 3,516,952</u>
<hr/>			
	2016	2017	2018E
Liabilities and Equity			
Accounts payable	\$ 145,600	\$ 324,000	\$ 359,800
Notes payable	200,000	720,000	300,000
Accruals	<u>136,000</u>	<u>284,960</u>	<u>380,000</u>
Total current liabilities	\$ 481,600	\$ 1,328,960	\$ 1,039,800
Long-term debt	323,432	1,000,000	500,000
Common stock	460,000	460,000	1,680,936
Retained earnings	<u>203,768</u>	<u>97,632</u>	<u>296,216</u>
Total equity	<u>\$ 663,768</u>	<u>\$ 557,632</u>	<u>\$ 1,977,152</u>
Total liabilities and equity	<u>\$ 1,468,800</u>	<u>\$ 2,886,592</u>	<u>\$ 3,516,952</u>

Note: "E" indicates estimated. The 2018 data are forecasts.

Income Statement

	2016	2017	2018E
Sales	\$ 3,432,000	\$ 5,834,400	\$ 7,035,600
Cost of goods sold	2,864,000	4,980,000	5,800,000
Other expenses	340,000	720,000	612,960
Depreciation	<u>18,900</u>	<u>116,960</u>	<u>120,000</u>
Total operating costs	<u>\$ 3,222,900</u>	<u>\$ 5,816,960</u>	<u>\$ 6,532,960</u>
EBIT	\$ 209,100	\$ 17,440	\$ 502,640
Interest Expense	<u>62,500</u>	<u>176,000</u>	<u>80,000</u>
EBT	\$ 146,600	\$ (158,560)	\$ 422,640
Taxes (40%)	<u>58,640</u>	<u>(63,424)</u>	<u>169,056</u>
Net income	<u>\$ 87,960</u>	<u>\$ (95,136)</u>	<u>\$ 253,584</u>

Industry Comparisons

	2017	Industry Average
Current	—	2.7X
Quick	—	1.0X
Inventory turnover	—	6.1X
Days sales outstanding	—	32 Days
Fixed assets turnover	—	7.0X
Total assets turnover	—	2.5X
Debt ratio	—	2.0X
TIE	—	6.2X
EBITDA coverage	—	2.0X
Profit margin	—	3.6X

Note: "E" indicates estimated. The 2018 data are forecasts.

Tasks:

- 1) Calculate Snider Corporation's working capital, current ratio, and quick (acid test) ratio.

Comment on the company's liquidity position.

- 2) Snider Corporation is owned by one principal (Jim "Saw tooth" Snider) with personal liquidity consisting of the following:

\$25,000	Cash
15,000	Mutual funds
75,000	Individual unlisted stock
<u>90,000</u>	IRAs
\$205,000	

Comment on Mr. Snider's personal liquidity.

Note: The principal's personal liquidity becomes a major strength of the principal's guarantee (tertiary source of repayment).

B. Activity (Turn Factors)

Definition:

Account Receivable Turnover
(A/R / Sales X Days in Period)

Accounts Payable Turnover
(A/P / COGS X Days in Period)

Inventory Turnover
(Inventory/COGS X Days in Period)

Task: Calculate Snider Corporation's A/R turnover, A/P turnover, and Inventory turnover.

Comment on the company's Activity.

Cash Conversion Cycle

Definition:

**Cash Conversion Cycle = Inventory conversion cycle + A/R collection period
– A/P deferral period**

Task: Calculate the company's cash conversion cycle.

Comment on the company's cash conversion cycle.

Note: The firm's goal should be to "shorten" its cash conversion cycle as much as possible without hurting operations. This will increase the firm's value, because the shorter the cash conversion cycle, the lower the required net operating working capital, and the higher the resulting free cash flow.

The cash conversion cycle can be shortened by the following:

- 1) Reducing the inventory conversion period by processing and selling goods more quickly,**
- 2) Reducing the receivables collection period by speeding up collections, and/or**
- 3) Lengthening the payables deferral period by slowing down the firm's own payments.**

C. Leverage

Definition:

Debt Ratio = Debt/Net Worth (Equity)

Adjustment: Subordinated Debt

Task: Calculate the debt to worth ratio for Snider Corporation.

Comment on the company's leverage position.

Creditor:

To the creditor, leverage is important as this ratio highlights the reality of the “us versus them” mentality.

Investor:

To the investor, leverage is important because too little of it may prohibit the firm from gaining certain “economies of scale” in the market place, thereby, limiting the firm’s ability to grow.

Manager:

To the business owner/manager, leverage is important in order to expand the operation in a shorter “window” of time and meet the demands of competition in the market place.

Guarantor:

To the guarantor (usually business owner), personal financial leverage should be closely monitored in order to avoid excess.

(Debt to Income Ratio):
$$\frac{\text{Total Monthly Debt Payments}}{\text{Total Monthly Income}}$$

D. Operating Performance

Definition:

Common-Size Analysis Vertical - Income Statement (Percent of Sales)

Net sales	\$5,000,000 (100%)
COGS	4,400,000 (88%)
<u>Gross Profit</u>	\$600,000 (12%)
G & A Expense	350,000 (7%)
<u>Net Profit</u>	\$250,000 (5%)

Note:

Common-size analysis vertical – Expresses comparison in percentage of the proportional expression of each item in a given period to a base figure selected from the same period.

Common-size analysis horizontal – Expresses comparison in percentage of the proportionate change over a period of time.

Creditor:

To the creditor, operating performance (the margins), is extremely important as these calculations emphasize the company's overall performance.

Investor:

To the investor, operating performance is usually measured by ROA and ROE.

Manager:

To the business owner/manager, the margins are an important measure of "daily" management of the firm's operation.

Guarantor:

To the business owner (guarantor), strong/stable margins are important in order to avoid excessive concern from various "stakeholders" as to why the company is operating at a level below "normal" (management's ability to effectively operate the business is questioned).

E. Cash Flow Models - Traditional versus Cash Basis:

Definition:

Traditional Cash Flow Analysis

EBITDA	\$1,200M
Less: Debt Ser. (P&I)	<u>500M</u>
Margin	\$700M
DCR	2.4X

(EBITDA = Net Income/ Loss + Interest Expense + Taxes + Depreciation + Amortization)

Note: Most commercial underwriters require a minimum DCR of 1.20X.

EBITDA Debt Coverage:

	<u>2016</u>	<u>2017</u>	<u>2018E</u>	<u>IND</u>
EBITDA				
Less: Debt Ser. (P&I)				
Margin				
DCR				

Personal Cash Flow (Business Owner/Guarantor)

Salary + Business Income+
Rental Income, etc. = Total Income \$500M

Less: Federal & State Taxes 150M

Cash Flow Available
For Debt Service \$350M

Less: Debt Service (P&I) \$200M

Margin \$150M

DCR 1.75X

Note: Most commercial underwriters want to see a minimum guarantor
DCR of 1.00X to 1.40X.

Global Cash Flow

Business Cash Flow + Personal Cash Flow (Business Owner/Guarantor)

Business Cash Flow:

EBITDA	\$1,200M
Less: Debt Ser (P&I) Margin	<u>500M</u> \$700M

Personal Cash Flow:

Cash Flow Available For Debt Service	\$350M
Less: Debt Service (P&I) Margin	<u>200M</u> \$150M
Combined Margin	\$850M
Combined DCR	2.21X

Section 4

A. Other Issues in Key Ratio Analysis

- 1. Industry Comparisons (RMA, S&P, D&B, Local Trade Group)**
- 2. Spreading a Financial Statement (See below)**
- 3. Z-Score (Bankruptcy Predictor) (See below)**
- 4. Sustainable Growth Model (See below)**

Statement Date	12/31/2008	12/31/2009	12/31/2010	1/31/2011
Months Covered	12	12	12	1
Audit Method	Compiled	Co.Pre'p'd	Co.Pre'p'd	Co.Pre'p'd
Accountant				
Analyst	D. Osburn	D. Osburn	D. Osburn	D. Osb...
Stmt Type	Annual	Annual	Annual	FY-To-...
CURRENT ASSETS				
Cash-Unrestricted	35	52	28	60
Accts Rec-Progress Billings	111	102	52	68
Supplies	1	1	-	-
Costs In Excess of Billings	14	45	30	48
Prepays/Deferreds - CP	11	10	10	10
Operating Current Assets	<u>-</u>	<u>-</u>	<u>1</u>	<u>1</u>
TOTAL CURRENT ASSETS	172	210	121	187
NON-CURRENT ASSETS				
Machinery & Equipment	8	8	8	8
Accumulated Deprec (-)	<u>7</u>	<u>7</u>	<u>7</u>	<u>7</u>
Total Fixed Assets - Net	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>
TOTAL NON-CURRENT ASSETS	1	1	1	1
TOTAL ASSETS	173	211	122	188
CURRENT LIABILITIES				
ST Loans Payable-Bank	-	82	65	105
Accounts Pay-Subcontractor	5	60	65	68
Interest Payable	-	-	2	2
Other Accruals	<u>-</u>	<u>2</u>	<u>2</u>	<u>3</u>
Total Accrued Liabilities	-	2	4	5
Billings In Excess of Costs	<u>30</u>	<u>120</u>	<u>22</u>	<u>28</u>
TOTAL CURRENT LIABILITIES	35	264	156	206
NON-CURRENT LIABILITIES				
Long Term Debt-Bank	50	-	-	-
Long Term Debt-ABC, LLC	248	248	248	248
Due to Officers/Stkhldrs	<u>64</u>	<u>64</u>	<u>65</u>	<u>65</u>
TOTAL NON-CURRENT LIABS	362	312	313	313
TOTAL LIABILITIES	397	576	469	519
NET WORTH				
Retained Earnings	<u>(224)</u>	<u>(365)</u>	<u>(347)</u>	<u>(331)</u>
TOTAL NET WORTH	(224)	(365)	(347)	(331)
TOTAL LIABS & NET WORTH	173	211	122	188

Sample Contractor, LLC (SampleCont)
 Industry Classification: SIC Code:
 Income Statement - Actual

Prepared: 10:34, 3/30/2011
 Page 2
 Thousands
 CONTR Version D

Statement Date	12/31/2008	12/31/2009	12/31/2010	1/31/2011
Months Covered	12	12	12	1
Audit Method	Compiled	Co.Prep'd	Co.Prep'd	Co.Prep'd
Accountant				
Analyst	D. Osburn	D. Osburn	D. Osburn	D. Osb...
Stmnt Type	Annual	Annual	Annual	FY-To-...
Contract Revenue	1,091	906	1,412	118
Contract Costs	<u>874</u>	<u>712</u>	<u>1,041</u>	<u>77</u>
GROSS PROFIT	217	194	371	41
General & Admin Expense	194	159	125	10
Officers' Compensation	129	170	188	15
Lease/Rent Expense	-	-	5	-
Depreciation	2	-	-	-
Bad Debt Expense	<u>6</u>	<u>-</u>	<u>6</u>	<u>-</u>
TOTAL OPERATING EXP(INC)	<u>331</u>	<u>329</u>	<u>324</u>	<u>25</u>
NET OPERATING PROFIT	(114)	(135)	47	16
Interest Expense	<u>2</u>	<u>6</u>	<u>6</u>	<u>-</u>
NET PROFIT	(116)	(141)	41	16

Sample Contractor, LLC (SampleCont)
 Industry Classification: SIC Code:
 Income Statement - Actual and %

Prepared: 10:34, 3/30/2011
 Page 3
 Thousands
 CONTR Version D

Statement Date	12/31/2008	12/31/2009	12/31/2010	1/31/2011
Months Covered	12	12	12	1
Audit Method	Compiled	Co.Prep'd	Co.Prep'd	Co.Prep'd
Accountant				
Analyst	D. Osburn	D. Osburn	D. Osburn	D. Osb...
Stmnt Type	Annual	Annual	Annual	FY-To-...
Contract Revenue	1,091 100.0	906 100.0	1,412 100.0	118 100.0
Contract Costs	<u>874 80.1</u>	<u>712 78.6</u>	<u>1,041 73.7</u>	<u>77 65.3</u>
GROSS PROFIT	217 19.9	194 21.4	371 26.3	41 34.7
General & Admin Expense	194 17.8	159 17.5	125 8.9	10 8.5
Officers' Compensation	129 11.8	170 18.8	188 13.3	15 12.7
Lease/Rent Expense	- -	- -	5 0.4	- -
Depreciation	2 0.2	- -	- -	- -
Bad Debt Expense	<u>6 0.5</u>	<u>- -</u>	<u>6 0.4</u>	<u>- -</u>
TOTAL OPERATING EXP(INC)	<u>331 30.3</u>	<u>329 36.3</u>	<u>324 22.9</u>	<u>25 21.2</u>
NET OPERATING PROFIT	(114) (10.4)	(135) (14.9)	47 3.3	16 13.6
Interest Expense	<u>2 0.2</u>	<u>6 0.7</u>	<u>6 0.4</u>	<u>- -</u>
NET PROFIT	(116) (10.6)	(141) (15.6)	41 2.9	16 13.6

Statement Date	12/31/2008	12/31/2009	12/31/2010	1/31/2011
Months Covered	12	12	12	1
Analyst	D. Osburn	D. Osburn	D. Osburn	D. Osb...
Stmt Type	Annual	Annual	Annual	FY-To-...
Contract Revenue		906	1,412	118
Chg in Accts Rec-Progress Billings		9	50	(16)
Cash Revenue		915	1,462	102
Contract Costs		(712)	(1,041)	(77)
Chg in Supplies		-	1	-
Chg in Accounts Pay-Subcontractor		55	5	3
Cash Purchases		(657)	(1,035)	(74)
GROSS CASH PROFIT		258	427	28
General & Admin Expense		(159)	(125)	(10)
Officers' Compensation		(170)	(188)	(15)
Lease/Rent Expense		-	(5)	-
Bad Debt Expense		-	(6)	-
Chg in Prepaids/Deferreds - CP		1	-	-
Chg in Costs In Excess of Billings		(31)	15	(18)
Chg in Billings In Excess of Costs		90	(98)	6
Chg in Other Accruals		2	-	1
Cash Paid for Operating Costs		(267)	(407)	(36)
CASH AFTER OPERATIONS		(9)	20	(8)
Chg in Operating Current Assets		-	(1)	-
Other Income (Expense) & Taxes Paid		-	(1)	-
NET CASH AFTER OPERATIONS		(9)	19	(8)
NET CASH AFTER OPERATIONS		(9)	19	(8)
Interest Expense		(6)	(6)	-
Chg in Interest Payable		-	2	-
Cash Paid for Dividends & Interest		(6)	(4)	-
CASH AFTER FINANCING COSTS		(15)	15	(8)
Current Portion Long Term Debt		-	-	-
CASH AFTER DEBT AMORTIZATION		(15)	15	(8)
Cash Paid for Plant and Investments		-	-	-
FINANCING SURPLUS (REQUIREMENTS)		(15)	15	(8)
Chg in ST Loans Payable-Bank		82	(17)	40
Chg in Long Term Debt		(50)	-	-
Chg in Due to Officers/Stkhldr		-	1	-
Chg in Capital(Less Non-Cash Inc)		-	(23)	-
Total External Financing		32	(39)	40
CASH AFTER FINANCING		17	(24)	32
Add:				
Cash-Unrestricted		35	52	28
ENDING CASH & EQUIVALENTS		52	28	60

Statement Date	12/31/2008	12/31/2009	12/31/2010	1/31/2011
Months Covered	12	12	12	1
Analyst	D. Osburn	D. Osburn	D. Osburn	D. Osb...
Stmt Type	Annual	Annual	Annual	FY-To-...
LIQUIDITY				
Working Capital	137	(54)	(35)	(19)
Quick Ratio	4.17	0.58	0.51	0.62
Current Ratio	4.91	0.80	0.78	0.91
Net Recs/Payables (incl Retentions)	22.20	1.70	0.80	1.00
Retentions Rec/Retentions Pay	N/A	N/A	N/A	N/A
LEVERAGE / COVERAGE				
Net Worth-Actual	(224)	(365)	(347)	(331)
Tang Net Worth-Actual	(224)	(365)	(347)	(331)
Eff Tang Net Worth-Actual	(224)	(365)	(347)	(331)
Debt/Worth	N/A	N/A	N/A	N/A
Debt/Tang Worth	N/A	N/A	N/A	N/A
Debt Less Sub Debt-Liab/Eff Tg Wth	N/A	N/A	N/A	N/A
Total Liabilities/Total Assets	2.29	2.73	3.84	2.76
Interest Coverage	(57.00)	(22.50)	7.83	N/A
Cash Flow Coverage	N/A	N/A	N/A	N/A
PROFITABILITY (%)				
Return on Assets	(67.05)	(66.82)	33.61	102.13
Return on Equity	N/A	N/A	N/A	N/A
Gross Margin	19.89	21.41	26.27	34.75
Operating Profit Margin	(10.45)	(14.90)	3.33	13.56
Profit Margin	(10.63)	(15.56)	2.90	13.56
Cash Dividend Payout Rate	-	-	-	-
Effective Tax Rate	-	-	-	-
ACTIVITY				
Net Recs (incl Ret) Days on Hand	37.14	41.09	13.44	17.53
Accts Pay (incl Ret) Days on Hand	2.09	30.76	22.79	26.86
Net Revenues/Total Assets	6.31	4.29	11.57	7.53
Net Revenues/Working Capital	7.96	(16.78)	(40.34)	(74.53)
Net Revenues/Net Worth	(4.87)	(2.48)	(4.07)	(4.28)
Net Revenues/Net Fixed Assets	1,091.00	906.00	1,412.00	1,416.00
Profit Before Taxes/Assets	(0.67)	(0.67)	0.34	1.02
Z - Score	2.92	(0.93)	8.06	7.93
GROWTH (%)				
Total Assets Growth		21.97	(42.18)	54.10
Total Liabilities Growth		45.09	(18.58)	10.66
Net Worth Growth		N/A	N/A	N/A
Net Revenue Growth		(16.96)	55.85	0.28
Operating Profit Growth		N/A	N/A	308.51
Net Profit Growth		N/A	N/A	368.29
Sustainable Growth	107.39	62.95	(10.57)	(36.71)

SAMPLE CONTRACTOR, LLC
FINANCIAL ANALYSIS

Liquidity (Ability to meet short-term obligations)

	FYE <u>12/31/08</u>	FYE <u>12/31/09</u>	FYE <u>12/31/10</u>	Interim <u>1/31/11</u>	RMA <u>Comp.</u>
Working Capital	\$137M	(\$54M)	(\$35M)	(\$19M)	N/A
Current Ratio	4.91	.80	.78	.91	2.5, 1.2, .7

Activity (Ability to collect accounts receivable and pay payables)

	FYE <u>12/31/08</u>	FYE <u>12/31/09</u>	FYE <u>12/31/10</u>	Interim <u>1/31/11</u>	RMA <u>Comp.</u>
A/R Turnover	38 days	42 days	14 days	18 days	0, 14, 35 days
A/P Turnover	3 days	31 days	23 days	27 days	0, 12, 35 days

Leverage (Ability to meet long-term obligations)

	FYE <u>12/31/08</u>	FYE <u>12/31/09</u>	FYE <u>12/31/10</u>	Interim <u>1/31/11</u>	RMA <u>Comp.</u>
Debt/Net Worth	(1.77)	(1.58)	(1.35)	(1.57)	.8, 0.0, (14.0)

Operating Performance (Profitability through regular operations)

	FYE <u>12/31/08</u>	FYE <u>12/31/09</u>	FYE <u>12/31/10</u>	Interim <u>1/31/11</u>	RMA <u>Comp.</u>
Gross Profit Margin	19.9	21.4	26.3	34.7	23.5
Net Profit Margin	(10.6)	(15.6)	2.9	13.6	2.6
Net Profit	(\$116M)	(\$141M)	\$41M	\$16M	N/A

Cash Flow (Life Blood)

	FYE <u>12/31/08</u>	FYE <u>12/31/09</u>	FYE <u>12/31/10</u>	Interim <u>1/31/11</u>	RMA <u>Comp.</u>
EBITDA	(\$112M)	(\$135M)	\$47M	\$16M	N/A
Cash After Debt Amort.	N/A	(\$15M)	\$15M	(\$8M)	N/A

How to Calculate a Z-Score

How do you know when a company is at risk of corporate collapse? To detect any signs of looming [bankruptcy](#), investors calculate and analyze all kinds of [financial](#) ratios: [working capital](#), profitability, debt levels and liquidity. The trouble is, each ratio is unique and tells a different story about a firm's financial health. At times they can even appear to contradict each other. Having to rely on a bunch of individual ratios, the investor may find it confusing and difficult to know when a stock is going to the wall. (For background reading, check out [An Overview Of Corporate Bankruptcy](#).)

In a bid to resolve this conundrum, NYU [Professor](#) Edward Altman introduced the [Z-score](#) formula in the late 1960s. Rather than search for a single best ratio, Altman built a model that distills five key performance ratios into a single score. As it turns out, the Z-score gives investors a pretty good snapshot of corporate financial health. Here we look at how to calculate the Z-score and how investors can use it to help make buy and sell decisions.

The Z-score Formula

Here is the formula (for manufacturing firms), which is built out of the five weighted financial ratios:

$$\text{Z-Score} = 1.2A + 1.4B + 3.3C + 0.6D + 1.0E$$

Where:

- A = Working Capital/Total Assets
- B = Retained Earnings/Total Assets
- C = Earnings Before Interest & [Tax](#)/Total Assets
- D = Market Value of Equity/Total Liabilities
- E = Sales/Total Assets

Strictly speaking, the lower the score, the higher the odds are that a company is headed for [bankruptcy](#). A Z-score of lower than 1.8, in particular, indicates that the company is heading for bankruptcy. Companies with scores above 3 are unlikely to enter bankruptcy. Scores in between 1.8 and 3 lie in a gray area.

Read more: <http://www.investopedia.com/articles/fundamental/04/021104.asp#ixzz2MKBSaEfu>

Bankruptcy Predictor

	FYE <u>12/31/08</u>	FYE <u>12/31/09</u>	FYE <u>12/31/10</u>	Interim <u>1/31/11</u>
<u>Scale</u>				
Z-Score	2.92	(.93)	8.06	7.93

Bankruptcy
Characteristics: 0-1.80

Gray Zone: 1.81-3.00

Non-Bankruptcy
Characteristics: Over 3.00

Sustainable Growth Rates (SGR) (from a financial perspective)

The sustainable growth rate according to Robert C. Higgins is the maximum growth rate a company can achieve consistent with the firm's established financial policy. Basically, it is calculated as:

$$\text{SGR} = (\text{pm} * (1 - \text{d}) * (1 + \text{L})) / (\text{T} - (\text{pm} * (1 - \text{d}) * (1 + \text{L})))$$

pm is the existing and target profit margin

d is the target dividend payout ratio

L is the target total debt to equity ratio

T is the ratio of total assets to sales

In order to grow faster, the company would have to invest more equity capital, increase its [financial leverage](#) or increase the target profit margin.

The sustainable growth rate model assumes several simplifications such as [depreciation](#) is sufficient to maintain the value of existing assets, the [profit margin](#) remains stable (also for new businesses), the proportion of assets and sales remains stable (also for new businesses) and the company maintains its current capital structure and dividend payout policy.

The sustainable growth rate model has implications for valuation models, as for instance the [Gordon model](#) and other [discounted cash flow](#) models require a growth estimate that can be sustained for many years. The sustainable growth rate can be a check if business plans are reasonable.

Sustainable Growth Model:

FYE <u>12/31/08</u>	FYE <u>12/31/09</u>	FYE <u>12/31/10</u>	Interim <u>1/31/11</u>
107.39	62.95	(10.57)	(36.71)

Section 4

B. Final Thoughts:

1. In today's economy:

a. Cash is not king

b. Credit is not king

c. Cash flow is king!

2. Figures lie and liars figure

3. Negotiating with other financial professionals using the ratios

4. Be a decision maker!