

Small Business Financial Management

Look at the financial data monthly (trend and historical analysis as well as comparisons to industry averages) to make proper managerial decisions

- ◆ **Cost-Based-Pricing:** Cost + Profit = Price → Figure out your costs, then add some % profit and then set your price.
- ◆ **Priced-Based-Cost:** Due to high international competition, price the product/service to be able to compete. → Build your products based on some price that the customer is willing to pay then reduce costs to make the price attainable.

Financial Analysis Steps

◆ Financial Statements Needed:

- **Balance Sheet:** [Assets - Liabilities = Owner's Equity] (financial snapshot at one instance in time)
- **Income Statement:** [Revenues (or Sales) - Expenses = Profits] then calculate → Net Income (after taxes, etc.)

1) Adjustments to Statements: **Normalize** Financial Statements First: i.e., Show the normal operations accounting of the business; not extraordinary situations.

- Ensure that assets are properly valued and that depreciation represents an actual decline in useful life. [As a general rule of thumb, depreciation can be calculated as 10% of Fixed Assets]
- Inventory should all be "sellable".
- Deferred income taxes are added to owner's equity.
- Adjust accounts receivable by eliminating uncollectible amounts - all accounts receivables should be collectable!
- Remove notes receivable and intangible assets [get rid of things not part of the **capital structure** of the company].
- Adjust the business' operating statement to reflect a "realistic" owner's compensation level (it should not be excessive).
- Eliminate extraordinary income and expenses from the operating statement; example: fire, land sale/purchase, selling of large assets i.e., building or machinery. All income and expenses should be ordinary.

2) Calculate **ROE = Return On Equity = Net Income /Owner's Equity (Total Equity) = NI/OE**

$$ROE = \frac{NI}{OE}$$

- **Note:** OE means that it includes retained earnings (what owner has left in business) + owner's investment. OE also includes any employee Equity Appreciation Unit Plan contributions (EAU's).
- **ROE means: for every \$1 of equity that is invested, \$ROE is received.**
- Examine ROE over time (**trend/historic**)
- Compare ROE to **industry standard**¹ (**SIC or NAICS**² Codes)
 - * Average ROE for small businesses in the top quartile (25%) is: **30-40%**; you want at least **20%**
 - * ROE of **14.5%** is better than what banks are offering as a return (i.e., about 5% interest)
 - * Compare ROE to Treasury bills (~7% return): return may be sufficient based on how the individual thinks.
 - * Compare ROE to Risk-Free-Rate of return + a premium and see if this value is > ROE; if so, then why put all the effort into the business, put your money where the Risk-Free-Rate of return is provided.
 - * Note: ROE will change as NI changes at a rate > OE
- **ROE is a function of:** (problems)
 - * **ROAI:** Return on Asset Investment; this should be checked: **the higher ROAI, the higher ROE**
 - * **Leverage** Amount and Rate = (Debt/Equity): use of debt may suggest a higher ROE if earning on debt is more than what you are paying on debt [ex. Earning 14%, paying 10%]
 - * **Tax Impact:** The lower your taxes, the higher your Net Income [compare against industry tax rate]
 - ◇ The lower the tax rate, the higher ROE
 - ◇ Use 2 different tax years to transfer funds between
 - ◇ Declare an S-Corporation or an LLC to avoid double-taxation (once corporate, then individual)

¹ Other industry compilations: (a) Trade associations (b) Risk Management Association (formerly Robert Morris Associates) - RMA

² SIC = Standard Industrial Classification codes (or SIC's replacement codes, NAICS)

ROAI Analysis

3) Calculate **ROAI = Return on Asset Investment** = Earning Power or “Profitability” = **EBIT/Asset Investment**:

- Measures what management has been doing with its assets
- Allows comparisons between similar businesses.
- Want **at least 29%** - the **top quartile (25%)** of all businesses have ROAI in the range of **29% to 100%**: look at SIC codes top quartile to see what value they have and then compare with your business’ calculation:

$$AI = OE + IBD + \text{Revolving Line of Credit}$$

$$ROAI = \frac{EBIT}{AI}$$

- ⇒ The Higher ROAI; the Higher ROE
- ⇒ **Asset Investment (AI)** = Subtract non-interest bearing spontaneous current liabilities from both sides [Asset, Liability] of Balance Sheet. *These are liabilities and assets that are part of the day-to-day operations of the business.*
- ⇒ **AI = OE + Interest bearing debt (IBD)** (includes owner’s line of credit) (+ **Differed income tax** (if not to be paid in current year/period)). *IBD = current portion of long-term debt + long-term debt.*
- ⇒ **Interest bearing debt = Long-term debt + Current Interest bearing debt (+ Revolving Line of Credit)**
- ⇒ **EBIT** (from Income Statement) = **Earnings Before Interest and Taxes** (Net Income before interest and taxes) = **Operating Income**. *Since taxes are handled differently in every organization, we need to consider earnings before taxes.*

4) Calculate Financial **Leverage: L = Interest Bearing Debt (IBD)** (from Balance Sheet) / **OE** [Don’t include differed taxes]:

For every \$ that is invested, \$L is borrowed: (\$L + \$1 = Cost of capital).

$$Lev = \frac{IBD}{OE}$$

SBA usually looks for 1:1 ratio. However, in leverage buyout situations, we may have 20:1 or 8:1 etc...

5) Calculate Cost of Debt: **COD = Interest Expense** (from Income Statement) / **IBD**

$$COD = \frac{IE}{IBD}$$

Caution when taking this off or adding this on to the income statement calculations.

6) **Compare COD and ROAI:** “Cushion” = **Spread = ROAI - COD**: Debt can be borrowed at COD if prime rate does not increase by **Spread** or can be borrowed at ROAI if you do not expect interest rate to increase at all. $Spread = ROAI - COD$

- ⇒ If **Spread** is negative, need to **liquidate OE**, therefore, improve the situation by increasing ROAI!
i.e., if ROAI < COD, need to fill the gap with earnings on equity → may have to liquidate!
- ⇒ **Question:** At what rate can a company safely borrow money? **Answer:** At ROAI - COD - Some Cushion (at some cushion on COD)
- ⇒ In an inflationary economy, businesses cannot borrow money because they need to borrow at: **interest expense + cushion**
- ⇒ If Spread = +: The Higher the Leverage, The Higher ROE
- ⇒ If Spread = -: The Higher the Leverage, The Lower ROE *20% of all businesses have a negative spread!*

Note: When interest rates hit 8%, Spread becomes negative for 20% of all small businesses and small business units or divisions → This is a buyer's market time: great time to buy/acquire some of these businesses, improve their cash position and then sell, merge etc... in 2-3 years' time.

7) Calculate **Tax Rate = Income Tax (IT) / Income Before Tax (IBT)**

$$TaxRate = \frac{IT}{IBT}$$

⇒ **Income Before Tax: IBT = NI + Tax**

$$IBT = NI + Tax$$

- ⇒ Compare Tax Rate with industry average (from Trade Associations, RMA, etc.)
- ⇒ Note: **ROE = (1 - Tax Rate) [ROAI + (Leverage x {ROAI - COD})]**
- ⇒ The lower the Tax Rate, the higher ROE

8) Calculate **Impacts on Debt and Equity capital structure:**

⇒ **Earning or Loss on Debt:**

$$EarningOnDebt = IBD \times Spread$$

⇒ Gain or loss on debt = Portion generated through the use of debt:

$$P_{Debt} = [EarningOnDebt] \times [1 - TaxRate]$$

⇒ **Percent (%) of NI Generated Through the Use of Debt:**

$$\% NI_{Debt} = \frac{P_{Debt}}{NI} \times 100$$

⇒ **Earning or Loss on Equity** (used to offset the loss on debt): $EarningOnEquity = TotalEquity(OE) \times ROAI$

⇒ **Net gain/loss on equity vs. debt:** $NetGainLossOnEquityVsDebt = EarningOnEquity + EarningOnDebt$

Note: If there is no loss on debt or equity, then the sum of the two numbers equals the NetGain. If there is loss on debt, then Equity - Debt = NetGain

Summary: We need to look at the equity and debt distribution not just profits! This tells us how much debt we can carry as an organization.

Analysis of ROAI Results and Fixing the Situation

• **ROAI = Asset Turnover x Operating Margin = (Sales/AI) x (EBIT/Sales)**

- * For: A-type company: Efficiency-seeking: concentrate on Asset Turnover
- * For: B-type company: Flexibility-seeking: concentrate on Operating Margin

- **Asset Turnover = Sales / Asset Investment** → get this number as high as possible for a type A company
- **Operating Margin = EBIT / Sales** → watch this closely in a type B company
- **Asset Investment = Working Investment + Fixed Assets**
- **EBIT = Sales - Expenses**
- **Working Investment = (Cash + Accounts Receivable + Inventory) - (Accounts Payable + Accounts Liable)**
- **Expenses = COGS + Operating Expenses**

◆ **Increasing ROAI:** Keep this > COD; Develop a strategy using all 3 of the following options!

1. Increase **Revenue**: increase price, sell more
2. Decrease **Expenses**: buy at lower prices, use VC instead of FC
3. Decrease **Amount Invested**

• **Order of importance:** getting the most bang for the buck

1. Increase Price
2. Decrease VC
3. Increase Sales: As sales increase, VC increases
4. Decrease FC: most businesses shift FC to VC
5. Decrease Amount Invested (Equity) → only as a last resort

Company Type - Action Priority

A - Eff.	B - Flex.
4	1
3	2
1	3
2	4
5	5

◆ **ROAI Example: Increasing ROAI to 20%**

• **Given:**

- AI = \$400,000
- Sales = Income = \$500,000 (Assumption: \$250 Average Invoice x Number of Invoices 2000)
- Expenses (COGS) = \$450,000 (\$300,000 VC = 67%; \$150,000 FC = 33%)
- NI Before interest and taxes (EBIT) = \$50,000
- ROAI = EBIT / AI = \$50,000 / \$400,000 = 12.5%

$$\begin{aligned} ROAI &= EBIT / AI \\ EBIT &= Sales - COGS \\ COGS &= VC + FC \end{aligned}$$

1. **Increase price** by 6%: Invoice price \$250 → \$265 [0.06x\$250 + \$250 = 1.06x\$250 = \$265]
 Sales_{New} = 2000 invoices @ \$265 = \$530,000
 ROAI_{New} = (Sales_{New} - Expenses) / Asset Investment = (530,000 - 450,000) / 400,000 = **20%**
2. **Decrease VC** by 10%: from 60% of sales by 10% to 54% of sales: [0.10(60) = 6; 60-6 = 54]

$$\text{ROAI} = (\text{Sales} - 0.54(\text{Sales}) - \text{FC}) / \text{AI} = (500,000 - 0.54(500,000) - 150,000) / 400,000 = (500,000 - 270,000 - 150,000) / 400,000 = \mathbf{20\%}$$

3. **Increase Sales** by 15%: Increase number of invoices from 2000 to 2300 (+15%)
 $\text{VC} = (\text{VC}_{\text{old}} / \text{Sales}_{\text{old}}) \times \text{Sales}_{\text{New}} = (300,000 / 500,000) \times \text{Sales}_{\text{New}} = 0.60 \times \text{Sales}_{\text{New}}$
 $\text{Sales}_{\text{New}} = \text{New number of invoices} \times \$250 = 2300 \times \$250 = 575,000$
 $\text{ROAI} = (\text{Sales}_{\text{New}} - (0.60 \times \text{Sales}_{\text{New}}) - \text{FC}) / \text{AI} = (575,000 - (0.60 \times 575,000) - 150,000) / 400,000 = \mathbf{20\%}$
4. **Decrease FC** by 20%: Decrease FC 20% [from \$150,000 to \$120,000]
 $\text{ROAI} = (\text{Sales} - \text{VC} - \$120,000) / \text{AI} = (500,000 - 300,000 - 120,000) / 400,000 = \mathbf{20\%}$
5. **Decrease Amount Invested** by 37.5%: Decrease \$400,000 to \$250,000 (37.5%) → *do only as a last resort*
 $\text{ROAI} = \text{NI Before interest and taxes} / \$250,000 = 50,000 / 250,000 = \mathbf{20\%}$

In reality, a combination of these strategies would be used to achieve the 20% desired ROAI!

- Assets = Liabilities + Owner's Equity [A = L + OE] includes Retained Earnings (cash that is left in business) + Owner's investment
- Negative OE: A - L = OE i.e., L > A
 - ⇒ Don't pay creditors (banks will work with you, they are your partners)
 - ⇒ Don't pay employees
 - ⇒ Turn situation around by increasing ROAI: using the 5 options outlined above.

Net Balance Position (NBP)

- ◆ **Net Balance Position: NBP: Cash Liquidity:** How much permanent capital a business has; how much Fixed Assets they have for the next period assuming everything remains constant. **As a consultant, fix this first!!** This is the fundamental measure of business **liquidity**. *The number one fix, always, is to fix a negative NBP situation otherwise the company is going to go bankrupt!*

Since small business management is **cash** management (cash flow management), we need to know how much cash is available and how to improve the situation if there is not enough to handle the expenses within a business period.

#1 leading cause of business failure: inadequate sales

#2 leading cause of business failure: 1/3 of all companies that go bankrupt, go so when they are profitable and in their year of highest sales.

- ⇒ Cash is needed to pay: wages, suppliers, other expenses, income taxes
- ⇒ The traditional methods add depreciation and amortization which are misleading
- ⇒ Measure NBP monthly, quarterly, and annually
- ⇒ You can draw/borrow against on 80% (maximum) or less of Accounts Receivable to finance a company, but not any more.

- **Compare NBP with Cash Conversion Cycle (days to collect receivable, inventory to go out etc.)**

- **In the long-run, NBP must be > COD**
- **In the short-run, cash is more important:**
 - ⇒ **Manage CASH Liquidity i.e., Manage NBP to be positive (+)**

- **NBP Calculation:**

1. **Determine Permanent Capital:** Capital that is available to the business over the operating period:

$$\text{PC} = \text{OE} + \text{Interest Bearing Debt}$$

$$\boxed{\text{PC} = \text{OE} + \text{IBD}}$$

- **Interest Bearing Debt** = Long-term debt (include revolving lines of credit, but **do not include Current Portions**) + *Deferred Inc. Tax*. (Add Deferred Tax if it will not be paid in the current operating period).

2. Determine Net **Working Capital Available**: $WCA = PC - \text{Net Fixed Assets}$ $WCA = PC - FA$
- **Net Fixed Assets** = Fixed Assets - Depreciation + Other Fixed Assets (after depreciation = Total FA)
WCA must be > cash outflow so that Accounts Receivable, Inventory can be met.

3. Determine **Working/Operating Capital Needs/Required**:

- **Minimum Cash Balance** = (Sales/365) x 5 days

$$\text{MinCashBal} = \left(\frac{\text{Sales}}{365} \right) * 5$$

Research shows that most businesses are covered by 5 days of sales; however, when known, a number that reflects the average for the industry should be used.

- WC on hand / **Operating Capital Needs (OCN or OCR)**

OCN = Minimum Cash Balance + Accounts Receivable + Inventory + add additional current assets that are common in the specific industry being analyzed

$$\text{WCOH} = \text{OCN} = \text{MinCashBal} + \text{AR} + \text{Inv} + \text{OtherAssets}$$

*Clue: a quick clue to identifying whether a company has cash on hand is to see if the **dividends payable amount = 0!** Since dividends are paid to owners, if it's zero, the owner is not taking anything out, therefore, cash may be short (or being reinvested, which would not be a problem).*

- **Operating Resources / Operating Capital Available (OCA):**

OCA = Accounts Payable + Taxes Payable + Wages Payable + ...Other Payable Liabilities...

Note: Use accruals (money set aside to pay expenses later) like wages payable, or taxes payable only as a safeguard, not as part of the cash strategy. Since accruals build up and decline during the business cycle (week, month, quarter etc...), they fluctuate too much and you almost always need more cash than you had initially planned. You need a cushion that is more than what the accrual totals indicate.

$$\text{OCA} = \text{AP} + \text{Taxes Payable} + \text{Wages Payable} + \text{Other Payable Liabilities}$$

- **Working Capital Required/Needed = WCR = WCN:**

WCR = WCN = OCN - OCA = [Minimum Cash Balance + Accounts Receivable + Inventory - Accounts Payable - Taxes Payable - Other Payable Liabilities]

$$\text{WCR} = \text{WCN} = \text{MinCashBal} + \text{AR} + \text{Inv} - \text{AP} \quad \text{or} \quad \text{WCR} = \text{WCN} = \text{OCN} - \text{OCA}$$

4. Determine **Net Balance Position: WCA - WCR** = NBP = Cash Liquidity $NBP = WCA - WCR$

If NBP = **negative**, the company will go bankrupt even if it is profitable since obligations can't be met! In the next period, **cash outflow will be > cash inflow!**

- **Solutions to fix NBP:**

- * Decrease inventory (by the amount of negative NBP)

- * Decrease accounts receivable (by the amount of negative NBP): ↓ collection period
Note: writing a letter that asks "What Happened!" (literally) to see why payments are not being made will get a response. (Avoid threats!)

- * Increase Permanent Capital (by the amount of negative NBP): PC ↑ investment

- * Pay suppliers later: ↑ payment deferral period

- * Decrease minimum cash required for business operations: ↓ cash needs
- * Pay wages later (pay exempt workers once a month; pay hourly workers 2x per month)
- * Increase accounts payable

Analyzing and Fixing Negative NBP

1. ↓ Collection Period:

◆ Determine Collection Period CP:

(a) Sales Per Day = SPD = Sales/365 [Sales = Revenue] $SPD = Sales / 365$

(b) Days to Collection: Number of days that sales sits in Accounts Receivable (AR); "Days in the Red":

CP = AR/SPD [Average = 45 days; Base on the average for the industry.] $CP = AR / SPD$

Question: How much should collection period be shortened to get NBP fixed?

(c) SB = <NBP>/SPD = number of days to shorten by. $SB = \langle NBP \rangle / SPD$

Therefore, you should be collecting in CP - SB days.

$CollectIn = CP - SB$

- * Note: You may not be able to decrease collections by all the days calculated; base it on industry average, take a partial of the days. (Use it only as a recommended value)

Question: How to achieve this?

- * Don't make credit sales (get cash on delivery)
- * Find out buyer's cut of point on payment of invoices; send invoices right before invoice payment date to other vendors so that you get your payments
- * Invoice when you ship
- * Call for verification of invoice and correct errors quickly
- * Force customer to pay you
- * Discount the amount if payment is received earlier. (give an incentive to pay early)

2. ↓ Inventory:

◆ Determine Average Age of Inventory:

• COGS per day = Inventory used each day = IU = COGS/365 $IU = COGS / 365$

Or use the number of days of operation instead of 365; whatever is used, be consistent!

• Number of days inventory is on hand = age of inventory = IOH = Inventory / IU $IOH = Inv / IU$

Question: How much should inventory be reduced to get NBP fixed?

* Number of days to reduce inventory = RI = <NBP>/IU = Number of Days in the Red $RI = \langle NBP \rangle / IU$

* **IOH - RI = target days:** base this on an industry average; may not be able to reduce all the way down to target. $TargetInvOnHand = IOH - RI$

Question: How to achieve a reduction on inventory?

- * Stop producing
- * Out-source production to someone else
- * Buy less raw materials/goods
- * Manage to “Just in time” manufacturing

Note: If both options 1 and 2 are done in full, NBP goes from a negative to zero to positive: $\langle NBP \rangle \rightarrow 0 \rightarrow NBP$: creates extra cash, which is good! You can reinvest extra cash into the business to expand growth.

3. **↑ Payment Deferral:**

- ◆ **Calculate Payment Deferral Period (PDP): Cash going out per day:** How long can one hold out on paying bills?

- **Shortcut:** Cash Expense = $CE = Sales - Net Profit (or Net Income) - Non Cash Expenses$ ³

- * Non Cash Expenses = Depreciation + Amortization (from Income Statement: footnotes)

$$CashExpense = Sales - NI - NonCashExpenses$$

- **Cash Expense Per Day = CEPD = Cash Expense/365 = “Cash Out-Going Per Day”**

$$CEPD = CashExpense / 365$$

- **DT_{NIBSCL} = Number of Days Funds are Tied in NIBSCL (paying suppliers in) = $NIBSCL / CEPD$**

$$DT_{NIBSCL} = NIBSCL / CEPD$$

- * **NIBSCL = Non-interest bearing spontaneous current liabilities** = supplier payments, accrued wages, taxes, interest, payroll tax, accounts payable; No dividend payments or current portions
- Remember that you were **collecting in (CP - SB)** in option 1 above and **paying in DT_{NIBSCL} days.**

Question: How many days should we defer payments?

- * **PDP = Deferment = $\langle NBP \rangle / CEPD$ ~ number of days to defer payments** $PDP = \langle NBP \rangle / CEPD$

$$\text{Increase PDP by “Defer” days: Target days to defer are } = DT_{NIBSCL} + PDP$$

Question: How to achieve deferment of payments?

- * Negotiate long payment terms
- * Pay workers later: instead of every two weeks, pay once a month
- * Hold withholding tax forms longer
- * DON'T PAY EARLY!!

4. **↑ Cash Conversion Cycle: measurement of how often you collect money**

$$CCC_{current} = CP \text{ (from 1 above)} + IOH \text{ (from 2 above)} - DT_{NIBSCL} \text{ (from 3 above)}$$

- Any expenditure today, comes back as revenue in $CCC_{current}$ days = conversion cycle
- If all 3 suggestions above are implemented, cash will come back in less than $CCC_{current}$ days, therefore, NBP will go up to 2x the negative value. Once the above changes have been made, the **new CCC_{new} is:**

$$CCC_{new} = (CP - SB) + (IOH - RI) - (DT_{NIBSCL} + PDP) \text{ days to be collecting in the future!}$$

³ Depreciation + Amortization (from income statement footnotes) OR can assume that it is 10% of Total Fixed Assets [Land, Building, Machinery, Equipment - Depreciation]

◆ **Fixing Positive NBP (Excess Cash):** First retire (payoff) debt, and then re-invest any remaining excess cash into the business to earn you a return at a rate of ROAI. If you let excess cash sit in your account at the bank, you only earn at what a Certificate of Deposit (CD) rate might yield.

- If you can't use techniques 1,2,3 above and the company is in good financial management position, increase **Permanent Capital (PC)** (machinery, technology, etc.). **Increasing PC causes leverage to go up from something like 1.91 to 1 → to → 8 to 1**
- Re-invest in company: to earn 25%+ return (better than anything you can get by putting your money in a bank!)
- Market → Sell more; build "brand" / reputation, etc.
- Expand operations → new division / product line
- **Operate at equilibrium** with a little bit of cushion to avoid problems (you will always need more cash than you thought you needed).

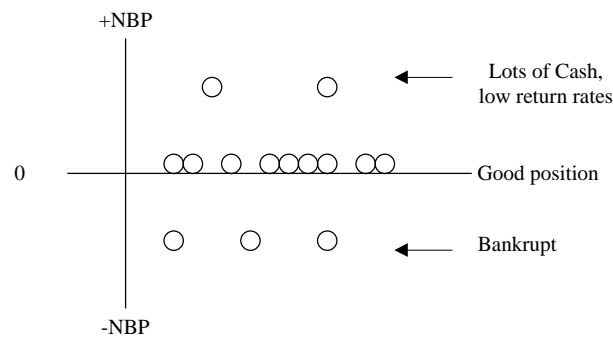


Figure 1: Maintain Equilibrium NBP

Dane County, Wisconsin, Manufacturing Company
Income Statement = Profit and Loss Statement: Record of financial activity

Revenue - Expenses = Profit

Sales	\$22,380,026	
Less:		
Cost of Goods Sold	<12,532,800>	→ COGS
Gross Profit	\$ 8,376.131	
Less:		
Operating Expenses ⁸	<u>8,376.131</u>	
Earnings Before Interest and Taxes	\$ 1,471,095	→ EBIT
Less:		
Interest Expense	<780,932>	→ IE
Income Taxes	<u><195.862></u>	
Net Income	<u>\$ 494,301</u>	→ NI: after tax income

Summary of Financial Calculations (details follow below):

- ROE = 13.5% → want about 40%
- ROAI = 14.5% → want at least 29%
- COD = 12% → okay as long as below prime + spread
- Spread = 2.5% → compare to industry's top quartile; need a large enough cushion to be able to handle unforeseen costs.

- Leverage = 1.78 to 1 → (borrowed) high if interest rates are high
- Earning on Debt = \$162,694
- % NI Generated through the use of Debt = 24%
- Earning on Equity = \$530,588
- Net gain/loss on Equity vs. Debt = \$693,282
- NBP = <\$625,881> → this has to be fixed and made positive!
- SGR = 7.184% → compare this to actual sales growth

Conclusion: This company is profitable but in a negative NBP. Overtime, the cash drain on the business could lead to its failure.

The owners of this example business raised prices several times and increased leverage to [8.61 to 1] and sold the company for \$64 million and donated \$1 million to the University of Wisconsin-Madison, School of Business.

Details of Financial Calculations:

- **ROE** = NI / OE x 100 = 494,301 / (3,410,229 + 249,000) x 100 = 13.51% ~ 13.5%
 - For every \$1 invested, 13.5 cents is received. Desired amount ~ 40%

- **ROAI** = EBIT/AI = 1,471,095/AI → ROAI = Earning power of business
 - **AI** = OE+IBD
 - **IBD= Long-Term Debt + Interest Bearing Debt + Deferred Income Tax**
 - AI = 3,410,229+6,194,886+312,881+249,000 = \$10,166,966
 - ROAI = 1,471,095/\$10,166,966 = 14.5%
 - To fix ROAI: Strategy A: increase price; Strategy B: increase sales

⁸ Depreciation of \$266,009 included (equals 10% of Total Fixed Assets)
 Variable Costs = 60% of total costs.

- **COD** = $\text{IE/IBD} \times 100$ = $780,932 / 6,507,767 \times 100 = 12\%$
 - Want to keep this low; below prime rate if possible.
- **Spread** = $\text{ROAI} - \text{COD}$ = $14.5 - 12 = 2.5\%$
 - If Debt (~6,000,000) $\times 0.025 = 150,000$ + (money that is made on debt) = **<negative>**, will have to liquidate OE, therefore, need to **increase** ROAI.
 - 2.5% means: Debt can be borrowed at 12%, if the prime rate does not increase by more than 2.5% (i.e., can handle a 14.5% cost of debt).
- **Financial Leverage** = IBD/OE = $6,507,767 / 3,659,225 = 1.78$ to 1
 - IBD = $6,194,886 + 312,881 = 6,507,767$
 - For every \$1 invested, \$1.78 is borrowed → *high if interest rates are high*
- **Tax Rate** = $\text{IT/IBT} = \text{Income Tax/Income Before Tax} = 195,862 / (494,301 + 195,862) = 28.38\%$
 - **IBT** = $\text{NI} + \text{Tax}$
 - Compare Tax Rate vs. Industry average
- **Earning/Loss on Debt** = $\text{IBD} \times \text{Spread}$ = $6,507,767 \times .025 = 162,694$
 - IBD = $6,194,886 + 312,881 = 6,507,767$
 - Through the use of debt in our capital structure, we are able to generate \$162,694 dollars of earnings
 - Portion generated through the use of debt = $\text{P}_{\text{Debt}} = \text{Earning on Debt} \times [1 - \text{Tax Rate}]$
 - $\text{P}_{\text{Debt}} = \$162,694 \times [1 - .28] = \$162,694 \times .72 = \$117,140$
 - **% NI Generated through the use of Debt** = $(\text{P}_{\text{Debt}} / \text{NI}) \times 100 = (\$117,140 / \$494,301) \times 100 = 24\%$
- **Earning/Loss on Equity** = $\text{OE} \times \text{ROAI}$ = $3,659,225 \times .145 = 530,588$
 - OE = $3,410,229 + 249,000 = 3,659,225$
 - *Used to offset the loss on debt, in this case, we don't have any (above)!*
- **Net gain/loss on Equity vs. Debt** = $\text{Earning on Equity} + \text{Earning on Debt} = 530,588 + 162,694 = 693,282$

- **Scenario:** If ROAI = 5% or 0.05 and COD remained at 12% or 0.12, then the Spread would = $\text{ROAI} - \text{COD} = -0.07$
 - **Loss on Debt** = $6,507,767 \times -0.07 = -455,544$
 - P_{Debt} = $-455,544 \times 0.72 = -327,991$
 - **% NI Generated through the use of Debt** = $-327,991 / 494,301 = -66\%$
 - **Earning on Equity** = $3,659,225 \times 0.05 = 182,961$
 - **Net gain/loss on Equity vs. Debt** = $182,961 - 455,544 = -272,583$

- **NBP**
 - **PC** = $\text{OE} + \text{IBD} = 3,659,225 + 6,194,886 = 9,854,115$
 - **WCA** = $\text{PC} - \text{Net FA} = 9,854,115 - 3,974,180 = 5,879,935$
 - Cash in the business within a period: want inflows > outflows
 - **WCR = WCN = Min Cash Bal. + AR + Inventory - AP**
 - **Min Cash Balance** = $(\text{Sales}/365) \times 5 = (\$22,380,026/365) \times 5 = 306,576$
 - **WCR** = $306,576 + 3,137,287 + 4,532,640 - 1,470,687 = 6,505,816$
 - **NBP** = $\text{WCA} - \text{WCR} = 5,879,935 - 6,505,816 = \text{<625,881>}$
- **SGR** = $\text{P}(1-\text{R})(1+\text{L})/\text{T} - (\text{P})(1-\text{R})(1+\text{L}) = (0.0221)(1-.4)(1+1.78)/(.55) - (.0221)(1-.4)(1+1.78) = 7.184\%$ (*actual sales or revenue growth is 24%*)
 - **P** = $\text{NI/Sales} = 494,301 / 22,380,026$
 - **R** = $\text{Distribution to Owners} / \text{NI} = 0.4$ for WI (*specific to each company*)
 - **T** = $\text{Total Assets/Sales} = 12,401,687 / 22,380,026$

- **Fixing NBP:**

1. **Sales Per Day** = **Sales / 365**
 - **SPD** = $22,380,026/365 = 61,315$
 - **Collection Period** = $CP_{\text{current}} = \text{AR}/\text{SPD} = 3,137,287/61,315 = \mathbf{51.16}$
 - *days to collection: Avg. = 45*
 - **Shorten Collection by** = $\langle \text{NBP} \rangle / \text{SPD} = 625,881/61,315 = \mathbf{10.21}$ days
 - *shorten collection period by 10 days i.e., collect in 51.16 - 10.21 = 40.95 ~ 41 days = CP_{new}*
2. **Inventory Age**
 - **Average Age of Inventory**
 - **IU: Inventory Used Per Day** = $\text{COGS}/365 = 12,532,800/365 = 34,336$
 - **IOH_{current}: Inventory On Hand** = $\text{Inventory}/\text{IU} = 4,532,640/34,336 = \mathbf{132}$
 - *number of days that inventory is on hand*
 - **Shorten Inventory Retainment by** = $\langle \text{NBP} \rangle / \text{IU} = 625,881/34,336 = \mathbf{18.2}$ days
 - *reduce inventory by 18.2 ~ 19 days i.e., 132 - 19 = 113 days = IOH_{new}*

If **both** things are done at the same time and in the maximum quantities indicated, NBP would be: +625,881
 $\langle \text{NBP} \rangle \rightarrow 0 \rightarrow +\text{NBP}$

3. **Payment Deferral Periods**
 - **CEPD: Cash Expense Per Day** = $\text{Cash Expense}/365$
 - **Cash Expense** = $\text{CE} = \text{Sales} - \text{Net Profit (or NI)} - \text{Non Cash Expense}^9$
 - **CE** = $22,380,026 - 494,301 - 266,009 = 21,619,716$
 - **CEPD = CE/365** = $21,619,716/365 = 59,232$
 - *cash outgoing per day*
 - **DT_{NIBSCL} = NIBSCL/CEPD**
 - **NIBSCL = Non-interest bearing spontaneous current liability** = supplier payments, accrued wages, taxes, interest, payroll tax, accounts payable. [no dividends payments or current portions]
 - **DT_{NIBSCL current}** = $2,135,599/59,232 = \mathbf{36}$ days
 - *number of days funds are tied into NIBSCL; paying suppliers in 36 days*
 - *collecting in 51.16 and paying in 36 days → opposite of what it should be*
 - **Defer payments by**
 - **PDP** = $\text{NBP}/\text{CEPD} = 625,881/59,232 = \mathbf{10.57}$ days
 - *increase PDP by 11 days, therefore, target PDP = 36 + 11 = 47 days = $DT_{\text{NIBSCL new}}$*
 - 4. **Cash Conversion Cycle: CCC**
 - **CCC_{current}** = $\text{Collection Period}_{\text{current}} + \text{IOH}_{\text{current}} - \text{DT}_{\text{NIBSCL current}} = 51 + 132 - 36 = \mathbf{147}$ days
 - *an expenditure today, comes back as revenue in 147 days later*
 - **After making all the above changes**
 - **CCC_{new}** = $\text{Collection Period}_{\text{new}} + \text{IOH}_{\text{new}} - \text{DT}_{\text{NIBSCL new}} = 41 + 113 - 47 = \mathbf{108}$ days

⁹ Depreciation + Amortization (from income statement footnotes) = \$266,009 OR can assume that it is 10% of Total Fixed Assets [Land, Bldg. Mach., Equip. - Depreciation]

Sustainable (or Appropriate) Growth Rate As A Percentage of Sales (SGR)

◆ $SGR = [P (1-R) (1+L)] / [T - P (1-R) (1+L)]$

- P = Net Profit Margin = NI / Sales
- R = Projected Returns to Owner: Average: **0.4 for Wisconsin** or **Distribution to Owners / NI**
 - *Want to know impact on retained earnings. How much of profit is given to owner in the form of dividend or salary? This differs per company, but in WI 40% can be assumed; the average for the U.S. is $1/3 = 33\%$.*
 - *Calculate $R = \text{Distribution to owners} / \text{NI}$, where Distribution to owners is not dividends payable! (Ask the owner how much he/she takes out of the business.)*
- L = Projected Debt to Equity Ratio = Leverage = Interest Bearing Debt/ Owner's Equity
- T = The Ratio of Assets to Sales = **Total Assets / Sales**
 - *The weakness with this is that if assets are low, it will give a false impression of high growth rate examples: software and architecture organizations do not have many assets.*

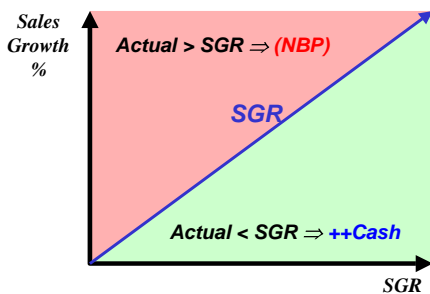


Figure 2: SGR Problem

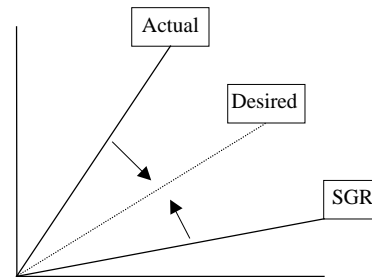


Figure 3: SGR Correction

- If **Actual > SGR**, growing too fast, will grow into **negative NBP**: Fix situation by changing P, R, L, T in SGR equation.
 - Reduce owner withdrawal from the company. Example: $R = 0.4 \rightarrow R = 0.1$ or 0.0
 - The best practice is to Raise prices, therefore, increasing NI to bring 2 curves together. Example: $P = 0.022 \rightarrow P = 0.03$
 - * Gauge the sensitivity and elasticity of the price increase by doing it in increments, in 1 area, 1 store, 1 product line etc. to see results before going with an all-out increase in price.
 - Increase debt: finance growth through borrowing. Example: $L = 1.78 \rightarrow L = 5.0$
- If **Actual < SGR**, **cash** starts to build up
 - Pay down any debt you may have
 - Increase investment in new capital equipment, renovations, training etc...
 - Look into new product lines; internationalization etc...
 - Invest in R&D and so on
 - If market is saturated (you own 50% or so of market share), sell the business and look for new opportunities

◇ **Other Useful Notes:**

- **Stocks** become less desirable as interest rates increase. People invest in stocks rather than bonds as interest rates go down.
- When dealing with a **giant like Wal-Mart**, which drives businesses out by undercutting them on price, experience shows that it is best to increase prices rather than decrease them and specialize on key demographic needs for products and services (even though they try to keep prices low). If you decrease your prices, they will assume there is extra margin that they could tap into and take from you.
- **Hockey Stick Phenomena:** Revenues are earned at an earlier point in time and expenses occur at a later point in time. This gives the impression that cash is coming in and in adequate amounts to pay off obligations. Just because we have large amounts of sales, does not mean that we will have adequate cash (payments of accounts receivables) to pay our obligations due to the lag time in collection. Increases in sales must be matched by adequate cash and in a timely manner. Most people see sales increasing and think everything is going great, but never see that there is little to zero cash coming in on a timely basis to pay off their obligations.

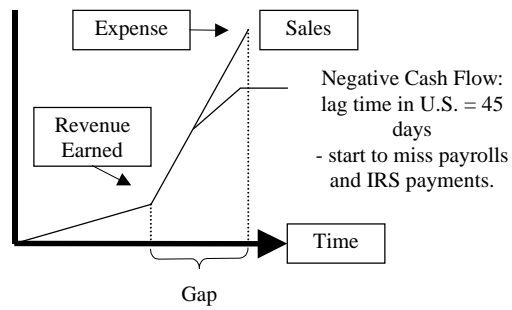


Figure 4: Hockey Stick Phenomena

Examples:

- **Michael's Frozen Custard:**
 - Used Accounts Payable to finance its Fixed Assets (FA) while CPA's were telling him to pay them off.
 - Used suppliers to provide FREE capital: paid their bills in 65 days, used excess cash to fund operations.

- **In Portugal:**
 - Company bought beer and sold it at cost. How can they make money? Why be in business?
 - Turned over inventory (sold beer) in 2 days, but paid suppliers in 90 days.
 - Interest in market was 40% → used suppliers' accounts payable to finance company!