

Credit Risk Management Seminar for Commercial Bankers in Ghana

Presented by:



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Credit Risk Assessment
Supplement for SME Lending



Credit Analysis Primer

Credit analysis is about predicting whether or not a customer will repay a loan. Credit analysis seeks evidence that allows the analyst to assess whether a customer will have the capability, and willingness, to repay the loan. This evidence can come in a variety of forms, both internal and external to the bank, and can be both objective and subjective, quantitative and non-quantitative.

When a banker makes a loan, he entrusts funds from depositors, creditors and investors to the customer in the expectation that the borrower will use the funds profitably, return the principal and generate a return for the bank. As SME bankers, we need to know if our bank is being compensated for the risk and the costs we undertake in making the loan. With so much at stake, we need reasons to believe that the customer will return our principal and compensate us for his use of our funds. Credit analysis, then, is about conducting a systematic investigation of the customer to understand his strengths and weaknesses, and to identify the situations and conditions that could cause poor loan performance or even default.

Besides judging the probability of default, we are also interested in the business of the customer and how we can structure the credit facility to serve the borrower and the bank. Judging the probability of default allows us to accept or reject the credit application and calculate a price for the risk premium of dealing with the particular credit.

Credit Investigation

Credit investigation is a fundamental part of the credit underwriting process. It is an active process best carried out at the place of business of the customer where the banker can observe the operations, review records, and verify the condition of inventory, plant and equipment. The structured interview guides the banker in gathering relevant and material information to build a simple financial projection model.

The purpose of credit investigation is to provide information about the applicant that will allow the banker to analyze the borrower, accept or reject the application, and structure the credit facility. The depth of the information collected in the investigation is partly determined by the kind of credit under consideration.

Internal Sources of Information

If the loan customer has an existing relationship with the bank, a great deal of information is internally available to the bank about the customer's willingness and capacity to service the proposed loan. Inflows and outflows to the customer's accounts may reflect a seasonality of business, the magnitude of the business, and a sense of the



variety and quality of customers. Importantly, owners of the business may have personal bank accounts or have purchased CDs or other investment instruments of the bank that are valuable for cross-selling services and also for providing funded personal guarantees.

External Sources of Information

Where available, credit information bureaus where available allow banks and non-bank credit institutions to share information about borrowers. This information can reduce the cost of gathering information aimed at answering the question:

“Does the borrower honor his obligations?”

Where available, mutual revision among banks can serve the same purpose, to understand the financial position of a client and at minimum whether the experience has been favorable or unfavorable. Mutual revision is the protocol whereby banks share information about customers as part of the interbank credit culture.

Visiting the Customer

In SME lending, visiting the customer’s business is important in making an informed credit decision. The banker requests the following information from the applicant:

- ◆ A brief description of the proposed transaction
- ◆ Personal financial statement
- ◆ Current and previous three year-end financial statements for existing businesses
- ◆ Resumes for all partners
- ◆ A business plan

Customer Interview

Although customer interviews can present a lopsided picture of the borrower, it is still the principal source of information. The prospective medium-sized borrower should:

- ◆ Indicate the type and amount of loan requested;
- ◆ Designate the proposed source and plan of repayment;
- ◆ Identify the collateral or guarantors;
- ◆ Name other previous and current creditors;
- ◆ List primary customers and trade suppliers;
- ◆ Identify the firm's accountant;
- ◆ Indicate the principal officers and shareholders;
- ◆ Give personal and business histories.

Ideally, the borrower also should provide documents needed to establish the lending relationship, including such items as:

- ◆ The latest three or more years of business financial statements;
- ◆ Personal financial statements;
- ◆ Income tax returns;
- ◆ Borrowing authorities;
- ◆ Evidence of insurance, and continuing guarantees¹.

In small business lending and in banking in transitional economies, however, these requirements are frequently unrealistic.

The conventional method for investigating the client means calling at his place of business and conducting a *structured interview* to help judge his overall strengths and weaknesses. This interview will answer such questions as:

- ◆ What are the characteristics of the borrower's market?
- ◆ Who owns the business? What is their background and experience?
- ◆ Who runs the business? Does the manager have a stake in the business?
- ◆ Who is in charge in the absence of the general manager?
- ◆ What is the state of bookkeeping and accounting?
- ◆ Is accounting performed by the cash or the accrual method?
- ◆ Who manages the treasury and has access to cash?
- ◆ How are the products sold and distributed to the market?
- ◆ On what basis does the customer compete--How important is price, quality, or service in selling the product?
- ◆ What is the technology of the production process?
- ◆ Does the business appear to be a thriving concern?
- ◆ Is labor availability a constraint?
- ◆ Does the order book show a future stream of purchases?
- ◆ Is the inventory system orderly and up to date?

The degree to which the banker will wish to investigate a company depends on the breadth of the relationship and the credit facilities used. A very short-term, self-

¹ See Chapter 11, "Lending Principles and the Business Borrower," Hemple, Simonson, and Coleman. Also Chapters 1-3, *Credit Analysis*, Hale.

liquidating loan will require a different level of effort than a term loan that is based on the residual cash flows of operations.

The structured interview will also be the opportunity to collect financial information in the absence of financial statements.

The process of the visit:

1. **Research the customer's character.** External analysis. Talk to other shops and business-people in the neighborhood to find out if they have any strong positive or negative opinions about your prospective customer. Ask them about the vitality of the neighborhood and the vitality of your customer's business.

- ◆ How long has your customer been in business?
- ◆ Do they know the owner?
- ◆ Is the business a "good neighbor"?
- ◆ If a retail merchant, for example, how does he compare to competitors?

2. **Ask the applicant's permission to talk to his customers and suppliers.**

- ◆ How do these products compare to those of competitors?
- ◆ Quality?
- ◆ Price?
- ◆ Does the applicant pay his bills on time?

3. **Research the quality of the assets and property:**

- ◆ Does this appear to be a quality business? Are the premises clean? Are employees behaving purposefully?
- ◆ Is the equipment new or old?
- ◆ Are there obvious problems?

4. Review financial statements, relevant records and documents:

- ◆ Are records orderly and accessible?
- ◆ Who are the owners?
- ◆ Does the business have a business registration?
- ◆ What is the form of ownership? Sole proprietorship? Partnership? Corporation?
- ◆ Does the business have a balance sheet and income statement?
- ◆ What kind of bookkeeping and accounting system does the business have?
- ◆ Does the business have a tax statement?
- ◆ Has the business pledged any assets to other creditors?

5. Assemble relevant documents:

- ◆ Bank statements
- ◆ Records of customers and accounts receivable
- ◆ Records of supplies and accounts payable
- ◆ Record of fixed assets
- ◆ Tax records
- ◆ Business registration
- ◆ Title to business property, vehicles and equipment
- ◆ Title to the personal property and assets of the business owner(s)

6. Interview the business owner about the operations of the business:

- ◆ Conduct the interview
- ◆ Determine how the applicant wishes to use loan funds
- ◆ Gather sales revenue and operating cost information
- ◆ Build the financial projection model
- ◆ Determine the future cash flow shortfalls of the business

Contents of a Business Plan

- Executive Summary
- Mission and Vision
- Market Analysis
- Product Analysis
- Company Organization
- Company Operations
- Marketing Plan
- Financial Plan
- Risks
- Collateral
- Guarantors
- Supporting Documents

Financial analysis: Building the Visual Model of Financial Projections

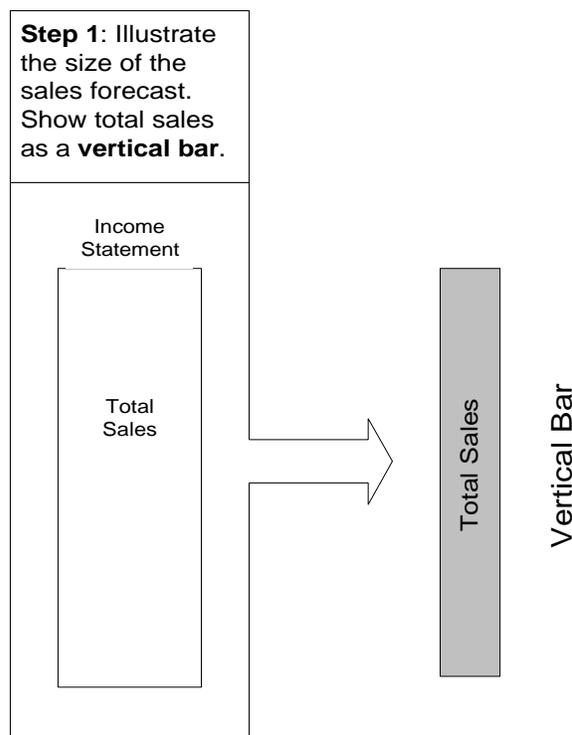
The basic model can be drawn on a blocked, graphic pad, 0.5cm or ¼” blocks. The purpose is to create an income statement and balance sheet projections that can be compared visually. The proportionate size and relationship of each is portrayed on the graph pad².

1. Develop a Sales Forecast

Estimate sales for the first period. Interview concentrates on:

- ◆ Volume of sales x price = sales revenues
- ◆ Other income
- ◆ Use historical sales as a basis
- ◆ Review the order book of the applicant and any other records indicating future sales
- ◆ Review the customer’s marketing plan and targets

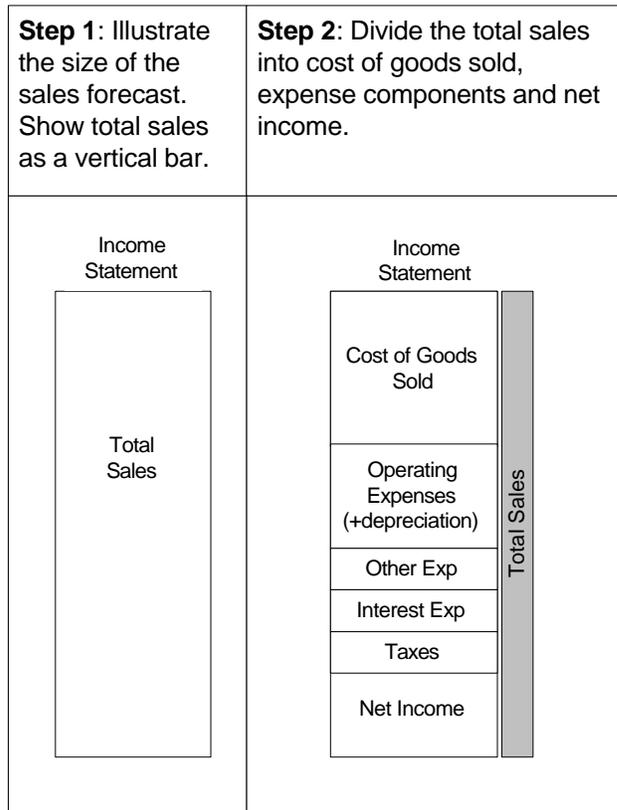
Draw a vertical bar on the right 1/3 of the graph paper leaving ample space on the left.



² “The Art of Making Financial Statement Projections: A Six-Step Visual Model,” by Richard Hamm (Robert Morris Associates, 1995).

2. Estimate Costs, Expenses and Profit

Break the income statement down into items covered by the revenue:



Projected sales is a key driver of net income and cash flow and is therefore crucial to the derivation of all other income statement and balance sheet items.

In step No. 2, break down total sales into the major components of the income statement: cost of goods sold, operating expenses, interest expense, taxes and net income. Other elements also should be considered if they are material to the borrower's business.

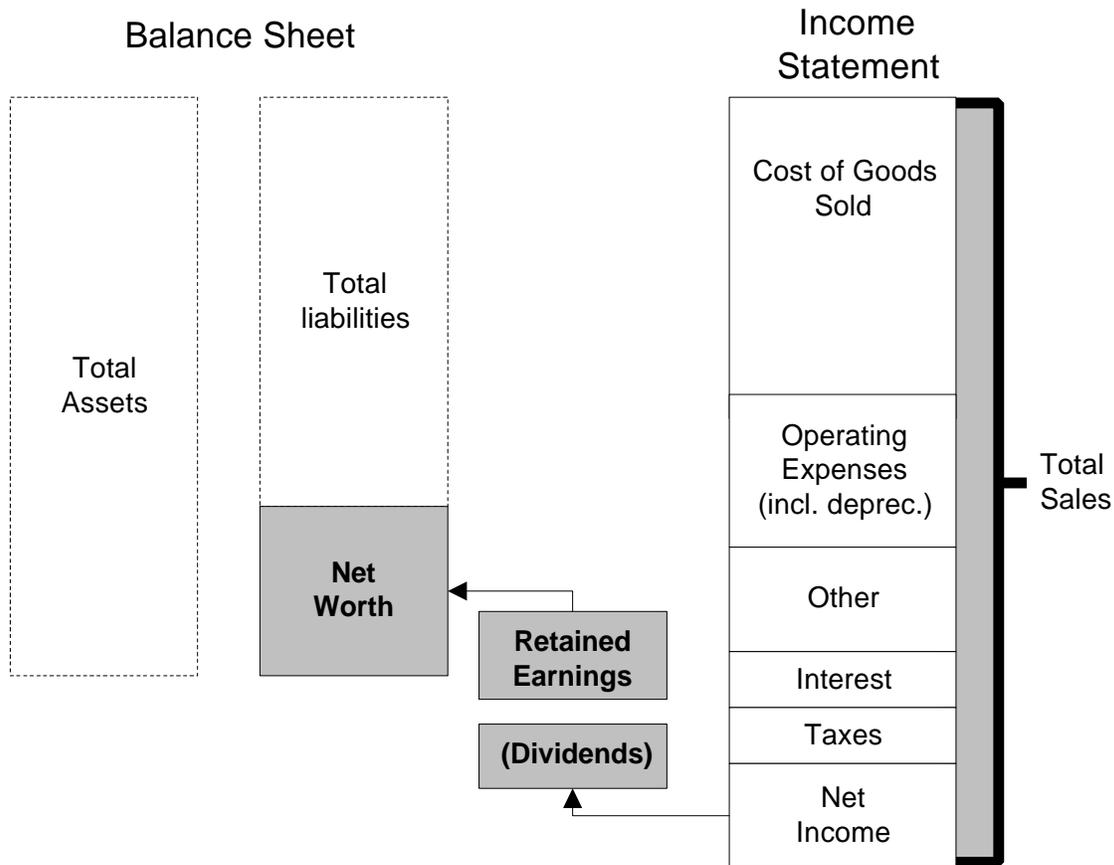
In the model, the income statement is shown as a stacked bar and the individual elements are shown in blocks proportional in size roughly to their percentage value.

For instance, most firms reflect cost of goods sold at 60-75% of sales, so this is usually the largest cost component. The bar "total sales" shows that the revenues from sales cover all the costs plus the return to the owner in the form of net income.

3. Add Retained Earnings to Net Worth

Show the balance sheet as two equal, vertical bars. Retained earnings = net income less dividends. Add retained earnings to net worth. Adjust net worth in proportion to total liabilities.

Sketch in the balance sheet on the left. For most companies, sales can be double the total assets so, in the model, make the balance sheet bars shorter than the income statement bar. This presentation emphasizes the relative efficiency, or inefficiency, of the firm's utilization of assets.

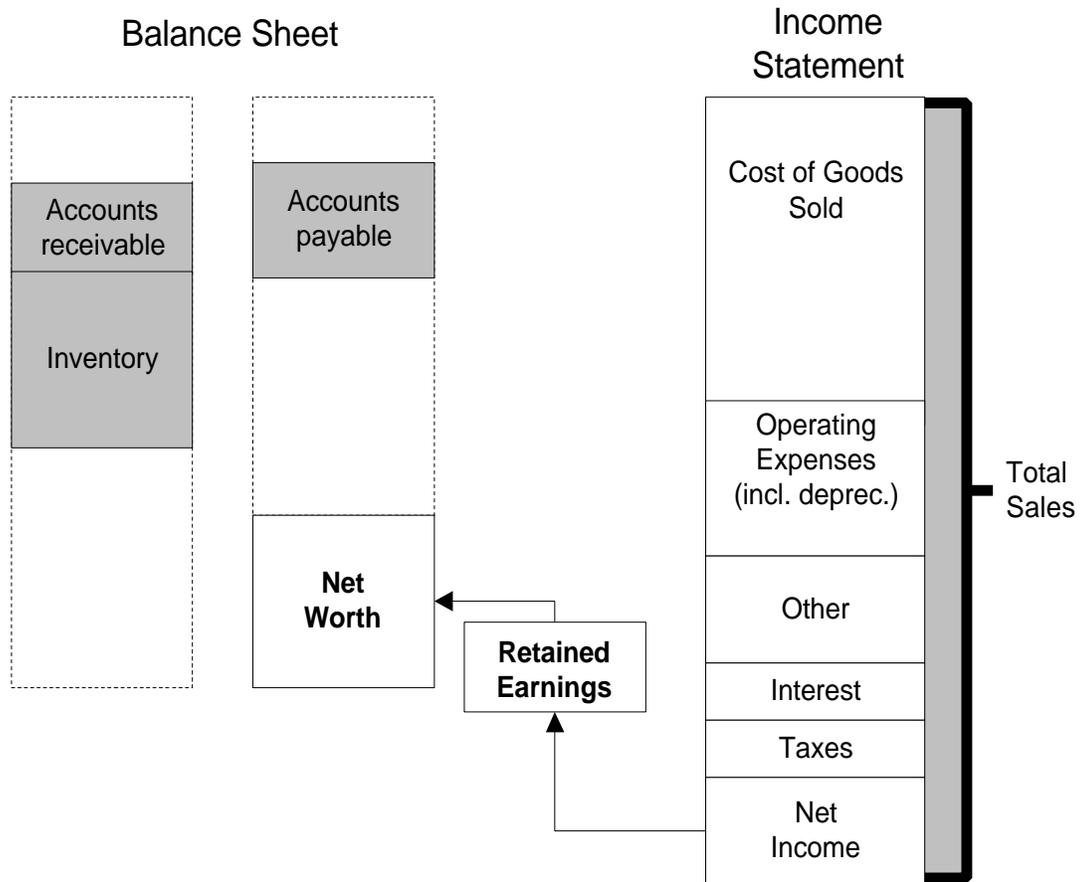


4. Forecast the Net Working Assets

Net working assets = current assets – current liabilities – cash. *Net Working Assets* (NWA) are different from *Working Capital* because they contain accounts that move proportionately with the level of sales. NWA does not include short term debt or cash because the purpose of this project model is to derive cash, or the lack thereof, resulting from the ordinary process of buying raw materials, manufacturing them into products, selling the products, and collecting the sales proceeds.

Using historical records as a guide, sketch in proportionate amounts of accounts receivable, inventory and accounts payable as in the figure 4 below:

Figure 4. Net Working Assets



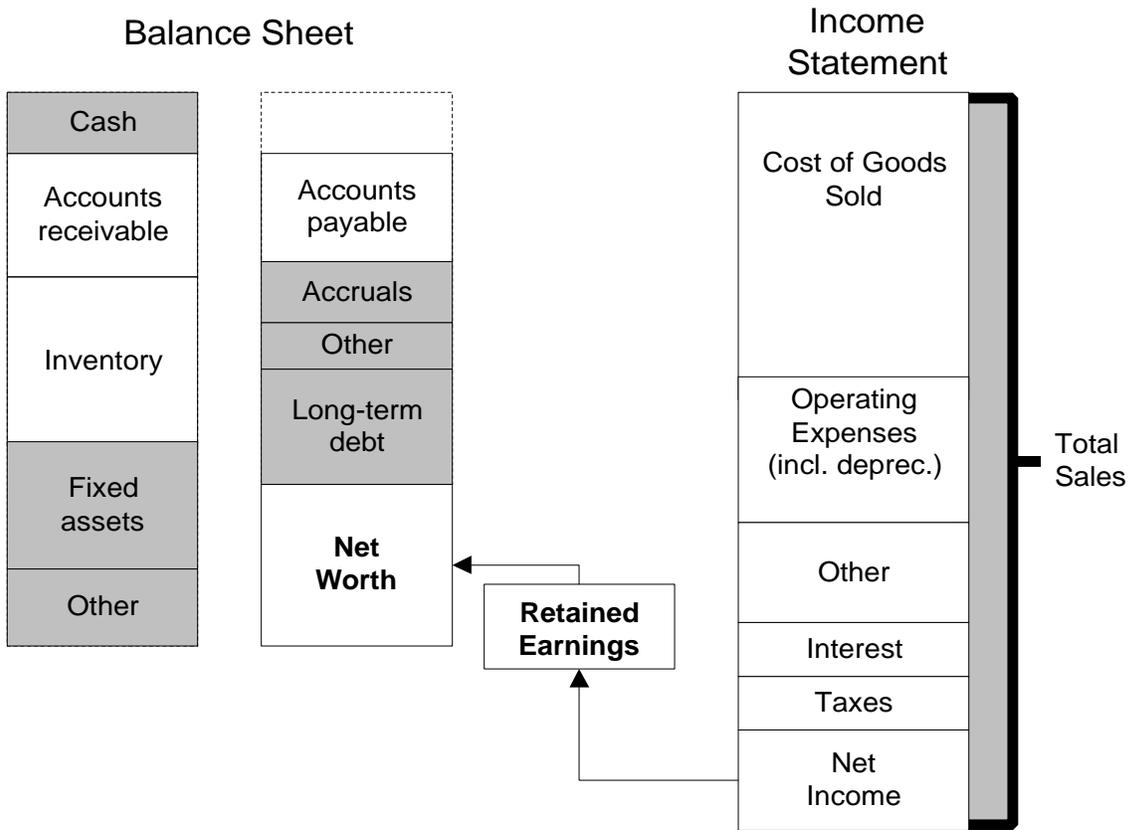
5. Forecast Other Assets and Other Liabilities

Project the value of any significant remaining assets. In most cases, these projections will include nominal cash and fixed assets. Sketch in short-term debt to equalize the bars depicting assets and liabilities, since it is assumed that the purpose of the financial projection is to support a credit decision or the expansion of an ongoing credit relationship.

The acquisition of fixed assets can be associated with needs such as expanding productive capacity, reducing processing costs, new product production, or external acquisitions of other companies. An increase in fixed assets can be expected to affect income statement accounts, revenues and expenses moving into the future.

On the liability side, it must be noted that accruals—obligations to be paid such as salaries—can be an important source of short term financing.

Figure 5. Other assets and liabilities

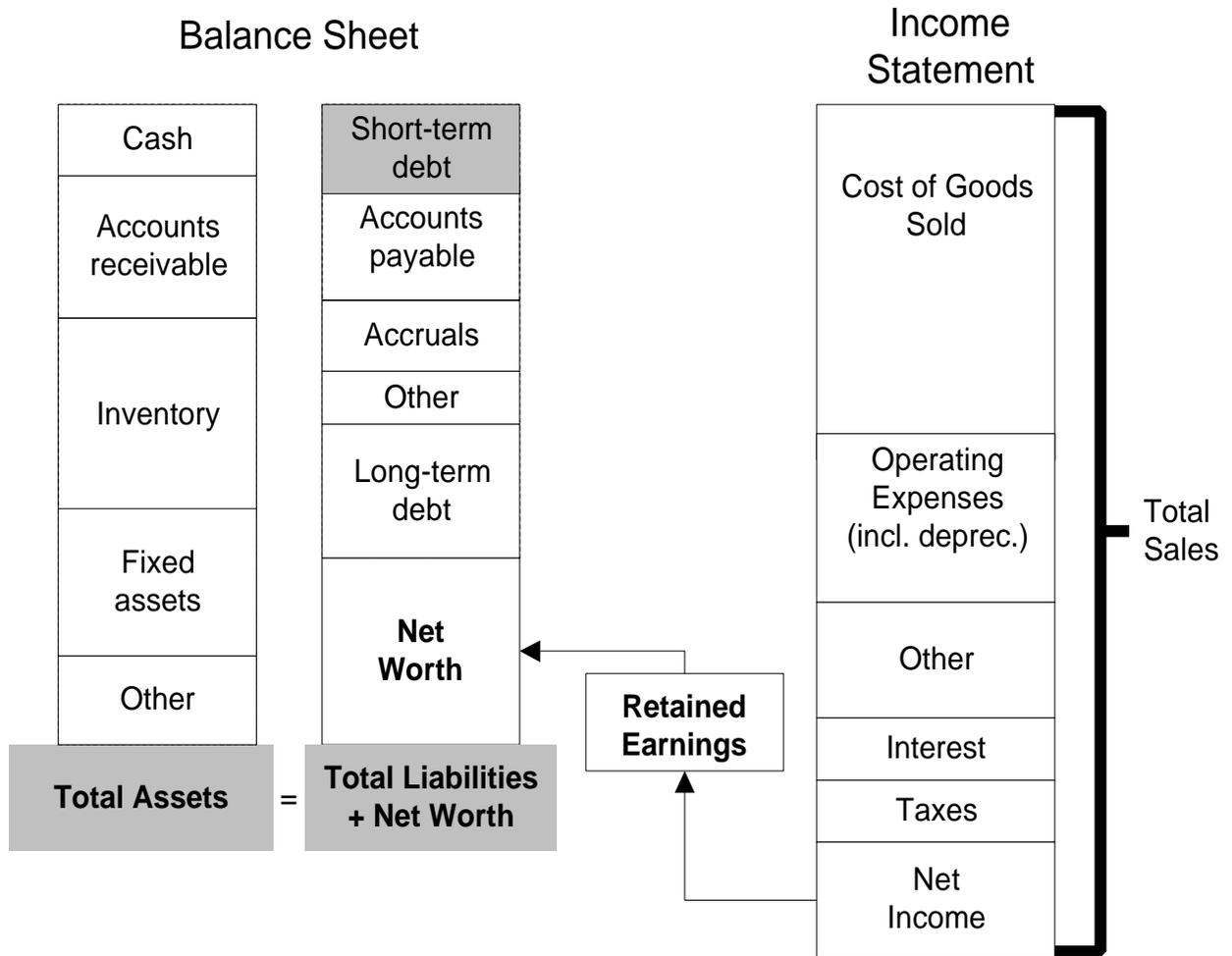


6. Estimate New Financing Required

Complete the asset side of the balance sheet. Since the accounting equation is total assets = total liabilities + net worth, then total assets – liabilities + net worth = short term debt or some other form of liability.

Check the calculations going over the model with the customer.

Figure 6. New Financing



Credit Investigation Exercise 1: Aksoy Machine Shop

Alan Aksoy runs a machine shop that performs subcontracts for various local firms. He employs eight people and always has sufficient work. Alan is interested in expanding his business and has come to you, an SME banking account officer, to request assistance in estimating the financing required to achieve his objectives.

You have checked his credit record with his suppliers and found that he pays on time. Checks around the neighborhood reveal no negative information about Aksoy or his shop.

When you go to Aksoy Machine Shop, he gives you a tour to point out his machinery, the set-up for production, and the inventory of raw material, wire, steel and parts. The shop is relatively clean and orderly, and the tools are well maintained even though most are obviously old. He introduces you to his employees and to his bookkeeper. His records are kept in steel file cases and his accounts are maintained on manual ledger cards. He has an order book that tracks business chronologically and he notes delivery deadlines on a wall calendar and on a black board on the shop floor.

Go over the records with him and his bookkeeper and begin building a financial project for the business.

Step One: Forecasting sales. During the first three months, he estimates that his sales will be baht 400,000. If he can buy another lathe, he can expand sales to 480,000 and hire another employee. This project is consistent with his historical sales levels.

Mark off on the right side of the draft pad a vertical bar representing 480,000. (Use 48 small blocks representing 10,000 each or use 24 where each block is 20,000.)

Step Two: Estimating costs of goods sold, expenses and profits. His costs of goods sold will be approximately 260,000. Aksoy estimates that salaries, expenses for marketing, sales and general administrative will be 80,000. Other expenses are 20,000. Interest Expense is 40,000. Taxes are 20,000. Profits are the remaining 60,000.

Mark a box labeled “COGS” (cost of goods sold) which will be 26/48 blocks the length of the sales bar.

“Operating Expenses” 14/48 blocks.

“Other expenses” 2/48 blocks

“Interest expense” 4/48 blocks

“Taxes” 2/48

“Profits” 6/48 remaining.

Step Three: Add retained earnings to Net Worth. Add the predicted profits, 60,000 to Aksoy Machine Shop's net worth. His net worth is total assets – total liabilities. This has not been worked out yet.

Sketch the balance sheet on the left of the pad. Leave enough space. Usually, total assets will be considerably less than a year's sales. For the time being, total assets have not yet been estimated.

Step Four: Forecast the Net Working Assets. Net working assets = [current assets (cash + accounts receivable + inventories) – current trade payables]. Using historical records, figure out the turnover of the various asset accounts. If cost of goods sold, for instance, was 260,000, and inventory turns over 4 times a year, then inventory on the asset side of the balance sheet is $260,000/4 = 66,500$. Receivables have historically been around 50,000. Adjust this up to 60,000 for the growth in sales. Accounts payable have been around 40,000, adjust this to 50,000.

“Receivables” 6 blocks.
“Inventory” 6½ blocks
“Accounts payable” 5 blocks

Step Five: Forecast Other Assets and Other Liabilities. Project the value of any significant remaining assets. Aksoy will have 150,000 of equipment, current book value about 100,000. Using historical records, Aksoy has average collected bank balances of 20,000. Accrued salaries, rent and other expenses are 30,000. Other assets are about 20,000. On the liability side, other liabilities are about 10,000. Long term debt is 20,000.

“Fixed assets” 10 blocks
“Cash” 2 blocks
“Other assets” 2 blocks
“Accrued expenses” 3 blocks
“Other liabilities” 1 block
“Long term debt” 2 blocks

Step Six: Estimate new financing required. Total assets = total liabilities.

Projected Balance Sheet			
Assets		Liabilities and owners equity	
Cash	20,000	Short term debt	65,000
Receivables	60,000	Accounts payable	50,000
Inventory	65,000	Accruals	30,000
Other assets	20,000	Other liabilities	20,000
Fixed assets	100,000	Long term debt	20,000
		Retained earnings	80,000
Total assets	265,000	Total Liabilities + OE	265,000

Total assets	265,000
- Estimated liabilities + owners equity	-200,000
Short term debt required	65,000

Since total assets = 265,000 and estimated liabilities and owners equity = 200,000, then the amount of short term debt needed is $265,000 - 200,000 = 65,000$.

Cost of Information

A note of caution. Active credit investigation and analysis is costly to the bank. The SME banker must weigh the cost of additional information about a customer against the benefits of that information. In analyzing smaller companies, administrative costs are regressive. This means that costs are proportionately higher when applied to a smaller revenue base than against a large revenue base. For example, if a credit investigation costs the bank 1000, and the size of the loan is 500,000, on which the bank will make a 3% spread, the percent cost/spread is $1000/(3\% \times 500,000) = 6.67\%$. For a corporate loan of 5,000,000, the credit investigation might cost 10,000 and the spread might be 1%, the cost/benefit would be $10,000/(1\% \times 50,000,000)$ or 2%.

Therefore, for cost/benefit reasons, it is important to have low cost guidelines for SME investigations that do not duplicate the costs of corporate credit investigation and analysis.

Sometimes, with smaller firms, the investigation above is all the credit analysis that will be necessary, especially to finance self-liquidating contracts or fill existing work orders.

Question: Cost of Information

1. What would be the percentage cost/benefit ratio of a credit investigation costing 500 for a one year SME loan of 100,000 where the lending rate is 15% and the cost of funds is 10%?
2. Compute the cost/benefit ratio of a credit investigation costing 700 for a six month corporate loan of 1,000,000 where the lending rate is 12% and the cost of funds is 10%.
3. On the basis of this information, explain the need to develop low-cost procedures for investigating, analyzing, and structuring credit facilities to smaller companies.

Many things affect credit analysis and how it is performed. To name a few:

- ◆ How the funds will be employed by the borrower
- ◆ Character and reputation of the borrower
- ◆ The bank's historical experience with the borrower
- ◆ The credit applicant's credit history
- ◆ Capacity to repay
- ◆ The cash flow generated by the assets created by the loan
- ◆ The quality and liquidity of the collateral
- ◆ Other assets that can service the debt if the primary cash flow falters
- ◆ The maturity and terms of the credit
- ◆ Quality of management
- ◆ The operating condition of the company
- ◆ The competitive position of the company's products
- ◆ Economic and industry conditions
- ◆ The quality of clients to whom the borrower sells
- ◆ The borrower's capital invested in the company or in the transaction
- ◆ What the borrower has at stake in the transaction and the loan.

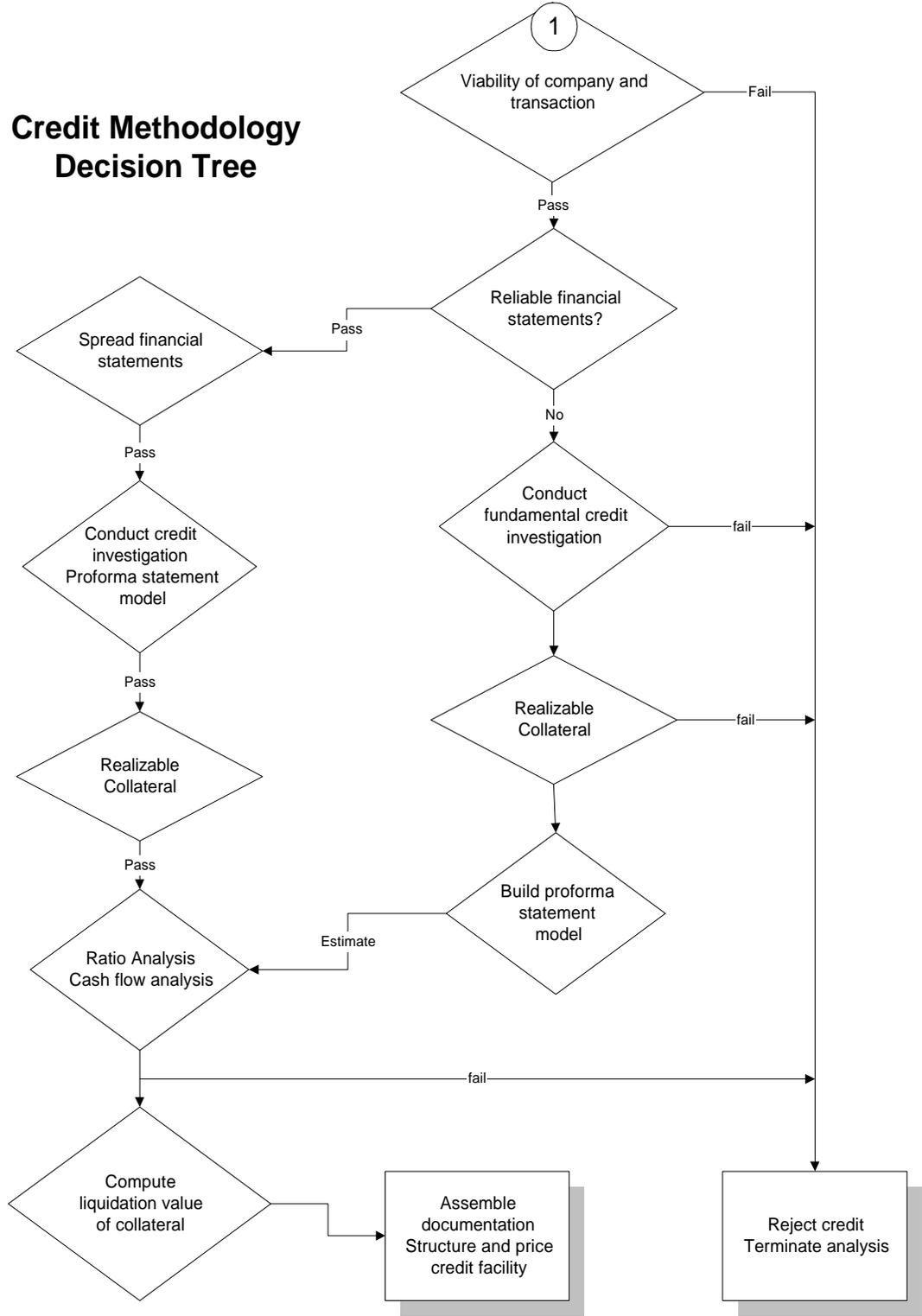
Classifying customers

Obviously, with so many factors present, it is necessary to have a decision tool to guide the credit analyst. The tool is presented as a decision tree. The method incorporates several tools to classify customers:

- ◆ **Stratification by size.** While the credit investigation may be the best source of information and analysis for a small firm, for larger and more sophisticated customers greater information and analysis is required.
- ◆ **Stratification by viability.** Similarly, a credit decision tool also eliminates customers who do not meet basic criteria, such as being registered, or proposing a transaction that would be illegal.
- ◆ **Stratification by type of loan required.** The purpose and tenor of the loan are important in the credit analysis process.
- ◆ **Selecting tools of analysis.** If reliable financial statements are available, and the customer passes viability tests, then the statements should be spread and analyzed according to ratio analysis and cash flow analysis. The *credit methodology decision tree* below represents a process for making these decisions

The Steps in the Credit Methodology Decision Tree:

Credit Methodology Decision Tree



1. Check on the viability of the company and the transaction.
 - ◆ Viable. Continue credit investigation and analysis
 - ◆ Not viable. Reject the credit and terminate the analysis. Report on reasons for rejection.
2. Does the company have reliable, published financial statements?
 - ◆ Yes, then spread the financial statements in a common size, IAS format.
 - a) Spread the financial statements in a common size, IAS format
 - b) Conduct credit investigation at the business of the customer. Verify the reason for the application of loan funds. Build a proforma financial projection of balance sheet and income statement.
 - c) Check the collateral. Is it available, viable and realizable?
 - d) Conduct ratio analysis and cash flow analysis. Is cash flow sufficient to repay the loan?
 - e) Compute the liquidation value of the collateral under the distress conditions of a forced sale.
 - ◆ No, Conduct fundamental credit investigation as described below
 - (a) Check the collateral. Is it available, viable and realizable?
 - (b) Build a proforma financial projection model as in Module Two.
 - (c) Conduct ratio analysis and cash flow analysis based upon management's information and projections
 - (d) Compute the liquidation value of the collateral under the distress conditions of a forced sale
3. Assemble documentation, copies of financial records and bank statements, and appraisals of property and collateral. Structure and price the credit facility.

The Traditional “5 C’s of Credit”	
Character	Does the borrower demonstrate a commitment to honor his transactions and keep his promises even under adverse circumstances?
Capacity	Does the business demonstrate the capacity to apply the loan funds? Does management have a business plan? Are plant and equipment sufficient? Are marketing and product delivery well developed?
Conditions	What are the economic and market conditions that could impair the company’s ability to service the debt and repay the loan? Does the company recognize these risks and have plans to mitigate them?
Cash flow	Can the cash flow of the business and the transaction support the credit? Are cash flows from operations a viable primary source of repayment?
Collateral	Is the collateral sufficient as a secondary source of repayment? If the collateral must be liquidated, is the realizable value enough to repay principal, outstanding interest, and cover the bank’s administrative costs of liquidation?

The character of the borrower

The most important factor in lending is the honesty and good faith of the borrower. Dishonest or criminal persons do not repay their debts and are often skilled in misrepresenting themselves in order to borrow. Part of the role of the credit officer is that of a detective: to detect fraud when it is present and distinguish between a good credit and a fraudulent one.

Not all of character judgment centers on dishonesty. The credit officer is also interested in the organizational characteristics of the borrower, whether he is overextended in his business and finance, and whether the business is on sound footing.

In developed economies, credit officers have access to public information about borrowers that is reported to credit information bureaus. For a small fee, a credit officer can find out if the credit applicant honors his financial obligations or whether there is a history of late payments, missed payments, controversy, delinquency and default. Where this information does not exist in such accessible form in developing countries, the credit officer must make direct investigations, as we discussed in Module Two: Credit Investigation. If previous creditors have experienced losses, this information is solid evidence to reject the credit application.

Capacity: Application of the loan funds

The reasons for borrowing may be obvious, but sometimes it takes skill to discover the true reason the applicant wishes to borrow. While the purpose may seem apparent, such as: “replace the product line equipment with new technology,” in many cases, borrowing needs are more complicated. Understanding how the applicant intends to use the loan funds helps the analyst understand if the request is reasonable and sound.

If the borrower applies funds to working assets, such as acquiring inventory or selling on credit, or importing goods to sell, we say that these transactions are *self-liquidating*. A self-liquidating transaction will convert to cash over the course of the business process and provide the means for servicing debt.

Businesses that are requesting working capital loans to buy inventory, expand sales and other working assets, however, may actually need to use the funds to pay other creditors and deal with some extraordinary situation. These needs may not fit with the structure of the self-liquidating credit facility. Using a working capital loan, for example, to purchase machinery with a long expected lifetime would clearly be inappropriate. In a growth situation, credit facilities for seasonal purchase of working assets can quickly turn into a permanent, term loan type of facility.

Question: *How can a business be profitable and run out of cash?* One simple explanation is that when sales expand faster than collections, uses of cash exceed sources of cash and this can lead to illiquidity—running out of cash. Expanding sales entail purchases of raw materials, labor charges, and carrying costs of inventories and receivables. If the growth in the rate of the cash outflow exceeds the rate in the growth of cash inflow, the customer will be a continual borrower, constantly needing infusions of cash.

If the business is growing rapidly, cash outflows can overwhelm cash inflows. For a customer using accrual accounting, financial statements and projections can show solvency and profitability, even though the enterprise is bleeding cash.

For smaller businesses, the assets of the owners are often indistinguishable from the assets of the business. This is not an ideal situation but it is a real one, nevertheless. There is always a danger in any business that the owners or employees may divert the funds of the business to other non-planned or personal uses. Lending for speculative purposes is normally rejected as a legitimate borrowing need as it does not contribute to the economic health of the enterprise.

Knowing the borrower's purposes often requires good background credit investigation to determine if the borrower has a history of honoring obligations. Even a good borrower with a sound credit history may change behavior in the face of a family crisis or a business emergency.

Basic Classifications of Loans:

Type of Loan/ Purpose	Repayment	Analysis
<p>Short term</p> <p>Seasonal working capital line of credit; letters of credit; transactional</p>	<p>Loan is repaid when borrower sells inventory and collects receivables</p>	<p>Working capital: projections should show cash-to cash cycle; the timing and reliance on inventory as support.</p> <p>Note expected peak loan needs, timing of drawdowns, link between bank loans and supplier credit</p>
<p>Bridge loans</p> <p>Project financing; construction</p>	<p>Expected longer-term refinancing or take-out event</p> <p>Maturities tailored to the refinancing event</p>	<p>Probability that refinancing event will occur (Event analysis)</p> <p>Analyze borrower's ability to repay if refinancing fails</p>
<p>Medium term loans</p> <p>Equipment and vehicle acquisition; lease</p>	<p>Repayment based upon cash flow of firm</p> <p>Maturities roughly match the useful lifetime of the asset or the legal tax amortization period</p>	<p>Incremental cash flow to firm due to the equipment</p> <p>Business and industry analysis: competitiveness</p> <p>Sensitivity analysis on cash from operations</p>
<p>Term loans</p> <p>Financing the purchase of fixed assets or broad expansion of the production lines; maturities over 1 year less than 10.</p>	<p>Firm must have predictable, long-term sources of cash.</p> <p>Cash flow (shelter) from depreciation expense</p> <p>Long term tenor to match the useful lifetime of the assets</p>	<p>Long term profitability of the firm.</p> <p>Business and industry analysis: competitive strength within the industry.</p> <p>Sensitivity analysis based upon state of the economy and other assumptions; breakeven analysis</p>

Conditions: Evaluating Business and Industry

Below are items that should be considered in assessing the long-term profitability and survival of the business. Longer-term analysis is especially important when the bank is considering term loans and leases.

Profitability. Business survival is based on the ability to generate profits, the residual surplus of revenues over costs. Profit measures effectiveness of the business, covers the cost of doing business and provides a supply of capital for future growth.

Therefore, profitability is *a key measure of management capability*. Profitability can be compared in the same business over time and can be compared between businesses in the same industry.

Market standing. Market share is difficult to measure in smaller companies. Use an approximate measure. Position the products of the business in the following matrix.

	Low	High
	Market	Market
	Share	Share
High	A	B
Growth		
Low	C	D
Growth		

Newly introduced products and startup companies would be positioned in **A**. They have little market share, but the company thinks they have potential. If all goes well, the products migrate to **B** and become winners. This will require an addition to net working assets and to capital expenditures.

If products fail to sell as expected, they may fall from **A** to **C**, low growth-low market share. These products do not contribute significantly to profits or cash flow.

During the course of the product life cycle, growth slows and even winning products will migrate from **B** to **D** (low growth, high market share). These products are commonly referred to as “cash cows” because their cash flow generation is high. As growth slows, net working assets contract, production is marked by economies of scale that lower average unit costs, and capital expenditures achieve their intended purpose.

Companies can also be compared according to the same standards. Use these ratings to apply to the market position of the company's products. C products are losers that the bank would do well to avoid. D is a "cash cow" that is welcome within the bank's mix of products—it can provide the cash flow to cover financing for new products in A and growth products in B.

Innovation. Within its industry, to what extent has the company kept pace with its peers in using technology? Have competitors gained recognition and market share by introducing more technically advanced products? What is the difficulty of other companies competing in the same market with the same product?

In commodity-type markets, such as banking (money is a pure commodity), innovation (and service) is extremely important to differentiate a company from its competitors.

Resources. How does the company handle its suppliers? Is procurement concentrated with one supplier or is it diversified? Do its performance ratios reflect its efficiency?

Such as: $\frac{\text{Sales}}{\text{Total assets}}$, etc.

Human resources. What is the $\frac{\text{Sales}}{\text{No. of employees}}$ output per employee?

Does the business work according to a business plan whose goals are discussed with employees? What are the incentives for the employees to do an exceptional job? Do the employees believe that they have career development potential in the business?

Industry dynamics. In SME lending, some of the most important industry factors are:

- ◆ **The number and relative size of competitors.** An SME banker should understand the competitive standard of businesses in the major industries he serves.
- ◆ **Rate of industry growth.** Slow growth industries tend to breed rivalry where competitors saturate the market. Market share can only be gained at the expense of another competitor. In rapidly growing markets, rivalry should be less intense and there should be less pressure on pricing.
- ◆ **Level of fixed costs and overcapacity.** This phenomenon is treated in the breakeven analysis in the text and appendix. High fixed costs create strong pressures to fill capacity, which can lead to price wars.
- ◆ **Degree of diversity among competitors.** The lesser the degree of diversity, the greater the rivalry of competition (price pressure).

- ◆ **Buyer power or supplier power.** Does the business have any power with regard to negotiating prices of supplies? Is the supplier so powerful that the customer becomes a “price-taker” at the mercy of the “price-maker”?

Evaluating Management

Having conducted the examination of business and industry, the credit investigation, and the working capital and cash flow analyses, the analyst can then evaluate more fully the quality of management.

- ◆ Management quality should first be examined in terms of integrity, honesty and ethical business practices. An unethical or dishonest business owner should be rejected as a credit applicant.
- ◆ Secondly, management performance can be measured in terms of profitability. Here, the analyst should compare the customer to other businesses of the same kind that face similar conditions.
- ◆ Third, how does management plan and execute business plans?

Topic	Evaluation and Rating				Source of Information
	Startup	Growth	Mature	Decline	
Industry: Stage of development					
Number and size of competitors	High	Moderate		Low	
Rate of industry growth	High	Moderate		Low	
Level of fixed costs and overcapacity	High	Moderate		Low	
Degree of diversity among competitors	High	Moderate		Low	
Business: Stage of development?	Startup	Growth	Mature	Decline	
Buyer's power	Strong	Moderate		Weak	

Management:	Very Good	Good	Satisfactory	Poor	
Profitability	Very Good	Good	Satisfactory	Poor	
Resources	Very Good	Good	Satisfactory	Poor	
Human Res.	Very Good	Good	Satisfactory	Poor	
Planning capability	Very Good	Good	Satisfactory	Poor	
Innovation	Very Good	Good	Satisfactory	Poor	
Product Position	A	B	C	D	
Product No. 1					
Product No. 2					
Summary View	Strong	Satisfactory	Needs Improvement	Poor	

Cash flow is the primary source of repayment

Cash from operations is the primary source of repayment for most loans. During investigation and analysis, the banker must be persuaded that the assets of the business can be converted to sufficient cash to repay the loan and provide adequate profit for the owners.

Businesses normally repay their working capital loans through the orderly *contraction* of working assets, where receivables and inventories are converted or liquidated to cash. Typically, the borrower draws down on a loan to pay for raw material and operational expenses associated with a manufacturing and selling process. Raw materials are made into finished goods, finished goods go into inventory, inventories are sold for cash or deferred payment, and cash is received from these receivables. As the business generates cash, it repays its bankers.

Despite the apparent degree of *profitability* of the borrower, it is cash produced by operations that services a loan. The *cash cycle* is the conversion of assets into cash. A business buys raw materials and supplies, makes a product, sells a product, and collects cash.

In general, the more remote and uncertain the cash flow for repayment, the more attention an analyst must devote to finding out how (and why) a customer will repay. A pawnbroker, for example, needs to perform very little credit analysis of a customer because the loan is fully collateralized—*over-collateralized*—and the collateral is *under the control of the lender*, and the loan pricing covers all expenses including the cost of capital. Another way to look at this is that the lender (pawnbroker) is *buying* the collateral and *selling* the customer the option to buy it back.

Sources of repayment other than cash flow from operations should be viewed with caution. The sale in the future of a machine or other fixed asset is not a predictable source of cash.

Collateral: the secondary source of repayment

In SME finance, secondary sources of guarantee include:

- ◆ Perfected liens on accounts receivable, inventory, equipment, and real estate collateral
- ◆ Guarantees, standby letters of credit
- ◆ Pledges of personal property and real estate
- ◆ All forms of liquid and executable security that the banker can extract from the borrower.

Secondary sources of repayment are important in lending to small businesses for a number of reasons. Obviously, collateral provides a backup source of cash to repay a loan if the primary source fails. With small and medium-sized companies, the cost of foreclosing and liquidating security can sometimes be more expensive than writing off the loan. If so, why identify a secondary source as part of the credit approval process?

Besides serving as a secondary source of repayment, pledging collateral also *motivates* the borrower to repay. It puts the borrower in a first loss position relative to the bank. Even if the primary source of repayment fails because of a shortfall in the cash flow from operations, knowing that the bank will seize collateral or equipment necessary for the continued operations of the company means that the borrower has more at stake than the amount of the loan.

Securing the loan with collateral means making sure that the liquidation value of the collateral covers all the direct and indirect costs of the loan, and the collection process, too. In some cases, secondary sources include guarantors and co-signers, but, unless the means to liquidate these sources is clear, the procedure of collection can be a costly legal process. The best of these guarantees are represented by standby letters of credit,

whereby a bank undertakes to pay on demand by the creditor, if pre-authorized collection documents are presented.

- ◆ **The purpose of credit analysis is to reduce the chance of lending to a business that cannot repay or structuring a credit inconsistent with cash flow.**
- ◆ **TYPE I Error: The False Positive**
 - An application is approved when it should have been rejected
 - Occurs frequently in times of credit expansion
- ◆ **TYPE II Error: The False Negative**
 - An application is rejected when it should have been approved.
 - Occurs frequently in times of credit contraction

Successful credit analysis reduces the probability of errors:

- ? **Type I error:** The bank accepts a credit application that should have been rejected. This is a “false positive” error. The cost of a false positive is a defaulted loan, computed at the cost of equity capital and includes the expenses required to exercise remedies and realize collateral.
- ? **Type I error:** The bank rejects an application that should have been accepted.

The cost of rejecting a good credit is the opportunity cost of foregone interest and fees. Skilled credit analysis will reduce Type II errors by discovering ways to structure credit opportunities around cash flow, security and collateral.

- ? ***Given the highly leveraged nature of a financial structure where assets may be 10 to 12 times the amount of core capital, it is clearly much more important to screen out possible Type 1 errors than to correct for Type II errors.***

Financial Statement Analysis

When SME bankers lend to smaller companies and startups, these companies may not have reliable financial statements, audited financial statements or statements prepared by management. In these cases, the banker or analyst must construct statements as in the exercise in Credit Investigation (Module Two). For the smaller enterprises, the construction of a model and the valuation of security may be sufficient credit analysis.

In corporate lending (as compared to *SME* lending), the principal source of information about a customer is audited financial statements, complemented with management information. One of the first sections of a formal credit report is *sources of information*. Usually, in examining corporate financial statements, a cautious reader will scan down until he sees the key phrase, *audited by...* Then he looks to verify if the auditing firm is a local or international firm of good reputation. Then he looks to see if the auditors rendered a “clean” opinion, or if it was in some way “qualified,” or less than standard and ideal. The purpose of using audited statements is to benefit from the *confidence* that the external information, the financial statements, have been prepared accurately from valid information, according to generally accepted accounting standards.

In the case of SMEs, where financial statements are not audited or are prepared based on interviews with the borrower, the lender must take on both greater risk and the increased cost of acquiring additional supportive information. In these cases, collateral as a secondary source of repayment becomes crucial to the credit decision. It is appropriate to add a premium to the interest rate to compensate the bank for additional uncertainty, due to the absence of reliable financial statements. It may also be necessary to charge credit applicants a fee to gather and prepare proxy financials from structured interviews.

Module Two, *Credit Investigation*, demonstrated structured interviews with the borrower to collect balance sheet and income statement types of information. With this information, we are able to approximate financial statements, ratio analysis, and cash flow analysis. Working from financial statements or from our investigations, we should use standard tools to support our investigation of the credit application.

Using Financial Statement Analysis Tools

Standard Tools of Financial Statement Analysis:

- ◆ Spreading financial statements
- ◆ Using common-size statements
- ◆ Ratio analysis
- ◆ Working capital analysis
- ◆ Cash flow analysis
- ◆ Sensitivity analysis
 - Break even analysis
 - Valuation of the firm

Spreading Financial Statements. Spreadsheets are a way of systematically organizing financial statements of companies according to IAS standards, to enable the bank to:

- ◆ Establish common definitions of financial ratios and key income statement, balance sheet, and cash flow items.
- ◆ Facilitate the calculation of key ratios and cash flow analysis
- ◆ Identify and highlight critical information and ratios for analysis.

Format:

- ◆ Assets and liabilities/owners' equity. Assets and liabilities are organized with the most liquid and most current first, followed by less liquid and less current.
- ◆ Income statement. The income statement should be organized in an analytical format beginning with sales matched with the cost of goods sold (or cost of sales). The logical flow shows how revenues are consumed by various expenses and residual profits.
- ◆ The spreadsheet indicates % for common size statement and key ratios.
- ◆ The cash flow statement derives actual cash flow from the accrual accounting figures in the balance sheet and income statement, examines the components of cash flow and aims to reconcile the opening and closing cash balances on the balance sheets.

Spreadsheet in International Accounting Standards (IAS)/Generally Accepted Accounting Principles (GAAP) format

COMPANY NAME										
AMOUNTS IN (CURRENCY 000):										
AUDITED STATEMENT:										
STATEMENT DATE	19__		19__		19__		19__			
	AMOUNT	%	AMOUNT	%	AMOUNT	%	AMOUNT	%		
BALANCE SHEET										
CASH										
MARKETABLE SECURITIES										
NOTES RECEIVABLE										
ACCOUNTS RECEIVABLE**										
INVENTORY**										
ALLOW FOR DOUBT ACCT										
TOTAL CURRENT ASSETS										
FIXED ASSETS—NET										
NON-MARKETABLE SECURITIES										
NON-CURRENT RECEIVABLES										
PREPAID & DEFERRED EXPENSES										
INTANGIBLES										
TOTAL NON-CURRENT ASSETS										
TOTAL ASSETS										
NOTES PAYABLE										
ACCOUNTS PAYABLE**										
CURRENT MTY OF TERM DEBT										
ACCRUED EXPENSES & MISC.										
INCOME TAXES PAYABLE										
TOTAL CURRENT LIABILITIES										
SUBORDINATED DEBT										
TOTAL LIABILITIES										
MINORITY INTEREST										
DEFERRED INCOME/RESERVES										
PREFERRED STOCK										
COMMON STOCK OUTSTANDING										
ADDITIONAL PAID IN CAPITAL										
RETAINED EARNINGS (DEFICIT)										
NET WORTH										
LIABILITIES + OWNERS EQUITY										
TANGIBLE NET WORTH										
NET WORKING ASSETS										
CURRENT RATIO										
QUICK RATIO										
DAYS IN RECEIVABLES										
DAYS IN PAYABLES										
CASH CYCLE										
DEBT TO (TANGIBLE NET WORTH. + SUBORDINATED DEBT										



Spreadsheet for Income Statement

COMPANY NAME								
INCOME STATEMENT								
AMOUNTS IN (CURRENCY 000):								
AUDITED STATEMENT:								
STATEMENT DATE	19__		19__		19__		19__	
AMOUNT	AMOUNT	%	AMOUNT	%	AMOUNT	%	AMOUNT	%
NET SALES								
COST OF GOODS								
GROSS PROFIT								
SALES, GEN & ADMIN								
INTEREST EXPENSE								
TOTAL OPERATING EXPENSES								
OPERATING INCOME								
NET OTHER INCOME								
NET INCOME BEFORE TAXES								
INCOME TAXES								
NET INCOME (LOSS) AFTER TAXES								
ADDITIONAL DATA								
CONTINGENT LIABILITIES								
LEASE OBLIGATIONS								
DIVIDENDS								

Cash Flow Summary Sheet: Indirect Method

COMPANY NAME:					
AMOUNTS IN (CURRENCY 000):					
DATE (DAY,MONTH,YR):		19__	19__	19__	19__
NET INCOME	1				
ADD: NON CASH EXPENSES	2				
DEPRECIATION	3				
	4				
CHANGES IN OPERATING ACCTS	5				
(INCREASE) IN RECEIVABLES	6				
DECREASE IN INVENTORIES	7				
(DECREASE) IN ACCOUNTS PAYABLE	8				
INCREASE IN ACCRUED LIABILITIES	9				
INCREASE IN INTEREST PAYABLE	10				
INCREASE IN TAXES PAYABLE	11				
	12				
CASH FLOW FROM OPERATIONS (CFO)	13				
	14				
CAPITAL EXPENDITURES	15				
INVESTMENTS IN AFFILIATE	16				
	17				
CASH FLOW FROM INVESTMENTS	18				
	19				
SHORT-TERM BORROWING	20				
DIVIDENDS PAID	21				
	22				
CASH FLOW FROM FINANCING	23				
	24				
NET CASH FLOW	25				
	26				
RECONCILING:	27				
BEGINNING CASH, DATE:	28				
ENDING CASH, DATE:	29				
NET CHANGE IN CASH	30				



Illustrative exercise for financial statement analysis
-- Olympia Electronics--

(000 Zls)	% total		% total		% total		Lead Competitor
	31/12/96	assets	31/12/97	assets	31/12/98	assets	
Assets							
Cash	11	6%	12	5%	16	6%	5%
Accounts receivable	22	13%	48	21%	41	14%	19%
Inventory	122	69%	147	64%	203	72%	66%
Total current assets	155	88%	207	91%	260	92%	90%
Net fixed assets	21	12%	21	9%	24	8%	10%
Total assets	176	100%	228	100%	284	100%	100%
Liability and Equity							
Accounts payable	16	9%	10	4%	8	3%	2%
Short term finance	112	64%	127	56%	149	52%	63%
Total current liabilities	128	73%	137	60%	157	55%	65%
Long term debt	23	13%	57	25%	90	32%	8%
Total equity	25	14%	34	15%	37	13%	27%
Total liabilities & equity	176	100%	228	100%	284	100%	100%

(000 Zls)	% total		% total		% total		Lead Competitor
	1996	Income	1997	income	1998	income	
Sales	713.4	100%	866.2	100%	911.7	100%	100%
Less: Cost of goods	<u>592.2</u>	<u>83.0</u>	<u>706.2</u>	<u>81.5</u>	<u>745.1</u>	<u>81.7</u>	<u>70.5</u>
Gross margin	121.2	17.0	160.0	18.5	166.6	18.3	29.5
Operating Expenses							
Wages & salaries	46.4	6.5	60.1	6.9	54.7	6.0	17.7
Sales expense	19.6	2.7	24.3	2.8	39.7	4.4	4.2
Depreciation	10.0	1.4	11.5	1.3	11.1	1.2	---
Other operating exp	<u>20.0</u>	<u>2.8</u>	<u>30.1</u>	<u>3.5</u>	<u>30.1</u>	<u>3.3</u>	<u>4.1</u>
Operating Expenses	96.0	13.5	126.0	14.5	136.5	15.0	26.0
Operating Income	25.2	3.5	34.0	3.9	30.1	3.3	3.5
All other expenses	<u>15.9</u>	<u>2.2</u>	<u>21.3</u>	<u>2.5</u>	<u>22.9</u>	<u>2.5</u>	<u>0.5</u>
Net income before tax	9.3	1.3	12.7	1.5	7.2	0.8	3.0
Taxes	2.4	0.3	3.9	0.5	4.4	0.5	0.4
Net Income	6.9	1.0	8.8	1.0	2.8	0.3	2.6

Common-size statements. Common-size statements are a variety of ratio analysis that permits comparison of companies of different size. It also permits comparing the financial statements of one period to that of another.

Even a brief scan of the common-size balance sheet and income statement tells a story about the performance of the company. In common-size statements, balance sheet line items are a % of total assets. For the income statement, line items are a % of total revenues or sales.

Common Size Analysis:

- % changes from period to period. Are percentages increasing, decreasing or staying the same?
- Percentages compared to leading competitor or nearest comparable company (if available).
- Percentages can be compared to industry norms. If norms are not available as public information, the SME lending unit can construct its own data base from its customers.
- Common-size figures have greater power to explain financial condition and performance when they are combined, as in the DuPont System Analysis.
- Common-size balance sheets and income statements occasionally are misleading. If one asset account is very large, other assets appear small in ratio terms. A large investment in equipment, for instance, could make inventories appear insignificant.

Comparative statement analysis of Olympia Electronics:

- **Accounts receivable** only amount to 14% of total assets, compared to 19% of a local competitor. From the comparative data, the firm appears to have good control of its credit sales.
- **Inventory.** Olympia appears to be overinvested in inventory, which represents 72% of its assets, versus 66% for the local competitor. This suggests that the firm stocks slow-moving items or has a more complicated product mix, or both.
- **Fixed assets.** Less than competitor. This may allow Olympia some pricing latitude.
- **Cost of sales.** 1998 cost of sales was 81.7% of income, compared with cost of sales in the 70% range for the other comparable firm. In this retail business, an unusually high cost of sales suggests the likelihood of underpricing—using low prices as a marketing tool.
- **Operating expenses.** Wages, salaries, sales expense, and other operating expenses totaled only 15% of total income in 1998 compared with 26% for the local competitor. This indicates an exceptionally low-cost operation, capable of supporting somewhat lower product prices.

- **Non-operating expenses.** At 2.2% of sales, Olympia’s “All Other Expenses” compared unfavorably with its local competitor at 0.5% and eliminated the operating income advantage.
- **Net income.** At 0.3% of income in 1998, Olympia’s net income was only a fraction of its competitor's at 2.6%

Financial ratios

Financial ratios provide the basis of most technical, quantitative credit analysis. Ratios show changes in key variables that allow an analyst to compare company financial condition and performance over time and compare it to other companies and industry standards. Comparative ratios point out areas of change and allow the analyst to investigate the reasons for the change and the factors causing deterioration or improvement.

Financial ratios seek to measure and evaluate the company's ability to use, manage, and repay debt. The four principal areas of inquiry are:

- ◆ Profitability
- ◆ Liquidity
- ◆ Activity
- ◆ Leverage

Risk Area	Rationale and Problems	Critical Ratios
Profitability	<ul style="list-style-type: none"> ▪ Operating strengths, growth potential, competitive position ▪ Measures operating efficiency of management ▪ The analyst is looking for unfavorable changes in these ratios and then seeking to understand the cause for their improvement or deterioration ▪ Long term lenders are concerned with profitability ratios <p>≠ Numbers can be inaccurate or contrived</p> <p>≠ Income recognition methods can be conservative or liberal</p>	<ul style="list-style-type: none"> ▪ Profit margin on sales ▪ Return on assets ROA ▪ Return on equity ROE
Liquidity	<ul style="list-style-type: none"> ▪ Determines ability to meet obligations—to fixed expenses, employees, suppliers, creditors ▪ Banks supply liquidity to bridge the cash flow gaps between disbursements for expenses and collection of sales receivables ▪ Short-term lenders are concerned foremost with liquidity ratios <p>≠ Cash payables > cash receipts</p>	<ul style="list-style-type: none"> ▪ Current ratio ▪ Quick ratio
Activity	<ul style="list-style-type: none"> ▪ Measures the turnover and cash conversion of assets ▪ Short-term lenders are concerned with activity ratios 	<ul style="list-style-type: none"> ▪ Inventory turnover ▪ Days in inventory ▪ Receivables turnover ▪ Days in receivables ▪ Payables turnover ▪ Days in payables ▪ Cash-to-cash cycle (days) ▪ Fixed assets turnover
Leverage	<ul style="list-style-type: none"> ▪ Measures degree of financial risk and ability to absorb losses ▪ Reflects owners' commitment to the business—share of loss in worse case ▪ Excess leverage exposes a business to insolvency risks ▪ Long-term lenders are concerned with leverage ratios 	<ul style="list-style-type: none"> ▪ Debt/Total assets ▪ Net worth ▪ Debt/assets ▪ Interest coverage ▪ Interest rate risk

Calculating Key Ratios

Profit margin measures the profit per Zls of net sales.

$$\text{Profit margin} = \frac{\text{Net income after tax}}{\text{Net sales}}$$

Olympia: 1996, 1.0%; 1997, 1.0%; 1998, 0.3%. Profit margin declines due to rising operating expenses.

Return on assets (ROA) indicates the efficiency with which management employed the total capital resources available to it. The denominator is formed by averaging beginning and ending asset levels: [(year one + year two) / 2.].

$$\text{Return on average assets} = \frac{\text{Net income after tax}}{\text{Average total assets}}$$

Return on equity (ROE) is a summary measure of how effectively common stockholders' funds have been employed, including the effectiveness of the use of financial leverage. Net worth can be substituted for equity. (Net worth = assets – liabilities).

$$\text{Return on average equity} = \frac{\text{Net income after tax}}{\text{Average common stock equity}}$$

The **current ratio** indicates the extent to which the claims of short-term creditors are covered by assets that can be readily converted into cash. High current ratios suggest a high margin of safety for short-term creditors. However, the ratios can mask quality problems in receivables and inventory.

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

The **quick (“acid-test”) ratio** removes the uncertainty of inventory turnover from the liquidity measure. For industries in which inventory values may be suspect, the quick ratio is a more reliable measure of liquidity than the current ratio.

$$\text{Quick (acid test) ratio} = \frac{\text{Current assets - inventories}}{\text{Current liabilities}}$$

The **inventory turnover ratio** indicates the effectiveness of management's inventory controls. It measures the number of times per year that the firm rolls over its entire investment in inventory. If the turnover of inventory is too high, it may indicate a less than optimal inventory level, which would result in inventory deficiencies and lost sales. A turnover too low may indicate poor purchasing, production, and handling controls or obsolete merchandise. The cost of sales is used in the numerator, since inventory is usually valued at cost.

$$\text{Inventory turnover} = \frac{\text{Cost of goods sold (annually)}}{\text{Average inventory}}$$

Days in inventory calculates the average number of days inventory is held until it is sold.

$$\text{Days in inventories} = \frac{365}{\text{Inventory turnover}}$$

Receivables turnover measures the effectiveness of the firm's credit policies. Days in receivables measures the average collection period.

$$\text{Receivables turnover} = \frac{\text{Sales}}{\text{Average trade receivables}}$$

$$\text{Days in receivables} = \frac{365}{\text{Receivables turnover}}$$

$$\text{Average collection period} = \frac{\text{Accounts receivables}}{\text{Sales per day}}$$

Payables turnover measures the average time between billing and paying suppliers. Payables are an important source of financing for operating activities.

$$\text{Payables turnover} = \frac{\text{Sales}}{\text{Average accounts payable}}$$

$$\text{Days in Payables} = \frac{365}{\text{Payables turnover}}$$

Working capital turnover attempts to measure the amount of cash needed to finance current assets. Commercial banks typically finance accounts receivable and inventory, non-permanent assets conventionally referred to as *working assets*. This analysis was approximated during credit investigation. Where reliable financial statements are available, an analyst can see historical levels and trends. In this ratio, the analyst should exclude short term debt, marketable securities and excess cash as they are not required for operating activities.

$$\text{Working capital turnover} = \frac{\text{Sales}}{\text{Average working capital}}$$

The cash-to-cash cycle measures the turnover rate of working capital. It represents the time required for a single ZIs to move through the working capital cycle. Funds are first invested in operating cash balances, then converted to inventories by means of purchases of labor and material, then transformed into receivables as inventory is sold on credit and, finally, returned to cash when receivables are collected.

$$\text{Cash-to-cash cycle} = \text{Days in cash} + \text{days in inventory} + \text{days in receivables}$$

The fixed asset turnover ratio measures the efficiency of (long-term) capital investment. The ratio measures the rate at which the product value flows through the firm's plant and equipment. Low rates of flow or turnover indicate below-capacity operations. A high rate of flow may reflect inadequate investment in plant and equipment.

$$\text{Fixed assets turnover} = \frac{\text{Sales}}{\text{Average fixed assets}}$$

The **debt ratio** represents the portion of assets financed by creditors. It is a measure of the financial risk and vulnerability of the firm. Generally, the more debt in the firm's financial structure, the more volatile its earnings and the greater the risk to owners and creditors. From a lender's point of view, equity represents a cushion against operating losses or a decline in the value of assets. From the owner's point of view, leverage permits owners to control a firm with less personal investment at stake. Assuming that borrowed funds can be invested to earn a rate of return greater than their cost owners are motivated to increase financial leverage.

$$\text{Debt ratio} = \frac{\text{Total debt}}{\text{Total assets}}$$

The **interest coverage ratio** indicates the margin of safety that earnings provide creditors in relation to interest charges. A more liberal measure that is sometimes of value includes depreciation in the numerator to reflect the coverage provided by total cash flow.

$$\text{Interest coverage ratio} = \frac{\text{Pretax income plus interest}}{\text{Interest expenses}}$$

The **fixed-charge coverage ratio** includes lease payments along with interest expenses.

$$\text{Fixed - charge coverage ratio} = \frac{\text{Pretax income} + \text{interest} + \text{lease payments}}{\text{Interest expenses} + \text{lease expenses}}$$

Cash Flow Analysis

Cash flow analysis. Cash flow analysis adjusts data from the income statement and the balance sheet to determine the sources and uses of cash. Accounting income is not a measure of cash due to non-cash expenses, such as depreciation, and because of leads and lags of cash due to the timing of accrual accounting practices. The derived cash flow statement conventionally breaks down into several categories:

- ◆ **Cash from operations (CFO).** CFO measures the cash generated by the production and sale of goods and services. CFO is income adjusted for non-cash income statement items and for the expansion and contraction of working assets. When assets grow, they absorb cash—they are *uses of cash*. When assets contract, they generate cash and become *sources of cash*. Similarly, when liabilities grow, they shelter or postpone disbursement and are *sources of cash*. When liabilities contract, they are paid and are therefore *uses of cash*.

Cash is sometimes hidden in financial statements due to non-cash expenses such as depreciation, or magnified due to non-cash revenue recognition methods of accrual accounting.

Besides CFO, the analyst may also investigate other sources and uses of cash and use this information, along with the CFO to reconcile increases or decreases in cash in the balance sheet.

- ◆ **Cash from investments.** This includes purchases and sales of plant and equipment and investments in affiliated businesses. These are functions necessary to maintain the firm's operating capacity and to build capacity for growth. Increases in investments use cash. Sales or divestment of fixed assets generate cash.
- ◆ **Cash from financing.** This includes borrowings and stock sales, dividends paid, stock buy-backs and repayment of debt. Issuance of securities or borrowing generates cash. Repayment of principal, retirement of debt and repurchase of shares (“treasury shares”) use cash.
- ◆ **Net cash flow.** The sum of CFO, cash from investments and cash from financing.
- ◆ **Net change.** The net cash flow is then added to the opening cash balance on the balance sheet to reconcile with the closing cash balance. If we are looking at two years, the cash balance in the earlier year, say 1997, becomes the opening cash, and the cash balance in 1998 becomes the closing cash balance.

Cash flow analysis can be done in two ways: *direct* and *indirect*. The methods differ according to the method used to derive CFO. The *indirect method* starts with net income, which it adjusts for non-cash items and changes in net working assets. The *direct method* of calculating cash flow builds CFO from cash sales, which it adjusts for sources and uses of cash in the production-sales cycle of the business. Where information is available, the indirect method is preferred as the revenue and expense activities can be compared from period to period, versus the direct method, which does not break out these income statement flows.

Testing assumptions

The analyst will test assumptions about price and volume of sales, based upon conversations with the owners, historical levels of sales and prices, and current industry information.

Scenario analysis. Scenario analysis combines several states of nature that represent optimistic, pessimistic and most likely levels of sales. Each state of nature is weighted by its likelihood of occurrence or probability. *Beta distribution* takes consensus opinions and groups them into three categories:

- ◆ Optimistic. Often the view of management. The optimistic view represents the “best case” for sales and price, based on the highest historical results.
- ◆ Most likely. Usually based upon historical data and adjusted for obvious positive or negative market trends. Can be the average of historical sales.
- ◆ Pessimistic. The pessimistic view frequently depends on the judgement of the analyst and represents a very conservative view of sales that represents the lower level of historical sales, again adjusted for market trends. Otherwise called “the worst case” scenario.

Expected Value Calculations:

1. Weight the categories. Give “optimistic” and “pessimistic” forecasts a weighting of 1. Give “most likely” forecast a rating of 4.
2. Add the three, weighted categories and divide the sum by 6. This is the “expected value.”

$$\text{Expected value} = \frac{(\text{Optimistic} \times 1 + \text{Most Likely} \times 4 + \text{Pessimistic} \times 1)}{6}$$

3. Adjust financial analysis, key ratios and cash flow analysis by the “expected value” and the “pessimistic value.”

Evaluating Security and Collateral: The Secondary Source of Repayment

Analyzing collateral is extremely important in credit analysis. Despite the prospects of strong cash flow from operations, unexpected and unforeseen events can impair the primary source of repayment.

When a bank takes a security interest in collateral of the borrower, the bank obtains the right to sell the collateral assets and apply the proceeds to the loan, if the borrower cannot repay the loan as agreed. Most bank loans to businesses are made on this basis. Although short-term loans to high-quality borrowers are not secured, most long-term loans are secured, even to best customers. With respect to loans to SMEs, collateral is generally required on loans of almost every tenor.

Banks follow precise procedures to establish and document their legal claim to the proceeds of collateral assets in the event of default. Different procedures and documents are required for real, as opposed to personal, property. There is also a difference in the procedures for securing personal property, depending on whether the property remains in the possession of the bank or the borrower.

Real property. To perfect security interests in property, it must be recorded at an official agency. Real estate collateral is usually recorded with a public agency. This recording or filing protects the bank against subsequent claims by third parties. A title search establishes the existence of defects in the title in the form of other possible claims on the real estate. While a professionally prepared appraisal is necessary to document the real estate's value, it must be remembered that liquidation will occur in distress situations, which often will cause the property to be sold for less than appraised value. Secondly, foreclosure, liquidation or workout with the borrower require additional legal and administrative expenses for the bank and these should be netted from the expected value.

Property in the bank's possession. A security interest in the property of the borrower is perfected when the bank, or its agent, actually takes physical possession of it. The borrower completes a pledge agreement, which authorizes the bank to hold the collateral and to derive cash from it in the event of default. Because the asset is already in the bank's possession, it is not necessary to file a pledge agreement publicly. In the simplest case, the pawnbroker has the borrower's property in his possession.

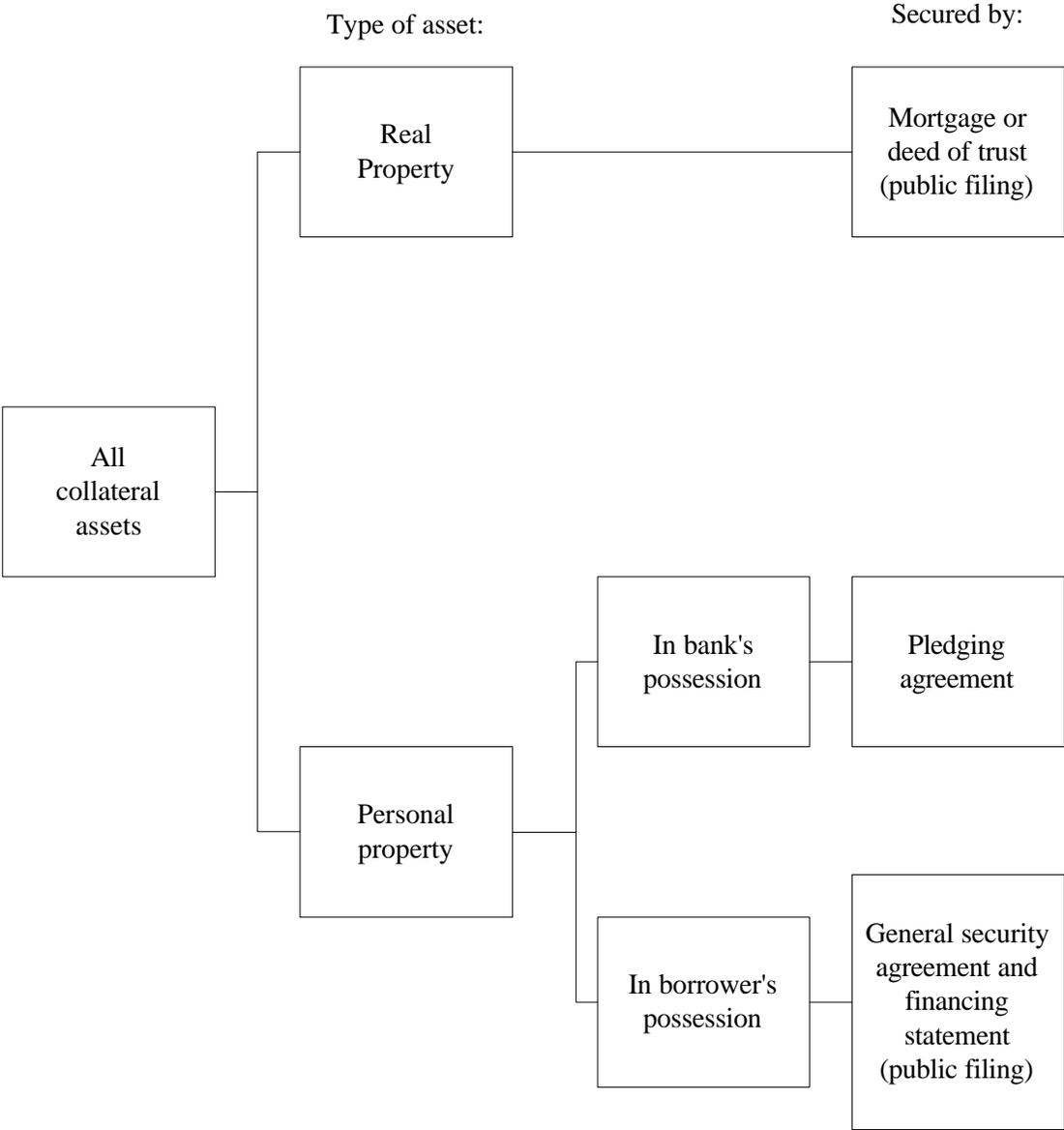
A bank can take a security interest in a savings account belonging to an owner or stockholder of a borrowing firm. If the borrower's deposit is in another financial institution, that institution must formally acknowledge the assignment. This third-party notice perfects the lending bank's claim. Within the lending bank, a pledge agreement blocks the possible withdrawal of the cash collateral. In warehouse lending, inventory or goods for the customer are kept in a bonded warehouse, which issues *warehouse receipts* that are delivered to the bank. In this way, the bank has control as well as legal rights.

Property in the Possession of the Borrower. Under a Commercial Code, a bank can perfect its security interest in collateral property held by the borrower with a public registry of a general security agreement. A public statement describes the collateral and provides public notice that the unique collateral has been pledged to the lender.

Guarantees. It strengthens the credit if the guarantor signs the loan as a co-maker. The obligation of a co-maker (co-signer) is stronger than a guarantor. This can help to prevent lawsuits if the loan is restructured later.

Accounts receivable. Borrowing against accounts receivable helps a weaker customer access credit he might not be extended on an unsecured basis. Usually, the bank will lend a percentage of the accounts receivable assigned to it.

Methods and Documents for Taking Security Interests



Collateral should be consistent with types of loans.

Type of loan	Collateral	Collateral Analysis
Short term	<p>Inventories</p> <p>Accounts receivable</p> <p>Fixed assets</p> <p>Guarantees</p> <p>Liens on salaries of family members (small business, microfinance)</p>	<p>Inventory quality, salability</p> <p>Credit policy, aging of receivables, servicing of accounts, collections</p> <p>Liquidity of guarantees</p> <p>Employer compliance</p>
Bridge loans	<p>Perfected security interest in the asset</p> <p>Assignment of contract proceeds</p>	<p>Fair market value of the asset (under forced sale)</p> <p>(Backup: cash from operations)</p>
Medium term loans	<p>Title of equipment (lease)</p> <p>Perfected security interest in the asset</p>	<p>Resale possibilities</p>
Term loans	<p>Mortgage on physical structures and land</p> <p>Perfected security interest in equipment</p>	<p>Liquidation value (under forced sale or distress sale conditions, net of costs)</p>