

**Module 2: Preparing for Capital Venture Financing
Financial Forecasting Methods**

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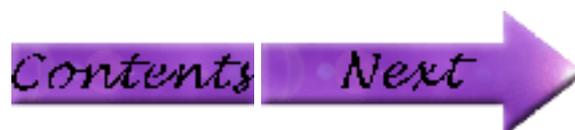
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1.0 Financial Forecasting Methods

1.01 Introduction

A critical component of the venture capital investment process is the preparation of financial projections for the business seeking venture capital financing. These projections normally include a balance sheet, income statement, and cash flow statement or statement of changes in financial position and normally have a time horizon of 4-7 years, similar to the investment time horizon of most venture capitalists. Typically, the projections are done on a monthly basis for at least one year so that any seasonal considerations are evident.

The following content will illustrate some commonly used methods for forecasting the typical accounts that appear on financial statements.



2.0 Income Statements

The typical structure of an income statement is as follows:

Revenue

Less: Cost of Goods Sold

Equals: Gross Margin

Less: Operating Expenses

Equals: Operating Profit

Less: Non-operating income/(expenses)

Equals: Profit Before Tax

Less: Income Taxes

Equals: Profit After Tax

Some components of a projected income statement are simply calculated from other components (e.g. revenue less cost of goods sold equals gross margin). However, other components require a forecasting methodology.



2.01 Revenue/Sales

Forecasting revenue/sales might be as simple as multiplying estimated unit sales by expected unit price for each period. A more sophisticated methodology would involve forecasting the total market and the company's market share in order to determine unit sales. An even more complex methodology might involve the use of regression analysis to fit a trend line through historical data to forecast future unit sales.

Example

If the projected total market for a product is 1 million units, the expected market share is 20% and the price per unit is \$10 the projected sales for the period are:

$$\text{Sales} = 1.0 \text{ million} \times 0.20 \times \$10 = \$2,000,000$$



2.02 Cost of Goods Sold

Cost of goods sold is often projected as a percentage of sales based on historical experience and/or expected direct unit production costs.

Example

If 200,000 units are expected to be sold and the expected direct cost per unit is \$5, projected cost of goods sold will be:

$$\text{Cost of goods sold} = 200,000 \times \$5 = \$1,000,000$$

Similarly, if projected sales are \$2,000,000 and cost of goods sold is expected to average 60% of sales, then projected cost of goods sold will be:

$$\text{Cost of goods sold} = \$2,000,000 \times 0.60 = \$1,200,000$$



2.03 Gross Margin

Gross margin is projected by subtracting projected cost of goods from projected sales.

Example

If projected sales are \$2,000,000 and cost of goods sold is expected to average 60% of sales, then projected gross margin will be:

$$\text{Gross Margin} = \$2,000,000 - (\$2,000,000 \times 0.60) = \$800,000$$



2.04 Operating Expenses

The first step in forecasting operating expenses is to identify the categories of expense that are relevant to the business (e.g. salaries, maintenance, depreciation, utilities, marketing, rent, etc.).

Some expense categories might be projected as a percentage of sales based on historical experience and or budget targets. Others, such as utilities, might be based on an annual percentage increase. Depreciation expenses can be determined from depreciation schedules for existing assets and assets to be acquired in the future. Future rental expenses might be projected based on existing rental or lease contracts.

Example

If sales are projected to be \$2,000,000 and marketing expenses are budgeted to be 5% of sales, then marketing expenses are projected to be $\$2,000,000 \times 0.05 = \$100,000$.

If utility expenses last year were \$50,000 and a 1% increase is expected each year, then projected utility expenses will be \$50,500 next year and \$51,005 the year after.

If depreciation expenses next year from depreciation schedules are \$67,000 for plant and \$23,000 for equipment, total depreciation expense is projected to be \$90,000.



2.05 Operating Profit

Projected operating profit is calculated by subtracting projected operating expenses from projected gross margin.

Example

If the projected gross margin for the period is \$800,000 and the sum of all categories of operating expense for the period is \$570,000, then projected operating profit is \$230,000.



2.06 Non-operating Income / (Expenses)

Projected non-operating expenses might include interest on debt if the company has or plans to borrow money, interest income earned on investments and/or projected gains/(losses) that might arise from planned future disposal of assets.

Interest expense can be projected from loan amortization schedules for existing and future loans. It is often assumed that assets will be disposed of in the future at their net book value. Under this simplifying assumption there will be no projected gains or losses on disposal of assets.

Example

If interest expense on existing long term debt will be \$22,000 in the next twelve months (from loan amortization schedules) and interest earned on short-term investments of surplus cash in the next year is expected to be \$8,000, then projected non-operating income/(expense) will be (\$14,000).



2.07 Profit Before Tax

Projected profit before tax is calculated by subtracting non-operating income/(expenses) from projected operating profit.

Example

If the projected operating profit for next year is \$230,000 and projected non-operating income/(expense) is (\$14,000), then profit before tax will be \$216,000.



2.08 Income Taxes

The projected income tax liability for each future period is calculated by multiplying the applicable corporate tax rate given the company's tax bracket by the projected profit before tax. If the company is projecting losses in the future those losses can be carried forward to reduce taxable income in future profitable years.

Example

If projected profit before tax next year is \$216,000 and the company's corporate tax rate is 29%, then the projected corporate income tax liability for the year is $\$216,000 \times 0.29 = \$62,640$.



2.09 Net Income

Projected net income for each future period (or “profit after tax” or “earnings” or “the bottom line”) is calculated by subtracting the projected corporate income tax liability from the projected profit before tax.

Example

If projected profit before tax next year is \$216,000 and the projected corporate income tax liability is \$62,640, then projected net income is $\$216,000 - \$62,640 = \$153,360$.



3.0 Balance Sheet

The typical accounts that must be forecasted on a balance sheet as follows:

Assets

Current

- cash
- accounts receivable
- inventory

Long Term

- property
- plant and equipment

Total Assets

Liabilities and Equities

Current

- accounts payable
- short term debt
- income taxes payable
- current portion of long-term debt

Long Term Debt

Shareholder's Equity

- share capital
- retained earnings

Total Liabilities and Equities



3.01 Cash

Future end of period cash balances are normally projected on the cash flow statement or statement of changes in financial position. An analyst will normally first prepare projected balance sheets and income statements. All balance sheet accounts with the exception of the cash account will be projected. The projected cash flow statements will then be prepared to determine cash flow for each future period. The cash flow can then be used to project closing cash on the balance sheet for each future period. When the closing cash amounts are posted to the balance sheets, they should balance.



3.02 Accounts Receivable

Once the sales forecast has been prepared on the income statement, assumptions can be made about when each month's sales will be collected. For example, if the business extends credit to its customers for up to 90 days, it might be assumed that 25% of sales are collected in the same month that they occur, 50% are collected in the next month and the remaining 25% in the third month. The appropriate percentages for each business will vary depending upon such considerations as experience in collecting receivables and/or credit policy.



3.03 Inventory

Closing or ending inventory for each future balance sheet date is normally projected using the following equation:

$$\text{Closing Inventory} = \text{Opening Inventory} + \text{Additions to Inventory} - \text{Cost of Goods Sold}$$

Opening Inventory is the closing inventory from the previous period.

Additions to inventory such as raw materials, work-in-progress and finished goods might be projected as a percentage of a future month's sales depending upon the lead time necessary from ordering raw material to final sale of finished goods.

Projected cost of goods sold can be obtained from the forecast income statements.

Example

Opening inventory at the beginning of the forecast period is \$75,000. Additions to inventory during the first forecast month will be 50% of projected sales for the third forecast month estimated to be \$300,000. Cost of goods sold for the first forecast month is projected to be \$60,000. What is closing inventory at the end of the first forecast month?

$$\begin{aligned} \text{Closing Inventory} &= \text{Opening Inventory} + \text{Additions to Inventory} - \text{Cost of Goods Sold} \\ \text{Closing Inventory} &= \$75,000 + 0.5(\$300,000) - \$60,000 \\ \text{Closing Inventory} &= \$165,000 \end{aligned}$$



3.04 Property

Any existing property owned by a company will be carried forward on projected future balance sheets at the historical cost of the land. If land acquisitions are planned in the future the future acquisition cost will have to be estimated and added to the value of any existing property from that point forward.

Example

A company currently owns land that it purchased for \$60,000 five years ago. It plans to sell this land soon for an estimated \$90,000 and acquire a new property within this fiscal year at an estimated cost of \$150,000. What is the projected balance sheet value for property at the end of the next fiscal year?

The projected balance sheet value for property at the end of the next fiscal year is \$150,000. The value showing for the original property will be reduced to zero when it is sold. The new property will be added to the balance sheet at \$150,000. The gain of \$30,000 on the sale ($\$90,000 - \$60,000$) will be recorded as extraordinary income on the projected income statement.



3.05 Plant and Equipment

Similar to property, plant and equipment is added to the balance sheet at the cost paid to acquire it. However, unlike property, plant and equipment is depreciated using an acceptable depreciation accounting method. Future depreciation expenses associated with existing assets can be obtained from depreciation schedules for each asset. Depreciation schedules can also be prepared for planned future asset acquisitions using estimated acquisition costs.

For each balance sheet date, the “net fixed assets” is calculated by subtracting accumulated depreciation for all assets owned at that point in time (from the depreciation schedules) from the aggregated actual (for existing assets) or estimated (for planned future asset acquisitions) costs of acquisition.

Depreciation Methods

When preparing financial statements for management purposes, accountants are free to use the depreciation method that best approximates the actual rate of deterioration of the value of the asset.

However, when preparing financial statements for tax reporting purposes, accountants must use the depreciation methods set out in the Modified Accelerated Cost Recovery System (MACRS) of the Tax Reform Act of 1986.

The three methods allowed under MACRS are:

1. Straight-line method
2. 200% Declining balance method
3. 150% Declining balance method

The choice of method depends on the depreciable life of the asset. MACRS established a number of asset life categories with sample asset types for each category. The straight-line method may be used for all asset categories. For asset categories with lives of 10 years or less, the 200% declining balance method may be used instead of straight line. For 15 and 20-year depreciable life assets, the 150% declining method may be used instead of straight line.

For all depreciation methods, depreciation charges in the year of acquisition of an asset are calculated as if the asset were acquired on July 1 (mid-year convention).

1. Straight Line Method

In the straight line method the depreciation rate in year t (Dept) is given by $1/n$ where n is the number of years over which the asset is to be depreciated. The depreciation rate for each year is applied to the **original cost basis** of the asset.

Example

An asset purchased for \$100,000 has a five-year depreciable life. What is the allowable depreciation each year using the straight-line method?

<u>Year (T)</u>	<u>Depreciation</u>
1 **	$0.5(1/5)\$100,000 = \$10,000$
2	$(1/5)\$100,000 = \$20,000$
3	$(1/5)\$100,000 = \$20,000$
4	$(1/5)\$100,000 = \$20,000$
5	$(1/5)\$100,000 = \$20,000$
6**	$0.5(1/5)\$100,000 = \$10,000$

** Mid-year convention in first year. The last half-year of the 5-year depreciable life occurs in year 6.

2. 200% Declining Balance Method In the 200% declining balance method the depreciation rate in year t (Dept) is given by $2/n$ where n is the number of years over which the asset is to be depreciated. The depreciation rate for each year is applied to the **remaining cost basis** of the asset (i.e. original cost basis less accumulated depreciation).

Example

An asset purchased for \$100,000 has a five-year depreciable life. What is the allowable depreciation each year using the 200% declining balance method?

<u>Year (T)</u>	<u>Depreciation</u>
1 **	$0.5(2/5)\$100,000 = \$20,000$
2	$(2/5)\$80,000 = \$32,000$
3	$(2/5)\$48,000 = \$19,200$
4	$(2/5)\$28,800 = \$11,520$
5	$(2/5)\$17,280 = \$6,910$

** mid-year convention in first year

3. 150% Declining Balance Method In the 150% declining balance method the depreciation rate in year t (Dept) is given by $1.5/n$ where n is the number of years over which the asset is to be depreciated. The depreciation rate for each year is applied to the **remaining cost basis** of the asset (i.e. original cost basis less accumulated depreciation).

Example

An asset purchased for \$100,000 has a 15-year depreciable life. What is the allowable depreciation each year using the 150% declining balance method?

<u>Year (T)</u>	<u>Depreciation (1st 5 years of 15 year life)</u>
1 **	$0.5(1.5/15)\$100,000 = \$5,000$
2	$(1.5/15)\$95,000 = \$9,500$
3	$(1.5/15)\$85,500 = \$8,550$
4	$(1.5/15)\$76,950 = \$7,695$
5	$(1.5/15)\$69,255 = \$6,925$

** mid-year convention in first year



3.06 Total Assets

Projected total assets are calculated by summing total current assets, property and net plant and equipment (acquisition cost less accumulated depreciation).

This completes the asset side of the balance sheet.



3.07 Accounts Payable

Accounts payable is typically heavily influenced by inventory purchases from suppliers combined with credit terms available from suppliers. If forecast of inventory purchases is made in order to project closing inventory on the balance sheet, this forecast could be used to estimate accounts payable. Total purchases for the period can be converted to average purchases per day by dividing by the number of days in the period. The average purchases per day can then be multiplied by the average age of payables (based on supplier credit terms e.g. 30, 60 days etc.).

Accounts payable can also be projected by the following equation:

Closing accounts payable = opening accounts payable + purchases from suppliers during the period – payments to suppliers during the period.

Example

Total inventory purchases for the next quarter are expected to be \$180,000. If the company maintains an average age of payables of 45 days, what is the projected accounts payable at the end of the quarter assuming there are 90 days in the quarter?

The average inventory purchases per day is $\$180,000 / 90 \text{ days} = \$2,000$.

Projected accounts payable at the end of the quarter is $\$2,000 \times 45 \text{ days} = \$90,000$.

** mid-year convention in first year



3.08 Short Term Debt

Short-term debt is borrowed money that will be repaid within the next twelve months. Often short-term debt is in the form of an operating line of credit especially in businesses that have seasonal fluctuations in sales and cash requirements.

Short-term debt can be projected based on known future short term borrowing requirements. In the case of an operating line of credit, the balance owing at the end of each period can be determined from the projected cash flow statement. If the projected cash balance at the end of a period is positive, the balance owing on the line of is zero. If the projected cash balance were negative, the amount would be the projected balance owing on the line of credit.

Example

A retail computer company will need to borrow \$90,000 in June to finance purchase of computer hardware that will be sold to a major customer in July. The loan is expected to be repaid in full during the month of September when the customer pays for the purchase.

In this case projected short-term debt on the company's balance sheet will be \$90,000 at the end of June, July and August. It will be reduced to zero again at the end of September.



3.09 Income Taxes Payable

Projected income taxes payable can be determined from the projected income statement. It should be noted that the income taxes payable for a fiscal year would remain on the balance sheet until the company files its tax return and pays the taxes owing. This could be as much as 6 months after the end of the fiscal year.

Example

If a company has projected net income next year of \$300,000, is in a 30% income tax bracket, has a fiscal year end of December 31, and pays its income taxes in July of each year, then the projected income tax liability will be \$90,000 on the December 31 balance sheet and remain the same until the end of June the following year.



3.10 Current Portion of Long-Term Debt

Current portion of long term debt is the amount of principal that will be paid on long term debt (e.g. a mortgage) during the twelve months following any give balance sheet date. This can be determined from loan amortization schedules for existing and future long-term debt. The amortization schedules segregate loan payments into principal and interest portions.

Example

If a company is making constant principal payments of \$2,000 per month on a 5-year \$120,000 loan, the projected current portion of loan term debt will be \$24,000 on each monthly balance sheet until the last year of the loan where the projected liability will decline by \$2,000 each month until it reaches zero when the loan is paid in full.



3.11 Long-Term Debt

Long-term debt is principal owing on long-term loans that will be paid beyond the next twelve months after each balance sheet date. Again the projected long-term debt liability can be determined from loan amortization schedules for existing and planned future borrowings.

Example

If a company is making constant principal payments of \$2,000 per month on a 5 year \$120,000 loan, the projected long term debt will be \$96,000 (\$120,000 less \$24,000 current portion) after the first payment, declining by \$2,000 per month each month thereafter until the end of the of the fourth year where long term debt will be zero and all remaining principal will be current portion of long-term debt.



3.12 Shareholder's Equity

Shareholder's equity consists of share capital plus retained earnings.

Projected share capital will be based on any existing share capital that has been provided by investors in the company and any planned future equity infusions.

Retained earnings can be projected using the following equation:

Closing retained earnings = opening retained earnings + net income for the period – dividends paid to shareholders

Projected net income can be obtained from the projected income statement. Projected dividend payments, if applicable, are often forecast as a percentage of net income.

Example

If a company has closing retained earnings this fiscal year of \$375,000, has a projected net income next year of \$500,000 and plans to pay dividends to shareholders equivalent to 20% of annual earnings, then projected retained earnings at the end of next year will be:

$$\text{Closing retained earnings} = \$375,000 + \$500,000 - 0.20(\$500,000) = \$775,000$$



4.0 Statement of Changes in Financial Position (Cash Flow)

A projected statement of changes in financial position draws upon the projected income statement and balance sheet to produce a cash flow projection.

Most cash flow statements are structured to display three components of cash flow:

1. cash flow from operations
2. cash flow from investing activities
3. cash flow from financing activities



4.01 Cash Flow for Operations

A projection of cash flow from operations begins with the projection of net income for the forecast period, which can be obtained from the projected income statement.

In order to reconcile net income to cash, one of the first adjustments is to add back non-cash expenses such as depreciation. Depreciation expenses reduce income but they do not result in a cash outflow.

Projected changes in working capital accounts also affect cash flow. The projected changes in working capital accounts during the forecast period can be obtained from the projected balance sheets.

If current asset accounts such as accounts receivable and inventory are projected to increase during the forecast period of the income statement, then this is a negative adjustment to cash flow and vice versa. Simply put, if the income statement is projecting an increase in sales of \$100,000 for the period and accounts receivable is expected to increase by \$25,000 during the same period, then cash flow would be \$25,000 less than a scenario where all sales would be collected during the period.

If current liability accounts such as accounts payable, short term debt and income taxes payable are projected to increase during the period, this is a positive contribution to cash flow from operations and vice versa. To illustrate, if accounts payable is projected to increase, this means that cash flow will be higher than a scenario where suppliers are paid in full. Conversely, if accounts payable is projected to decrease during the period this means that cash will be used to pay down trade credit.

To summarize, projected cash flow from operations is:

Projected net income

Plus: Projected non-cash expenses (depreciation)

Less: Projected increases in current assets other than cash

Plus: Projected decreases in current assets other than cash

Plus: Projected increases in current liabilities

Less: Projected decreases in current liabilities

Example

A company is projecting a net income next year of \$275,000. Accounts receivable is expected to increase by \$75,000 whereas accounts payable is expected to decrease by \$35,000. Inventory is projected to decrease by \$40,000 and income taxes payable will increase by \$60,000. Depreciation expense during the year is projected to be \$32,000. What is the projected cash flow from operations?

Cash Flow from Operation is **\$297,000**:

Projected net income = **\$275,0000**

Plus: Projected non-cash expenses (depreciation) = **\$32,000**

Less: Projected increases in current assets other than cash = **(\$75,000)**

Plus: Projected decreases in current assets other than cash = **\$40,000**

Plus: Projected increases in current liabilities = **\$60,000**

Less: Projected decreases in current liabilities = **(\$35,000)**



4.02 Cash Flow from Investing Activities

Investing activities include acquisition or divestiture of fixed assets such as property plant and equipment and/or other long term assets.

Projected acquisitions of fixed assets represent a negative cash flow during the period in which they are expected to occur.

Conversely, projected divestitures of fixed assets represent a positive cash flow during the period in which they are expected to occur.

Projected acquisitions/divestitures of fixed assets can be obtained from projected balance sheets.

Example

The company plans to replace existing production equipment next year with modern equipment at an expected cost of \$375,000. The existing equipment is expected to be sold for \$35,000. What is projected cash flow from investing activities?

Cash flow from investing activities = $(\$375,000) + \$35,000 = (\$340,000)$



4.03 Cash Flow from Financing Activities

Financing activities include borrowing funds and subsequent re-payment of debt, raising share capital through the issue of shares and the payment of dividends to shareholders. Projected increases in borrowing are a positive cash flow whereas the projected re-payment of debt is a negative cash flow.

A projected infusion of equity capital through the sale of shares to investors is a positive cash flow whereas when a company is projected to re-purchase shares from investors this is a negative cash flow.

Payment of dividends to shareholders is a negative cash flow.

Projected increases and decreases in debt and share capital can be obtained from the projected balance sheets.

Example

The company plans to borrow \$200,000 at 7% annual interest to partially finance the \$375,000 fixed asset acquisition. The loan will be paid back over 5 years with equal annual principal payments. The owners of the company will also invest a further \$50,000 in the business to maintain a strong balance sheet. No dividends will be paid next year. What is projected cash flow from financing activities next year? Cash flow from financing activities = \$200,000 (borrowed funds) – (\$40,000) (principal payment) + \$50,000 (shareholder investment) = **\$210,000**



4.04 Cash Flow Summary

The projected cash flow for next year for the above company is as follows:

Example

Cash flow from operations = **\$297,000**

Cash flow from investing activities = **(\$340,000)**

Cash flow from financing activities = **\$210,000**

Total cash flow = **\$167,000**

