Cashflow, Free Cashflow, and Proforma Forecasting

Proforma Forecasting Models

Proforma forecasting models are designed to use the balance sheet and income statement from a corporation from a number of past periods (such as three previous years) for the purpose of making a forecast for a number of years into the future (such as five years). In a few words, the user will enter data from historical balance sheets and income statements and use the model to make a forecast. Once that forecast is made, certain conditions or assumptions can be overridden and a new forecast can be made.

A good proforma model will also produce at least one cashflow sheet for historical years and for the forecast, along with common size, trend, important ratios and value drivers and a list of critical variables that drive the forecast.

It should be understood that the *default* forecast produced by a proforma model is usually not a reliable forecast for the actual future of the company in question. The models is designed to be used for *sensitivity analysis*, where the user, after making the default forecast, plugs in certain values for such categories as capital spending and new debt, possibly makes new assumptions about such important categories as *sales growth rates* or *days receivable*, *days inventory*, or important ratios like *CGS/sales*, then reforecasts to evaluate the effect of these assumptions upon future cashflow or profitability and to evaluate future financing needs. In effect, the analyst is using "*what-if*" analysis, asking "what will happen (e.g. to cashflow) if this is done (e.g. borrow a certain amount of money and use it to buy fixed assets)?" The proforma model allows the analyst to project different scenarios, whether scenarios that are being strategically considered (planning) or scenarios that are considered to be highly likely (true forecasting).

The default forecast for a proforma cashflow forecasting model will assume the continuation of historical growth rates for operating categories like sales, cost of goods sold, SGA expenses and other operating expenses, and all interest expenses, but will freeze all categories of gross fixed assets (but not depreciation) and any new addition to debt. Therefore, on the proforma cashflow sheet, *capital expenditures* and *change in short term debt* and *change in long term debt* is recorded as zero for the forecast years. This is one of the reasons why the default forecast by itself is not likely to project an accurate image of the company's future. At a minimum, some level of capital spending must be manually projected into the future by the analyst, which is done by overriding the forecast value for *capital spending* (normally zero at default).

[To help understand this, if the reader has access to a proforma cashflow forecast with company data, look at the forecast values for these three categories. Look also, on the income statement or balance sheet, at how the proforma forecast treats all categories of *gross fixed assets*, *depreciation*, *net fixed assets*, *sales*, *CGS*, *SGA expense*, *notes payable*, and *long-term debt*].

Why does the proforma model forecast this way? Again, because the purpose of the model is to do sensitivity analysis, allowing the user to override default values, making direct capital investment decisions (by buying various categories of gross fixed assets, like land, equipment, rolling stock, etc.) and deciding how to finance such purchases, whether via short-term debt, long-term debt, some combination, or internal cashflow. Models can be used for many other purposes as well, such as *valuation*.

The Concept of Free Cashflow

Free cashflow is at the core of modern valuation techniques. One of the most common and respected standards of valuation of any corporation is to estimate the *present discounted value of free cashflow* (discussed more below). Techniques used to do this are complicated but the concept of *free cashflow* is consistently found at the core of such estimations.

Free cashflow is a company's operating cashflow after investment in new capital *but* before considering new debt. Copeland, Koller, and Murrin define *free cashflow* in the following way:

> "Free cash flow (FCF) is a company's true operating cash flow. It is the after-tax cash flow generated by the company and available to all providers of the company's capital, both creditors and shareholders. It can be thought of as the after-tax cash flows that would be available to the company's shareholders if the company had no debt."[1]

The concept of *free cashflow* works on a related premise that the ultimate origin of long-term corporate growth is invested capital. Generally, productive fixed assets are expected to be at the core of a company's productive ability, which in turn is essential for the production of commodities sold by the company, which in turn is essential for sales revenues and their growth. Therefore, cash placed into invested capital (increasing net fixed assets) is a primary value driver for long-term sales growth (but not necessarily margins or other measures of profitability).

This concept shows a clear bias towards manufacturing firms. Clearly the growth of productive assets, and in particular net fixed assets, is far less important in service firms, such as large law firms or large consulting firms, or merchandising firms, like sports apparel merchandisers. This is recently recognized by analysts. For example, Weston, Chung, and Siu have this to say about capital budgeting (for what has traditionally been defined as invested capital):

> "Capital budgeting represents the process of planning expenditures whose returns extend over a period of time. Examples of capital outlays for tangible or physical items are expenditures for land, building, and equipment. Outlays for research and development, advertising, or promotion efforts may also be regarded as investment outlays when their benefits extend over a period of years."[2]

The first group listed in this quotation, all fixed assets, have always been regarded as invested capital. Research and development, however, is of critical importance in such industries as pharmaceuticals and chip design, whereas advertising and marketing outlays are the critical value drivers in many consumer industries such as clothing apparel.

If this premise about the importance of invested capital can be accepted as valid, then an immediate question arises: how is the expansion of productive fixed assets to be financed? Generally, there are two candidates; (1) internal cashflow and (2) debt. *Free cashflow* is a measure of cash remaining assuming that new investment capital is financed via internal cashflow (rather than new debt).

How does *free cashflow* differ from other measures of cashflow? *Free cashflow* equals ordinary operating cashflow after all adjustments, including all categories of depreciation, amortization, and tax payments, *minus* new investment, but excluding any debt payments and prior to any cash received from new loans.

In notation form

$$\text{Free Cashflow} = \text{Net Operating Cashflow} - \text{New Invested Capital (Investment)}^{3}$$

It should be remembered that Net Operating Cashflow does not include interest payments on debt nor principle reductions of long-term debt, but does include adjustments for accruals, depreciation, amortization and taxes.

Estimating Free Cashflow with a Proforma Model

As was stated above, the estimation of *free cashflow* is at the core of the best modern corporate valuation techniques. There are a number of different ways, each rather difficult, to estimate valuation through the estimation of the present discounted value of *free cashflow*.[4] This section discusses the use of a proforma model blended with another model used to estimate the perpetuity component of free cashflow. It is assumed that the analyst has access to a legitimate proforma forecasting model which can generate a few periods (typically years) of forecast cashflow based upon data from historical years. Although any proforma model that can do this will suffice, the examples below are drawn from *The Bora Credit Evaluation and Cashflow Model*[5], which uses three years of balance sheet and income statement data to make a five-year proforma forecast. The explanation below is easier to follow if the analyst has access to an Excel workbook provided by the author labeled **PDVCash.xls** or **PDVV5.xls**. The printout page of this workbook is shown in **Appendix A** of this document.

The proforma approach involves two steps: (1) Using the proforma model to generate five proforma forecast years of free cashflow then discounting each forecast year by using a discount rate, then summing them. (2) After estimating a sixth year based upon average growth rates of the prior five years, obtaining a perpetuity forecast assuming constant growth using a standard

constant growth formula.

To show the analyst how this is done, an appendix is attached to this document. That appendix includes a cashflow page from the *Bora* model using Hershey Foods as an example, followed by the printout from Excel workbook PDVCash.xls, which takes the data from the proforma forecast and and makes a present discounted value estimate of the *free cashflow* of Hershey Foods. Here are the steps that we taken to obtain that value:

1. From the proforma model printout, the two historical years for **NET CASH AFTER OPERATIONS** are entered into the **Operations Cashflow** row and the data from **Capital Expenditures** are entered into the **Investment** row. This will generate two investment rates for two separate years (48.3% and 50.2%). These will later be averaged into one investment rate.

2. Next, the five forecast years for **NET CASH AFTER OPERATIONS** are entered into years 1 through 5 (from 2,978 to 4,210). This will automatically generate a sixth projected year.

3. At this point, if the actual workbook is being used, default assumptions will have produced an actual valuation ($46.404 billion in the example). The actual formulas used to make this calculation are described at the end of this set of instructions. Override possibilities will be discussed first.

4. The first override possibility is the **Expected long-term growth rate**, which is used in the calculation of the perpetuity. The default is the average of the five forecast years. This rate represents the expected growth rate for all years following the first five. If the default looks unrealistic, change it to a more realistic value.

5. Probably the most important rate to consider is the **Investment rate**. The default is set to the historical **Investment rate** determined in step 1. Aside from the fact that the historical numbers might produce an unrealistic result (for example, with heavy external financing, it is possible for new capital spending (investment) to exceed operations cashflow, producing a meaningless value greater than 100%) which would have to be overridden, the analyst might conclude that investment should include more than change in net fixed assets (the proforma model defines capital expenditures as equaling $NFA_t - NFA_{t-1} + Depreciation_t$). It might be deemed appropriate to also include values like recurring research and development expenses or marketing costs, as was discussed in the opening of the paper. In this case, the analyst, using additional data particular to the company being investigated (such as R&D outlays for recent years), should make an off-line calculation and override the default **Investment rate**.

6. The present value **Discount rate** is defaulted to be equal to the model's **First-estimate WACC** (weighted average cost of capital). This model, in turn, uses a simpler estimate of

WACC than some. The default WACC takes the **Current Long-Term Bond Rate**, assumed at default to be 7% (and the analyst should override this if that figure is much different that the market yield for 30-year U.S. Treasury Bonds and replace it with that yield) and adds a premium of 5.0%. This is meant to represent the cost of capital to the firm when some mix of equity or debt is used. There are many alternative ways of calculating WACC[6] (the author is not impressed with any of them and so uses this simpler approach) and if the analyst uses any of those then the **Discount rate** can be overridden.

The spreadsheet uses standard discounting techniques to discount for present value, and the **TOTAL DISCOUNTED VALUE** equals the sum of the five discounted proforma years (6,441 in the example) and the **Perpetuity Value** (39,962 in the example). The formulas for each respectively are[7]:

$$F = \sum_{i=1}^{5} \frac{C_i}{(1+d)^i} \quad \text{and}$$

$$P = \frac{C_6(1-r)(1+g)}{(w-g)} \quad \text{where (with values shown from the example)}$$

F: present discounted value of the five forecast years
C: proforma forecast values for operations cashflow
d: discount rate (12%)
C_6: projected year 6 cashflow value (4,590.82)
r: investment rate (49.2%)
g: expected long-term growth rate (9%)
w: weighted average cost of capital (same as discount rate, 12%)

Where the Proforma Forecasting Technique Works Best and Where it is Limited

The forecasting technique based upon the use of a reliable proforma forecasting model will normally provide a more credible forecast than an algebraic model because the latter relies more upon point- or single-valued estimates of all key variables and is therefore extremely sensitive to even small variations in some of the key variables, such as the growth rate in after-cash tax flows or the marginal profitability rate.[8]

The proforma-based valuation technique works best when modeling an established company with recent cashflows that are healthy and with fairly high levels of capital investment. If the analyst were to run AT&T through the model, for example, the result would be reliable. AT&T has good cashflow and a high investment rate.

The problem arises when the analyst tries to evaluate weaker companies with poor or negative cashflow or companies that, because of restructuring or similar reasons, are going through a spurt of negative cashflow in recent years on the path to recovery. Takeover targets are often in this situation. A proforma model, which derives its forecast from recent trends, will often forecast five years of negative cashflow or the extension to the model, used to forecast the 6th year for the long-range component of the valuation formula, will forecast negative cashflow for the 6th year. The present value estimate of such a company is, of course, negative (the company is worthless). This would technically be true. A company that is doomed to forever have negative cashflow is a bankruptcy candidate.

Negative cashflow for surviving companies, though, is a temporary problem. The analyst must therefore do some extra work to try to resolve the problem of negative valuation. (The analyst can also try to value the company using the algebraic approach, although this involves no less work). When fixing this problem, use this general three-step approach: (1) Scour the historical books and try to find the origin of the cashflow problem, then (2) determine if the problem is temporary (and possibly even resolved) or if this company really is in trouble, and (3a) if the problem was temporary, determine if it is likely to show up as better performance (such as a higher sales growth rate or fatter margins) than is shown in the proforma forecast, and override the forecast to reflect this, or (3b) try to figure out what the management of the target company or the management of the takeover company is going to do to fix this (such as fatten margins by lowering SG&A expense through downsizing or eliminating redundant resources), and reflect this by overriding key variables in the default forecast.

If this sounds imposing, don't worry. The quality of an evaluation depends upon good detective work and the depth of analysis, not a perfect valuation projection. By trying to figure out what is wrong, the analyst will likely uncover some problem, whether temporary or permanent, in the company. This should be written up and aptly described in the evaluation. If the override doesn't produce a credible valuation figure, so be it.

Notes

1. Copeland, Tom, Koller, Tim, and Murrin, Jack. *Valuation - Measuring and Managing the Value of Companies*, 2nd ed., 1996, Wiley, pp. 172 - 173.

2. Weston, J, Fred, Chung, Kwang S., and Siu, Juan A. *Takeovers, Restructuring, and Corporate Governance*, 2nd ed. 1998, Prentice-Hall, p. 179.

3. In the *Bora Credit Evaluation and Cashflow Model*, for historical data, free cashflow equals NET CASH AFTER OPERATIONS minus CAPITAL EXPENDITURES (the latter is already recorded as a negative value in the historical data). For the proforma forecast, a capital expenditure projection must be made. Note that the cashflow category entitled Change in Investments is not CAPITAL EXPENDITURES and does not figure into the calculation of free cashflow.

4. This is discussed at length in Weston, et. al., chapter 9, and Copeland, et. al., Part II, chapters 5 - 10. It is assumed that the reader is generally familiar with this subject.

5. *The Bora Credit Evaluation and Cashflow Model,* © 1998, Gary R. Evans and Steven D. Evans.

6. In Weston, et. al., see pp. 189 - 194 and in Copeland, et. al., see chapter 8.

7. See Weston, et. al., p. 184. The second equation shown (the perpetuity) is the same as equation 9.3 in Weston. There is no tax variable because taxes are already removed in the proforma model.

8. See Weston, et. al., model 9.5 from table 9.7, for a good example of an algebraic model.