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Running the Numbers: Wall Street Style Valuation Assumptions Are Popular & Often Wrong

Discounted Cash Flow Methodology Can Give Litigators the Upper Hand

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"Running the Numbers" is an occasional column concerning tax, accounting, and auditing issues.

Most formulas used to arrive at valuations are based on Wall Street criteria. This is obviously the case in transactions, but not only in that instance. Valuation assumptions based on transactional formulas are commonly used by private equity investors to make strategic decisions about their portfolio companies, and by litigators and courts to argue for and arrive at determinations of damages.

But in most of those instances, Wall Street valuation formulas are inadequate. They are often severely distortive. Designed for a transaction environment, they are arrived at quickly and generically, and do not take fully into account the realities of operating a business.

Investors, litigators, and courts would be well advised to rely on accounting approaches, rather than transactional approaches, to arrive at valuations that reflect real-world realities. A business-savvy financial economist can examine a business in more detail. And paradoxically, by making more assumptions, he or she can actu-

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ally be more accurate in valuing a business as a going concern.

Choosing the right valuation model is important in the context of litigation because assumptions on valuations must be clearly spelled out and meet *Daubert* criteria.[1] In *Celebrity Cruises, Inc. v. Essef Corp.*, a Wall Street analyst was excluded under *Daubert* and a leading expert's conclusions on lost enterprise value were reversed because of errors made in a crucial element of his valuation model.[2] The *Essef* case stemmed from claims of lost profits by Celebrity, a cruise ship operator, because an Essef product—a whirlpool sand filter installed on a Celebrity's cruise ship—contributed to a July 1994 outbreak of Legionnaires' disease on board the ship. The court's reversal led to the exclusion of $135 million in damages that the jury awarded but that the judge rejected due to an error in the expert's valuation methodology.

How the Wall Street Valuation Method Works

How does Wall Street arrive at a valuation? Wall Street typically values entities by comparing valuations of other publicly traded peers or transactions of recent like entities. These valuations involve a figure that is compared to an accounting variable like revenues or earnings before interest, taxes, depreciation, and amortization (EBITDA). This valuation multiple is then applied to the accounting variable on the subject company to derive an implied value based on market multiples.

For example, the peer group might have average revenues of $400 million with an average equity value of $800 million. This would imply a revenue multiple of 2x to be applied to the revenues of the subject company's revenues in order to estimate its value. Such an approach is a simple and sometimes effective way to obtain a valuation. Wall Street analysts often talk about industry multiples, implying that some rule-of-thumb multiple is applicable to a particular company that operates in that industry.

Why Wall Street Valuations Are Often Inaccurate

Wall Street assumptions are biased toward transaction value or public peer multiples. That is often different from operational value. Financial economists are often closer to an understanding of what it means to run a business.

Wall Street assumptions can be biased in order to derive the optimal value for either a buyer or seller in a given transaction. But operational assumptions can create a more objective valuation which ultimately will benefit both the buyer and the seller, and not one at the expense of the other. For example, a Wall Street banker might make assumptions about how a business will grow, but does not factor in the capital or inventory it needs to reach that target. Wall Street bankers usually focus on the top line instead of on the business as a whole and how it will operate as its current environment changes.

An Alternative Approach: Discounted Cash Flow Methodology

An alternative approach known as the discounted cash flow (DCF) methodology involves deriving a forecast of revenue, costs, and other cash outlays used to support the business. These forecasts lead to estimations of future free cash flows that are discounted at the appropriate weighted average cost of capital (WACC) to derive an implied value. The DCF model involves many more assumptions about future growth, profit margins, capital requirements, tax rates, and interest rates that are not required in the market multiple approach. However, the DCF model, in spite of—or more accurately, because of—the number of assumptions and parameter estimates, can actually lead to more accurate valuations.

Free cash flows represent cash that is available to all capital providers after they have been generated through sales net of all expenses including taxes and other cash expenditures, such as working capital needs (such as inventory and customer sales on credit) and capital expenditures, but before payment to capital holders of interest and dividends.

The DCF methodology requires judgment to estimate many model parameters such as future revenue growth rates, interest rates, profit margins, and capital requirements. As such it is important to support these assumptions with historical data and/or industry projections and peer performance, and to support the DCF valuation outcome with alternative methods based on peer multiples from publicly traded companies, or based on recent similar company transactions.

The formula used to derive free cash flows is:

FCF = REV – CGS – OTHEXP – TAX – WC – CAPEX

Where:

FCF = Free Cash Flows;

REV = Revenues;

CGS = Cost of goods sold excluding noncash costs such as depreciation

OTHEXP = Other operating and nonoperating expenses excluding noncash expenses such as amortization and depreciation

TAX = Tax expense based on revenues net of cash and noncash expenses

WC = The change in working capital

CAPEX = Expenditures for capital equipment

Free cash flows are forecast for each year up to a terminal year, at which point a terminal value is used to estimate all future cash flows into the foreseeable future. All these cash flows are then discounted at the weighted average cost of capital to derive a value at a given point in time. Thus, in order to estimate free cash flows, and hence a value under the DCF methodology, one must estimate and make assumptions related to revenue growth rates, gross margins, operating margins, working capital changes, capital expenditures, amortization expense, the terminal growth rate, depreciation expense, the effective tax rate, and the weighted average cost of capital.

Market-multiple approaches, using either publicly traded peers or recent transactions, can lead to erroneous conclusions because they are not necessarily forward-looking and can not be stress-tested, while a well laid-out discounted future free cash flow forecast model can. For example, the market-multiple approach will not allow one to determine the impact on value under alternative cost structures, profit margins, or revenue growth assumptions. The backward-looking valuation approach and the failure to model and assess underlying risks in the valuation of mortgages and real estate assets is the underlying cause of the current financial crisis.

The Advantages of DCF Methodology

A market multiple approach cannot always capture crucial elements of a company's value. A well-structured discounted free cash flow model will incorporate all of the following factors as they relate to valuations:

- How do revenue growth rate assumptions compare to industry forecasts, historical growth rates of the company and its competitors, and the company's market share?
- How do customer and demographic trends support or contradict assumptions on future revenue growth rates?
- What is the implication of alternative top line growth rates on valuations?
- What level of capital is required to sustain forecast growth?
- How do assumptions on future profitability compare with those of the industry as a whole and the company's closest competitors?
- How can alternative assumptions on cost-of-capital, interest rates, profit margins, tax rates, and the cost of capital impact the valuation?
- How do alternative exit or growth options impact the valuation?

Incorporating these factors and assumptions confers a superior level of detail.

The Rationale for Making Many Small Assumptions Rather than a Few Large Ones

Wall Street often uses quick, rule-of-thumb calculations—multiples of revenues or earnings—

that often are not applicable, particularly in the current environment. It is rare to find a real-world company that is identical to the particular company that is being valued. Where a banker might make a single large assumption and say, 'Use a revenue multiple of two,' it would be preferable to adopt the DCF methodology and say, in effect, "Let us use a more sophisticated model. Project out cash flows, understand if there are any potential imbedded options, work out the assumptions and see if they make sense. If sales growth is off, look at the industry forecast, and use third-party data to test the assumptions. Take the rule of thumb as a guideline and then do a deeper analysis—breaking it down into smaller more tangible pieces instead of making one draconian assumption."

The DCF methodology requires careful application. It will be successful if the following requirements are met:

- Assumptions must be clearly stated. Stress testing of all critical assumptions and sensitivity analysis can only be performed if the assumptions are clearly laid out. Such stress testing and sensitivity analysis has become continually more important in valuations that are derived for litigation purposes.
- Third-party, unbiased sources should be used to corroborate assumptions.
- In the context of the courts there is a risk in performing a DCF analysis because all assumptions are clearly laid out and must be justified as scientific and unbiased under the *Daubert* standards.

Used properly, the reward for using the DCF approach is greater accuracy, as well as more insight into the range of potential values and the factors that will influence this range. This can have significant real-world consequences. In the *Essef* case discussed above, errors in estimating the appropriate interest rate resulted in reversal of a $135 million jury verdict. Such an error would not have been detected without using an explicate valuation model that lays out all relevant assumptions and the courts rejected valuation models where assumptions were not corroborated by third-party sources or were deemed too simplistic.

When to Use DCF Methodology in Litigation

DCF methodology is not welcomed by the courts in all instances. One argument that failed in connection with Essef's motion to preclude one of Celebrity's experts is that the expert failed to perform a DCF analysis when calculating lost profits. The expert instead based his analysis on a comparable companies study. The court held that "it would be wrong to conclude that any valuation analysis must be supported by DCF calculations. Courts recognize that different methods may be acceptable, depending upon the context."[3] Although *Essef* cited to cases that rejected expert analyses for failure to use a DCF analysis, the court here distinguished those cases:

> **where the objective was to value a single business entity at a fixed point in time. The goal here is different: it is to calculate damages that were incurred over a period of time and are attributable to a specific event. Consequently, the use of comparable companies has the advantageous feature of 'controlling' in a rough way for market factors. That is, factors that impact the market generally are assumed to affect the target company (Celebrity) and the comparators alike. Thus, a downturn in Celebrity's profits is not attributed to the incident if the comparators suffer similar losses over the same period.[4]**

Ultimately, however, the expert's opinion on lost profits was precluded because of flaws in comparing the chosen proxies to the expected income of Celebrity.[5]

However, market-multiple approaches are sometimes received badly in the courts. For example, another of Celebrity's experts was precluded from opining on Celebrity's lost enterprise value. This expert based his analysis on a comparison of the purchase of Celebrity by Royal Caribbean Cruise Lines (RCCL) to two other acquisitions in

the cruise industry. The court rejected this analysis as unreliable, because these other acquisitions were not comparable to the Celebrity acquisition for three reasons: 1) the other two were larger in scale, with one of the two almost four times as large, on a per berth basis; 2) the other two transactions were subject to competitive bidding, whereas the Celebrity acquisition had only one other, last-minute bidder; and 3) the other two transactions took place several years later, and the expert made no effort to account for any market changes over the intervening period that might have affected the relative value of the sales.[6]

The Argument for Subjectivity

Common sense would dictate that making a greater number of assumptions, as happens in the DCF methodology, is inherently subjective, and therefore distortive. But the positive aspect of this is that it's possible to see what the assumptions are, and test them. If all assumptions are tested, one large assumption does not affect all other calculations, and it is then possible to prevent large distortions from impacting the valuation. More research brings more objectivity to subjective assumptions.

Real-world experience demonstrates that private equity firms and Wall Street analysts sometimes do not realize how imperfect their assumptions are. Large assumptions may not reflect the reality of the business. Using the market-multiple approach, you may know that your valuation is way off the mark but be unable to pinpoint what the specific problem is and therefore correct for it. Using many small assumptions, you can find measurements that are closer to reality. If they are not, you will understand why and be able to adjust accordingly. The multiple approach—unless it mimics a specific peer that is identical to the company you are valuing—will not allow you to pinpoint areas of distortion and examine the potential range of values under alternative scenarios and assumptions.

The advantages of the greater subjectivity of the DCF approach are:

- Errors and biases in estimating model parameters can more easily be detected if all model assumptions are well spelled out and explicit;
- These assumptions can only be laid out in a well specified discounted free cash flow model; and
- Courts are becoming more and more aware of model assumptions and will exclude an expert if assumptions are not scientifically based, well laid-out and unbiased.

For example, another expert's lost profits damages model, which was based on a five-year plan formulated by Celebrity's management in January 1994, was also precluded on *Daubert*. The expert compared Celebrity's actual performance with that in the five-year plan, and then adjusted the projections in various ways to arrive at alternative results. Relying on Second Circuit precedent, the court held that "the entrepreneur's 'cheerful prognostications' are not enough."[7]

The court also noted that another of Celebrity's experts rejected the use of this same five-year plan as being prepared at a point too remote in time and failed to account for several relevant factors. Furthermore, the performance of the three ships studied had largely failed to meet the budgeted revenue projections in the two quarters prior to the Legionnaire's incident.

Finally, courts are increasingly requiring a range of values under alternative assumptions known as sensitivity analysis. This sensitivity analysis is optimally performed using the DCF as opposed to the multiple-valuation methodology.

Wall Street's market-multiple valuation methodology is popular, widely used—and often highly inaccurate outside the transaction setting. Litigators would do well to familiarize themselves with alternative approaches, in particular the Discounted Cash Flow methodology. While it involves more assumptions, it more closely captures real-world valuations in businesses that are going concerns, rather than transaction participants. And the number of assumptions can, paradoxically, provide a more accurate picture of the valuations that are critical to your client's case.

NOTES

1. The *Daubert* standard is a rule of evidence regarding the admissibility of expert witnesses' testimony during U.S. federal court legal proceedings. The standard is derived from three Supreme Court decisions, including *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 113 S. Ct. 2786, 125 L. Ed. 2d 469, 27 U.S.P.Q.2d 1200, Prod. Liab. Rep. (CCH) P 13494, 37 Fed. R. Evid. Serv. 1, 23 Envtl. L. Rep. 20979 (1993).
2. *Celebrity Cruises Inc. v. Essef Corp.*, 434 F. Supp. 2d 169 (S.D. N.Y. 2006).
3. *Essef Corp.*, 434 F. Supp. 2d at 179.
4. *Essef Corp.*, 434 F. Supp. 2d at 179-80.
5. *Essef Corp.*, 434 F. Supp. 2d at 180-181.
6. *Essef Corp.*, 434 F. Supp. 2d at 182.
7. *Essef Corp.*, 434 F. Supp. 2d at 184.