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Oil, Gas & Energy Law Intelligence

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Dealing with Uncertainty: Discounted Cash Flow (DCF) Versus Adjusted Present Value (APV)

*By Thierry Senechal**

Summary

Both DCF (under the weighted average cost of capital or WACC basis), and APV methodologies are now commonly used in litigation for estimating the pecuniary value of damage in investment disputes. However, the APV and the traditional DCF methods differ in how the relevant cash flows are calculated, and the applicable discount rates. While APV has a great advantage by taking into account all sources of value creation and destruction related to the investment, DCF/WACC leads to more reliable results over time. More importantly, under a DCF scenario uncertainties in estimates of future revenues and costs can be easily accommodated. Such feature is a major advantage to deal with the increasing number of disputes prevailing in unstable economic and political conditions of the rapidly developing economies.

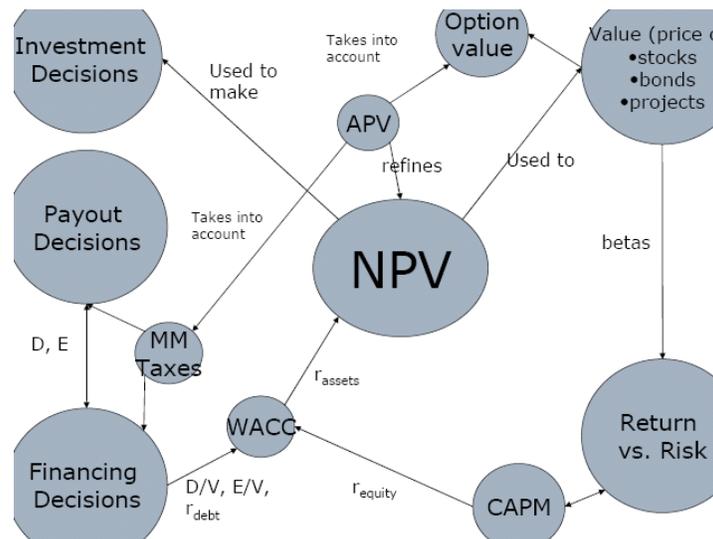
As a result, the DCF/WACC approach remains a standard valuation technique regularly used in litigation. Indeed, the approach should be privileged over the APV method which can be complex to implement and very costly or time consuming. At the general level, DCF has proven to be simple and consistent, rather than subtle and arbitrary. When well designed, it allows easy processing, consistency and accuracy of the valuation work. One should not forget that historical cost methods are also available and should be used whenever possible in international valuation practice.

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Dealing with Uncertainty: Discounted Cash Flow (DCF) Versus Adjusted Present Value (APV)

Valuation: Art or Science?

It is often claimed that valuation is an art, not a science. When it comes to valuing an asset or a company (or to put it differently, a cash flow or income stream), many would argue that there is no one “right answer.” There is no single “magic number” that instantly and permanently confirms what the company or the asset is worth. The issue is further complicated by the wide range of methodologies available to the expert valuator: Historical cost valuation (Book Value, Replacement Value, Liquidation Value), Earnings Multiples (Price/Earnings, Cash Flow or Revenue Multiples), Discounted Cash Flows (Net Present Value under the CAPM, Free Cash Flow Discounted at the Weighted Average Cost of Capital, Adjusted Present Value, Economic Value Added), Residual Income Model, or Industry Comparables. As illustrated in the following graph, it is true that the relation between the different methods and variables can be a challenge for the non expert.



Further adding to the complexity of each individual valuation technique mentioned above, the parties of a recent arbitration case presented two different approaches for estimating the pecuniary value of the alleged damages: the Discounted Cash Flow (DCF) under the WACC basis and the Adjusted Present Value (APV). The scope of work for the Neutral Expert involved the estimation of the aggregate value of damages suffered by the Claimant as a result of the termination of an Investment Agreement by the Respondent. It shall be noted that the business was created a few years before the cancellation of the agreement with only purpose to manage the contract signed between the Claimant and the Respondent in the area of operating hotels and other tourist facilities. Under the agreement, the claimant was receiving fees from the Respondent. It shall also be noted that the whole business, as a going concern, was lost as a result of the cancellation of the agreement by the Respondent.

The case of an investment dispute in Eastern Europe

The Tribunal asked whether the damages could be assessed on the basis of the fees the Claimant would have received under the contract (hypothetical expenses being subtracted). In conducting the evaluation, consideration was given to the issue of whether reliable methods are available for estimating possibly loss of fees (revenues) through 2018.

In particular, the Arbitration Tribunal's request included to be informed on whether the expert's knowledge and experience would allow him to make a recommendation on the choice of most acceptable methodology between the DCF/WACC and the APV approaches: What valuation methodology should be used to estimate of investment loss of profits in an Eastern European country under many political and economic uncertainties? The Tribunal asked whether lost profits could be assessed on the basis of the fees the Claimant would have received under an investment contract over a period of 15 years. In conducting the valuation, the expert had to recommend whether or not it would be within the range of generally accepted methods to estimate possibly lost profits for such a long period of time.

Review of the methodologies

Let us briefly review these two valuation approaches. The DCF/WACC analysis is a widely used method for evaluating the likely profitability of business investments that will generate future flows of revenues and costs. It is a method that is quite often used in arbitration of investment disputes. The idea is to forecast future cash flows of an investment and discount them at the proper discount rate to arrive at a present value. Instead of trying to project the cash flows to infinity, a terminal value approach is taken in the valuation. This is done because as time moves on, it becomes harder to come to a realistic estimate of the cash flows. In our case, it was admitted by the Tribunal that it is usual to end the cash flow used in a DCF with a terminal value as the final year cash flow under the agreement (2018).

The expert's biggest challenge was then to comment on the choice of the discount rate (or cost of capital) for the lost business. Usually, the discount rate is found by deriving the average cost of equity and debt of the company, weighted according to their relative contributions. The widely adopted approach that consists of weighting both debt and equity is called the "Weighted Average Cost of Capital" (WACC). One difficulty is related to the derivation of the cost of equity. The Capital Asset Pricing Model (or CAPM) for estimating the cost of equity is based on one major assumption, that financial markets are dominated by rational, risk-averse investors, who seek to maximize satisfaction from return on their investment. Other important assumptions include that the market is efficient, frictionless, and without imperfections like transaction costs, taxes and restrictions on borrowing and short selling. In addition, it assumes that investors base their judgment on a common time horizon, because the model in itself is a one-period expectation model. Another difficulty is related to derivation of the cost of capital for non traded companies when benchmarks are not easy to obtain.

APV, on the other hand, takes into account all sources of value creation and destruction related to the investment. This is particularly relevant since investments are not without risk, especially in some countries where political instability is a key variable that may lead to major swings in profitability from year to year. As a result, the APV method is used more and more often these days. The adjusted present value is equal to the sum of the value of the unleveraged company and the value of tax shield less the present value of financial distress costs. Each of these components is discounted at different rates representing the different risks. APV is obtained in three steps. First, we begin by estimating the value of the firm with no leverage. We then consider the present value of the interest tax savings generated by borrowing a given amount of money. Finally, we evaluate the effect of borrowing the amount on the probability that the firm will go bankrupt. The APV is found by the following formula:

$$\text{APV} = \text{Base case NPV of the unlevered value} + \text{Effects of debt (floatation costs, Tax shield, interest subsidy effects)}$$

Pros and Cons for each method

The party that proposed to use the APV approach objected to the fact that forecasting cash flows over a long period of time is difficult under the DCF method. It was argued that the APV approach was more appropriate because it seeks to separate asset value from other sources of value. For instance, the APV approach allows the addition of effects such as debt financing (flotation costs, tax shields from debt, effects of subsidized financing, etc.). It was also objected that a traditional DCF valuation under WACC assumes constant debt to equity ratio, making the approach quite speculative over long periods of time.

It is true that DCF is subject to many assumptions that may prove subjective in nature. So are other valuation techniques, including the most traditional ones based on historical cost accounting. For instance, in a book valuation basis, the effect of depreciation, provisioning, stock evaluation or lease recording can be very subjective, depending on the overall results to be achieved, and one can come to hugely differing classifications and valuations. Obviously, DCF can be said to be speculative when it comes to variables taken into account (risk-free rate; estimation of betas; choice of risk premium; marginal tax rate evaluation; debt ratio definition...).

Still, today the DCF approach remains an international standard in the valuation field. It is a methodology which has been extensively tested and researched by leading institutions. When properly used, the DCF approach is simple to implement. The fact that the approach is based on the major assumption that financial markets are dominated by rational, risk-averse investors should not be an obstacle.

But the DCF approach can be accommodated to take into account the many uncertainties in estimating future revenues and costs, to a substantial degree, through the choice of discount rate used in the analysis. For instance, when estimating a loss of profits for a long period of time (10-15 years) in a context of political and economic instability, it is possible to assign to the future cash flows different projected growth factors and/or adjustments. Considering the prevailing economic conditions in rapidly developing economies, a DCF calculation can be designed to deal with uncertainties in the estimation of inflation and revenue/expense fluctuations. The investment cash flows can be assigned different discount rate commensurate with the level of risk (i.e., uncertainty) of future cash flows at different points in time.

The major drawback of the APV method is the level of complexity of the technique. Valuation with APV requires estimates for the following items: (1) expected future free cash flows (so does the DCF approach); (2) the unleveraged cost of equity; (3) the expected future capital structure; (4) the discount rate to be applied to the tax shield; and (5) the steady-state long-term growth rate of free cash flows and debt. Three problems immediately presented themselves in the case in front of us. First, the unleveraged cost of equity is rarely observable, and so it usually has to be derived from the leveraged cost of equity for the firm in question or from the leveraged cost of equity for similar firms. Second, the appropriate discount rate for the tax shield is not observable either. Third, the future capital structure of the firm is likely quite speculative.

All together, the predictive value of any model can become easily questionable. One way to tackle this problem of having a wide range of values from different methods is to compare the valuations from several models and present a range under a confidence interval for each model. Combination is also a possibility. In many empirical valuation studies, it has been found that a combination or average of two or more valuation methods would be more accurate than either of the individual method that makes up the combination. Combining estimates has two major advantages: First, in most cases, it produces a more comprehensive estimation (because a wider range of data and variables is included). Second, it removes the need to find the one best model, since often the combination of different models produces the best results. By using only one model, we may ignore some processes or patterns. Furthermore, some valuation approaches use data other ones do not use and thus increase predictability.

Making a choice about the methodology?

When making a choice over which valuation method to favor, the following key strengths and weaknesses of the DCF/WACC and APV should be taken into consideration:

- If a firm's leverage ratio (debt to total assets) is constant, then the DCF/WACC method is easier as only one discount rate needs to be calculated.
- If a firm's leverage ratio is not constant, then it is easier to use the more versatile APV method.
- If a firm's leverage ratio changes over time, then the WACC discount rate would have to be continually recalculated, which can be extremely cumbersome.
- To calculate the tax shields under the APV method, one needs to know the firm's marginal tax rate.

Needless to say that the traditional valuation models based on historical cost and book value still has a long shelf life in international valuation practice.