

April 30, 2011

IVSC

Response to Exposure Draft

Technical Information Paper 1

The Discounted Cash Flow (DCF)

Method – Real Property and Business

Valuations

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General Observations

Our general observations on the Technical Information Paper (“TIP”) are as follows:

- It is unclear how this document meets the criteria for a TIP; that is, how it is geared to valuation professionals, or how it identifies best practices or promotes consistency in valuations. The document is very broad and high-level, and may be better suited to giving a general overview of the DCF method to certain users of valuations. However, even if this would be the ultimate perspective taken, we have identified a number of areas of further improvement in our additional observations attached.
- If the intent of the TIP is to provide guidance to countries in which constituents are not very familiar with valuation concepts, we find that the TIP in its current form is still too generic. The vagueness in certain sections can lead to potential misapplications of key concepts.
- It is unclear why this TIP addresses the DCF method in both real property and business valuations in a single document when either area merits a separate technical discussion, which can go into greater depth depending on the subtopics covered.
- The TIP omits key issues related to any DCF application. An example is the nature of the cash flows used in a DCF analysis – whether they are expected, best estimate, most likely or contractual cash flows – and how this impacts the assumptions used. Further work needs to be performed to identify and address such issues at the appropriate level of detail.
- It is unclear why the TIP is structured as it currently is, and if any inference should be made from its structure and ordering of sections about the applicability of the concepts discussed to real property and business valuations.
- The inconsistent writing style and different references to similar notions throughout the TIP are noticeable; currently, the document does not seamlessly blend what seem to be contributions by multiple authors.

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Subject to our comments above we have provided responses to the questions posed in the Exposure Draft. Also, we have provided additional observations by paragraph which we believe are important to improving the substance of the document.

Responses to Questions

Question 1: *Do you agree that the DCF method, if properly applied, can be used as a method to arrive at market value?*

Duff & Phelps response: Yes, the DCF method is a well recognized and appropriate means to estimate value. In most circumstances it is considered superior to other methods or approaches.

The TIP makes a distinction between *market value* and *investment value*, yet Question 1 is specific to market value. The DCF method is in fact broadly applicable to estimate not only market value and investment value, but can also be used to derive value indications under other definitions such as fair value and fair market value.

In general, the DCF method cannot be regarded as an exact science. Projecting into the future is always a difficult task. This does not, however, invalidate the method itself. Reasonable assumptions can be made to forecast future events and performance. To the extent there is uncertainty about the future, there will be greater variability in cash flows around the expected cash flow projections. The greater uncertainty is typically addressed discretely in the cash flow projections (e.g. through scenario analysis) forming the basis for expected cash flows. In this regard, the TIP would benefit from a specific discussion of the nature of the cash flows used in the analysis (e.g. expected cash flows, most likely cash flows, etc.) and their valuation implications.

Question 2: *Do you agree that the underlying DCF method described in this paper applies equally to the valuation of real property and businesses? If not, please explain the differences that you believe exist?*

Duff & Phelps response: Value, under any definition, is created when capital is invested to generate future cash flows with rates of return in excess of the cost of that capital. This fundamental premise is applicable to real property, businesses or any other investment. The DCF method is generally considered to be the best measure of value creation and, in turn, the value of the real property or businesses.

Question 3: *Do you agree, or do you consider that other matters should be taken into account in determining the appropriate discount rate?*

Duff & Phelps response: Estimating an appropriate discount rate is challenging in itself even without an attempt to adjust it for a company or project-specific risk premium. From a finance theory standpoint, the value

of an investment estimated using the DCF method is equal to the present value of its *expected* cash flows, discounted back at a rate that reflects the riskiness of both the timing and the amount of the projected cash flows.

In general, there are two main ways that practitioners use to incorporate risk in a DCF-based valuation: (1) a probability-weighted-cash-flow scenario approach or (2) a discount rate adjustment technique:

- (1) The expected present value technique uses explicit assumptions about the range of possible estimated cash flows and their respective probabilities (i.e., probability-weighted cash flows).
- (2) The discount rate adjustment technique uses a single set of cash flows from the range of possible estimated amounts, whether contractual, promised, or most likely cash flows. These contractual, promised, or most likely cash flows are discounted at a rate commensurate with the risks involved.

Setting up the parameters for scenario analysis is always subjective. However, there is typically more and better information about the distribution of possible outcomes than there is to support the magnitude of a risk adjustment to the discount rate. An expected value approach is thus preferable in that the variability (and corresponding risk) of the projections is reflected in the weighting of the scenarios rather than in an often arbitrary or insufficiently supportable adjustment to the discount rate. The discount rate (WACC or cost of equity, depending on the investment) should capture the non-diversifiable risk of the industry or geography of the subject investment while the projections, in the form of expected cash flows, reflect the unique risks of the investment.

Question 4: *Do you agree that the most commonly adopted terminal value calculation at the end of the explicit forecast period is the 'constant growth' model, cross-checked for sensibility to an implied capitalisation rate or exit multiple? If not please identify what other method you most commonly use?*

Duff & Phelps response: We agree that the constant growth model with cross-checks is the most common method. However, there are other perpetual growth models that should be considered as either the primary method or as a cross-check.

The value driver formula is particularly useful in that it requires an explicit consideration of reinvestment rates and expected rates of return on new investment into perpetuity. Companies with sustainable competitive

advantages may expect to continue to earn rates of return on their invested capital in excess of their cost of capital.

In highly competitive industries, where the expected rates of return on new investment may equal the cost of capital, the convergence formula would be more appropriate. This formula is a variation of the value driver formula wherein the projected rate of return on new invested capital is equal to the cost of capital, the result of which being that growth does not add any incremental value to the company.

On a side note the use of exit multiples is also prone to misapplication. For example, the current average industry multiples may reflect a period of high expected growth, which is well in excess of a sustainable long-term growth level upon industry maturity. In such a case, using current industry average multiples as the exit multiple would overstate the value of the firm or investment.

Question 5: *Do you agree that providing a discount rate is used that is consistent with the financial assumptions made in calculating the cash flows that the choice of using explicit or implicit financial assumptions in the cash flows should not affect the valuation result?*

Duff & Phelps response: While we agree in theory that when consistent discount rates and projections are used the valuation outcome should be the same, the practical application of certain approaches is more prone to error than others.

For example, pre-tax discount rates are not readily available in financial markets for business valuations and their derivation has at times been based on mathematical calculations that correlate them with after-tax rates of return. Often times this conversion to pre-tax discount rates will be performed incorrectly.

Similarly, there are a variety of nuances of applying real discount rates to real cash flows. The mere exclusion of inflation from both the projected cash flows and the discount rate will not necessarily lead to the correct result.

Paragraph 22 of the TIP, which addresses this issue, does not put sufficient emphasis on the potential issues that may lead to error. In that this is intended to be a best practices document, we believe that the IVSC should recommend a specific approach. This would help reduce diversity in practice. Alternatively, if different options are provided, then potential pitfalls under each approach should be highlighted in the TIP.

Question 6: *Do you agree that more detailed discussion and examples of the valuation inputs into a discounted cash flow model are inappropriate? If not how much additional information do you think should be included in best practice guidance?*

Duff & Phelps response: We agree that a TIP is not the appropriate venue for very detailed and complex examples and discussions of all varieties of inputs and models. There are excellent text books and other resources that serve this purpose. However, there would be some benefit of having general examples to place the discussion in context. Examples could be created to illustrate a specific point (e.g., which line items are generally included in FCFF and the use of a WACC in that context).

Other general examples of the structure of pre-tax analyses (including an example of the calculation of a pre-tax discount rate) and equity cash flow models would also serve to place the discussion in context. The Appraisal Foundation's monograph "The Identification of Contributory Assets and Calculation of Economic Rents" provides an example of a reasonable level of detail.

Additional Observations by Paragraph

In addition to our prior comments and responses to the questions we also have the following observations for your consideration with regard to certain specific paragraphs in the TIP, as put forth below:

Paragraph 1:

This introductory paragraph raises expectations of the TIP by stating: “It describes best practice in performing and reporting valuations using the DCF method.” Alternatively, it could be simply described as a discussion of general concepts rather than the best practices themselves. The precise intent should be made clear, also considering whether the TIP is really geared to valuation professionals or users. In addition, there is also a notable absence of references to fair value in the context of financial reporting.

Paragraph 3:

As mentioned earlier, the lack of reference to fair value in the context of financial reporting is notable in this paragraph as well, and it infers that a DCF method may not be appropriate to estimate fair value. It should be stated that the DCF method may be applicable in the measurement of other types of value as well (e.g. fair market value).

This paragraph also introduces the concept of “assets” as being the subject of the DCF method when in paragraph 2 intangible assets are specifically removed from the scope of the TIP. Further, paragraph 1 specifically mentions real property assets but they have also been excluded here. We suggest that “assets” be clearly defined.

Paragraph 4:

The minority interest discussion seems out of place and is given too much prominence in the Introduction of the TIP. We suggest that it be relocated to a later section of the TIP. In addition, there is no further discussion of this topic, leaving the reader with the impression that discounts for lack of control and/or liquidity are straight forward adjustments when in fact they are quite complex. The Appraisal Foundation working group currently addressing the issue of premiums and discounts may be a worthwhile reference to make for readers of this TIP.

The introduction of the Dividend Discount Model (DDM) is to some degree presented as the default method to be used in “certain circumstances”. These circumstances are not discussed nor are variants of the DCF method or DDM. We suggest that the DDM reference be removed from the

Introduction and instead, a brief description be provided of the most common approaches under the DCF Method – Overview section. One useful reference for alternative approaches can be found in McKinsey's *Valuation*, 5th Edition, "Frameworks for DCF-Based Valuation".

Paragraph 5:

The definitions are not entirely clear and there seems to be some inconsistency between them which may create some confusion for the reader. It is also unclear how these definitions will relate to the Glossary, which the IVSC is re-working (i.e., will they appear in the Glossary in the exact form they are drafted in this TIP?).

Further, the definitions seem to blend references to real property valuation, business valuation and project finance. While discounted cash flows may be used in all of these valuation applications, some of the terminology or some nuances may be unique to each application. Blending these terms, and/or alternating the use of these terms in the definitions create confusion.

In general, we recommend aligning definitions where possible with well-recognized finance texts.

Discounted Cash Flow: This definition is too vague. It would benefit from a reference as to how the DCF method captures the sum of all expected future cash flows, discounted to their present value equivalent by using a rate of return that reflects the relative risk of the investment, as well as the time value of money. In addition, the use of the term "liabilities" is not clear. Liabilities are a balance sheet item and while they are an integral element of the valuation process the use of the term here seems to have been confused with expenses or cash outflows (see comments to paragraphs 8 and 9).

Free Cash Flow: It is described as a "the cash flow for an asset..." Is the intent for this to address real property assets or assets in general? Also, the definition which follows for Free Cash Flow to the Firm (FCFF) specifically defines it to be "before interest and debt repayments" which may be read as inferring that Free Cash Flow is an equity cash flow. The use of an equity cash flow in the valuation of an asset is inappropriate. Lastly, the FCFF definition specifically mentions the WACC as being the appropriate discount rate but there is no mention of a discount rate in this definition (nevertheless, see our subsequent comments regarding the discussion of discount rates when defining FCFF).

Free Cash Flow to the Firm (FCFF): The definition is too open for interpretation and should be further refined. If the intent is to compare and contrast it to Free Cash Flow then that should be stated. There are a number of finance text books with a standard definition of FCFF that could be considered. The discussion of the appropriate discount rate goes beyond the definition of FCFF and introduces an element of the application of the DCF method (the WACC). The issue of consistency between the cash flows and the appropriate discount rate should be covered elsewhere.

Current net debt is defined as “external debt net of cash”, deducted to arrive at the Equity Value of the business. However, limiting the deduction from Enterprise Value to *external debt* rather than expanding it to interest bearing debt (which may come in the form of inter-company debt) will lead to improper Equity Values when the subject of the valuation is, for example, a cash generating unit or a legal entity. Further, by including all cash in the definition of net debt, the issue of operating vs. non-operating cash is overlooked. Also, the treatment of debt and equity equivalents is not addressed. These issues can have a significant impact on the value conclusion.

Lastly, paragraph 4 introduced the issue of discounts for lack of control and/or liquidity yet there is no mention of this in the context of arriving at Equity Value. It may be worthwhile to mention that the equity value derived per above may be subject to further adjustments (e.g. discounts for lack of control and/or liquidity).

Free Cash Flow to Equity (FCFE): As mentioned above, the discussion of the appropriate discount rate should be addressed elsewhere and not in the definition of a type of cash flow.

Again, paragraph 4 introduced the issue of discounts for lack of control and/or liquidity yet there is no mention of this in arriving at Equity Value here either. As these are definitions, some readers may place the first priority on the specific words used in the definitions over other elements of the TIP. Therefore, the specific language in the definitions is quite important and should not be open for alternative interpretations.

Gross Present Value (GPV): There is no mention of a terminal value and the reference to cash flows over a holding period infers that it is excluded. In addition, the use of the term “holding period” can be construed that the analysis, or projection, should correlate to the period the asset or business will be held rather than a period

sufficiently long to arrive at a normalized or stable level of cash flows for use in the terminal value. Furthermore, consider replacing the term “DCF model” with “DCF analysis” as a model implies that it is a straight-forward analysis.

The last sentence in this definition is confusing and requires further discussion. The concepts of gross and net present value are applicable more so in capital budgeting, when evaluating individual projects. In that context, the distinction is dependent on whether the initial investment outlay is included or excluded in the analysis. Introducing this concept in the context of applying the DCF method to estimate value will result in confusion, as the “price” or “initial investment outlay” is not known, since that is the very subject of the value estimation.

Finally, we observe that the term GPV is not used or referenced elsewhere in the TIP, therefore it may be unnecessary.

Internal Rate of Return (IRR): This definition does not provide a succinct description of an IRR. If the intent is to limit its application to a project in the capital budgeting context, then “project” should be clearly defined. Further, the term “net cash flows” is introduced without any definition and may be confused with the meaning of “Net” in Net Present Value.

An IRR may also be applicable in other circumstances (e.g. purchase price allocations), or in the context of acquisitions of any investment or asset. In these circumstances, the goal is to measure the IRR based on the price paid (invested amount) and the projected cash flows. If the intent is to broaden the IRR discussion in this context – which would seem necessary, given the fact that the TIP addresses DCF application for business and real property valuations – then the language should be clarified.

Investment Value: This definition should identify the attributes that distinguish investment value from other types of value.

Net Present Value (NPV): The definition of NPV is discussed in the context of hurdle rates which may be more appropriately located in the IRR definition. The current use of GPV and NPV in the TIP does not provide any incremental clarity. We suggest eliminating the distinction between the two and if the desire elsewhere in the TIP is to compare the present value of a cash flow projection to a price, then simply state that there.

The definition replaces “asset” from the GPV definition with “real property”. Are they intended to be one in the same?

Weighted Average Cost of Capital (WACC): This definition could benefit from a conceptual reference to the opportunity costs that investors face for investing their funds. The definition should also indicate that a WACC typically uses the after-tax cost of debt.

Paragraph 6:

As discussed earlier, the use of the terms “asset” and “liabilities” should be refined here and in the paragraphs following. Further, the term “benefits” used in the context of a cash flow projection may lead to confusion. Is the intended reference here simply to cash inflows and cash outflows? Or is the intended reference to benefits and obligations arising from owning and operating the asset (however, these are not necessarily terms that convey a cash flow analysis)?

Paragraph 7:

The term “expected future cash flows” is introduced without any discussion as to what it represents. This is a complicated topic and this document should address the distinction between *expected* versus *most likely* cash flows, which has a key impact on the assumptions used in performing a DCF and ensuring technical accuracy of the valuation conclusion. We note that FAS 157, *Fair Value Measurements*, now codified in ASC 820, incorporates a good discussion of this topic, and likely, the soon-to-be-issued IFRS 13, *Fair Value Measurement*, will address this topic as well.

Paragraph 8:

Cash flows for future periods should not be described as “actual”. Since future periods always involve projections, they can never be “actual” themselves, though they may be based on actual historical results. Also, changes in forecasts should not be described as “known” in that even contractual cash flows may be subject to a certain probability of occurring (expected cash flow).

The discussion would benefit from the use of the term “explicit (or discrete) forecast period”, the length of which is a function of the amount of time it takes to stabilize cash flows and reach a steady-state, to which a terminal value can be applied.

The discussion interchanges the use of expenditures, cash outflows and expenses, leading to inconsistencies with other portions of the document.

Paragraph 9:

Again, future events are not certain or “known”; they are expected.

Paragraph 10:

A short projection period does not, in and of itself, result in a proportionately larger terminal value. For example, if the growth rate in the projections is high, then adding additional years to the discrete projection period in the analysis may at times also increase the relative amount of the terminal value. Also, “vigilance” should always be applied when calculating a terminal value not just when the “forecast period is short”.

The reference to “current value” may be confusing; the result of discounting future cash flows is typically referred to as “present value”.

Paragraph 11:

Identifying the requisite level of detail in a market transaction so as to be able to derive a discount rate is inappropriate for a business. Therefore, we suggest relocating this discussion to the end of the paragraph, and making it specific to real property transactions only. In addition, the reference to risk free rate should be made in the context of a “AAA government rated bond”. Further, the risk premium is not impacted by “the prospects for future income growth” in and of itself but rather the uncertainty of the growth which should be reflected in the expected cash flow scenarios.

Finally, we believe that the use of asset pricing models such as the CAPM for deriving a discount rate in a business valuation is also appropriate in an analysis of market value, as the inputs to the model are market-derived.

Paragraph 12:

This paragraph states that “...the DCF method involves the projection of a series of cash flows to either a real property interest, or a business.” Cash flows are generally generated from an investment. Further, interchanging cash flow and income stream in the same sentence will generally lead to confusion.

Paragraph 13:

This discussion would benefit from a description of expected cash flows and how they are incorporated in the analysis. In addition, it would be helpful to include in the market sentiment reference the notion that the market should be active.

Paragraph 14:

We suggest avoiding the use of the expression “likely” in connection with estimating the cash flows projections and related assumptions. “Likely” may infer that there is a greater than 50% probability that these projections will be realized or that the assumptions used are more than 50% likely to occur. In the context of estimating expected cash flows, it is not uncommon to have a variety of scenarios, each having less than 50% likelihood of occurrence. However, when taken together, the sum of probabilities of occurrence for all scenarios should add up to 100%. The assumptions used would have to be internally consistent with each individual scenario. In other words, all the assumptions would have to be reasonable, but some may have a greater probability of occurring than others.

Paragraph 16:

Again, we suggest avoiding the use of the term “DCF model”. We also have some observations on certain sub-paragraphs as well, as indicated below:

- a. Wouldn't the lease renewals be driven more by the specific attributes of the lessees than by characteristics in the class of real property and its market sector? In addition, the term “duration” is used in other areas of finance (e.g. bond duration), therefore we suggest replacing duration with something along the lines of the length of the explicit forecast or projection period.
- d. Shouldn't the frequency of inflows be derived from the specific terms of the project rather than be derived from the market?
- e. This paragraph is not clear and would benefit from further attention. In addition, the use of term nominal rate should be reconsidered in this context, as it is commonly used to state that the projections are inclusive of inflation.
- g. The issue of expected cash flows should be referenced here.
- h. The description of the terminal value approaches would benefit from a discussion of how value is created when the return on invested capital exceeds of the cost of capital. For further observations see our response to Question 4.

- j. By identifying three (3) specific adjustments it is inferred that there are no others. Also, are these adjustments specific and limited to businesses (as the discussion is located under that heading) or might they also be applicable to real property in some cases? In addition, “surplus assets” are more commonly referred to as “non-operating assets”, and pension deficits (unfunded pension liabilities) are not typically considered contingent liabilities.
- k. Paragraph 21 provides for projections either “Gross or net of tax”. This will have a significant impact on the discount rate (assuming one believes that a pre-tax rate is appropriate) and should be mentioned here as a factor for consideration. In addition, the term “typical WACC” is better described as an “industry WACC”.

Paragraph 17:

The terminal value discussion states: “For real property it can be the anticipated rental income after considering the possible impact of void periods or re-letting costs capitalised at an appropriate rate.” Are operating expenses not a consideration in the terminal value for real property?

Paragraph 19:

Investment Value should not be based on market derived cash flows as the cash flows are specific to the owner or prospective owner. Also, the WACC is generally considered to be *the opportunity cost of capital*, however, based on the current discussion in the paragraph they could be construed as being different concepts.

Paragraph 20:

Is there a reason to redefine Internal Rate of Return when it has already been included in the definitions section?

Paragraph 21:

The terms “real” and “nominal” are also commonly used to describe whether inflation is incorporated into the analysis or not.

Further, the application of a DCF method to real cash flows with real discount rates is very prone to error. Readers should be cautioned about potential pitfalls. Similarly, the use of a pre-tax rate can lead to significant errors, as pre-tax discount rates for businesses are not readily available in financial markets.

Paragraph 22:

Consider rewriting this paragraph as it is not clearly written. Further, this may also be a good location for additional discussion regarding expected cash flows.

Paragraph 24:

Consider having the bullet discussion regarding the product name and version of proprietary software as a separate discussion at the end of paragraph 24. This reference currently seems to be out of place, as the nature of the disclosures before and after this bullet relates to the actual assumptions used in the application of the DCF method. The reference to a software package, either proprietary or from a third-party vendor should be mentioned separately.