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International Valuation Professional Board

41 Moorgate
London EC2R 6PP
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By E-mail to: CommentLetters@ivsc.org

Re: Exposure draft of Technical Information Paper 1: *The Discounted Cash Flow (DCF) Method – Real Property and Business Valuations*, published January 2011

Thank you for developing this important Technical Information Paper on the DCF Method and providing this opportunity for comment on the Exposure Draft. The American Institute of Minerals Appraisers (AIMA) observes that our members have particular expertise in working with DCF models ranging from small to extremely large and complex, for projects in a wide range of international conditions. We are therefore eager to submit our comments on this Paper

The expertise of the large majority of our membership lies in the area of valuation of real property aspects of the minerals and petroleum industries (a.k.a. extractive industries), while only a small number of our members specialise in business valuation for the extractive industries sector. Therefore our comments are primarily focused on the real property aspects of the draft Paper.

Questions for Respondents

1. This Exposure Draft states that the DCF method should not be judged on the basis of whether or not the explicit cash flow assumptions are ultimately realized but rather on the degree of market support for the assumptions at the time they were made.

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

Response: **Agreed**

2. The IVPB has concluded that although there may be distinct terms and types of analyses that apply respectively to real property valuations and business valuations, the underlying DCF method is identical in each case.

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?

Response: Though the fundamental theories of DCF-NPV calculation are the same for real property and business valuation, application methodologies and detailed beliefs diverge substantially across fields of practice, let alone between them. Specifically, the DCF method will produce reliable and reproducible results for real property and business valuation in the mineral sector, when the property is a single, producing property owned by the business. When that is not the case, the valuation results of the method become less reliable. One reason is that the Highest and Best Use of mineral properties tends to limit the use of the DCF method to producing properties, while exploration and development stage properties are less amenable to reliable and meaningful application of the DCF method.

3. This Exposure Draft states that the discount rate should be determined based on the risk associated with the cash flows (para 10), whether the DCF model is being used to determine a market value or investment value.

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

Response: With mineral valuation in mind, the DCF method as portrayed in the Exposure draft of Technical Information Paper 1, ignores the use of probability factors and probability-weighted decision trees to capture much of the critical risk and uncertainty components inherent in the forecast being modelled. These tools allow risk and uncertainty to be incorporated into the cash flow model with much better precision than the blunt method of building risk and uncertainty factors into the discount rate that might be applied to a number of decades of cash flows. As an example, when a mineral property is being developed, there are strong reasons for using a discount rate at or near the Weighted Average Cost of Capital (WACC) for the capital investment. In contrast, the future cash flows from income from production less the operating costs are impacted much more by risk and uncertainty, until stable operations and market penetration are established. Application of a high discount rate to represent these risks and uncertainties can misrepresent how the market weights the relationship between near term and long term cash flows, particularly by undervaluing long term cash flows.

4. A number of different methods are identified which can be applied to the calculation of the terminal value at the end of the cash flow period (growth, fading growth, net asset value, salvage value, etc). For long-life real property assets or going concern businesses the Board believes a constant growth model is the most commonly used method, coupled with a cross check for the reasonableness of the figure, eg by reference to the implied exit multiple.

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?

Response: We cannot agree. This statement is not true in the Extractive Industries sector, particularly pertaining to real property valuation. Before assuming a further period of income, the probable quantity and quality of remaining mineralization, or potentially recoverable petroleum, would need to be evaluated, as well as needing to evaluate environmental considerations and the viability of plant and equipment. Therefore, in this sector a salvage value, either positive or negative, is probably the most common terminal value assumption. Notwithstanding the above, it is very common in the mineral sector that a sequential Highest and Best Use occurs at some point of declining mineral or oil and gas extraction, frequently more conventional surface real estate use. Therefore, a sequential real estate valuation is mandated with the DCF method as a possible method and with the future capital investment and possible income discounted back to the Effective Date.

5. The Exposure Draft explains that cash flows can be developed on the basis of alternative financial assumptions, eg inclusive or exclusive of anticipated inflation, inclusive or exclusive of tax etc. Providing the discount rate used is consistent with the financial assumptions in the cash flows the valuation result should not be affected by the alternative used.

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?

Response: Disagree. In a broad sense, this statement may be true when using simplistic DCF modeling, particularly pertaining to whether or not inflation is incorporated. However, the inclusion of an income tax and/or financial leveraging will inherently change the mathematical structure of the present value calculation in a discounted cash flow model in a way that is essentially impossible to accurately compensate for in the discount rate for calculation of a market value of a long life mining property. This is because a change in discount rate changes the weighting in the NPV between the values of near term versus longer term cash flows. An assumption pertaining to a tax-loss-carry-forward available to a likely buyer could cause further disparity of the results for market valuation of a mineral property. The way an inflation assumption interacts with these assumptions could increase the disparity even more.

6. This Exposure Draft is intended to identify best practice in the creation and application of discounted cash flow models. The Board has made the decision not to explain in detail the types of inputs that may be used in different situations or the investigations that may be appropriate. Neither are illustrative examples provided. The preliminary view of the Board is that detailed discussion of inputs or a limited range of examples is inappropriate because it could be misleading if it led readers to believe that these models were endorsed by IVSC or conversely, variations of these models in different situations were not appropriate. There are many industry specific sources for those who require training in the development and use of relevant DCF models.

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?

Response: Though we understand IVSC’s concerns, we believe that inadequate in-depth market valuation literature and educational materials are available for many sectors outside of business valuation and conventional real estate valuation. If IVSC is not going to fill this gap, it should look into how it can best encourage others to fill the gap.

In addition to responding to the Questions for Respondents, we address some other issues that we found during our reading of the draft Paper. We respectfully ask you to consider these items in the spirit under which they are forwarded, namely towards improving the overall quality of the Technical Information Paper 1.

Specific Issues Found

The real property content of the paper has a strong bias to valuation of conventional rental real estate. We recommend the wording of the document to be fashioned to be more encompassing of other real property, such as minerals and petroleum property holdings, ground water horizons or extraction rights, farming and timber land, transport corridors and utility easements. For example, subparagraphs 16 a) and b) are apparently focused on buildings, without stating so.

Definitions

We have a few concerns and recommendations pertaining to the definitions provided within Paragraph 5.

With the **Discounted Cash Flow** definition, we recommend that there be provided recognition that this method is commonly termed the Net Present Value (NPV) method amongst valuers (appraisers) working in real property sectors outside of conventional real estate, particularly minerals and petroleum property valuation. The wording of the definition sentence should also be modified to begin with, “is a valuation method” Furthermore, the definition should include mention of the application of a discount rate, since it is defining *Discounted* Cash Flow. Therefore, we suggest that the definition read:

Discounted Cash Flow (DCF) – is a valuation method utilizing explicit assumptions regarding the benefits and liabilities of ownership over the asset’s life including an exit or terminal value, converted to a present value by application of a discount rate.

In the definition of **Discount Rate**, the word “market” should be removed, since it can be, for example, an investment or institutional rate. The definition should have added “.... into a present value, future or annualized value.”

Free Cash Flow to the Firm appears to be defined as a business valuation term. If so, we recommend that it so be stated.

Within the **Gross Present Value** definition, the last sentence defines Net Present Value. This usage has no relationship to any standard usage of the NPV term with which the *American Institute of Minerals Appraisers* is familiar. It appears to be a new invention. Similarly, where **Net Present Value** is defined later on page 7, we have never previously been aware of such a definition as that provided. We recommend that it be stricken.

Within the definition of **Internal Rate of Return**, we find the context of the term *capital investment* confusing and potentially ambiguous. For valuation purposes, the context in which the term is used is likely to be the proposed or actual purchase price, or the purchase price plus additional proposed or actual capital investment. Furthermore, the term *net cash flows* used here is not defined, while other forms of cash flow are defined.

We submit that the definition of Internal Rate of Return given in Paragraph 20 is actually the better definition: “The IRR is the discount rate at which the net present value of all the cash flows, including the cost of acquisition equals zero.” This matches with our conventional understanding, as being instructed in the universities of the USA, of the interaction of NPV and IRR.

The definition of **Weighted Average Cost of Capital (WACC)** includes the qualifier, “at market value.” We view this qualifier as an ambiguous term that would be impractical to workably employ in many situations.

In paragraph 8 we make note that any extractive business is highly sensitive to commodity prices. Therefore, the “reasonably predictable” life of the mine or business is generally indeterminable. The financial forecast of a mine or of the extractive business may be cut off by convention with the apology that the NPV of the possible production thereafter has a very low present value. As a result, technical economic evaluation modelling of additional mineral reserves and resources may be misunderstood and misused unless explained to the reader. We recommend that the unique character of a depleting property (subject to further mining if commodity prices so allow) be explained.

Comments on Other Specific Issues Found

Throughout the document, there seems to be an assumption that WACC equates to a market discount rate, appropriate for calculation of a market value of a subject business or real property asset. In our extractive industries sector, a WACC discount rate is often used to provide what some authors and regional standards have termed a *technical value*, being so termed to clearly distinguish from market value.

WACC rate fluctuations may not be synchronised with the actual asset market value movements, sometimes providing a large mismatch between the WACC-derived technical value and market

value. The cost of funds can be pushed up many months to many years before transaction values fall. Instead, we recommend that there should be more emphasis in this Paper on suggesting the use of measurement of actual market discount rates derived by extraction of IRRs from transactions of similar assets to the Subject.

In subparagraph 16 b), the term “investment properties” is not used in a way that relates well to investment properties in the extractive industries sector. Real property of interest to investors in this sector could be an operating copper mining property or natural gas field. Investors in properties such as these would rarely find a reason to model “vacancy” or “collections.” We recommend referring the reader to the definition of “investment property” in the glossary of the IVSS (exposure draft).

We suggest that the Paper would benefit from incorporation of a discussion of how a negotiation between a buyer and seller with differing perspectives of the potential best use of the subject property or business can influence the effective discount rate and market value of the transaction, dependent on whether the market is a buyer’s or seller’s market.

Please, accept the following diminutive suggestions in the spirit with which they have been forwarded: The writer(s) or lead editor of the Exposure draft of Technical Information Paper 1 seems to have a severe aversion to the use of punctuation, particularly commas. More commas would help clarify meaning of sentences and avoid the reader having to reread lengthy sentences to make his own determination of the writer’s intention of meaning from ambiguous possibilities.

For example, the following sentence appearing in paragraph 10 needs punctuation or restructuring:

“Where this is the case vigilance is required to ensure that the assumptions made in constructing the cash flow used in the terminal value calculation are appropriate and that there are no probable changes that would be better reflected by extending the forecast period to allow them to be explicitly reflected.”

We also observe that the common abbreviations, “eg” and “ie” are used without their usual delimiting periods. Though this may be viewed as a stylish formatting, these abbreviations are rarely seen in this form and are not yet found in the Oxford Dictionary without the delimiting periods. We recommend returning to standard formatting with the delimiting periods included.

Sincerely,

For the American Institute of Minerals Appraisers

John B. Gustavson, President

Trevor R. Ellis, Contributor