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Comments on IVSC Exposure Draft – Technical Information Paper 1 (TIP1) –

The Discounted Cash Flow (DCF) Method - Real Property and Business Valuations

The Commentator:

The commentator has recently retired from Lincoln University's property research and teaching staff. He is currently completing his PhD research thesis into investment valuation methods and in particular real value models.

He was responsible for writing the Monograph on DCF Valuations in New Zealand (Jefferies, R. L. (1995) *Discounted cash flow (DCF) valuation techniques & spreadsheet applications, A CPD Monograph*. Wellington, N.Z.: New Zealand Institute of Valuers); and writing the first Guidance Note on DCF Valuations issued in New Zealand (NZIV) (1995) *Guidance Note 4: Use of Discounted Cash Flow Techniques in Property Valuations*. Wellington, N.Z.: New Zealand Institute of Valuers), which was largely incorporated into the first IVSC DCF Guidance Note (IVSC. (2003) Guidance Note No. 9 - *Discounted cash flow (DCF) Analysis for market and non-market based valuations*. London: International Valuation Standards Council).

His latest publication on real value valuation models was published in the recent Dr Tom Whipple Memorial publication by the *Pacific Rim Real Estate Society*, (Jefferies, R. L. (2010) *Real value valuation for property in the 21st Century? - A comparison of conventional and real value models*. Pacific Rim Property Research Journal, 16 (4), 435-457).

He was also the author of the New Zealand chapter in the just published Appraisal Institute's global valuation text (Jefferies, R. L. (2010) *New Zealand* In H. C. Gelbtuch & E. H. Park (Eds.), <u>Real Estate Valuation in Global Markets</u> (2nd ed., pp. 310-336) Chicago, IL: Appraisal Institute).

Comments on TIP1:

Introductory: The committee is to be congratulated on producing a concise and transparent set of proposed guidelines that in general terms require little substantial amendment. Items which require clarification, amendment, additional explanation or definitions are deal with below in addressing the questions for respondents.

Question 1: Yes, The DCF method *properly applied* (emphasis added) in any of its forms whether Short-cut DCFs (as in term and reversion models) or in fully explicit period-by-period forecast holding period spreadsheet type models, is a valid method to use to arrive at market value.

The criterion as to *validity* is the correct application of sound discounting techniques of forecast or expected future cash inflows, outflows including reversionary (or exit or terminal) values as variously defined and used. The DCF method is also validated by comparison to other valuation methodologies, as appropriate e.g. where available market evidence is analysed and applied via a sales comparison technique.

Question2: Yes, the fundamentals of DCF type techniques are inherent in all capitalisation valuation methodologies, and apply to all valuation (both real property and businesses) and financial project analyses.

The application of the DCF principles will differ (as between the different types as in Q1 above), but equally apply. Any IVSC Guidance Note, Technical Paper or Standard should be applied to and able to be interpreted as applying to any of those methods. In specific application some guidance as to explicit period-by-period fixed holding period type application (as in spreadsheets and other proprietary computer software) – should be embraced by the proposed TIP1. This guidance should also embrace both real value and nominal (monetary) value models and applications – see also later comment.

Question 3: Agree **but** the discount rate applied must (not should) be determined on the risk associated with the expectation of achieving the forecast cash flows. This applies in any application irrespective of determining market value or any other subset – like investment, compensation, rating or assessed (taxation) values, etc.

It is particularly important that in applying any DCF methodology to arrive at market value the discount rate (in *real terms* or in *nominal terms* as applied – see later) must be based on a consistent model's use.

This is just as important in the analysis of comparable risk related property or business transactions (i.e. sales that meet the normal "market value" definitional test) as in the valuations applying those analysed discount rates. See Charts attached for international basis for discount rates in 25 countries as reported in AI's new global valuation text.

If such a market test is not met then a *non-market* based discount rate will not necessarily arrive at a market value but only a *subjective* value, which may or may not determine investment value. It will depend on the basis of determining the discount rate, or hurdle rate via the assumptions, a capital asset pricing model or other discount rate methodology used. If this is not market based the DCF valuation will not arrive at market value.

Where such discount rates reflect a particular investor's required or hurdle rate the resulting asset or business valuation will reflect only that investor's maximum price (for buying) or lowest price (for selling). It will not indicate market value.

It is fundamental that an asset or business will have different *subjective* values for different purposes and under different assumptions and pricing criteria, between buyers and sellers otherwise a market will not exist.

It is acknowledged that some assets for which there is not an active market, when required to be valued for asset or other (e.g. taxation or rating) purposes, the DCF valuation can be based on actual or assumed income and expenses. This should be based on the net rental value for the actual use of the asset. It will require assumptions as to the "most likely discount rate" as one of a number of methods

that would be appropriately applied. (In this respect paragraphs 18-19 and 25 of the draft TIP1 are noted as appropriately precautionary.)

Question 4:   In this commentator's long career (over 45 years in valuation) –having experience using, teaching and reviewing DCF valuations over the last 35+ years) – valuers find determining the terminal value the most difficult and unreliable part of the method. Many valuers stick to an arbitrary "rule of thumb" method. The widely used "plussage" or additional approx 0.5 decimal points above the ingoing fully let (initial yield) capitalisation rate is applied to the last period's (or more correctly to the last + 1 period's) forecast cash flow. This plussage is an "allowance" for perceived additional risk, uncertainty and/or lower growth prospects at termination.[1]

Few valuers understand or use any sound methodological means of determining an appropriate terminal capitalisation rate. The proposed use of a sound *constant growth model* is taught by many academics, but not widely used in practice as is evidenced in the AI's new global valuation text.[2] Good textbook instruction on this important aspect is lacking – even in the latest textbooks available world-wide.

The emphasis on the importance of this critical input is one of the strengths of this draft TIP1 that will assist in greater consideration of this aspect both by practitioners and demand more rigorous and authoritative texts and teaching addressing this vital issue.

It must be noted that a constant growth model is not the only model that may be appropriate.[3]

The draft TIP1 does refer in paragraph 16 (h) to other models for business valuations – but not in relation to real property assets.

This aspect needs more attention in giving appropriate guidance for real property assets under paragraph 16 (b). See also later comment re terminology and definitions required, e.g. exit multiple?

Question 5:   I agree with this draft TIP1, that consistent discount rates and logical financial assumptions *properly applied* in *valid* methodologies is *key* to the proper uses of DCFs. This part of the exposure draft is, however, inadequate.

In parts it is poorly expressed, uses confusing and/or inadequate terminology and lacks adequate supporting definitions.

This is particularly so in respect of confusion over using *explicit* or *implicit* financial assumptions. It does not define *inflation and deflation* thereby confusing *nominal* (or monetary) *value* (inclusive of inflation) versus *real value* (exclusive of inflation) methods (e.g. usage in paragraph 21, 3rd bullet point, and in paragraph 22).

Growth *per se* is not synonymous with inflation but is a combination of expected monetary inflation and real growth:

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[1] See the AI's new global valuation text for variations described by each country's authors and the attached charts.

[2] Of the 47 countries only 25 or 53% are described as using explicit period-by-period DCFs and of those only one (NZ) is described as using a *constant growth model* for determining terminal capitalisation rates (an ideal "state of the art" which may not represent common practice in that country). See attached Charts.

[3] In valuing a multi-tenanted property's terminal value at the common termination date inherent in explicit period-by period DCFs, the "correct" terminal capitalisation rate will be a cash flow weighted average of the growth explicit terminal cap rates derived from each tenancy's income and the expense items. In theory this should reflect the contribution of each lease on their rental contribution, terms to run and reversion timings, growth or escalation rates and the risk adjusted yield rate of a purchaser of the post-termination future cash flows. This is rarely carried out, however. The rule of thumb "plussage" method is a "rough and ready" pragmatic and arbitrary attempt at approximating that more correct terminal cap rate.

(i) <u>Nominal value</u> models can be explicit or implicit in respect of *nominal growth* which is *inclusive* of inflation, i.e. in monetary or *nominal* terms; and

(ii) <u>Real value</u> models can be explicit or implicit in respect of *real growth* which is *exclusive* of inflation, i.e. in *real* terms.

"Inflation" is frequently confused with nominal price growth and needs to be defined as the general increase in prices in an economy as represented most commonly by the increase in prices of a basket of goods and services as reflected in a statistically computed general price index. A consumer price index (CPI) i.e. as in the USA, Canada, New Zealand, CIPX (South Africa) or other similar indices in different countries, states, or communities, e.g. the European Union's HICP (Harmonised Index of Consumer Prices)[4].

Real property value growth may be <u>positive</u> where nominal property cash flows grow in monetary terms at a greater rate than the CPI (as a measure of general inflation or the purchasing power of money); or may be <u>negative</u> where the opposite occurs or is forecast, i.e. nominal property cash flows grow in monetary terms at a lesser rate than the CPI.

Nominal value models therefore include both monetary inflationary expectations and any real growth forecasts as <u>implicit</u> where nominal growth rates are used and implied in the nominal discount rate applied.

Real value models require <u>explicit</u> definition and forecasts of both (CPI) expected monetary inflation and real property cash flow growth. A real discount rate allows for the explicit real cash flows growth rate expectations.

Capitalisation rates, entry (initial or ingoing) and exit (terminal, outgoing or reversionary) under both nominal value and real value valuation models, where properly computed using an explicit constant growth model, will respectively be the same. These capitalisation rates are applied to current or forecast real or nominal net cash flows, to produce respectively current or future real or nominal capital values.

In respect of valuation models *inclusive* or *exclusive* of tax, this aspect needs separate treatment as between real property valuation and business valuations. So does *inclusive* or *exclusive* of debt and interest approaches. To mention such distinction under Question 5 is confusing and is more properly treated as separate issues (as under sub-paragraphs 16 (f) to (g) as matters for consideration and specification for business valuations only.

Real property valuations as described under sub-paragraph 16 (a) to (e) are properly and normally valued on a full equity basis before allowance for interest on borrowings and taxation when assessing market value. Even in the USA and Canada allowing for interest on debt and/or taxation has now passed from use as mortgage-equity methods (Ellwood methods and its variations) are no longer appropriate as standard long-term mortgages at fixed interest rates are no longer available to buyers/investors.

Question 6: Agreed, to the extent that a best practice guidance note should indicate "practices" that are both *acceptable* (i.e. based on sound methodologies); and *unacceptable* (based on hunch, tradition, pure opinion or unsupported principles and practices i.e. where the analytical basis is illogical or absent).

Agreed further, that detailed and technical discussion of theory and methodology,

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[4] See the new AI's global valuation text where the various inflation indices available and recent past inflation rates experienced in 47 different countries are described. Most countries produce analyses of past inflation and forecasts of expected inflation by econometric services, banks (incl. ECB and IMF) or other international sources such as www.economywatch.com/ ... the latter covering (1980 to 2015).

both analytical and educational, is best left to authoritative texts and educationalists to disseminate.

However, some technical guidance is required on an appropriate holding period. A wide variation exists internationally in practice with 10 years the most frequent (see Charts attached).

A 10 year holding period is a long standing commercial convention in finance and business that has been adopted by valuers and appraisers. Historically it had more to do with how many time period columns will fit across a typed single landscape page layout and be readable, than any inherent or logical criteria. It has long been the way DCFs have been presented in real estate appraisal and valuation texts but should not be endorsed as best practice in the TIP1.

In income property DCF valuations, the holding period adopted should not be arbitrary but a future period beyond any leasing up of vacant space and major rent reviews, i.e. until a stabilised income is expected.[5]

For residual valuations involving project development forecasts, the DCF will need to extend over the life of the project.

The selection of and reason for the holding period used in the DCF valuation should be explained and justified in the valuers' report.

It is suggested that paragraph 10 in the draft TIP1, which does not assume any standard period, is expanded or another paragraph added to give clear advice in respect of the foregoing suggestion.

DCFs are also conventionally presented in annually in arrears cash flows and discounting whereas in practice rentals and expenses are normally paid monthly (in some leases and countries quarterly in advance or other frequencies or payment basis) which is difficult to present in printed single page printed form, especially if each cash flow is shown in its own time period column[6].

It is noted that the draft TIP1 in sub paragraphs 16 (a) to (e) does address the payment frequency complexities and issues in general terms but sub-paragraph 16 (d) and e) needs strengthening as to what is acceptable best practice to achieve accuracy in each circumstance.

The use of the words "should be appropriate" in sub-paragraph 16 (d), in this commentator's opinion, is not strong enough, and preferably be "should accurately reflect the timing and frequency of the cash inflows and outflows".

To the extent that real property valuation differs from business valuation separate treatment and comment on timing of cash flow issues should be added to paragraphs 16 (f) to (h), perhaps a new 16 (i) mirroring an amended 16 (d) as

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[5] Extending the holding period to an arbitrary conventional time, e.g. 10 years, being after the date of a stabilised income growth cycle is established, in combination with a constant growth expectation, neither changes or improves a DCF's valuation accuracy if the method is properly applied. Where expected growth rates change over time or the terminal capitalisation rate is based on a different post-holding period growth expectation or different required yield (or a combination of these) thus changing that terminal value, then different holding periods will lead to different DCF valuations. The timing of future CAPEX (capital expenditure) outflows such as for refurbishing will have a substantial effect on discounted present values; as will inclusion of abnormal vacancy allowances in the terminal cash flow period that is used to be capitalised into the terminal value. Overridingly, as noted in paragraph 10, the holding period and thus the timing and impact of the terminal value basis is critical, despite its PV reducing as the holding period is extended.

[6] It is interesting to note that in the AI's new global valuation text, all but one of the 25 countries' authors that gave DCF examples show annually in arrears cash flows and discounting calculations. The one exception (NZ) makes an adjustment to the net cash flows for monthly in advance receipts and payments, but not to the terminal value, that approximates the effect of those payments, but is not mathematically exact. Modern DCF software packages do allow for specification of actual cash flow payment frequencies but differ in how the equivalent annual cash flows and present values are displayed – often in an annualised (10 year or other holding period) consolidated summary sheet for printing overall results.

being under a separate sub heading.

The statement regarding the purpose and status of TIPs on page 5 is noted and endorsed and therefore what is stated as "appropriate" methodology will necessarily stop short of being prescriptive or restrictive.

Additional Comments:

Spelling: needs correcting to a consistent use of UK English (or American English) spelling, not a mixture, e.g. capitalisation (not capitalization); capitalised (not capitalized), stabilised (not stabilized); amortisation (not amortization)

Terminology: consistency and correct use of terminology is also required:

- forecast(s), or forecasting not projection(s) or projecting; also in place of predict or predicable (paragraph 8);
- constant not perpetuity (paragraph 24 last bullet point);
- expectations not assumptions (when related to future forecasts (paragraph 7, 2nd bullet point); and
- expected not anticipated (in respect of inflation (paragraph 21, 3rd bullet point).

Definitions (with suggested wording) should be added to paragraph 5 for:

- *capitalisation rate*: the percentage rate that when used as a decimal and is divided into the passing net cash flow converts this to capital value at the current or forecast valuation date. This will apply to current (ingoing) or future (exit, terminal or outgoing) net cash flows divided by the respective capitalisation rate applicable as at those dates.
- *deflation*: declining prices generally in an economy as measured by a reducing or falling consumer's price index, usually expressed as a percentage per annum.
- *discount rate*: a percentage rate that when compounded on a period by period basis is applied to reduce a future cash flow to a present value.
- *exit multiple*: a conversion factor to determine capital value as a multiple of net cash flow at the exit, reversionary or termination date of the investment (i.e. the reciprocal of a terminal capitalisation rate)
- *forecast*: an estimate of an expected cash inflow, outflow, net cash flow or future value, based upon an estimated growth rate from current data as at the date of valuation.
- *holding period*: the future period from the current valuation date to reversion, termination or an exit date over which period an expected cash flow forecast is made, (not forecast period [paragraph 16]).
- *inflation*: increasing prices generally in an economy as measured by an increasing or rising consumer's price index, usually expressed as a percentage per annum.
- *nominal* (terms and values): cash inflows, cash outflows and values expressed in the monetary currency or purchasing power as at the date of each forecast.
- *real* (terms and values): cash inflows, cash outflows and values expressed in current currency or purchasing power as at the date of the current valuation.

For completeness the IVS Council might consider adding appropriate abbreviations and financial definitions for PV (present value); GPV (gross present value); NPV (net present value); IRR (internal rate of return), especially as there is evidence of confusion over the meaning and use of these terms.[7] There is also misunderstanding of "explicit" and "implicit" which could also be defined.

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[7] As clearly revealed in some of the countries' authors in the AI's new global valuation text, most notably using NPV where it should be PV both in text and DCF examples.

Charts:

Use of explicit DCFs in 47 countries as described in Real Estate Valuation in Global Markets (2011) (2nd ed., Chicago, IL: Appraisal Institute). Analysis and charts prepared by Commentator.

These results should be viewed in the context of the limitation that the country's author(s) descriptions may not truly represent the wider professional practice in their country. The absence or lack of any description of a methodology cannot be construed as not being practised by any valuers in that country

Use of Discounted Cash Flow Valuations - Total 47 Countries

- No DCFs, 6 Countries 13%
- Use DCFs, 25 Countries 53%
- Mention DCFs, 16 Countries 34%

DCF holding periods used in 25 Countries where use described

- 20 yrs, 1 Country 4%
- 15yrs, 1 Country 4%
- 10 to 15 yrs, 1 Country 4%
- 10 yrs, 16 Countries 59%
- 5 yrs, 4 Countries 15%
- 5 to 7yrs, 2 Countries 7%
- 5 to 10yrs, 1 Country 4%
- 6 to 10yrs, 1 Country 4%

Basis for DCF Discount Rate in 25 Countries where use is described

Category	Value
Built-up ex risk free rate + premia	7
Investor publications or surveys	5
Based on sales analysis	4
Capitalisation rate + margin or added…	4
Qualitative opinion	1
Yet to be clarified - not established	1
No basis described	10

Basis for terminal capitalisation rate in 25 Countries where use is described

Category	Value
Capitalisation rate + margin or added risk	11
Sales analysis	1
Investor publications or surveys	1
Qualitative opinion	1
Growth explicit	1
No basis described	11