# Property Conferences
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## The Valuation of Investment Property: Are Explicit Discounted Cash Flow (DCF) Models a panacea for the property valuation profession?

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## *Abstract*

**Purpose** - The purpose of this paper is to discuss the implications of the Royal Institution of Chartered Surveyors (RICS) Independent Review of Investment Valuations that recommended a shift towards (explicit) discounted cash flow (DCF) valuations for the valuation of investment properties.

**Design/methodology/approach** - This paper discusses the reason for the review and the impact of the recommendations related to a shift towards explicit DCF valuations. A comparative analysis is conducted to contrast implicit valuation models with an explicit DCF model. This has been promoted by the RICS with the publication, in 2023, of the RICS (Global) Practice Information - Discounted Cash Flow valuations.

**Findings** - The proposed shift to DCF valuations in the real estate industry carries both subtle and direct implications. This paper will discuss the likely development of a market consensus for an agreed framework and structure of DCF modelling and a need for transparency when determining and reporting the assumptions underpinning the market valuation.

**Practical implications** – Implicit valuation models are widely adopted in property valuations as they capture, through the capitalisation rate determined, market sentiment and expectations that underpin the market valuation. There are issues with the opaqueness of this model and this paper examines if a move towards explicit modelling, which by definition makes explicit the assumptions used in the valuation, will help the investment better understand the concept of market value and its relationship to the (individual) worth of the property asset in question.

**Originality/value** – This paper identifies the distinction between market value and the investor's own calculation of the worth of the asset to themselves based on their own forecasts of market growth and capital value changes. It proffers that a move towards DCF modelling will allow investors to better identify the market expectation assumptions within the valuation model and better compare them, and the Market value, to their own forecasts and worth calculation.

**Keywords** Real Estate Valuation, Explicit Discounted Cash Flow Modelling, Risk, Real Estate Market Evidence, Property Valuation Assumptions

# Explicit Discounted Cash Flow Models: A panacea for the property valuation profession?

## Introduction

In early January 2022, the findings and recommendations of the "Royal Institution of Chartered Surveyors (RICS) Independent Review of Investment Valuations", chaired by Peter Pereira Gray, was published (RICS, 2022). The review made 13 proposals albeit Recommendation 8 was split into two so, technically, there are 14 recommendations for the RICS to address. The report was commissioned by the RICS Standards and Regulation Board (SRB) in 2021 with a brief to provide a recommended framework that would ensure confidence in property valuations in today's markets. This will apply particularly to valuations which are relied upon by third parties.

The SRB accepted all the recommendations from the review and the relevant teams at the RICS have spent nearly two years between Jan 2022 and October 2023 discussing and consulting upon the best way to implement the recommendations.

One of the outcomes of the review was the publication of the "RICS (Global) Practice Information - Discounted Cash Flow (DCF) valuations" (RICS, 2023a) which was due to be updated anyway but its rewriting coincided with the review's publication and thus it made sense to dovetail the work to capture the review's recommendations relating to the use of explicit DCF models for property valuations to determine Market Value.

Market Value is an estimate of price where there is no actual sale. It is a proxy. An estimate of the figure that would be paid for the property asset in the open market were the property to be sold (after marketing) on the date of the valuation. The definition of Market Value is defined in the International Valuation Standards (IVS, 2024)[1] as:

*Market value is the estimated amount for which the property should exchange on the date of valuation between a willing buyer and a willing seller in an arm's length transaction after proper marketing wherein the parties had each acted knowledgeably, prudently and without being under compulsion.*

Market value estimates the most likely exchange price by capturing market perspectives from comparables. The primary evidence, if available, for the market price is other transaction prices of similar assets. Prices in the market are reflections of the expectations of investors and the major inputs into the explicit DCF method will be part of these expectations. For a full discussion of the definition and concept of market value, see French et al (2021).

As noted, it is an estimate of the figure for exchange. It is not the same as what a client or investor might think the property is worth to them. Worth is a not an estimate of a transaction price. It is a subjective assessment of the financial benefit of that asset to a

[1] The IVS are adopted fully by the RICS and

particular owner or potential purchaser at a particular moment in time. The definition of Worth or Investment Value is defined in the IVS (2024) as:

*Investment Value is the value of an asset to a particular owner or prospective owner for individual investment or operational objectives.*

The distinction between these two concepts is discussed in more detail later in the paper but it is a central tenet to the question posed by the title; is the use of explicit discounted cash flow models a panacea for the property valuation profession?

**Valuation Reviews in the 1990s and 2000s**

The 2022 review will be discussed in more detail later in this paper but it is worth noting that this is only the latest in a number of reviews undertaken by the RICS since the early 1990s. In 1994, the RICS commissioned and published the "Mallinson Report on Commercial Property Valuations" which made similar suggestions to those relating the 2022 review in regard to the use of explicit DCF valuations. And the Mallinson report led directly to the publication of two RICS Information Papers in 1997; the "Commercial Investment Property Valuation Methods" (RICS, 1994a) and its sister publication "Calculation of Worth" (RICS, 1994b). Both these publications mirrored many of the comments and recommendations made by the 2022 review. For a discussion on the implementation of the Mallinson report, see Peto (1996), Peto et al (1997) and Mallinson & French (2000).

Likewise in 2002, the RICS published another review entailed "Property Valuation - The Carsberg Report (RICS, 2002) which discussed and recommended many of the points raised in the 2022 report. And, like the outcome of the 2022 review, the report generated a number of changes to the RICS Red Book and the publication of the RICS Guidance Note "Discounted Cash Flow for Commercial Property Valuations" (RICS, 2010).

For a full discussion on the use of explicit DCF models for valuation see Baum & MacGregor (1992), French (1996 & 1997) and (2012).

There was thus, for those of us old enough to be involved in the previous reviews, a distinct feeling of Déjà vu when the 2022 review recommendations were themselves published. Did the previous reviews not change valuation practice sufficiently? Were the recommendations of the Mallinson and Carsberg reports not fully implemented?

The answer to both questions is "no". Both reports had a significant impact on the requirements, education and professional standards of RICS qualified valuers. The regulation and standards in place at the RICS today are substantially stronger and more robust than their equivalents in the early nineties and noughties. The point is that valuations and their regulation/promotion do not operate in a vacuum. Client needs and valuation/worth modelling have become significantly more sophisticated in the interim period and, more so, the current economic zeitgeist is demanding more transparency and public scrutiny. The latest review is a natural progression in this process.

**The RICS Independent Review of Real Estate Investment Valuations**

As noted above, the review was commissioned by the RICS Standards and Regulation Board in 2019 with the stated intent as follows:

*"The review is therefore intended not just to enhance the process by which valuations are arrived at, but also to guide the governance of the process to ensure it remains appropriate for a changing world"*

This review made 14 recommendations relating to valuation standards and culture including suggestions about the commissioning and reporting of valuations; the procurement process with an introduction of the mandatory rotation of valuers and valuation firms; the need to develop internal procedures for compliance officers and the corresponding need to for the RICS to oversee the role. In short, the recommendations all centre upon the need not only to enhance the integrity, transparency and robustness of all RICS valuations undertaken using global and national valuation standards (RICS 2020 and RICS 2023b) but on the corresponding need for users and the public to see that independence and professionalism of the RICS property valuer is uncompromised. The review is ensuring there is more clarity and transparency in valuation

It was therefore quite appropriate that the RICS accepted all the recommendations of the 2022 review and that they made substantial efforts to ensure the implementation of the review recommendations in a timely and appropriate manner. As noted on the RICS website[2], this has been done via a number of avenues. This included changes in the RICS Valuation UK National Supplement (RICS 2023b), from May 2024 and proposed changed to RICS Global Valuation Standards (RICS 2025), that will come into effect in January 2025.

Indeed, when the new UK national supplement of the RICS' Global Valuation Standards were published in 2023 (RICS 2023b), the RICS stated:

*"The RICS is proud to lead on the regulation of the built environment, and these innovative changes to our standards serve the public good and will grow confidence in the sector. They will increase the trust clients have in the standards of the UK's valuation profession, which sits among the most respected in the world."*

The consideration of all the review recommendations is outwith the remit of this paper. This paper will concentrate upon the Recommendation 8 which relates to the use of explicit DCF modelling and advanced analytics.

**Review of Real Estate Investment Valuations – Recommendation 8**

Whilst other recommendations within the review concentrated upon valuation procedure and quality assurance, Recommendation 8, which was split into two parts, focussed upon valuation models and associated analysis.

One of the issues that became apparent throughout this section was the need for more transparency and liaison between the valuer and the client. There was also a need for the market to fully appreciate the difference between a market valuation and the worth of the same asset to the client. This was acknowledged by the principal author of the review, Peter Pereira Gray, who stated:

*"I acknowledge that traditional (implicit) measures of value can correctly identify the exchange price at which an asset will likely trade (the all risks yield (ARY) is merely the mathematical summary of the many assumptions that go into a valuation), but the use of the (ARY) does not provide sufficient information and clarity to the client on the make-up of*

[2] www.rics.org

*the value of their property…….instead, the models should be 'explicit' to achieve the required levels of transparency, understanding, and education."*

This is the crux of the review when talking about modelling and will be discussed in more detail later in this paper. Recommendation 8 was concerned with two issues. Firstly, the increased use of explicit DCF models when preparing property investment valuations and the need for valuers to become better educated and familiar with advanced analysis both for valuations and calculations of worth. The recommendation stated

**Recommendation 8(i) - Discounted Cash Flow**
*The valuation profession should incorporate the use of (explicit)[3] discounted cash flow as the principal model applied in preparing property investment valuations*
**Recommendation 8(ii) - Advanced Analytics**
*RICS should improve the knowledge and application of valuers in respect of advanced analytical techniques*

Again, this paper is concentrating upon Recommendation 8(i). Whilst this will incorporate some elements of Recommendation 8(ii), the full implementation of the second part of the recommendation is still being considered and addressed by the RICS. That discussion is outwith the ambit of this paper.

So concentrating upon recommendation 8 (i), the move towards explicit valuation models is more to do with transparency and providing the client with details of market expectations and market value assumptions than the need for cash flow analysis itself rather than a dogmatic insistence on the precision of the technique. Again to reiterate, the client will be better able to understand the difference between the market value (estimate of price) and their own assessment (calculation) of worth based on their own forecasts and client specific assumptions if the valuer provides more transparency on the assumptions used in the valuation. Explicit valuation models forces the valuer to reveal the assumptions.

Although the member response to the review was very positive, some articles and social media comments immediately after its publication picked up on the apparent implication that investment valuations should exclusively use explicit discounted cash flow models and move away from implicit capitalisation models. This is not the case as witnessed by the FAQ section on the RICS website where one of the responses uploaded within days of the review's publication directly addresses this concern and stated:

*The Review does not call for absolute prescription of a particular valuation model……. The Chair accepts that different methods and models[4] may be used and supports the use of cross checking with different models. It is highlighted in the Review that clients are becoming less accepting of 'implicit' valuation inputs, assumptions, and outcomes within the method and models used; instead, the models should be 'explicit' to achieve the required levels of transparency, understanding, and education.*

[3] There is a tendency in the professional industry of using the term "discounted cash flow" to specifically refer to explicit discounted cash flow models. Whist, this is wrong as implicit models are also discounting future cash flows albeit it in a different way, this paper acknowledges the erroneous colloquialism and understand that a reference to DCF is referring to explicit models.

[4] There are three recognised approaches (Cost, Market and Income) to valuation which capture the use of the five property valuation methods (Contractors, Profits, Residual, Comparable and Investment methods). Below methods sit the models being discussed in this paper. For a full explanation of this hierarchy see French & Gabrielli (2018)

Once again, the central theme is increased transparency of assumptions within the valuation. But the main point is that implicit and explicit models and other short cut variants (discussed later) are all valid and important valuation models at the valuer's disposal. The choice of model remains with the valuer.

To understand this, it is useful to recap the process and concept of market valuations.

**Market Valuations**

All investment valuations are based on the present value of a projected cash flow so all such valuations are, in fact, discounted cash flow regardless of the model used. The actual distinction between valuation models is whether they are an implicit capitalisation model or whether they are an explicit discounted cash flow model. Implicit models capture any market growth expectation (in rents and/or capital value) in the yield whereas explicit models allow for any growth expectation in the cash flow and discounts that cash flow at an (normally, higher) required rate of return.

The role of the valuer is, and always has been, to use the most appropriate model for the valuation task in hand. Valuation is a process; a market analysis. But it is also, once the market has been analysed and assumptions determined, a mathematical model. There are principally two models. There are an implicit capitalisation model (sometimes referred to as the traditional method) and an explicit DCF model. Both models do the same. Both estimate the Market Value of the property. It is the way in which they do so that is different. This is illustrated with examples in Appendix 1.

The implied model, as the names suggests, hides all the assumptions by using one capitalisation multiplier (x the rent) to estimate the Market Value. The other, the explicit DCF, uses all the same assumptions but it shows what those assumptions are within the valuation. Both will estimate the same Market Value but the explicit DCF model is simply more transparent.

And this was the crux of the review, property investors no longer are accepting of the valuation figure alone, they also want to know what the underlying assumptions are. If there is more transparency, then investors can see why the Market Value at any one point differs from their view of worth.

Once upon a time when markets were driven by a desire to be in a specific locality, the valuation adage was "location, location, location". This changed, in subsequent recessions and downturns when the proliferation of bankruptcies led to the default of leases, to "covenant, covenant, covenant". Today, where we are in a world of sophisticated investment decision modelling, I would suggest the adage now should be "transparency, transparency, transparency".

We are entering a world where transparency, consistency and regulation are all bedfellows for good commerce and the valuation profession needs to embrace these traits in all property valuations. It makes sense that the property valuation profession starts to adopt explicit models, where appropriate, as their principal valuation model for some assets

However, if you value in a market where the main players analyse the property by explicitly projecting forward the likely rents over time (say 10 years) and allowing for specific expenditures before discounting all net rentals back to a present value using an overall required rate of return, then it can be argued that the appropriate valuation model will mirror this layout and valuers will use the explicit discounted cash flow model. This would

apply to cash flow driven property investments such as shopping centres, student housing, storage units, build to let residential properties etc. In such markets the appropriate valuation model will become the principal model. So Recommendation 8(i) is only confirming the natural progression toward the use of more explicit valuation models for cash flow driven property investments and the RICS' response to recommendation 8(i) will simply accelerate the transition to the same.

**The baby and the bathwater[5]**

There is the old adage that one should "value as you analyse. If a market analyses the attractiveness of an investment by simple heuristics such as the initial yield and market rent, then the appropriate valuation model will be an implicit capitalisation model where the market value is derived by the multiplication of the market rent and, in some cases (term and reversion/layer), the rent passing.

As all investment valuations are based on the present value of a projected cash flow, all valuations are discounted cash flow regardless of the model used. The distinction between valuation models is whether they are an implicit capitalisation model or whether they are an explicit discounted cash flow model. Implicit models capture any market growth expectation (in rents and/or capital value) in the yield whereas explicit models allow for any growth expectation in the cash flow and discounts that cash flow at an (normally, higher) required rate of return

If a market analyses the attractiveness of an investment by simple heuristics such as the initial yield and market rent, then the appropriate valuation model will be an implicit capitalisation model. However, if players analyse the property by explicitly projecting forward the likely rents over time to discount at their target rate[6] then the explicit DCF model will be the appropriate model that will become the principal model

In other words, the use of the implicit capitalisation[7] models will continue where appropriate, maybe as a double check to an explicit DCF model, maybe as the principal valuation model depending upon the asset type. The point of the review is to highlight that many of the asset types that investors buy are at a juncture where their analysis is by full explicit DCF models (e.g. shopping centres, student accommodation, multi-occupancy offices etc) and so the principal valuation model will be also be an explicit DCF model And then, added to this mix, there are the short-cut DCF model for smaller investments where the transparency of the valuation assumptions is just as important and where the need for a common benchmark with other investments is just as essential as it is for the larger property asset types.

**Market Evidence and data availability**

As noted above, all valuations rely upon comparison. In the case of implicit investment valuations, this normally refers to the analysis of comparables to determine NIYs and the

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5 The phrase "don't throw the baby out with the bathwater" is a British saying that highlights the need to be careful when implementing change. In this context, it si say that one may want to throw away one aspect of the current use of implicit modelling but be careful that one doesn't throw out the useful elements of the same.

6 The Discount Rate used in Explicit DCF valuations has numerous names, it can be (1) Target Rate (2) IRR (3) Expected IRR (4) DCF Yield (5) Required Rate of Return (6) DCF Rate of Return or others not listed.

7 The Discount Rate used in implicit valuations also has numerous names, it can be (1) Capitalisation Rate (2) Cap Rate (3) ARY – All Risk(s) Yield (4) Property Rate and for reversionary property (depending upon model) (5) Equivalent Yield (6) Term & Reversionary Yield or others not listed

Market Rent. And, one of the advantages of implicit models is that they price to market with reference to only those two variables. The greater use of explicit DCF models will require that the valuer looks at, and has access to, other comparable evidence. This may be the discount rates used in the investors' analyses or it could be turnover information that underpins the increased use of turnover-based rents or a better insight into how clients price risk. Valuers can only provide valuations on an explicit basis if this data is available to them either via aggregated third party data or if valuation teams have sufficient confidential information direct from the principal investors in the market. Concentrating upon the discount rate, this will require clients sharing details of their current required rate of returns (target rates) with the valuation profession as a whole[8]. Internal Rate of Return (IRR) information is readily available in real time in the stock market but this tends not to be the case in the property market. MSCI (previously IPD) provides data on historic performance measurement but regular surveys of investors' target rates by property type would greatly facilitate the transition to explicit DCF models as promoted by the review. For a full discussion on this point see Frodsham(2024).

But the main advantage of moving toward explicit modelling is that it "does what it says on the can" and information and assumptions are revealed and justified much more so than when using implicit models. Implicit models have the advantage of capturing the previous market pricing of similar assets and explicit models have the advantage of revealing the market expectations[9] used within the valuation.

But Recommendation 8(i) (and, to some extent, 8(ii)) have been dealt with mainly by the revision of the RICS Guidance Note (RICS, 2010) "Discounted cash flow for commercial property investment" which has been rewritten and updated as the "RICS Practice Information, (Global) Discounted Cash Flow Valuations" (2023).

## The RICS DCF Practice Information[10]

The new Practice Information was commissioned to update the RICS' guidance on the use of DCF valuations and to incorporate, amongst other things, the recommendation to move toward explicit valuation models to increase transparency. It states:

*"This global practice information addresses the valuation of real estate investment property and the calls from some stakeholders in the valuation process, not least valuers themselves, for greater consideration and, where appropriate, adoption of (explicit) Discounted Cash Flow (DCF) methods for valuing such property. This practice information can be applied to all properties, whether commercial or residential, occupied or vacant, which would normally be valued by a method of valuation that addresses the property's income earning potential and a capitalisation of that income.*

It also addresses, at length, the difference between value and worth, summarising this by saying:

8 At the moment, this happens on an ad hoc basis and it could be that the predominance of implicit models in some markets has endured this long because this sharing of more explicit information has been lacking.

9 It should also be noted that there is a distinct difference between a(n) (econometric) forecast and a market expectation. An expectation could be described as an exposition of market sentiment. For example, growth expectation is decanted out of the market. A formal forecast, by contrast, is an investor's own opinion (whether derived heuristically or econometrically) of the assumptions used in a worth calculation.

10 The DCF Practice Information paper is NOT intended to be a "to do" manual. Instead, it is a framework to outline the application of explicit DCF modelling and a guide to the corresponding market analysis required for such valuations.

*"Market value is based primarily on market evidence and is not an entity specific value to the particular individual……."*

Investors want to know why is the Market Value (an estimate of price in the current market) as provided by the valuer different from their own calculations of worth (a subjective assessment of the benefits of ownership to that particular investor) for the same asset?

**Value, Price and Worth**

Value (price) and worth are different concepts driven by different assumptions. Market valuation decants market expectations, from comparable market evidence, and uses those assumptions in the valuation model either implicitly or explicitly. Worth calculations uses the investor's own forecasts and return requirements in an explicit model to determine what the same asset is worth to them. If the market expectations are different to the investors own view of the future then, unsurprisingly, the Market Value will be different to the investor's worth calculation.The process of determining the worth of a property asset based on specified forecasts of the future may differ from the market expectations derived valuation.

A Market Valuation estimates the figure at which a property asset is likely to sell on the date of the valuation (What is the price?) and the process of valuation is to find "signposts" to determine that price on that date. Signposts can be previous sales (CVs, rents and yields), asking prices and/or market sentiment (see French, 2020) that help the valuer determine the market value of the subject property. The valuer chooses the valuation model to capture those market signposts in the best way to mirror the market. This may be an implicit or explicit model. The outcome is the estimate of price in the market; it is a proxy for a sale.

This is very different to a Calculation of Worth (or an Investment Appraisal) which calculates what the asset is worth to the buyer/owner. In short, it can be compared to a market value at the same date. It answers the question "Is it the property worth that price?" Value (an estimate of price) and worth are different concepts.

This is often misunderstood and some investors believe that the Market Value should be the same as what they think it is worth. That is why we often hear investors saying, especially in market downturns, "That can't be Market Value because we wouldn't sell it for that price". The misconception is that market value and worth are the same concept.

This is discussed in full in the DCF Practice Information paper (RICS, 2023) but the principal issue is that if clients use explicit DCF models to determine worth and they believe that market value should be the same as worth then, when the two figures diverge, they may think that by moving towards the same explicit DCF model that the market value will change to match the worth figure. This will not happen. The choice of model (Implicit capitalisation or explicit DCF) will not change the market value.

Valuation is the determination of market value by reference to the market. It is an estimate based on market evidence and the valuer expertise and judgment. But it is market derived and not determined by the model used. To reiterate, the use of an explicit model won't change the market value.

The reason that there is a difference between market value and worth is not the choice of the valuation model. For market valuations, the underlying assumptions are the same in both the explicit and implicit models. Market value and worth diverge when the market expectations used in the market valuation diverge from the forecasts used in the calculation of worth. An understanding of those differences will help the investor appreciate why market value and worth diverge.

Explicit models require the valuer to reveal those assumptions. It is transparent. But, as an alternative, it would be possible to do the same by using an implicit model side-by-side with a matrix of the assumptions implied in that valuation model.

The second takeaway of the DCF Practice Information is that market value is not the same as worth. They are two different concepts. The confluence of the two is that explicit models, by being transparent, can show the investor where their own forecasts differ from the market expectations captured in the valuation.

**The use of Explicit DCF model**

One of the perceived problems with explicit DCF is that valuers are reluctant to explicitly apply growth. In fact, some valuers use a DCF template (with, say, a 10 year cash flow) but leave all incomes in today's terms. This is not a true DCF but the implicit model laid out differently. Every transaction analysis or valuation using the implicit method can be replicated by reference to an explicit DCF model. This is illustrated in Appendix 1.

In simple terms, an explicit DCF model makes explicit the same assumptions that are used in an implicit model. It does not make new assumptions. The principal assumptions are overall rate of return required (the Target Rate), the capitalisation rate at exit (the Exit Yield) and the growth rate. Growth is applied to the rental cash flow for the duration of the cash flow (including a sale at the reversion) and is discounted at the target rate.

Referencing the IVS, the target rate[11] is:

*A20.29 - The rate at which the forecast cash flow is discounted should reflect not only the time value of money, but also the risks associated with the type of cash flow and the future operations of the asset.*

*A20.30 - The discount rate must be consistent with the type of cash flow.*

*A20.31 - The valuer may use any reasonable method for developing an appropriate discount rate. While there are many models for developing a discount rate or determining the reasonableness of a discount rate, a non-exhaustive list of common models includes:*

*a. capital asset pricing model (CAPM)*
*b. weighted-average-cost-of-capital (WACC)*
*c. observed or inferred rates/yields*
*d. build-up method.*

The models (a) & (b) only apply to business valuations and financial instruments as they reflect the risks attached to portfolio investment (a) and specific businesses (b). They do not reflect property risks. So it is (c) and (d) that apply to property. Observed rates is based on comparables using market evidence to determine the property (initial) yield

[11] The IVS section on Approaches, Methods and Models is very confused and is more applicable to business valuations and financial instruments

(1/yield = multiplier) or the target rate by reverse engineering[12]. In the final model, the build-up (or bottom-up) model, the target rate is derived by reference to other asset classes by implementing a variation on Fishers and Gordon's Growth Models. For a full discussion of the target rate derivation see Baum (2022) and French (2019a).

Growth assumptions are a vital part of the DCF model. Implicit models imply growth, explicit models decant out this growth and show the average annual increase derived from the relationship between the capitalisation rate and target rate. As discussed, this is a market expectation and not a forecast defined by the client. A numerical example of the derivation of the expected market growth is shown in Appendix 1.

**Full DCF Models**

DCF models can be annual, quarterly or monthly. The question on which split is used in the cash flow is likely to be asset determined. For example, shopping centres have multiple tenants but all rents, in the UK, are received on the quarter days. It is therefore likely that a quarterly cash flow would be chosen. Correspondingly, residential investments receive rents monthly and thus monthly cash flow will be preferred. Hence, it is impossible to be prescriptive on the framework used in DCF valuations' it will be market determined.

Likewise, the duration of the cash flow will differ according to the assets and it is likely to be driven by the duration used in worth models. Anecdotally, this may be five or 10 year cash flows[13]. At the end of the cash flow period, there is an assumption of a hypothetical sale where the future sale price is calculated by reverting to an implicit valuation (rent x exit yield) at that juncture.

So, when we are talking about an explicit DCF model, we are actually only talking about making the initial period of five or 10 years explicit. The reversion reverts to the implied model and the market expectations of growth thereafter are implied within the hypothetical sale price at the end of the cash flow.

It is that fact which means that it is possible to consider the reversion to the implied model at an earlier point. If this is done, much of the complexity of the full DCF is avoided (see below).

The hypothetical sale also raises another issue. Historically, explicit valuation mirror the implicit assumption of the implied model and that is that the exit yield (the capitalisation rate to be used at the hypothetical exit of the investment) is the same as today's capitalisation rate. This is questionable and it may be something that the market discusses and adjusts in the future. There is also the question of whether the sale should be gross or net of costs.

[12] If you put the expected cash flow into a spreadsheet, the full DCF model, you can use goal seek/solver to decant out the market target rate. To reverse engineer the TR, the transactional sale price has to be equated to the PV of the explicit cash flow but the cash flow needs to be a similar structured framework.

[13] In textbooks, you often see cash flows being illustrated for in excess of 10 years. This is rarely the case in practice. In practical terms, anything beyond 10 years seems to be beyond our comfort zone for expectations. Convention seems to be a five-year cash flow especially when the analysis/valuation is carried out quarterly or monthly.

Again, the increased use of explicit DCF should mean that the market adopts a similar framework[14]. As you move towards more complex models that make explicit other variables (voids/exit yield change/ refurb costs/etc) the simplicity of a consistent framework, which is one of the advantages of the simple implied model, starts breaking down. But, over time, the firms will start sharing and moving towards a common framework. It is likely that as more and more valuers and firms use explicit DCF then conventions will form. Some will form through discussion and the sharing of information between valuers and some due to valuers switching firms and taking the framework that they have used previously to the new firm.

**Modified or Short-cut DCF Models**

For the large cash-flow driven investments with multiple cash flows it makes sense that full annual or quarterly or monthly cash flow models will become the norm and, indeed, for many of the large or niche market valuation firms this is already the case.

But there is also an argument that the transparency being sought by clients, as witnessed by the review comments, shouldn't be restricted to just the top end of the market. In a world where single direct property investments are competing side by side with other asset classes (bonds, stocks, chattels/art and indirect property vehicles), all investors, large and small, want to assess the expected performance of all the options relative to a common benchmark. The target rate or required rate of return is that benchmark and it makes sense that all property professionals and valuers in particular get used to talking about the target rate as easily as they talk about the net initial yield. And, more importantly, as more and more valuers use the target rate, then the analysis of the market will allow for it to be decanted out of previous transactions as easily as the net initial yield. These are now the market signposts that clients want and need. Short-cut or modified DCF reveals the assumptions and is a simple layout that will help provide consistency of analysis.

The RICS DCF Practice Information paper discusses and illustrates the differences (and similarities) of the various valuation models with worked examples. These have not been included in the main section of this paper as it is more concerned with concepts and procedures but, for ease of reference, some numerical examples are shown in Appendix 1 for ease of reference.

## Conclusion

Implicit models have the advantage of capturing the previous market pricing of similar assets and explicit models have the advantage of revealing the market expectations used within the valuation. That said, due to the relationship between the capitalisation rate and target rate, explicit valuation models do use both a capitalisation rate and a target rate. For a full DCF, the capitalisation rate is needed to decant out the growth expectation when related to the target rate. And, more so, a modified DCF model, by mirroring the layout of an implied valuation, uses both the capitalisation rate and target rate in the same valuation.

So explicit DCF modelling is not a panacea. Market values will still rise and fall in line with the vagaries of the market. Valuers will still have days where comparable transactions are plentiful and the decantation of market assumptions is straight-forward. Conversely there

[14] A framework is the structure of the cash flow; the duration, the intervals of the cash flows, the exit yield, the target rate

will be downturns where market sentiment is more important due to the lack of transactional evidence. But in all cases, explicit models force the valuer to make explicit all those assumptions. The move towards explicit valuation models is more to do with transparency and providing the client with details of market expectations and market value assumptions than the need for cash flow analysis itself. The client will be better able to understand the difference between the Market Value (estimate of price) and their own assessment (calculation) of worth based on their own forecasts and client specific assumptions. When undertaking a valuation for market value, all the assumptions must be market expectations; when undertaking a calculation of worth, then the assumptions are forecasts of the individual investor.

Of course there are issues with the increased use of explicit DCF modelling. Implicit models use simple heuristics to capture market sentiment through comparable evidence. And, in the UK, the market is blessed with well reported and shared transactional evidence to determining the capitalisation rate. There are also third-party provides that report ARYs for property type and region. Currently, this is not the case with target rates and growth rates but the increase in the use of explicit DCF should generate of additional data to aid its use. In time, it is incumbent on those data providers to support the creation of new data outputs such as (DCF) discount rates & growth rates.

And that was the battle cry of investors in the review. In essence, the review has acted as a catalyst to ensure that investment valuations are provided to clients with increased transparency and that can only lead to the greater confidence in property valuations that everyone desires.

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## APPENDIX 1: Implicit and Explicit Valuations

### Introduction

When undertaking a valuation, the valuer will choose the appropriate model(s) (implicit or explicit) to use. The market value derived will be the same regardless of the model as the assumptions implied in the capitalisation rate model are made explicit in the DCF model. The principal assumption is expected market growth. There is a simple mathematical relationship between the initial yield and target rate that reveals the market growth expectations.

### Growth Calculation

For example, using the numbers in the RICS DCF Practice Information (RICS, 2023), an ARY of 5% and target rate of 7.75% reveals a calculated average annual growth is 3.02% (details of growth calculation is discussed in full in RICS DCF paper).

The simple relationship between the capitalisation rate (k) and the target rate (e) is that if an investor requires a 7.75% (e) overall return but accepts an initial return of 5% (k), and then they will need annual growth in income over the year of 2.75% (g):

k = e – g (5% = 7.75% - 2.75%) **Formula 1**

When rents can rise annually, then that simple formula is all that is needed. But in some countries (like the UK), rents are fixed for a period before reverting to market (in the UK, there are 5yr rent reviews). In such a case, the formula needs to be adjusted to allow for additional growth on an annual basis to allow “catch-up” of the income during the no-growth years. The simple relationship in Formula 1 becomes:

k = e – (SF x P) **Formula 2**

where P is the % over the rent review (rr) and SF is the annual sinking fund (ASF) at (e) for the rent review period. Using the same inputs:

0.05 = 0.75 – (0.1713 x P) and thus P = 0.1605 or 16.05% **Formula 3**

As an annual average growth rate, g can be calculated:

(1+g)^rr = 1+ P and thus g = 3.02% **Formula 4**

### Example 1 – A rack rented property[15]

*Valuation 2024: Retail High Street Property with good demand – just been let at Market Rent of £35,000. Market evidence suggests a capitalisation rate of 5% and market analysis suggests that target rate of 7.75%. Using Formula 4 above, the expected average annual growth rate is 3.02%.*

NB. These examples are for illustration and are deliberately mathematically precise to show that the capital value (Market Value plus costs[16]) remains the same regardless of the model used. In reality, the estimated rental figure projected in the DCF models will not be as precise when agreed through negotiation at that juncture.

[15] A rack rented property is one where the property has just been let at (or reviewed to) Market Value.

[16] For a full discussion on how and why costs are deducted from Capital Value to determine Market Value see French (2019b).

**Example 1 – A rack rented property - Calculations**

| IMPLICIT VALUATION OF RACK RENTED FREEHOLD | |
|---|---|
| Market Rent | £35,000 |
| YP perp @ 5.00% | 20.00 |
| Capital Value before costs | £700,000 |

**Figure 1 - Implicit Valuation of Rank Rented Property**

| EXPLICIT DCF VALUATION OF RACK RENTED FREEHOLD | | | | | |
|---|---|---|---|---|---|
| Year | RR | Rent | YP @ 7.75% | PV @ 7.75% | PV£ |
| 1 | 5 | £35,000 | 4.02 | 1 | £140,671 |
| 6 | 10 | £40,619 | 4.02 | 0.6885 | £112,402 |
| 11 | perp | £47,139 | 20.00 | 0.4741 | £446,928 |
| | | Capital Value before costs | | | £700,000 |

**Figure 2 - Explicit Full Discounted Cash Flow Valuation of Rank Rented Property**

Some valuers use a DCF template (as shown in Figure 3) but leave all incomes in today's terms. This is not a true DCF but the implicit model laid out differently. This is shown in Figure 3.

| IMPLICIT VALUATION OF RACK RENTED FREEHOLD (DCF layout) | | | | | |
|---|---|---|---|---|---|
| Year | RR | Rent | YP @ 5.00% | PV @ 5.00% | PV£ |
| 1 | 5 | £35,000 | 4.33 | 1 | £151,532 |
| 6 | 10 | £35,000 | 4.33 | 0.7835 | £118,729 |
| 11 | perp | £35,000 | 20.00 | 0.6139 | £429,739 |
| | | Capital Value before costs | | | £700,000 |

**Figure 3 - Explicit Full Discounted Cash Flow Valuation of Rank Rented Property**

Where the property is between reviews or is on a lease that is due to come to an end in the next few years, the property is known as a reversionary property. The valuation of such a property can be done using implicit or full DCF (see Figures 4 and 5 respectively).

In addition to the implicit and full explicit DCF models, there is a third model that uses the layout of the implicit model yet applies the target rate to the term and the discounting of the reversionary sale. This is known as the modified or short-cut DCF and is illustrated in Figure 6 below.

**Example 2 – A reversionary property**[17]

*Valuation 2024: Office Property with good demand was let 2 years ago at £10,000, it is estimated by market comparison that the Market Rent is now £20,000. Market evidence suggests a capitalisation rate (Equivalent Yield) of 5% and market analysis suggests that investors' target rate is 7.75%. Using Formula 4 above, the expected average annual growth rate is 3.02%.*

| IMPLICIT VALUATION OF REVERSIONARY FREEHOLD | | | |
|---|---|---|---|
| Term Rent | | £10,000 | £27,232 |
| YP for 3 years @ | 5.00% | 2.72 | |
| Market Rent | | £20,000 | |
| YP perp @ 5.00% | | 20.00 | |
| PV for 3 years @ | 5.00% | 0.86 | £345,535 |
| Capital Value before costs | | | £372,768 |

**Figure 4 - Implicit Term & Reversion Valuation of Reversionary Property**

| EXPLICIT DCF VALUATION OF REVERSIONARY FREEHOLD | | | | | |
|---|---|---|---|---|---|
| Year | RR | Rent | YP @ 7.75% | PV @ 7.75% | PV£ |
| 1 | 3 | £10,000 | 2.59 | 1 | £25,888 |
| 4 | 8 | £21,869 | 4.02 | 0.7994 | £70,260 |
| 9 | perp | £25,379 | 20.00 | 0.5504 | £279,365 |
| Capital Value before costs | | | | | £375,512 |

**Figure 5 – Explicit Full DCF Valuation of Reversionary Property**

| MODIFIED or SHORT-CUT DCF VALUATION OF REVERSIONARY FREEHOLD | | | | |
|---|---|---|---|---|
| Term Rent | | £ | 10,000 | |
| YP for 3 years @ | 7.75% | | 2.59 | £25,888 |
| Market Rent | | £ | 21,869 | |
| YP perp @ 5.00% | | | 20.00 | |
| PV for 3 years @ | 7.75% | | 0.80 | £349,624 |
| Capital Value before costs | | | | £375,512 |

**Figure 6 – Modified DCF Valuation of Reversionary Property**

[17] A reversionary property is one where the property is let at below market value and market value will be achieved at the next review or the end of the lease, whichever is the sooner.