

Observations On The Use Of Generic Software For The Valuation Of Major Investment Properties

David Parker

Portfolio Manager Property, Suncorp Metway Limited
Adjunct Professor, University Of Queensland

Keywords: Valuation - software - *Cougar*[®] - investment - accuracy - discounted cash flow

Abstract: Numerous generic valuation software packages are now available for application to major investment properties. One such generic software package is *Cougar*[®]. Generic software is now in widespread use by both major firms of valuers and institutional investors.

As an example of generic software, the structure and approach of the *Cougar*[®] software package is outlined and compared to that of traditional valuation practices, with areas of significant process difference identified and considered.

The impact of the widespread use of generic software packages is then considered in the context of the evolution of the valuation paradigm and the role of the valuer, with suggestions made for possible changes to current valuation practice.

Introduction

The last two decades have seen a dramatic change in the business of institutional property investment in Australia. The local insurance and British property companies have been superseded by the listed property trusts and subsidiaries of international financial groups. The significant asset allocation historically made to direct property for investment and development has been moved to listed property trusts for investment only as the holding period for measurement of returns has moved from several years to a matter of months.

With an intense focus on returns, there has been a philosophical shift in the view of investment property from bricks and mortar to cash flows, with the focus moving from the individual property asset to the portfolio. Investment property is no longer a special asset class, but just another risk/return combination competing for funds under management in the asset allocation process.

The institutions of the new millennium are relatively few, relatively large and global, investing diversely by both sector and geography and offering a multi-product range. Such institutions are a significant property market participant both domestically and internationally, employing a highly qualified, highly skilled and globally portable property team.

For the international business of the new institution, the accurate forecasting of returns, both income and capital, from the property level through to the portfolio level is paramount. Every tenancy/suite and income/expense line requires individual consideration with explicit

assumptions for vacancies, rent reviews, lease expiries, capital expenditure, refurbishment/redevelopment and so forth. With a much greater level of sophistication in property portfolio management emerging for increasingly large and diverse portfolios, given the absence of codified valuation guidelines and given the dependence now placed upon such forecasts, a high level of accuracy, consistency and transparency is now demanded.

Generic And Specific Software Packages

Each of the major valuation firms offering services to institutional investors for major investment properties has its own proprietary or specific software package for investment property valuation, with its own protocols and conventions of convenience for use. Observation of the valuation reports of several major firms indicates that each such software package is generally similar but specifically different, resulting in the inability to compare variables in one with their apparent equivalent in another with certainty and the prospect that two firms could value the same property using the same variables and achieve two different results.

Such a specific software package may also suffer inconsistencies in both the logic supporting the capitalisation valuation relative to the DCF valuation and within each, often compounded by the idiosyncratic adjustments made by the respective users to overcome such inconsistencies. Accordingly, there develops a reliance on such protocols and conventions of convenience, based often on little more than unsubstantiated assertion, which may lead to two different results for the same property valued in the same software by two valuers from the same practice at the same time. Thus, there may be not only differences in results between two firms but also between two valuers within the same firm. Whilst all may be equally defensible, such results potentially further compound the issues surrounding valuation inaccuracy and diminish the attractiveness of property as an asset class for investment.

Such potentially anomalous results are clearly unacceptable to the funds management industry seeking a high level of consistency, transparency and accuracy and where a variance of 0.1% in actual returns compared to forecast is significant. The changes to the institution over the last two decades have resulted in major property investment groups no longer being run by property people but by managers of corporates to whom such results are fertile ground for error rate management through business process re-engineering. Such an approach to the business of institutional property investment has manifested in the institution's desire to achieve a high level of consistency, transparency and accuracy in the valuation process through business process re-engineering. If the existing process does not work efficiently, the corporate management response is to change the process.

The use of specially developed, generic portfolio management and valuation software packages offers the attraction of such a high level of accuracy, consistency and transparency. The mathematics are standard so that which comes out of the generic software package is purely a function of that which is put in. The answer is directly related to the assumptions in the inputs and is always calculated in the same way and is always mathematically correct. There is no capacity in the software for subjective adjustment. Such software facilitates a clear focus on the key aspects of returns through cashflows, being quantum, direction and timing and their respective sensitivities (Parker (2001)).

Several such specially developed generic software packages are now available including *Dyna*[®], *Argus*[®], *Circle*[®] and *Cougar*[®] which was developed in Australia and is now marketed internationally. It is not proposed to analyse the functionality of any of the software packages, but rather to observe, through reference to *Cougar*[®], some of the issues surrounding the use of generic software packages and the implications arising therefrom for the valuation of multi-tenanted properties over, say, \$10 million, leased on dissimilar lease structures.

Cougar[®] software is now in widespread use by both institutional investors for portfolio management and for valuation and by major firms of valuers for valuation, with adoption by the former leading to adoption by the latter. Some institutional investors link their generic portfolio management and valuation software to their property management software giving an electronic interface for data uploading.

The adoption of generic software packages by institutional property investors has resulted in a range of issues arising for the evolution of the valuation paradigm and for the role of the valuer. Such issues will be considered below following a brief description of the structure and approach of the *Cougar*[®] software package (as a proxy for generic software packages generally) with some concluding suggestions for possible changes to current valuation practice.

Outline Of A Generic Software Package

Consistent with other generic software packages, the structure and approach of *Cougar*[®] is summarised in the User's Guide as follows:

“The *Cougar*[®] Property System is a purpose built property investment management system designed to analyse, manage and value lease-based real estate.” (*Cougar*[®] (2000))

which then further asserts that *Cougar*[®] is not a spreadsheet programme but:

“ ... a fully featured Windows[™] program based upon a powerful database structure” (*Cougar*[®] (2000))

As such, *Cougar*[®] separates the data input, calculation and reporting functions with each being undertaken in a separate part of programme.

Cougar[®] generates a series of monthly cashflows for the property on a lease by lease basis over a period of 21 years, based on the detailed information input into the programme. Such information is a combination of known information (being essentially tenancy schedule and outgoings information) and user assumptions about the property market and the economy. The programme models using known information if available and assumptions otherwise:

“The extent of information supplied is largely up to the analyst. The more detailed the supplied information, the more accurate the forecast.” (*Cougar*[®] (2000))

Cougar[®] arranges all information in a formal hierarchical structure, such organisation allowing for consistency and control of base assumptions. The explicitly structured and ordered approach adopted to the specification of the information hierarchy provides an useful insight into the logic of *Cougar*[®] and the differences to the often muddled logic in the allocation of roles to certain variables that might be adopted in a traditional valuation approach. The information hierarchy might be likened to an information tree, with the top level being:

Level 1 - Global Assumptions

These comprise universal settings that apply to all properties such as the forecast period start and end dates, forecast calculation methodology to be employed and some optional over-riding sensitivity style parameters;

Level 2 - Sector Assumptions

These refer to each discrete sector of the property market specified, which may be definable by geography, demography, ownership, quality and so forth. Such sectors are influenced by broad economic forecasts that tend to apply across an entire sector of the property market rather than just a single property. Such forecasts include inflation, market rental growth rates, market parking rental growth rates, sales turnover growth rates, capitalisation rate and discount rate trends (or the specification of two points to allow linear interpolation), vacancy forecasts and incentive forecasts (which then influence relet periods as the market improves or deteriorates) that may be made for as many years into the future as may be feasible or required;

Level 3 - Property Assumptions

A property is primarily defined in terms of its physical composition, its ownership, the sector to which it belongs and its fundamental valuation characteristics. The property also forms the basis of expenses for forecasting purposes including leasing costs, renewal costs, make good costs, review fees, disposal costs and acquisition costs;

Level 4 - Premises Assumptions

The premises may be any logical division of the property and generally comprise the individual leasehold premises within the property. Any single component of the property that is capable of generating income should generally be defined as a premises and have a market rent attached, including anything from part of a floor to the whole building or a roof antenna; and

Level 5 - Lease Assumptions

Individual leases reside at the bottom of the information tree, representing periodic occupation of a premises which may have many leases over a long period of time. Each lease may have a start and end date, rent review structure, ratchet provision, outgoings update provision and turnover provision (including the number of months which the tenant may be likely to take to pay the turnover rent) attached. (*Cougar*[®] (2000)).

In many respects, there are few differences in the basic information input into both the generic and the specific software packages. Tenancy schedule data, market rental data, growth rates, capital expenditure data and so forth are generally common inputs to both forms of software package. Similarly, both forms generally address such issues as cashflows in advance or in arrears, monthly, quarterly or annual rests, inclusion or exclusion of acquisition or disposal costs, adoption of face or effective rents and so forth. Such similarities in data and issues do not, therefore, require further consideration with attention to be focussed instead, below, on the differences.

Having entered the requisite data and assumptions or any subsequent change to same into *Cougar*[®], it is then necessary to calculate the cashflows. On completion of the calculations, the 150 standard *Cougar*[®] reports can be viewed or printed by property or portfolio on a monthly, quarterly or annual basis (with the management module providing a further 8 reports including a diary system). Such reports can also be saved, charted or copied to other Windows[™] applications.

To ensure that the software package functions effectively, *Cougar*[®] counsel users to ensure that:

- they have a good grasp of the operation of the system prior to using it;
- all information (both known and assumed) is as accurate as possible;
- all information is input correctly into the system with a check that source document totals (such as tenancy schedule totals, outgoing statement totals and so forth) align with *Cougar*[®] report totals; and
- the software package results and reports generally accord with expectations. If the results are widely different to expectation, it is recommended that the user go back and check the inputs. (*Cougar*[®] (2000))

A generic software package allows the valuation to comprise accurate, consistent and transparent forecasts that align with the property management system and portfolio management system.

The institutional investor can be confident that (subject to appropriate data entry protocols) the data and the calculations are accurate, that each property in the portfolio has been treated consistently and that each result can be deconstructed to observe its composition.

For the valuer and the valuation process, the package is entirely forward looking with an emphasis on forecasts. Further, it adopts cash flow forecasts that align with the property management budgets and the portfolio management distribution and NTA forecasts providing an additional layer of transparency not available when the cashflow from a specific software package does not, prima facie, match that of either. As such, the generic software package allows the property valuation process to be brought seamlessly within the overall portfolio management process.

Observations On Areas Of Significant Process Difference

Whilst it is not proposed to undertake a detailed comparison of *Cougar*[®], as an example of a generic software package, to those specific software packages used by each of the major valuation firms, observations will be proffered on some of the apparent process differences based upon the perusal of valuation reports by such major valuation firms.

Accordingly, it is acknowledged that the specific software packages developed by some of the major valuation firms may incorporate some of the functionality considered below.

Cougar[®] offers a range of additional functions which improve the quality of the cashflows for valuation purposes, including:

Modelling Vacancy

Vacancy can be specified (ie: a lease by lease vacancy assumption) or enforced (ie: a blanket vacancy percentage) in both the capitalisation and DCF valuation bases. Thus the actual impact of vacancy can be observed in the cash flows and easily measured for conversion into an appropriate vacancy rate percentage for use in the capitalisation method, if required, providing a significantly greater level of accuracy.

Further, vacancy forecasts and incentive forecasts can be linked to relet periods (see below) to reflect the overall impact of an improvement or deterioration in market conditions on the cash flow. Thus, as the market improves and vacancy rates trend down, *Cougar*[®] will similarly trend incentive levels and relet periods which provides a much greater level of consistency and accuracy;

Modelling Terminal Value

The time period cash flow upon which the terminal value in the DCF is to be calculated can be specified, such as the cash flow at the end of year 10 or at the end of year 11 or mid way between and so forth. This may make a very considerable difference to the valuation result, particularly with lumpy rent review or lease expiry scenarios in year 10 or 11, with such explicit regard potentially significantly improving the level of accuracy;

Modelling Reversionary Adjustments

The date range within which the reversionary adjustments to the capitalisation method and the terminal value in the DCF are calculated can be specified (ie: ignore less than 3 months or more than 48 months). This provides consistency of treatment rather than an ad hoc approach based on such issues as size or complexity;

Modelling Rent Reviews

The ability of generic software packages to automatically model a range of rent review scenarios including caps and collars, greater of clauses, increases plus margins and so forth significantly increases the level of accuracy throughout the twenty one years of the cash flow. There is no need to default to simpler blanket assumptions for future years of the cashflow;

Modelling Lease Expiry Scenarios

The continuation of unusual or complex lease agreements through option periods or their conversion to an assumed standard basis following expiry, allows the explicit consideration of all relevant aspects and reflection in modelling.

Further, the retention and relet functions following lease expiry allow a much more detailed forecast of likely income and costs to be prepared. At lease expiry, *Cougar*[®] allows the user to specify whether a given lease will definitely be renewed or, if not, to specify a blanket percentage level for retention (say, 50% retention) with a relet period in months.

For each retention or relet, the costs associated with incentives (level and form in which to be taken can be separately specified), leasing costs, renewal costs, make good, refurbishment, review fees, legal fees and so forth can be specified and summed. This allows the user to address expiries within the next 12 months with some accuracy and have a general principle for all expiries beyond 12 months and the programme then calculates all income and costs resulting therefrom for inclusion in the cashflow. Such assumptions may be varied by the vacancy trend to reflect improvement or deterioration in the market.

Whilst individually, such income and cost effects may be minor, at the property level and the portfolio level they may be significant. Traditionally, the convention may have been to disregard such income and cost effects individually as they were too difficult to calculate though, cumulatively, they may have an effect on value in excess of the generalised allowance;

Modelling Linked Income/Expense Cashflows

The modelling of complex income/expense linked cashflows such as after-hours air-conditioning costs and recoveries, electricity costs, recoveries and profit margin and so forth can be undertaken automatically in generic software packages. Such relatively complex calculations have tended to be obviated in the past by assumed average annual income amounts, despite the inconsistency of growing such average annual income amounts in the cashflow at a different rate to the expense component. Over the twenty one years of the cashflow, this can be a significant difference;

Modelling By Classifications

The classification of tenants by use, covenant, rent review type and so forth in generic software packages allows a more detailed analysis of the strengths and risks inherent in the cash flow. Rather than some approximating calculations for indicative reference, generic software packages allow the accurate determination of classification sizes to facilitate benchmarking and more detailed consideration in the valuation process;

Modelling Outgoings

The treatment of outgoings including the coding of expenses, apportionment for recovery, updating of base dates, attribution of a growth rate for costs that flows through to recoveries and so forth can all be specifically modelled in *Cougar*[®] allowing a much greater level of accuracy in the cashflow. Traditionally, the treatment of outgoings attracted a range of conventions of convenience to simplify the process often resulting in an incorrect relationship in the rate at which costs grew relative to recoveries with an obvious value impact;

Modelling Turnovers

The treatment of turnover issues in retail leases can be very accurately modelled in *Cougar*[®] including turnover growth, turnover rents, updating turnover thresholds on rent review and so forth. This is particularly significant for the conversion of higher risk turnover rent to lower risk base rent which can have a considerable value impact. Similar to outgoings, the treatment of turnover attracted a range of conventions of convenience to simplify the process often resulting in an incorrect relationship in the rate at which turnover grew relative to turnover income with an obvious value impact; and

Modelling Lifecycle Costing

The lifecycle of the asset can be effectively modelled in *Cougar*[®] with the inclusion of detailed capital expenditure forecasts for progressive leasing of new space, refurbishment and redevelopment and changing growth, capitalisation and discount rates to reflect the improvement or deterioration of the property itself. This is particularly effective for the consistent modelling of the relativity of the capital expenditure allowance in year 9 or 10 of the cash flow to the terminal yield adopted, overcoming conventions of convenience such as pre-determined differences between the capitalisation rate in the capitalisation valuation and the terminal capitalisation rate adopted in the DCF.

Further, the horizon for capital expenditure inclusion in the capitalisation can be specified in terms of the number of months from the date of valuation, providing enhanced objectivity and consistency.

The increasing use of generic software packages for valuation creates a range of issues for not only the evolution of the valuation paradigm, but also the role of the valuer which will be considered, respectively, below.

Issues Arising For The Valuation Paradigm

The emergence of generic software packages is a potential catalyst for the development of the property valuation paradigm, akin to the impact of the publication of valuation tables and availability of the financial calculator on the capitalisation method and the introduction of spreadsheet software and desk top computers on the discounted cash flow.

The art of valuation, with its implicit elements, rounding and conventions of convenience, evolved in an era of mental arithmetic and slide rules. The advent of the calculator and the computer did not overcome some aspects of the art and saw further rules of thumb develop to deal with issues that would otherwise be either too difficult or too time consuming to address explicitly.

With generic software packages, the sheer range of variables that can be entered and the sophistication of the programmed mathematics provide previously unavailable powers which mean that many of the conventions of convenience and rules of thumb are either no longer needed or require consideration as candidates for possible change to valuation practice.

The ability to devalue sales evidence using generic software packages and undertake a wide range of sensitivity analyses has potentially significant implications for the quarter percent convention, the annual cash flow convention and the role of rounding.

Whilst the use of quarter percent increments for capitalisation rates and discount rates has been a common convention for many years, it's future must now be under challenge. Generic software packages are unlikely to devalue comparable sales in quarter percent increments (unless purchasers have acquired in such increments), so the relevance of using quarter percent increments in the subsequent valuation process should be considered.

Similarly, generic software packages allow the use of monthly, quarterly, half yearly or annual cash flows such that the convention of using annual cash flows should be revisited. Rent is often billed monthly and many rent reviews and lease expiries cause income cash flows to change on a monthly basis, such that the relevance of valuing in annual cashflows should be considered.

Rounding is endemic in the valuation process. Rental and outgoings rates per square metre are rounded, annual cash flows may be rounded, the valuations by capitalisation and discounted cash flow might each be rounded and then the final valuation figure might be rounded. With explicit devaluation and valuation using generic software packages, there is no need for rounding as the software can compute unrounded numbers and with correct inputs should give the same result by capitalisation as by discounted cash flow. Whether or not the final valuation figure should then be rounded requires consideration - is it appropriate to then round the answer and if so, by how much?

The vast range of variables allowed in *Cougar*[®] modelling focuses attention on the role of the capitalisation rate, terminal capitalisation rate and discount rate and their careful selection. With risk and growth so explicitly addressed in the cashflows, there is a clear need to avoid double counting in the capitalisation rates and discount rate. Such evolution to the explicit has a potentially significant impact on the role of the capitalisation rate which was traditionally a highly implicit variable.

The focus on the cashflow in generic software packages, rather than on bricks and mortar, further aligns property with the other asset classes. Having cash flows for valuation that accord with those for property management and portfolio management contributes to a greater transparency for the property asset class. Historically, the inability of auditors and independent experts to match cash flows in valuation reports with property management or portfolio management cashflows was often a cause for concern and suspicion that was negative for the reputation of property as a competing asset class.

The trend towards the use of generic software packages raises a range of issues not only for the evolution of the valuation paradigm, but also for the role of the valuer.

Issues Arising For The Role Of The Valuer

The trend to the use of generic software packages creates an accurate and portable database which can be provided by the client to the valuer in a form which can then be used to undertake the valuation. Thus the valuer may not now be required to undertake extensive data entry but may, instead, rely on the clients data. In the past, when clients records may not have been accurate or comprehensive, the need for the valuer to collate and check data may have arisen but has now been potentially superseded.

The use of generic software packages may finally shift the focus of the valuer away from location, bitumen sealed dual carriageways and tenancy schedule data entry to the detailed, analytical consideration of the key variables being entered into the valuation model. As has been advocated by the property industry for over a decade, generic software packages now require the valuer to be more forward looking with a greater emphasis on forecasting.

The use of such packages introduces a new level of accuracy, consistency and transparency into the valuation process. The opportunity for mathematical error, omission of data, differing treatments of the same issue and so forth are much reduced. Provided the data is correctly input, the result will be correct and the same each time.

Within such a clinical framework, the role for the art of valuation and judgement moves from the management of the process to the selection of the input variables. The valuer is now being paid to provide expert judgmental input for variables such as growth rates, capitalisation rates, discount rate and so forth, to consider each explicitly and to rationalise same relative to each other, which is a much higher order use of the valuers skills and more effective use of the valuers time.

It does, however, raise issues for the role of the cadet valuer and the optimal training approaches for the valuation of large investment property. With Titles Office and similar data now on-line and tenancy schedule data entry obviated, the entry point for training for the valuation of major investment properties may require a higher level of prior experience. Thus, rather than being just one type of valuation undertaken progressively during cadetship, it may now be a form of valuation only commenced after the cadetship has been completed.

Generic software packages also allow the valuer to step back from the minutiae and look at the property in the widest context of the market, having regard to all aspects of potential future risk and return performance and their adequate reflection in the valuation process. As the property market variables become less important and the economic, financial and capital markets variables become more important, such generic valuation software encourages a discipline for the valuer to consider the relativities and interactions between variables from each market.

The scope for differences of opinion between valuers still remains regarding the key judgmental inputs where the expertise of the valuer is paramount, but any further argument about the mechanical aspects of DCF has effectively been resolved for the valuation profession by the property industry.

The use of generic software packages has contributed to a greater awareness amongst valuers of the conventions of convenience, rules of thumb and shortcuts being used with specific software packages and to the need to improve the quality and consistency of data inputs in order to improve the quality of the resulting valuation.

As the industry standardises to generic software packages, the opportunity for valuers to value add to such packages will increase. Revision of report formats and enhanced analysis using the functionality of generic software packages will allow valuers to provide their clients with greater insights into the risk/return profile of the subject property or portfolio. Given the

sustained calls for a greater emphasis on the financial and a reduced emphasis on the physical, such value adding should be well received by clients.

The further stratification of the valuation profession would appear inevitable as such generic software packages gain widespread acceptance. Not only will the gap between the residential and commercial valuation profession widen, but the gap between the smaller commercial property and larger commercial property valuation profession will also widen.

The trend to generic software packages may also have implications for the education, training and professional development of valuers. For example, teaching the use of generic software packages and the interpretation of the results in undergraduate courses may be expected to become common with training courses in the various available packages potentially becoming a popular form of CPD.

Possible Changes To Valuation Practice

Long standing conventions and rules of thumb, arising from the lack of functionality of calculators, early spreadsheet packages and current specific software systems are now challenged and it will be interesting to observe the response by valuers through changes in valuation practice.

A significant benefit of the generic software package is that there is no longer the need to undertake the capitalisation approach separately to the DCF, they can both be done in the same generic software package using the same base data.

Provided the data is correctly entered and such judgmental variables as the capitalisation rates, growth rates and discount rate appropriately determined, there is no reason why the capitalisation approach and the DCF should not give the same answer without the need for allowances or adjustments.

Accordingly, generic software packages could contribute to a clearer understanding and more appropriate use of DCF in the same way that valuation tables enhanced the use of the capitalisation method and the spreadsheet of the DCF method.

The widespread adoption of generic software packages may diminish the need for a DCF valuation Practice Standard and enhance the need for a Guidance Note (Parker and Robinson (2000)).

The implications of the trend to the use of generic software packages on the role of the valuer are also contended to be considerable. There is the potential for significant change in the nature of the relationship between the client and the valuer, with implications for professional indemnity, fee levels and so forth.

Further, the business process re-engineering experienced by institutional investors may now be transmitted to service providers such as valuation practices. For those practices undertaking a significant amount of institutional investment valuation work, the costs of generic software packages, the impact on IT requirements, the profile and skill base of the valuation team and so forth will all require review to ensure profitability is maintained.

The trend to the use of generic software packages is, ultimately, just another manifestation of change for the property industry and for the valuation profession. As with past changes, the valuation profession will adapt with many seizing the opportunity provided to further develop their skills and businesses to optimise the benefits.

Bibliography

Cougar[®] (2000) User's Guide

Parker, DR (2001) Observations On Trends In Institutional Property Valuation, *Australian Property Journal* (awaiting publication)

Parker, DR and Robinson, J (2000) A Brief History Of The Australian Discounted Cash Flow Practice Standard, *Journal Of Property Investment And Finance*, Vol 18, No 2, pps 196-211

© D.R.R. Parker, 2001

Other than for the purposes of and subject to the conditions of the Copyright Act 1968, no part of this work may in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise) be reproduced, stored in a retrieval system or transmitted without the prior written consent of the author.