**Valuation techniques to improve rigour and transparency in commercial valuations**

| Rational | Accurate | Good theory is good practice |
|---|---|---|

# RECESSION ....

- Over rented properties

- Vacant Properties

- Properties nearing expiry

- **So What Is The Problem?**

**EQUIVALENT YIELD** is the internal rate of return computed from an income stream which is not adjusted for inflation or deflation. It assumes:

- No growth

- But low initial yields imply growth

- So therefore the model is irrational

# WHERE'S THE PROOF?

Consider the following underlet factory:

Sold: $550,000

Term  Income: $16,000

Market Income: $32,000 (**Ratio 1:2**)

Years to Review: 3 yrs

Rent Review Pattern: 7 yrs

# ANALYSIS OF SALE

## Yields Matrix

| Model | Equivalent Yield | All Risks Yield(k) | Growth(g) |
|---|---|---|---|
| Equivalent Yield | 5.393995% | | |
| Modified DCF (e=10%) | | 5.4894% | 5.2206% |
| Modified DCF (e=15%) | | 5.5668% | 10.75234% |

**Where:**

k = All Risks Yield

e = Equated Yield

g = Growth

**EQUATED YIELD is the IRR computed from an income stream that has been adjusted for change. It assumes:**

- **Specific allowances for growth**

- **Rational**

# ALL RISKS YIELD (k)

**ALL RISKS YIELD** a yield which incorporates risks and potential for growth. It is a theoretical method of comparison rather than a return rate recognising the time value of money where passing net income and assessed market income differ and is analysed over the period of time up to where net market income is realised.

- Provides a common denominator for comparison
- Rational

# APPLY YIELDS TO VALUATIONS

**PROPERTY A:**

Term Income: $22,400

Market Income: $44,800 (**Ratio 1:2**)

**PROPERTY B:**

Term Income: $4,000

Market Income: $32,000 (**Ratio 1:8**)

# TERM TO REVERSION RATIO SAME AS FOR COMPARABLE – PROPERTY A

**Equivalent yield valuation**

| | | |
|---|---|---|
| Net Contract Income | $22,400 | |
| PV perpetuity @ 5.393995% | | $415,277 |
| Plus Shortfall | $22,400 | |
| PV perpetuity @ 5.393995%: $415,277 | | |
| deferred 3 years @ 5.39% | | $354,723 |

**Valuations equal**

| | |
|---|---|
| Valuation: | $770,000 |

**Modified DCF Approach**

**Discount Rate @ 10%**

| | | |
|---|---|---|
| Net Contract Income | $22,400 | |
| PV $22,400, 3 years @ 10% | | $55,705 |
| | | |
| Reversion income: | $44,800 | |
| FV of $44,800, 3 years @ 5.22%: $52,189 | | |
| Capitalised in perpetuity @ 5.49%: $950,726 | | |
| deferred 3 years @ 10% | | $714,295 |
| | | |
| Valuation: | | $770,000 |

**Discount Rate @ 15%**

| | | |
|---|---|---|
| Net Contract Income | $22,400 | |
| PV $22,400, 3 years @ 15% | | $51,144 |
| | | |
| Reversion income: | $44,800 | |
| FV of $44,800, 3 years @ 10.75%: $60,861 | | |
| Capitalised in perpetuity @ 5.57%: $1,093,290 | | |
| deferred 3 years @ 15% | | $718,856 |
| | | |
| Valuation: | | $770,000 |

# TERM TO REVERSION RATIO DIFFERENT FORM COMPARABLE – PROPERTY B

**Equivalent yield valuation**

| | | |
|---|---|---|
| Net Contract Income | $4,000 | |
| PV perpetuity @ 5.393995% | | $74,157 |
| Plus Shortfall | $28,000 | |
| PV perpetuity @ 5.393995%: $519,096 | | |
|    deferred 3 years @ 5.39% | | $443,404 |

**Valuations differ**

| | |
|---|---|
| Valuation: | $517,561 |

**Modified DCF Approach**

**Discount Rate @ 10%**

| | | |
|---|---|---|
| Net Contract Income | $4,000 | |
| PV $4,000, 3 years @ 10% | | $9,947 |
| | | |
| Reversion income: | $32,000 | |
| FV of $32,000, 3 years @ 5.22%: | $37,278 | |
| Capitalised in perpetuity @ 5.49%: | $679,090 | |
|    deferred 3 years @ 10% | | $510,210 |
| | | |
| Valuation: | | $520,158 |

**Discount Rate @ 15%**

| | | |
|---|---|---|
| Net Contract Income | $4,000 | |
| PV $4,000, 3 years @ 15% | | $9,133 |
| | | |
| Reversion income: | $32,000 | |
| FV of $32,000, 3 years @ 10.75% | $43,472 | |
| Capitalised in perpetuity @ 5.57%: | $780,921 | |
|    deferred 3 years @ 15% | | $513,468 |
| | | |
| Valuation: | | $522,601 |

# FURTHER INVESTIGATION OF THE EQUIVALENT YIELD

## OBSERVATION

Property B and the comparable from which the equivalent yield was extracted have an identical performance at expiration of the term period; i.e. both have market rents of $32,000.

## IRR TEST

•Assume the comparable, Property A and Property B are sold at the end of the term – Year 3.

•Take three rental change scenarios: 0%, 5% & 10% growth p.a.

•For each, compute the IRR.

# ILLUSTRATION OF TEST FOR COMPARABLE ASSUMING 5% p.a. GROWTH

## CALCULATION

| | | |
|---|---|---|
| Beginning of period: | | -550,000 |
| End of Year 1: | | 16,000 |
| End of Year 2: rent escalated 5% | | 16,800 |
| End of Year 3: | | |
| rent escalated 5% | 17,640 | |
| reversion rent escalated 5% and capitalised at 5.393995% | 686,764 | 704,404 |

For this cash flow, the IRR is 10.522%.

# INTERNAL RATE OF RETURN

**IRR Analysis**

| Growth | Comparable | Property A | Property B |
|--------|------------|------------|------------|
| 0% | 5.394% | 5.394% | 5.394% |
| 5% | 10.522% | 10.522% | 10.627% |
| 10% | 15.649% | 15.649% | 15.859% |

• The comparison property and Property A return the same result if equally exposed to growth.
• All three are identical in performance at zero growth in rents.

• Assuming the equivalent yield adopted is appropriate, the performance of Property B outpaces the others – given the IRR for Property B is higher - **even though its passing income is less**!

# WHAT'S GOING ON?

## WHY?

• Lies in the valuation of the term income. Their respective present values, at the equivalent yield of 5.393995% are:

Comparable: $43,252

Property B: $10,813

• Which leads to a lower value for B, and hence a higher IRR as rents escalated.

• The effect of escalation relative to the assessed value is more favourable to B.

• The difference in passing rent is $12,000 p.a.

• It appears that the equivalent yield model undervalues Property B.

# THE PROBLEM WITH THE EQUIVALENT YIELD

## THE PROBLEM

**The problem is that the equivalent yield deduced from the comparable was obtained from a property which was not "comparable enough". To overcome the anomaly it is necessary to revise the equivalent yield downwards. These manipulations are difficult and become increasingly difficult as comparables get less perfect.**

## FURTHER DIFFICULTIES

Take two properties let at their market rent of $20,000 pa. One has a rent review due in four years time; the other has a term fixed at 15 years. A physically similar property was sold for $250,000 which is an equivalent yield of 8.00%.

**4 year term case**

| | | |
|---|---|---|
| Net Market Income | $20,000 | |
| PV $20,000 in perpetuity @ 8% | $250 | |
| deferred 4 years @ 8% | $183,757 | |
| plus | | |
| PV $20,000, 4 years @ 8% | | $66,243 |
| | | |
| Valuation | | $250,000 |

**15 year term case**

| | | |
|---|---|---|
| Net Market Income | $20,000 | |
| PV $20,000 in perpetuity @ 8% | $250 | |
| deferred 15 years @ 8% | $78,810 | |
| plus | | |
| PV $20,000, 15 years @ 8% | | $171,190 |
| | | |
| Valuation | | $250,000 |

**Valuations are identical**

# FURTHER DIFFICULTIES CONTINUED…

## THE RESULT

- The valuations are identical despite the fact that, in a growth situation, the first property is much preferred.

- The equivalent yield used with the longer-term period should be adjusted – to what extent?

# RETURN TO PROPERTY B

## RESULTS

•**The results obtained for Property B were:**

| Model | Result | Implied Growth |
|---|---|---|
| Equivalent yield | $517,561 | 0% |
| Modified DCF with e = 10% | $520,157 | 5.22% |
| Modified DCF with e = 15% | $522,601 | 10.75% |

•The modified DCF results in a higher value – which seems to be appropriate in this case.
•How appropriate is this?
•Computing the IRR's under various growth assumptions is useful

| Growth Scenario | Comparable Property | Equivalent Yield | e=10% | e=15% |
|---|---|---|---|---|
| 5% | 10.5220% | 10.6270% | 9.8059% | 9.1300% |
| 10% | 15.6490% | 15.8590% | 14.9990% | 14.2910% |

•The closest IRR for the comparable and for Property B is 10.522% compared with 9.8059%.

•This indicates, that, if growth is 5% , the corresponding equated yield is about 10%.

•Hence, the valuation of B under the 10% equated yield assumption is closer to the comparable than if the equivalent yield model is used or the modified DCF with a higher equated yield.

# THE SOLUTION: MODIFIED DCF APPROACH?

• The growth explicit model starts by analysing the all risks yield for implied rental growth.

• One formula for implied rental growth is:

$$(1+g)^t = \frac{\text{PV\$1 pa in perp @ k} - \text{PV\$1 pa t yrs @ e}}{\text{PV\$1 pa in perp @ k} \times \text{PV t yrs @ e}}$$

Where:

g = Implied annual rental growth rate

t = Rent review pattern of the all risks yield

e = Internal rate of return

k = All risks yield

# Modified DCF Approach vs Equivalent Yield Approach

## VALUATION IN A FALLEN MARKET

- **Over-rented properties:**

- A CBD office block leased with 17 years unexpired.

- The reviews are (ratcheted upwards only) every five years and the next one is in 2 years time.

- The current contract rent is $1,500,000 p.a. and the estimated net market rental is only $1,000,000 p.a.

- Assuming an Equivalent Yield 6% the valuation via the Equivalent Yield Approach is:

| Equivalent Yield Approach | | |
|---|---|---|
| Net Market Income | $1,000,000 | |
| PV $1,000,000 in perpetuity @ 6% | | $16,666,667 |
| deferred 17 years @ 6% | | $6,189,407 |
| plus | | |
| Overage | $500,000 | |
| deferred 17 years @ 6% | | $5,238,630 |
| | | |
| Valuation: | | $21,905,297 |

# Modified DCF Approach vs Equivalent Yield Approach Continued…

## FLAWS IN EQUIVALENT YIELD APPROACH

• Values some of the income flow twice (shaded blue).

• Low initial yields imply growth, and while the contract rent is higher than market rent, the growth at each rent review eats into the overage.

• This growth has been capitalised within the valuation core. The overage actually diminishes during the lease term but the equivalent yield approach assumes that it stays the same.

• The other major problem is that the overage might be eliminated before the end of the lease and therefore the valuation for 17 years is too long.
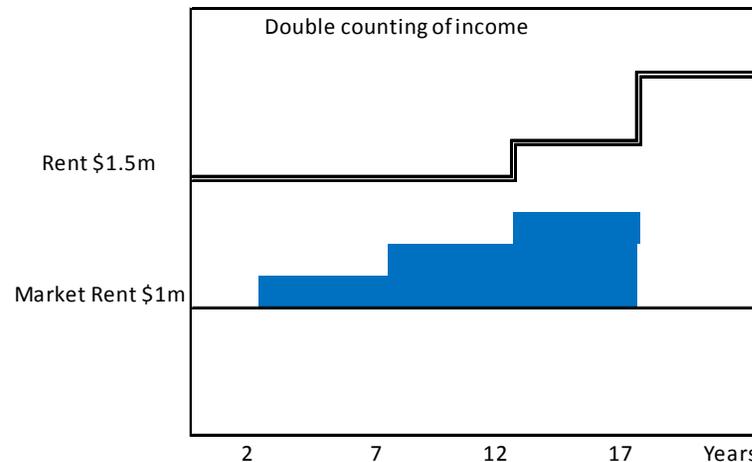
# MODIFED DCF TREATMENT OF OVER RENTING:

## GROWTH EXPLICIT SHORT CUT DCF

•Figure below illustrates the cash flow approach which treats the term as a fixed income cash flow and then reverts to a market rent.
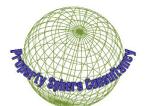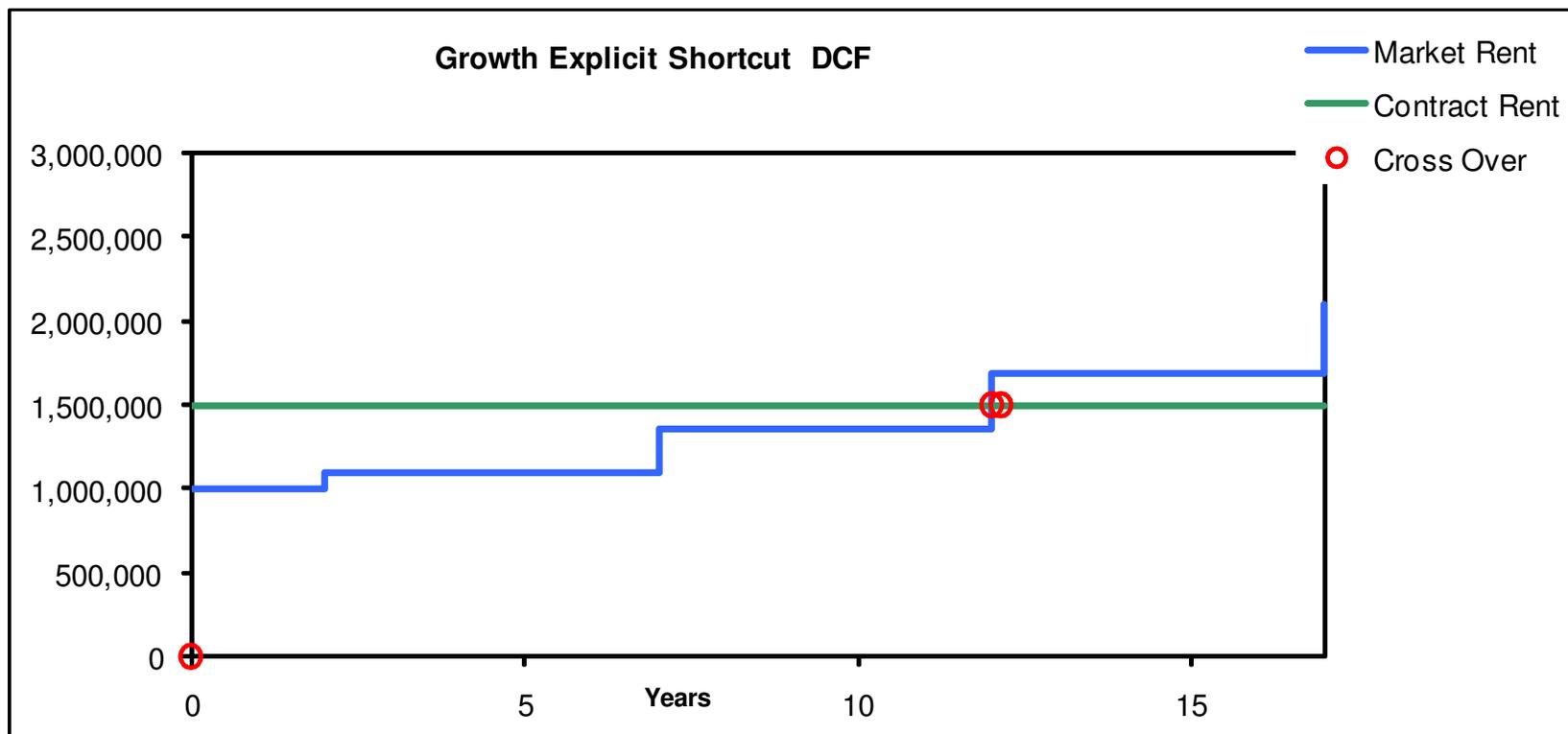
# MODIFED DCF CONTINUED…

## ASSUMPTIONS

• The valuation requires an assessment of the rental growth rate implied by the all risks yield.

• This in turn requires a target rate of return; an assumed Equated Yield of 10% is adopted.

• An All Risks Yield of 6% assessed from comparables is assumed.

Where:

g = Implied annual rental growth rate

t = Rent review pattern of the all risks yield

e = Internal rate of return

k = All risks yield

Implied Growth Rate formula:

$$(1+g)^t = \frac{PV\$1 \text{ pa in perp @ k - PV\$1 pa t yrs @ e}}{PV\$1 \text{ pa in perp @ k x PV t yrs @ e}}$$

$$5 \quad \frac{16.66667 - 3.79079 =}{16.66667 \times 0.62092 =} \quad \frac{12.87588}{10.34869} \quad = 1.244204$$

$$(1+g) = \qquad\qquad\qquad (1/5)$$

=======>     g = 1.244204          -1 = 4.466807% pa

# MODIFED DCF VALUATION CONTINUED…

## CROSSOVER POINT

- The growth rate can now be used to assess the date at which the market rent would overtake the contract rent of $1,500,000.

$1,000,000 \times (1.044668)^2$      =$1,091,331

$1,000,000 \times (1.044668)^7$      =$1,357,839

$1,000,000 \times (1.044668)^{12}$      =$1,689,429

- This suggests that the first rent increase will take place at the review in year 12.

**Modifed DCF Approach**

| | | |
|---|---|---|
| Net Contract Income | $1,500,000 | |
| PV $1,500,000, 12 years @ 10% | | $10,220,538 |
| | | |
| Reversion income: | $1,000,000 | |
| FV of $1,000,000, 12 years @ 4.47%: | $1,689,429 | |
| Capitalised in perpetuity @ 6%: | $28,157,142 | |
| deferred 12 years @ 10% | | $8,971,733 |
| | | |
| Valuation: | | $19,192,271 |

# COMPARISON OF TWO VALUATIONS

## EQUIVALENT YIELD APPROACH

• Valuation is higher than Modified DCF.

• Over values over-rented properties due to double counting and inability to assess crossover point.

## MODIFIED DCF APPROACH

• The investment could be termed a fixed income bond with an equity kicker.

• The valuation identifies two parts, the term is the fixed income bond investment with all the risk tied into tenant covenant.

• The reversion is tied to assessments of rental growth, which may be wrong, and possibilities that the property might be obsolete at the end of the lease.

# APPLICATION OF MODIFIED DCF WHERE SHORT UNEXPIRED TERM

## SCENARIO

• Suburban shop property leased with 2 years unexpired at a rent of $50,000 p.a.

• Market rent is $30,000 p.a.

• Vacancy rates are high.  Assume a 1 year re-leasing period is required; 9% All Risks Yield, 5 year rent review frequency and 11% Discount Rate.

| | | |
|---|---|---|
| Net Contract Income | $50,000 | |
| PV $50,000, 2 years @ 11% | | $85,626 |
| | | |
| Reversion income: | $30,000 | |
| FV of $30,000, 3 years @ 2.38%: | $32,189 | |
| Capitalised in perpetuity @ 9%: | $357,658 | |
| deferred 3 years @ 11% | | $261,516 |
| | | |
| Valuation: | | $347,142 |

• The main focus of attention in this over-rented valuation is not the security of the rent, but the possible outcome of the lease renewal to the existing tenant or the chances of obtaining a new tenant in 2 years time.

• Note the reversion is delayed 2 years to 3 years on the assumption the tenant vacates.

# VACANT INVESTMENT PROPERTIES

## SCENARIO

•An office building where incentives are required to secure a tenant.

•Assume a face rent of $50,000 p.a. with a one year rent free period.

•Would also take a year to find a tenant.  Net effective rent estimated at $36,000.

• 7% All Risks Yield, 3 year rent review frequency and 12% Discount Rate.

## STEPS

•Implied rental growth rate from k = 7% and e = 12% is 5.3344%.

•The cross over date to get an effective rental value of $36,000 p.a. is just after the second review.

•Therefore the contract rent will remain unchanged until the review in year 9: i.e.

$36,000 \times (1.053344)^3$         =$42,074

$36,000 \times (1.053344)^6$         =$49,172

$36,000 \times (1.053344)^9$         =$57,469

# VACANT INVESTMENT PROPERTIES CONTINUED…

| | | |
|---|---:|---:|
| TERM RENT | $ 50,000 | |
| PV $1 pa in 8 yrs @ 12% pa | 4.96764 | |
| PV $ 1yr @ 12% | 0.892857 | |
| **Value of Term** | | $ 221,770 |
| **REVERSION TO CURRENT MARKET RENT** | $ 36,000 | |
| Growth in 9 years @ 5.334384% | 1.596362 | |
| Inflated rental value | $ 57,469 | |
| Capitalised in perpetuity @ 7% | 14.28571 | |
| PV 9 years @ 12% | 0.36061 | |
| Value of Reversion | | $ 296,053 |
| VALUATION (before costs) | | $ 517,823 |
| Say | | $ 518,000 |

•The valuation of the property needs to be reduced for the time lag before a leasing is affected and for the costs of holding the empty property.

Landlord's outgoings while vacant

| | |
|---|---:|
| Uniform outgoings while vacant | 5,000 |
| Letting | 5,000 |
| Security | 2,000 |
| Total | 12,000 |

# VACANT INVESTMENT VALUATION

| Cashflow | | Year 1 |
|---|---|---|
| | | -12,000 |
| | | 517,823 |
| PV @ 1 year @ 12% | | 451,628 |
| Valuation | Say | 450000 |

- The vacancy has reduced the valuation by 13%.
- In some cases this can up to 20% in the current market

# CLOSING REMARKS

- One comes away from a review of these methods with a distinct feeling of unease.

- Yet valuations have to be carried out for manifold purposes and valuers must meet responsibly the demands upon their professional skills.

- One of the major features of the fallen property market in NZ has been a closer scrutiny of valuations and the methodology applied.

- The valuation profession is under increasing pressure to review and overhaul both basis and methods.

- Growth explicit models have a key role to play in this environment.

- It is ironic the genesis of growth explicit approaches were born in the 'bull' 1970's and 1980's property markets.

- Their adaptability in the current 'bear' market reflects the limitations of conventional approaches.