How to value real estate when the road curves

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Let us assume South Africa was a 4x2 bakkie. The two front wheels are already over the (fiscal) cliff; the two rear wheels are still on *terra firma*. The driver is still behind the steering wheel and is frantically engaging reverse gear – but it is a front-wheel-drive vehicle. This is where the SA economy is.

This has important implications for the valuation of fixed property. The practical problem is that all evidence of value is in the past. In fact, the act of valuation can be described as a blindfolded driver behind the steering wheel while a passenger looking through the rear window gives directions to the driver. This could sort of work when the road is straight. But now the road is curving …

It seems to me there are many blindfolded valuer drivers out there who do not recognise that the road is curving and that the voice in the rear seat shouting directions based on the road behind the vehicle hasn't got a clue either.

This brings me to the drivers of market value. For income-producing properties, the important variables are the expected income stream (peering into the future) and capitalization rates. When you do a combination of discounted cash flow and straight capitalisation, then both the capitalization and the discount rate are important. However, because our metaphorical road is curving, the past evidence for these variables is of limited use. This problem is compounded as valuers have virtually no known recent transactions, given the Covid-19 lockdown. So, the guy looking through rear window cannot even see the first 200 metres behind the vehicle; thus, in his directions to the driver he not only has to predict the future, he must also predict the past.

Hence, valuations are a guessing game at present. To help valuers, let us first revisit the first principles of valuing income-producing properties.

Equation (1) below is an example of discounted cash flow, which is based on the principle that time has a monetary value. It can be explained in the following way:

R100 is worth more today than a year from now. The difference is how much interest one can earn on R100 over the next year. For example, the present value (PV) of R100, payable a year from now, would be R89,29, calculated at an interest rate of 12%. Put differently, if one could invest R89,29 for one year at 12%, this investment would be worth R100 at the end of the term. Discounting is, therefore, nothing but the opposite of compounding interest.

Valuers all know the capitalization formula

$$P_0 = \frac{D_1}{k}$$

But does the reader know that this simple formula has royal ancestry? It was derived from the equation below, also known as Gordon's Growth Model.

$$P_0 = \frac{D_0(1+g)}{(1+r)} + \frac{D_0(1+g)^2}{(1+r)^2} + .. + \frac{D_0(1+g)^\infty}{(1+r)^\infty} \qquad (1)$$

Where:

P_0 =Price or value in period 0

D_0 =Cash flow or dividend in period 0

g =A *constant* growth rate of the cash flow in perpetuity

r =Total return (hurdle rate) required by investors, in other words, income yield plus capital return. It can be likened to the opportunity cost of equity capital: in an ungeared portfolio of properties, it is the rate of return on new investments you require not to dilute the portfolio's returns.

Provided r > g, Equation (1) can be simplified as follows:

$$P_0 = \frac{D_1}{r-g} \qquad (2)$$

or:

$$P_0 = \frac{D_1}{k} \qquad (3)$$

where:

$k = r - g$ (the capitalization rate)

It is Equation (3) that is known as the capitalization formula, and it is widely used by professional valuers. Where a property is not rented at market-related levels, certain further adjustments are necessary by adding the present value (PV) of the opportunity cash flow (OCF) or the PV of the top-slice amount.[1] The capitalization formula should, therefore, be used with caution.

It is clear from the above that direct capitalization is a form of discounting – a form that assumes that the cash flow will grow at a constant rate ***g*** *in perpetuity.* This assumption is not always correct. For instance, due to existing leases, further adjustments are often necessary after capitalization.[2] Otherwise, the rental income should be discounted and capitalization only done at the expiry of the lease of a single tenant. In the case of multi-tenanted buildings, this is complicated — what with different lease expiry dates — and this writer, therefore, normally prefers the straight capitalization option, provided adjustments are made for any over- or under-rentedness.[3]

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[1] Where a property is under-rented, the OCF or top-slice amount would be negative. (Under-rented means the escalated contractual rentals are lower than market rentals.) In SA the opposite is more common because of our high contractual escalation rates.

[2] See previous footnote.

[3] The two methods should yield the same market value, provided the assumptions going into the models are internally consistent.

After rearranging Equation (2), we get the calculation of the required total return (hurdle rate):

$$r = \frac{D_1}{P_0} + g \qquad (4)$$

The hurdle rate is the rate that should be used when discounting because it is the total return investors forgo when they are not invested in a specific property (their opportunity cost). The hurdle rate of a specific property is of course a function of such a property's risk and expected (*ex ante*) cash-flow growth in perpetuity. The latter is represented by **g**.

From **Equation 2** it is clear the crucial variables to establish are **r** and **g** – whether you do straight capitalization or a combination of straight capitalization and discounting. If you had a good handle on what **r** is *and* you knew what **g** was (good luck!), then you can calculate **k** (the capitalization rate). If you knew what **k** was (say, ex *Rode's Report*), *and* you can estimate **g** *ex ante*, then you can calculate **r** because **r** = **k** + **g**. This is the normal way of calculating the discount rate.

South Africa's future is currently very uncertain. This begs the question, how does uncertainty manifest itself in the above variables, i.e. **k** and **g**?

I posit that **g** only represents expected net income growth, nothing more. The uncertainty is encapsulated in **k**, the capitalization rate. Let me illustrate:

There are two types of risks associated with an investment:

- Firstly, the probability that the future cash flow will deviate from the expected, in other words, expected **g** might turn out to be wrong. The uncertainty regarding **g** is captured in **k**, the initial yield at which investors are prepared to trade. The higher the uncertainty about **g**, the higher the capitalization rate the buyer would demand to achieve his desired total return **r**. This is an endogenous risk.
- Secondly, the probability of capital depreciation through exogenous factors like the economy tanking or long-bond interest rates moving higher, resulting in lower bond values. Long bonds (or similar) also act as substitute investments for property; hence changes in these yields influence **k** (more about this later).

Government bonds of 10 years and longer are often seen and used as a metric for return on a risk-free investment. The reason is that – normally – the risk of default is low,[4] but that does not mean their risk of capital depreciation is low because the probability of long interest rates fluctuating[5] is greater than the government defaulting.

Of course, these two sources of risk are intertwined. We see it in the way credit rating agencies look at countries' risk profile. A high debt obligation may still be tolerated, provided the economy ("**g**") grows strongly, enabling the country to continue serving its interest obligations.

Thus, both endogenous and exogenous risk can result in capital loss. But how to quantify this risk?

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[4] Credit rating agencies reckon SA government bonds are becoming so risky they are now below investment grade. Thus, they are hardly risk free anymore.

[5] Rising long interest rates depress bond values and vice versa.

The risk premium in the capital market

In May 2020, long yields in SA were volatile but averaged 10%. Remember, this type of investment may be – or is supposed to be – free of default risk, but not free of capital depreciation risk via fluctuating long interest rates.

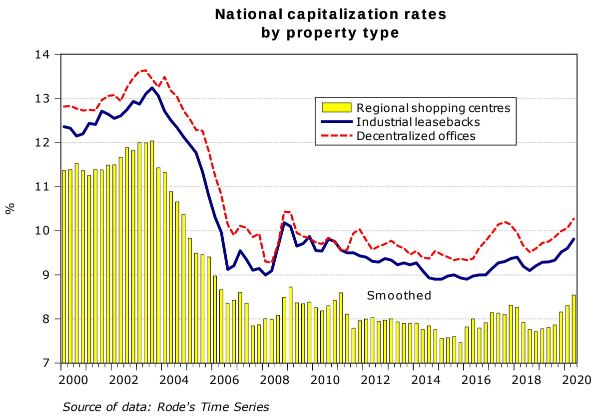
On the other hand, money-market instruments like treasury bills (TBs) of 91 days are practically risk free with respect to both the probability of default and capital loss (because of the short term of 91 days). On 25 June 2020 TBs stood at about 4%.

The spread (difference) between short and long investment was thus 6% points at the time of writing. This is the risk premium in the capital markets, which caters for the risk of higher inflation over the 10-year period and the possibility of default by the state. The reader might think the latter source of risk is negligible, but the history of the capital markets of Latin America over many decades shows this risk is very real in a democratic developing country because politicians in such regimes often have a short time horizon and tend to be socialist in their policies (think "bread and circuses").

The yields at which long bonds trade can be compared with the capitalization rates of income-producing properties. Thus, we can posit that risk is already built into property capitalisation rates and that at present the risk premium for a grade-A office building in Sandton CBD is a hefty 5,8% points (9,8% Sandton CBD capitalization rate[6] less 4% TB 91 days). By chance, this was also the average risk premium of 10-year bonds in May.

Thus, it is wrong to include a risk element in **g** (the expected constant growth rate of the cash flow) because this would amount to double counting for risk. I recently had the opportunity to read other valuers' reports with valuation dates February and March 2020 and it struck me that they seem to use a typical **g** of 6%.[7] [8] This was excessive even during the boom years but is now patently unrealistic. If you can buy a grade-A office property at an initial net yield of 10% today and be so lucky as to get a 2% per year growth in cash flow over, say, a period of five years, you would get a total return **r** of about 12%, which equates to a very satisfactory real total return of about 8%, given today's inflation rate of about 4%.

Common sense tells you that in today's market the values of properties surely must have depreciated compared to a year ago. Yet, when you do a discounting of the first few years' cash flow rather than a straight capitalization, the following anomaly raises its head compared to last year:



Yes, capitalization rates have been creeping up over the past year or two (see the graph), but because of a lower **g**, the discount rate on a net basis is probably reduced (depending on what the previous

[6] See **Table 2.2** in Chapter 2 for the surveyed capitalization rates as in quarter 2 of 2020.
[7] The source is given as Sapoa's survey as at the end of 2019 – or even many years earlier!
[8] Such a high **g** is not defendable as *Rode's SA Property Trends* publication forecast as at December 2019 that, for instance, under the more probable 'IMF' scenario gross grade-A office rentals would nationally grow at 2,1% p.a. over the following six years. But this rate would not apply to individual buildings' cash-flow as it ignores changes in vacancies, the effect of ageing on an individual building's market rental and operating costs that grow faster than inflation. Thus, a 2,1% growth of gross grade-A rents becomes something like 1% growth in cash flow.

year's **g** was), thereby pushing up the value, holding all other factors constant. Surely that cannot be. The 'all other factors' we hold constant are the income stream. And this is the answer to the riddle.

Temporarily, contractual escalation rates on existing leases (say, 8% per year) will tend to support a growth in cash flow that exceeds market-related rental growth of, say, 2%.

However, these leases with their escalated rentals will sooner or later revert to (much lower) market levels. Also, there will be growing vacancies through tenants going bankrupt or reducing their rented space and having to be replaced at market rentals. The space may even remain vacant for a long time. Whether the valuer does the DCF over five or ten years, it is exceedingly important to incorporate the effect of these market reversions in the cash flow. Also crucial, is to do the capitalization at the end of the DCF period on the forecast net *market* rentals of the following year[9] – in our example, using net market rentals that had grown at an assumed 2% per year since the valuation date.

The determinants of capitalization rates and g

In Chapter 3 of this issue of *Rode's Report* and all past issues, the reader will see that a cross-sectional[10] regression analysis shows that – nationally – gross market rental levels are a very significant determinant of capitalization rates. And rentals are in turn largely driven by economic growth, which in turn fuels **g**. The explanation is that when the market expects booming market rentals, investors are prepared to pay a higher price for year 1's expected income stream – meaning capitalization rates drop. And vice versa.

Our time series regression analyses[11] show that over time the drivers of capitalization rates are 10-year bond yields (as substitute investments) and economic growth. The former thus incorporates a risk premium and the latter determinant powers **g** of course. Today, both drivers of capitalization rates point to rising capitalization rates because:

- Long bond yields have – for a good reason – been rising since last year, thereby via the substitution mechanism confirming that capitalization rates include the risk premium discussed above.
- The economy is waning (depressing expectations over the growth of **g**, resulting in buyers demanding a higher capitalization rate to still achieve their desired total return).

Note, however, that capitalization rates are sticky – meaning they do not change as fast as, say, 10-year bonds' yield to maturity.

In conclusion, the most important take-away of this piece is that valuers should carefully weigh the impact of the unfolding economic malaise on the important drivers of value – **k, g** and the cash-flow growth during the DCF period **–** and make sure the assumptions are internally consistent**.** Above all, the magnitudes of the variables must be internally consistent and defendable. When an economy lapses into a serious and protracted downswing, past growth rates of cash flow are nigh irrelevant and **g** of an individual property cannot be assumed to exceed inflation. ◊

9 In the case of a 5-year DCF, year 6's expected net normalised market rent and in the case of a 10-year DCF, year 11.

10 A cross-sectional analysis is as at a certain date in contrast to a time series analysis that analyses data trends over long periods.

11 The results (forecasts) of which are published every six months in *Rode's SA Property Trends*.