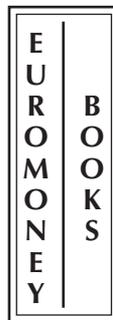


# **Assessing Real Estate Risk – Applied Models, Concepts, Methods**

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## **About the author**

Nicole Lux is the senior risk manager at Deutsche Postbank London Branch and has previously held positions in CMBS origination and structuring at Citigroup and in CRE credit/rating analysis at Moody's Investor Service. Altogether she has more than 10 years experience in real estate equity and debt analysis and investing. With a strong interest in research and teaching she has been giving guest lectures at Said Business School, University of Oxford and CASS Business School, City University.

She has a PhD in Agricultural Economics from the University of Reading, and completed the London Business School Investment Management programme. She is an active member of the CFA UK Society and a member of the Association of Property Lenders (APL) and the Society of Property Researchers (SPR).



We define risk...as 'the possibility of loss or injury'. Academics, however, like to define investment 'risk' differently, averring that it is the relative volatility of a stock or portfolio of stocks...compared to that of a large universe of stocks. Employing data bases and statistical skills, these academics compute with precision the 'beta' of a stock...and then build arcane investment and capital allocation theories around this calculation. In their hunger for a single statistic to measure risk, however, they forget a fundamental principle: it is better to be approximately right than precisely wrong. ...the academics' definition of risk is far off the mark, so much so that it produces absurdities.

*Warren Buffett, Berkshire Hathaway Chairman's Letter, 1993*

The global property industry is not known for its focus on quantitative modelling of risk and return. The crash of 2007–2009 pointed out the folly of this oversight, and the policy response expressed through, for example, Solvency II and Basel III has meant that more numerically explicit methods of risk modelling are essential for both debt and equity. This book is an admirable first attempt to summarise suitable quantitative and qualitative approaches.

*Professor Andrew Baum, Reading University, 2012*

## Key financial ratios for corporate analysis

Liquidity is an important issue for companies in general, but real estate in particular is an industry with low liquidity ratios compared with other sectors. Liquidity ratios are used to judge a company's ability to meet short-term obligations and to remain solvent. Liquidity needs are classified as short-term and longer-term to meet intermediate-term fixed obligations. For a property company we use the following sources of liquidity:

- borrowing capacity on committed credit lines usually provided by banks;
- cash balances;
- operating cash flow;
- capital market offerings; and
- unencumbered assets.

Because the free cash flow in a property company is typically lower than in other industries, credit lines from banks are an important source of liquidity. These credit lines are, however, often subject to tight covenant compliance and can be withdrawn if the company's condition deteriorates and it is in breach of these covenants.

The company uses liquidity for interest and principal payments of outstanding bonds, mortgage debt, capital expenditure, development projects and dividend payments to shareholders. The timing of debt repayments can be particularly important because the accumulation of maturities can result in liquidity shortages. The more debt maturities are evenly spread over time, the more financial flexibility the company will have and the less affected it is by other unexpected market changes. We can calculate the liquidity ratio or current ratio for a property company using Formula 19.1.

$$\text{Current ratio} = \frac{\sum (\text{cash} + \text{committed bank lines})}{\sum \left( \begin{array}{l} \text{debt maturities next 12 months} + \\ 50\% * \text{debt maturities next 13-24 months} + \\ 33\% * \text{debt maturities next 25-36 months} \end{array} \right)} \quad (19.1)$$

Note: the denominator is a special modified formula for calculating short-medium debt used by Moody's Investor Services.

When considering the impact of dividend payout ratio (Formula 19.2) on liquidity, we have to distinguish between real estate investment trusts (REITs) and real estate operating companies (REOCs), as REITs legally have to pay out 90% of their taxable income while REOCs do not have to comply with this condition.

$$\text{Dividend ratio} = \frac{D_{yr}}{FFO} \quad (19.2)$$

where FFO is funds from operations and D is the annual dividend paid.

In order to compare any of the following ratios, it is important to select the right benchmark. Some ratios such as cash flow and earnings vary by property type; others, for example leverage and capital structure, may vary depending on country regulation. Therefore, it is important to collect the information for a number of companies to develop a database of market comparisons. Another way, which requires less effort, is to look into real estate securities analyst or rating agency opinions for guidelines on ratios.

---

### Exhibit 19.1

#### Moody's liquidity ratio guidelines

	<i>Debt maturities (weighted debt maturities &lt; % of total debt)</i>	<i>FFO payout (average dividend payout %)</i>	<i>Amount of unencumbered assets</i>
AA	<10% of total debt	< 50%	> 97%
A	<15% of total debt	< 60%	> 80%
Baa	<20% of total debt	< 90%	> 60%
Ba	<25% of total debt	>90%	> 40%
B	<40% of total debt	>100%	> 20%
Caa	<60% of total debt	>110%	> 0%
Ca	>60% of total debt	>120%	No assets unencumbered

Source: Moody's Investor Service

---

## 19.1 Ratios of leverage and capital structure

Leverage risk or asset impairment risk focuses on three aspects. First the potential for impairment in the value of balance sheet assets, secondly a reduction in intangible value, and finally the physical impairment of the assets. Given that REITS and REOCs hold a significant proportion of their net tangible assets in real estate, the impairment of the asset is highly relevant.

Leverage can have adverse affects on a company's performance and can increase its vulnerability to operating and market challenges. Therefore, the analysis of leverage combined with cash-retention capacity and earnings volatility is an important one.

Leverage ratios do not change overnight, so companies typically try to stay within a certain band, which, apart from regulatory constraints, can be fairly wide but is more often driven by banking covenants. In cases where the company accesses the capital market for funding, rating agency guidelines can also be an important constraint for the company as it tries to stay within a certain rating category, thus keeping credit spreads on new funding costs as low as possible. In the US there are no statutory or regulatory leverage limits for US REITs, while in the UK property profits must be 1.25 times the property financing costs.

For a meaningful debt ratio, we have to make an estimate of the total asset value, which for real estate, which is not marked-to-market on a daily basis, can be challenging. We can distinguish between three approaches.

### 1 Book value approach (used during periods of rising property valuation)

$$\text{Leverage ratio} = \frac{\sum (\text{debt} + \text{preferred equity})}{\text{GBVA}} \quad (19.3)$$

where GBVA is the gross book value of assets, which can be calculated as total assets plus accumulated depreciation.

However, when real estate prices in the market are falling, the book value might understate the leverage, because assets would have been recorded at cost when prices were high.

### 2 Cash-flow based approach

$$\text{Leverage ratio} = \frac{\text{Total net debt}}{\text{EBITDA}_{yr}} \quad (19.4)$$

where net debt excludes any perpetual preferred stock.

### 3 Market value based approach

$$\text{Leverage ratio} = \frac{\sum (\text{debt} + \text{preferred equity})}{E[\text{MV}]} \quad (19.5)$$

where E[MV] is the estimated portfolio value.

In the market value approach we can estimate the market value by using a stressed value, derived by applying various cap rates and net operating income (NOI) stresses, or simply by using the latest external property valuation.

For the bondholders the following two ratios – secured debt ratio and unencumbered asset ratio (Formulae 19.6 and 19.7) – are also of importance. They show how much asset value is tied up in secured debt, which is not available to bondholders compared with assets with no debt impairment. For an unsecured bondholder, the existence of a pool of unencumbered assets adds to a commercial real estate company's flexibility, because bondholders rank subordinate to bank mortgage debt, including non-recourse mortgage finance. Hence, the higher the unencumbered asset ratio, the higher the credit protection of the bondholders.

$$\text{Debt}_{(\text{secured})} \text{ ratio} = \frac{\sum (\text{secured debt})}{\text{GBVA}} \quad (19.6)$$

$$\text{Asset}_{(\text{unencumbered})} \text{ ratio} = \frac{\sum (\text{unencumbered assets})}{\text{debt}_{(\text{unsecured})}} \quad (19.7)$$

The larger the ratio of unencumbered assets to total unsecured debt, the more flexibility the company has in repaying its unsecured debt at maturity.

What about recourse versus non-recourse debt, considering that **non-recourse financing** is very common for real estate? Rating agencies view non-recourse finance as favourable since the company can walk away from a single encumbered asset that has significantly deteriorated in value. In this way, non-recourse financing will not jeopardise the stock of unencumbered assets, therefore, giving higher protection to the bondholder. Overall mortgage debt is much more restrictive than unsecured debt. First, mortgage debt is related to a specific asset and its cash flows and in addition often subject to meeting debt covenants, such as interest coverage ratio (ICR), debt-service coverage ratio (DSCR) and loan to value (LTV) ratios. Secondly, it is difficult to obtain second mortgage charges over the property and increase the level of debt. In general mortgaged assets are much less flexible, thus impairing the company's asset liquidity and constraining the company's ability to reposition or refinance its portfolio. Non-recourse finance is a good way for a company to mitigate some negative effects of mortgage debt on the company's performance and flexibility.

The leverage ratio or impairment risk is also subject to changes in market prices and hence, subject to market risk. Depending on the internal treatment of the market changes, the recognition through write-downs may impede the execution of strategy by adversely affecting credit ratings and analyst outlook for public companies. Higher leverage or gearing has further impact than just lower interest rate covers and higher financial risk, as investors immediately price this risk in the discount to the overall **net asset value** (NAV) of the company.

In the case of joint ventures (JVs), total debt is calculated by adding any joint venture debt on a pro rata basis. This is important because in some countries it has become popular for property companies to enter also into fund and asset management businesses on a JV basis to diversify company income.

---

#### Exhibit 19.2

#### Moody's leverage ratio guidelines

	<i>Effective leverage (debt + preferred equity)/ gross assets</i>	<i>Net debt/EBITDA</i>	<i>Secured leverage (secured debt/gross assets)</i>
AA	<15%	<3.5x	3%
A	<30%	<4.0x	10%
Baa	<50%	<6.0x	20%
Ba	<60%	<8.0x	30%
B	<80%	<10.0x	60%
Caa	<90%	<13.0x	80%
Ca	>90%	>13.0x	>80%

Source: Moody's Investor Service

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## 19.2 Cash flow and earnings ratios

The real estate industry is highly capital-intensive and, depending on the type of business model (development, sales, investment) or property type, cash flow can be very volatile. A measure of the ability of a company to service its debt is the relationship of annual cash flow to the amount of debt outstanding. As for any corporate body, the cash flow is defined as the cash generated from the operation of the company.

The price-earnings (P/E) ratio can be calculated using the market value per share (MV) divided by earnings per share as in Formula 19.8.

$$P/E \text{ ratio} = \frac{MV_{share}}{Earnings_{share}} \quad (19.8)$$

The critical input here is the earnings figure, which can easily be manipulated. For REITs the generally accepted accounting principles (GAAP) net income measure is not very useful because depreciation hides the true cash flow. Instead REITs define their cash flow as funds from operations (FFO). Their FFO are calculated by adding depreciation and amortisation expenses to earnings. We adjust income as shown in Formula 19.9.

$$FFO = NI_{GAAP} + \text{real property depreciation} + \text{amortisation} - \text{Net profit} + \text{pref. dividends} \quad (19.9)$$

The FFO-per-share ratio should be used in lieu of earnings per share (EPS) when evaluating REITs and other similar investment trusts. To be even more accurate in determining the true earnings figures, we need to make a further adjustment to FFO with regard to recurring capital expenditure used to maintain the quality of the REIT's underlying assets. The calculation takes in the adjustment to GAAP straight-lining of rent, leasing costs and other material factors.

$$AFFO = FFO - \text{adjustment for straight line rents} - \text{Capex} \quad (19.10)$$

where capex is the normalised recurring capital improvement expenditure.

A simple net income (NI) ratio can be used when evaluating the impact of secured debt on the cash flow from encumbered assets.

$$NI \text{ ratio} = \frac{NI(\%)_{encumbered \ assets}}{AV_{encumbered \ assets}} \quad (19.11)$$

An indicator of a company's financial performance is **EBITDA**, the earnings before interest, taxes, depreciation and amortisation.

$$EBITDA = \text{Revenues} - \text{Expenses} \quad (19.12)$$

where EBITDA is excluding tax, interest, depreciation or amortisation.

This can also be expressed as a percentage profitability margin (Formula 19.13).

$$EBITDA_{margin} = \frac{EBITDA}{Revenues} \quad (19.13)$$

An EBITDA margin volatility can be calculated using the quotient of standard deviation and the average EBITDA margin of a time series.

$$EBITDA_{margin\ vol} = \frac{\sigma_{EBITDA\ margin}}{\mu_{EBITDA\ margin}} \quad (19.14)$$

In order to calculate a meaningful EBITDA margin volatility a trading history of at least 10 years should be used.

Another very common ratio is the interest coverage ratio (Formula 19.15), which is simply the earnings before interest and tax in relation to interest charges over the same period. The total fixed interest should be covered.

$$Interest\ cover\ ratio_{fixed} = \frac{EBITDA}{Interest} \quad (19.15)$$

In more detail, the interest expense includes capitalised interest, preferred dividends, trust preferred distributions and preferred unit distributions, and normal ongoing interest expenses. Sometimes distinctions can be made between calculating the ratio for all senior interest first and allocating the remaining cash to the junior interest. The interest or cash-flow coverage ratio is highly correlated with bond ratings and the market's assessment of risk in corporate bond markets. To achieve an investment grade rating of AAA–BBB, lenders usually expect a coverage ratio of 2.0–4.0x.

One of the shortcomings of an interest coverage ratio is that a company's ability to service debt is related to both interest and principal repayments. Therefore, the ratio is often adjusted to include principal repayments in the denominator, changing Formulae 19.16 to 19.17. However, we have to note that principal payments are made after tax while interest payments are before tax.

$$Interest\ cover\ ratio_{fixed} = \frac{EBITDA}{\sum I + P \left( \frac{1}{(1-t)} \right)} \quad (19.16)$$

where I is the total interest expense, P the principal repayment and t the tax rate.

Another profitability ratio sometimes of interest to bondholders is the total debt plus equity in relation to EBITDA.

$$Profitability = \frac{Total\ debt + equity}{EBITDA} \quad (19.17)$$

Because REITs distribute most of their earnings, the company's ability to repay its debt is a direct function of its ability to raise cash. REITs with a proven track record in securing funding from the four quadrants of the capital market (public and private, debt and equity) are considered financially stronger and more resistant in a market crisis.

## Exhibit 19.3

**Moody's cash flow and earnings ratio guidelines**

	<i>EBITDA margin (EBITDA/revenues)</i>	<i>EBITDA margin volume</i>	<i>Fixed charge coverage (EBITDA/interest)</i>	<i>Joint venture exposure</i>
AA	>75%	<1%	> 4.0x	<5%
A	>65%	<2%	> 3.0x	<10%
Baa	>55%	<6%	> 2.2x	<15%
Ba	>50%	<10%	> 1.7x	<20%
B	>35%	<15%	> 1.4x	<35%
Caa	>20%	<25%	>1.0x	<50%
Ca	<20%	>25%	<1.0x	>50%

Source: Moody's Investor Service

**19.3 Profitability ratios and market value approaches**

The equity investor is mainly concerned with the profitability of the company, for which the two most important measures are the return on equity (ROE) and the dividend payout ratio (Formulae 19.18 and 19.19).

$$ROE = \frac{\text{Net profit} - \text{pref. div}}{\text{Shareholder's equity}} \quad (19.18)$$

where the net profit used is after tax deduction.

$$\text{Dividend payout ratio} = \frac{E[D]}{\text{Market cap}} \quad (19.19)$$

where the dividend payout ratio is simply the quotient from the expected annual dividend and market capitalisation.

There are a number of ways to calculate the market capitalisation of a company. A unified approach has been suggested by EPRA for calculating triple net asset value (NNNAV), which can be calculated as shown in Formula 19.20.

$$NNNAV = \frac{MV}{V_{\text{outside assets}} - \text{deferred tax}} \quad (19.20)$$

where the fair market value is the fair value of the real estate, debt and other assets and V the current value of outside assets.

The fair value of debt is determined as the difference between interest-bearing loans and borrowings included in the balance sheet at amortised cost, and the fair value of interest-bearing loans and borrowings.

## 19.4 Other fundamental risk drivers

After assessing these different ratios and comparing companies we get a good insight into the company's approach to equity and debt and with that its financial strength and stability to withstand any market shocks. However, our analysis does not end there; so far we have not looked at the actual portfolio. In general when analysing the quality and performance of the portfolio the same rules apply as when analysing the portfolio of a fund. Possible questions could be whether there are any specific asset concentrations or tenant industry concentrations, or what the ratio is between developments and investments.

Further, there are business risks or operational risks. Operational risks result from a breakdown in a core operating, manufacturing or processing capability. Often these risks get overlooked but a simple operational risk, such as human error in the manual data inputs of vital financial data, can have unforeseen and serious effects. Business risks can be multiple, such as the risk of unexpected costs for the corporate entity due to adverse changes in factors such as:

- tax, country regulations;
- unexpected operating costs (for example, an increase in energy prices);
- environmental factors (environmental certification); or
- loss of key personnel.

A further factor to consider is competitive risk, relating to changes in or actions by competitors, regulators, customers or suppliers. Organisations are at risk if any of these changes reduce their ability to create value and differentiate their products or services from those of their competitors. The competitive market position will often be the success or non-success factor of a property company when bidding for strategically important properties, or trophy assets.

## 19.5 The viewpoint of an equity analyst

In this section we look at the analysis and risk/return assessment of a company made by equity analysts on both the sell side (brokers) and buy side (fund managers). Leaving aside the methodology, which is discussed below, there are essentially two areas in which equity analysts differ from their debt counterparts. First, they focus as much on reward as risk (reflecting the fundamental difference between debt and equity – equity has upside to the initial investment), and secondly, the impact of different scenarios can be assimilated into their pricing almost immediately. There is, therefore, both a conceptual and a timing difference between the equity analysis and the debt analysis. Equity analyst recommendations are not binding to the extent that they cannot be reversed. In fact, it is to be expected that as events unravel and circumstances change, those recommendations and forecasts will change in short order to reflect the changed circumstances. In essence there are three components to their analytic process:

- 1 a company specific model, allowing the analyst to forecast specific variables for at least two years in advance;

- 2 a methodology for establishing a target price and thus a recommendation for the security, which in the case of the sell side will be a buy, sell, hold recommendation and in the case of a fund manager will be an increase/decrease weighting recommendation; and
- 3 the development of a model or screening process, which can highlight investment preferences at any point in time. This is the most flexible tool and is used to capture the most relevant factors that will impact both the specific company and the group of companies followed by the analyst(s), the immediate sector peer group and a larger pan-sector grouping.

**Company model:** analysts build a separate financial model for each company they follow. The purpose of this is to enable them to forecast specific line items, culminating in their forecasts for adjusted earnings per share, dividend per share, NAV per share and gearing. Forecasts are normally at least for two years, and often for five years in duration. Exhibit 19.4 shows an example of the outputs of this type of financial model (the complete output can be found in the CD-ROM).

Exhibit 19.4

REIT financial model summary output

<b>British Land Company PLC</b>					
<b>Table for report</b>					
<b>British Land Company PLC</b>					
<b>INCOME STATEMENT (RM)</b>					
Years ended	Mar-11A	Mar-12	Mar-13	Mar-14	Mar-15
<b>Gross Rental Income</b>	262	280	290	350	380
Property expenses	(7)	(7)	(8)	(9)	(10)
<b>Net rental income</b>	255	273	282	341	370
Operating expenses	(71)	(69)	(73)	(77)	(83)
<b>EBIT exc. valuation movements</b>	549	454	509	613	687
Interest receivable	17	7	7	7	7
Interest payable	(101)	(87)	(107)	(125)	(144)
Capitalised interest	12	7	8	10	11
<b>Net interest</b>	(72)	(74)	(91)	(109)	(126)
<b>Profit / (loss) before tax</b>	778	772	715	823	1,128
<b>Profit after tax</b>	788	767	709	815	1,119
Minority interests	-	-	-	-	-
<b>Net income</b>	788	767	709	815	1,119
<b>BALANCE SHEET (RM)</b>					
Years ended	Mar-11A	Mar-12	Mar-13	Mar-14	Mar-15
Investment property	4,752	4,936	5,463	6,092	6,556
Development property	-	123	219	316	364
<b>Tangible fixed assets</b>	4,790	5,090	5,710	6,432	6,941
Cash & Short-term investments	263	300	300	300	300
<b>Current assets</b>	353	413	417	421	425
<b>Total assets</b>	7,260	7,619	7,921	8,616	9,111
Short term debt	319	16	127	367	635
<b>Current liabilities</b>	652	240	242	611	881
Long term debt	1,620	2,371	2,350	2,500	2,400
<b>Non-current liabilities</b>	1,678	2,448	2,427	2,577	2,477
Share capital & premium	1,461	1,461	1,461	1,461	1,461
Reserves	3,469	3,471	3,791	3,968	4,292
<b>Equity</b>	4,930	4,932	5,252	5,429	5,753
Minority interest	-	-	-	-	-
<b>Total liabilities</b>	7,260	7,619	7,921	8,616	9,111

Source: Macquarie Global Property Securities Analytics

Looking at the line items separately, the analyst seeks to input four key elements, rental income, interest payable, gross assets and gross debt, and uses them to determine his forecast areas.

The key points for the analyst to question about rental income are as follows.

- What is the weighted average unexpired lease term (WALT)? How will this affect dividend-paying and debt-servicing ability and drive acquisition criteria?
- What is the reversionary profile? Most companies in the UK now provide a detailed reversionary profile, which shows expected rental uplifts due to reviews/lease expiries based on current market values. This is more relevant in the UK compared with continental Europe because of the longer lease terms and the upward-only nature of reviews.
- Who are the key tenants and what percentage of rental income do they represent?
- How are the main drivers of rental income changes quantified, i.e. lettings on new developments, reviews, acquisitions and disposals?
- How are the administrative expenses managed, i.e. is the portfolio internally or externally managed?
- How does the ratio of administrative expenses to rental income and gross assets compare with both the listed peer group and third party management fees charged on institutional portfolios?
- Are there any transaction and performance-related incentives?
- What is the performance-based component of the executive team's remuneration?

The key points for the analyst to question about interest payable are as follows:

- What is the relationship between the disclosed level of interest payable and forecast levels of debt?
- What is the fixed/floating rate mix?
- Are there any existing swap arrangements and what is their impact?
- What is the likely interest cost on refinancing?
- What is the level of interest capitalised?
- What is the maturity profile of rental income and debt?

## Exhibit 19.5

**REIT financial model cash-flow output**

Cash Flow Statement (\$m)					
Years ended	Mar-11A	Mar-12	Mar-13	Mar-14	Mar-15
EBITDA	194	304	314	323	332
<b>Net operating cashflow</b>	<b>437</b>	<b>299</b>	<b>294</b>	<b>285</b>	<b>278</b>
Dividends	(139)	(224)	(223)	(223)	(223)
Capital expenditure	(482)	(502)	(483)	(483)	(242)
Corporate acquisitions / disposals	-	-	-	-	-
Share capital issued / (redeemed)	-	-	-	-	-
<b>Cash surplus / (requirement)</b>	<b>(184)</b>	<b>(427)</b>	<b>(412)</b>	<b>(421)</b>	<b>(187)</b>
Leverage Metrics					
	Mar-11A	Mar-12	Mar-13	Mar-14	Mar-15
Net rental interest cover (x)	3.5 x	3.7 x	3.1 x	3.1 x	2.9 x
Net debt (\$M)	(1,714)	(2,087)	(2,177)	(2,567)	(2,735)
Net debt / Equity (%)	34.8%	42.3%	41.4%	47.3%	47.5%
<b>Loan to value</b>					
Group (%)	25%	30%	30%	33%	33%
Consolidated (%)	46%	49%	47%	45%	44%
Key Metrics (\$/share)					
	Mar-11A	Mar-12	Mar-13	Mar-14	Mar-15
Dividend (p / share)	26.00	26.00	26.00	26.00	26.00
Growth	0.0%	0.0%	0.0%	0.0%	0.0%
Adjusted EPS (p)	28.5	31.7	32.9	34.0	35.0
Growth	0.3%	11.6%	3.6%	3.4%	5.9%

Source: Macquarie Global Property Securities Analytics

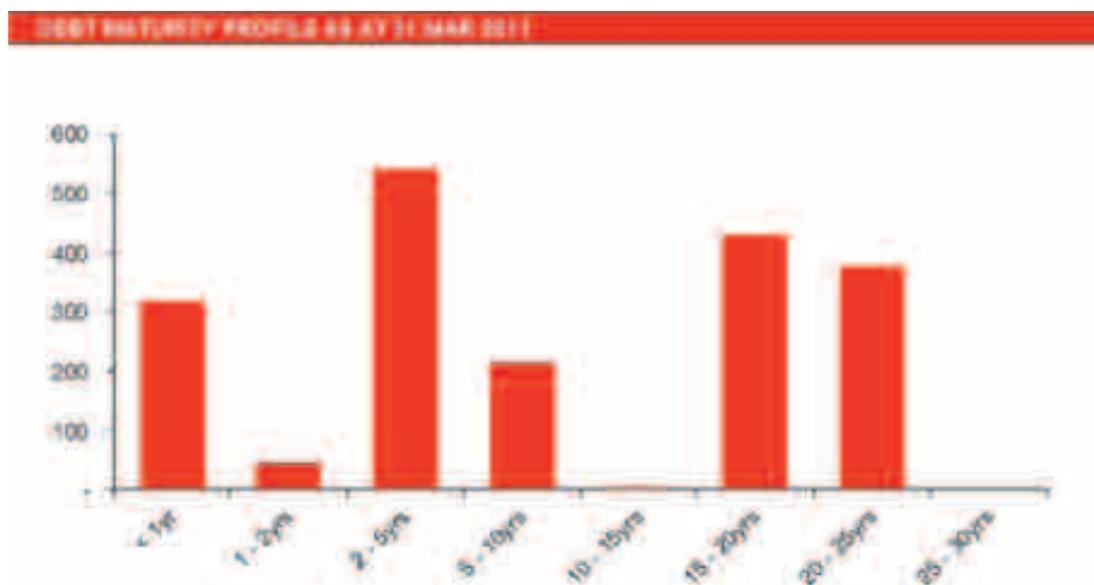
The following are key points for the analyst to question about the company's gross assets.

- What is the portfolio mix in terms of sector, location, tenants, investment/development and yield?
- What are the capital expenditure requirements?
- What are the opportunities for active asset management?

The following are key points for the analyst to question about the company's gross debt.

- What is the debt maturity/ repayment profile?
- What is the split between fixed/floating-rate debt?
- What is the balance between secured/unsecured debt?
- What type of debt does the company have: bank loans, listed bonds, private bonds, convertibles? What is the company's total leverage? Is there any off-balance sheet debt?
- Who are the lenders? Is there a dependence on a specific lender?

## Exhibit 19.6

**REIT model maturity profile output**

Source: Macquarie Global Property Securities Analytics

Having set up the model with the help of company presentation materials and often meetings with the company management, the analyst will then seek to update the model for each acquisition/disposal and set of results as well as changes in growth assumptions for the underlying market.

**Target prices:** having assessed the sensitivity to various factors and forecast specific variables, it is time to build these into a target price. The purpose of a target price is to represent expected returns (normally over a 12-month period) in a single figure. The expected return is then compared either with expected equity market returns over the same period, or with an absolute benchmark to give a recommendation. As an example, a target price of more than 10% above the current price could be a Buy recommendation, and less than -10% could be a Sell recommendation, with everything in between, i.e. more than -10% and less than 10% representing a Neutral recommendation.

There are many different ways of deriving a target price, all of which require a valuation model. We deal more comprehensively with valuation methodology in later chapters. As an example, however, some buy-side analysts derive their 'own' fair value NAV based on a bottom-up approach to the portfolio, asset by asset, and use this figure. Movements in this figure are extremely correlated to movements (actual and anticipated) in the direct property market, which are unlikely to change dramatically in the short term.

Sell-side analysts' target prices are far more prone to change, although it should be noted they have to be explicit in their methodology. It is noticeable that criteria can vary from country to country. A number of analysts look at economic value added (EVA), which in its simplest form relates to the excess return above the weighted average cost of capital. Similarly a number of commentators use a dividend discount model (DDM). Thus it is not uncommon to see the explanation, 'Our target price is based on a combination of EVA and DDM methodology'. As well as setting a target price, sell-side analysts have to outline the catalysts (such as new lettings on a development programme, disposals and so on) that they believe will propel the share price to the target price. It should be noted that typically these are in addition to expected market movements, i.e. they represent alpha not beta.

**Screening process:** the purpose of running different screens across a database of stocks is to capture the individual stock's exposure to the most prevalent stock market drivers at the time. As a simple example, in the first quarter of 2009 the UK commercial real estate prices had been falling for just under two years, and still had another quarter of declines ahead of it. As a result, the main focus of attention on property shares was as follows.

- How much do property values have to fall by before a company breaches its banking covenants?
- How much debt does a company have to refinance in the next three to 12 months?
- How much cash and available facilities does a company have?

Move on a little in time to 2010, when UK values had not only stabilised (from August 2009) but started to recover, listed companies had refinanced with rescue rights issues, and there was a chronic shortage of new office space in Central London due to very limited supply being delivered as a result of little debt finance being available, and the key questions being asked were these.

- How much Central London exposure does the company have?
- How large is the development programme?
- How quickly can they bring it to market?

The purpose of the screen is to rank stocks by preferred characteristics. As such it is essentially qualitative not quantitative. However, it is integrated into the valuation system by attaching a premium target rating for those stocks that meet the selected criteria. Again, to use a simplified example, if Central London exposure is preferred, then those stocks with greater than 50% exposure may have a target price, say, 10% to 15% higher than those without exposure. The factors to be included in the screening process will range in hierarchy from:

- 1 global influences;
- 2 domestic macro factors;
- 3 sector specific factors;
- 4 asset level influences; and
- 5 valuation metrics.

As mentioned, the preferred characteristics vary over time according to investors' preferences but contemporary examples would include:

- highest EVA, i.e. excess of return (realised and unrealised) on assets above weighted average cost of capital;
- lowest (at times of modest or negative) capital growth (highest when property markets are rising) loan to value ratio;
- highest growth rates in dividend per share, earnings and NAV;
- dividend yield relative to domestic bond yield;
- lowest exposure to financial services tenants;
- highest exposure to West End retail and offices;
- lowest exposure to Spain, Greece, Portugal, Ireland and Italy;
- longest average unexpired lease term;
- directors purchasing stock; and
- share buybacks in prospect.

In conclusion it should be re-emphasised that conditions change over time and these screens should be run regularly, which itself leads to another dynamic in the continuous pricing mechanism.