



CAA's initial price control proposals for Heathrow, Gatwick and Stansted airports

December 2006

Supporting paper XIV

Cost of capital – capital markets context

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Section 1.0

1.1 Introduction

In the course of the current quinquennial review of BAA, the CAA has developed an assessment of the Weighted Average Cost of Capital ("WACC") for Heathrow and Gatwick airports based on a classic regulatory Capital Asset Pricing Model ("CAPM") methodology. This paper provides market-based evidence to contextualise these estimated WACCs for Heathrow and Gatwick with a generalised review of gearing and debt premia associated with infrastructure financing techniques.

Although the CAPM methodology continues to form the base for determining an appropriate WACC for regulated utilities in the UK, this approach is based on observable (traded price) data from quoted companies – and has generally assumed a debt financing structure traditionally used by quoted companies. There appears to be a trend in the infrastructure sector towards private ownership and much more highly leveraged financing based on structured financing techniques. The private equity financing associated with this makes it inherently difficult to quantify objectively effective WACCs. However its increasing prevalence and comparisons of utilities pre and post structured financing imply that there may indeed be greater efficiencies in this form of finance than traditional forms. Market evidence suggests that it is possible to maintain investment grade credit ratings at materially higher levels of leverage than would be achievable under corporate structures, whilst equity returns required to finance infrastructure assets through private equity do not appear to escalate linearly with gearing. In other words, there appears to be evidence in the infrastructure sector that structured finance may be more efficient than classic corporate finance associated with CAPM analysis. Whilst the CAA has made clear that it will not regulate BAA to accommodate any particular financing strategy, it will be important to consider the potential impact of market trends in infrastructure finance.

1.2 Approach

This paper provides context for the CAA's CAPM based analysis of Heathrow and Gatwick. For the purposes of the analysis we have sought to provide market evidence to inform the CAA's views of an achievable and realistic basic financing structure for Heathrow and Gatwick. The CAA's high level financing assumptions for both airports are:

- A level of (net debt : RAB) gearing of 60% (not based on any specific financing strategy);
- A debt premium over the risk free rate of 100 basis points;
- Consistency with a comfortable investment grade credit rating.

The objective of this analysis was purely to identify market evidence with respect to gearing which shows whether the CAA's notional financing assumptions might reasonably be expected to be consistent with a comfortable investment grade rating by reference to examples from both the airports sector and other relevant industries. For the purpose of this analysis we have assumed that a comfortable investment grade rating would be in the (S&P) range of high triple-B to low single-A. Considering this single dimension only, the market evidence suggests that this credit rating band would be broadly consistent with the gearing and debt premia criteria that the CAA is minded to assume in its review.

It is important, however, to recognise that whilst the information available can provide the CAA with comfort that its initial parameters may be reasonable, the credit rating agencies would consider a number of other factors in addition before providing a rating. Credit rating agencies take a comprehensive view of business risk (which involves a degree of qualitative assessment) as well as financial risk (which is more amenable to quantitative assessment, although even here a degree of professional judgement must be applied). Other factors that would be likely to be evaluated include:

- Business risks
- Revenue quality and diversity
- Ownership
- Competitive position and passenger base
- Capacity constraints and capital programme

- Cash/interest coverage of debt and interest
- Legal and regulatory framework

Within our analysis we have noted that BAA's London airports, Heathrow in particular, have a strong demand base relative to available capacity which has been a factor behind increasingly rapid recovery of traffic and revenues from previous demand shocks. In addition, the strong commercial revenue stream at Heathrow and Gatwick has enabled BAA to be less dependent upon aeronautical revenue when compared to other airports, in some respects providing a damping effect to other revenue shocks. This strong underlying demand and revenue diversification has been recognised by ratings agencies in BAA group credit ratings in the past.

Our review has covered a broad range of infrastructure sectors including:

- European airports;
- UK water;
- UK gas;
- UK electricity; and
- European telecoms

We believe that adopting such a broad base for comparison is appropriate as Heathrow and Gatwick airports both have a substantial commercial base whilst exhibiting some utility characteristics, making a comparison to corporate sectors and regulated utilities relevant.

The paper is structured as follows:

- Section 2 – This section provides evidence to support the statement that there is an observable trend of infrastructure businesses assuming higher levels of debt and there is clear evidence of the use of more structured finance in the market particularly since 1999.
- Section 3 – Shows a comparison of key financial characteristics relating to gearing, debt premia and credit rating in order to provide comparable evidence in other regulated sectors which support the CAA's assumptions of 60% gearing with 100 basis points debt premium and a solid investment grade credit rating. This section also provides high level or anecdotal evidence to suggest that the cost of equity associated with these financing structures in the infrastructure sector (especially for regulated assets) generally falls within the low teens range (10% - 15%).
- Section 4 – Summarises the findings from the analysis undertaken and presents the conclusions drawn from the available market evidence.

Section 2.0 Infrastructure financing

2.1 Debt structures in the infrastructure market

Structured finance, in contrast to corporate finance, accesses the secured bond market and the key issue is the marginal cost of borrowing for each of several different layers or tranches of debt. It is typically used for businesses, such as infrastructure assets, with stable, highly predictable cashflows that can be tranches into different layers of credit quality. Using such techniques can enable the borrower to achieve a lower cost of funding and/or increased leverage.

The most common uses of Structured Finance are securitisation and project finance, however, this paper looks solely at the securitisation market for corporate issuers.

2.2 Uses of structured finance in corporate securitisations

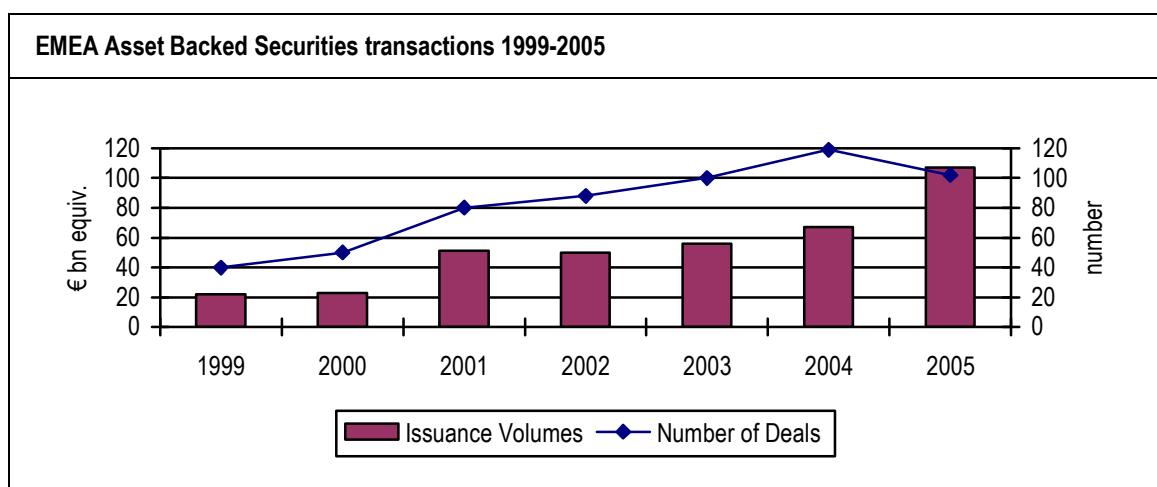
For corporate issuers, structured finance techniques have become increasingly sophisticated and flexible, being applied to a broader range of asset classes and businesses. Securitisation alternatives have regularly replaced more traditional financing for companies in various industries, including:

- Pubs, food and beverage companies
- Entertainment parks, real estate, theatres, sports clubs
- Transportation (ports, airports, ferries, motorway services)
- Regulated utilities (water, electricity and gas grids)
- Telecom, cable and broadcasting assets
- Trademark, royalty and patent right holders

2.3 Recent trends in the European market

Issuance analysis

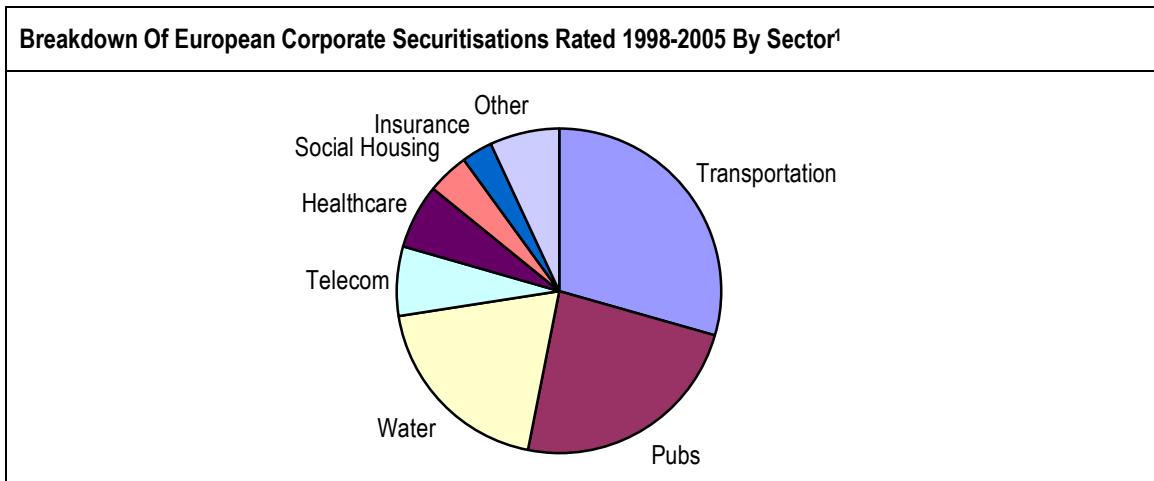
The corporate structured finance market in Europe, Middle East and Africa (EMEA) has experienced significant growth since 1999. In particular in 2005 there was a significant increase in the amount of debt raised. Whilst the number of deals has been increasing in general, in 2005 this number declined with growth being driven by fewer larger transactions – the average deal size in 2005 was around €10bn, compared to around €5bn in 2004. There is clear evidence that there has been a significant and steady growth in the use of structured finance over the last five years.



Source: Moody's International Structured Finance 2005 Review and 2006 Outlook

Sector analysis

The European corporate securitisation market is dominated by issuance volumes from the water, transportation and pubs sectors.



The flow of new issuance in the pipeline for corporate securitisations is likely to remain driven by M&A activity, in particular in the healthcare and infrastructure (water and transport) sectors, whilst the majority of new issuance in recent months has been in the infrastructure and public houses sectors with tap issuance and refinancings². S&P expects "the pub and infrastructure sectors to lead the corporate securitisation market in 2007, with new issuance and taps likely in the first half of the year".

New asset classes

The depth of the corporate securitisation market is being enhanced by the continuing emergence of new asset classes and is expected to continue to develop geographically, structurally and with additional sectors. In 2005 this included the introduction of dealer floorplan³ and auto residual value⁴ securitisations. Since the beginning of 2006 three new asset classes have used this form of financing, namely shipping, wind power (Alte Liebe's securitisation of eight wind power projects located in Germany) and stadia (Arsenal Football Club's securitisation of ticket revenues from the club's new stadium in London).

In the utility sector, the UK independent gas transporters (IGTs), which have similar business characteristics to the water sector, including predictable cashflows and a supportive regulatory environment albeit a higher level of competition, have started to make use of corporate securitisation techniques.

Use of structured finance by private equity

Private equity firms are increasingly using corporate securitisations to refinance leveraged acquisitions as a result of the competitive pricing on this form of debt and the flexibility associated with the structuring of the debt⁵. Whilst the use of structured finance as an exit from private equity-backed leveraged buyouts has historically been rare, over the last year its use has increased.

Securitisation was used by Hertz in December 2005 and the trend has continued strongly, becoming a core form of funding. Recent transactions that have been or are expected to be refinanced in the corporate securitisation market include: BAA,

¹ Industry Report Card: European Corporate Securitisations 2005 (S&P October 2006)

² European Corporate Securitizations Driven By Growing Prepayment And Ongoing M&A (S&P October 2006)

³ Dealer floorplans are revolving credit agreements that are extended to qualified dealers to finance auto and light trucks inventory at a wholesale rate

⁴ The residual value of automobiles at the end of its lease period

⁵ LBO sponsors look to ABS financing solutions (Euromoney October 2006)

Thames Water, London City Airport and Associated British Ports in the infrastructure sector as well as in other corporate sectors with deals completed in recent years for Fraikin, Rexel and Mory and expected for Hertz Europe and Europcar.

Transaction analysis

The following table broken down by sector shows a sample of the corporate securitisations in issuance (excluding those backed by a government guarantee)⁶ in the three key sectors with the gearing ratio and debt levels specified:

Name	Company	Underlying Credit Rating	Total Size	Gearing Level
Transport				2004/2005 ⁷
City Aviation Finance	London City Airport	BBB	£87.7m	40%
Romulus Finance	Aeroporti di Roma	BBB	€1.5bn	66%
Water				(2005/06) ⁸
Anglian Water Services	Anglian Water	BBB+	£3.5bn	79%
Dwr Cymru	Welsh Water	BBB	£2.3bn	74%
South East Water Services	South East Water	BBB	£418m	83%
Southern Water Services	Southern Water	A-	£2.4bn	96%
Sutton & East Surrey Water	Sutton & East Surrey Water	A-	£85m	59%
Pubs			(snr / jnr)	Latest Financial Closing ⁹
Greene King Finance	Green King Retailing	A / BBB	£600m	72%
Mitchells & Butlers Finance	Mitchells & Butlers	A / BBB+	£1.9bn	49%
Punch Taverns Finance B	Pubmaster	A / BBB+ / BBB	£1.2bn	76%
Punch Taverns Finance	Punch Pub Co	A	£1.8bn	78%
Spirit Issuer	Spirit Managed Pubs	BBB+	£1.3bn	55%
Unique Pub Finance	Unique Pubs Properties	A / BBB+ / BBB	£1.8bn	75%
W&DB Issuer	W&DB Pubs	A / BBB	£805m	69%

As is highlighted in the table above use of structured finance has enabled companies to increase leverage levels whilst still maintaining an investment grade credit rating. In general it can be seen that the underlying credit rating for these

⁶ Source: S&P website (credit ratings as of 4 October 2006)

⁷ Source: Rating agency reports (Gearing levels for City Aviation FY2004, Aeroporti di Roma FY2005)

⁸ Source: OFWAT website (Gearing = Net Debt to RAB)

⁹ Source: S&P as of December 2005 (Gearing = LTV%)

transactions is in the low single-A / high triple-B area. Indeed, one of the characteristics of structured finance is its ability to increase gearing whilst maintaining a given underlying credit rating relative to corporate financed debt.

Section 3.0 Financial characteristics of airports and utilities sectors

3.1 Gearing and Debt Premia

In making a price control determination by reference to a company's WACC, regulators implicitly express a view on the level of gearing that they deem appropriate for that company. This reflects a trade-off between efficient levels of gearing over the long term, a credit rating that provides access to adequate liquidity to facilitate future investment requirements and an acceptable level of risk of default (and disruption to consumers).

In the case of other regulated utilities:

- Ofwat sets price limits to allow companies to maintain "solid investment grade rating", generally interpreted as low single 'A' (for corporate credits) (UK Water sector: Financial Parameters and Structural Enhancements for Leveraged Financings, Moody's July 2002);
- However Moody's assessment of structured financings in the water sector generate financial indicators consistent with a rating of Baa1 (BBB+) (*ibid*);
- Ofgem establishes electricity distribution controls to allow companies to maintain credit ratings that are "comfortably within investment grade" (Electricity Distribution Price Control Reviews: Final Proposals, Ofgem, November 2004);

BAA's financing requirement over the next decade is not only substantial in absolute terms (Ferrovial forecast capex of approximately £1 billion per year¹⁰) and proportionate to its current RAB, but the capital expenditure programme consists of large blocks of expenditure, completion of which, once started, generally becomes unavoidable. Taken in the round, these factors suggest that the CAA should indeed be alive to the projected credit rating that the financing strategies under review are likely to achieve. There is no obvious reason why the CAA should adopt a lower credit rating for BAA in its regulatory assessment of WACC than other regulated utilities target (although the CAA has fewer direct regulatory mechanisms, such as licence conditions, at its disposal to be able to impose any particular level of credit quality).

It is also important to consider how 'solid investment grade' targets translate into projected financial metrics. This issue is complex and subjective but some regulators are quite specific as to how this should be interpreted. Ofwat and Ofgem have set certain 'bankability' tests for corporately financed utilities consistent with a low single A rating with FFO:Net Interest indicators of around 3x and Net Debt to RAB indicators of around 55-65%.

3.2 Specific infrastructure sector evidence on gearing and cost of debt

In looking at the optimal gearing level and cost of debt for BAA, we have collated market evidence on trends in the infrastructure sectors including transport and other regulated utilities, where they share an economic model and regulatory framework comparable with the UK's regulated airports, namely:

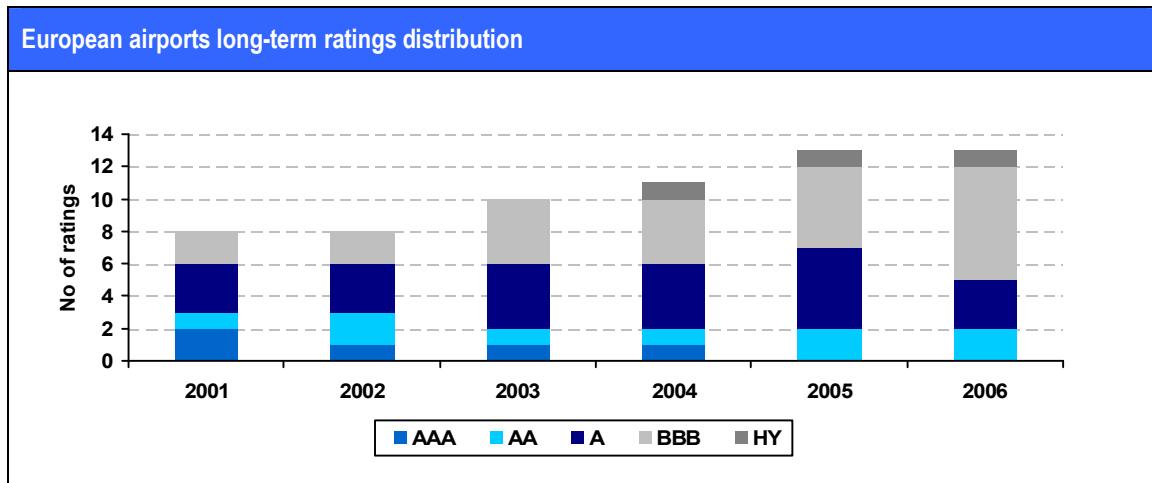
- European airports;
- UK water;
- UK gas;
- UK electricity; and
- European telecoms

¹⁰ Source – Ferrovial website – 03-07-06 – Presentation on the acquisition of BAA

3.3 European airports

Credit quality in the sector

Higher leverage levels and the resultant diversification of funding sources leading to a need to access alternative debt markets has led to an increase in the number of European airport operators obtaining credit ratings, as shown below. Moreover, as gearing has increased, this has had a negative impact on the credit quality in the sector with credit ratings in the sector tending towards the high to mid triple-B ratings category over the last five years.



Source: S&P (*European Airports: Solid performance despite increasing external risk – October 2006*)

The view from the rating agencies with respect to future credit quality in the airport sector highlights that whilst the sector is currently experiencing positive financial results, this will not necessarily translate into de-gearing and any free cash flow not used for funding investments will likely go to equity holders. Consequently, S&P believes that, particularly as a result of the highly leveraged structures being increasingly used in the sector, this could have more downward pressure on credit quality over the next two years. While in particular cases other factors may also have had an effect, this trend is also highlighted by the number of airports which have had their credit ratings reduced since the start of the year as shown below:

Airport	Corporate Credit Rating as of		Comment on downgrades
	4 Oct 2006	1 Jan 2006	
Aeroports de Paris	AA- (stable)	AA (negative)	Privatisation triggered downgrade
BAA	BBB+ (watch negative)	A (stable)	Expectation of more aggressive financial profile and uncertainty of the group's final financial structure after Ferrovial takeover
Birmingham Airports	A- (stable)	A- (stable)	
Brussels International	BBB+ (stable)	BBB+ (stable)	
Copenhagen Airports	BBB+ (stable)	A (watch negative)	Majority control by Macquarie Airports which required a consolidated approach to the rating of Macquarie and Copenhagen Airports and led to an overall more aggressive financial profile for the group despite no changes at Copenhagen Airports
Dublin Airports Authority	A (negative)	A (watch negative)	
Manchester Airport	A (stable)	A (stable)	
Newcastle International	BBB+ (watch negative)	BBB+ (stable)	Creditwatch reflects affect of additional debt burden on credit metrics
Schiphol	AA- (negative)	AA- (stable)	Parliamentary approval of privatisation
Unique (Zurich)	BBB+ (stable)	BBB (stable)	

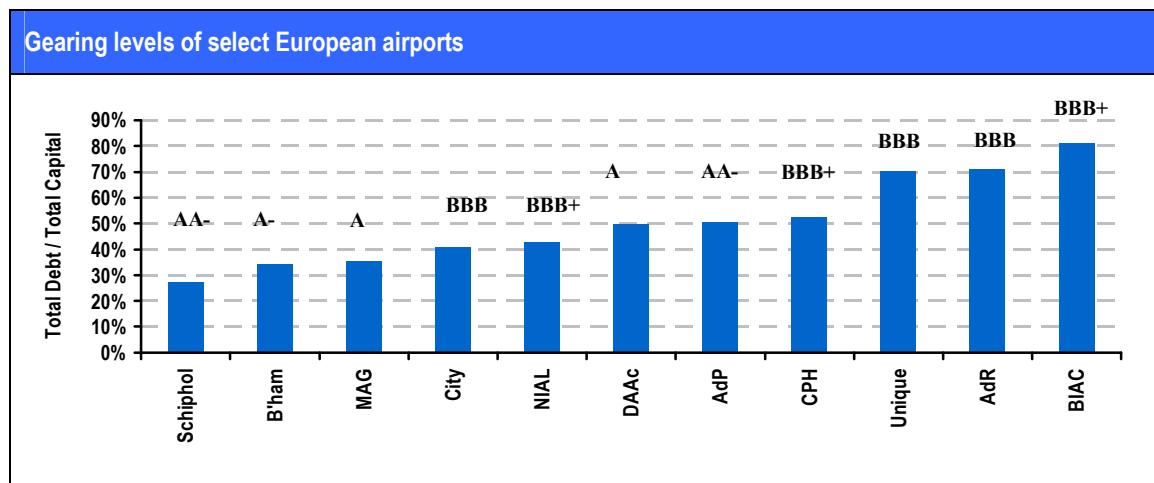
Change since 1 January 2006:

Upgrade	No change	Downgrade
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Source: S&P (*European Airports: Solid performance despite increasing external risk – October 2006*)

Gearing levels

In recent years, the substantial capital expenditure requirements of airport groups globally has led to large funding requirements for proposed investments in the sector that cannot be achieved through internally generated cashflows. Combined with increasing M&A activity, privatisation in the industry and growing cashflow generation, this has seen companies in the sector trend towards increasing their level of gearing. The following diagram demonstrates the effect these factors have had on the gearing levels for select airport groups in Europe based on the latest published accounts or leverage levels quoted by S&P in their ratings reports.



Source: S&P Reports and Latest Company Annual Reports

The dataset of European airports, and their diverse circumstances make it difficult to provide conclusive evidence on gearing and associated credit ratings. However, the chart above suggests that whilst there is not a direct linear correlation (or even a ranking correlation) between gearing and credit rating, a 60% gearing level could be consistent with a high triple-B rating, particularly when considering business risk and qualitative factors applying to Heathrow and Gatwick.

Company	S&P underlying credit rating	Gearing	Date
Aeroporti di Roma (AdR)	BBB	71.0%	31/12/2004
Aeroports de Paris (AdP)	AA-	50.5%	30/06/2006
Birmingham Airport Holdings Ltd	A-	34.1%	31/03/2006
Brussels International Airport Co (BIAC)	BBB+	81.2%	31/12/2005
City Aviation Finance Ltd	BBB	40.80%	31/12/2004
Copenhagen Airports A/S (CPH)	BBB+	52.7%	30/09/2006
Dublin Airport Authority plc	A	49.8%	31/12/2005
Manchester Airport Group plc (MAG)	A	35.5%	31/03/2006
Newcastle International Airport Ltd	BBB+	42.8%	31/12/2005
NV Luchthaven Schiphol (Schiphol)	AA-	27.2%	31/12/2005
Unique Flughafen Zurich AG (Unique)	BBB	70.5%	31/12/2005

Source: S&P Reports and Latest Company Annual Reports

Debt Premia

The debt premia for the airports in this dataset have been identified, where publicly tradable debt is issued by the airport:

Debt premia for European Airports				
Company	S&P	Credit Spread (bps)		
		1-7yrs	7-15yrs	15yrs+
Aeroporti di Roma (AdR) ¹	AAA	46.6		51.5
Aerports de Paris (AdP)	AA-	31.7		
NV Luchthaven Schiphol (Schiphol)	AA-	36.7		
Dublin Airport Authority plc	A	54.0		
Birmingham Airport Holdings Ltd	A-		101.8	
Newcastle International Airport Ltd	BBB+		101.2	
City Aviation Finance Ltd	BBB		105.8	
Unique Flughafen Zurich AG (Unique)	BBB	34.9		

¹ Underlying credit rating is BBB but data is only available for the AAA wrapped tranches

Source: Bloomberg

Summary

It can be seen that for the mid to high triple-B credit rating, to which there appears to be a trend among airport operators, the credit spread in the 7-15 year tenor is around 100-105bps. There is a significant diversity of gearing levels in the sector although the airports in this sample, that are rated in the mid to high triple-B band, have an average gearing of approximately 60%.

Airports do not exist, or raise finance, in isolation from other businesses. Accordingly, it is appropriate to test, and if possible, substantiate these findings against the relevant data derived from businesses in other industries that share broadly similar economic characteristics and regulatory frameworks. The following sections examine experience in the water, power and telecoms sectors.

3.4 UK Water

Credit quality in the sector

OFWAT has stated that it requires water companies to maintain a “solid investment grade rating”.

Gearing levels

The following table shows the credit ratings for those UK regulated water companies that have a credit rating as well as the type of debt structure they have used. This highlights that the use of Structured Finance has typically enabled water companies to increase the level of gearing whilst maintaining a credit rating of triple-B flat or triple-B plus in the majority of cases. A lower level of gearing typical under Corporate financed companies (in most cases below 65%), has supported a stronger credit rating in the majority of cases.

Whilst in the transportation sector in general the gearing level is defined as the level of debt relative to total capital (i.e. debt + equity), when looking at the regulated utilities in the UK, the rating agencies look at debt to RAB as a measure of gearing.

	Credit Rating ¹¹	Type of Debt	Gearing Level ¹²
Anglian	BBB+	Structured	78.6%
Dwr Cymru	BBB	Structured	73.7%
Northumbrian	BBB+	Corporate	58.0%
Severn Trent	A	Corporate	47.2%
Southern	BBB+	Structured	95.8%
South Staffordshire	A-	Corporate	80.5%
Sutton & East Surrey	BBB+	Structured	59.4%
Thames	BBB+	Corporate	44.4%
Three Valleys	A-	Corporate	32.5%
United Utilities	A-	Corporate	51.3%
Wessex	BBB+	Corporate	63.1%
Yorkshire	A	Corporate	42.2%

¹¹ Based on S&P's credit rating. For the structured financed companies the credit rating is the underlying credit rating, whilst for the corporate financed companies the credit rating is for the water company.

¹² OFWAT reported net debt to RAB ratios for 2005-06

The average gearing levels for each rating are as follows:

Credit Rating	Average Gearing
A	44%
A-	54%
BBB+	66%
BBB	73%

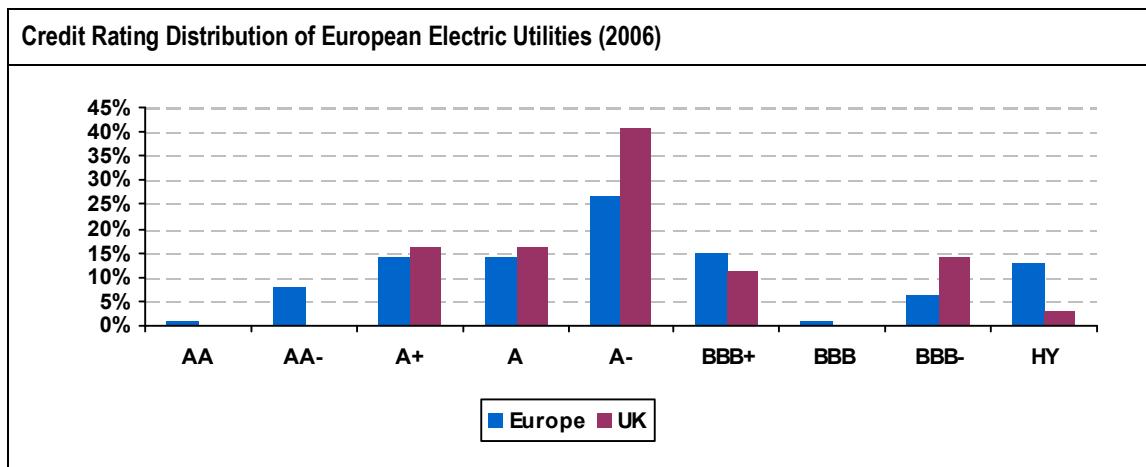
Summary

OFWAT's indicators for a "solid investment grade rating" include a net debt to RAB ratio of 55-65%. With the rating agencies interpreting the "solid investment grade rating" as low single-A, this is consistent with the average gearing levels identified above for the various ratings categories. Importantly, qualitative factors will also have an important part to play in determining each rating.

3.5 UK Electricity

Credit quality in the sector

Ofgem establishes electricity distribution controls to allow companies to maintain credit ratings that are "comfortably within investment grade". As can be seen below both when looking at Europe as a whole and also when focusing solely on the UK, the most common rating category is low single-A.



Source: S&P Electric Utilities report September 2006

Gearing levels

In terms of the distribution network operators in the UK, Moody's¹³ has quoted the following guidelines in terms of gearing when assessing the following ratings categories:

Net Debt to RAV

AA	< 45%
A	40-68%

The gearing levels for the rated UK electricity utilities are shown below.

	Credit Rating	Gearing level ¹⁴
Scottish & Southern Energy	AA-	45.3%
United Utilities Electricity	A	52.4%
Scottish Power plc	BBB+	56.6%
National Grid Electricity	BBB+	59.5%
WPD Holdings UK	BBB-	68.3%
CE Electric	BBB-	75.0%

Summary

For the UK electric utility sector, the majority of the companies are rated in the single-A minus category. The gearing for the single-A category is an average of 54% which is consistent with the gearing levels for the companies identified above.

¹³ Moody's Rating Methodology (Global Regulated Electric Utilities, March 2005)

¹⁴ 3-yr average

3.6 UK Gas

Credit quality in the sector

The UK independent gas distribution companies have similar fundamentals to the UK water and electricity sectors including the inherently low business risk, stable cashflows and the regulatory ring-fence provisions in the Gas Transporter licences. However, the business risk associated with the sector is slightly higher than for water and electricity due to the current lack of a track record for the companies. Until mid-2005, all of the UK independent gas distribution companies operated as part of National Grid Transco. Consequently, the rating agencies believe that the target credit rating for the sector is lower than that of the other utilities at around triple-B plus. However, in time they believe that there will be a convergence of ratings towards that of the water and electricity sectors.

Gearing levels

In terms of gearing levels, Moody's commented: “Based on our current assessment of the business risk, we believe the UK gas distribution sector can support up to 70% leverage (measured as debt/RAV) for Baa1 ratings on traditional corporate debt without the benefit of structural enhancements. Moody's assumes Baa1 to be the target minimum ratings in the sector.¹⁵”

Of the four gas distribution networks that were sold off, Scotia Networks, which acquired Southern Gas Networks and Scotland Gas Networks, financed the acquisition via a highly leveraged structured debt issue. With an underlying credit rating of triple-B flat, the rating agencies targeted a debt to RAV ratio of around 75%.

The following table highlights the underlying credit rating and gearing levels of the rated gas distribution networks:

	Funding Structure	Underlying Credit Rating	Gearing level ¹⁶
National Grid Gas plc	Corporate	A	55%
Northern Gas Networks	Corporate	BBB+	70%
Southern Gas Networks	Structured	BBB	75%
Scotland Gas Networks	Structured	BBB	75%

Source: S&P ratings reports

Summary

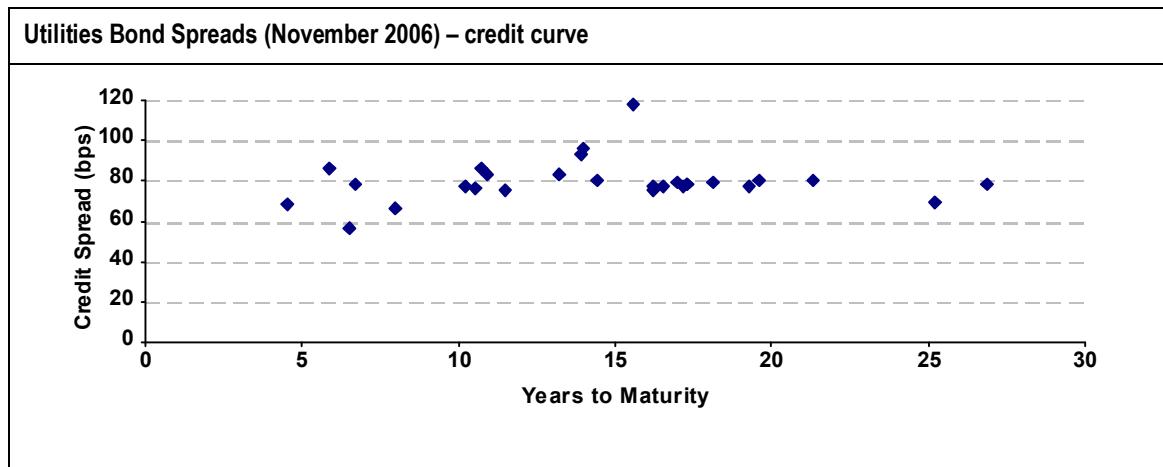
The rating agencies view the target rating in the UK independent gas sector to be triple-B plus. This is one notch lower than for the UK water sector, although the gas sector is deemed to be slightly more risky than water and electricity. At this credit rating, companies are able to increase leverage up to a maximum of 70% on a corporate financed basis.

¹⁵ Moody's rating methodology (UK Independent Gas Distribution Companies, March 2004)

¹⁶ Gearing = Debt / RAV

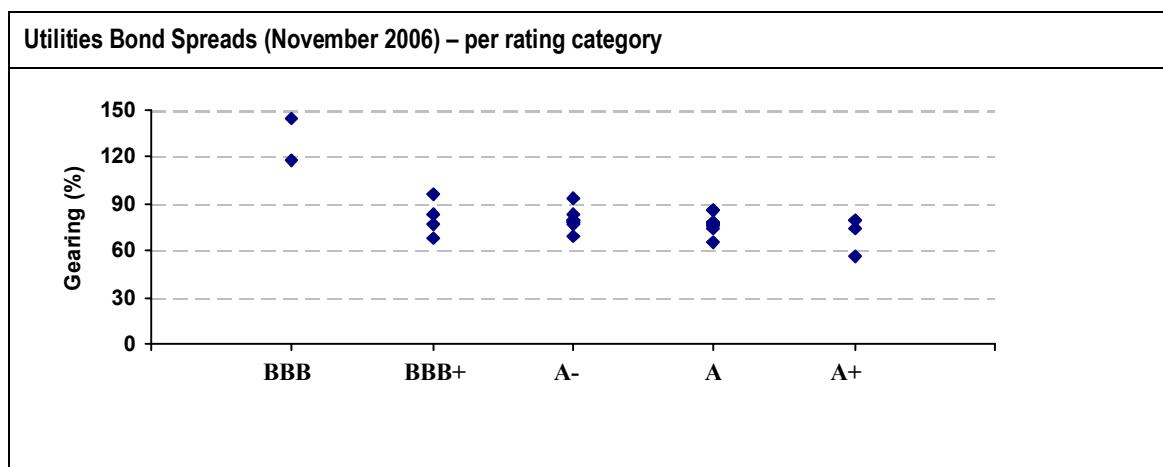
Utility Debt Premiums

We have looked at the current credit spreads for sterling denominated bonds in the broad utilities sector with credit ratings from triple-B flat to single-A plus. The results of the analysis are shown graphically below.



Source: Bloomberg

The credit curve for sterling denominated utilities bonds is relatively flat and on average in the long-end (10 years plus) at around 80bps. In terms of spread by rating (below), the most noticeable feature is a significant widening of spread below triple-B plus.

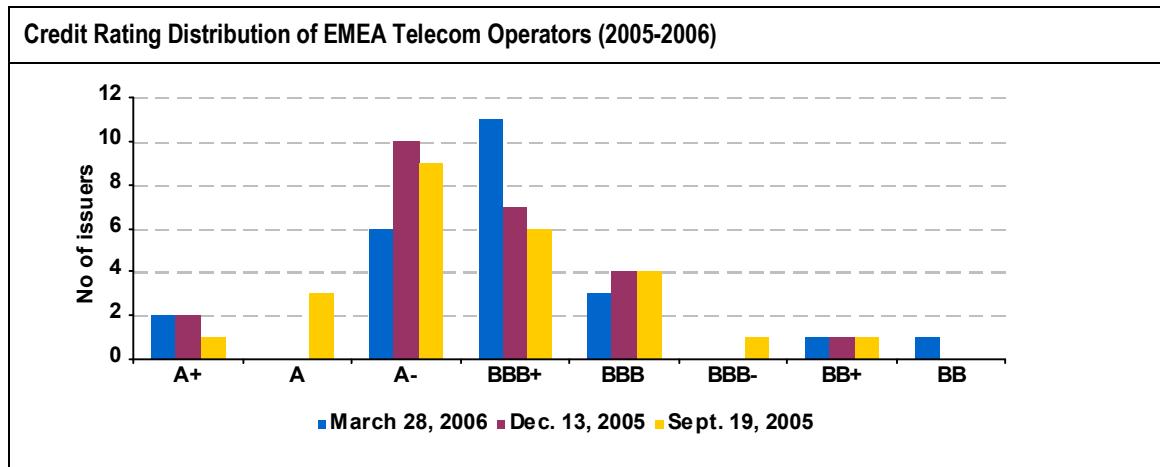


Source: Bloomberg

3.7 European Telecoms

Credit quality in the sector

M&A activity has characterised the European telecom sector in recent years, resulting in increased leverage levels, away from the de-leveraging that was prevalent in 2002-2004 after the high gearing associated with 3G licences earlier that led to a dramatic decline in credit quality in the sector. The following chart shows the rating distribution for the largest telecom operators in EMEA

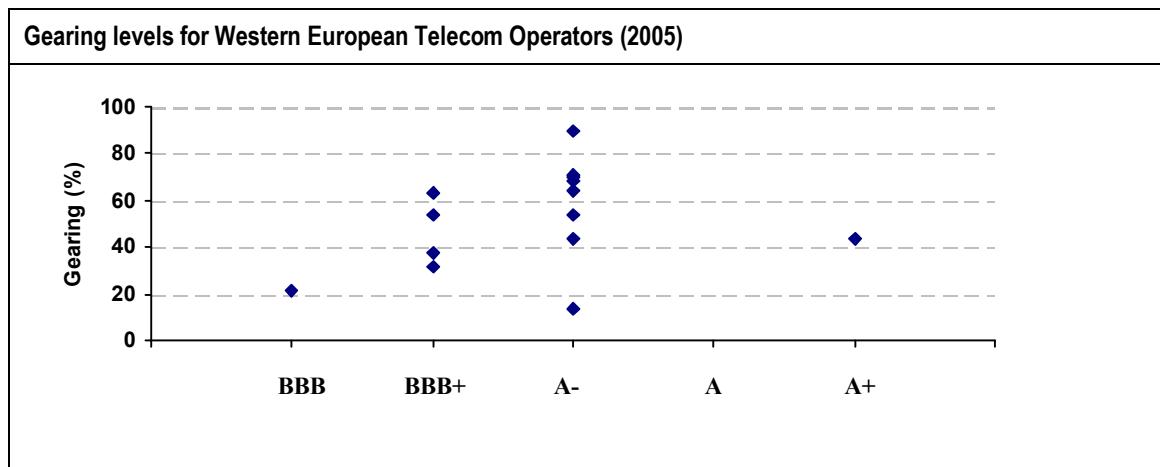


Source: S&P Industry report card 2006

As is evident from the chart above, over the last year there has been a shift downward in the median rating from single-A minus to triple-B plus.

Gearing levels

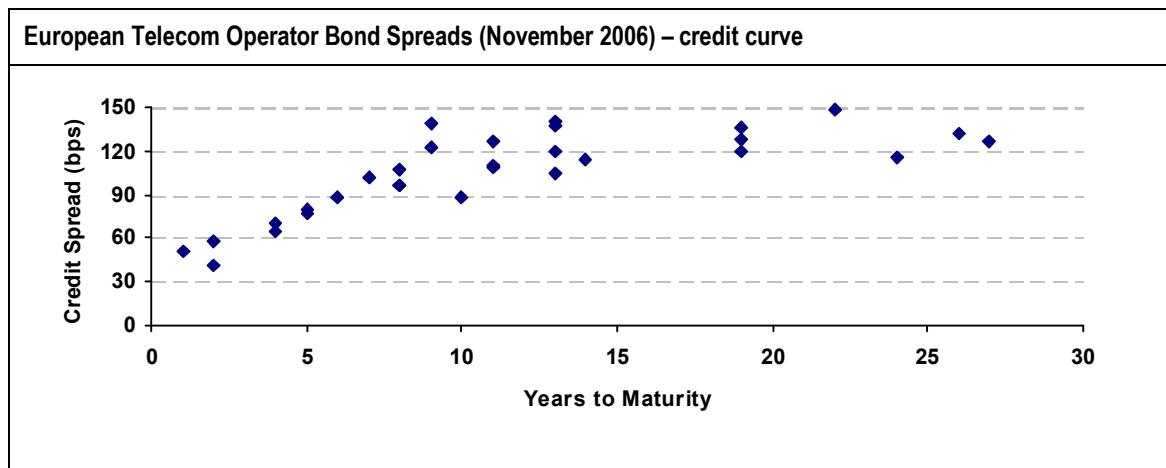
The gearing levels at the different credit rating levels for telecom operators in Western Europe vary considerably as highlighted below.



Source: S&P Credit stats

Debt Premiums

The following chart shows the credit spreads for sterling denominated corporate bonds for telecom operators in Europe in the triple-B plus to single-A rating categories. At the long-end of the curve (10 years plus) the credit curve tends to flatten out and is broadly in the 100-130bps range.



Source: Bloomberg

Summary

With the credit ratings for telecom operators in Europe tending towards the low single-A to high triple-B area, this is consistent with the evidence seen in other regulated sectors as shown above. In terms of gearing levels associated with specific credit ratings, there does not seem to be an obvious trend from the data set analysed. However, this could be attributable to qualitative factors that affect the credit rating. The long-term credit spreads in the sector can be found in the 100-130bps range.

3.8 Findings and conclusions

- From the dataset reviewed it can be seen that for the mid to high triple-B credit rating range, which is where the rating agencies see the airport sector's underlying credit drawing towards, the credit spread in the 7-15 year tenor is around 100-105bps. This is associated with an average gearing level for airports in this range of around 60%.
- The dataset of European airports and their diverse circumstances make it difficult to provide conclusive evidence on gearing and associated credit ratings. However, whilst there is not a direct linear correlation (or even a ranking correlation) between gearing and credit rating, a 60% gearing level would be broadly consistent with a high triple-B rating, particularly when considering business risk and the qualitative factors applying to Heathrow and Gatwick.
- The use of Structured Finance has typically enabled water companies to increase the level of gearing whilst maintaining a credit rating of triple-B flat or triple-B plus in the majority of cases. A lower level of gearing typical under Corporate financed companies (in most cases below 60%), has ensured a stronger credit rating in the majority of cases.
- For the UK regulated electricity distribution networks the rating agencies believe that companies in the sector can achieve a weak triple-B rating when gearing up to mid 80%. With the majority of the companies in this sector having more conservative financial profiles, the gearing level associated with the high-triple-B / low-single-A rating median is around 50-60%. The credit curve for sterling denominated utilities bonds is relatively flat and on average in the long-end (10 years plus) at around 80bps.
- Within the Gas sector, in terms of gearing levels, Moody's comments that: "Based on our current assessment of the business risk, we believe the UK gas distribution sector can support up to 70% leverage (measured as debt/RAV) for Baa1 ratings on traditional corporate debt without the benefit of structural enhancements. Moody's assumes Baa1 to be the target minimum ratings in the sector."
- Within the European Telecoms sector the credit spreads for sterling denominated corporate bonds in the triple-B plus to single-A flat rating categories is broadly in the 100-130bps range.

The airport sector as a whole features high levels of operational gearing (similar to regulated utilities) with some airport operators exposed to greater levels of volatility in operating revenues. Key differences include:

- Gas and water are more essential, less substitutable products than aviation, with a greater cost of substitution for end-users so any price or GDP-based shock would have less pronounced and immediate effect than on airport demand;
- Similarly demand for aviation is inherently more exposed to exogenous direct-impact shock events (such as 9/11, SARS, Avian 'Flu);
- The airport industry features intermediate service providers (airlines) that can expose airports to greater levels of concentration and risk of switching / supply chain volatility than other utilities (although the capacity constraints in the South East airports suggest that marginal effects of most individual airline failures would be quickly absorbed);
- Airports tend to be significantly more complex operationally than basic utility supply with an attendant risk of service failure. This is particularly true in terms of complexity of delivering major capacity upgrades on live, safety-critical operating sites;
- Some airports tend to face greater competition at the margin – although in the case of BAA Heathrow it could be argued that the competitive pressure it faces as a hubbing airport from major continental European airports is very second-order compared to its strong origin and destination market for London; but
- Airport revenue risks are to some extent compensated by greater revenue diversification (non-aeronautical / aeronautical and domestic / international demand).

Overall it seems fair to say that airports in general face a materially more volatile operating environment and equally high levels of operational gearing relative to regulated utilities. We have not attempted to quantify this relative level of riskiness for debt-holders but even the qualitative risk assessment does suggest that one would expect airports in general to feature more conservative quantitative metrics for a given credit rating and assumed financing structure compared to water and gas distribution comparators. However, the strength of demand for Heathrow and Gatwick relative to supply puts these two airports at the more secure end of the spectrum of business risk facing European airports. Against that background, and that of economic regulation, a point of reference could also be UK utilities.

3.9 Equity returns in the infrastructure market

There is evidence to suggest that, whilst not explicitly reported, equity returns for infrastructure investments are likely to be in the low teens (10% - 15%)¹⁷.

- "Over the next decade, the number of private investment funds targeting infrastructure assets is expected to rise considerably ... Macquarie is perhaps the most experienced [and] across its portfolio of managed infrastructure assets, this Australian-based infrastructure giant can boast of a rate of return of 19.4% over the past 11 years ...while many factors point to a steady climb in new private infrastructure investment over the next 10 years, it seems unlikely that many conventional funds will be able to replicate Macquarie's astounding track-record." – Infrastructure Journal (September 2006)
- "Why invest in infrastructure assets – the absolute returns focus, with most funds targeting returns of about 10% per annum" – Infrastructure – going global and listed (Dragana Timotijevic and Harry Liem)
- "an investor could expect to get yields of between 8% and 12% per year plus scope for further value to be added to these returns" – Building returns on infrastructure investment (Investing for pension funds)
- "Goldman Sachs ... will be looking for a return of about 12% or so from its investment in AB Ports. This is much lower than typical private equity returns of 25%" – Corporate Venturing Journal (September 2006)
- "If PFI and infrastructure can offer a comparatively safe return at between 12% and 15%, then right now that look very attractive to us indeed" Alex Scot, investment manager of West Midlands Pension Fund, Infrastructure: a hidden gem? (December 2004)
- "Borealis, the infrastructure arm of the Ontario Municipal Employees Retirement System pension fund achieved a return of 23.2% in 2005, more than double its target of 11.8%." - Efinancial news (October 2006)
- "Internal rates of return for infrastructure assets are usually between 8% and 15%, less than those of private equity or hedge funds but much lower risk and considerably greater than returns from government bonds." – Australian banks jump on Europe's infrastructure bandwagon, Efinancial News (October 2006)

¹⁷ Market convention for short-term publicly traded investments is for equity returns to be described on a post-tax nominal basis. The examples mentioned above have not necessarily identified whether the data is pre-tax versus post-tax or nominal versus real.

Highly Stylised Example: Impact of conversion of pre-tax real returns to post-tax nominal

Assumptions: Pre-tax real return = 10% Effective Tax rate = 30% Inflation rate = 2.5%	Calculations: Pre-tax real to pre-tax nominal: $(1 + \text{pre-tax real}) * (1 + \text{inflation rate}) - 1$ Pre-tax nominal to post-tax nominal: $\text{Pre-tax nominal} * (1 - \text{tax rate})$ Post-tax nominal return = 9%
Based on the highly stylised example above a pre-tax real return of 10% would convert into a post-tax nominal return of 9%.	

Section 4.0 Summary of Findings

This paper reviews the trend towards structured financing of infrastructure assets in general and considers at a high level how this may be relevant to the consideration by the CAA of appropriate notional balance sheet structures for Heathrow and Gatwick. The paper highlights:

- there is an observable trend of infrastructure businesses assuming higher levels of debt and there is clear evidence of the use of more structured finance in the market particularly since 1999. In 2005 there was a significant increase in the amount of debt raised together with a growth in the size of transactions and this appears to have continued through 2006;
- the use of structured finance has enabled companies to increase leverage levels whilst still maintaining an investment grade credit rating. In general the underlying credit rating for these financings is in the low single-A to high triple-B area. It is recognised that one of the characteristics of structured finance is its ability to increase gearing whilst maintaining a given underlying credit rating relative to corporate financed debt;
- there is high-level or anecdotal evidence to suggest that the cost of equity underpinning increased gearing in the infrastructure sector (especially for regulated assets) generally falls within the low teens range (10% - 15%), and;
- that based on the high level information available, the evidence is broadly supportive of the basic financing structure assumed by the CAA for Heathrow and Gatwick. This makes no specific assumption about the use of corporate or structured finance, but features 60% gearing with 100 basis points debt premium and assumes a comfortable investment grade credit rating. In reviewing the evidence available a gearing level of 60% appears to be at the high end of the examples of corporately financed debt and the low end of structured financing. A more definitive position would require more detailed consideration of the specific credit circumstances of Heathrow and Gatwick, including a review of quantitative metrics and qualitative factors as they pertain to these airports.