

**Report for Air New Zealand by Europe
Economics**

**Critique of Commerce Commission's
asset beta analysis**

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1 INTRODUCTION

- 1.1 This report by Europe Economics sets out to critique section 6.9 (asset and equity betas) of the Commerce Commission's Draft Reasons Paper of May 2010¹, regarding the asset beta applicable to airport services supplied by Auckland International Airport Ltd, Wellington International Airport Ltd; and Christchurch International Airport Ltd.
- 1.2 Europe Economics is an independent private sector consultancy, based in London, which specialises in the application of economics and econometrics to problems arising predominantly in the fields of public policy, regulation, and competition. Cost of capital is a cornerstone of the work we do. We have previously advised the UK Civil Aviation Authority, the Irish Commission for Aviation Regulation and the UK water and telecoms regulators on cost of capital and asset beta issues during respective price reviews. More about us can be found in Appendix 1.
- 1.3 The report considers the following issues:
- (a) Are the estimates of the asset betas of the comparator airports as set out in Tables 6.13, 6.14 and 6.15 of the CC's report accurate?
 - (b) The data cut-off point used in the CC's report was September 2009. Since that time financial conditions have relaxed around the world (with the exception of the Eurozone from early May 2010) – what would an updated version of the beta estimates look like?
 - (c) The appropriateness of the chosen comparator set – the CC's paper focuses on the mean and median of its comparator set. How well are the New Zealand airports likely to be represented by the mean and median of this comparator set (might the New Zealand airports, for example, lie below the median of that set, or above)?
 - (d) The use of a "service wide" asset beta and whether construction of a range based on a selection of the "best" comparators might be more appropriate.
 - (e) Regulatory precedents – whether examining regulatory determinations involving unlisted comparator airports would result in a different asset beta range.
- 1.4 Our analysis, which mirrored the Commission's own as closely as possible but updated to 31 May 2010, leads us to an unadjusted mean asset beta of 0.71 and a median of 0.66. This compares with the Commission's calculated mean of 0.74 and median of 0.71. We also assessed the effect of adding in additional comparator airports which yielded a slightly lower mean unadjusted asset beta of 0.70 and a median of 0.66.

¹ Commerce Commission: Input methodologies airport services, draft reasons paper, May 2010.



- 1.5 Taking account of the argument that unregulated services (which are also reflected in the unadjusted asset betas above) are likely to be more risky than those regulated, the appropriate judgement for a regulated entity asset beta might be closer to 0.60. This would also fall at the top of the 0.4-0.6 range the Commission adopted in the 2002 review for the three airports in question.



2 UNADJUSTED ASSET BETAS OF COMPARATOR AIRPORTS

Introduction

- 2.1 This section explores the estimates of raw betas and leverage used by the Commission to arrive at the unadjusted asset betas of a chosen sample of comparable companies in Table 6.14 of the report.
- 2.2 Europe Economics has applied the method followed by the Commission, or what we consider to be the appropriate approach where this is not specified, to recalculate unadjusted asset betas (i.e. the asset betas for the whole company including the non-regulated services). Updates to the figures till 31 May 2010 have also been calculated.

Equity betas

- 2.3 The Commission drew on estimates of raw equity beta and corresponding standard errors from Bloomberg. Europe Economics followed a similar process and downloaded rolling monthly equity betas over a five year period to September 2009 where available.

Leverage

- 2.4 In calculating the leverage, the Commission applied a mixture of book and market values as indicated in footnote 447 of the report:

“The average leverage was calculated as the unweighted arithmetic average of leverage at each financial year end for the same period as the observations used for the equity beta estimate (using the book value of net interest bearing debt and market value of equity)”.

- 2.5 Our measure of leverage is:

$$\frac{NetDebt}{NetDebt + MarketCapitalisation}$$

- 2.6 This ensures the equity component of total capital is valued at market prices while net debt² figures are based on book values.
- 2.7 Table 2.1 presents our calculations next to those of the Commission.³

² In Bloomberg net debt is defined as Short-Term Borrowings + Long-Term Borrowings - Cash & Near Cash Items - Marketable Securities - Collaterals.

³ Where Bloomberg gave negative average leverage figures (for the three Mexican companies) these were normalised to zero. This appears also to be the method adopted in the Commission's approach.



Table 2.1: Unadjusted Equity Beta and Leverage Estimates (September 2004 – September 2009)

Name	Country	CC Calculations			EE Calculation		
		Unadjusted equity beta	Standard error of beta	Average leverage	Unadjusted equity beta	Standard error of beta	Average leverage
Aeroports de Paris*	France	0.94	0.21	26%	0.94	0.26	27%
Airports of Thailand	Thailand	1.15	0.12	34%	1.10	0.12	33%
Auckland International Airport Ltd (AIAL)	New Zealand	0.92	0.18	25%	0.95	0.23	25%
Fraport	Germany	0.97	0.19	13%	0.70	0.17	16%
Flughafen Wien	Austria	0.84	0.09	20%	0.87	0.12	29%
Flughafen Zuerich	Switzerland	1.25	0.25	42%	1.29	0.35	48%
Grupo Aeroportuario del Centro Norte*	Mexico	1.00	0.22	0%	0.98	0.24	0%
Grupo Aeroportuario del Pacifico*	Mexico	0.59	0.20	0%	0.63	0.24	0%
Grupo Aeroportuario del Sureste	Mexico	0.79	0.19	0%	0.83	0.21	0%
Macquarie Airports**	Australia	1.18	0.27	44%	0.88	0.30	42%

* 60 monthly data points (5 years of data) were not available for these companies. 30 data points were used instead to calculate rolling betas.

Source: Bloomberg, Commerce Commission

- 2.8 There are minor differences in the two sets of calculations which can arise due to updating of data on the Bloomberg terminal or different measures of leverage, rounding differences and differing timelines such as when calculating rolling beta — assumptions which were not explicit in the Commission paper. The equity beta for Fraport and Macquarie are more noticeably lower but others such as Grupo Aeroportuario del Pacifico are higher in the EE estimates.⁴
- 2.9 Overall we see no strong pattern in these differences in the sense of one set of estimates of equity betas or leverage consistently being much higher or lower.
- 2.10 Updating the figures to 31 May 2010 does not result in a substantial movement in direction (see Table 2.2).

⁴ In October 2009 MAp acquired Macquarie Airports Mgmt Ltd. Our calculations are based on data for the parent company as data on Macquarie Airports Mgmt is no longer available on Bloomberg.



Table 2.2: Updated Unadjusted Equity Beta and Leverage Estimates (May 2005 – May 2010)

Name	Country	Unadjusted equity beta	Standard error beta	of	Average leverage
Aeroports de Paris	France	0.91	0.24		27%
Airports of Thailand	Thailand	1.14	0.12		33%
Auckland International Airport Ltd (AIAL)	New Zealand	0.98	0.22		25%
Fraport	Germany	0.75	0.17		16%
Flughafen Wien	Austria	0.85	0.12		29%
Flughafen Zuerich	Switzerland	1.28	0.33		48%
Grupo Aeroportuario del Centro Norte	Mexico	1.02	0.23		0%
Grupo Aeroportuario del Pacifico	Mexico	0.65	0.25		0%
Grupo Aeroportuario del Sureste	Mexico	0.83	0.20		0%
MAp Group (Macquarie Airports)	Australia	0.94	0.30		42%

Source: Bloomberg

Unadjusted Asset betas

2.11 Assuming a debt beta of zero, and re-levering gives rise to the asset betas in Table 2.3.

Table 2.3: Comparable Companies Unadjusted Asset Betas

Name	Unadjusted asset beta - as in Commission report	Unadjusted asset beta - EE calculations up till Sep 09
Aeroports de Paris	0.70	0.69
Airports of Thailand	0.76	0.74
Auckland International Airport Ltd (AIAL)	0.69	0.71
Fraport	0.84	0.59
Flughafen Wien	0.67	0.62
Flughafen Zuerich	0.72	0.67
Grupo Aeroportuario del Centro Norte	1.00	0.98
Grupo Aeroportuario del Pacifico	0.59	0.63
Grupo Aeroportuario del Sureste	0.79	0.83
Macquarie Airports	0.66	0.51
Mean	0.74	0.70
Median	0.71	0.68

Source: Commerce Commission and Europe Economics calculations based on Bloomberg data

2.12 Our calculations give rise to slightly lower mean and median of the asset betas.



3 ANALYSIS OF THE COMPARATOR SET

Introduction

- 3.1 In this section we analyse the characteristics of the three New Zealand airports – Auckland, Christchurch and Wellington. We then examine the set of comparators used by the Commerce Commission (CC) and comment on what appears to be the most appropriate section of the range for choosing the point estimate.
- 3.2 We first consider the Commerce Commission's decision to use a “service wide” asset beta.

Use of a Service Wide Asset Beta

- 3.3 In its draft reasons the CC estimated a “service wide” cost of capital, including a service wide asset beta.
- 3.4 In the consultation the suppliers and users of airport services had argued that the Airports were not homogeneous in respect of their risk characteristics and that therefore their equity betas were different. The Commission agreed that as airport services may face different levels of systematic risk, different equity betas could apply, in principle, to different airports.
- 3.5 However, the Commission noted that estimating asset betas for an industry (or specific service) is inherently imprecise and involves a significant degree of judgement. It argued that estimating supplier-specific equity betas would require an even greater degree of judgment than estimating service-specific equity betas. In the context of information disclosure for Airports, the Commission stated that a service or Airport-specific asset/equity beta was more appropriate as supplier specific estimates would require a degree of precision that was not present.

Europe Economics' view

- 3.6 Whilst we acknowledge the difficulties relating to estimating a supplier specific cost of capital, we consider that there are a number of factors which may differ between airports (particularly when considered internationally) which make a service specific beta inappropriate.
- 3.7 We also note that by estimating the service wide asset beta based on averages of a comparator set, the CC makes the determined beta dependent on the sample of airports chosen which may be somewhat arbitrary.
- 3.8 Factors which are commonly identified as potentially affecting an airport's exposure to systematic risk (and hence its asset beta) include:
- (a) Market power — the amount of excess demand and ability to absorb shocks. Changes in demand can manifest themselves either through effects on passenger



numbers, or through prices (discounts from the price caps in a regulated context based on price caps).

- (b) Nature of traffic and activity — e.g. whether airports are regional airports, international, international hubs, or mega hubs. There is some evidence that domestic business travel is more strongly correlated to GDP than domestic leisure travel; and that resident international travel (both business and leisure) is more strongly correlated to GDP than travel by international visitors.⁵
- (c) Relative importance of commercial and aeronautical activities revenues — revenues from shopping malls and other such commercial services located within airports may be subject to different systematic risks from aeronautical activities (e.g. people might shop less without stopping flying).
- (d) Level of government interest — different levels of government involvement could change risks due to policy changes, and their allocation due to, for example, an expectation of government support in the event of the airport experiencing financial distress;
- (e) Investment programmes compared to size of business — different investment requirements could change exposure to systematic risk either through operational gearing (increase) or by providing flexibility (reduce). The level of investment programme would also affect an airport's exposure to systematic risks involved in construction (e.g. changes in labour costs or the cost of materials); and
- (f) Regulatory regime — different regimes could provide different levels of risk pass through to customers, and this might affect systematic as well as specific risk.

3.9 Although the regulatory regime may affect a company's risk it is difficult to meaningfully compare these in order to estimate a firm's exposure to systematic risk – particularly in cases where one company may own several airports. For this reason our analysis focuses primarily on other components of systematic risk such as the nature of traffic and activity and the size of investment programmes. However, we discuss below the reasons why a regulated firm's exposure to systematic risk may differ from that of an unregulated firm with similar characteristics.

Differences in systematic risk between regulated and unregulated firms

3.10 There are three main reasons why a regulated firm's asset beta may differ from that of a similar firm operating in an unregulated market. These are:

⁵ Research by Australia Pacific Airports Melbourne (APAM) analysing the traffic composition of Australian airports and how various types of traffic are correlated with the domestic economy described in: ACCC Melbourne Airport, Multi-user domestic terminal, New investment decision, August 2000.



- (a) **Possible correlation with market power:** The fact that a particular firm is subject to price regulation may be associated with its market power, for example, international hubs with excess demand may be more likely to be regulated than other airports. It is hence possible that a greater proportion of firms with relatively low systematic risk would be subject to economic regulation than other firms.
- (b) **Regulation in itself may be a source of risk,** in the form of political/regulatory risk. Regulatory risk can arise if the regulator's actions introduce systematic risk, for example, if the regulator takes actions that cause the returns of the firm to be correlated with some systematic risk factor. An example of this would be if the regulator decreases a price cap in response to a macro-economic shock that affects the profits of a firm. (In paragraph 3.32 below we discuss how certain airports in the comparator group might be subject to relatively high politico-regulatory risk.)
- (c) **The effect of the actual regulatory framework.** A regulatory framework can either increase or decrease a company's exposure to systematic risk when compared with an unregulated company performing similar functions. Below we discuss some of the potential effects of regulatory framework.

3.11 Whether the price control takes the form of a price cap or a revenue cap affects a company's systematic risk. The two alternatives work as follows:

- *Price cap* – the regulator agrees a fixed set of tariffs. The revenue which the company earns from these tariffs would depend on market volumes. Under a pure price cap approach, the company is fully exposed to the revenue consequences of any change in market volumes. In other words, its revenue would increase if market volumes increased, but would fall if market volumes decreased.

However, price cap regulation decreases a firm's beta when compared with an unregulated firm. This is because profits rise less for the regulated firm compared with the unregulated firm when there are positive shocks to demand due to the price cap placing a limit on price rises, but profits will fall due to negative shocks in the same way as for an unregulated firm since prices can (at least in theory) fall below the cap. Overall, profits for the regulated firm are less variable (and on average lower, due to not being able to take full advantage of upside shocks) than when the firm is unregulated. This lower variability in profits leads to a lower beta for the regulated firm when compared to an unregulated firm.

- *Revenue cap* – the regulator would agree the revenues that the company should be allowed to earn. Tariffs would be calculated so as to recover these revenues on the basis of projected market volumes. However, in the event that out-turn market volumes differed from these projections, any over- or under-recovery of revenue would be taken into account in finalising the tariffs for the following year. As tariffs are changed annually (to allow a set level of revenues to be earned) the company is exposed to less systematic risk than companies with a pure price cap.



- 3.12 Regulators are not necessarily restricted to choosing between the pure price cap and revenue cap approaches described above, since it is also possible to employ a hybrid approach. For instance, a price control could be set such that 50 per cent of allowed revenue is fixed, with the company exposed to changes in market volumes in relation to the other 50 per cent.
- 3.13 There are also a number of mechanisms that a regulator can use to reduce a company's exposure to systematic risk. These include cost drivers and pass-through items.
- 3.14 *Cost drivers:* Cost drivers can be used to reduce a company's risk exposure by linking the allowed revenues of a firm to certain factors such as volume changes.
- 3.15 *Pass-through items:* Regulators differ in the way in which they treat costs which are either partly or wholly out of the control of the regulated company, e.g. local authority rates or costs associated with heightened security. If a regulator allows costs to be passed through to the customer this reduces the companies' systematic risk.
- 3.16 Whether a regulated company would have higher or lower systematic risk than a similar company that was unregulated would depend on the balance between factors b) and c) above, i.e. whether any increase in systematic risk a company faced as a result of being subject to regulation (regulatory risk) was outweighed by any extra protection from systematic risk the regulatory framework afforded. The balance of the respective risks is likely to differ between different jurisdictions – for example in countries with more unstable political regimes regulatory risk is likely to be higher. However, although this could be subject to quantitative analysis this is not possible within the scope of this project.

Analysis of the Three New Zealand Airports

- 3.17 We now analyse the characteristics of the three New Zealand airports before considering the characteristics of the comparator airports. In section 4 we consider the effects on the mean and median of altering the sample of comparator airports.

Auckland International Airport⁶

- 3.18 Auckland International Airport Limited (AIAL) owns and operates the Auckland International Airport. Over 70 per cent of visitors enter or leave New Zealand via Auckland Airport, which handles over 13 million passengers a year. More than 30 international airlines serve Auckland Airport, Australasia's second busiest international airport, after Sydney.

⁶ <http://www.aucklandairport.co.nz/>



- 3.19 The Airport includes a single runway, an international terminal and two domestic terminals. The Airport also has commercial facilities which include airfreight operations, car rental services, commercial banking centre and office buildings.
- 3.20 In 2009 passenger numbers were 13.01 million - of which 7.36 million was international and 5.65 million domestic. In 2008 passenger numbers were 13.20 million - of which 7.46 million was international and 5.74 million was domestic. Auckland Airport is continually developing the capacity and services to ensure it will cope with an anticipated 24 million passengers a year by 2025.
- 3.21 In 2009 Auckland's turnover was \$369.244 million of which \$41.725 million was profit. Investment in 2009 totalled \$88 million. In 2008 there was \$143 million of investment in the expansion of the international terminal, including a new arrivals area and pier, which opened in October 2008.

Christchurch International Airport Limited⁷

- 3.22 Christchurch International Airport (CIAL) is situated on the east coast of New Zealand's South Island. Christchurch Airport is New Zealand's second largest airport.
- 3.23 The airport is located next to many tourism highlights and almost six million passengers travelled in and out of CIAL from 1 July 2008 to 30 June 2009. Of these 1.6 million (33 per cent) were international passengers and 4.2 million (72 per cent) were domestic. Over the last year CIAL has experienced consistent, record growth in international passenger volumes, at 4.3 per cent over 2007 levels. The combined passenger growth resulted in 7.7 per cent growth over 2007.
- 3.24 In 2009 operating revenues were \$89.9 million (an increase of 5.6 per cent on the previous year) and the company recorded a net profit after tax of \$14.7 million; slightly down from \$23.4 million in the previous year. There was \$31.9 million investment in airfield, terminal, car parking and property projects.

Wellington International Airport⁸

- 3.25 Wellington International Airport Ltd (WIAL) is the hub of New Zealand's domestic aviation network. WIAL was privatised in 1998 and now infrastructure company, Infratil, owns 66 per cent of Wellington Airport and Wellington City Council owns 34 per cent.
- 3.26 The Airport is on a 110 hectare freehold site. It hosts about 5 million passengers a year and 7 million visitors in total. In the year to end March 2008 4.4 million (85 per cent) of the passengers were domestic and 0.6 million (15 per cent) were international.

⁷ <http://www.christchurchairport.co.nz/>

⁸ <http://www.wellington-airport.co.nz/html/airportinfo/index.php>



- 3.27 Wellington Airport, despite constant growth in passenger numbers, is constrained by both its size and capacity. Over the last 15 years, international passenger numbers at Wellington have grown 6.4 per cent per annum and domestic 2.8 per cent per annum. Recently, Wellington has experienced growth rates of up to 30 per cent in some months on the domestic trunk since Pacific Blue's domestic start up. The future potential capacity of Wellington Airport is currently being reassessed as part of the Airport's master planning process. Forecasting has predicted at least a doubling of passenger numbers over the next 20 years from the current 5 million per year.
- 3.28 Wellington Airport's revenue in the year to end March 2008 was \$78.2m with earnings (EBITDAF) of \$60m. Investment projects completed or underway, including non-aeronautical investment, amount to \$120m.⁹

Analysis of Other Comparators

- 3.29 We carried out additional analysis of the sample of comparators used in the CC's report in order to compare them to the New Zealand airports. This information is summarised in the following table. (Note airports are listed in order of the updated unadjusted asset betas calculated in section 2, with the two unlisted New Zealand airports shown at the bottom of the table).

⁹ Wellington Airport, Factsheet: meeting capacity and demand.



Table 3.1: Analysis of Other Comparators

Name of operator	Airports owned/operated	Ownership type	Type of airport(s)	Passenger numbers, domestic/international split	Turnover (figures in bold are 2009 in NZ\$ ¹⁰) other figures in local currency	Percentage of revenue from non-aeronautical activities	Investment	Unadjusted asset beta May 2005-May 2010 EE calculation	Unadjusted asset beta as at May 2010 EE calculation
Grupo Aeroportuario del Centro Norte	International airports in the northern and central regions of Mexico		All international airports	14 million	\$223m	2008 – 20% 2007 – 18%	103m GBP to construction and remodelling between 2006-2010	1.02	1.06
Grupo Aeroportuario del Sureste	Holds 50 year concessions, beginning in 1998, to manage airports in Cancun, Cozumel, Merida, Oaxaca, Veracruz, Huatulco, Tapachula, Minatitlan,		Cancun: international , international hub. Cozumel: regional, international . Huatulco: international , regional.	Cancun: 11 m (2009). Cozumel 500,000 (2003). Huatulco: 365,000 (2008). Merida: 1.2m (2008). Minatitlan: 150,000 (2008). Oaxaca: 600,000 (2008). Tapachula 240,000 (2008). Veracruz: received 900,000 (2008). Villahermosa: received 950,000 (2008). TOTAL: 14 m/year In 2006, domestic passengers accounted for 28%, int'l 72%.	\$369m		Investments totalling 307m USD between 2004 - 2008	0.83	0.79

¹⁰ Bloomberg



Name of operator	Airports owned/ operated	Ownership type	Type of airport(s)	Passenger numbers, domestic/international split	Turnover (figures in bold are 2009 in NZ\$ ¹⁰) other figures in local currency	Percentage of revenue from non-aeronautical activities	Investment	Unadjusted asset beta May 2005-May 2010 EE calculation	Unadjusted asset beta as at May 2010 EE calculation
	and Villahermosa.								
Airports of Thailand	Bangkok International Airport (Don Muang), New Bangkok International Airport (Suvarnabhumi) and provincial airports in Chiang Mai, Hat Yai, and Phuket.	Public Limited Company - Ministry of Finance holds a 70% stake	International hub, international and regional	53.9 million (2009) - of which 32.83 million were international, 21.11 million domestic	\$1044m 21,502.39 million Baht (2009)	2009 – 43% 2008 – 43%	Currently developing the New Bangkok International Airport (Suvarnabhumi) - Thai Airway's domestic traffic is being transferred to here from Don Mueang airport	0.76	0.78
AIAL (Auckland)	Auckland International Airport		International, regional	13.01 million (2009) - of which 7.36 international, 5.65 domestic 13.20 million (2008) - of which 7.46 international, 5.74 domestic	\$250m \$369.244 million (2009)	2009 – 55% 2008 – 54% (retail accounted for 28% of total revenue in	\$87.593 million (2009)	0.74	0.67



Name of operator	Airports owned/operated	Ownership type	Type of airport(s)	Passenger numbers, domestic/international split	Turnover (figures in bold are 2009 in NZ\$ ¹⁰) other figures in local currency	Percentage of revenue from non-aeronautical activities	Investment	Unadjusted asset beta May 2005-May 2010 EE calculation	Unadjusted asset beta as at May 2010 EE calculation
						both years)			
Flughafen Zuerich (Zurich Airport)	Zurich Airport	Private company which operates Zurich airport on behalf of the federal government	International hub		\$1,202m			0.67	0.66
Aeroports de Paris	Paris-Charles de Gaulle, Paris-Orly and Paris-Le Bourget (also 10 airfields and one heliport)	Partially government owned (52.4%)	International hub	78.7 million (2005) of which 24.9 million Paris-Orly, 53.8 million Paris-CDG.	\$5,825m 2,633.4 million Euros (2009)			0.66	0.65
Grupo Aeroportuario del Pacifico	Airports in the Pacific and central regions of Mexico	Airports were recently concessioned by the Mexican Government to improve safety and efficiency.	International and domestic hubs	Guadalajara, Tijuana, and Hermosilla fly mostly domestic passengers, while Guadalajara, Puerto Vallarta and Los Cabos fly mostly international passengers. In 2009, 12.6m flew domestically, 6.6m intr'n'l. total = 19.6m	\$385m	2009 – 28% 2008 – 20%		0.65	0.71



Name of operator	Airports owned/ operated	Ownership type	Type of airport(s)	Passenger numbers, domestic/international split	Turnover (figures in bold are 2009 in NZ\$ ¹⁰) other figures in local currency	Percentage of revenue from non-aeronautical activities	Investment	Unadjusted asset beta May 2005-May 2010 EE calculation	Unadjusted asset beta as at May 2010 EE calculation
Fraport	Frankfurt-Main (100%), Frankfurt-Hahn (100%), Lima (100%), Varna (60%), Bourgas (60%) and Antalya (51%).	State of Hesse holds 31.52% of shares, City of Frankfurt 20.13%	International , regional	78.15 million (2008)		65% (18% in retail & real estate)	€1,051 million (2009) €766 million (2008)	0.63	0.83
Flughafen Wien	Vienna International Airport and the Vosslau Airfield.	Province of Lower Austria 20%, City of Vienna 20%	International	18.11 million (2009) - of which 5.45 transfer passengers	\$1,110m 501.7 million Euros (2009)	2009 – 20% 2008 – 20% (retail and properties accounted for 17% of total revenue in both years)	€223.6 million (2009)	0.60	0.62
Macquarie Airports	Sydney, Brussels, and Copenhagen. ASUR airports (which they have part	At Copenhagen Airport the Danish state owns 39.2%. At Brussels	Sydney: regional, international , international hub, freight. Copenhagen	Sydney: 33.4m. Brussels: 17m. Copenhagen: 19.7m	\$1,512m		Brussels: construction of underground rail-link and expansion of cargo area	0.55	



Name of operator	Airports owned/operated	Ownership type	Type of airport(s)	Passenger numbers, domestic/international split	Turnover (figures in bold are 2009 in NZ\$ ¹⁰) other figures in local currency	Percentage of revenue from non-aeronautical activities	Investment	Unadjusted asset beta May 2005-May 2010 EE calculation	Unadjusted asset beta as at May 2010 EE calculation
	ownership in) include: Merida, Cozumel, Veracruz, Villahermosa, Oaxaca, Huatulco, tapachula, and Minatitlan.	airport the state owns 25%.	n: International hub, regional. Brussels: regional, international, military, freight.				(unknown cost). Copenhagen: 565m GBP expansion project		
Christchurch (CIAL)	Christchurch IAL		Domestic/international hub	Almost 6m in 2008/9. 1.6m (33%) international, 4.2m (72%) domestic.	\$89.9 m		\$31.9m investment in airfield, terminal, car parking and property projects	-	
Wellington (WIAL)	Wellington IAL	Infratil, owns 66 per cent of Wellington Airport and Wellington City Council owns 34 per cent	Domestic hub	5m passengers a year - 4.4m (85%) domestic 0.6m (15%) international.	\$78.2m		Investment projects completed or underway, including non-aeronautical investment, amount to \$120m	-	



Analysis of Comparator Set

- 3.30 In the discussion above we identified a number of factors that are likely to affect an airport's exposure to systematic risk. These include large investment programmes (increasing a company's exposure to systematic risks associated with construction costs), the proportion of domestic passengers, and the exposure to non-aeronautical revenues.
- 3.31 Other potentially relevant factors include:
- (a) The political environment that the airport operates in – this could affect a company's systematic risk if there was an increased chance of systematic factors being passed onto the airport via policy changes e.g. taxes or government intervention.
 - (b) Whether the comparator is a single airport or an airport group.
- 3.32 It is arguable that certain of the airports in the comparator group might be subject to relatively high politico-regulatory risk. For example, it is not clear that the regulatory environment in Thailand or Mexico should be regarded as as stable and predictable as that in New Zealand – in particular, we are not convinced it is appropriate to include so many Mexican airports within the comparator group.
- 3.33 On the other hand, both Wellington and Christchurch are primarily domestic airports. This is in contrast to the majority of the comparator set which comprises of airports dealing with a large proportion of international traffic. Since domestic traffic is typically argued to be associated with higher systematic risk, it is natural to regard this as a factor tending to favour Wellington and Christchurch lying higher within the comparator group.
- 3.34 However, the above points noted, although there might be a case that the New Zealand airports perhaps lie somewhere below the median of this comparator set, it does not appear that the key factors of difference demonstrate decisively that the New Zealand Airports lie towards either the top or the bottom of the comparator set. Within the comparator set, those with relatively low non-aeronautical revenues and those with higher such revenues equally sit at around the 0.65-0.7 range. The comparator with the closest overall turnover to the New Zealand airports (Grupo Aeroportuario del Pacifico) has an asset beta of 0.65, also. It thus appears to us that, although it has some weaknesses, this comparator set provides at least some support for an unadjusted asset beta in the region of 0.65.

Alternative Comparators

- 3.35 As explained above we do not consider the comparator set chosen by the CC in which to calculate the service-wide asset beta to be particularly good comparators for the three New Zealand airports. This is due to a number of reasons including the large number or large airport groups chosen; the inclusion of airports from countries which may face very different systematic risks resulting from the financial/political environment and the low number of airports with high proportions of domestic traffic included.



3.36 We therefore consider in the next section the effect of expanding the comparator set to include a number of other airports.

Revision of the Comparator Set

Introduction

3.37 In this section we consider the effect of using a revised comparator set.

3.38 We first consider the inclusion of the asset betas of the following three airports. These airports were chosen as we consider their characteristics to have some similarities with those of the three New Zealand airports.

- (a) **Copenhagen Airports A/S** is the listed company that owns and operates the airports at Kastrup and Roskilde. The airport is Scandinavia's main airport, i.e. the transfer airport for air traffic between other parts of the world and the many national and regional airports in Scandinavia and the area south of the Baltic Sea. At the end of December 2008, Macquarie Airports Copenhagen ApS held 53.7 per cent of the share capital of Copenhagen Airports A/S, and the Danish State held 39.2 per cent of the share capital. The remaining part of the shares is held by private and institutional investors. The number of passengers in 2009 was 19.7 million. Turnover in 2009 was NZ \$868 million.
- (b) **Shanghai Pudong International Airport** is a major international hub in Asia. A total of 31.9 million passengers passed through the airport in 2009, making the airport the third busiest in mainland China. There were 17.5 million international passengers handled in 2007. There are currently two main passenger terminals, and there are plans for the building of a third passenger terminal, a satellite terminal and two additional runways by 2015, raising capacity to 80 million passengers a year. Turnover in 2009 was NZ \$748 million.
- (c) **Xiamen International Airport Group Co Ltd** is a state-owned conglomerate affiliated directly with the Xiamen Municipal Government. It manages three airports, namely, Xiamen Gaoqi Airport, Fuzhou Changle Airport and Longyan Guanzai Mountain Airport. Its core business is ground handling services for civil aviation, with supplementary businesses covering commerce and trade, hotel, advertising, investment, and real estate development.
 - Xiamen Gaoqi International Airport is a regional and international hub. In 2005 it handled a total of 6.28 million passengers and 201,300 tons of cargo and mail. The inbound and outbound international passengers totalled 1,173,300.
 - Fuzhou Changle International Airport is an international hub. In 2003, Fuzhou airport handled 3.39 million passengers.
 - Longyan Guanzaishan Airport is a regional airport targeted mainly to tourists, with a handling capacity of 140,000 passengers and 800 tons of cargos.



The revised set of comparators

3.39 Table 3.2 below presents the unadjusted asset betas of the Commerce Commission's comparator sample with the addition of Copenhagen; Shanghai Pudong and Xaimen airports.

Table 3.2: Summary of Comparator Analysis

Name	Unadjusted asset beta - as in Commission report	Unadjusted asset beta - EE calculations up Sep 04 – Sep 09	Unadjusted asset beta - EE calculations up May 05 – May 10	Unadjusted asset beta - EE calculations up till May 10 plus new airports
Aeroports de Paris	0.70	0.69	0.66	0.66
Airports of Thailand	0.76	0.74	0.76	0.76
Auckland International Airport Ltd (AIAL)	0.69	0.71	0.74	0.74
Fraport	0.84	0.59	0.63	0.63
Flughafen Wien	0.67	0.62	0.60	0.60
Flughafen Zuerich	0.72	0.67	0.67	0.67
Grupo Aeroportuario del Centro Norte	1.00	0.98	1.02	1.02
Grupo Aeroportuario del Pacifico	0.59	0.63	0.65	0.65
Grupo Aeroportuario del Sureste	0.79	0.83	0.83	0.83
Macquarie Airports	0.66	0.51	0.55	0.55
<i>Kobenhavns Lufthavne (Copenhagen Airports)</i>	-	-	-	0.42
<i>Shanghai International Airport</i>	-	-	-	0.66
<i>Xiamen International Airport</i>	-	-	-	0.85
Mean	0.74	0.70	0.71	0.70
Median	0.71	0.68	0.66	0.66

Source: Europe Economics calculations based on Bloomberg data

3.40 As can be seen above the inclusion of three extra comparators lowers the mean of the comparator set slightly to 0.70 and the median to 0.66.

3.41 Any set of comparators can be challenged, and the inclusion of these additional comparators does not materially change the result, which we believe provides some additional support for the idea that the correct calculation for the unadjusted asset beta of the comparators is in the region of 0.66, rather than 0.71.



4 ANALYSIS OF REGULATORY PRECEDENTS

Introduction

4.1 In this section we analyse some recent regulatory determinations which have involved unlisted airports which can be considered as comparators to the three New Zealand airports. The airport groups we cover are:

(a) Dublin Airport Authority (DAA) – Dublin, Shannon and Cork.

(b) BAA - London airports (Heathrow, Gatwick and Stansted)

(c) Aéroports de Paris (Paris Airports)

4.2 Earlier decisions from Australia and New Zealand are also looked at.

Dublin Airport Authority (DAA), Ireland

4.3 The DAA's principal activities include airport management, operation and development, domestic and international airport retail management, and airport investment. The company's domestic operations include the running of Dublin, Cork and Shannon airports.¹¹

4.4 The DAA's total revenue from activities in Ireland was almost €421 million in 2009 of which 55 per cent came from commercial activities.

Commission for Aviation Regulation (CAR) 2009 determination on maximum airport charges for the Dublin Airport Authority

4.5 DAA is an unlisted company and therefore CAR has historically relied on comparator data to estimate asset betas. In contrast to both 2005 and 2001, the preferred comparator BAA's shares were no longer listed at the time of the 2009 price cap determination. The Commission did, however, continue to use evidence relating to BAA in determining the appropriate equity beta for DAA. In particular, the Commission referred to the work carried out by the Competition Commission in the UK in 2008 and 2009 in estimating the beta for BAA in price cap reviews for Heathrow, Gatwick and Stansted.

4.6 In deciding what weight to attach to beta estimation for BAA airports, the Commission considered two things: whether the systematic risks faced by the DAA were different from those risks that BAA airports are exposed to, and whether the airport sector in general had become more risky.

¹¹ On dates yet to be confirmed, the Cork and Shannon Airport Authorities may have the relevant airport assets vested in them and assume full responsibility for the management, development and operation of Cork and Shannon airports respectively. In the interim, the board of the DAA has transferred significant day-to-day operational responsibility, under delegated authority, to the boards of the Cork and Shannon Airport Authorities.



- 4.7 On the basis of these considerations, the Commission decided that an asset beta for the DAA in the range of 0.5 to 0.7 was appropriate and decided on a 0.61 point estimate of the asset beta in estimating the cost of capital.

Description of airports

- 4.8 **Dublin Airport** manages an average of 60,000 passengers per day, rising to 80,000 during the peak season, and more than 600 aircrafts movements every day. The airport handled almost 23.5 million passengers in 2008 but this fell to 20.5 million passengers in 2009. It is an international airport and a hub for the likes of Aer Lingus (though their main base is in Stansted), Aer Lingus Regional, Ryanair, CityJet, Monarch Airlines and Thomson Airways). In 2009, the airport served over 190 routes with 63 airlines for the year.
- 4.9 Since 2006, the DAA has embarked on a €1.2 billion investment at Dublin Airport, which will see a new terminal open in November 2010, in addition to improvements to the existing airport infrastructure. This was spurred by passenger numbers more than doubling over the past 10 years.¹² It is funded through a combination of passenger charges and commercial revenue.
- 4.10 DAA has developed a "GROW Incentive Scheme 2010" to reward passenger retention and encourage traffic growth at Dublin Airport. If annual traffic exceeds 19 million passengers in 2010, DAA will rebate all associated DAA airport charges for each passenger in excess of that amount.¹³
- 4.11 **Cork International Airport** is smaller and offers domestic flights as well as flights to European destinations. A new terminal building was opened in 2006 designed to cater for the expected 3+ million passengers and with the capacity to expand to take up to 5 million passengers a year.
- 4.12 The global recession has hit Irish aviation hard. In 2009 while 2.77 million passengers travelled through Cork Airport, traffic was down 15 per cent on the historic record high of 3.25 million in 2008.
- 4.13 **Shannon**¹⁴ was designated as Ireland's Transatlantic Airport at its inception in 1945. Annually, Shannon handles a passenger throughput of approximately 3 million people (capacity 4.5 million) with some 26,000 aircraft movements every year. Well over half a million passengers who travel through Shannon do so as transit passengers, breaking their journey at Shannon while travelling between Europe and North America.

¹² <http://www.dublinairport.com/about-us/airport-development/>

¹³ Information on airport charges and others schemes can be found at http://www.dublinairport.com/about-us/airport_charges.html.

¹⁴ <http://www.shannonairport.com/company/mediacentre/trafficfigures.html?interest=%2Fcompany%2Fmediacentre%2Ftrafficfigures.html&imageField.x=15&imageField.y=14>



4.14 In 2009, almost 2.8 million passengers passed through the airport, a decline of 12 per cent on the previous year. The number of passengers also declined between 2007 and 2008 from 3.6 million to 3.2 million. Transatlantic traffic declined by 23 per cent to 442,000 passengers as carriers reduced capacity due to the economic downturn. European traffic declined by 13 per cent to almost 900,000 passengers. UK traffic was down by 7 per cent to almost 1.1 million.

Civil Aviation Authority: Heathrow and Gatwick 2007 and Stansted 2008, UK

4.15 In November 2007, the CAA adopted the Competition Commission's recommendations on the WACC and the assumptions used for its estimation, setting it at 6.2 per cent for Heathrow and 6.5 per cent for Gatwick on a pre-tax real basis.

4.16 In arriving at an estimate for the asset beta of BAA, which was de-listed in 2006, the Commission gave regard to the analysis of group asset beta for BAA prior to its takeover and delisting, as well as asset betas of broadly comparable companies. The stand-alone estimates of individual airport betas derived from this analysis were re-levered to the notional gearing level to produce equity beta estimates.

4.17 With regard to the debt beta the Commission's assessment was based on the decomposition of the debt premium, which gave rise to a range of 0.10 to 0.19. The CAA settled on a cautious assumption of 0.10 for the debt beta in its final assessments.

4.18 A group asset beta of **0.52 for BAA** was recommended by the Competition Commission. This was disaggregated into **0.47 for Heathrow** and **0.52 for Gatwick**. (Given the single till nature of regulation for BAA, these asset betas would not have been adjusted to allow for unregulated services.)

4.19 In a separate review for Stansted in 2008, the CC recommended an asset beta of **0.62 for Stansted** airport.

4.20 The analysis to arrive at these differing betas considered the different risks facing the two airports and other business of BAA spanning demand risk, riskiness of the client airlines and operational leverage. Heathrow was considered to be the lowest risk —its passenger numbers were less affected by the 9/11 attacks; it is considered to have excess demand; and its client airlines are relatively low risk.

4.21 After Heathrow, Gatwick was perceived as less risky than the remainder of the BAA group by virtue of being a regulated business, subject to five-yearly resets of price caps. It had also been shown to face less demand risk than Stansted.

Description of airports

4.22 Heathrow remains the world's busiest international airport. The number of passengers arriving and departing in 2009 was 65.9 million. The vast majority (92 per cent) are international passengers. The split between leisure and business travellers is 66.3 per



cent and 33.7 per cent respectively. There are also a large proportion of transfer passengers at 37.5 per cent.

- 4.23 In 2010, 45 per cent of revenues came from sources other than airport charges. Of these, the vast majority (70 per cent) was from retail. This has been declining slightly year on year — 53 per cent in 2006, 52 per cent in 2007, 50 per cent in 2008 and 46 per cent in 2009. Heathrow has plans to invest in all terminals, though plans for a third runway are out of the equation in the short term.¹⁵
- 4.24 **Gatwick** is the UK's second largest airport with the busiest single-use runway in the world. It served 34 million passengers in 2008. Gatwick is predominantly a point-to-point airport focused on scheduled and low-cost flights which make up 76 per cent of total traffic. Charter operations account for a quarter of all flights. In 2009, 48 per cent of revenues came from channels other than airport charges. This declined from 56 and 57 per cent in 2008 and 2007 respectively.
- 4.25 Gatwick is in the process of investing (circa £1 billion) in improvements ranging from new multi-storey car park, more check-in desks, increased forecourt capacity, an improved shuttle system, improved baggage systems, an extended departure lounge in South Terminal and additional aircraft stands. The 2006 interim master plan described Gatwick's future as a single runway airport, with the possible addition of a second runway after 2019.
- 4.26 **Stansted** is Britain's third-busiest airport — home of the leading low-cost scheduled airlines — offering flights to more than 160 destinations in over 30 countries. It handles some 23 million passengers per year with over 177,000 air transport movements per year.¹⁶ 18.4 per cent of its passengers are business travellers. In 2008, retail accounted for 35 per cent of total commercial revenues at Stansted, which in turn accounted for 38 per cent of total revenues.¹⁷
- 4.27 It is currently forecast that the level of 35 million passengers a year will be reached in around 2015. Stansted has been seeking permission for a second runway for a number of years which, if granted, could open in 2017.

Aéroports de Paris

- 4.28 In the public consultation document¹⁸ on economic regulation for Aéroports de Paris for 2011-2015 a range for the asset beta of 0.75-0.80 was put forward by Aéroports de Paris,

¹⁵http://www.heathrowairport.com/portal/page/Heathrow%5EGeneral%5EOur+business+and+community%5ERebuilding+Heathrow/a9cd1a148e05210VgnVCM10000036821c0a_/448c6a4c7f1b0010VgnVCM200000357e120a_/

¹⁶http://www.stanstedairport.com/portal/page/Stansted%5EGeneral%5EAbout+Stansted+Airport%5EStansted+lowdown%5EStansted+at+a+glance/29c7af0226a9d110VgnVCM10000036821c0a_/448c6a4c7f1b0010VgnVCM200000357e120a_/

¹⁷DTZ (2008) 'Assessment of commercial revenue and property management at Stansted airport'
<http://www.caa.co.uk/docs/5/ergdocs/ccstanstedian3.pdf>

¹⁸ Aéroports de Paris, 'Economic regulation agreement public consultation document 2011-2015'



with 0.78 being the central estimate. (This compares with our calculation of the unadjusted asset beta of 0.66 for Aéroports de Paris).

Australia

4.29 Sydney, Melbourne, Brisbane, Perth and Adelaide airports have been subject to price monitoring since 2002 — a form of ex post regulation. Estimates of asset betas for these Australian airports are contained in earlier decisions where the airports were under a price cap regulatory regime e.g. 0.61 for Adelaide in 2000.

New Zealand

4.30 In 2002, the Commerce Commission completed its first regulatory control inquiry on whether airfield activities should be controlled at the three major international airports in New Zealand.¹⁹

4.31 An asset beta range of 0.4 to 0.6, with a point estimate of 0.5, was thought appropriate for Auckland International Airport as at 1 September 2001. The same conclusion was reached for Wellington and Christchurch.

Conclusion

4.32 Table 4.1 summarises the range of asset betas for unlisted airports reviewed in this section.

Table 4.1: Summary of Asset Betas of Unlisted Companies in Decisions Reviewed

Company	Time of estimate	Point estimate (range)
Dublin Airport Authority (Dublin, Cork and Shannon)	2009	0.61 (0.5-0.7)
Heathrow	2007	0.47
Gatwick	2007	0.52
Stansted	2008	0.62
Aéroports de Paris	2010	0.78 (0.75-0.80)
Adelaide	2000	0.61
Auckland, Wellington, Christchurch	2001	0.5 (0.4-0.6)

4.33 One can see that the Commission's proposed figure of 0.65 for the adjusted asset beta would be very nearly at the top of this range and indeed outside the previous range of 0.4 to 0.6 the Commission settled upon in its 2002 review. Dropping the 2000 and 2001

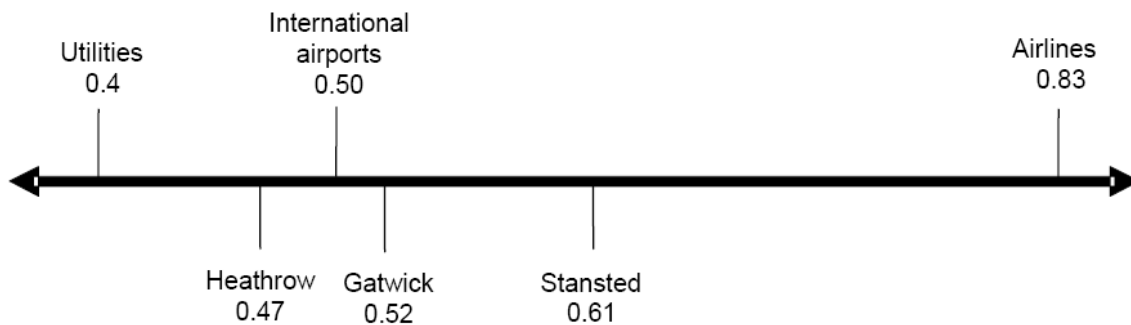
¹⁹ Archived document can be found at http://www.med.govt.nz/templates/MultipageDocumentTOC_3344.aspx



figures, one arrives at a mean of 0.60 and a median of 0.61 for the adjusted asset betas from this sample.

4.34 Another set of calculations of 2 year asset betas using daily data in various sectors is summarised in the following diagram taken from First Economics (2009).²⁰ The diagram shows the simple average of betas within each comparator type. International airports examined include Copenhagen, Frankfurt, Florence, Macquarie, Vienna and Zurich. As shown below, the Commission's 0.65 adjusted asset beta is higher than the average asset beta of the airports examined in the First Economics report.

Figure 4.1: Range of asset betas across sectors



Source: First Economics

²⁰ First Economics (2009) 'A preliminary estimate of NERL's asset beta, Prepared for the CAA'
<http://www.caa.co.uk/docs/5/ergdocs/20090305AssetBeta.pdf>



5 CONCLUSIONS

Unadjusted Asset Beta

- 5.1 Using its own analysis, the Commission arrived at an average unadjusted asset beta for international airports of 0.74 and a median of 0.71. The Commission considered this estimate to be an upper bound as it includes both regulated and unregulated services, the latter of which it considers to be more risky than the former. Based on this reasoning, and upon the recommendations of its panel, it therefore settled upon an adjusted asset beta of 0.65.
- 5.2 Our analysis here suggests that the comparator set chosen, and the judgement that the New Zealand airports lies at the median of the group, somewhat overstates the correct interpretation of these data. In particular
- (a) Our own calculation of the median unadjusted asset beta for the same set of comparators and over the same time period is lower, at 0.68, than the 0.71 found by the Commission.
 - (b) We believe that including three Mexican comparators over-weights the significance of Mexico as a source of comparator data. The inclusion of three Mexican comparators tends to raise the median. Yet it is reasonable to imagine that Mexican airports will be exposed to higher betas than New Zealand airports, since the elasticity of demand for air travel tends to decline with GDP per capita, so at higher GDP per capita the responsiveness of air travel to downturns in GDP will be less.
 - (c) Use of May 2010 data, as opposed to September 2009 data (including a significant period when the international financial crisis was still at its most fierce), further reduces our median unadjusted beta to 0.66.
 - (d) Other, more suggestive reasoning, such as consideration of the comparator with the closest aggregate turnover to the New Zealand airports (Grupo Aeroportuario del Pacifico), supports a 0.65 unadjusted beta.

Adjusted Asset Beta

- 5.3 These arguments suggest that, in fact, a better estimate of the unadjusted asset beta of comparators might be closer to the 0.66 median we find for our expanded comparator set, with data up to May 2010. Taking account of the argument that unregulated services are likely to be more risky than those regulated, that suggests that the appropriate judgement for a regulated entity asset beta might be close to **0.60**.
- 5.4 Further to this, we note that a figure of 0.6 would fall at the upper end of the 0.4-0.6 range the Commission adopted for the 2002 review. For the Commission to argue that developments in the market since then meant that the latest number falls at the top of its previous range would be arguably more defensible than its current position whereby systematic risk in the industry is adjudged to have increased so materially that it now lies



above what was even the plausible range in the past. We note that for other airports, such as those in the UK, regulatory determinations of systematic risk fell, rather than rose, after 2002. In this analysis Europe Economics has not made any further adjustments to account for the differences in regulatory regimes in New Zealand (i.e. disclosure only) and those that the comparator airports may be subject to.



APPENDIX 1: ABOUT EUROPE ECONOMICS

- A1.1 Europe Economics provides consultancy services in economic regulation, competition policy and the application of economics to public policy and business issues. Our clients include government departments, regulators and competition authorities, companies large and small, professional and trade associations, charities, law firms and public affairs firms. About half our work comes from outside the UK.
- A1.2 In 2006 Europe Economics advised the Civil Aviation Authority (CAA) on the methodology and implementation on all aspects of determining the regulatory cost of capital for the South East regulated airports Heathrow and Gatwick. More recently we have been advising the CAA on the cost of capital and financial model for NATS (UK air traffic controller). We have also advised the Irish Commission for Aviation Regulation on its duties with regard to financeability.
- A1.3 Our cost of capital work spans other sectors. In 2008, Europe Economics advised Ofwat on cost of capital and financeability issues for the water price review (PR09). Last year, Europe Economics was appointed as cost of capital advisers to the Irish Commission for Energy Regulation (CER) for the current electricity transmission and distribution price reviews in the Republic of Ireland. In an earlier 2009 project for the Northern Ireland Authority for Utility Regulation (NIAUR) and the CER, Europe Economics advised on whether the Single Electricity Market Operator responsible for operating the all-island wholesale electricity market should have a different cost of capital from its parent companies. Andrew Lilico, who led on this project, was part of the Ofcom team on a six-month secondment producing its August 2005 Cost of Capital Statement, playing a key role in the assessment of BT's group cost of capital.