The Commerce Commission's DRAFT 56G Report on WIAL:

Comments on Futures Consultants Limited Report to BARNZ dated 27 November 2012

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Report prepared for:
NZ Airports Association
PO Box 11 369,
Manners Street,
Wellington 6142

By
Dr Alastair Marsden
Department of Accounting and Finance
The Business School
The University of Auckland
Email: a.marsden@auckland.ac.nz
Ph (64) (9) 3737-599 Ext. 88564

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Authorship

This report is written by Dr Alastair Marsden on behalf of Auckland UniServices Ltd ("Auckland UniServices")[1] for the NZ Airports Association ("NZ Airports"). The NZ Airports represents Auckland International Airport Limited, Christchurch International Airport Limited and Wellington International Airport Limited ("Airport" or "Airports").

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Auckland UniServices Limited
c/o The University of Auckland
Private Bag 92019
Auckland

[1] References in this report to "we" or "our" refer to the opinions of Dr Alastair Marsden.

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The Commerce Commission's DRAFT 56G Report on WIAL: Comments on Futures Consultants Report to BARNZ dated 27 November 2012

1 Introduction

Auckland UniServices Ltd ("Auckland UniServices") has been engaged by the NZ Airports Association ("NZ Airports") to comment on the submission by Futures Consultants Limited ("FCL") titled "*The Commerce Commission's Draft 56G Report on WIAL: Comments on Selected Aspects", Report for BARNZ,* ("FCL Report") dated 27 November 2012.

Specifically, NZ Airports have requested that Auckland UniServices comment on FCL's statements that:[2]

- Three of the four non-parametric sources of uncertainty in estimating WACC identified by the Commission in its 2008 Gas Control Decision Paper will tend to lead to the WACC being overstated;
- In the 2008 Gas Control Decision Paper, the Commission notes that there is evidence suggesting the use of a domestic rather than an international version of the CAPM and the use of monthly data for estimating betas may inflate the estimates of WACC by up to 1.4%[3]; and
- With three of the four non-parametric uncertainty factors all working in the direction to overstate WACC, the true range for WACC, if it were known, would be centred on a point materially below the midpoint estimate using the Brennan-Lally model and monthly data (FCL Report, page 3).

1.1 Structure of this report

In Auckland UniServices' view, it is not clear which are the *specific* three out of the four non-parametric uncertainty factors that FCL considers are all working in the same direction to overstate WACC for Airports.

We therefore structure our report as follows:

- Section 2 briefly discusses the different forms of the CAPM;
- Section 3 considers if the asset beta and leverage parameter inputs adopted by the Commission in its Airports IM Reasons Paper (2010) to determine the WACC lead to an upward biased

[2] FCL also argue that the Commission should not use the 75th percentile WACC as a benchmark for excessive profits. The question of the WACC range and measurement of excess profits is addressed in Auckland UniServices (2009, 2010).

[3] Commerce Commission, Authorisation for the Control of Supply of Natural Gas distribution Services by Powerco Ltd and Vector Ltd: Decision Paper, 30 October 2008, pp.180-82. ("Gas Control Decision Paper").

estimate. The asset beta and leverage are parameter input factors in WACC, which are specifically noted by FCL as inputs that may overstate the Commission's WACC for Airports;

- Section 4 discusses if other parameter inputs and factors relevant to the determination of WACC or measurement of excess profits favour Airports; and

- Section 5 concludes.

2 The use of the simplified Brennan-Lally Capital Asset Pricing Model to determine the cost of equity capital

2.1 Introduction

In its report for BARNZ, FCL suggests that the use of the Brennan-Lally CAPM model as opposed to an international version of the CAPM will be one factor that leads to a material overstatement of the mid-point estimate of the WACC. The FCL Report (page 2) notes that:

> *"The Commission also recognises there are other potential sources of uncertainties concerning the true value of WACC, including:*[4]
> - *the Capital Asset Pricing Model (CAPM) does not fully describe expected returns from investments;*
> - *the Brennan-Lally version of the CAPM used by the Commission is inappropriate;*
> - *the market portfolio in the CAPM is poorly proxied by a single country's share market index and not an index of all market returns".*

We briefly consider below the different forms of the CAPM and the bias in the cost of equity capital estimates that may arise.

2.2 The Brennan-Lally CAPM

The Brennan-Lally CAPM is a variant of the standard domestic version of the CAPM but modified to reflect the assumptions of personal taxes and the NZ dividend imputation tax regime.

In Auckland UniServices' view, the simplified Brennan-Lally CAPM is an acceptable model for New Zealand. The simplified version of the model is extensively used by practitioners in the NZ market.

[4] Commerce Commission, *Gas Control Decision Paper*, p.181.

2.3 Alternative forms of the CAPM

Sharpe-Lintner CAPM

The standard Sharpe-Lintner or classical CAPM assumes either (i) no taxes, or (ii) taxes on dividend income, interest income and capital gains are all equivalent. Similar to the Brennan-Lally CAPM, this model is extensively used in practice in many jurisdictions.

In empirical tests of the CAPM, however, there is evidence that shows that average returns for low-beta firms are higher than predicted by the classical CAPM. Fama and French (2004) provide a summary of this evidence that low (high) beta stocks earn greater (lower) returns than predicted by the classical CAPM.[5]

In the Recommendations Paper (para. 22),[6] Professor Myers suggests that the Commission use the classical CAPM rather than the simplified form of the Brennan-Lally CAPM. The reasons include that any deviation from the simplified Brennan-Lally model's assumptions will tend to underestimate the cost of equity for low-beta firms.

International CAPM

The international CAPM assumes markets are fully integrated. Most evidence suggests that the use of an international CAPM will result in a lower cost of capital than under a domestic version of the CAPM (e.g., Stulz 1995). On the other hand, Koedijk et al. (2002) report evidence that an international CAPM will often not provide an estimate of the cost of capital materially different to a simple classical version of the CAPM. For US stocks, Harris et al. (2003) also report ex-ante expected returns show a better overall fit with the domestic version of the single factor CAPM compared to a global CAPM, albeit the difference is small.

The "classic" version of the international CAPM includes no exchange rate risk premium. Dumas and Solnik (1995) provide empirical evidence that currency factors affect expected returns and suggest a multifactor international CAPM that incorporates exchange rate risk.

In the Recommendations Paper (para. 32) it is noted that Professor Myers also does not agree that the international CAPM will necessarily yield lower estimates of the cost of capital than the simplified Brennan-Lally version of the CAPM.

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[5] The Commission also acknowledges that the results of a number of empirical tests imply that the CAPM may understate the returns on low beta stocks (Airports IM Reasons Paper, 2010, para. 6.4.36).

[6] Recommendations to the New Zealand Commerce Commission on an Appropriate Cost of Capital Methodology, 18 December 2008, by Julian Franks, Martin Lally, and Stewart Myers (hereafter "Recommendations Paper").

2.4 Conclusion on the form of the CAPM

In Auckland UniServices' opinion, FCL present no strong evidence to support any claim that the Brennan-Lally CAPM will result in an upward or downward biased estimate of the cost of equity capital for NZ Airports.

The application of the domestic Sharpe-Lintner CAPM may provide a higher cost of equity capital than the simplified Brennan-Lally CAPM. We note in the Recommendations Paper (paragraph 29) that:

> *"Dr Lally considers that the classical CAPM tends to produce the highest cost of capital estimates, the simplified Brennan-Lally model estimates that are somewhat lower, and the lowest estimates of all tend to come from the ICAPM. Taking a 'compromise' between the alternative models also points towards selecting the simplified Brennan-Lally version."*

The Recommendations Paper (page 11, Footnote 10) also notes that the cost of equity produced by the simplified Brennan-Lally model will diverge from that produced by the classical CAPM by R_f [T(1-Beta)].[7] Applying this relationship, where the Commission's estimate of the equity beta for Airports is 0.72, the Sharpe-Lintner CAPM will produce a higher estimate of the cost of equity capital than the simplified Brennan-Lally CAPM.

The evidence on the reduction in the cost of capital from use of an international CAPM is mixed. The international CAPM is not extensively used and more difficult to implement in practice.[8] In our view, it is also difficult to quantify the reduction, if any, in the cost of capital under an international version of the CAPM compared to the domestic CAPM. In addition, the standard errors around parameter inputs in the international CAPM will be high.

Auckland UniServices still considers, however, that the Commission should take a conservative view and recognise model error in the determination of a plausible WACC range for the purposes of assessing profitability. This is to ensure regulated firms have the appropriate incentives to invest.

[7] The Sharpe-Lintner CAPM is R_f + Beta ($R_m - R_f$). The simplified Brennan-Lally CAPM is R_f (1-T) + Beta ($R_m - R_f$ ((1-T)).

[8] Koedijk and van Dijk (2004) note that for the vast majority of companies a domestic CAPM is used by practitioners to estimate a company's cost of capital.

3 Asset beta and leverage parameter estimates in the determination of the point estimate of WACC

3.1 Introduction

The FCL Report (page 3) notes that:

> *"…arguments presented by MEUG at the input methodology conference related to the cost of capital in 2010 identified that the Brennan-Lally model with leverage leads to an overstatement of WACC…….*
>
> *Illustrative calculations suggest the bias towards overstatement could be material.*
>
> *With three of four non-parametric uncertainty factors all working in the direction to overstate WACC it is likely that the true range for WACC, if it were known, would be centred on a point materially below the midpoint estimate using the Brennan-Lally model and monthly data."*

We discuss below if the Commission's asset beta and leverage parameter inputs into WACC in its Airports IM Reasons Paper (2010) result in a bias towards an overstatement.

3.2 Asset beta

FCL quote the Commerce Commission's 2008 Gas Control Decision (page 181) in suggesting that the use of monthly data for estimating beta will over-inflate the estimate of WACC.

The Commission's statement in its Gas Control Decision (page 181) refers to Lally's (2008) advice on WACC for gas pipeline businesses (pages 101-108). In this paper, Lally (2008) cites evidence by Levi and Levhari (1977) and Handa et al. (1989) that shows beta estimates will be biased up when the investor horizon is longer than the data frequency used in estimating betas and the true beta is less than one. [9]

In Auckland UniServices (2009, section 3.2.4) we noted a number of issues involved in the empirical determination of beta. In the study by Levi and Levhari (1997), the greater the time horizon to measure returns the less is the number of data points available to empirically estimate beta.[10] Not unsurprisingly, Handa et al. (1989, Table 1) report, in general, higher standard errors of portfolio betas the longer the return interval that beta is measured over. Higher standard errors will widen the WACC range. In the study by Levi and Levhari (1997, Table 1) a number of the stocks in the

[9] Lally (2008, page 102).

[10] Levi and Levhari (1997, page 101) state that "*..if we use annual rates of return we have only twenty observations*" in relation to the time period of their study between 1948 and 1968. Over this length of time (20 years) many of the companies in the sample may have experienced a significant change in leverage and type of business activity, which can impact on beta.

defensive portfolio also show negative betas the longer the return interval measurement period. Negative betas for Airports would not be plausible.

In its Airports IM Reasons Paper (2010, Figure E9, page 30), the Commission's rolling weekly average unadjusted asset beta estimates for its comparable sample of airports are less than the monthly estimates. This directional impact of beta, with higher beta estimates for monthly compared to weekly data, is contrary to the evidence that using a longer time return horizon to estimate beta will decrease the beta estimate.

In summary,

- In our opinion, FCL provide no empirical evidence to support the view that a longer measurement period greater than one month will decrease betas for the comparator sample of airport companies used by the Commission in its Airports IM Reasons Paper (2010); and
- In any event we do not believe that it would be possible to quantify with reasonable precision the amount of reduction, if any, in the asset betas for airports using a longer return interval time horizon and the comparative sample of airports in the Airports IM Reasons Paper, 2010. This reflects data limitations and the small number of comparative airport companies with data in the five year period prior to 31 May 2005.[11]

3.3 Leverage

The Commission considers that an anomaly exists in the use of the simplified Brennan-Lally CAPM, whereby the estimate of WACC increases with leverage.

For this reason the Commission decided to use a service-wide notional leverage of 17% when estimating the cost of capital for Airport services.[12] This was on the basis that using any leverage assumption other than the leverage of the comparative firm sample for estimating the asset beta, would bias the cost of capital estimate.

Thus, contrary to any suggestion by FCL, the 17% leverage assumption by the Commission does not inflate upwards the point estimate of WACC.

In Auckland UniServices' view, the Commission should increase the notional leverage for the aeronautical component of Airports, when also making a downward adjustment to the asset beta of the comparative sample.[13]

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[11] In the Airports IM Reasons Paper (2010, Footnote 710), the Commission notes that prior to the five year period to 31 May 2005, the number of entities for which data is available rapidly declines to a very small sample.

[12] Para E 3.67 of the Airports IM Reasons Paper (2010).

[13] Comparing the Commission's beta and leverage estimates between Airports and Electricity Distribution Businesses we have:

	Commission's estimates in its IM Reasons Paper	
	Asset Beta	**Notional Leverage**
Airports	0.60	17%
EDB	0.34	44%

4 Other Parameter Inputs into the determination of the point estimate of WACC or issues relevant to the measurement of excess profits

4.1 Introduction

In this section of our report we discusses if other parameter inputs and factors relevant to the determination of WACC or measurement of excess profits favour Airports. That is, even if the form of the CAPM, and asset and leverage parameter inputs leads to an upward bias in WACC[14], there may be other factors that either (i) provide an "offset" or lead to a downward bias in the Commission's estimate of WACC; or (ii) may lead to the Commission overstating the level of any excess profits for Airports.

4.2 Tax-adjusted market risk premium

The Commission offers survey evidence from the major investment banks in its Airports IM Reasons Paper (2010, Table E11, para. E7.75) as reliable independent evidence on the TAMRP most used by investors in NZ businesses to support its 7.0% point estimate.

However, in Table E11 (page 280) of the Commission's Airports IM Reasons Paper (2010), Deutsche Bank has a different methodology to estimate the market risk premium. This estimate is therefore not comparable to the estimate of the TAMRP under the Brennan-Lally form of the CAPM.

Other evidence on the point-estimate value of the TAMRP used by independent parties in the valuation of SOEs for the NZ Treasury is presented below.[15]

Thus, in Auckland UniServices' view, if there is a downward adjustment to the asset beta on account of lower systematic risk for Airports' aeronautical activities, the notional leverage of 17% should be adjusted upwards.

[14] As discussed above, Auckland UniServices considers that the evidence does not suggest that the form of the CAPM, together with the Commission's point estimate of asset beta and leverage, results in an upward biased estimate of WACC for Airports.

[15] Source: See http://www.comu.govt.nz/publications/information-releases/valuation-reports/2011/

Table. Summary of TAMRP used in SOE Valuations			
Party	**Point estimate of TAMRP**	**Date**	**Valuation Report**
PricewaterhouseCoopers (PWC)	7.50%	Nov 2011	Valuation of Animal Control Products Limited; Research Report Landcorp Farming Limited; and Research Report Learning Media Limited.
Ernst and Young	7.50%	Nov 2011	Valuation of Assure Quality Limited; SOE Economic Profit Analysis for 19 SOEs; and Valuation of Quotable Value Limited.
Macquarie Equities	7.0%	Nov 2011	Valuation of Genesis Energy; Valuation of Meridian Energy; Valuation of NZ Post; and Valuation of NZ Rail Corporation.
First NZ Capital	7.25% (≡ MRP of 5.75%)	Oct 2011	Valuation of Mighty River Power; Valuation of Transpower; and Valuation of Kordia.
Forsyth Barr	7.0%	Nov 2011	Valuation of Transpower.
Woodward Research	7.5%	Nov 2011	Valuation of Airways Corporation of New Zealand Limited; and Valuation of Meteorological Services of NZ Limited.

Based on the evidence in the table above (which may not be exhaustive) (i) the Commission's point estimate for the TAMRP is at the low end of the range; and (ii) the Commission's point estimate of the TAMRP is favourable to airlines or users of airport services and not biased in the direction that will overstate the WACC.

In Auckland UniServices' view, the Commission should also acknowledge that there is evidence that the global financial crisis has not yet ended, albeit there has been some signs of an improvement in market conditions.

4.3 Term of the risk free rate

In Auckland UniServices (2009, 2010) we argued that the Commission's use of a five year risk free rate and a debt profile that matches the term of the regulatory review period does not accord with normal commercial practice and the matching principle, whereby for long-life assets firms will seek debt finance with a term greater than a regulatory review period of five years.

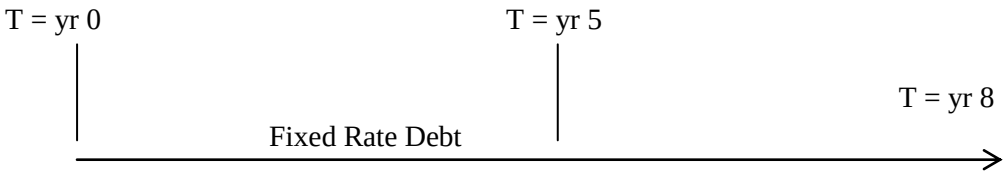
Accordingly in our view, the Commission's use of a five year term for the risk free rate favours the users of airport services.

4.4 Term Credit Spread Differential

The Commission in its Airports IM Reasons Paper (2010) recognised that regulated suppliers may issue debt with a term exceeding five years to manage their refinancing risk. The issue of such debt will typically have a greater debt premium due to the longer term.

The Commission therefore has provided a term credit spread differential (TCSD) allowance in the cashflows to recognise the additional debt premium and the interest rate swap execution costs that are incurred from issuing longer term debt.

In Auckland UniServices' view, the allowance provided by the Commission may fail to fully recognise all swap execution costs (in particular the potential need for two interest rate swaps). To illustrate, assume a prudent firm borrows *fixed* rate debt for a term of 8 years at time T = yr 0.



To align "interest rate risk" to the regulatory review cycle for the period T = yr 5, the firm will need to enter into two interest rate swaps. The first swap is to convert the 8 year fixed rate debt into "notional" floating rate debt by entering into an interest rate swap to pay floating, receive fixed. The second swap will then be to convert the "notional" floating rate debt into five year "notional" fixed rate debt by entering into a five year swap to pay fixed, receive floating. [16]

In summary, the TCSD allowance may not adequately cover all swap execution costs to align the maturity of regulated debt suppliers to the term of the regulatory review period.

4.5 Asymmetric risks

The Commission's decision in its Final IM Reasons Paper is not to make any adjustments to the cost of capital for Type I and II asymmetric risks. However, while the Commission has stated it may in some circumstances make an allowance for such risk in the cash flows[17], in our view it is unclear what these circumstances are or how any allowance would apply.

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[16] In Auckland UniServices' view, however, it would not be practical or commercially prudent for a firm to adopt a theoretical hedge strategy to match the term of its debt to the "regulatory review period", where under the approach in its IM Determination the Commission determines a rolling annual WACC, with the risk free rate and cost of debt also revised on an annual basis. In our view this does not accord with prudent treasury management in the 'real world' and may expose the firm to unacceptable interest rate risk.

[17] Para E12.13 of the Commission's Final IM Reasons Paper.

Asymmetric risks (e.g. risk of SARs, terrorist attacks, volcanos, etc.) exist and are clearly not zero. Thus, at a practical matter firms will add an increment to the discount rate to reflect asymmetric risks and other market frictions (see Auckland UniServices July 2010, section 6.4).

The lack of recognition of asymmetric risks by the Commission favours the users of airport services.

5 Conclusion on Commission's overall WACC estimate

In summary we conclude:

- FCL provide no strong evidence that the use of the Brennan-Lally CAPM will result in either an upward or downwards biased estimate of the cost of capital;
- The evidence on the reduction in the cost of capital from use of an international CAPM is mixed. The "classic" version of the international CAPM includes no exchange rate risk premium. In our view, it is also difficult to quantify the reduction, if any, in the cost of capital under an international version of the CAPM compared to the domestic CAPM.
- FCL have provided no strong evidence that use of monthly data to estimate the asset beta for airports will result in an upwards biased estimate of beta;
- The Commission has adopted WACC parameter inputs that are generally favourable to users of airport services, in particular with respect to the risk free rate, leverage and TAMRP;
- The TCSD may not adequately provide for the execution costs of all interest rate swaps that would be necessary for regulated firms to theoretically adopt a hedge strategy to match the term of their debt to the "regulatory review period"; and
- The lack of any specific allowance for asymmetric risk is also favourable to the users of airport services.

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