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Economists

Issues raised by the Commerce Commission's draft decision on cost of capital

A report for Powerco

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1. Introduction

On 16 June 2016 the Commerce Commission ('the Commission') released its draft decision ('the draft decision') in relation to its review of the input methodologies ('the IMs') that guide the economic regulation of the electricity network, gas pipeline and airport sectors in New Zealand. The draft decision is comprised of a suite of documents, including a summary paper, an introduction and process paper, a framework paper and seven topic papers.

1.1 Scope of this report

Powerco has asked us to review and comment on a number of specific matters arising from the draft decision. In particular, we have been asked to review:

- the approach adopted by the Commission in its consideration of debt issuance costs in the weighted average cost of capital (WACC) topic paper;
- the Commission's proposal not to make adjustments to the asset beta for differences in systematic risk between different electricity and gas network services in the WACC topic paper; and
- the issues raised in a letter prepared by the Electricity Authority (the EA), which sets out the EA's views on the potential implications of changing the form of control for electricity network businesses.

Although these matters do not involve significant interdependencies, for ease of presentation we address each of them within this report.

1.2 Findings of this report

Our findings on the matters within the scope of this report are that:

- the Commission's draft decision to determine a debt issuance cost allowance of 20 basis points per annum (bppa) is likely to underestimate the efficient costs that would be incurred by a supplier acting consistently with the Commission's financing assumptions. This is because the proposed allowance:
 - > does not include the costs associated with obtaining and maintaining a credit rating, including fees to credit rating agencies and the costs associated with maintaining financing arrangements so as to comply with credit rating requirements;
 - > does not include a new issue premium, which we estimate to be in a range from 10 to 12 basis points based on analysis of New Zealand dollar bonds issued by New Zealand domiciled firms; and
 - > relies substantially on the results of the Commission's confidential debt survey, which appears likely to underestimate debt issuance costs.
- the Commission's draft decision to determine no asset beta differential for GPBs is, in our view, not supported by its analysis because the Commission adopts inconsistent positions in relation to its assumptions about the applicability of overseas evidence for income elasticity of demand and systematic risks;
- the Commission's analysis, and that of its expert advisor, Dr Martin Lally, focuses only on the evidence for an uplift for gas pipeline businesses (GPBs) more generally; It does not engage with our analysis showing that the evidence for an asset beta differential was strongest for gas distribution businesses (GDBs);
- given the empirical evidence available to the Commission, it should implement an uplift for GDBs over the asset beta determined from its sample of comparator firms. There is insufficient evidence to support adjusting the asset beta of electricity businesses relative to those in the Commission's sample;

- the benefits of a weighted average price cap (WAPC) are less clear-cut than implied by the EA's letter and it is open for the Commission to conclude that a revenue cap would be able to achieve efficient pricing outcomes. In particular, although there are some theoretical reasons to expect that a WAPC might give rise to more efficient pricing for electricity distribution services:
 - > empirical evidence from Australia suggests that, in practice, these theoretical benefits have not been achieved and that other, less desirable, incentives are promoted by a WAPC; and
 - > a revenue cap, combined with regulatory pricing principles, may be capable of promoting efficient pricing.

1.3 Structure of this report

The remainder of this report is structured as follows:

- section 2 reviews the approach to estimating debt issuance costs undertaken by the Commission;
- section 3 examines the Commission's rationale for proposing that there be no adjustment to the asset beta for specific services; and
- section 4 assesses arguments raised by the EA in its letter about implications of the form of control for efficient pricing of electricity services.



2. Estimating debt issuance costs

The Commission proposes to reduce the allowance for debt issuance costs from 35 to 20 basis points per annum (bppa). The Commission does not provide a breakdown for its proposed allowance, and it relies upon the results of a confidential debt survey that we have been unable to review.

In our opinion, it is likely that the Commission's allowance is too low, relative to the efficient costs that would be incurred by a supplier acting consistently with the Commission's financing assumptions. This is because the proposed allowance:

- does not include the costs associated with obtaining and maintaining a credit rating, including fees to credit rating agencies and the costs associated with maintaining financing arrangements so as to comply with credit rating requirements;
- does not include a new issue premium, which we estimate to be in a range from 10 to 12 basis points based on analysis of New Zealand dollar bonds issued by New Zealand domiciled firms; and
- relies substantially on the results of the Commission's confidential debt survey, which appears likely to underestimate debt issuance costs.

With the inclusion of these additional categories and review of the use of the confidential survey data, it is possible that efficient debt issuance costs could be equal to or greater than 35 bppa. However, we note that firm conclusions about the robustness of the Commission's analysis of debt issuance cost is impossible without being able to review and assess its use of the information collected from the confidential debt survey. We consider that external review of this information, and the Commission's use of it, should be facilitated.

The Commission's draft decision proposes significant changes to the compensation for fees and costs associated with prudent debt issuance and refinancing. The Commission proposes that the allowance for debt issuance costs should be no higher than 20 bppa, whereas under the current IMs the allowance for debt issuance costs is set at 35 bppa.¹

In this section we review the Commission's basis for determining the debt issuance allowance. We:

- introduce a principle that we consider provides useful guidance for determining the debt issuance allowance;
- summarise the rationale for the Commission's decision;
- assess the Commission's reasons for excluding costs associated with obtaining and maintaining a credit rating;
- review the Commission's reliance on information sourced from its confidential debt survey; and
- explore the evidence for a new issue premium on New Zealand dollar denominated bonds issued by companies domiciled in New Zealand.

2.1 Principle for determining debt issuance costs

In our view, the Commission should provide an allowance for debt issuance costs that recovers all costs expected to be efficiently incurred by a supplier acting consistently with the Commission's financing assumptions. We refer to this as the 'efficient debt issuance costs principle'.

¹ Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, pp 56, 60

We consider that this principle is reasonable and promotes the objectives at section 52A of the Commerce Act. In particular:

- It provides incentives to invest by ensuring that the efficient costs associated with raising capital to fund investment are recovered. The principle requires the Commission to consider the cost implications of its debt financing assumptions and any changes that it makes to them.
- It provides incentives for efficient debt raising practices by setting a benchmark level of compensation unconnected with costs. The principle does not require the Commission to accept the actual debt issuance costs of suppliers. Suppliers are free to adopt financing practices that are different from those assumed by the Commission, and may incur transactions costs that are higher or lower in doing so.

In our opinion, this principle is also consistent with the 'simple' approach to determining the cost of debt, as espoused by the Commission in its draft decision and discussed further below.

The Commission's financing assumptions in relation to the cost of debt for EDBs, Transpower and GPBs are set out in its draft decision as:²

...publicly traded vanilla New Zealand dollar denominated bonds that:

- 164.1 are issued by an EDB or GPB that is neither majority owned by the government or a local authority;
- 164.2 have a S&P's long term credit rating of BBB+ (or equivalent rating from Moody's or Fitch); and
- 164.3 have a remaining term to maturity of five years.

It follows that allowance determined by the Commission should include:

- the costs required to be incurred in issuing a bond, including:
 - > fees paid to arrange and market the issue;
 - > fees for legal advice;
 - > registrar fees; and
 - > costs associated with discounting the issue price of a bond in order to attract investors, where this is otherwise not captured in the Commission's estimate of the cost of debt.
- the costs required to obtain and maintain a credit rating of BBB+, including:
 - > fees paid to credit ratings agencies; and
 - > costs required to comply with requirements commensurate with a credit rating of BBB+.

2.2 Rationale for the Commission's decision

The Commission proposes to adopt an allowance for debt issuance costs of 20 bppa on the basis that:³

... this is sufficient to cover the costs of issuing NZ domestic corporate bonds (5-10 bps) and costs of any required swaps (~4 bps). Given the uncertainty and variability of the various costs, we consider it is prudent to include an additional margin to cover other issues related to debt issuance.

The values assumed by the commission for debt raising costs and swap transactions costs are based to a significant extent on the results of a confidential survey of the debt held by regulated suppliers ('the

² Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, p 43

³ Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, p 60

confidential debt survey'). The Commission also relies on a submission from Contact Energy and analysis of bid-ask spreads for interest rate swaps.⁴

However, the Commission rejects providing compensation for debt issuance costs relating to:⁵

- maintaining standby bank facilities;
- issuing debt in overseas markets;
- procuring and maintaining a credit rating from Standard & Poor's; and
- discounting the issue price of a bond, relative to prices for similar bonds in secondary market trading, to attract investors in that bond – otherwise known as the new issue premium.

The Commission notes that it uses what it describes as the 'simple' approach to determining an allowance for the overall cost of debt, based on the costs of issuing publicly traded corporate bonds denominated in New Zealand dollars. It rejects approaches that consider actual debt raising practices – including raising bank debt or overseas debt – as being 'complex' and relying on firm-specific and privately-held information.

In addition to these concerns, the Commission rejects costs associated with prudent debt management and maintaining a credit rating:⁶

... the use of standby facilities is a prudent aspect of debt management, but is generally associated with the use of shorter-term debt (eg, commercial paper). We also consider that a S%P [sic] credit rating is not necessarily required to issue New Zealand domestic bonds by New Zealand regulated suppliers.

Finally, the Commission notes in relation to the new issue premium that:⁷

We accept that there has been some evidence of a new issue premium in various foreign debt markets, but no specific evidence has been presented to us on the average premium in New Zealand. Any premium is likely to be variable (and can even be negative) depending on the state of the debt market at any point in time.

2.3 Costs of obtaining and maintaining a credit rating

The Commission's preference to rely on a 'simple' approach for determining the cost of debt, and to determine debt issuance costs commensurate with this, is consistent with the efficient debt issuance costs principle that we set out above. We agree that the Commission should estimate debt issuance costs that are consistent with its debt financing assumptions.⁸ In our view, it is consistent with the Commission's simple approach, and the efficient debt issuance costs principle, to allow for the efficient costs of obtaining and maintaining a credit rating of BBB+. We set out the reasons for this opinion in more detail below.

The Commission determines the cost of debt for EDBs, Transpower and GPBs under an assumption that debt is raised at a credit rating of BBB+ with Standard & Poor's, or its equivalent with Moody's and Fitch.

This assumption is important to the Commission's determination of the cost of debt. It determines the sample of bonds that the Commission reviews in determining the debt premium. If a credit rating requirement were not specified, the bonds that the Commission includes in its sample could include those with different ratings

⁴ Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, pp 57, 59

⁵ Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, pp 57-59

⁶ Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, p 58

⁷ Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, p 59

⁸ We note that the Commission's debt financing assumptions are open to question – in particular its preference for a five year term and its requirement for publicly traded New Zealand denominated debt. However, reviewing these aspects of the Commission's decision does not fall within the scope of this report.

(either higher or lower), or bonds that are unrated. This alternative analysis might be expected to give rise to different estimates for the cost of debt.

The Commission rejects a view that it needs to provide for the costs of obtaining or maintaining a credit rating of BBB+, including the costs of meeting credit rating requirements, because:⁹

...a S&P [sic] credit rating is not necessarily required to issue New Zealand domestic bonds by New Zealand regulated suppliers.

In our view, this statement addresses the wrong question.

We agree that a credit rating with Standard & Poor's, or any other credit ratings agency, may not necessarily be required to issue New Zealand domestic bonds by New Zealand domestic suppliers. There are many New Zealand suppliers that do not maintain a credit rating.¹⁰

However, the question at hand is not whether it is necessary to maintain a credit rating, but whether to do so is consistent with the Commission's debt financing assumptions for an efficient supplier. This is incontrovertibly the case, as the Commission sets out:¹¹

We consider that an efficient operator would seek to maintain an appropriate investment grade credit rating to ensure satisfactory access to debt capital markets at reasonable costs.

In our opinion, it is not reasonable to determine the cost of debt for a supplier under an assumption that it maintains a credit rating of BBB+, but then to set aside efficient costs that it must incur to achieve this. This is not consistent with the efficient debt issuance costs principle, and it is not consistent with maintaining incentives for suppliers to invest – which in turn does not promote the long-term benefit of consumers as set out section 52A of the Commerce Act.

In our view, it is reasonable and appropriate that the Commission allows debt issuance costs that include the direct costs to a supplier of obtaining and renewing a credit rating, and for the costs of meeting requirements to maintain a credit rating. We set out in our report of 5 February 2016 that this latter category of costs includes:¹²

- the costs of maintaining liquidity (or 'headroom') so that Standard & Poor's is satisfied that a company is able to withstand adverse market circumstances; and
- the cost of early debt refinancing (or the 'cost of carry') as part of a strategy that provides assurance to a credit ratings agency of the credibility of a supplier's approach to refinancing debt.

In our report, we estimated total fees associated with headroom and the cost of carry of \$1.69 million per year across Powerco's electricity lines and gas distribution businesses.

The Commission's draft decision does not address or contest our analysis of these costs. However, in addressing the use of 'standby bank facilities' raised by Orion, which are similar to headroom, the Commission states that:¹³

... the use of standby facilities is a prudent aspect of debt management, but is generally associated with the use of shorter-term debt (eg, commercial paper).

⁹ Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, p 58

¹⁰ These include smaller businesses with less significant debt raising requirements, who would in any case typically tend to seek bank financing rather than issue bonds. Arguably, larger suppliers may need to maintain a credit rating.

¹¹ Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, p 61

¹² HoustonKemp, *Comment on the Commerce Commission's cost of capital update paper*, 5 February 2016, pp 14-20

¹³ Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, p 58

And also:¹⁴

Although these debt management costs may be legitimately incurred by suppliers, we do not consider that they should be included in debt issuance costs, given our simple approach to determining the cost of debt.

In our opinion, this analysis does not accurately characterise the nature of the cost of headroom and the cost of carry. Although these costs may be associated with the use of shorter-term debt, such as bank facilities, they would be efficiently incurred by a supplier issuing debt in a manner consistent with the Commission's debt financing assumptions that we set out above.

In other words, providing for these costs in the debt issuance allowance does not amount to varying the assumption that all capital costs are funded through raising five year bonds. It does not require the Commission to abandon its simple approach to determining the cost of debt. To the contrary, it is consistent with this approach because it allows only the costs that would be incurred by an efficient supplier maintaining the BBB+ credit rating assumed by the Commission in its simple approach to determining the cost of debt.

2.4 Confidential debt survey

The primary bases for the Commission's decision to decrease the allowance for debt issuance costs are:¹⁵

- its review of the results of a confidential survey of the debt held by regulated suppliers ('the confidential debt survey'), which it states suggest debt issuance costs in the range of 6-7 bppa; and
- information provided by Contact indicating that debt issuance costs are 5 bppa.

The Commission also proposes to provide for the costs of engaging in interest rate swap transactions in its allowance for debt issuance costs, whereas previously these were provided for under the term credit spread differential allowance. The Commission estimates that the cost of a single swap transaction is about 2 bppa, on the basis that this estimate is supported by:¹⁶

- analysis of the bid-ask spread on interest rate swaps over the period between 2013 and 2015; and
- evidence collected from the confidential debt survey.

Our review of the draft decision suggests that the Commission's reliance on information sourced through the confidential debt survey is substantial. We consider that it is appropriate for the Commission to rely on information sourced from suppliers. However, external review of this information, and the Commission's use of it, should be facilitated.

To date we have not been provided any information from the confidential debt survey, other than the Commission's conclusions derived from its consideration of the survey data. This is problematic because it appears that information collated through the confidential debt survey forms a substantial part of the basis relied upon by the Commission to propose a lessening of the debt issuance allowance from 35 bppa to 20 bppa. Without being provided this information, we are unable to review and test the Commission's reliance upon the survey responses.

However, based on our review of the survey template, we have substantial reservations that the results of the survey could form a reliable source of information with which to assess debt issuance costs. These reservations arise because:

1. The template does not ask respondents for detailed information about debt issuance costs. It simply asks for 'debt issuance costs' of a one-off or ongoing nature, without clarifying what categories of costs

¹⁴ Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, p 58

¹⁵ Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, p 57

¹⁶ Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, p 59

respondents should include in those fields. Given the potential for a variety of debt issuance costs to be incurred, it appears likely that this question will attract a range of responses, some of which will capture more categories of debt issuance costs than others.

2. The Commission asks for debt issuance costs that are 'not already captured' in the interest rate. However, the Commission doesn't ask for any information that would enable it to identify what part of debt issuance costs are captured in the interest rate, and to ensure that these are captured in the estimate of debt issuance costs that it reports from the survey.

In our view, these issues provide reasonable grounds to expect that the information that the Commission sources in its confidential debt survey will not capture all debt issuance costs. Further, it will likely not provide sufficiently disaggregated information to be able to establish the extent to which these costs are underestimated.

Notwithstanding these reservations, we consider that obtaining the information collected in the confidential debt survey will be important in reviewing and responding to the Commission's draft decision.

2.5 New issue premium

The Commission states that it has not been provided with evidence of the existence of a new issue premium for New Zealand denominated bonds.¹⁷ In this section, we undertake an analysis investigating whether evidence exists for a new issue premium for New Zealand denominated bonds.

The results of our analysis suggest that a new issue premium does exist for these bonds, and that its value is approximately 10 to 12 basis points, based on information sourced from a large number of bonds issued in New Zealand dollars, issued by companies domiciled in New Zealand.

2.5.1 Relevance of primary market yields

The Commission's debt financing assumptions assume that suppliers issue five year New Zealand denominated bonds. These bonds are issued into the 'primary debt market', where the supplier must attract new investors to purchase its debt securities. Therefore, the costs incurred by the supplier in raising its debt will be those resulting from its engagement in primary debt markets – often called 'issue yields'.

By contrast, the method that the Commission uses to determine debt premium, and therefore the cost of debt, is based on analysis of secondary market yields. Secondary market yields are reported by financial information providers on the basis of trades, or indications of willingness to trade, between holders of a bond and another party. These transactions, or potential transactions, do not typically involve the bond issuer, and do not reflect its debt costs.

It follows that, under the regulatory regime applied by the Commission, secondary market yields are used as a proxy for primary market yields. To the extent that primary market yields systematically vary from secondary market yields on otherwise identical debt, it would be appropriate, and consistent with the efficient debt issuance costs principle, for the Commission to take this into account in determining the overall cost of debt.

The Commission alludes in its draft decision to overseas evidence supporting the existence of a premium in primary market yields over secondary market yields – often referred to as a new issue premium.¹⁸ Given agreement on this point, in this report we do not review the overseas literature showing the new issue premium or discuss the rationale for such a premium. Our focus is on estimating whether such a premium exists for a supplier issuing debt consistent with the Commission's debt financing assumptions.

¹⁷ Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, p 59

¹⁸ Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, p 59

2.5.2 Estimating the new issue premium

We estimate the new issue premium for a bond as the difference between:

- the change in the yield on the bond over a period from its issue date; and
- the change in a general measure of interest rates over the same period.

The theory underlying this approach is that if the issue yield on a bond incorporates a new issue premium, this premium should be eliminated over time once secondary market trading in the bond commences. If the decrease in yield on the bond is greater than the decrease in yield on a general measure of interest rates reflecting secondary market yields, then this provides evidence of the existence of a new issue premium.

Our approach in this report is to measure the change in interest rates using New Zealand dollar interest rate swap yields interpolated to the maturity of the bond at its issue date and at a subsequent date over which the new issue premium is measured. This approach is similar to the approach of Datta, Iskandar-Datta and Patel (1997), who use risk free rates for this purpose.¹⁹

Other papers have used estimates of yields specific to the rating of individual bonds to proxy changes in the general measure of interest rates.²⁰ We have not been able to pursue this approach for New Zealand data because of the poor availability of corporate fair value estimates. Currently, Bloomberg publishes a fair value curve only for AA New Zealand corporates.

The period over which one should measure the new issue premium is uncertain. In the finance literature a range of different assumptions are used. There appears to be no theory that would inform how quickly a new issue premium would be priced out of a bond issue.

To address this, we estimate new issue premiums over a range of periods, from two weeks to 20 weeks and every multiple of two weeks in between. This approach gives rise to an array of estimates for the new issue premium. If the new issue premium exists, then we would expect to observe:

- our estimate of the new issue premium increasing as the measurement period increases, consistent with more of the new issue premium being purged in secondary market trading; but
- our estimate of the new issue premium becoming less precise as the measurement period increases, because of the increasing influence of factors other than the new issue premium that may affect yields on the bond and general market yields.

2.5.3 New issue premium results

To inform the new issue premium, we form a sample of 690 bonds, either active or matured, issued by companies domiciled in New Zealand and denominated in New Zealand dollars. Using this sample, we are able to estimate new issue premiums on a sub-sample of 121 bonds.

We examine evidence of new issue premium on samples of bonds, being:

- sample A: New Zealand dollar denominated bonds – 121 bonds meet this criterion; and
- sample B: New Zealand dollar denominated bonds with broad Standard & Poor's ratings of BBB and A – 41 bonds meet this criterion.

¹⁹ Datta, S., Iskandar-Datta, M. and Patel, A. (1997) "The Pricing of Initial Public Offers of Corporate Straight Debt", *The Journal of Finance*, Vol. 52, No. 1, p. 384

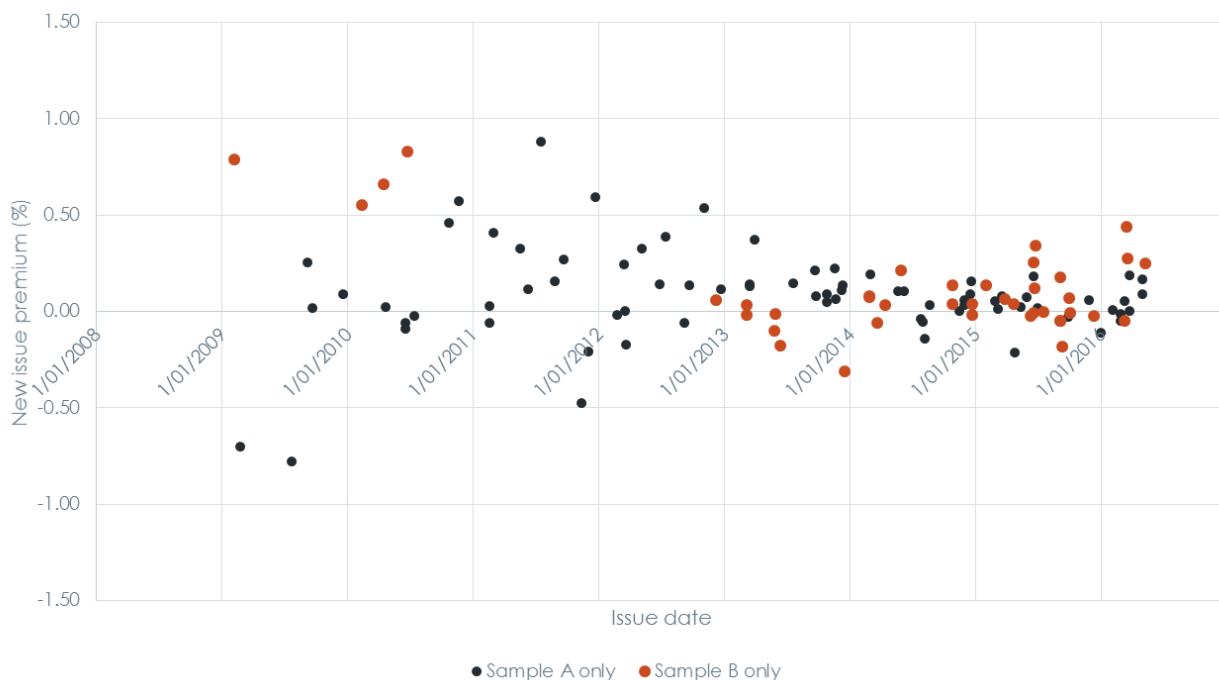
²⁰ Weinstein, M.I (1978) "The seasoning process of new corporate bond issues", *The Journal of Finance*, Vol. 33, No. 5, pp 1343-1354; Cai, N., Helwege, J. and Warga, A. (2007) "Underpricing in the Corporate Bond Market", *The Review of Financial Studies*, Vol. 20, No. 6, p. 2021-2046; and Ronn, E.I. and Goldberg, R.S (2013) "Quantifying and Explaining the New-Issue Premium in the Post-Glass-Steagall Corporate Bond Market", *The Journal of Fixed Income*, Vol. 23, No. 1, pp 43-55

We consider sample B to examine whether bonds with ratings of BBB and A have different new issue premiums from bonds of all or no ratings.

It may also be relevant to consider the effect that issue date and term to maturity from issue have on empirical estimates of the new issue premium. Figure 1 and Figure 2 show new issues premiums measured over eight weeks²¹ against issue date and term to maturity respectively, identifying bonds according to which sample they belong:

- bonds that belong in sample B, are identified as “sample B only” and coloured in red;
- bonds that belong in sample A, but not sample B, are identified as “sample A only” and coloured in black.

Figure 1: New issue premium estimates measured over eight weeks against issue date



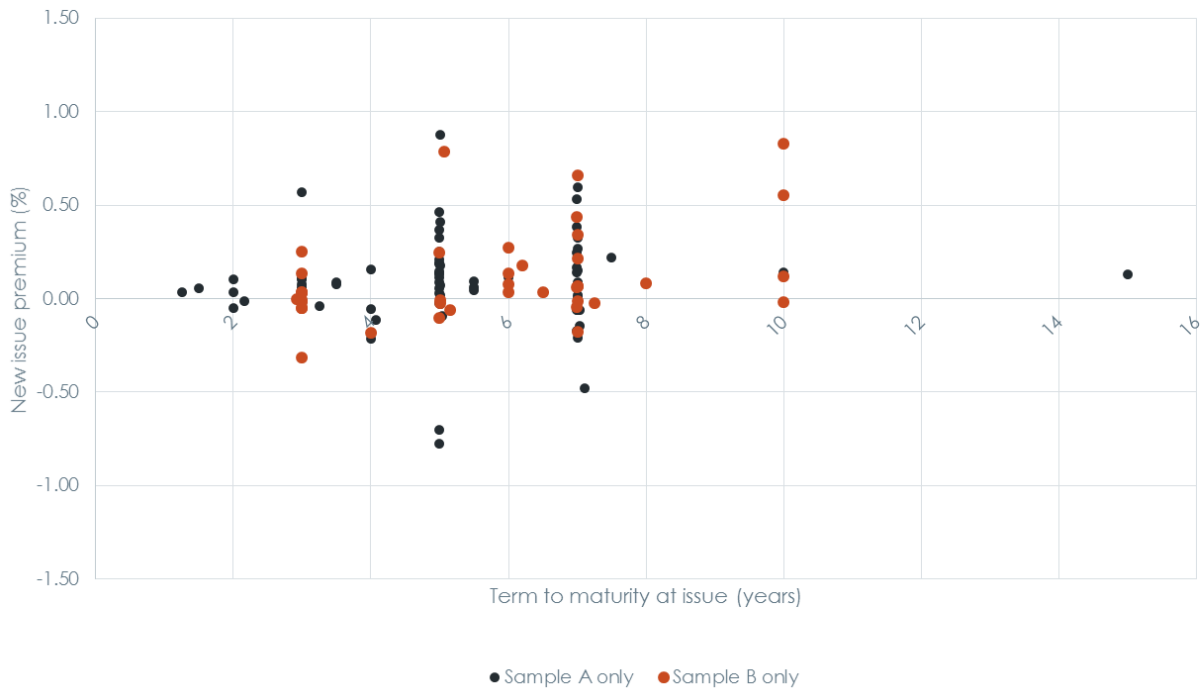
Source: Bloomberg data, HoustonKemp analysis

Figure 1 above shows that the variability of estimates for the new issue premium appears to have reduced over time. However, the average level of new issue premium is relatively unchanged.

Figure 2 below indicates that the new issue premium is not significantly affected by the term to maturity at issue of the bond.

²¹ The analysis presented at appendix A1 indicates that 8 weeks is a reasonable period over which to estimate the new issue premium for New Zealand data.

Figure 2: New issue premium estimates measured over eight weeks against term at issue



Source: Bloomberg data, HoustonKemp analysis

Figure 1 and Figure 2 suggest that there is not a significant difference between the new issue premiums estimated for bonds with broad ratings between BBB and A, and those without credit ratings in this range. In other words, the sample of red dots appears to be drawn from the same underlying population as the same of black dots.

We confirmed this visual intuition through the application of Welch's test for differences in population. Table 1 below documents this t-test against a null hypothesis that the means of the underlying populations are the same. The test does not produce sufficient evidence to reject this hypothesis.

Table 1: Welch's t-test for difference in population means

	New Zealand dollar bonds with broad credit ratings of BBB and A	New Zealand dollar bonds without broad credit ratings of BBB and A
Number of bonds	40	77
Mean new issue premium	0.115	0.106
Standard deviation of sample	0.247	0.311
Difference in sample means		0.009
t-stat		0.175
degrees of freedom		96
p-value		0.861

Full results of our analysis on these samples of new issue premiums are set out at appendix A1 below. In summary, we find that sample A and B return broadly similar mean estimates of new issue premium, at between 10 and 12 basis points. These estimates are significantly different from zero at the five percent level – indicating that there is evidence for a positive mean new issue premium in New Zealand.

The Commission currently does not allow compensation for a new issue premium, either through debt issuance costs or through the cost of debt. The results that we describe in this section, and in appendix A1 below, indicate that evidence from data for New Zealand denominated bonds is consistent with evidence in overseas markets in supporting the existence of a positive new issue premium. In our opinion, the Commission should allow for the costs of a new issue premium, either within debt issuance costs or as a component of the cost of debt.

3. Adjustment to asset beta

The Commission's draft decision is to determine no asset beta differential for GPBs. In our view, this conclusion is not supported by its analysis.

The Commission adopts two inconsistent positions in relation to its assumptions about overseas evidence on income elasticity of demand and systematic risks. Specifically, it:

- rejects reliance upon our empirical estimates of the ratio of income elasticity of demand for gas to the income elasticity of demand electricity in New Zealand by comparing our results to evidence sourced from overseas markets; but
- assumes that it has no knowledge of the relative systematic risks between electricity and gas businesses in New Zealand as against those overseas.

These positions are inconsistent because the Commission's rejection of our results was founded upon an implicit assumption that income elasticities in New Zealand were comparable to those of overseas markets – in particular the United States. However, the Commission has no basis upon which to make this assumption, as is reflected in its subsequent questions about the relative systematic risks between New Zealand suppliers and firms in its asset beta sample.

Conversely, there is evidence that supports the direction of the results emerging from our empirical analysis of income elasticities of demand in New Zealand. In particular, our results are supported by qualitative analysis of gas consumptions patterns in New Zealand, as well as empirical estimates of income elasticities in Australia.

In its draft decision, the Commission questions how it should use information from its set of comparator firms to implement an asset beta differential. In our opinion, the empirical evidence available to the Commission supports implementing an uplift only for GDBs. There is insufficient evidence to support adjusting the asset beta of electricity businesses relative to those in the Commission's sample.

Further, the Commission's analysis of asset beta considers only the extent to which there is evidence supporting an asset beta differential for GPBs. The analysis that we presented in our earlier report specifically addressed evidence for an asset beta for gas distribution businesses (GDBs). The draft decision and Dr Lally's report do not address this aspect of our evidence.

In its draft decision, the Commission proposes that there be no adjustment to asset beta for differences in systematic risk between different electricity and gas network services. The Commission proposes to determine asset beta at 0.34 for EDBs, Transpower and GPBs.

The Commission's draft decision cites six factors that weigh on its proposal to make no adjustment to asset beta. In summary, those factors are:²²

1. Its decision in 2010 to allow an uplift of 0.10 to asset beta for GPBs might have been generous to those businesses;
2. Advice from Dr Lally no longer supports a higher asset beta for GPBs;
3. Limited weight should be placed on evidence that we provided on the relative income elasticity of demand for gas and electricity in New Zealand, and in any case how this informs the asset beta differential is unclear;

²² Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, pp 81-82

4. Regulators overseas do not typically use different (or very different) asset betas for electricity lines and gas pipelines;
5. Empirical estimates of asset beta do not establish a significant difference between those for electricity lines and gas pipelines; and
6. Additional risks that may be faced by GPBs could potentially be attributed to non-systematic sources of risk and might be diversifiable.

In this section, we review the Commission's rationale for this conclusion, and in the remainder of the section we:

- clarify the interpretation of our previous empirical analysis;
- assess the relevance of overseas evidence in informing the relative income elasticity of demand between gas and electricity in New Zealand;
- review the Commission's treatment of overseas estimates of asset beta;
- review the Commission's claim that evidence of income elasticity may be irrelevant to asset beta; and
- comment on other matters raised by the Commission.

3.1 Our advice on asset beta differential related to GDBs

It is important to note that the analysis and advice in our previous paper was framed in relation to the asset beta differential for GDBs as against EDBs. We did not seek to estimate the asset beta differential for the GPBs as a whole, and our analysis did not directly inform the asset beta differential for gas transmission businesses (GTBs).

Dr Lally mischaracterises the nature of our advice as relating to an asset beta differential for GPBs over EDBs. His analysis indicates that the evidence for an asset beta differential is lessened when our analysis is adjusted to calculate the asset beta differential for GPBs as a whole.²³

In our report of 13 May 2016, we focused on the asset beta differential for GDBs because the empirical evidence pointed to significantly higher income elasticities for residential customers of gas over residential customers of electricity.²⁴ Since residential demand is much more important to GDBs than to GTBs, this suggests that the asset beta differential for GDBs, as informed by income elasticities, is likely to be greater than for GTBs or GPBs as a whole.

Dr Lally highlights the fact that we did not take into account the use of gas in electricity generation, and that we used revenue weights from electricity and gas distribution businesses, in our analysis of asset beta differential. He describes these assumptions as key 'shortcomings' in our analysis. However, rather than shortcomings, these aspects of our analysis were deliberate assumptions chosen to focus on evidence for an uplift for GDBs, rather than GPBs.

In its draft decision, the Commission continues to discuss the existence of different asset betas between electricity networks and GPBs as a whole. It does not engage with the specific nature of our analysis indicating higher systematic risks for GDBs in particular, other than to reject our estimates of income elasticity.

²³ Lally, M., *Review of further WACC issues*, 22 May 2016, pp 48-49

²⁴ HoustonKemp, *Asset beta for gas pipeline businesses*, 13 May 2016, pp 3-5, 10-11

3.2 Relevance of overseas evidence of income elasticity

The Commission rejects our empirical estimates of residential and commercial income elasticities of demand for gas. It states that:²⁵

Houston Kemp estimated income elasticities of demand of 3.6-3.8 for residential gas, and 1.4-1.2 for commercial gas. These values seem very high for a service that is likely to be more of a necessity than a luxury.

The Commission also cites empirical estimates from overseas jurisdictions to support its critique:²⁶

Alternative studies estimate much lower income elasticities of demand for energy.

3.2.1 New Zealand is expected to have higher income elasticity than comparators

We agree with the Commission that our results point to gas being more of a luxury than a necessity for residential users in New Zealand. However, in our opinion, this is not a robust basis for critique of our results. Rather, our analysis is an accurate reflection of what is known about the residential consumption of gas in New Zealand.

Our empirical results are supported by qualitative evidence that was submitted to the Commission in a report by Concept Consulting. Concept's analysis highlighted the discretionary nature of gas consumption in New Zealand, as compared with electricity which is more of an essential service.²⁷ In its draft decision, the Commission also appears to accept that gas use is more discretionary than electricity use in New Zealand.²⁸

We agree with the Commission that in some overseas markets consumption of gas is not a luxury. In particular, we understand this to be the case in many parts of the United States and a number of countries in Europe. This understanding is reflected in the overseas studies cited by the Commission, which show that for several countries, and in particular the United States, income elasticities for gas are low and comparable with those for electricity.

Against this backdrop, we consider it unreasonable to set aside our evidence about the relative income elasticity of demand for gas against electricity based on evidence from other markets that are understood to have very different consumption patterns for gas.

3.2.2 Other empirical evidence supports gas as a luxury in comparable countries

In our opinion, Australia is likely to be a closer comparison for New Zealand than the United States or most countries within Europe. This expectation is reflected in the conclusions of our empirical analysis, when we interpret our results cautiously but as being consistent with those of Akmal and Stern²⁹ based on Australian data:³⁰

We interpret these results as providing support, alongside the Akmal and Stern analysis, for a conclusion that the income elasticity of residential demand for gas is substantially higher than for electricity in New Zealand.

And also:³¹

²⁵ Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, p 93

²⁶ Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, p 93

²⁷ Concept Consulting, *Relative long-term demand risk between electricity and gas networks*, 27 January 2016

²⁸ Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, p 82

²⁹ Akmal, M, and Stern, D, *Residential energy demand in Australia – An application of dynamic OLS*, October 2001, p 22

³⁰ HoustonKemp, *Asset beta for gas pipeline businesses*, 13 May 2016, p 6

³¹ HoustonKemp, *Asset beta for gas pipeline businesses*, 13 May 2016, p 9

The results from the OLS models reported in the first column of Table 2 show a ratio of these estimates as 4.51 – broadly consistent with the results reported by Akmal and Stern, which suggest a ratio of 3.62.

We note that the Commission has yet to engage with the results found by Akmal and Stern, and how they compare with our results or those that it cites based on United States and European data.

It is also noteworthy to point out that the study of OECD studies cited by the Commission estimates the income elasticity of residential demand for gas in ten countries. It estimates the lowest income elasticity for the United States, of 0.031. However, for three countries it reports an income elasticity of demand above unity, including 1.715 for Ireland, 1.196 for Austria and 1.121 for Switzerland.³² Together with the context of Akmal and Stern, who report an income elasticity of demand for residential gas of 1.882 for Australia,³³ these observations are at odds with the Commission's view, quoted above, that gas is more likely to be a necessity than a luxury. The evidence suggests that, in several countries, although notably not the United States, this is not the case.

3.2.3 Evidence suggests that income elasticity for gas is higher than electricity in New Zealand

Having regard to the totality of the information available about New Zealand consumption of gas compared to overseas patterns, we consider that these are likely to be high – higher than for electricity in New Zealand. This is supported by our estimates of income elasticities of residential demand, qualitative analysis in New Zealand, and other empirical evidence from a similar market in Australia.

The Commission itself has collated evidence suggesting that the income elasticity of residential demand for gas in the United States, where the vast majority of its asset beta comparators operate, is very low.

The Commission states that:³⁴

... it is only if the income elasticity of demand for New Zealand reticulated gas is significantly different to the comparator companies (such that it materially affects beta), that we should provide an uplift to our estimate of asset beta (0.34).

In our view, the Commission has been provided with evidence (or provided it itself) that goes to precisely to the test that it sets out above.

Although the Commission rejects reliance upon the empirical evidence that we developed, we note that:

- our analysis represents the only quantitative evidence provided to (or by) the Commission that is sourced from New Zealand data and provides direct evidence relating to the relative systematic risk of the electricity and gas industries;
- the Commission does not assess this evidence in any detail or set out an alternative analysis that it considers to be more persuasive; and
- the Commission does not identify any substantive reason to reject reliance on our analysis other than that the results are not in alignment with its prior views as to the level of the income elasticity of residential gas demand.

Finally, it is important to note that we do not utilise the absolute level of income elasticity of gas demand from our econometric analysis, but ratios of income elasticities estimated from this analysis.³⁵ To the extent that there is merit in cross-checking our results against those from other countries, it is these ratios that should be assessed, since they form the key input into our calculation of the asset beta differential.

³² Bernstein R. and Madlener, R., *Residential natural gas demand elasticities in OECD countries: an ARDL bounds testing approach*, FCN working paper No 15/2011, October 2011, p 15

³³ Akmal, M, and Stern, D, *Residential energy demand in Australia – An application of dynamic OLS*, October 2001, p 22

³⁴ Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, p 90

³⁵ For example, see Table 5 of HoustonKemp, *Asset beta for gas pipeline businesses*, 13 May 2016, p 12

3.3 Treatment of overseas evidence of asset beta

The Commission samples asset betas from a range of electricity and gas businesses, the large majority of which operate in the United States. To this point, the Commission has not given close consideration to the appropriateness (or otherwise) of using asset betas estimated in foreign jurisdictions and applying them to New Zealand regulated entities. It appears this position has changed in the draft decision.

The Commission states that, if it decides to adopt an asset beta differential for gas, it is not clear how it should be applied. It raises four potential scenarios in which an asset beta differential may be applied:³⁶

1. Gas companies in New Zealand and in the Commission's sample are more risky than electricity companies. The Commission should respond by setting an asset beta for gas higher than its sample average and an asset beta for electricity lower than this.
2. Electricity companies in New Zealand face similar risks to electricity and gas companies in the Commission's sample. The Commission should set an asset beta for gas higher than its sample average.
3. Gas companies in New Zealand face similar risks to the electricity and gas companies in the Commission's sample. The Commission should set an asset beta for electricity lower than its sample average.
4. Both gas companies and electricity companies in New Zealand are more (less) risky than the companies in the Commission's sample. The Commission should set an asset beta for electricity and gas that is higher (lower) than its sample average.

We agree that it is reasonable to consider how best to apply an asset beta differential. In considering this, the Commission should be guided by the empirical evidence that it has collected or been provided. In our view, this evidence supports the adoption of scenario 2, for reasons that we set out below.

We have provided the Commission with new evidence that supports an asset beta uplift for GDBs in New Zealand as against EDBs. This evidence consists of empirical estimates of income elasticity of demand, supported by qualitative analysis of gas consumption patterns and overseas evidence from Australia.

By contrast, evidence from the United States does not tend to support higher asset beta for gas businesses over electricity businesses. For example, CEG's review of equity beta from United States utilities for the Australian Energy Networks Association was not able to establish a difference between asset beta for electricity and gas utilities.³⁷ This is consistent with evidence cited by the Commission that the income elasticities of demand for electricity and gas are not significantly different.

Both quantitative and qualitative provided to the Commission suggests that the systematic risks of GDBs in New Zealand are higher than those of operating a gas utility in the United States, because of the discretionary nature of gas as a fuel in New Zealand, whereas in the United States it is a necessity with an income elasticity of close to zero. By contrast, there is limited evidence collected to date to support a view that electricity network businesses in New Zealand face either more systematic risks, or less systematic risks, than those in the United States.

Taking into account the evidence above, we consider that:

- there evidence against scenario one. because there are not significant differences in the asset betas (or income elasticities) between electricity and gas businesses in the Commission's sample of comparator firms; and
- there is evidence against scenario three, because the quantitative and qualitative evidence both support a view that the systematic risks of a GDB in New Zealand is significantly higher than for a gas utility in the United States.

³⁶ Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, p 99

³⁷ CEG, *Information on equity beta from US companies*, June 2013, pp 34-36

Scenario two assumes that New Zealand electricity businesses have similar risks to those in the Commission's sample, whereas scenario 4 presupposes that they may have different risks. Although there is evidence to support a view that New Zealand gas businesses are more risky than United States gas businesses, no firm empirical basis has yet been provided to establish that New Zealand electricity businesses are more or less risky than those in the Commission's sample. In our opinion, until such evidence is provided, it is reasonable to adopt scenario two.

We note that scenario two is also consistent with the Commission's practice to date, and would therefore be consistent with maintaining regulatory stability. In our view, this is appropriate in this context, because there is no persuasive evidence that would support adopting any other approach.

3.4 Relevance of income elasticity for asset beta

In addition to rejecting our empirical estimates of income elasticity of demand, the Commission also casts doubt on the relevance of income elasticity of demand for estimating asset beta. Noting that it has adopted a position that the asset beta for a regulated business should not be affected by its form of regulation, the Commission states:³⁸

More fundamentally, it is not clear income elasticity of demand will have a material impact on exposure to systematic risk for New Zealand electricity lines and gas pipeline businesses. This reflects the specific nature of the risks that regulated businesses are exposed to under revenue caps, and weighted average price caps, respectively.

In raising this concern, the Commission in effect casts doubt not just on the effect that income elasticity has on asset beta for regulated businesses, but also on the effect that all systematic cash flow risks have on asset beta for regulated businesses.

In our view, this is an extraordinary conclusion to draw, and amounts to an abrupt change in regulatory approach. It places a great deal of weight on one interpretation of empirical evidence collected by the Commission. There are other interpretations of that empirical evidence that would lead to different conclusions. Further, the notion that systematic cash flows do not affect asset beta does not appear consistent with empirical evidence that the Commission uses to determine different asset betas across various sectors, including for airports and telecommunications.

The Commission has adopted a position in its draft decision that the asset beta should not be affected by its decision on the form of control. A number of considerations led to this decision:³⁹

- although there may be reasons to believe that systematic risks under a weighted average price cap (WAPC) are higher than those under a revenue cap, there was insufficient empirical evidence to support this; and
- the lack of empirical evidence is likely due to a range of forms of regulation in use, and natural noise in the measurement of asset beta.

The conclusion of this investigation is that there is not sufficient evidence to support a different asset beta between different forms of control. This does not necessarily constitute evidence that systematic cash flow risks do not flow through to asset beta. Other interpretations could explain this lack of variation in asset beta, including in particular that differences in form of control do not give rise to large differences in the systematic risk of cash flows. However, the Commission appears to interpret this lack of variation in asset beta as indicating that the systematic risk of cash flows is not passed through to asset beta.

Beyond the leap of logic implicit in this interpretation, we note that this is also an abrupt reversal in regulatory position. The repeated position of the Commission's expert on cost of capital issues, Dr Lally, is that income elasticity of demand is amongst a range of factors that influence the systematic risk of cash flows and which

³⁸ Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, p 90

³⁹ Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, pp 79-80

are relevant to asset beta.⁴⁰ This includes Dr Lally's most recent advice, in which he attempts to show that income elasticity flows through to asset beta, but in negligible amounts due other parameter choices.⁴¹ Up to this point, this advice has been reflected in the Commission's cost of capital decisions.

Finally, we note that the Commission's logic does not appear to be consistent with the empirical evidence, relied on by the Commission, that regulated businesses operating in different sectors have different asset betas. If the Commission does not accept that systematic risks to cash flows affect asset beta, then it follows that the asset beta of all regulated businesses (not just electricity and gas) may all be similar. However, this position rests uneasily with empirical evidence that these asset betas do, in fact, differ.

3.5 Other issues cited by the Commission

The discussion in the sections above addresses the Commission's use of overseas information on asset beta and the relevance of evidence about income elasticity. The Commission cites a number of other grounds for rejecting an asset beta differential that we address briefly below.

3.5.1 Weakened evidence for asset beta uplift

The Commission considers that the basis for its previous estimate of asset beta uplift for gas businesses has been weakened:⁴²

In light of the available evidence, we consider that our original rationale for applying a higher asset beta for GPBs has been significantly weakened, and there is currently no strong evidence in support of an uplift for GPBs.

The original rationale for applying an asset beta for GPBs has not significantly changed because the evidence relied upon by Dr Lally in support of the asset beta uplift has not significantly changed. Rather, Dr Lally has undertaken a different analysis of the same data to reverse his previous view.⁴³ However, the underlying evidence remains the same.

We note that additional evidence and analysis that we provided supported an asset beta uplift specifically for GDBs. Dr Lally did not provide any evidence contradicting this view, and the Commission's draft decision does not address it. In our opinion, new evidence has strengthened the case for an asset beta uplift for GDBs.

3.5.2 Overseas regulatory positions

The Commission cites regulatory approaches in Australia and Europe as a factor indicating that there are not significant differences in systematic risk between electricity and gas in New Zealand. In our opinion, these decisions are relevant for the Commission's consideration of asset beta uplift in New Zealand.

Regulatory decisions on gas made in Europe are unlikely to be relevant for New Zealand. There is no reason to expect that European regulators would have considered factors that differentiate New Zealand's gas market from many other developed economies. The literature that the Commission cites indicates that the systematic risks of gas supply are lower in some parts of Europe than they are in New Zealand.

On the other hand, we consider that Australia's gas market may have some characteristics that are more similar to New Zealand's. The Commission quotes the Australian Energy Regulator (AER):⁴⁴

⁴⁰ Lally, M., *The weighted average cost of capital for gas pipeline businesses*, 14 May 2004, p 24; Lally, M., *The weighted average cost of capital for gas pipeline businesses*, 28 October 2008, p 49; and Lally, M., *Review of WACC issues*, 25 February 2016, p 8

⁴¹ Lally, M., *Review of further WACC issues*, 22 May 2016, pp 48-55

⁴² Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, p 99

⁴³ Lally, M., *Review of further WACC issues*, 22 May 2016, pp 47-48

⁴⁴ AER, *Explanatory statement | Rate of return guideline*, December 2013, p 83

We proposed to adopt the same point estimate and range for equity beta across each of the energy sectors we regulate (electricity transmission, electricity distribution, gas transmission and gas distribution). This is because our conceptual analysis suggests systematic risks are similar between the different sectors of the energy market. Further, the results of our empirical analysis are not sufficiently precise to distinguish a measurable difference between the gas and electricity sectors.

The relevance of other regulatory decisions lies in the reasoning process that another authority takes to draw conclusions from a particular set of facts. It is important to note that the type of empirical evidence that we provided the Commission, using income elasticities, has not previously been submitted in Australia. In other words, the evidence that the AER had before it in coming to its decision is not the same that the Commission has available. In our view, this limits the relevance of the AER's conclusions to the Commission's process.

It is also important to note that the AER has historically set the same equity beta for electricity and gas networks. This context is different from New Zealand, where the Commerce Commission has determined a higher asset beta for gas networks since 2004. In our view, it is appropriate that changes to regulatory approaches are supported with persuasive evidence. The fact that the AER did not find persuasive evidence to change its pre-existing approach does not go to the question that should confront the Commission – is there persuasive evidence that supports changing its own pre-existing approach?

3.5.3 Non-systematic risks

The Commission notes that additional risks faced by GPBs could potentially be attributed to non-systematic sources, and may therefore be diversifiable. In support of this contention, the Commission states:⁴⁵

Overall, is not clear that GPBs should receive a higher asset beta than electricity lines, simply because gas is a more discretionary fuel. This is because it is only systematic risk that is relevant to beta. It is not immediately clear whether:

- 369.1 New Zealand GPBs face greater exposure to systematic risk than New Zealand electricity lines businesses;
- 369.2 New Zealand GPBs face greater exposure to systematic risk than our sample of comparator companies; and
- 369.3 income elasticity of demand will have a material impact on exposure to systematic risk, given the specific nature of the risks New Zealand electricity lines and gas pipeline businesses are exposed to under revenue cap and weighted average price cap regulation.

In our opinion, there is now evidence in front of the Commission identifying that GDBs face greater exposure to systematic risk than New Zealand electricity companies. There is also evidence that these risks are greater than those experienced by average firms in the Commission's sample of comparator companies. In the quote above, the Commission again expresses its draft decision in terms of GPBs, rather than directly addressing the evidence provided specifically in relation to GDBs.

We address at section 3.4 above the relevance of income elasticity of demand to asset beta.

⁴⁵ Commerce Commission, *Input methodologies review draft decisions | Topic paper 4: Cost of capital issues*, 16 June 2016, p 92

4. Implications of the form of control

The EA notes that the introduction of a revenue cap may reduce the incentives for electricity distribution businesses (EDBs) to adopt efficient pricing structures, relative to under a WAPC. However, in our opinion the benefits of adopting a WAPC are much less clear-cut than this, and there is evidence suggesting the opposite may, in fact, be the case.

Although there are some theoretical reasons to expect that a WAPC might give rise to more efficient pricing for electricity distribution services, other evidence points in the opposite direction. Of particular relevance to this opinion is:

- empirical evidence from Australia suggests that, in practice, these theoretical benefits have not been achieved and that other, less desirable, behaviours are promoted by a WAPC; and
- a revenue cap, combined with regulatory pricing principles, may be capable of promoting efficient pricing.

This view aligns with the Australian experience of applying WAPCs to EDBs, where the AER recently changed to a revenue cap form of control from a WAPC for Victorian and New South Wales EDBs, and the Australian Energy Market Commission (AEMC) recently amended the national electricity rules to promote more efficient pricing practices by EDBs.

In our opinion, the balance of these considerations, and lessons from the Australian experience, suggests that it is open to the Commission to consider that incentives for efficient pricing may not be negatively affected, and may even be promoted, under a revenue cap as compared to a WAPC.

Under a revenue cap, the risks of forecast error are eliminated and there is a greater ability for businesses to innovate with pricing. Combined with regulatory principles to guide pricing objectives, a revenue cap may still be able to provide for efficient price structures.

The Commerce Commission's draft decision is to apply a pure revenue-cap form of control with a wash-up mechanism for EDBs.⁴⁶ However, some stakeholders have proposed the application of a WAPC for EDBs. In particular, the EA notes a preliminary view that:⁴⁷

...the introduction of a revenue cap might reduce distributors' incentives to adopt efficient distribution pricing structures.

Both forms of control have different implications as to the risks borne and incentives faced by EDBs, with corresponding merits and drawbacks that need to be considered carefully. Against this backdrop, the determination of the appropriate form of control necessitates the exercise of regulatory judgement, taking into account the particular characteristics of the electricity distribution sector.

In this section, we review and compare the implications of a revenue cap and a WAPC for efficient pricing. In particular we:

- compare a revenue cap and a WAPC at a high level;
- discuss the implications for pricing under a revenue cap; and
- discuss the implications for pricing under a WAPC.

⁴⁶ Commerce Commission, *Input methodologies review draft decisions | Topic paper 1: Form of control and RAB indexation for EDBs, GPBs and Transpower*, 16 June 2016, para 51

⁴⁷ Electricity Authority, letter from Carl Hansen to Sue Begg, *Possible implications for efficient distribution pricing of a decision to change the form of control for electricity distribution businesses*, 30 May 2016

4.1 Overview comparison between revenue cap and WAPC

Table 2 below presents a high level summary of the differences between a revenue cap and a WAPC form of control.

Table 2: High level comparison between revenue cap and weighted average price cap

	Revenue cap	Weighted average price cap
Volume risk	Low	High
Profitability risk	Low	High
Price flexibility	High	High
Incentives for efficient price structures	Neutral – but regulatory principles can guide pricing	Yes – align tariff and cost structures

**Can be combined with a rebalancing constraint to enhance stability*

We explain these distinctions and their implications in more detail below.

For completeness, we note that both approaches give rise to similar administrative costs and the degree of price stability arising under them will depend on the applicable side-constraints, but may be similar, ie:

- the wash-up mechanism accompanying a revenue cap may result in a degree of price variability within a regulatory period; and
- under a WAPC, the scope for EDBs to increase profit by rebalancing tariffs within a regulatory period may result in a degree of price variability.

4.2 A revenue cap form of control

The application of a revenue cap form of control places an upper limit on the level of revenue that a business can derive in any given year, where this limit is established by reference to the business' building block costs. In response to this constraint, an EDB forecasts its sales and sets prices so that expected revenue is no greater than the revenue cap. A revenue cap form of control is typically accompanied by a wash-up mechanism that adjusts for any over- or under-recovery of revenue in the previous year. Such a wash-up acts as an implicit guarantee that the business will recover its building block costs.

This implicit guarantee as to the recovery of a business building block costs is a defining characteristic of a revenue cap and has a range of implications. Notably, it reduces any risk arising from the forecast of demand in the next regulatory period, ie, risk arising from:

- the general imprecision of any forecast of future demand, with actual demand in any given year possibly substantially above or below that forecast; and
- the potential for the forecast of demand determined by the Commerce Commission to diverge from an EDB's best estimate.

The corresponding reduction in risk can have significant benefits where there exists material demand uncertainty. This consideration may be of particular relevance to the electricity sector, where the adoption of new technologies – namely, solar photovoltaic systems and efficient battery technology – have the potential for profound and uncertain effects on electricity demand. In contrast, the absence of disruptive technologies in the gas sector may contribute to relatively lower levels of risk.⁴⁸

⁴⁸ As discussed in previous reports, there may be no particular reason to believe that these reductions in risk are associated with changes in systematic risk.

By disestablishing the nexus between prices and profitability that would otherwise exist, a revenue cap provides no positive incentives for the implementation of prices that promote economic efficiency. In other words, an EDB ultimately derives the same level of revenue regardless of its pricing structure. On the other hand, since this form of control applies a constraint at the revenue level, it affords a business flexibility to innovate with its pricing. The promotion of efficient prices can be, and often is, implemented through regulated pricing principles that provide a guide as to the objectives for pricing. For example, in New Zealand the distribution pricing principles apply,⁴⁹ and in Australia there are similar arrangements.⁵⁰ A revenue cap can provide certainty to a business that would otherwise be averse to implementing new price structures to better comply with regulatory pricing principles.

A corollary of these circumstances is that reductions in costs are the principal means by which an EDB can improve profitability under a revenue cap. This gives rise to an incentive for EDBs to reduce peak demand if it results in the deferral or avoidance of augmentation investments expected to occur in the current regulatory period. Of course, there are circumstances in which the deferral of augmentation is inefficient, ie, where the value placed on increased capacity by customers exceeds the augmentation costs.

Where there exist non-trivial variable costs – which is generally not the case for EDBs – the emphasis on cost reductions arising from a revenue cap may encourage a business inefficiently to influence customers' decisions in a manner that reduces its costs.⁵¹ This may be a relevant consideration in the gas sector, where the cost of physically compressing gas through the network may contribute to non-trivial variable costs.

To summarise, the principal benefit of a revenue cap for EDBs is the corresponding reduction in regulatory risk that would otherwise arise, driven by demand uncertainty and the corresponding potential for forecasting error. Although a revenue cap provides no positive incentive for the adoption of efficient prices, it is important to bear in mind that:

- this objective can be achieved by other means, ie, the regulatory framework; and
- alternative forms of control that are considered to provide positive incentives for efficient prices have, in practice, been found to have limited effects on pricing – which we discuss in the following section.

4.3 A weighted average price cap form of control

The application of a WAPC form of control establishes an upper limit on the weighted average increase in prices from one year to the next, with the weights based on the quantities sold for each charging parameter.

In response to this constraint, a business sets prices in each year to ensure that the weighted average price increase does not exceed a CPI-X cap. The use of a weighted average reflects the fact that services are sold in different quantities, and means that a small increase in the price of a popular service would need to be offset by a relatively larger decrease in the price of an infrequently provided service.

Since this form of control applies at the price level, an EDB's revenue and profitability are a function of the quantity sold. It follows that a WAPC imposes on an EDB volume risk arising from any difference between outturn and forecast demand over a regulatory period, ie:

- if outturn demand is greater than forecast, the revenue recovered by an EDB will exceed its efficient costs; or
- if outturn demand is less than forecast, an EDB will not recover its efficient costs.

⁴⁹ EC, *Distribution Pricing Principles and Information Disclosure Guidelines*, February 2010

⁵⁰ AEMC, *Rule Determination | National Electricity Amendment (Distribution Network Pricing Arrangements) Rule 2014*, 27 November 2014

⁵¹ By way of example, if variable costs are non-trivial an EDB may have an incentive to increase charges in order to reduce throughput and lower its variable costs. Under a revenue cap, this reduction in demand does not affect the total revenue derived but will result in a decrease in variable costs and an increase in profitability.

The level of volume risk borne by an EDB under a WAPC will be amplified to the extent there exists uncertainty as to future demand, eg, due to the adoption of new technologies.

On the other hand, this exposure to volume risk may provide positive incentives to implement efficient prices, ie, prices that reflect the underlying cost of the services to which they relate. The volume risk borne by an EDB under a WAPC can be mitigated to some extent by aligning its pricing structure with its underlying cost structure. This could involve recovering fixed costs through fixed charges and setting variable charges by reference to the costs imposed on the network by further use.

However, recent experience in the states of New South Wales and Victoria in Australia suggests that, under a WAPC, EDBs pricing decisions are not driven by the objective of mitigating the effect of demand volatility on profitability. This finding led the AER to conclude that:⁵²

...the theoretical incentives for efficient pricing provided by the WAPC have resulted in little practical benefit in DNSPs' pricing.

...a WAPC control mechanism has not in practice resulted in material increases in pricing efficiency where it has been applied in previous regulatory control period across Victorian and NSW DNSPs.

We note that the EA contemplates the effects of ownership on the incentives faced by EDBs under a WAPC and revenue cap form of control. Of some relevance to this question is the consistent experience across EDBs in New South Wales and Victoria, where EDBs in those jurisdictions are publicly and privately owned, respectively.

The AER concluded that EDBs' pricing decision under a WAPC are driven by a profit maximising objective and that EDBs were able to derive windfall gains under a WAPC. Specifically, the AER found that privately owned EDBs in Victoria derived windfall gains by increasing the price of charging components, ie, above the level specified in the WAPC, for those charging components experiencing sales growth in excess of the level forecast.⁵³ The AER concluded that:⁵⁴

...the WAPC provides an opportunity for distributors to recover revenue systematically above forecast.

Since additional volumes lead to additional revenue for EDBs under a WAPC, it provides an incentive for EDBs to maximise the use of their network. However, this link between volumes and revenue can also lead to a disincentive to reduce peak demand, since doing so would have an adverse effect on an EDB's revenue and profitability.

⁵² AER, *Preliminary positions | Framework and approach paper Ausgrid, Endeavour Energy and Essential Energy | Regulatory control period commencing 1 July 2014*, June 2012, pp 47, 58

⁵³ By way of example, a Victorian EDB increased volumetric usage prices throughout the period (above the level forecast) while decreasing fixed charges to fall within the WAPC constraint. The AER noted that since volumetric usage was higher than forecast, it resulted in a large increase in revenue while the decrease in revenue from the drop in fixed charges was small because actual customer numbers were below forecast. AER, *Preliminary positions | Framework and approach paper Ausgrid, Endeavour Energy and Essential Energy | Regulatory control period commencing 1 July 2014*, June 2012, pp 128-9

⁵⁴ AER, *Preliminary positions on replacement framework and approach (for consultation) for CitiPower, Jemena, Powercor, SP AusNet, United Energy for the Regulatory control period commencing 1 January 2016*, May 2014, p 54

A1. Results of new issue premium

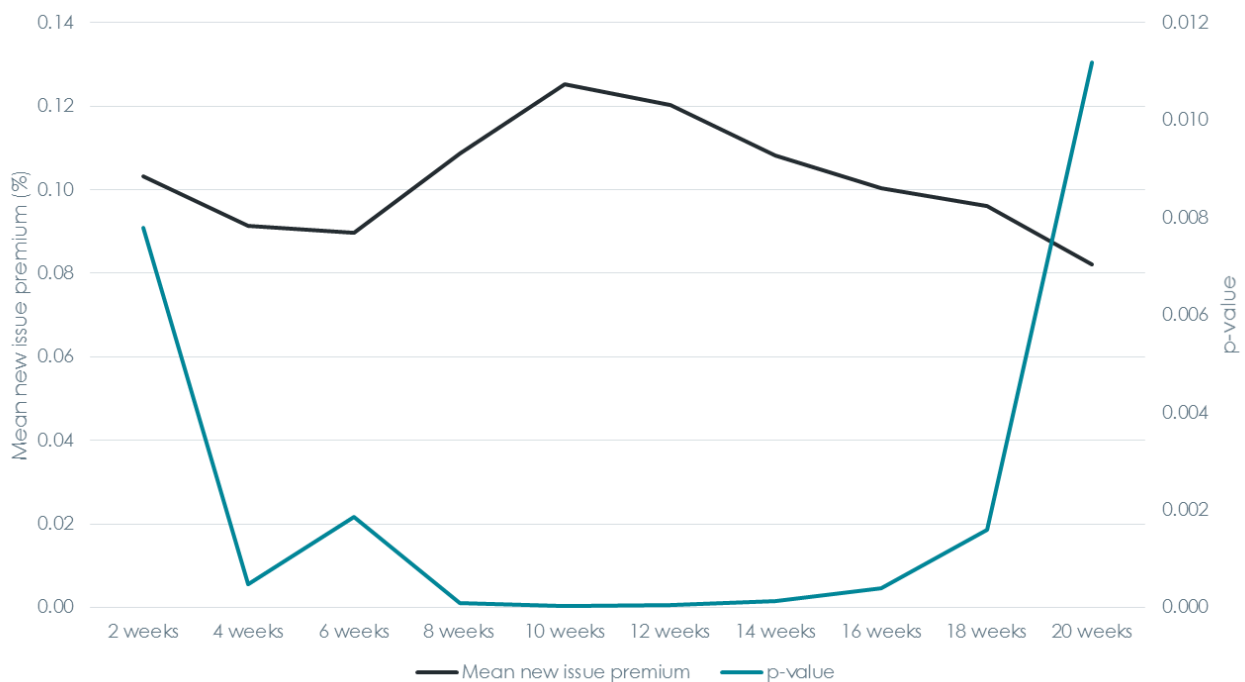
At section 2.5.3 above we introduce three samples of bonds, being:

- sample A: New Zealand dollar denominated bonds of any rating – 121 bonds meet this criterion; and
- sample B: New Zealand dollar denominated bonds with broad Standard & Poor's ratings of BBB and A – 41 bonds meet this criterion.

We identify our mean estimates of the new issue premium and the significance of these estimates on each of these samples, tested against a null hypothesis that the mean issue premium is zero. In Figure 3 and Figure 4 below we plot the mean issue premium against the p-value for each estimation period.

The first two samples, the results for which are depicted in Figure 3 and Figure 4, show broadly similar estimates of new issue premium, which appear to be in a range from 10 to 12 basis points in the intervals at which they are high and significant.⁵⁵

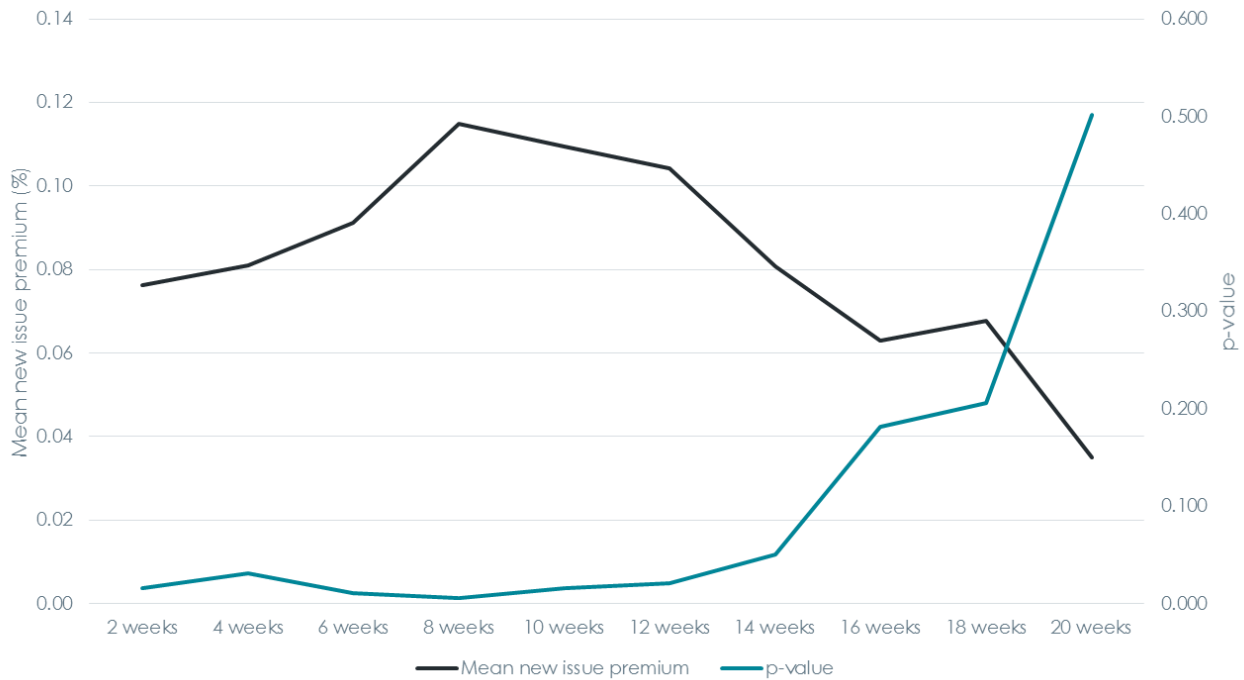
Figure 3: New issue premium mean and p-value, all bonds



Source: Bloomberg data, HoustonKemp analysis

⁵⁵ As we explain above, it is consistent with theory that the significance of new issue premium estimates will decline over longer periods as other factors play a role in determining the yield on bonds.

Figure 4: New issue premium mean and p-value, all bonds rated BBB and A



Source: Bloomberg data, HoustonKemp analysis

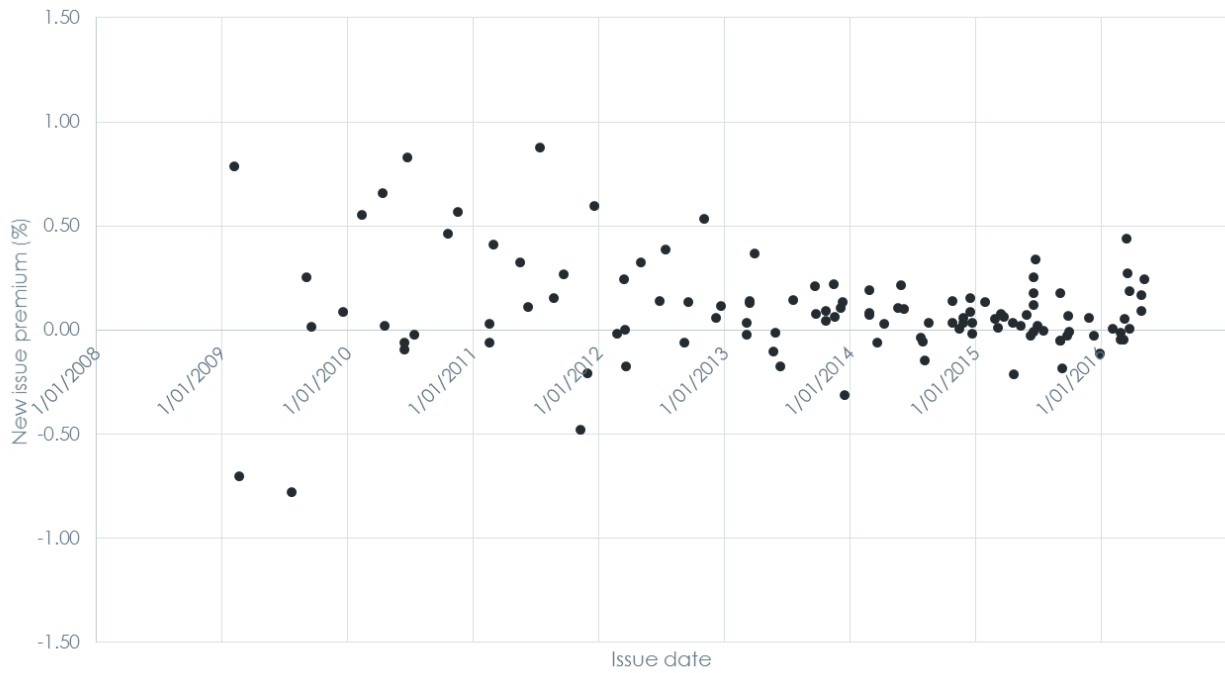
For both of these samples, we show scatter plots indicating the spread of new issue premium estimates against:

- issue date; and
- term to maturity from issue, measured in years.

These are set out in the figures below.

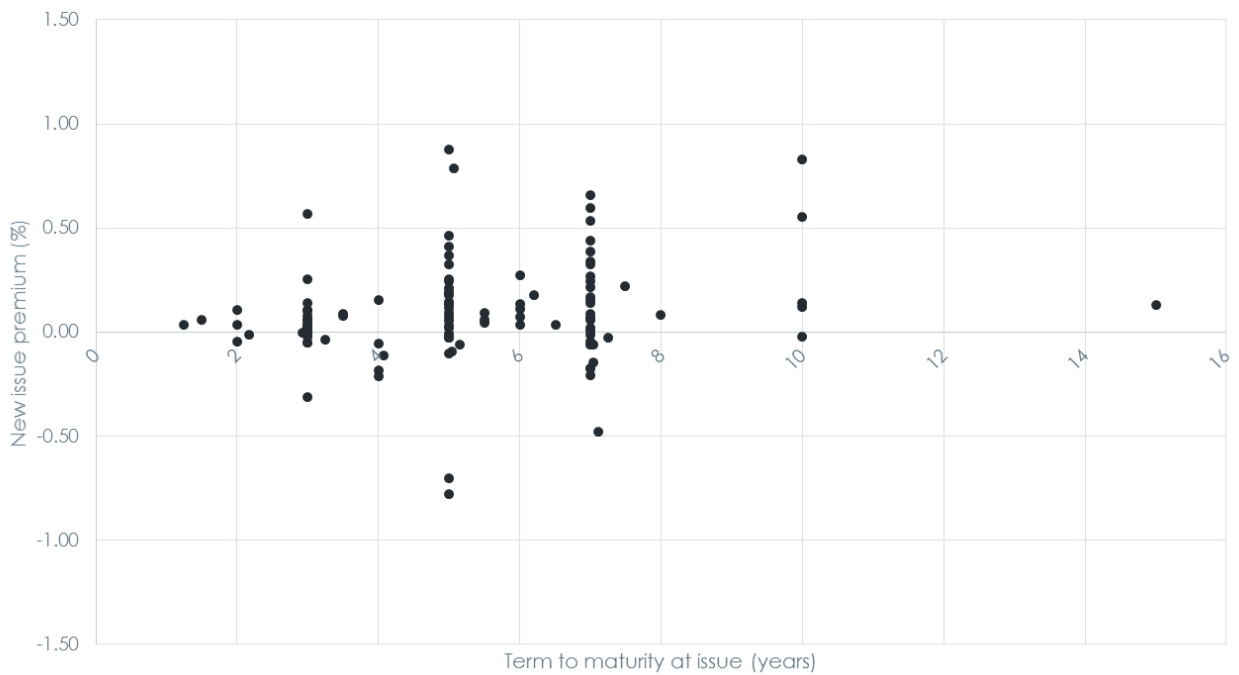
We show the new issue premium calculated over eight weeks in each case, because this estimate is generally amongst the highest and most significant in each of the samples that we discuss above. This suggests that the new issue premium is largely priced out of the bond in secondary market trading after eight weeks.

Figure 5: New issue premium against issue date, all bonds



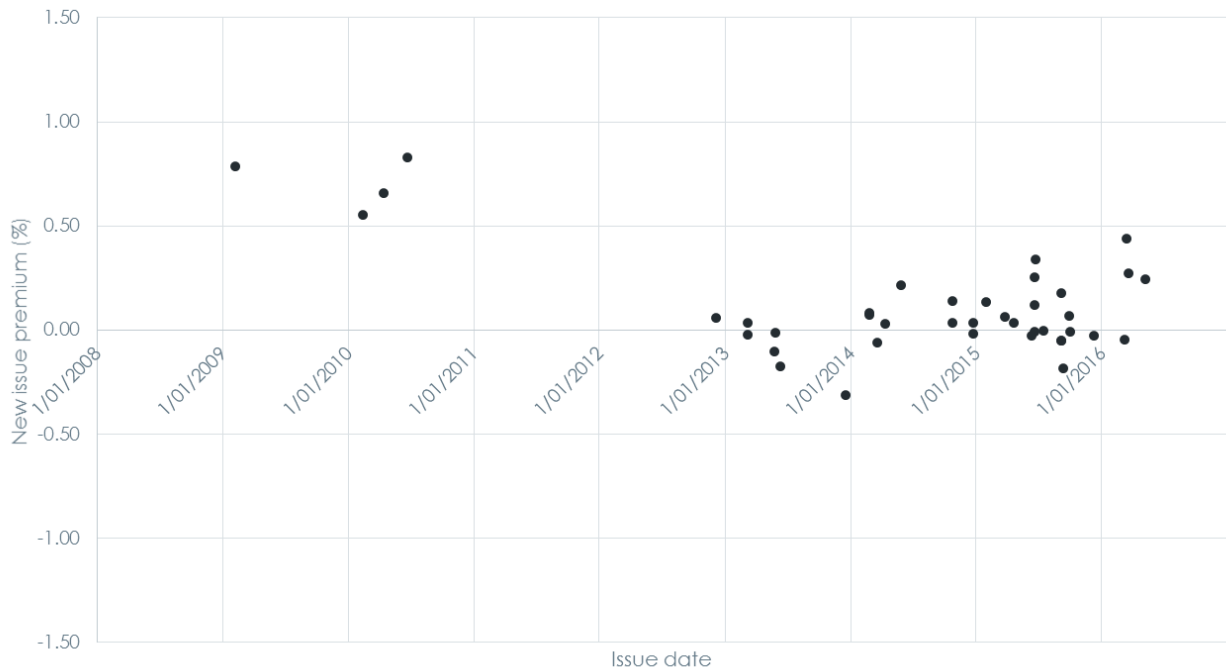
Source: Bloomberg data, HoustonKemp analysis

Figure 6: New issue premium against term at issue, all bonds



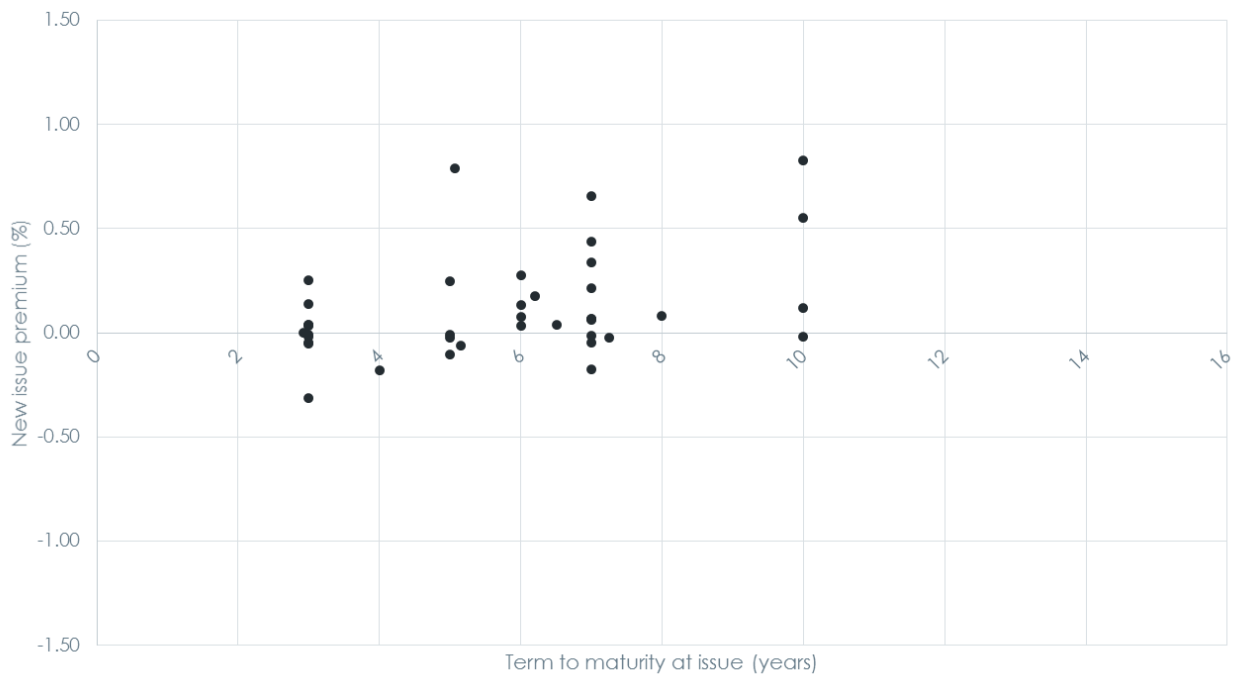
Source: Bloomberg data, HoustonKemp analysis

Figure 7: New issue premium against issue date, all bonds rated BBB and A



Source: Bloomberg data, HoustonKemp analysis

Figure 8: New issue premium against term at issue, all bonds rated BBB and A



Source: Bloomberg data, HoustonKemp analysis

A2. Estimates of new issue premium

Table 3 below sets out the estimates of new issue premium that we estimate from a sample of 121 bonds issued by New Zealand domiciled companies that are denominated in New Zealand dollars.

There are a number of gaps in Table 3 where yields were not reported on a bond. This could occur for a variety of reasons, such as a public holiday on that day, or lack of information to inform a yield.

Table 3: Estimates of new issue premium from New Zealand bond sample

Issuer	Bloomberg ID	Issue date	Maturity date	2 weeks	4 weeks	6 weeks	8 weeks	10 weeks	12 weeks	14 weeks	16 weeks	18 weeks	20 weeks
Westpac New Zealand Ltd	JK8744415	28/04/2016	28/04/2021	0.07	0.06	0.07	0.09						
Fonterra Co-operative Group Ltd	EK8455363	20/04/2015	20/10/2021	-0.02	0.02		0.04	0.06	0.06	0.05	0.06	0.03	-0.05
Chorus Ltd	JK6120527	6/05/2016	6/05/2021	0.30	0.31	0.30	0.25						
ASB Bank Ltd	QJ8343007	26/11/2015	26/05/2021	0.09	0.09	0.10	0.06	0.02	-0.11	-0.12	-0.14	-0.12	-0.05
ANZ Bank New Zealand Ltd	JK3962533	22/03/2016	22/03/2021	0.14	0.16	0.12	0.19	0.20	0.20	0.16			
Bank of New Zealand	EJ2419442	25/06/2012	25/06/2019	0.13	0.18	0.16	0.14	0.19	0.23	0.27	0.30	0.30	0.35
ANZ Bank New Zealand Ltd	EJ3477050	18/09/2012	18/09/2017	-0.06	0.00	0.16	0.13	0.22	0.30		0.46	0.45	0.48
Bank of New Zealand	EK9754301	18/06/2015	18/06/2020	0.13	0.16	0.16	0.18	0.17	0.16	0.13	0.08	0.08	0.06
Spark Finance Ltd	QJ8156235	10/12/2015	10/03/2023	0.01	0.00	-0.01	-0.02	-0.13	-0.19	-0.17	-0.13	-0.11	-0.11
Cooperatieve Centrale Raiffeisen-Boerenleenbank BA/New Zealand	EK9514168	10/06/2015	10/06/2020	-0.08	-0.09	-0.04	-0.03	-0.06	-0.02	-0.01	-0.16	-0.13	-0.16
Westpac New Zealand Ltd	EK7895890	16/03/2015	16/03/2018	0.07	0.08		0.08	0.11	0.11	0.00	-0.05	-0.04	-0.04
Westpac New Zealand Ltd	EJ8225348	20/09/2013	20/09/2018	0.12	0.13	0.19	0.21	0.23	0.23	0.25	0.25	0.24	0.27
ANZ Bank New Zealand Ltd	EK9022196	11/05/2015	11/05/2020	0.06	0.07	0.07	0.02	0.02	0.01	0.03	0.03	0.01	-0.07
Contact Energy Ltd	EJ9996244	20/03/2014	15/05/2019	0.03	0.09	0.14	-0.06	0.05	0.14	0.18	0.19	0.00	-0.04
ANZ Bank New Zealand Ltd	UV8429911	25/09/2015	25/09/2020	0.01	0.02	0.02	-0.03	-0.03	-0.07		-0.08	-0.16	-0.25

Issuer	Bloomberg ID	Issue date	Maturity date	2 weeks	4 weeks	6 weeks	8 weeks	10 weeks	12 weeks	14 weeks	16 weeks	18 weeks	20 weeks
Fonterra Co-operative Group Ltd	JK1487442	7/03/2016	7/03/2023	-0.07	-0.05	-0.05	-0.05	-0.03	-0.02	-0.05	-0.16		
ANZ Bank New Zealand Ltd	EK0888090	27/02/2014	27/02/2019	0.12	0.15	0.18	0.19	0.21	0.28	0.28	0.30	0.35	0.32
ASB Bank Ltd	EI7010891	8/06/2011	8/06/2017	0.02	0.05	0.07	0.11	-0.07	-0.15	-0.19	-0.19	-0.28	-0.32
Wellington International Airport Ltd	JK9790649	12/05/2016	12/05/2023	0.28	0.20	0.18							
ASB Bank Ltd	EJ4807040	20/12/2012	20/12/2017	0.06	-0.01	0.05	0.12	0.04	0.13	0.14	0.14		0.36
Cooperatieve Centrale Raiffeisen-Boerenleenbank BA/New Zealand	EI6730382	16/05/2011	16/05/2018	0.08	0.20	0.34	0.33	0.43	0.43	0.61	0.35	0.44	0.40
Bank of New Zealand	EI2827273	16/06/2010	30/06/2017	0.04	0.02	-0.02	-0.06	0.14	0.22	0.10	0.02	-0.01	-0.16
Kiwibank Ltd	LW1085528	13/05/2016	13/05/2019	-0.03	0.01	-0.05							
Transpower New Zealand Ltd	EI8907400	30/11/2011	30/11/2018	-0.05	-0.13	-0.06	-0.21	-0.22	-0.20	-0.22	-0.14	-0.21	-0.22
ANZ Bank New Zealand Ltd	JK3962483	22/03/2016	22/03/2019	0.01	0.04	0.01	0.00	0.08	0.10	0.04			
Bank of New Zealand	EI9124583	20/12/2011	20/12/2018	0.02	0.20	0.37	0.59	0.78	0.92	0.43	0.42	0.44	0.51
Transpower New Zealand Ltd	EK9947152	30/06/2015	30/06/2022	0.01	0.02	-0.04	0.02	0.02	-0.02	-0.07	-0.02	-0.08	-0.07
ASB Bank Ltd	EK7637052	25/02/2015	25/02/2020	0.01	0.02	0.02	0.06	0.07	0.01	0.10	-0.01	-0.06	-0.10
Port of Tauranga Ltd	EK7162994	29/01/2015	29/01/2021	0.19	0.18	0.16	0.14	0.14	0.14	0.10	0.14	0.10	0.20
Westpac New Zealand Ltd	EJ2695678	12/07/2012	12/07/2019	1.12	1.14	0.99	0.39	0.39	0.39	0.43	0.51	0.58	0.70
Bank of New Zealand	EI7485408	15/07/2011	15/07/2016	0.91	0.94	0.93	0.88	0.90	0.85	0.88	0.97	1.06	1.06
Auckland International Airport Ltd	QJ5396610	9/11/2015	9/11/2022	0.04	-0.11	-0.15		-0.17		-0.25	-0.35	-0.33	
Transpower New Zealand Ltd	EJ3319393	6/09/2012	6/09/2019	-0.07	-0.08	-0.06	-0.06	-0.06	-0.06	-0.03	-0.04	-0.03	-0.02
ASB Bank Ltd	EJ7522919	18/07/2013	18/07/2018	0.14	0.13	0.13	0.14	0.18	0.19	0.23	0.27	0.27	0.29
Genesis Energy Ltd	JK3183569	18/03/2016	18/03/2022	0.18	0.21	0.27	0.27	0.29	0.27	0.28			
ASB Bank Ltd	JK2984348	8/03/2016	8/03/2019	0.04	0.01	0.04	0.05	0.04	0.07	0.09	0.02		
ANZ Bank New Zealand Ltd	EJ0520696	13/03/2012	13/03/2019	0.16	0.17	0.24	0.25	0.11	0.14	0.11	0.11	0.13	0.07
China Construction Bank New Zealand Ltd	EK9696734	18/06/2015	18/06/2018	0.25	0.26	0.24	0.25	0.27	0.22	0.18	0.13	0.13	0.13

Issuer	Bloomberg ID	Issue date	Maturity date	2 weeks	4 weeks	6 weeks	8 weeks	10 weeks	12 weeks	14 weeks	16 weeks	18 weeks	20 weeks
Wellington International Airport Ltd	EJ7117835	11/06/2013	11/06/2020		-0.13	-0.08	-0.18	-0.13	-0.05	-0.09	-0.07	-0.09	-0.09
Precinct Properties New Zealand Ltd	EK6313291	17/12/2014	17/12/2021	0.09	0.07	-0.55	0.15	0.26	0.16	0.33	0.27	-0.29	-0.86
Fonterra Co-operative Group Ltd	EK0841677	25/02/2014	25/02/2020	0.04	0.06	0.06	0.07	0.07	0.08	0.12	0.12	0.17	0.17
ANZ Bank New Zealand Ltd	EI8181709	20/09/2011	20/09/2018	0.09	0.18	0.19	0.27	0.19	0.18	0.14	0.14	0.16	0.21
Fonterra Co-operative Group Ltd	EK9776171	19/06/2015	19/06/2025	0.15	0.15	0.16	0.12	0.06	0.04	-0.02	-0.06	-0.07	-0.08
Fonterra Co-operative Group Ltd	EK0841735	25/02/2014	25/02/2022	0.05	0.06	0.07	0.08	0.08	0.08	0.11	0.10	0.12	0.11
Contact Energy Ltd	UV5358675	4/09/2015	15/11/2021	0.08	0.10	0.18	0.18	0.17	0.09	0.06		0.03	-0.28
Cooperatieve Centrale Raiffeisen-Boerenleenbank BA/New Zealand	EJ1374051	3/05/2012	3/05/2017	3.53	0.35	0.34	0.33	0.29	0.38	0.36	0.39	0.40	0.39
TrustPower Ltd	EK5800520	15/12/2014	15/12/2021	0.03	0.03		0.09	0.05	-0.02	0.04		0.12	0.14
Bank of New Zealand	JV8632509	3/02/2016	3/02/2023	-0.02	-0.06	-0.01	0.01	0.01	0.00	0.05	0.04	0.02	0.03
Auckland International Airport Ltd	EK2689892	28/05/2014	28/05/2021	0.16	0.21	0.20	0.21	0.23	0.26	0.24	0.26	0.24	0.23
Meridian Energy Ltd	JK2345854	14/03/2016	14/03/2023		0.33		0.44	0.47		0.49	0.39		
China Construction Bank New Zealand Ltd	EK9696676	18/06/2015	18/06/2020	-0.02	-0.01	-0.01	-0.01	-0.02	-0.07	-0.12	-0.11	-0.11	-0.12
Kiwibank Ltd	EK5906327	13/11/2014	13/11/2017	0.10	-0.01		0.00	0.00	0.01	0.01	0.03	0.04	0.02
Cooperatieve Centrale Raiffeisen-Boerenleenbank BA/New Zealand	EJ0519656	19/03/2012	19/03/2019	-0.15	-0.16	-0.15	-0.17	-0.26	-0.35	-0.35	-0.34	-0.30	-0.29
China Construction Bank New Zealand Ltd	AF2798417	16/07/2015	18/06/2018	0.03	0.06	0.08	0.00	-0.02	-0.07	-0.10	-0.10	-0.16	-0.16
Transpower New Zealand Ltd	EJ5781202	15/03/2013	15/03/2028		0.01	0.04	0.13	0.14	0.09	0.14	0.16	0.16	0.18
ANZ Bank New Zealand Ltd	EI5748906	16/02/2011	16/02/2018	0.06	0.05	0.05	-0.06	0.40	0.46	0.43	0.22	0.23	0.20
Kiwi Property Group Ltd	EK3531028	6/08/2014	20/08/2021	-0.41	-0.33	-0.20	-0.14	0.13	0.18	0.26	0.22	0.22	0.20
Christchurch International Airport Ltd	EJ4614693	6/12/2012	6/12/2019	0.07	0.18	0.02	0.06	0.10	0.11	0.15	0.25	0.24	

Issuer	Bloomberg ID	Issue date	Maturity date	2 weeks	4 weeks	6 weeks	8 weeks	10 weeks	12 weeks	14 weeks	16 weeks	18 weeks	20 weeks
Contact Energy Ltd	EJ6898542	27/05/2013	27/05/2020	0.02	0.02	-0.01	-0.01	-0.07	0.05	0.06	0.04	0.00	0.01
Wellington International Airport Ltd	EJ8777645	15/11/2013	15/05/2021	0.07	0.10	0.22	0.22	0.22	0.22	0.23	0.27	0.28	0.28
Genesis Energy Ltd	EI3063357	23/06/2010	23/06/2020	0.89	0.77	0.84	0.83	0.90	0.93	0.89	0.89	0.97	1.05
Fonterra Co-operative Group Ltd	EK5386579	24/10/2014	24/10/2017	0.12	0.13	0.14	0.14		0.14	0.14	0.15	0.14	0.13
ASB Bank Ltd	EK3121754	6/06/2014	6/06/2017	0.05	0.08	0.11	0.10	0.11	0.05	0.07	0.07	0.10	0.11
ANZ Bank New Zealand Ltd	EK6302518	1/12/2014	1/12/2017	0.00	0.16	-0.01		0.17	0.00	0.02	0.01		0.04
Contact Energy Ltd	EI2174312	13/04/2010	13/04/2017	-0.04	0.76	0.71	0.66	0.64	0.62	-0.03	-0.10	-0.09	-0.09
Westpac New Zealand Ltd	EK4350899	24/07/2014	24/10/2017		0.00	-0.04	-0.04	-0.03	-0.03	-0.02	-0.01	0.00	0.01
Fonterra Co-operative Group Ltd	EK5386397	24/10/2014	24/10/2017	-0.09	-0.07	-0.09	0.04		0.03	-0.01	0.00	0.00	0.01
Hongkong & Shanghai Banking Corp Ltd/New Zealand	EJ9716832	10/12/2013	10/12/2018	0.06	0.13	0.11	0.14	0.13	0.13	0.17	0.17	0.19	0.26
Transpower New Zealand Ltd	EJ5781053	15/03/2013	15/03/2023		0.02	0.05	0.14	0.16	0.15	0.18	0.16	0.16	0.14
ANZ Bank New Zealand Ltd	EK4396546	18/08/2014	18/08/2016	0.03	0.03	0.03	0.03		0.02	0.04	0.05	0.05	0.19
Cooperatieve Centrale Raiffeisen-Boerenleenbank BA/New Zealand	UV6887565	4/09/2015	4/09/2018	0.01	-0.06	-0.04	-0.05	-0.07	-0.08	-0.08		-0.06	-0.08
China Construction Bank New Zealand Ltd	JK9343159	28/04/2016	28/04/2023	0.18	0.09	0.15	0.17						
Contact Energy Ltd	EJ6898492	24/05/2013	24/05/2018	0.02	-0.05	-0.08	-0.10	-0.07	-0.10	-0.11	-0.10	-0.07	-0.10
Auckland International Airport Ltd	EK1628859	11/04/2014	11/04/2017		-0.06	0.01	0.03	0.05	0.08	0.10	0.09	0.09	0.01
Kiwibank Ltd	EK9431355	29/05/2015	29/05/2020	0.09	0.10	0.06	0.07	0.07	0.08	0.08	0.04	0.00	-0.01
Mighty River Power Ltd	EJ5727601	6/03/2013	6/03/2019	0.04	-0.07	-0.02	0.03	0.06	0.01	0.06	-0.03	0.00	-0.02
ANZ Bank New Zealand Ltd	EJ9373022	18/11/2013	18/11/2016	0.00	0.04	0.13	0.06		0.08	0.10	0.11	0.11	0.13
Cooperatieve Centrale Raiffeisen-Boerenleenbank BA/New Zealand	EI5921578	1/03/2011	1/03/2016	0.05	0.19	0.15	0.41	0.41	0.42	0.47	0.11	0.13	0.11
Toyota Finance New Zealand Ltd	EJ9000088	23/10/2013	23/04/2019	-0.07	0.04	0.04	0.05		0.04	0.05	0.04	0.03	0.06

Issuer	Bloomberg ID	Issue date	Maturity date	2 weeks	4 weeks	6 weeks	8 weeks	10 weeks	12 weeks	14 weeks	16 weeks	18 weeks	20 weeks
Cooperatieve Centrale Raiffeisen-Boerenleenbank BA/New Zealand	UV6887573	4/09/2015	4/09/2018	-0.01	-0.06	-0.05	-0.05	-0.07	-0.07	-0.09		-0.07	-0.08
Auckland International Airport Ltd	UV9815381	1/10/2015	1/10/2018	0.11	0.11	-0.01	-0.01	0.02	-0.05	0.00	-0.10	-0.11	-0.15
Mighty River Power Ltd	EI1390778	11/02/2010	11/02/2020	0.04	0.09	0.17	0.55	0.54	0.56	0.26	0.39	0.37	0.29
Mighty River Power Ltd	EJ5727809	6/03/2013	6/03/2023	0.34	-0.07	-0.05	-0.02	0.01	-0.04	0.01	-0.07	-0.04	-0.05
Kiwibank Ltd	EK8505456	23/04/2015	23/04/2019	-0.17	0.15	-0.26	-0.21	-0.24	-0.26	-0.24	-0.24	-0.26	-0.24
China Construction Bank New Zealand Ltd	UV8428939	10/09/2015	10/09/2019	-0.10	-0.15	-0.18	-0.18	-0.23	-0.24	-0.27	-0.43	-0.44	-0.56
Spark Finance Ltd	EK8237910	25/03/2015	25/03/2022	0.01	0.08	0.10	0.07	0.16	0.10	0.07	0.04	0.10	0.14
Genesis Energy Ltd	EJ4279950	1/11/2012	1/11/2019	0.40	0.43	0.46	0.53	0.44	0.46	0.25	0.24	0.29	0.33
China Construction Bank New Zealand Ltd	JV4447241	29/12/2015	27/01/2020	0.03	0.04	-0.04	-0.11	-0.18	-0.18	-0.25	-0.14	-0.22	-0.21
Toyota Finance New Zealand Ltd	EJ8999967	23/10/2013	23/04/2019	-0.03	0.12	0.07	0.09		0.08	0.09	0.08	0.07	0.15
Cooperatieve Centrale Raiffeisen-Boerenleenbank BA/New Zealand	EI7899996	24/08/2011	24/08/2015	0.02	0.11	0.08	0.16	0.13	0.17	0.00	-0.02	-0.33	-0.11
Toyota Finance New Zealand Ltd	EK4234242	30/07/2014	30/07/2018	-0.19	-0.18	-0.05	-0.05	-0.08	-0.04	-0.05	0.03	0.02	0.03
ASB Bank Ltd	EI4808412	18/11/2010	18/11/2013	0.04	0.22	0.52	0.57	0.61	0.59	0.50	0.58	-0.04	-0.06
ANZ Bank New Zealand Ltd	EI3201114	13/07/2010	13/07/2015	-0.01	-0.04	-0.05	-0.02	-0.01	-0.01	0.20	0.15	0.57	0.77
Bank of New Zealand	EI8728814	10/11/2011	20/12/2018	0.44	1.27	-0.52	-0.48	-0.36	-0.24	-0.07	0.10	0.42	-0.22
ANZ Bank New Zealand Ltd	EK2823400	20/05/2014	20/05/2016	0.05	0.07	0.08	0.11	0.11	0.12	0.06	0.07	0.08	0.08
Westpac New Zealand Ltd	EH9040344	22/07/2009	22/07/2014	-0.21	-1.00	-0.84	-0.78	-0.72	-0.69	-0.77	-0.65	-0.70	-0.89
Cooperatieve Centrale Raiffeisen-Boerenleenbank BA/New Zealand	EH9505239	4/09/2009	4/09/2014		0.05	0.17	0.25	0.30	0.22	0.20	0.21	0.17	0.13
ASB Bank Ltd	EI4408312	20/10/2010	20/10/2015	0.00	0.10	0.32	0.46	0.77	0.85	0.99	0.96	0.69	0.81
ANZ Bank New Zealand Ltd	EI5748781	16/02/2011	16/02/2016	0.09	0.09	0.07	0.03	0.39	0.42	0.40	0.27	0.26	0.25
Bank of New Zealand	EI2827190	16/06/2010	30/06/2015	0.00	0.00	0.01	-0.09	0.25	0.25	0.20	0.15	0.12	0.06

Issuer	Bloomberg ID	Issue date	Maturity date	2 weeks	4 weeks	6 weeks	8 weeks	10 weeks	12 weeks	14 weeks	16 weeks	18 weeks	20 weeks
Industrial and Commercial Bank of China New Zealand Ltd	EK6663273	22/12/2014	22/12/2017	0.00		-0.01	-0.02	-0.03	-0.02	-0.03	-0.03		-0.01
Bank of New Zealand	EJ6066736	28/03/2013	28/03/2018	0.14		0.37	0.37	0.37	0.39	0.27	0.31	0.40	0.37
ASB Bank Ltd	EK7636930	6/03/2015	6/03/2018	0.00		0.00	0.01	0.00	0.00	-0.01	-0.01	-0.04	-0.03
Powerco Ltd	UV8904780	28/09/2015	28/09/2022	0.03		0.08	0.07	0.04	0.04		0.04		-0.09
Industrial and Commercial Bank of China New Zealand Ltd	EK6663513	22/12/2014	22/12/2017	0.19		-0.01	0.04	0.00	-0.01	0.01	0.00		-0.01
GMT Bond Issuer Ltd	EK9275125	23/06/2015	23/06/2022			0.32	0.34	0.31	0.33	0.23	0.27	0.26	0.23
ASB Bank Ltd	EJ9635487	5/12/2013	5/12/2016	0.05		0.09	0.11	0.10	0.11	0.12	0.13	0.18	0.19
ASB Bank Ltd	EJ8650594	23/09/2013	23/03/2017			0.07	0.08	0.09	0.08	0.19	0.11		0.14
Fletcher Building Industries Ltd	EK2878156	19/05/2014	15/03/2019			1.89	1.84	1.75	1.60	1.40	1.33	1.26	1.22
Bank of New Zealand	JK2984470	26/02/2016	26/04/2018	-0.01		-0.04	-0.01	0.00	0.01	0.04	0.03	-0.01	
Bank of New Zealand	JK2984421	26/02/2016	26/02/2018	-0.03		-0.06	-0.05	-0.03	-0.01	0.02	0.00	-0.02	
ANZ Bank New Zealand Ltd	EI0886529	18/12/2009	18/06/2013				0.09	0.06	0.07	0.06	0.05	0.06	0.05
Auckland International Airport Ltd	EH7178294	5/02/2009	28/02/2014				0.79	0.84	0.92	0.94	0.96	1.12	1.09
Bank of New Zealand	EH7306531	20/02/2009	20/02/2014			-0.78	-0.70	-0.70	-0.86	-0.81	-0.63	-0.39	-0.39
ANZ Bank New Zealand Ltd	EH9754241	18/09/2009	18/09/2012			0.00	0.02	-0.01	-0.01	-0.03	-0.01	-0.03	-0.08
Bank of New Zealand	EK6660154	27/11/2014	27/05/2016			0.08	0.06	0.05	0.04	0.03	0.05	0.00	0.00
Bank of New Zealand	EK6660030	27/11/2014	26/02/2016			0.05	0.03	0.03	0.03	0.06	0.08	0.02	0.03
Cooperatieve Centrale Raiffeisen-Boerenleenbank BA/New Zealand	EJ0340459	23/02/2012	23/02/2015	0.08	0.07	-0.05	-0.02	-0.04	-0.02	-0.19	-0.19	-0.07	-0.06
Cooperatieve Centrale Raiffeisen-Boerenleenbank BA/New Zealand	EI2234645	19/04/2010	19/04/2013	0.02	0.00	0.05	0.02	-0.04	0.00	-0.04	-0.09	-0.07	-0.09
Westpac New Zealand Ltd	EJ0950372	16/03/2012	16/03/2015	0.00	0.00	-0.01	0.00	-0.06	-0.04	0.02	0.01	0.07	0.12
Medical Securities Ltd	EJ9914908	16/12/2013	16/12/2016	-0.21	-0.30		-0.31	-0.31	-0.30	-0.19	-0.23		-0.22

Source: Bloomberg data, HoustonKemp analysis



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