Debt strategies of utility businesses, Tom Hird, Competition Economists Group (CEG) June 2013

Appendix 9.8

27 November 2014

Response to the ERA's Draft Decision on required amendments to the Access Arrangement for the Mid-West and South-West Gas Distribution System

Connecting WA to natural gas

COMPETITION ECONOMISTS GROUP

Debt strategies of utility businesses

June 2013

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Executive summary

1. The ENA have commissioned CEG to advice on the debt portfolios of utility/infrastructure companies in Australia and internationally, including the weighted average term of debt at issuance.

Term of debt at issuance

2. In Chapter 3 I investigate the debt term at issuance for different cross-sections of the full sample of 146 companies. An important conclusion in this chapter is that the weighted average term of debt issued for regulated energy companies and other similar infrastructure providers in Australia and internationally is, on average, in excess of 10 years. The weighted average for the whole sample is 17.7 years and the results for some relevant sub-samples are summarised in Table 1 below.

Table 1: Weighted average debt term at issuance

Years (# businesses)	AU	NZ	GB	US	AVERAGE
Electric Utilities	8.0 (2)	8.7 (3)	15.9 (2)	18.1 (31)	**17.5 (38)**
Gas Utilities	14.3 (2)	N/A	N/A	15.1 (22)	**14.9 (24)**
Multi Utilities	9.2 (3)	7.6 (1)	18.3 (2)	18.9 (21)	**18.3 (27)**
Water Utilities	N/A	N/A	22.5 (4)	21.5 (10)	**22.2 (14)**
Highways & Rail-tracks	13.1 (3)	N/A	N/A	N/A	**13.1 (3)**
Airport Services	11.9 (1)	6.5 (1)	N/A	6.2 (2)	**10.5 (4)**
Marine Ports & Services	N/A	6.4 (1)	N/A	N/A	**6.4 (1)**
AVERAGE	**11.3 (11)**	**8.1 (6)**	**19.1 (8)**	**18.2 (86)**	**17.7 (111)**

Source: Bloomberg, CEG analysis

3. The weighted average debt term at issuance for alternative sub-groupings to those presented in Table 1 above are also relevant. For example, the weighted average debt term at issuance for the five listed regulated Australian energy companies (APA Group, DUET Group, SP AusNet, Envestra and Spark Infrastructure) (which are spread across the first three GICS industry classifications) is 10.0 years (10.5 years based on a simple average). Also, the weighted average debt term at issuance of highly regulated US energy companies (i.e. at least 80% of total assets are regulated) is 19.4 years. The corresponding value for mostly regulated US energy companies (i.e. at least 50% of total assets are regulated) is 18.5 years[1].

4. I also investigate how the debt term at issuance has changed since the GFC based on data from SNL Financial for US energy companies. I find that the term of debt at issuance in 2006 and 2007 rose to materially higher levels than before (2002 to

[1] For a discussion on the definition of the highly and mostly regulated samples see section 2.2.1.

2005) and since. However, since 2008 the term of debt issued has remained above the 2002 to 2005 levels. The average term of debt issued in 2012 was the highest since 2002 (with the exception of 2006 and 2007 as noted above). This evidence strongly suggests that the standard practice of regulated energy businesses is to issue long term debt of 10 years or more.

5. Chapter 3 also presents evidence to show that companies' debt issues tend to be staggered so that maturity dates are spread through time.

Type of debt issued

6. Companies are able to issue debt with different types of attributes. For example, debt can be issued in the form of a bond or a bank loan, it can have optionality features such as being callable, and it can be issued in different currencies. In Chapter 4 I investigate what types of debt companies' issue, and the extent to which the debt term varies with such attributes.

7. I find that Australian and international companies tend to have more debt in the form of bonds than loans, and that a reasonable proportion of bonds are associated with optionality features. For example, in the sample of listed Australian regulated energy companies (which include Envestra, APA Group, DUET Group, SP AusNet and Spark Infrastructure) about 76% of the amount outstanding is in the form of bonds, and 24% is in the form of loans. About 41% of the bonds are callable. In the US, companies tend to issue significantly more bonds with optionality features than in the other countries I have investigated.

8. I find no obvious reason to exclude data on debt with optionality features when estimated in the benchmark cost of debt from market data. This is type of debt is commonly issued by Australian infrastructure providers and by regulated energy companies – including those used as proxies for the benchmark firm when estimating historical equity betas.

9. I also find that both Australian and international companies tend to issue more debt in their domestic currency than in foreign currencies. In the sample of Australian regulated energy companies, about 65% of debt outstanding is issued in Australian dollars, and the remainder in foreign currencies (the largest category of which is US dollars at 22%). About 98% of all debt issued by the companies in the US sample is issued in US dollars. I find no reason to exclude debt issued in foreign currencies when estimating the benchmark cost of debt from market data.

1 Introduction

10. My name is Tom Hird, and I have a Ph.D. in Economics from Monash University and over 20 years' experience as a professional economist. My CV is attached.

1.1 Terms of reference

11. I have been provided with the following terms of reference:

Please assess indicators of the debt risk premium (DRP) for benchmark 10 year corporate bonds rated BBB+ by Standard & Poor's, consistent with the current benchmark used by the Australian Energy Regulator (AER).

In doing so please consider:

- *whether the extrapolated Bloomberg BBB fair value curve remains a reasonable basis for estimating DRP on the benchmark 10 year BBB+ bond, and what method of extrapolation is suggested by current market data;*
- *what robust alternatives exist to relying on Bloomberg BBB fair value curves and what outcomes are produced by relying on these;*
- *whether methodologies proposed in recent years by the Western Australian Economic Regulation Authority (ERA) or the New South Wales Independent Pricing and Regulatory Tribunal (IPART) represent a robust basis for estimating this benchmark.*

12. I acknowledge that I have read, understood and complied with the Federal Court of Australia's *Practice Note CM 7, Expert Witnesses in Proceedings in the Federal Court of Australia".* I have made all inquiries that I believe are desirable and appropriate to answer the questions put to me. No matters of significance that I regard as relevant have to my knowledge been withheld. I have been provided with a copy of the Federal Court of Australia's *Guidelines for Expert Witnesses in Proceeding in the Federal Court of Australia*, and confirm that this report has been prepared in accordance with those Guidelines.

13. I have been assisted in the preparation of this report by Johanna Hansson and Annabel Wilton in CEG's Sydney office. However the opinions set out in this report are my own.

Thomas Nicholas Hird

28 June 2013

2 Data collection and sample selection

2.1 Data sources

14. I have, for the most part, sourced information on debt issues from data services (Bloomberg and SNL Financial).

15. Bloomberg provides corporate bonds and loans for companies in its database. Whilst Bloomberg's database is relatively comprehensive in some regards (for example in regards to corporate bonds), it is less comprehensive in regards to other types of debt. This is confirmed by cross-checking debt listed in Bloomberg's database with information provided by the actual companies in their Annual Reports or other official company materials.

16. The comparison of the Bloomberg data with information provided in the Envestra and Spark Infrastructure annual reports revealed that Bloomberg had full information on less than half those reported in the respective annual reports (in the case of Envestra, Bloomberg had data on many bonds but that data was not generally sufficient to calculate a term to maturity at issuance). I therefore supplemented the Bloomberg data with information from Envestra who, on request, supplied the date of issuance and maturity data missing from Bloomberg and the Spark Infrastructure 2012 Fact Book[2] which provided data on bonds not listed in Bloomberg. For the other companies in this report I have relied entirely on Bloomberg and SNL data.

17. In Appendix B, I compare the weighted average debt term at time of issuance calculated using Bloomberg data with information from Annual Reports for the following five Australian companies:

    - Envestra Limited
    - APA Group
    - DUET Group
    - SP AusNet
    - Spark Infrastructure

18. The results of this comparison are provided in Table 2 below. The table shows that I have slightly underestimated/overestimated the amount of debt outstanding relative to Annual Reports. The companies do not generally report weighted average debt term at time of issuance, but sometimes report weighted average time

[2] Spark Infrastructure 2012 Fact Book, p. 30

to maturity as at a given point in time. The weighted average time to maturity (from the corresponding date in the table), if available, is also reported in Table 2.

19. I have also collected data from SNL which provides comprehensive coverage of the US energy sector. Using this data I am able to also develop sub samples of 'highly regulated' and 'mostly regulated' companies as described in section 2.2.1 below.

Table 2: Weighted average debt term for core Australian companies, Annual Reports vs. CEG

		Annual Report		CEG	
Company	Date	Amount outstanding (m)	Weighted average time to maturity	Amount outstanding (m)	Weighted average time to maturity
Envestra	30/6/12	$2,178.0	11	$1,748.1	11.3
APA Group	30/6/12	$2,905.9	4.8	$3,050.4	4.7
DUET	30/6/12	$5,125.1		$4,290.3	
SP Ausnet	31/3/12	$4,538.5		$4004.3	
Spark Infrastructure	31/12/11	$2,978.0	9.4	$2,557.2	5.9

Source: Bloomberg, Annual Reports, CEG analysis

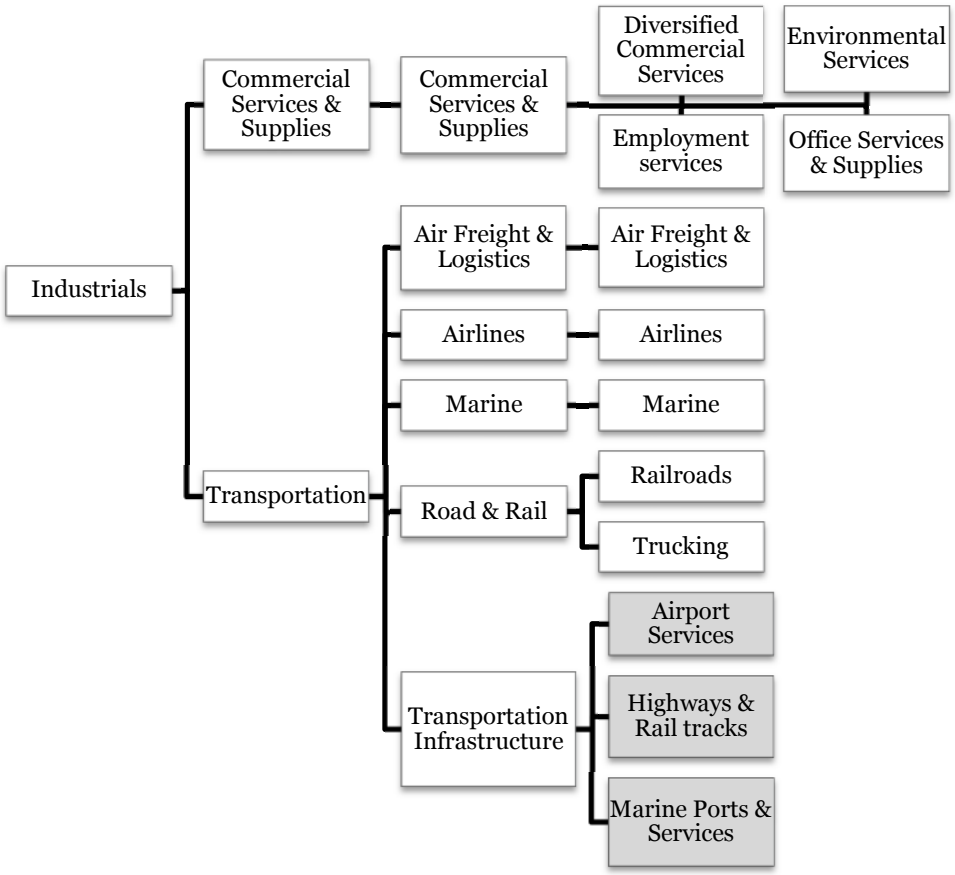
2.2 Sample selection

20. For the purpose of this report, I have considered the term of debt for companies in Australia, New Zealand, the United Kingdom and the United States. My sample consists of 146 companies from Australia (18), New Zealand (12), the United Kingdom (16) and the United States (100).

21. The sample has been derived by way of the Global Industry Classification System (GICS). GICS defines 10 sectors aggregated from 24 industry groups, 67 industries and 147 sub-industries. I have focused specifically on seven sub-industries which I consider best capture corporate utility / infrastructure companies (i.e. energy, toll roads, ports, water and airports).

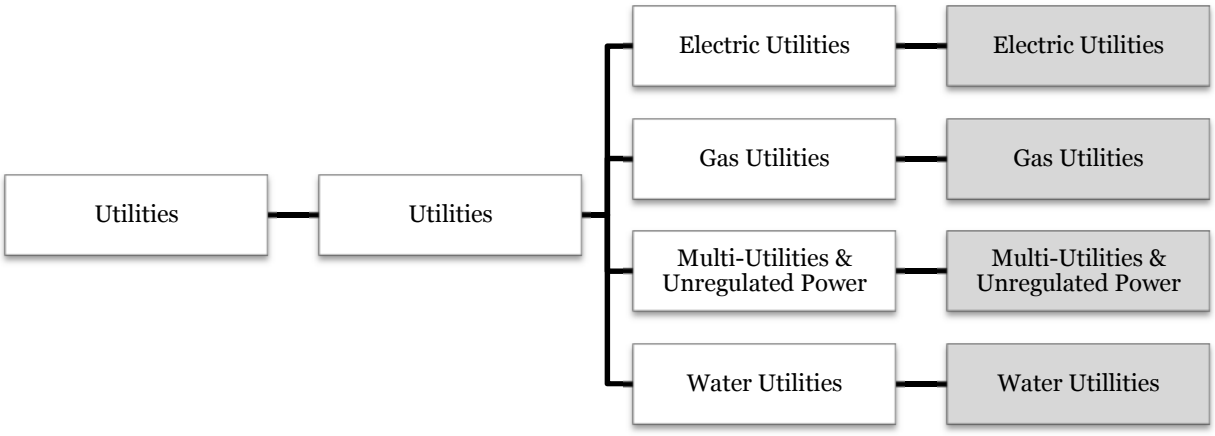
22. The location of the sub-industries in the GICS classification is illustrated graphically below (the sub industries used are illustrated in grey).

Figure 1: Industrials sub-industries



Source: GICS

Figure 2: Utilities sub-industries



Source: GICS

23. The full list of companies, including their GICS sub-industry and country, are summarised in Appendix A. Note that only 111 out of the sample of 146 companies have debt distribution data in Bloomberg, and only 74 companies from the US sample have debt distribution data from SNL Financial.

24. I have also investigated deriving samples from the Bloomberg Industry Classification System (BICS) and the Industry Classification Benchmark (ICB), but found that the GICS was most suitable for the purposes of identifying corporate utility / infrastructure companies.

2.2.1 Sub-sample selection

25. In this report, I look at different sub-samples of the total sample, including based on geography and industry. Additionally, I split up the 13 Australian companies into two discrete samples:

- Australian regulated energy companies; and
- Australian infrastructure companies other than regulated energy.

26. I also consider two sub-samples of US companies:

- 'mostly regulated' US energy companies; and
- 'highly regulated' US companies.

27. The US sub-samples were derived in the context of another report for the ENA (Information on equity beta for US companies), but provide a useful basis for assessing any differences in debt strategies associated with differences in the proportion of regulated activities between businesses.

28. The mostly regulated sample includes electricity and gas companies for which at least 50% of total assets are regulated assets. The highly regulated sample includes electricity and gas companies for which at least 80% of total assets are regulated assets. The mostly regulated sample consists of 56 companies, and the highly regulated sample consists of 34 companies (the highly regulated sample is a sub-sample of the mostly regulated sample). Which companies belong to each of these samples is indicated in Appendix A.

29. The proportion of regulated assets was derived by looking at segmentation data for the fiscal year ending December 2011 provided by Bloomberg. Where insufficient information is available from Bloomberg to make a distinction between regulated and non-regulated assets, I relied on annual reports and other information published by the potential comparator companies. To the extent that companies have attributed (often negative) values to '(reconciling) eliminations', these were excluded from the total assets.

3 Term of debt at issuance

30. In this chapter I present the empirical evidence in regards to the weighted average debt term from date of issue for different sub-samples of companies, including across different countries and industries.

31. Section 3.1 provides a snapshot view of the term of debt at issuance given the current debt portfolios of the sample companies. That is, it presents the weighted average debt term at issuance based on debt that is currently on issue[3]. It shows that the weighted average term of debt issued for regulated energy companies and other similar infrastructure providers in Australia and internationally is, on average, in excess of 10 years.

32. Section 3.2 assesses how the debt term at issuance has changed since the GFC based on data from SNL Financial for US energy companies. It shows that the term of debt at issuance in 2006 and 2007 rose to materially higher levels than before (2002 to 2005) and since. However, since 2008 the term of debt issued has remained above the 2002 to 2005 levels. The average term of debt issued in 2012 was the highest since 2002 (with the exception of 2006 and 2007 as noted above). This evidence strongly suggests that the standard practice of regulated energy businesses is to issue long term debt of 10 years or more.

33. Section 3.3 presents evidence to show that companies' debt issues tend to be staggered so that maturity dates are spread through time.

3.1 Term of debt at issuance

34. Out of the total sample of 146 companies, Bloomberg provides debt issuance information for a total of 111 companies. Table 3 shows the weighted average debt term from date of issue across different countries and GICS sub-industries and for the total sample of 111 companies. The weighted average debt term at issuance across the total sample of 111 companies is 17.7 years.

[3] The weighted average debt term is calculated based on Bloomberg data on debt portfolios as at March 2013.

Table 3: Weighted average debt term at issuance

Years (# businesses)	AU	NZ	GB	US	AVERAGE
Electric Utilities	8.0 (2)	8.7 (3)	15.9 (2)	18.1 (31)	**17.5 (38)**
Gas Utilities	14.3 (2)	N/A	N/A	15.1 (22)	**14.9 (24)**
Multi Utilities	9.2 (3)	7.6 (1)	18.3 (2)	18.9 (21)	**18.3 (27)**
Water Utilities	N/A	N/A	22.5 (4)	21.5 (10)	**22.2 (14)**
Highways & Rail-tracks	13.1 (3)	N/A	N/A	N/A	**13.1 (3)**
Airport Services	11.9 (1)	6.5 (1)	N/A	6.2 (2)	**10.5 (4)**
Marine Ports & Services	N/A	6.4 (1)	N/A	N/A	**6.4 (1)**
AVERAGE	**11.3 (11)**	**8.1 (6)**	**19.1 (8)**	**18.2 (86)**	**17.7 (111)**

Source: Bloomberg, CEG analysis

35. Table 4 presents the total debt issued and weighted average term at issuance for the five listed Australian regulated businesses as at March 2013. The weighted average debt term at issuance (green bars in Figure 3) is 10.0 years (10.5 years if calculated as a simple average of each companies' weighted average debt term from date of issue).

Table 4 CEG findings on Australian term of debt issuance – March 2013

Company	Industry	Total debt issued (AUD millions)	Weighted average term at issuance
Envestra	Elect./Gas	1,944.6	15.4
APA Group	Gas	4,810.9	13.8
DUET	Elect./Gas	4,590.3	7.1
SP AusNet	Elect./Gas	5,161.3	7.7
Spark Infr.[4]	Elect.	3,133.7	8.7
Simple Average			**10.5**
Weighted Average			**10.0**

Source: Bloomberg, CEG analysis

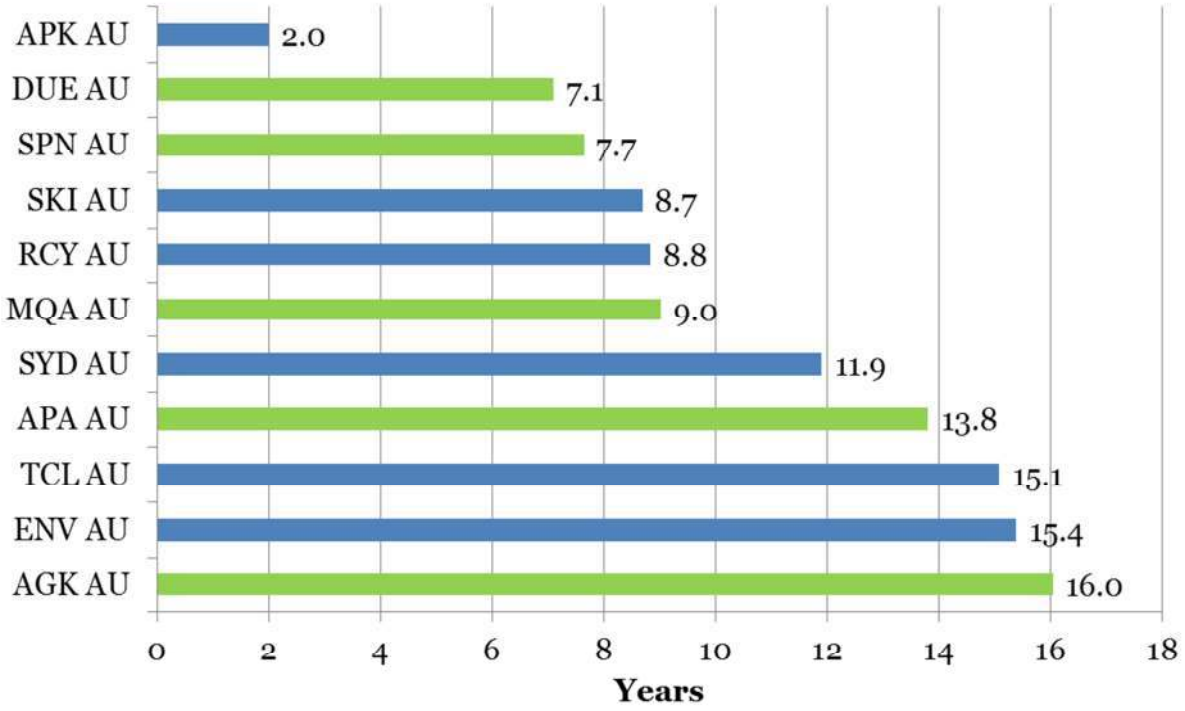
36. The remainder of this section is devoted to presenting the results in Table 3 in disaggregated, graphical form.

37. The weighted average debt term at issuance across the total sample of 11 Australian companies is 11.3 years. Table 3 shows the weighted average debt term for each of these companies. The weighted average term of debt from date of issue for each of

[4] Given that Spark Infrastructure owns 49% of ETSA and CHEDHA, Bloomberg only attributes $85 million in loans directly to Spark Infrastructure. However, the remainder of the debt is available in Bloomberg, but attributed to the asset companies themselves. Therefore, I have manually attributed 49% of the asset companies' debt to Spark Infrastructure.

these 11 companies is presented in Figure 3. The debt term ranges from 2.0 years for Australian Power and Gas Co[5] to 16 years for AGL Energy.

Figure 3: Weighted average debt term at issuance for Australian companies

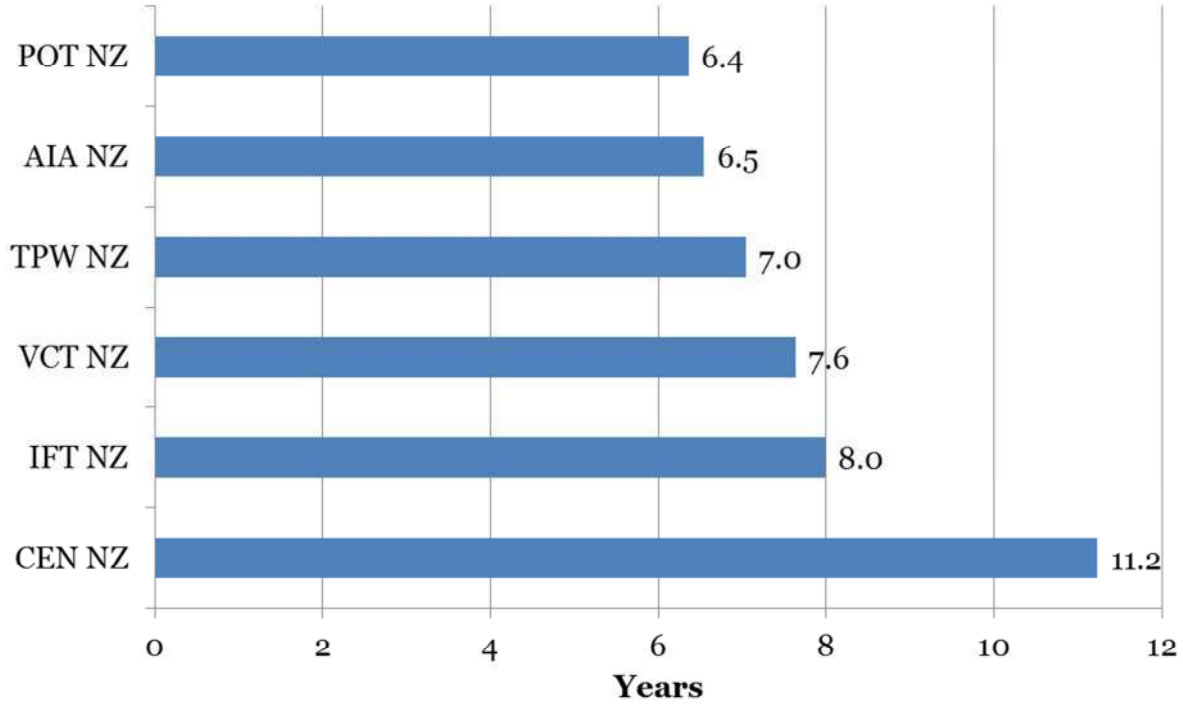


Source: Bloomberg, CEG analysis

38. Table 3 shows that the weighted average debt term at issuance across the total sample of six New Zealand companies is 8.1 years. The weighted average debt term at issuance for each of these six companies is presented in Figure 4.

5 Australian Power and Gas Co debt portfolio only consists of two loans according to Bloomberg, one with $A15 million outstanding and one with no information as to the amount outstanding.

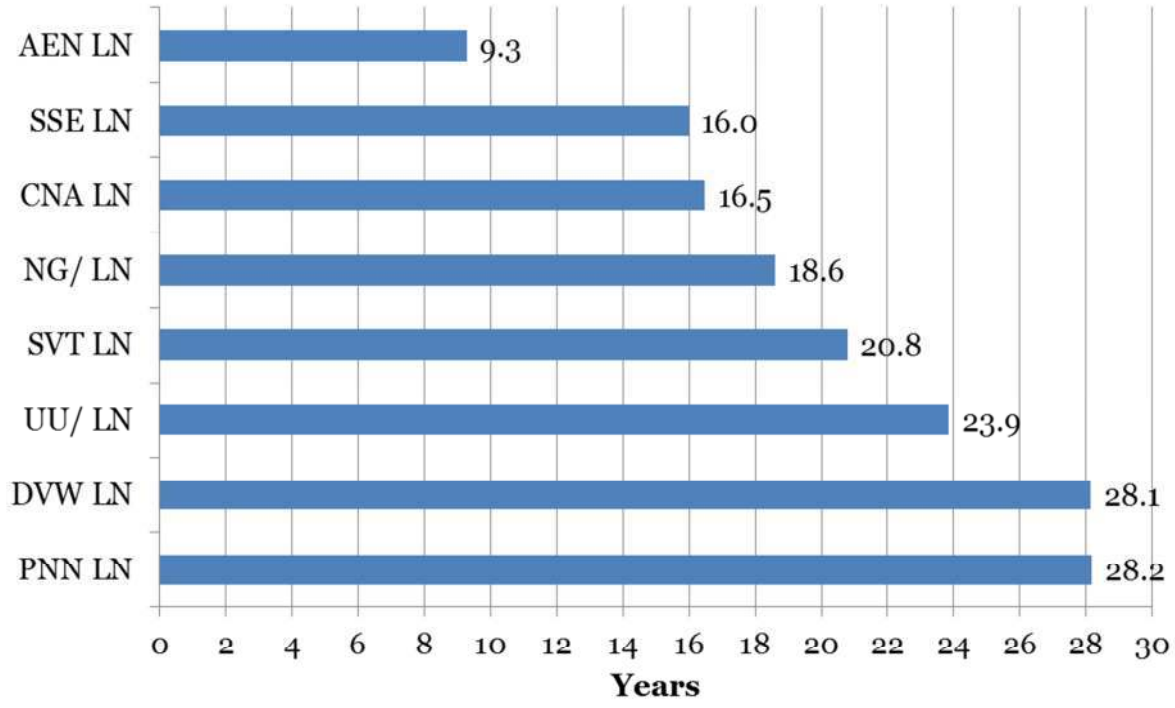
Figure 4: Weighted average debt term at issuance for New Zealand companies



Source: Bloomberg, CEG analysis

39. Table 3 shows that the weighted average debt term at issuance across the sample of eight UK companies is 19.1 years. The weighted average debt term at issuance for each of these eight companies is presented in Figure 5. The debt term ranges from 9.3 years for Andes Energia (an electric utility) to 28.2 years for Pennon Group (a water utility).

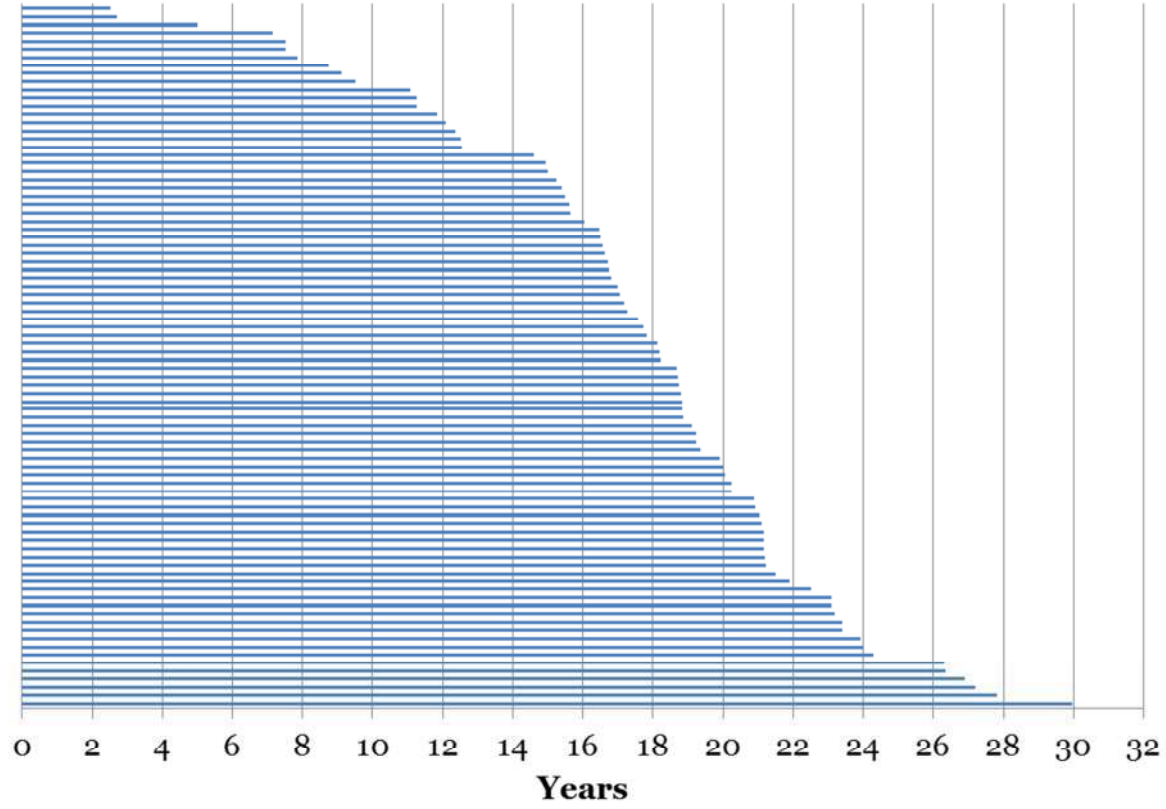
Figure 5: Weighted average debt term at issuance for UK companies



Source: Bloomberg, CEG analysis

40. Table 3 shows that the weighted average debt term at issuance across the total sample of 86 US companies is 18.2 years. This is based primarily on utilities (electricity, gas, water and multi utilities). The weighted average debt term at issuance for these companies is shown in Figure 6.

Figure 6: Weighted average debt term from date of issue US companies



Source: Bloomberg, CEG analysis

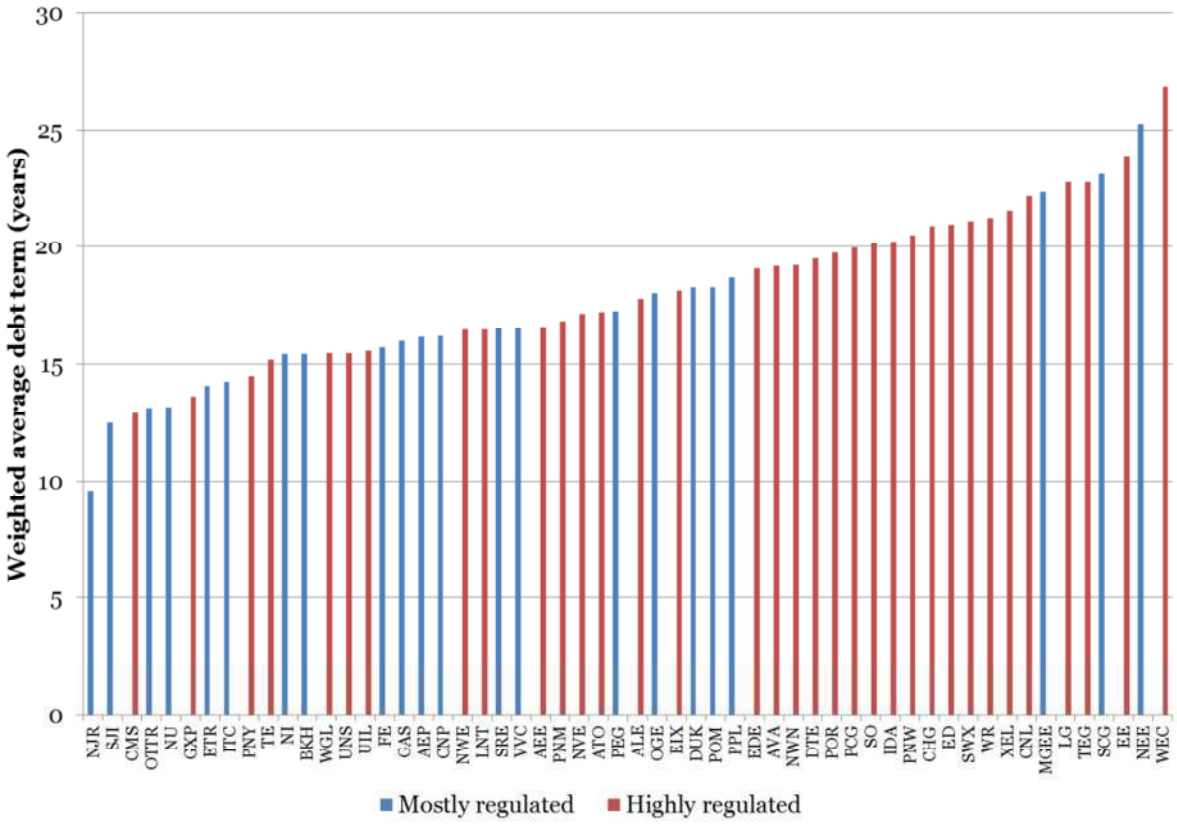
41. As noted in section 2.1, I have also collected data for US companies from SNL Financial. SNL Financial only provides data for electricity and gas companies. I have collected SNL data for 74 out of the 100 US companies (see Appendix A). Of these 74 companies, 56 are included in the "mostly regulated" sample, and 34 are included in the "highly regulated" sample.

42. According to SNL Financial, the weighted average debt term at issuance of all 74 companies is 17.8 years. The weighted average debt term of the 56 companies in the 'mostly regulated' sample is 18.0 years ($US 337,119 million outstanding). The weighted average debt term of the 34 companies in the 'highly regulated' sample is 18.3 years ($US 143,207 million outstanding).

43. The weighted average debt term for the 56 companies for which at least 50% of total assets are regulated is illustrated in Figure 7. The 22 companies for which 50 - 80% of total assets are regulated are marked blue, and the 34 companies for which at least 80% of total assets are regulated are marked red (note that the 'mostly regulated' and 'highly regulated' samples overlap).

44. For comparison, according to Bloomberg, the weighted average debt term for the 56 companies in the 'mostly regulated' sample is 18.5 years (~$US 312,817 million outstanding). The weighted average debt term for the 34 companies in the 'highly regulated' sample is 19.4 years (~$US 137,275 million outstanding).

Figure 7: Weighted average debt term from date of issue for mostly and highly regulated companies



Source: SNL Financial, CEG analysis

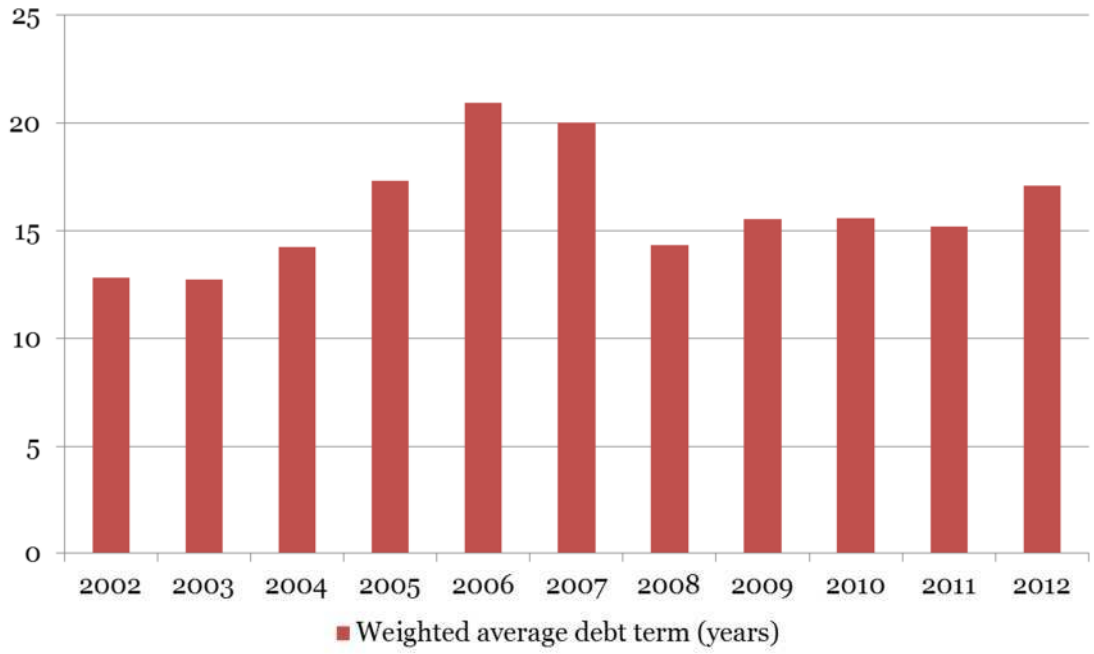
3.2 Term of debt at issue since the GFC

45. Using the SNL database is it possible to access data on all expired debt issued by a company. This allows us to derive a time series for the weighted average debt term issued in any given year (including bonds issued in that year that have since expired).

46. Figure 8 shows the weighted average debt term at issuance for each year for the 34 companies in the 'highly regulated' sample of US energy companies. That is, the weighted average debt term at issuances for all debt issued in 2002, 2003, 2004 and so on. Figure 9 shows the corresponding data for the larger 'mostly regulated' sample of US energy companies. It can be seen that in the two years immediately

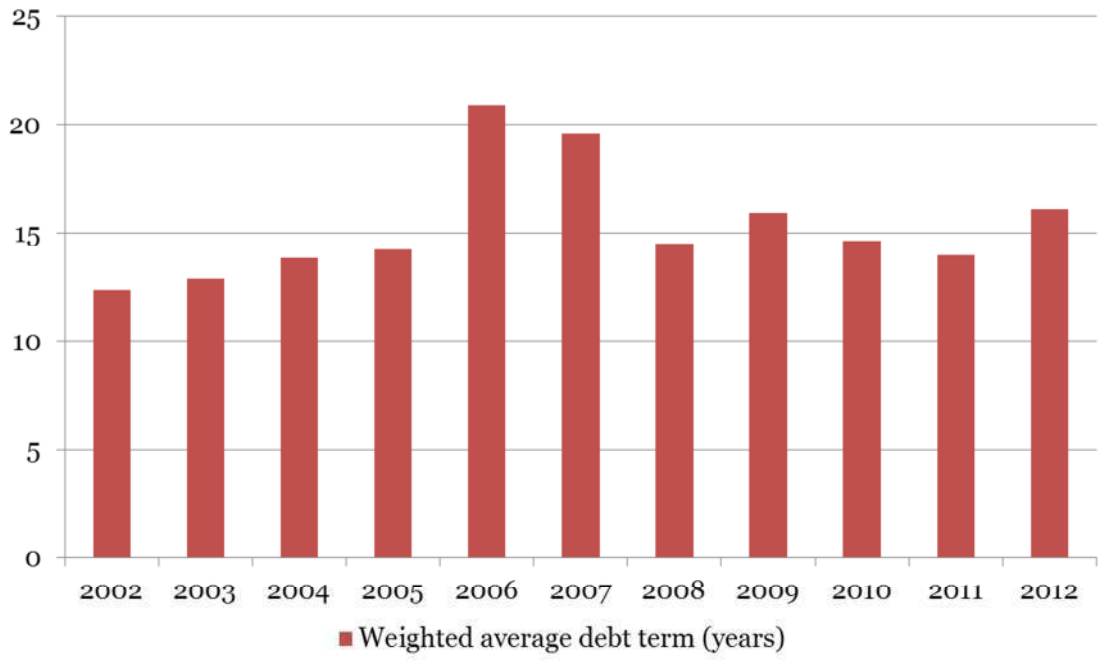
prior to the GFC (2006 and 2007) the term of debt issued rose materially above its average before that but fell back to a level more similar to, but still above, the pre-2006 levels.

Figure 8: Term of debt issued by year: highly regulated US energy utilities



Source: SNL, CEG analysis

Figure 9: Term of debt issued by year: mostly regulated US energy utilities



Source: SNL, CEG analysis

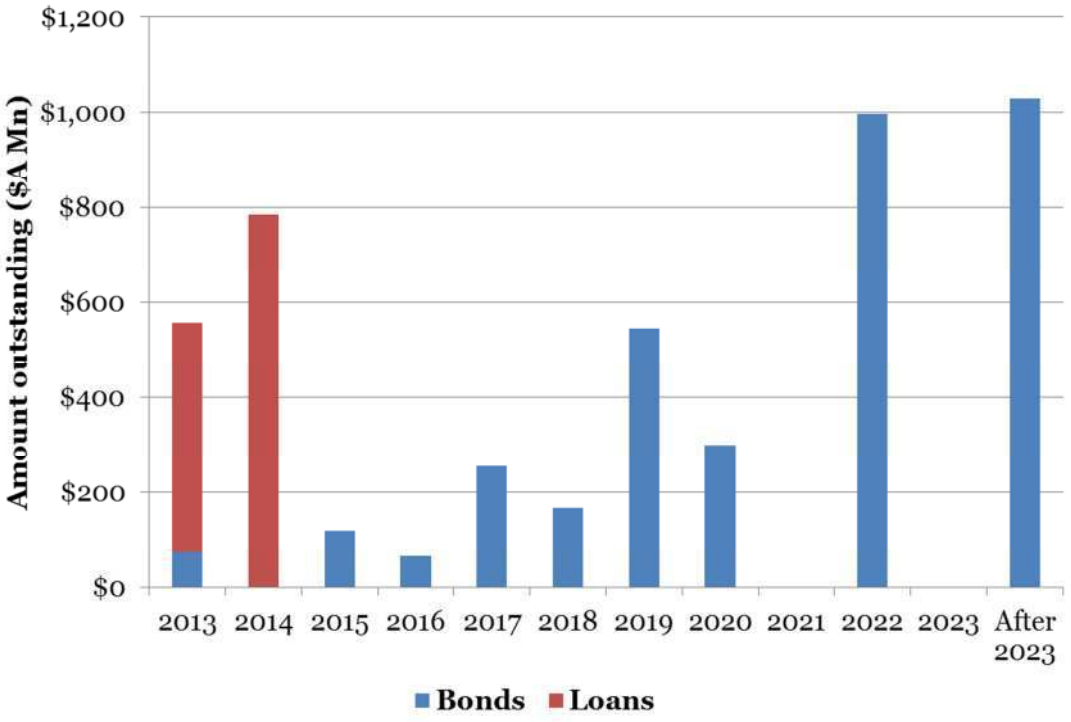
3.3 Do companies stagger debt issuance over time?

47. I have reviewed the current debt portfolios of the five regulated Australian companies and find that companies do issue staggered debt. That is, they do not issue just one bond, or several bonds maturing at the same time. This is evidenced in the following charts:

- Figure 10 shows the current debt portfolio of APA Group;
- Figure 11 shows the current debt portfolio of DUET Group;
- Figure 12 shows the current debt portfolio of Envestra;
- Figure 13 shows the current debt portfolio of SP AusNet; and
- Figure 14 shows the current debt portfolio of Spark Infrastructure.

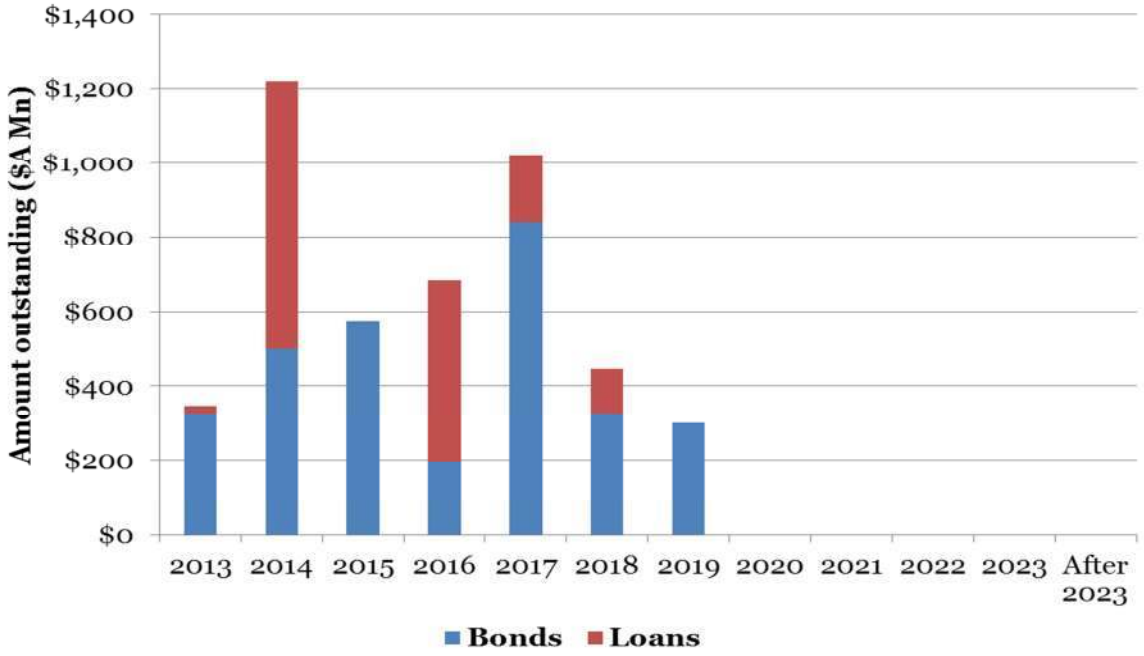
48. In the charts, blue bars indicate bonds and red bars indicate loans.

Figure 10: Current debt portfolio of APA Group



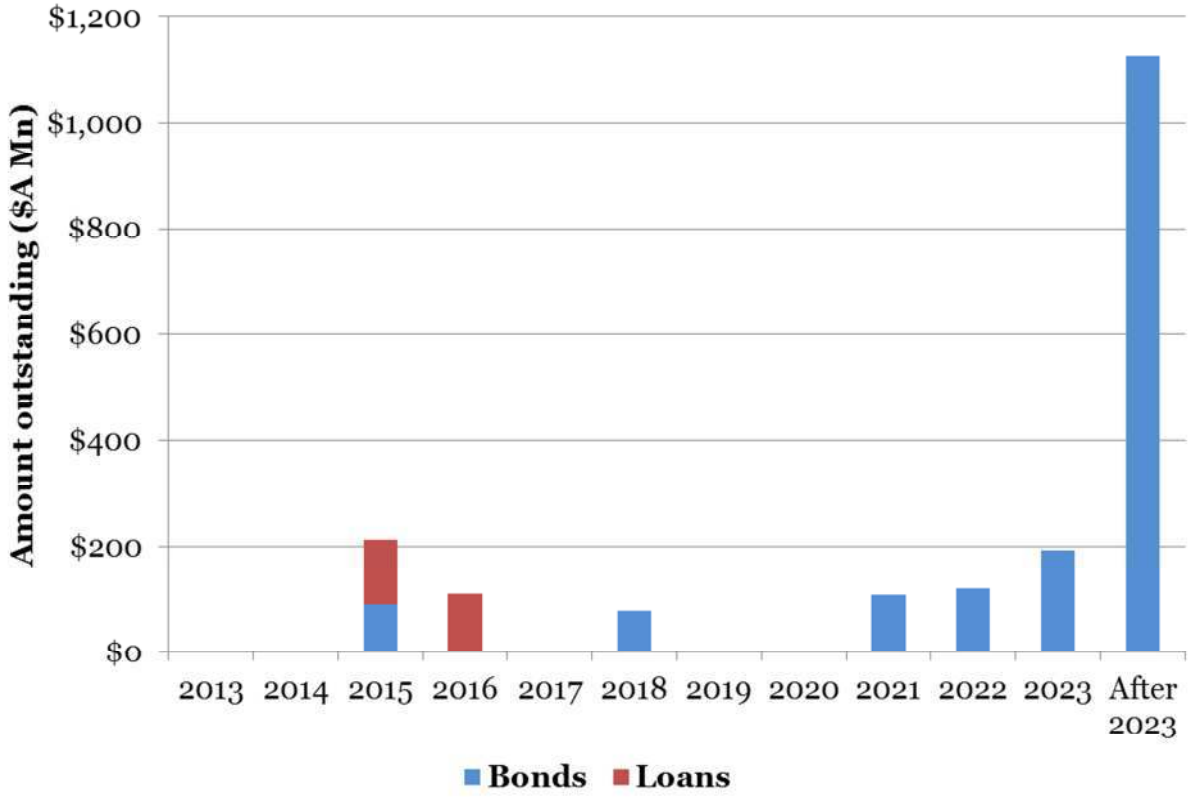
Source: Bloomberg, CEG analysis

Figure 11: Current debt portfolio of DUET Group



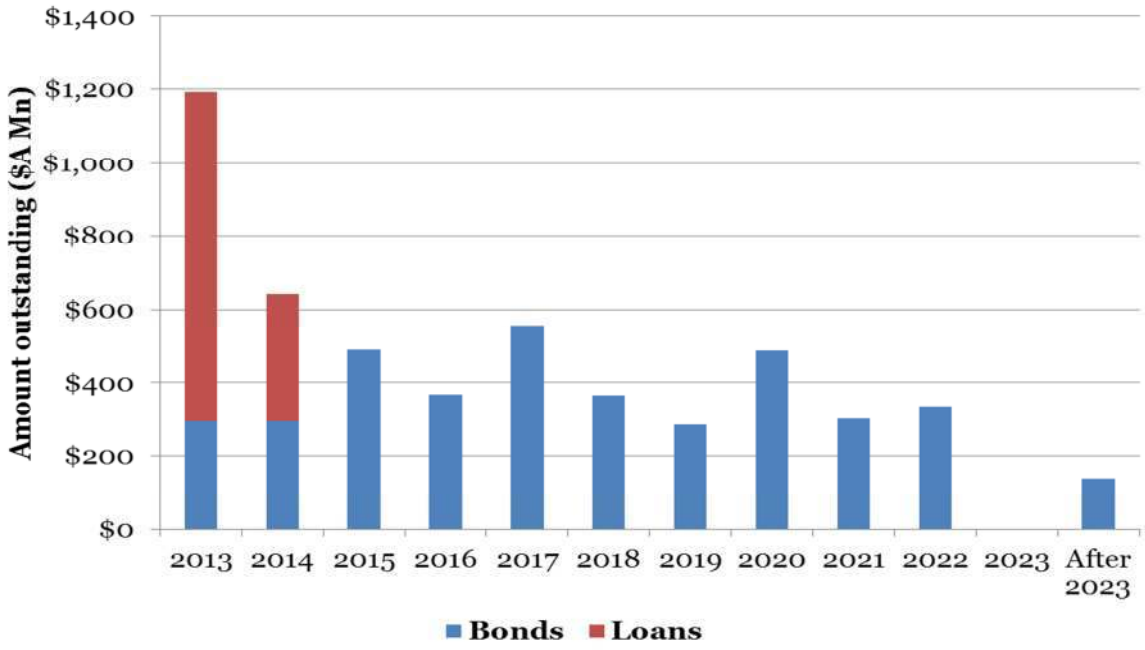
Source: Bloomberg, CEG analysis

Figure 12: Current debt portfolio of Envestra



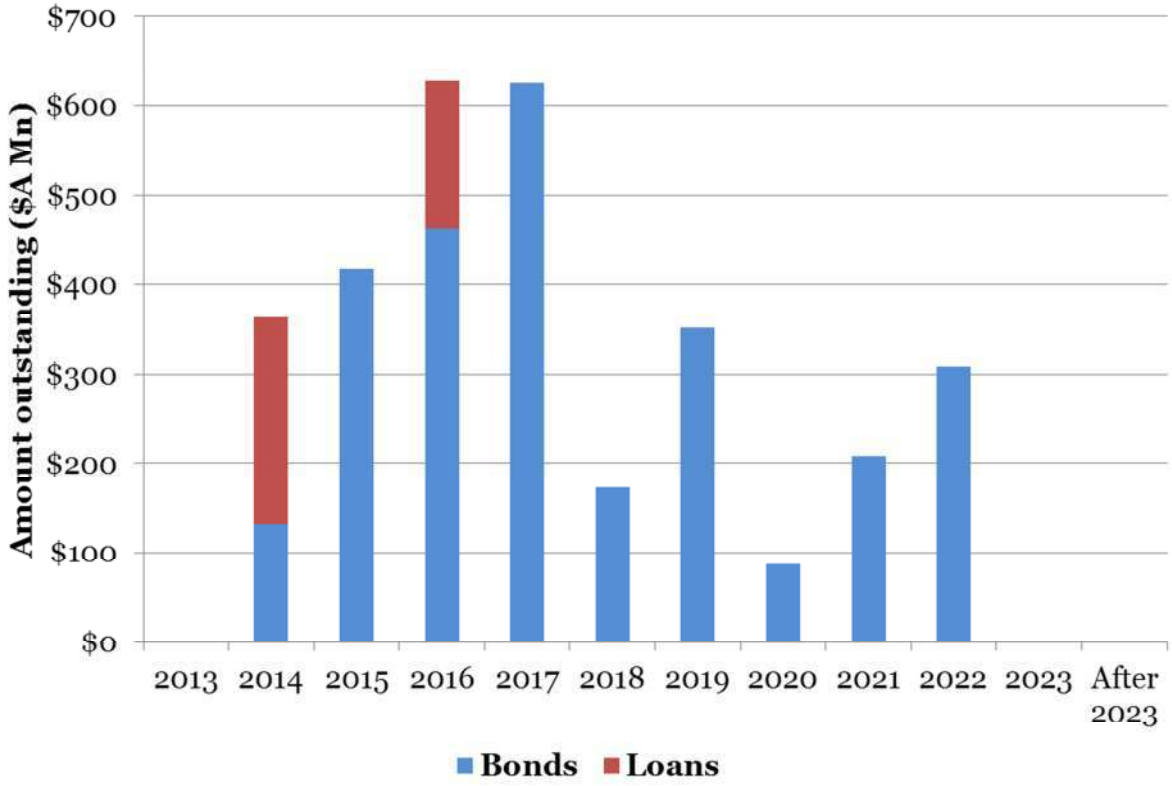
Source: Bloomberg, CEG analysis

Figure 13: Current debt portfolio of SP AusNet



Source: Bloomberg, CEG analysis

Figure 14: Current debt portfolio of Spark Infrastructure



Source: Bloomberg, CEG analysis

4 Type of debt issued

49. Companies are able to issue debt with different types of attributes. In this chapter, I consider how the weighted average debt term at issuance is influenced by debt type (bonds vs. loans and debt with optionality features), debt currency and debt size for different sub-samples, including:

- Australian regulated energy companies;
- Australian infrastructure companies other than regulated energy;
- New Zealand companies;
- UK companies; and
- US companies, including;
  - all companies;
  - mostly regulated energy companies; and
  - highly regulated energy companies.

4.1 Australian regulated energy companies

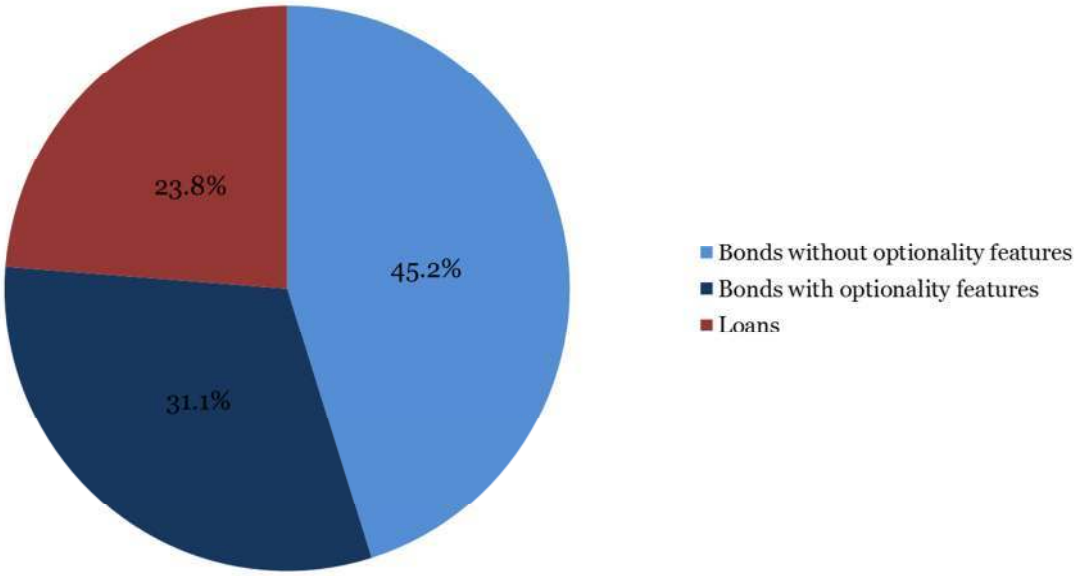
50. The five Australian regulated energy companies - Envestra, APA Group, DUET Group, SP AusNet and Spark Infrastructure - have about $A 19,666.5 million of debt outstanding according to Bloomberg. The weighted average debt term at issuance is 10.0 years.

4.1.1 Debt type

51. About 76% of amount outstanding in this sample is in the form of bonds, and 24% in the form of bank loans. However – I note that Bloomberg's database is likely to be more comprehensive in regards to bonds than bank loans – and this will tend to bias the proportion of bonds upwards relative to bank loans. About 41% of bonds have optionality features (all callable in this case), and 59% mature 'at maturity'[6]. Most loans are callable in nature (i.e., can be paid back at the discretion of the borrower) including loans in the data base would increase callable debt to over 65%. This split is illustrated in Figure 15.

[6] I note that Bloomberg does not report whether some of foreign currency issues by Envestra mature 'at maturity' or have optionality features. I have assumed that they are make whole callable (consistent with most USD issues).

Figure 15: Amount outstanding by debt type for Australian regulated energy companies



Source: Bloomberg, CEG analysis

52. As noted in paragraph 50, the weighted average debt term at issuance for the sample of five listed regulated Australian companies is 10.0 years. The weighted average debt term from date of issue for bonds only is 11.8 years. The weighted average debt term for bonds which do not have optionality features *other than make whole callable bonds*, is 10.1 years. The weighted average debt term for bonds without any optionality features is also 10.1 years. Loans can reasonably be excluded from the latter calculations because loans often have the feature of being able to be paid back ahead of the actual due date, therefore resembling bonds with optionality features. This is illustrated in Table 5 below.

Table 5: Impact of optionality features for Australian regulated energy companies

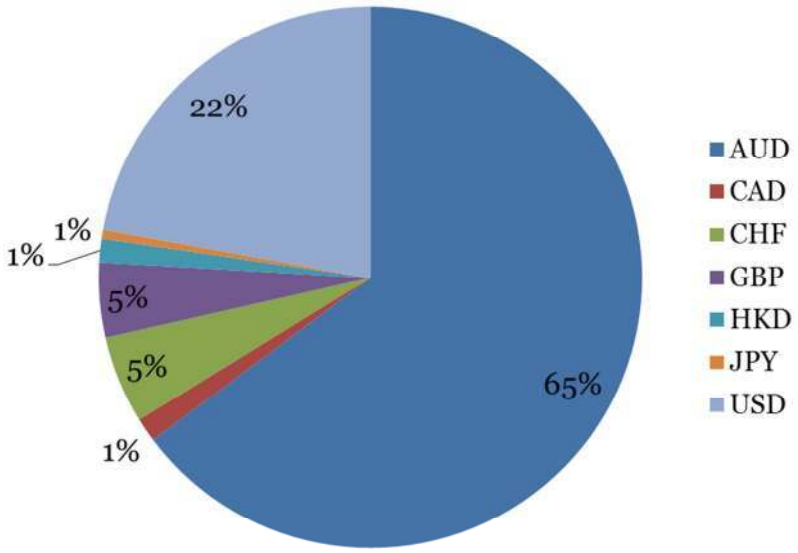
	Weighted average debt term (years)	Total amount outstanding ($A mn)
All debt	10.0	19,666.5
All bonds	11.8	14,990.8
All bonds without optionality features other than make whole callable bonds	10.1	13,729.0
All bonds without optionality features	10.1	8,718.3

Source: Bloomberg, CEG analysis

4.1.2 Debt currency

53. About 65% of the amount outstanding is issued in the domestic currency (AUD), and the remainder in foreign currencies, including USD, CHF, GBP, CAD, HKD and JPY. This is illustrated in Figure 16 below.

Figure 16: Debt outstanding by currency for Australian regulated energy companies



Source: Bloomberg, CEG analysis

4.1.3 Debt size

54. The average size (amount outstanding) of bonds issued by the five regulated Australian companies is $170.3 million, and the average size (amount outstanding) of loans is $99.5 million. For bonds the average size is higher if issued in Australian dollars than if issued in a foreign currency. This is illustrated in Table 6 below. The number of bonds / loans in each category is shown in brackets. Notably there are no loans issued in a foreign currency.

Table 6: Average amount outstanding for Australian regulated energy companies

	Bonds ($A mn)	Loans ($A mn)
Domestic currency	$196.6 (41)	$99.5 (47)
Foreign currency	$147.5 (47)	- (0)
Any currency	**$170.3**	**$99.5**

Source: Bloomberg, CEG analysis

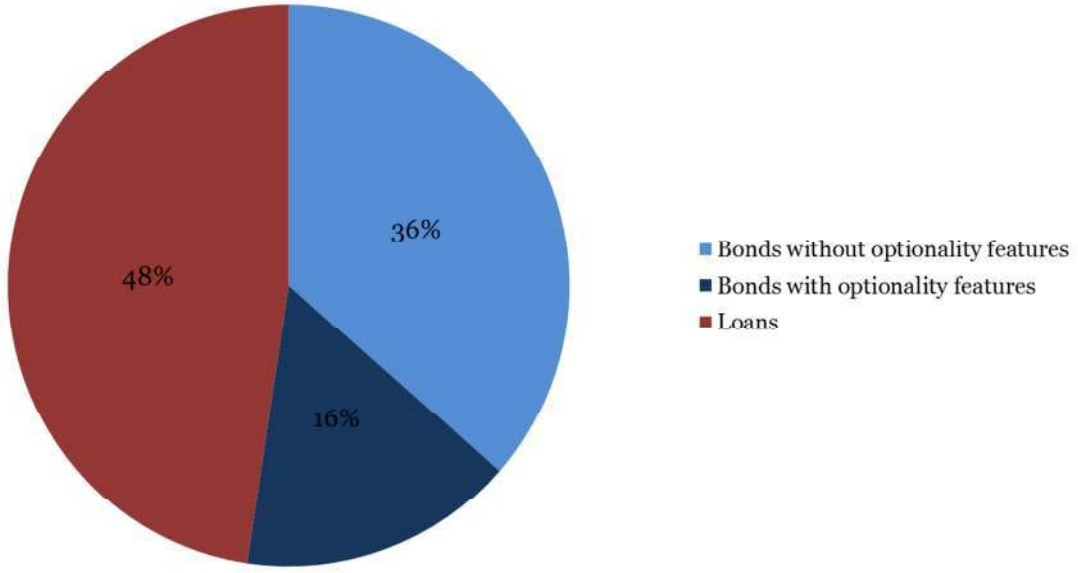
4.2 Australian infrastructure companies excluding regulated energy

55. The Australian infrastructure companies other than regulated energy which have debt issue information from Bloomberg include Australian Power and Gas Co, RiverCity Motorway Group, Macquarie Atlas Roads Group, Sydney Airport, Transurban Group and AGL Energy. These six companies have approximately $A 16,851.1 million debt outstanding, with a weighted average debt term at issuance of 12.9 years.

4.2.1 Debt type

56. About 51% of amount outstanding in this sample is in the form of bonds, 46% in the form of bank loans, and 3% is in the form of municipality bonds. About 30% of bonds have optionality features (all callable in this case), and 70% mature 'at maturity'. This split is illustrated in Figure 17.

Figure 17: Amount outstanding by debt type for non-regulated Australian infrastructure companies



Source: Bloomberg, CEG analysis

57. As noted in paragraph 55, the weighted average debt term at issuance for the sample of Australian infrastructure companies other than regulated energy is 12.9 years. The weighted average debt term for bonds only is 15.1 years. The weighted average debt term for bonds which do not have optionality features *other than make whole callable bonds*, is 12.6 years. The weighted average debt term for bonds without any optionality features is 13.3 years. This is illustrated in Table 7 below.

Table 7: Impact of bonds with optionality features for non-regulated Australian infrastructure companies

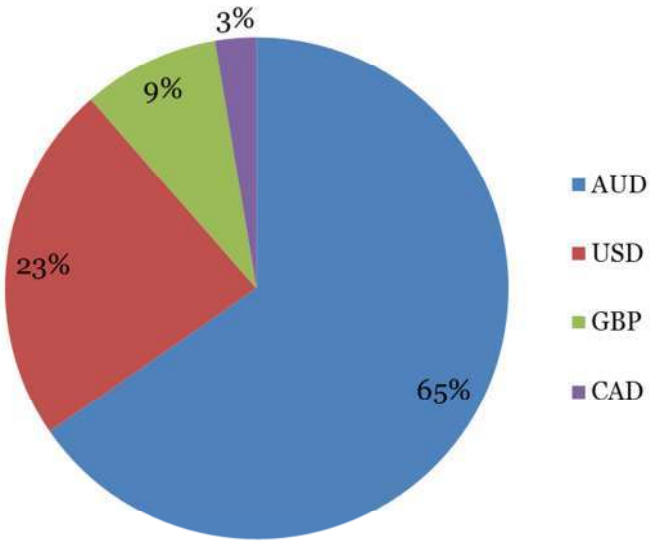
	Weighted average debt term (years)	Total amount outstanding ($A mn)
All debt	12.9	$16.851.1
All bonds	15.1	$9.098.3
All bonds without optionality features other than make whole callable bonds	12.6	$7,672.8
All bonds without optionality features	13.3	$5,936.8

Source: Bloomberg, CEG analysis

4.2.2 Debt currency

58. About 65.4% of debt is issued in the domestic currency ($A) and the remainder is issued in USD, GBP and CAD. This is illustrated in Figure 18.

Figure 18: Debt outstanding by currency for non-regulated Australian infrastructure companies



Source: Bloomberg, CEG analysis

4.2.3 Debt size

59. The average size (amount outstanding) of bonds issued by Australian infrastructure companies other than regulated energy is $A 284.1 million, and the average size (amount outstanding) of loans is $A 168.5 million. Bonds issued in the domestic currency are on average large in size than bonds issued in foreign currencies. Loans on the other land are on average larger in foreign currencies; however, this is an average of only 6 loans, one of which is very large. This is illustrated in Table 8 below. The number of bonds / loans in each category is shown in brackets.

Table 8: Average amount outstanding for non-regulated Australian infrastructure companies

	Bonds ($A mn)	Loans ($A mn)	Muni ($A mn)
Domestic currency	356.8 (16)	132.7 (40)	N/A
Foreign currency	201.1 (14)	407.3 (6)	143.9 (4)
Any currency	**284.1 (30)**	**168.5 (46)**	**143.9 (4)**

Source: Bloomberg, CEG analysis

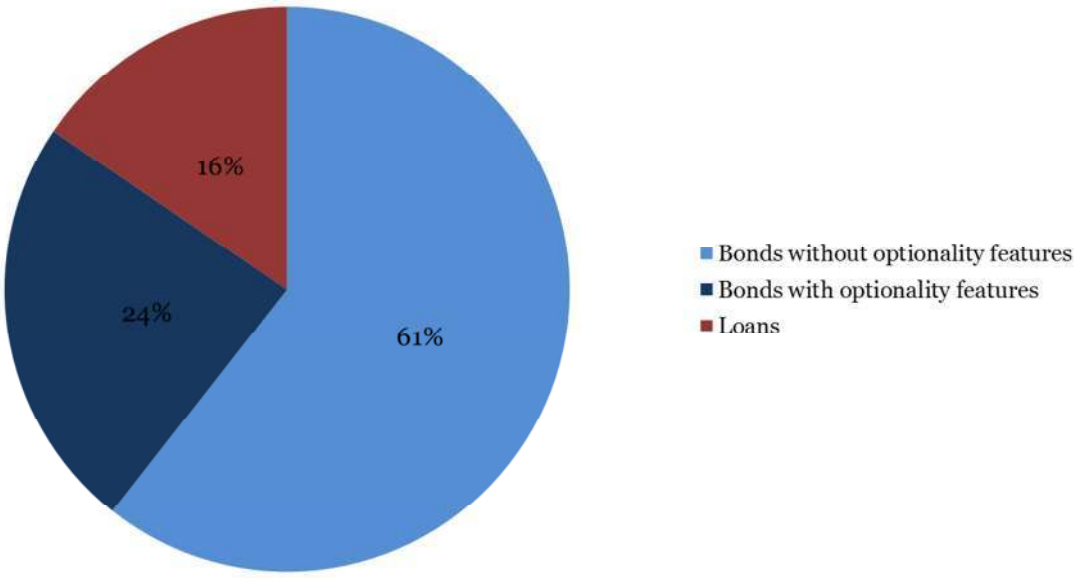
4.3 New Zealand companies

60. There are six New Zealand companies in the sample which have debt information in Bloomberg: Contact Energy, Infratil, TrustPower, Vector, Auckland International Airport and Port of Tauranga. These companies have approximately $A 3,972.4 million in debt outstanding, and a weighted average debt term at issuance of 8.1 years.

4.3.1 Debt type

61. About 84% of amount outstanding in this sample is in the form of bonds and 16% in the form of bank loans. About 28% of bonds have optionality features (all callable in this case), and 72% mature 'at maturity'. This split is illustrated in Figure 19.

Figure 19: Amount outstanding by debt type for New Zealand companies



Source: Bloomberg, CEG analysis

62. As noted in paragraph 60, the weighted average debt term at issuance for the sample of New Zealand companies is 8.1 years. The weighted average debt term for bonds only is 8.3 years. The weighted average debt term for bonds which do not have optionality features *other than make whole callable bonds*, is 6.6 years. The weighted average debt term for bonds without any optionality features is also 6.6 years (as there are no make-whole callable bonds in this sample). This is illustrated in Table 9 below.

Table 9: Impact of bonds with optionality features for New Zealand companies

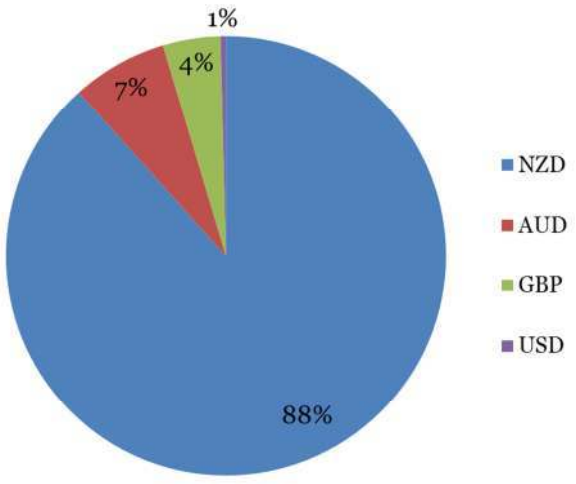
	Weighted average debt term (years)	Total amount outstanding ($A mn)
All debt	8.1	3,972.4
All bonds	8.3	3,356.7
All bonds without optionality features other than make whole callable bonds	6.6	2,408.0
All bonds without optionality features	6.6	2,408.0

Source: Bloomberg, CEG analysis

4.3.2 Debt currency

63. About 88% of debt is issued in the domestic currency (NZD) and the remainder is issued in AUD, GBP and USD. This is illustrated in Figure 20.

Figure 20: Amount outstanding by currency for New Zealand companies



Source: Bloomberg, CEG analysis

4.3.3 Debt size

64. The average size (amount outstanding) of bonds issued by New Zealand companies is $A 93.2 million, and the average size (amount outstanding) of loans is $A 28.0 million. This is illustrated in Table 10 below. The number of bonds / loans in each category is shown in brackets.

Table 10: Average amount outstanding for New Zealand companies

	Bonds ($A mn)	Loans ($A mn)
Domestic currency	91.1 (35)	23.0 (14)
Foreign currency	168.5 (1)	36.8 (8)
Any currency	**93.2(36)**	**28.0 (22)**

Source: Bloomberg, CEG analysis

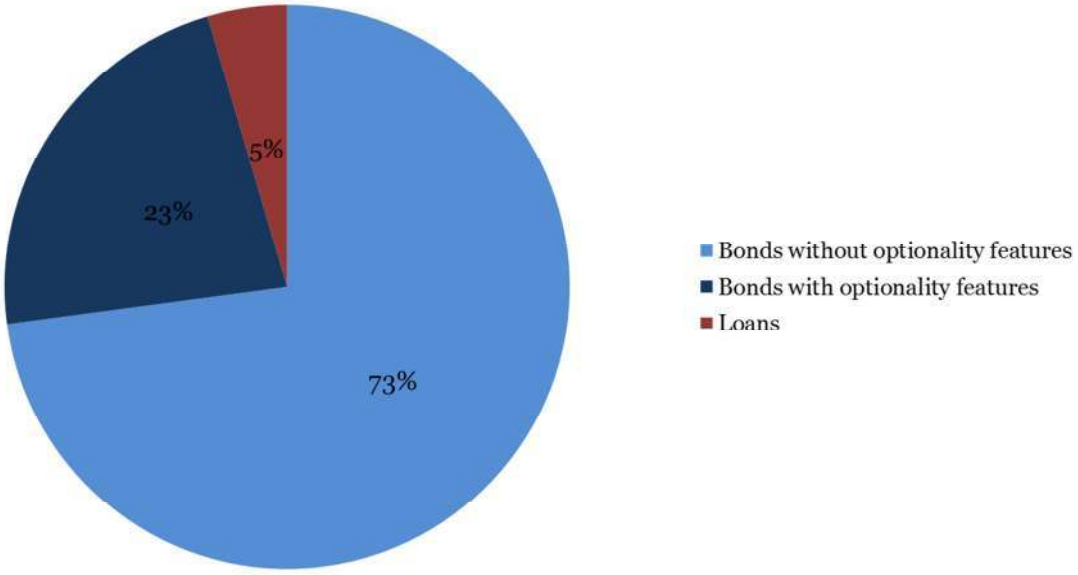
4.4 United Kingdom companies

65. There are eight UK companies for which Bloomberg has debt distribution information: SSE, Andes Energia, Centrica, National Grid, Severn Trent, United Utilities Group, Pennon Group and Dee Valley Group. These companies have approximately $A 63,631.7 million in debt outstanding, and a weighted average debt term from date of issue of 19.1 years.

4.4.1 Debt type

66. About 92% of amount outstanding in this sample is in the form of bonds, 5% in the form of bank loans, and 3% is in the form of municipality bonds. About 23% of bonds have optionality features (the vast majority of which are callable), and 76% mature 'at maturity'. This split is illustrated in Figure 21.

Figure 21: Amount outstanding by debt type for UK companies



67. As noted in paragraph 65, the weighted average debt term at issuance for the sample of UK companies is 19.1 years. The weighted average debt term for bonds only is 19.4 years. The weighted average debt term for bonds which do not have optionality features *other than make whole callable bonds*, is 19.0 years. The weighted average debt term for bonds without any optionality features is 18.3 years. This is illustrated in Table 11 below.

Table 11: Impact of bonds with optionality features for UK companies

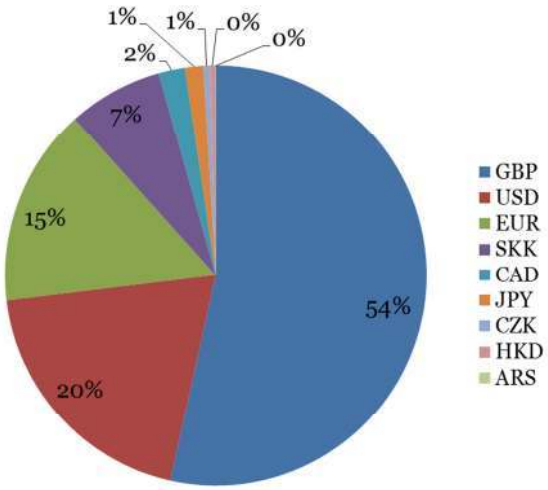
	Weighted average debt term (years)	Total amount outstanding ($A mn)
All debt	19.1	63,631.7
All bonds	19.4	60,739.1
All bonds without optionality features other than make whole callable bonds	19.0	57,508.6
All bonds without optionality features	18.3	46,386.4

Source: Bloomberg, CEG analysis

4.4.2 Debt currency

68. About 53.5% of this debt is issued in the domestic currency (GBP) and the remainder is issued in USD, EUR, SKK, CAD, JPY, CZK, HKD and ARS. This is illustrated in Figure 22.

Figure 22: Amount outstanding by currency for UK companies



Source: Bloomberg, CEG analysis

4.4.3 Debt size

69. The average size (amount outstanding) of bonds issued by UK companies is $A 248.8 million, and the average size (amount outstanding) of loans is $A 67.3 million. This is illustrated in Table 12 below. The number of bonds / loans in each category is shown in brackets. Notably there is not much difference in terms of average size of domestic and foreign bonds.

Table 12: Average amount outstanding for UK companies

	Bonds ($A mn)	Loans ($A mn)	Muni ($A mn)
Domestic currency	249.3 (125)	81.8 (35)	N/A
Foreign currency	248.2 (111)	3.6 (8)	43.2 (47)
Any currency	**248.8 (236)**	**67.3 (43)**	**43.2 (47)**

Source: Bloomberg, CEG analysis

4.5 US companies

70. There are 86 US companies in the sample for which Bloomberg has debt distribution data. The total amount of debt outstanding for these companies is $A 360,690.3 million, and the weighted average debt term at issuance is 18.2 years.

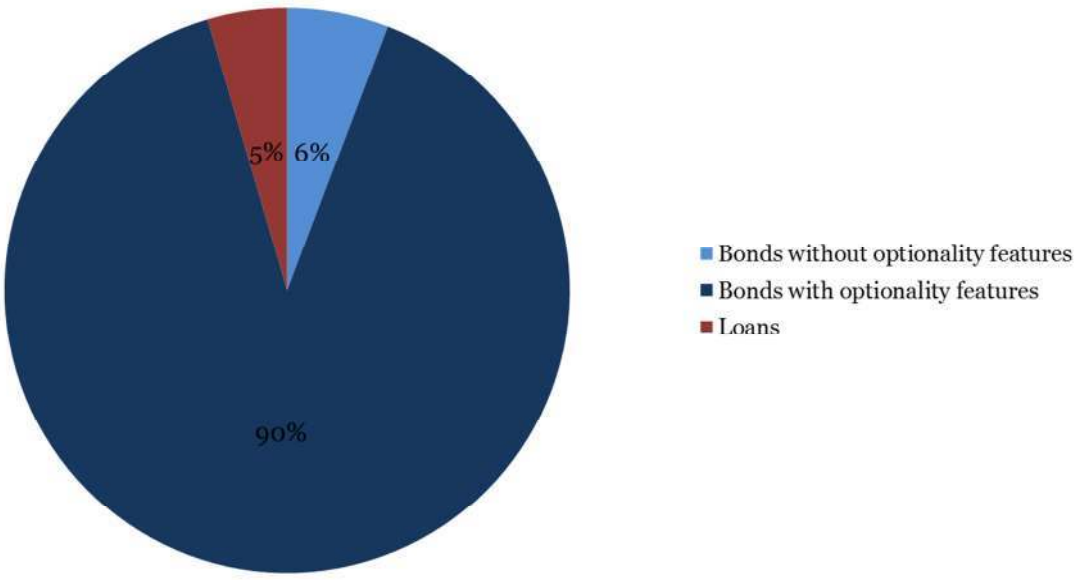
71. 56 of these companies are 'mostly regulated' energy companies, and 34 of these 56 are 'highly regulated' energy companies (see section 2.2.1 for definitions). The total amount of debt outstanding among the sample of 'mostly regulated' energy

companies is $A 305,653.5, and the weighted average debt term from date of issue is 18.5 years. The total amount of debt outstanding among the 'highly regulated' energy companies is $A 134,131.2 million, and the weighted average debt term at issuance is 19.4 years.

4.5.1 Debt type

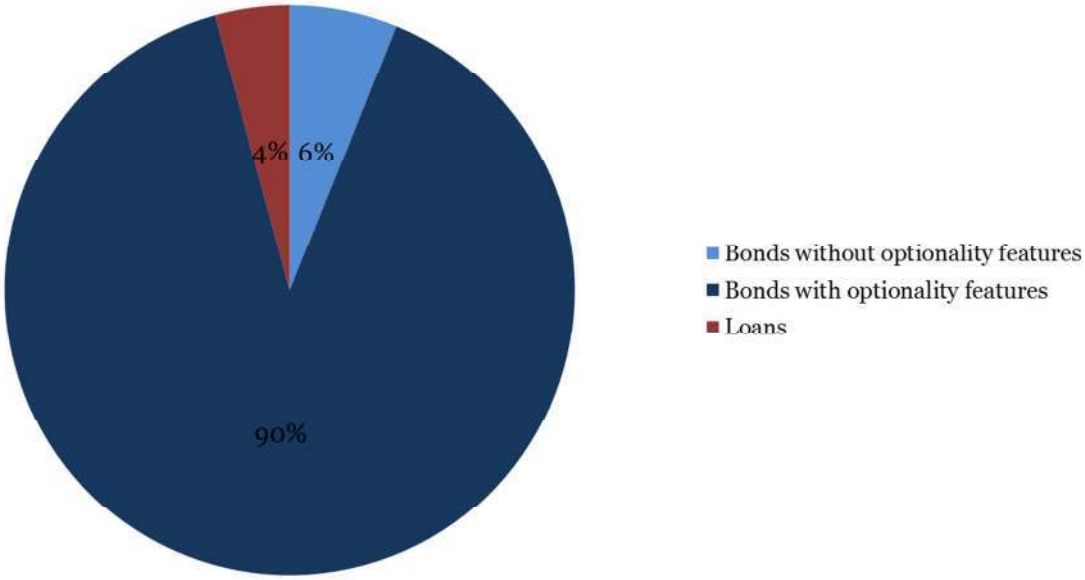
72. About 87% of amount outstanding in this sample is in the form of bonds, 5% in the form of bank loans, and 9% is in the form of municipality bonds. As much as 94% of bonds have optionality features, and only 6% mature 'at maturity'. This split is illustrated in Figure 23. The corresponding split for the mostly and highly regulated samples is shown in Figure 24 and Figure 25. For the highly regulated sample the proportion of bonds with optionality features is even higher than for the mostly regulated and full sample of US companies at 93% of total debt.

Figure 23: Amount outstanding by debt type for US companies



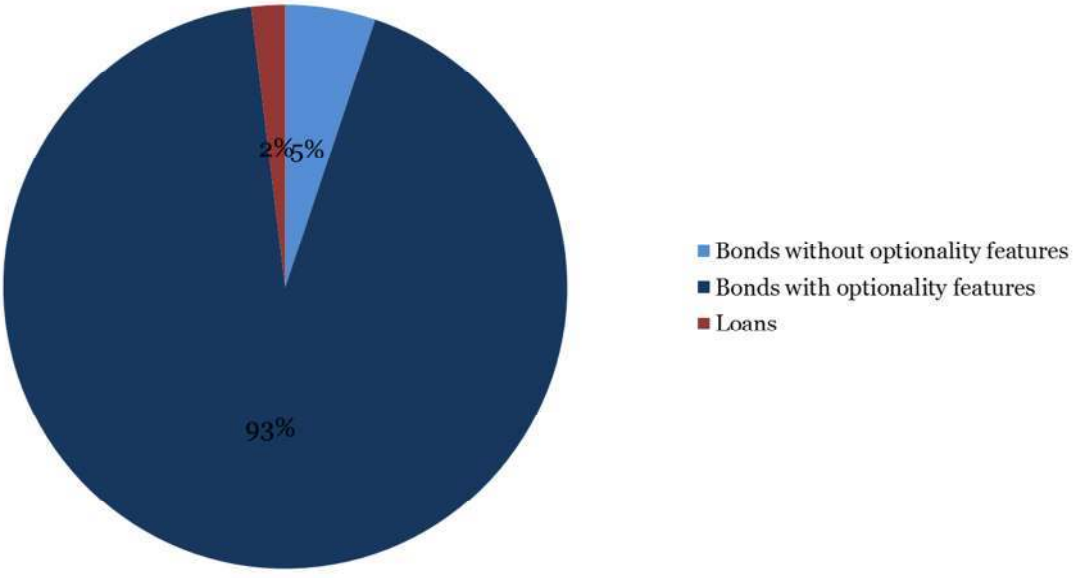
Source: Bloomberg, CEG analysis

Figure 24: Amount outstanding by debt type for mostly regulated US companies



Source: Bloomberg, CEG analysis

Figure 25: Amount outstanding by debt type for highly regulated US companies



Source: Bloomberg, CEG analysis

73. As noted in paragraph 70, the weighted average debt term at issuance for the full sample of US companies is 18.2 years. The weighted average debt term for bonds only is 18.7 years. The weighted average debt term for bonds which do not have

optionality features *other than make whole callable bonds*, is 17.9 years. The weighted average debt term for bonds without any optionality features is 18.3 years. This is illustrated in Table 13 below.

Table 13: Impact of bonds with optionality features for US companies

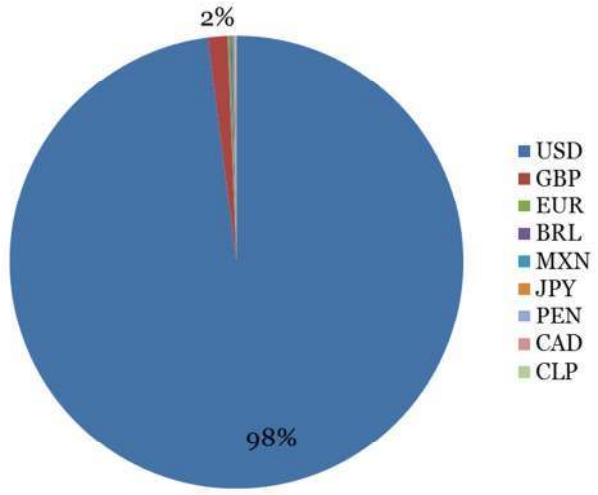
	Weighted average debt term (years)	Total amount outstanding ($A mn)
All debt	18.2	360,690.3
All bonds	18.7	344,288.7
All bonds without optionality features other than make whole callable bonds	17.9	301,917.0
All bonds without optionality features	18.3	20,925.9

Source: Bloomberg, CEG analysis

4.5.1.1 Debt currency

74. About 98% of the debt issued by the full sample of US companies in the domestic currency (USD) and the remainder is issued in GBP, EUR, BRL, MXN, JPY, PEN, CAD and CLP. This is illustrated in Figure 26. Also for the mostly regulated sample is the amount outstanding made up of 98% debt issued in USD. For the highly regulated sample 100% of the debt is issued in USD.

Figure 26: Amount issued by currency for US companies



Source: Bloomberg, CEG analysis

4.5.1.2 Debt size

75. The average size (amount outstanding) of bonds issued by the full sample of US companies is $A 202.7 million, and the average size (amount outstanding) of loans is $A 55.0 million. This is illustrated in Table 14 below. The number of bonds / loans in each category is shown in brackets.

Table 14: Average amount outstanding for US companies

	Bonds ($A mn)	Loans ($A mn)	Muni
Domestic currency	203.3 (1,507)	52.3 (288)	43.7 (731)
Foreign currency	175.6 (34)	134.5 (10)	N/A
Any currency	**202.7 (1,541)**	**55.0 (298)**	**43.7 (731)**

Source: Bloomberg, CEG analysis

Appendix A Full list of companies

Name	GICS sub-industry	Country	Australian regulated energy companies	Australian infr. companies	US mostly regulated	US highly regulated	Debt distribution data sources
SP AUSNET	Electric Utilities	AU	In				BB
ERM POWER LTD	Electric Utilities	AU		In			N/A
SPARK INFRASTRUCTURE GROUP	Electric Utilities	AU	In				BB
SOLCO LTD	Electric Utilities	AU		In			N/A
APA GROUP	Gas Utilities	AU	In				BB
ENVESTRA LTD	Gas Utilities	AU	In				BB
ETHANE PIPELINE INCOME FUND	Gas Utilities	AU		In			N/A
AGL ENERGY LTD	Multi-Utilities	AU		In			BB
DUET GROUP	Multi-Utilities	AU	In				BB
AUSTRALIAN POWER AND GAS CO	Multi-Utilities	AU		In			BB
WATER RESOURCES GROUP LTD	Water Utilities	AU		In			N/A
TRANSURBAN GROUP	Highways & Rail	AU		In			BB
SYDNEY AIRPORT	Airport Services	AU		In			BB
QUBE HOLDINGS LTD	Highways & Rail	AU		In			N/A
RIVERCITY MOTORWAY GROUP	Highways & Rail	AU		In			BB
AUSTRALIAN INFRASTRUCTURE FD	Airport Services	AU		In			N/A
MACQUARIE ATLAS ROADS GROUP	Highways & Rail	AU		In			BB
TRAFFIC TECHNOLOGIES LTD	Highways & Rail	AU		In			N/A
CONTACT ENERGY LTD	Electric Utilities	NZ					BB
INFRATIL LTD	Electric Utilities	NZ					BB

TRUSTPOWER LTD	Electric Utilities	NZ	BB
PULSE UTILITIES NZ LTD	Electric Utilities	NZ	N/A
HORIZON ENERGY DISTRIBUTION	Electric Utilities	NZ	N/A
VECTOR LTD	Multi-Utilities	NZ	BB
JUST WATER INTERNATIONAL LTD	Water Utilities	NZ	N/A
AUCKLAND INTL AIRPORT LTD	Airport Services	NZ	BB
PORT OF TAURANGA LTD	Ports & Services	NZ	BB
LYTTELTON PORT COMPANY LTD	Ports & Services	NZ	N/A
SOUTH PORT NEW ZEALAND LTD	Ports & Services	NZ	N/A
NORTHLAND PORT CORPORATION	Ports & Services	NZ	N/A
SSE PLC	Electric Utilities	GB	BB
ANDES ENERGIA PLC	Electric Utilities	GB	BB
JERSEY ELECTRICITY PLC	Electric Utilities	GB	N/A
CENTRICA PLC	Multi-Utilities	GB	BB
NATIONAL GRID PLC	Multi-Utilities	GB	BB
TELECOM PLUS PLC	Multi-Utilities	GB	N/A
SEVERN TRENT PLC	Water Utilities	GB	BB
UNITED UTILITIES GROUP PLC	Water Utilities	GB	BB
PENNON GROUP PLC	Water Utilities	GB	BB
HYDRO INTERNATIONAL PLC	Water Utilities	GB	N/A
DEE VALLEY GROUP PLC	Water Utilities	GB	BB
MODERN WATER PLC	Water Utilities	GB	N/A
BBA AVIATION PLC	Airport Services	GB	N/A
BRAEMAR SHIPPING SERVICES PL	Ports & Services	GB	N/A
VERIPOS INC	Ports & Services	GB	N/A
SUTTON HARBOUR HOLDINGS PLC	Ports & Services	GB	N/A

EXELON CORP	Electric Utilities	US			BB / SNL
DUKE ENERGY CORP	Electric Utilities	US	In		BB / SNL
SOUTHERN CO/THE	Electric Utilities	US	In	In	BB / SNL
FIRSTENERGY CORP	Electric Utilities	US	In		BB / SNL
AMERICAN ELECTRIC POWER	Electric Utilities	US	In		BB / SNL
NEXTERA ENERGY INC	Electric Utilities	US	In		BB / SNL
PPL CORPORATION	Electric Utilities	US	In		BB / SNL
EDISON INTERNATIONAL	Electric Utilities	US	In	In	BB / SNL
ENTERGY CORP	Electric Utilities	US	In		BB / SNL
XCEL ENERGY INC	Electric Utilities	US	In	In	BB / SNL
NORTHEAST UTILITIES	Electric Utilities	US	In		BB / SNL
PEPCO HOLDINGS INC	Electric Utilities	US	In		BB / SNL
OGE ENERGY CORP	Electric Utilities	US	In		BB / SNL
HAWAIIAN ELECTRIC INDS	Electric Utilities	US			BB / SNL
PINNACLE WEST CAPITAL	Electric Utilities	US	In	In	BB / SNL
NV ENERGY INC	Electric Utilities	US	In	In	BB / SNL
GREAT PLAINS ENERGY INC	Electric Utilities	US	In	In	BB / SNL
WESTAR ENERGY INC	Electric Utilities	US	In	In	BB / SNL
PORTLAND GENERAL ELECTRIC CO	Electric Utilities	US	In	In	BB / SNL
PNM RESOURCES INC	Electric Utilities	US	In	In	BB / SNL
UIL HOLDINGS CORP	Electric Utilities	US	In	In	BB / SNL
UNS ENERGY CORP	Electric Utilities	US	In	In	BB / SNL
IDACORP INC	Electric Utilities	US	In	In	BB / SNL
CLECO CORPORATION	Electric Utilities	US	In	In	BB / SNL
ALLETE INC	Electric Utilities	US	In	In	BB / SNL
EL PASO ELECTRIC CO	Electric Utilities	US	In	In	BB / SNL

OTTER TAIL CORP	Electric Utilities	US	In		BB / SNL
ITC HOLDINGS CORP	Electric Utilities	US	In		BB / SNL
EMPIRE DISTRICT ELECTRIC CO	Electric Utilities	US	In	In	BB / SNL
MGE ENERGY INC	Electric Utilities	US	In		BB / SNL
UNITIL CORP	Electric Utilities	US			BB / SNL
ALASKA POWER & TELEPHONE CO	Electric Utilities	US			N/A
ONEOK INC	Gas Utilities	US			BB / SNL
UGI CORP	Gas Utilities	US			BB / SNL
AGL RESOURCES INC	Gas Utilities	US	In		BB / SNL
ATMOS ENERGY CORP	Gas Utilities	US	In	In	BB / SNL
AMERIGAS PARTNERS-LP	Gas Utilities	US			BB / SNL
WGL HOLDINGS INC	Gas Utilities	US	In	In	BB / SNL
FERRELLGAS PARTNERS-LP	Gas Utilities	US			BB / SNL
NEW JERSEY RESOURCES CORP	Gas Utilities	US	In		BB / SNL
SOUTHWEST GAS CORP	Gas Utilities	US	In	In	BB / SNL
NATIONAL FUEL GAS CO	Gas Utilities	US			BB / SNL
STAR GAS PARTNERS L.P.	Gas Utilities	US			BB / SNL
LACLEDE GROUP INC/THE	Gas Utilities	US	In	In	BB / SNL
PIEDMONT NATURAL GAS CO	Gas Utilities	US	In	In	BB / SNL
QUESTAR CORP	Gas Utilities	US			BB / SNL
SUBURBAN PROPANE PARTNERS LP	Gas Utilities	US			BB / SNL
SOUTH JERSEY INDUSTRIES	Gas Utilities	US	In		BB / SNL
NORTHWEST NATURAL GAS CO	Gas Utilities	US	In	In	BB / SNL
CHESAPEAKE UTILITIES CORP	Gas Utilities	US			BB / SNL
GAS NATURAL INC	Gas Utilities	US			BB / SNL
DELTA NATURAL GAS CO INC	Gas Utilities	US			BB / SNL

RGC RESOURCES INC	Gas Utilities	US			BB / SNL
CORNING NATURAL GAS CORP	Gas Utilities	US			BB / SNL
P G & E CORP	Multi-Utilities	US	In	In	BB / SNL
DOMINION RESOURCES INC/VA	Multi-Utilities	US			BB / SNL
CONSOLIDATED EDISON INC	Multi-Utilities	US	In	In	BB / SNL
PUBLIC SERVICE ENTERPRISE GP	Multi-Utilities	US	In		BB / SNL
SEMPRA ENERGY	Multi-Utilities	US	In		BB / SNL
DTE ENERGY COMPANY	Multi-Utilities	US	In	In	BB / SNL
CENTERPOINT ENERGY INC	Multi-Utilities	US	In		BB / SNL
AMEREN CORPORATION	Multi-Utilities	US	In	In	BB / SNL
CMS ENERGY CORP	Multi-Utilities	US	In	In	BB / SNL
NISOURCE INC	Multi-Utilities	US	In		BB / SNL
WISCONSIN ENERGY CORP	Multi-Utilities	US	In	In	BB / SNL
INTEGRYS ENERGY GROUP INC	Multi-Utilities	US	In	In	BB / SNL
SCANA CORP	Multi-Utilities	US	In		BB / SNL
MDU RESOURCES GROUP INC	Multi-Utilities	US			BB / SNL
ALLIANT ENERGY CORP	Multi-Utilities	US	In	In	BB / SNL
TECO ENERGY INC	Multi-Utilities	US	In	In	BB / SNL
VECTREN CORPORATION	Multi-Utilities	US	In		BB / SNL
AVISTA CORP	Multi-Utilities	US	In	In	BB / SNL
BLACK HILLS CORP	Multi-Utilities	US	In		BB / SNL
NORTHWESTERN CORP	Multi-Utilities	US	In	In	BB / SNL
CH ENERGY GROUP INC	Multi-Utilities	US	In	In	BB / SNL
MOUNT CARMEL PUBLIC UTIL CO	Multi-Utilities	US			N/A
AMERICAN WATER WORKS CO INC	Water Utilities	US			BB
AQUA AMERICA INC	Water Utilities	US			BB

CALIFORNIA WATER SERVICE GRP	Water Utilities	US	BB
AMERICAN STATES WATER CO	Water Utilities	US	BB
SJW CORP	Water Utilities	US	BB
MIDDLESEX WATER CO	Water Utilities	US	BB
CONNECTICUT WATER SVC INC	Water Utilities	US	BB
ARTESIAN RESOURCES CORP-CL A	Water Utilities	US	BB
YORK WATER CO	Water Utilities	US	BB
ECOSPHERE TECHNOLOGIES INC	Water Utilities	US	N/A
CADIZ INC	Water Utilities	US	BB
PURE CYCLE CORP	Water Utilities	US	N/A
TWO RIVERS WATER CO	Water Utilities	US	N/A
GLOBAL WATER TECHNOLOGIES IN	Water Utilities	US	N/A
SIONIX CORPORATION	Water Utilities	US	N/A
ALANCO TECHNOLOGIES INC	Water Utilities	US	N/A
SOUTHWESTERN WATER EXPLOR CO	Water Utilities	US	N/A
WEST VIRGINA WATER CO	Water Utilities	US	N/A
MACQUARIE INFRASTRUCTURE CO	Airport Services	US	BB
WESCO AIRCRAFT HOLDINGS INC	Airport Services	US	BB
AVANTAIR INC	Airport Services	US	N/A
SINO-GLOBAL SHIPPING AMERICA	Ports & Services	US	N/A
SAKER AVIATION SERVICES INC	Airport Services	US	N/A
AVSTAR AVIATION GROUP INC	Airport Services	US	N/A

Source: Bloomberg, SNL Financial, CEG Analysis

Appendix B Comparison of CEG with Annual Reports

76. Table 15 compares the outcome of CEG's analysis with annual reports for the 'core' Australian sample of five companies. The point in time for comparison is defined by the date the annual report was published[7]. Table 15 confirms that the outcome of CEG's analysis is not significantly different from the annual reports, but that there are some discrepancies.

Table 15: Weighted average debt term for core Australian companies, annual reports vs. CEG

		Annual Report		CEG	
Company	Date	Amount outstanding (m)	Weighted average time to maturity	Amount outstanding (m)	Weighted average time to maturity
Envestra	30/6/12	$2,178.0	11	$1,748.1	11.3
APA Group	30/6/12	$2,905.9	4.8	$3,050.4	4.7
DUET	30/6/12	$5,125.1		$4,290.3	
SP Ausnet	31/3/12	$4,538.5		$4004.3	
Spark Infrastructure	31/12/11	$2,978.0	9.4	$2,557.2	5.9

Source: Bloomberg, Annual Reports, CEG analysis

B.1 Envestra

77. Envestra reported in its 2012 Annual Report that it has $2,178 million in borrowings (principal outstanding), broken down as follows[8]:

- Bank loans: $390.4 M
- Commercial Paper: $26.0 M
- Capital Indexed Bonds: $328.6 M
- Medium Term Notes: $645.0 M
- US Private Placement Notes: $788.0 m.

7 CEG has downloaded static data on the debt on issue in March 2013 from Bloomberg. This means that there may be debt issues that have expired between the Annual Report and the date I downloaded Bloomberg data which may not be accurately accounted for.

8 *Envestra,* Annual Report 2012, p. 64

78. Envestra reports that its average time to maturity as at 31 July 2012 is 11 years. The longest dated debt matures in 2042 according to its debt maturity profile.[9]

79. According to Bloomberg Envestra had bonds and loans outstanding for $1,748.1 million as at 30 June 2012 and the weighted average time to maturity was 11.3 years. The longest dated debt according to Bloomberg matures in 2041.

B.2 APA Group

80. APA notes in its annual report that, *"At 30 June 2012, APA's debt portfolio has a broad spread of maturities extending out to 2022, with a weighted average maturity of drawn debt of 4.8 years"*. The total borrowings in the balance sheet amount of $2,905.9 million, principally from bank borrowings, guaranteed senior notes, medium term notes.[10]

81. According to Bloomberg, APA Group have bonds and loans outstanding for $3,050.4 million as at 30 June 2012. The weighted average time to maturity was 4.7 years according to the Bloomberg data.

B.2.1 Note on recently issued debt

82. I note that APA Group recently acquired Hastings Diversified Utilities (January 2013). APA Group completed three financings between 30 June 2012 and 31 December 2012; *"the proceeds from the Notes and debt facilities were used largely to assist in the acquisition of HDF, the repayment of HDF's short term bank debt and for general corporate purposes"*.

83. The three financings included:

- Long-dated, unsecured, subordinated and cumulative Notes raising $515 million. The notes had a face value of $100 per Note with a first call date on 31 March 2018 and a final maturity date of 2072. The re-financing was completed on 18 September 2012.
- US$750 million of 3.875% senior guaranteed notes maturing in October 2022. The re-financing was completed on 11 October 2012.
- GBP 350 million of 12-year fixed rate Medium Term Notes with a fixed annual GBP coupon of 4.25% per annum maturing 26 November 2024. The re-financing was completed on 26 November 2012.

84. The Bloomberg data captures all of these recent re-financings. However, APA Group comments that, as at 31 December 2012, it had a "*broad spread of maturities*

[9] Envestra, Annual Report 2012, p. 26

[10] APA Group Annual Report 2012

extending out to 2024" with an average maturity of *senior* facilities of 6.5 years. This suggests that the very long dated Note (maturing in 2072) is not taken into account in APA's own calculation which focuses on senior facilities. In CEG's analysis, this long-dated note increases the calculated weighted average debt term from 8.3 years to 13.8 years (March 2013).[11]

B.3 DUET Group

85. According to the 2012 Annual Report, the total interest bearing liabilities are $5,125.1 million as at 30 June 2012.[12]

86. According to Bloomberg, DUET Group have bonds and loans outstanding of $4,290.3 million as at 30 June 2012. The amount outstanding is less than that reported by DUET Group itself.

B.4 SP Ausnet

87. According to SP Ausnet's 2011/12 Annual Report, it has total borrowings of $4,538.5 million. A total of $975.6 million are current borrowings including commercial papers, domestic medium term notes and bank debt facilities. The non-current borrowings comprise:

- Bank debt facilities ($571.3 million)
- Domestic medium term notes ($575.5 million)
- USD senior notes ($1,031.7 million)
- GBP senior notes ($462.9 million)
- CHF senior notes ($775.7 million)
- HKD senior notes ($145.8 million)

88. According to Bloomberg, SP Ausnet has bonds and loans outstanding for $4,004.3 million as at 31 March 2012.

B.5 Spark Infrastructure

89. According to the 2011 Annual Report from Spark Infrastructure, it has about 82.9 million in interest bearing liabilities.[13] Spark Infrastructure has a portfolio of

[11] APA Group Interim Financial Report, 20 February 2013, p. 4, see http://www.apa.com.au/media/209226/2013%2002%2020%20interim%20financial%20reports.pdf

[12] DUET Group, Annual Report 2012, p. 72.

[13] Spark Infrastructure Annual Report 2011. p. 33

regulated electricity distribution companies ('asset companies'): ETSA Utilities, CitiPower and Powercor (collectively CHEDHA). The asset companies issue their own debt, and about 49% of the asset companies' debt is attributable to Spark Infrastructure.

90. According to the 2012 Fact Book, Spark's share of CHEDHA's debt amounted to $1,696 million and its share of ETSA's debt amounted to $1,284 million (31 December 2011). This amounts to $2,978 million in total. I have calculated the weighted average debt term of Spark's share of the asset companies' debt (as reported in the 2012 Fact Book) as 9.37 years as at 31 December 2011.[14]

91. Given that Spark Infrastructure owns 49% of ETSA and CHEDHA, Bloomberg only attributes $85 million in loans directly to Spark Infrastructure. The remainder of the debt information was compiled from Bloomberg and the 2012 Fact Book and is attributed to the asset companies themselves. Therefore, I have attributed 49% of the asset companies' debt to Spark Infrastructure. Once these additions have been made Spark Infrastructure have bonds and loans outstanding for $2,557.2 million as at 31 December 2011. The weighted average time to maturity is 5.9 years according to the Bloomberg data.

[14] Spark Infrastructure 2012 Fact Book, p. 30

Appendix C Curriculum vitae

COMPETITION ECONOMISTS GROUP

Economics of competition, regulation and damages

Curriculum Vitae

Dr Tom Hird / Director

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Key Practice Areas

Tom Hird is a founding Director of CEG's Australian operations. In the six years since its inception CEG has been recognised by Global Competition Review (GCR) as one of the top 20 worldwide economics consultancies with focus on competition law. Tom has a Ph.D. in Economics from Monash University. Tom is also an Honorary Fellow of the Faculty of Economics at Monash University and is named by GCR in its list of top individual competition economists.

Tom's clients include private businesses and government agencies. Tom has advised clients on matters pertaining to: cost modeling, valuation and cost of capital.

In terms of geographical coverage, Tom's clients have included businesses and government agencies in Australia, Japan, Korea, the UK, France, Belgium, the Netherlands, New Zealand, Macau, Singapore and the Philippines. Selected assignments include:

Selected Projects

- Advice to Chorus New Zealand on the estimation of the cost of capital;
- Advice to Wellington Airport on the estimation of the cost of capital;
- Advice to Vector on appeal of the New Zealand Commerce Commission decision on the cost of capital.
- Expert evidence in relation to the cost of capital for Victorian gas transport businesses.
- Advice to Everything Everywhere in relation to the cost of capital for UK mobile operators - including appearance before the UK Commerce Commission.
- Expert evidence to the Australian Competition Tribunal on the cost of debt for Jemena Electricity Networks.
- Advice to Integral Energy on optimal capital structure.
- Advice to ActewAGL on estimation of the cost of debt
- Advising NSW, ACT and Tasmanian electricity transmission and distribution businesses on the cost of capital generally and how to estimate it in the light of the global financial crisis.
- Advice in relation to the appeal by the above businesses of the Australian Energy Regulator (AER) determination.

- Expert testimony to the Federal Court of Australia on alleged errors made by the Australian Competition and Consumer Commission (ACCC) in estimating the cost of capital for Telstra.
- Advice to T-Mobile (Deutsche Telekom) on the cost of capital for mobile operators operating in Western Europe.
- Advising Vivendi on the correct cost of capital to use in a discounted cash flow analysis in a damages case being brought by Deutsche Telekom.
- Advising the AER on the cost capital issues in relation to the RBP pipeline access arrangement.
- Advising the ENA on the relative merits of CBASpectrum and Bloomberg's methodology for estimating the debt margin for long dated low rated corporate bonds.
- Advising the Australian Competition and Consumer Commission, Australia on the correct discount rate to use when valuing future expenditure streams on gas pipelines.