

Jemena Electricity Networks (Vic) Ltd

2016-20 Electricity Distribution Price Review Regulatory Proposal

Attachment 9-17

UBS - Transaction costs in the hybrid transition

Public

30 April 2015



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Transaction Costs and the AER Return on Debt Draft Determination

Overview and instructions

UBS has been engaged by Jemena Gas Networks ("JGN") and Jemena Electricity Networks ("JEN") to prepare a report on the return on debt draft determination by the Australian Energy Regulator ("AER") for JGN with specific emphasis on transaction and related costs and to test the assertion that hedge costs are not material in determining the return on debt. The terms of reference for this engagement are included as Attachment A.

For the purposes of this report, we assume that the benchmark efficient entity must transition its return on debt from a hybrid cost where debt issuance is staggered evenly over time but the base rate component is fixed every five years using interest rate swaps (to match the regulatory period) to a trailing average cost where the base rate is not fixed. We have been asked to outline the transaction and related costs associated with hedging this "hybrid transition" over a 10 year period and advise our best estimate of these costs. We refer to this benchmark efficient entity as the "AER determined efficient entity" throughout this report.

We offer no view as to whether an AER determined benchmark efficient entity would face a hybrid cost currently or whether it would hedge a transition to a trailing average as this is beyond the scope of this report.

For the purposes of this report, we define transaction and related costs to be as follows:

- Just as investors require a debt risk premium ("DRP") to buy the debt of the AER determined benchmark efficient entity or banks to extend a loan, so do hedge counterparties require that the costs of execution, credit and capital are added to the mid-market level for interest rate and cross currency swaps¹;
- Deferred start premiums for swaps to cover risk between the averaging period and the commencement of the regulatory period and tracking error risk.

Structure of this report and conclusions

In summary, the relevant debate in the JGN draft decision of November 2014 appears to relate solely to interest rate swaps and the ability, desirability and costs associated with hedging the risk free rate². The debate and supporting comment contained in the draft decision does not examine the costs associated with raising debt in offshore capital markets that is necessary given the illiquidity and volume / tenor constraints of the Australian domestic capital markets, the cost of hedging during an averaging period and other costs that we refer to as "tracking error" related.

The factors that should be taken into consideration in testing the materiality of transaction and related costs for the AER's determined benchmark efficient entity are as follows:

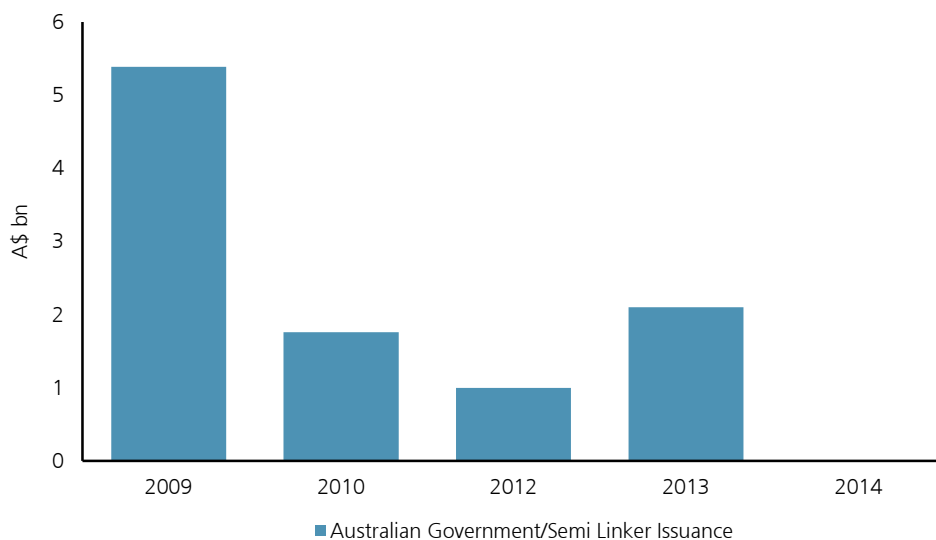
1. The appropriate hedging strategy for the AER's determined benchmark efficient entity is more complex in Australia than it is in regulated utility markets in other jurisdictions. In the UK, for example, the regulatory approach to weighted average cost of capital ("WACC") setting smoothes the impact of falling rates. UK regulators typically consider historical real bond yields when deriving the WACC³.

The appropriate hedging strategy for the AER's determined benchmark efficient entity is, in addition, more complex in Australia than it is in other regulated utility markets in other jurisdictions where financial markets are deeper and more liquid. This is one of the factors that may have led to different hedge strategies in the sector during the last regulatory period. That

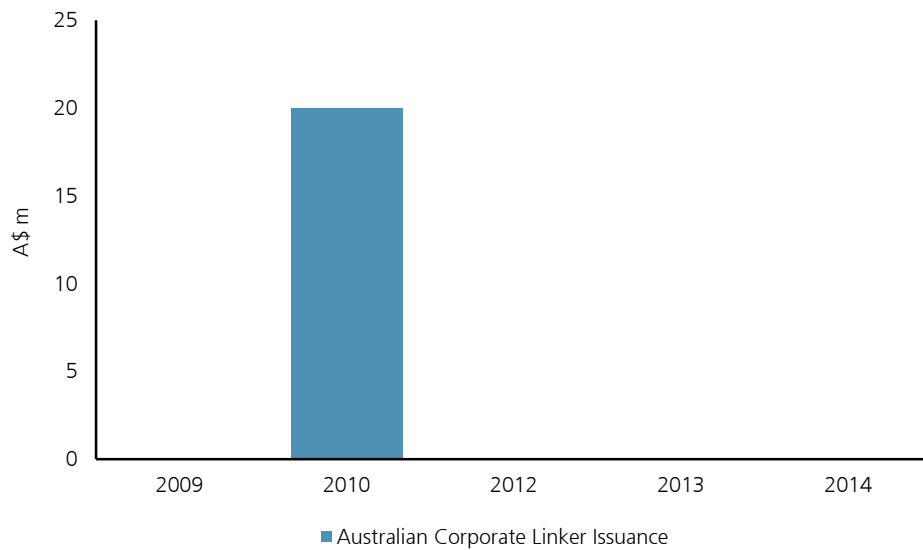
complexity is driven in part by the AER's methodology for compensating for the cost of debt where the benchmark efficient entity's efficient financing costs are estimated by using a floating inflation rate in the escalation of the regulated asset base ("RAB") but a fixed inflation rate in the determination of the return on debt through fixed nominal rates. In order to achieve this, the benchmark efficient entity would implicitly enter into an inflation linked swap on the liability side (as do UK regulated entities). However, no compensation is provided for the costs of entering into these derivatives. Moreover, given the limited liquidity in inflation swap markets, the AER determined benchmark efficient entity has limited ability to match asset and liability profiles in this manner.

Alternatively, notwithstanding that the AER methodology assumes that nominal debt is issued, a AER determined benchmark efficient entity could, in theory, hedge the floating inflation risk on the asset side (RAB) by issuing inflation linked bonds. However, as is the case with the market for inflation swaps, the market for inflation linked corporate bonds in Australia is not liquid enough for this to be an efficient hedging strategy. Consequently, a regulated business must manage asset and liability risk independently.

The charts below summarise inflation linked debt issuance in Australia by Commonwealth Government / Semi Government and Australian corporates.



Source: UBS



Source: UBS

2. The inability of the Australian debt capital markets to fund the AER determined benchmark efficient entity for a term of 10 years with a BBB or BBB+ credit rating, which, therefore, requires that firm to issue debt offshore in foreign currencies and swap it back into AUD using cross-currency swaps.
3. The "tools" available to the AER determined benchmark efficient entity to raise and manage debt are limited i.e. they can raise fixed or floating rate debt and enter into an interest rate swap strategy. The AER determined benchmark efficient entity cannot hedge the AER return on debt calculation that is built around adjusted RBA and Bloomberg BVAL estimates. The mismatch between the tools available to manage risk available to the AER determined benchmark efficient entity and the risk imposed by the AER is part of the "tracking error" risk calculation.

After considering all of these, we consider that the following transaction and related costs are relevant to estimating the return on debt over the 10 year transition period:

1. Credit, execution and capital charges on cross-currency interest rate swaps – which are relevant because a benchmark efficient entity would be required to issue debt offshore.
2. Credit, execution and capital charges on vanilla interest rate swaps – which are relevant because a benchmark efficient entity would (we assume, as noted above) enter these to hedge the interest rate risk implicit in the setting of the allowed return on debt.
3. Cost of deferral between a hedge during the averaging period and the start date of the next regulatory period – which is relevant because the benchmark efficient entity would (we assume) hedge the return on debt during the averaging period for a start date in the future.
4. Cost of tracking error risk from the mismatch between the observed yield and rate data used to estimate the return on debt and the actual hedge transactions – which is relevant because this is a risk that the AER determined benchmark efficient entity would face when attempting to hedge the allowed return on debt.

Our best estimate of these costs are:

1. 18 basis points per annum ("bppa") paid on a quarterly basis for credit, execution and capital charges on cross-currency swaps
2. 5bppa for credit, execution and capital charges on vanilla interest rate swaps—for debt issued in AUD, there are no cross-currency interest rate swaps, but there are two interest rate hedges where AUD debt is issued in fixed rate format, so this cost would double to 10bppa
3. 6bppa for the cost of deferral
4. 9bppa for tracking error risk – up to 64bppa if an allowance is made for the difference between a rate based on Commonwealth Government Securities ("CGS") and a rate based on a swap rate.

Combined, this gives total transaction and related costs of 38bppa if all debt is issued offshore. This is a base case. Adjustments to the base case are as follows:

- total transaction and related costs reduce to 25bppa if all debt is issued in the domestic capital markets;
- An additional 55bppa if we account for the swap spread risk relative to CGS.

We consider this estimate is conservative as it takes no account or consideration of the market impact, liquidity or extra margins required to hedge sector requirements of up to \$44b⁴.

The rest of this report is structured as follows:

1. Section 1 provides background on the relevant parts of the regulatory framework and describes key hedging transactions and their costs
2. Section 2 identifies the debt sources available to the AER's determined benchmark efficient entity
3. Section 3 describes the likely hedging activities undertaken by the AER's determined benchmark efficient entity and the costs of these activities.

Authorship and Federal Court guidelines

This report was prepared by Peter Kingston. My CV is included as Attachment B. In summary, I have worked in derivative markets since 1988 in Australia and Asia during which time I have advised and transacted with firms in currency, credit, rates and commodity derivative markets. I most recently prepared reports for Networks NSW and Transgrid on the transaction cost component in the return on debt calculation in relation to the AER draft decision.

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 provide financial advice and transaction support for a number of entities including to the Jemena Group (and related companies), but have no current or future potential conflicts.

I confirm that I have made all the inquiries that I believe are desirable and appropriate and no matters of significance that I regard as relevant have, to my knowledge, been withheld from this report.

Section 1: Background

The AER guidelines specify an allowed rate of return to provide network service providers a return on capital to service the interest on its loans and give a return on equity to investors. The return on capital building block is calculated as a product of the rate of return and the value of the capital base.

The allowed rate of return is a weighted average of the return on equity and return on debt estimates (“WACC”) determined on a nominal vanilla basis. In addition, the AER assumes a 60% gearing ratio, that a AER determined benchmark efficient entity would issue debt consistent with a term to maturity of 10 years and forecast inflation based on an average of the Reserve Bank of Australia's (“RBA’s”) short term inflation forecasts and the mid-point of the RBA's inflation targeting band of 2.5%.

In regard to the return on debt calculation, the AER draft decision:

- applies a trailing average portfolio approach is applied to the total return on debt—that is, to estimate the average return that would have been required by debt investors in a AER determined benchmark efficient entity if it raised debt over an historical period prior to the commencement of a regulatory year in the regulatory control period;
- updates the return on debt estimate annually;
- applies equal weights to all the elements of the trailing average;
- implements transitional arrangements—in moving from the current ‘on the day’ approach to the new ‘trailing averaging portfolio’ approach—consistent with an annual re-pricing of a portion of the notional debt portfolio and a benchmark term of 10 years.

The draft decision implements this approach, by applying an estimation procedure that:

- adopts a 10 year term for the return on debt with a BBB+ credit rating;
- applies a simple average of independent third party data from the RBA and Bloomberg.

Ideally, the AER determined benchmark efficient entity would match risk on its asset and liability profiles and then focus attention on managing DRP over time. The Australian regulatory process – as outlined above – does not allow asset and liability matching to take place given that the return on debt calculation is based on a nominal vanilla basis – specifically a fixed nominal rate. The AER determined benchmark efficient entity is therefore tasked with managing DRP plus the mismatch between the only means available to it to hedge nominal fixed rate risk i.e. an interest rate swap and the adjusted and interpolated RBA and BVAL curves used to determine the return on debt.

That additional mismatch needs to be measured and risk managed together with hedging foreign currency denominated debt swapped back into AUD, interest rate risk to fix the risk free rate and the time between averaging periods and the start of a regulatory year. All of these components form part of transaction and related costs incurred by the AER determined benchmark efficient entity.

Section 2: Sources of Debt for the Benchmark Efficient Entity - Debt Capital Markets

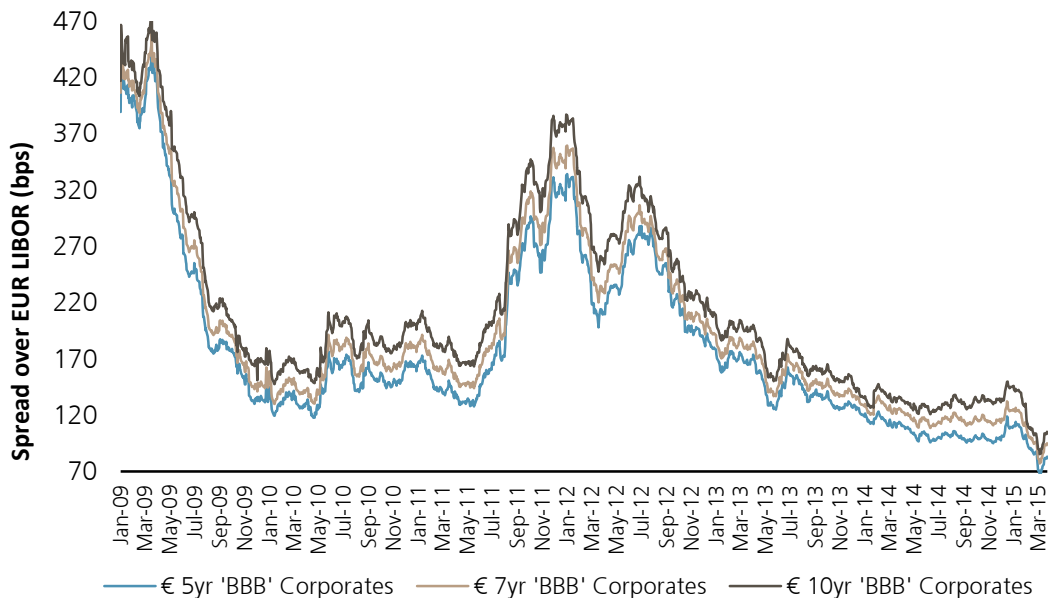
We have approached the assessment of the ability of JGN and JEN to access debt capital markets from a pricing, tenor and volume perspective initially on the assumption of a BBB band rating consistent with an AER determined benchmark efficient entity. The analysis draws upon data looking at the last five years of issuance for BBB rated corporates across global markets, with a focus on the domestic Australian institutional market.

Section 2.1: Pricing—BBB-band corporate issuance

Corporate 'BBB' credit spreads have materially reduced since 2008 / 2009 when they were significantly affected by the Global Financial Crisis ("GFC"). For Australian corporates, market access proved difficult during these times with no issuance in the immediate aftermath of the GFC in 2008, with the domestic AUD market completely closed and only supporting \$2.4b of domestic issuance in 2009⁵. During this period it was only the USD market that provided sufficient depth for issuers to raise debt capital in larger amounts and was typically reserved only for A-band or strong-BBB corporates. Remaining borrowings in the sector were bank loan related – with the exception of those entities funded by either NSW Treasury Corporation or Queensland Treasury Corporation.

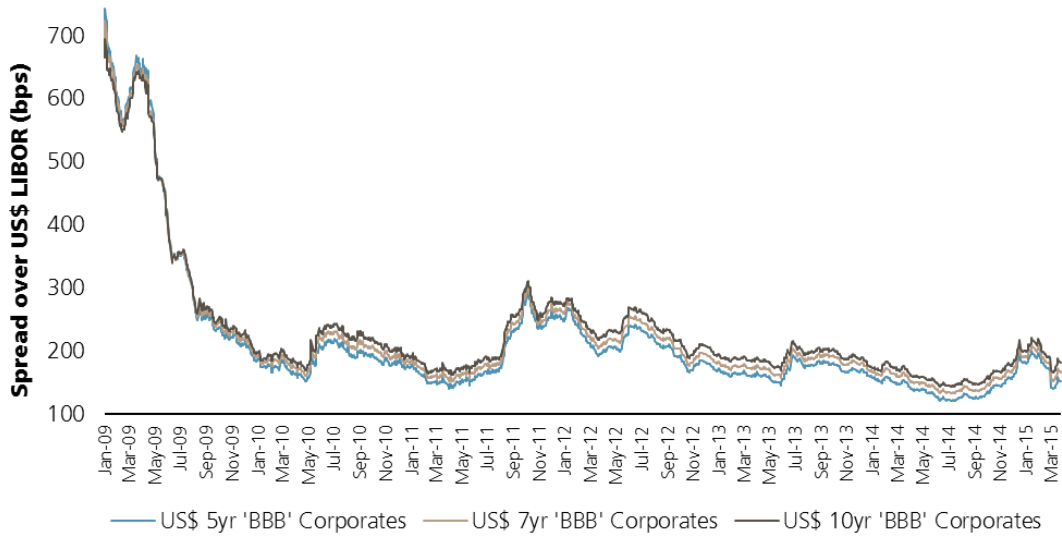
Spreads peaked again towards the end of 2011 / early 2012 and again in mid-2012 driven by the Eurozone credit and subsequent sovereign crisis in addition to Greek Eurozone exit concerns. The impact of these events is more clearly depicted on the € 'BBB' corporate spreads graph below. Over the past year the global search for yield driven by global quantitative easing programmes has supported a contraction in spreads to historical lows across currencies for 'BBB' band credits.

€ 'BBB' corporate spreads



Source: UBS Delta, yields expressed on an annual basis.

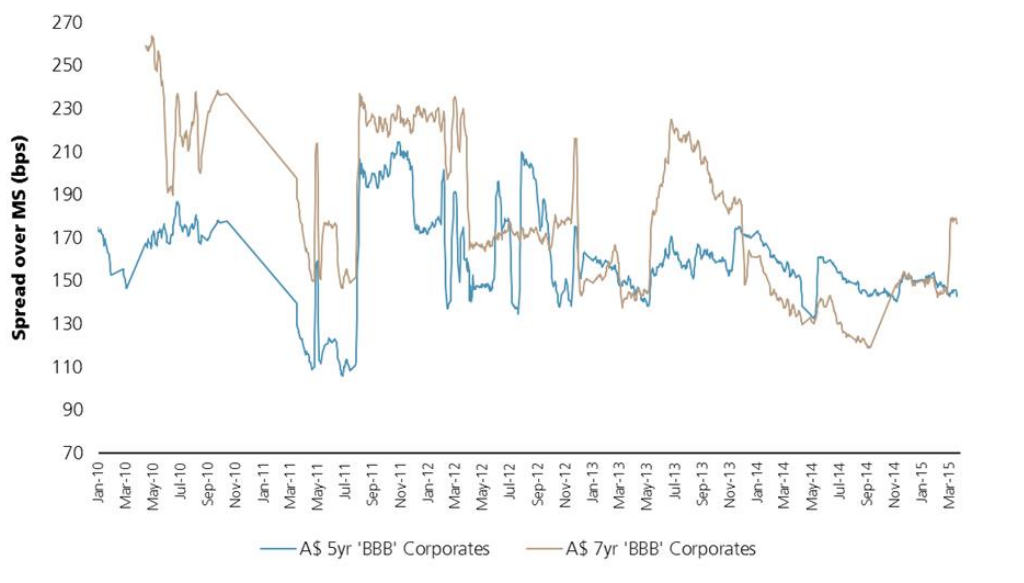
USD 'BBB' corporate spreads



Source: UBS Delta, yields expressed on a semi-annual basis

AUD 'BBB' corporate spreads

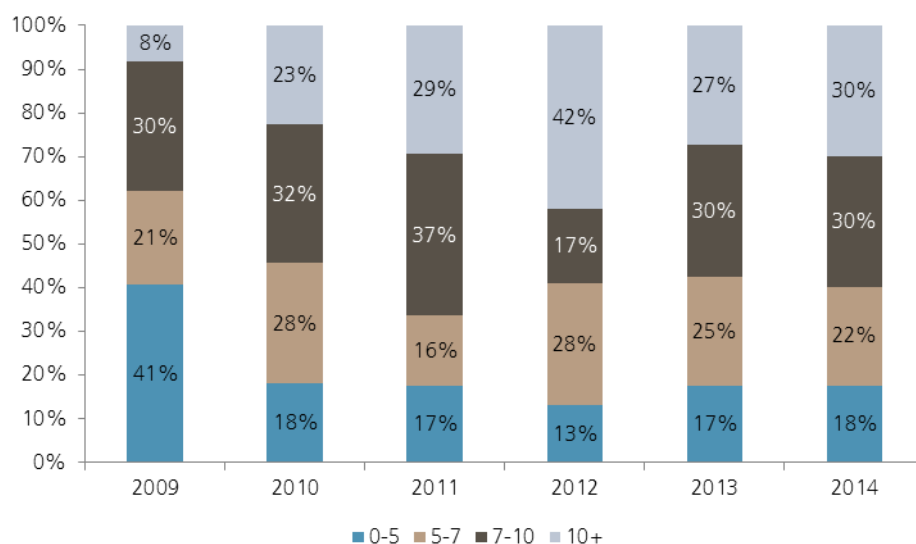
The Australian corporate market is relatively small compared to the aforementioned Euro and USD markets and as such is unable to support the requirements of the regulated utility sector. New issues may therefore (and do from time to time) skew the index. As with the Euro and USD market, domestically we have seen a steady contraction in spreads since the GFC and widening in the market in line with offshore political events. The story in the domestic market in the past 2 years however has been positive with corporates taking advantage of a relative lack of supply to achieve tighter pricing, larger volumes and less onerous covenant structures (in line with the Euro market).



Source: Bloomberg, UBS, MS refers to semi-annual mid swaps

Section 2.2: Tenor—Australian corporate historical issuance

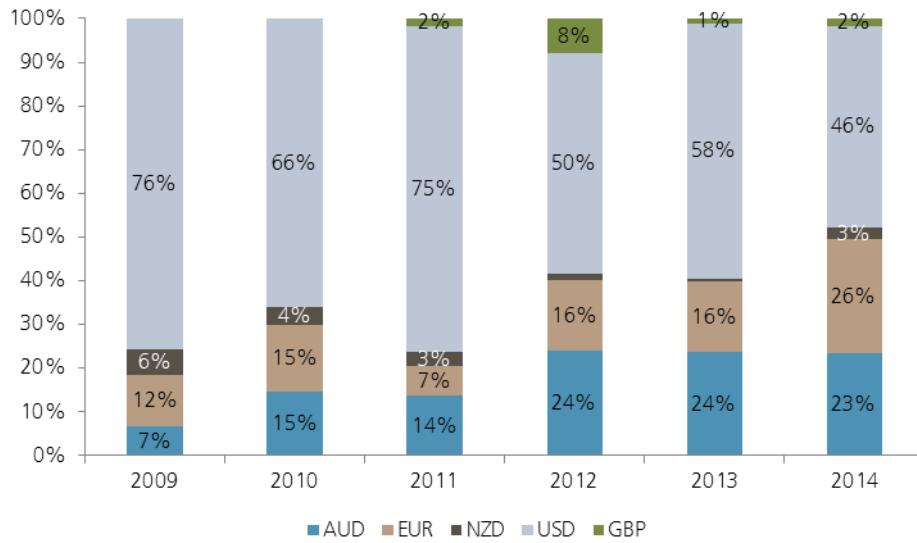
Australian corporate issuers have been able to benefit from the current global low yield environment by achieving longer dated transactions as investors seek higher yielding investments. Over the years, investors have become more supportive of longer dated transactions in order to achieve yield targets. The graph below depicts the lengthening of tenor for Australian corporates in the global debt capital markets, with the tenor sweet-spot moving from 0-5yrs in 2009 to 7+yrs in 2014.



Source: UBS, Dealogic

Market trends

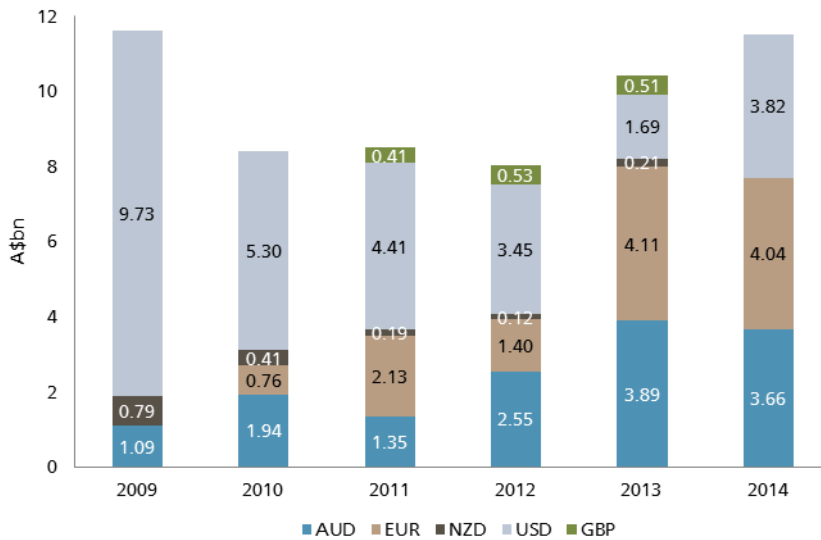
The Australian corporate domestic debt capital market has developed since the GFC - reaching a highpoint for debt issuance of ~\$14b in 2012 before falling away some 30% to \$10b in 2014⁶. It is nevertheless important to place the level of issuance in 2014 in the context of the debt requirements of the sector. Lally states "*The aggregate asset value of the businesses that are regulated by the AER is about \$74b. Assuming leverage of 60%, the aggregate debt level would be \$44b*"⁷. The aggregate debt requirement of the sector is 4.4 times the total issuance by all Australian corporates across all maturities. In 2009, most Australian corporates looked to the US market in USD Private Placement ("USPP") and 144A formats to fulfil their funding needs as these markets offered the deepest pools of liquidity⁸. Australian corporates are increasingly looking to issue offshore. The percentage of USD issuance has progressively declined in recent years in favour of the Euro market, which offers issuers the ability to adopt less onerous financial covenants, achieve similar size to the US market and access cheaper funding costs (lower spreads and legal costs). The graph below (all Australian issuance) depicts the rise in the use of the Euro market in particular since 2011.



Source: UBS, Dealogic

Section 2.3: Volume—Australian corporate BBB-band historical issuance

The AUD market has become increasingly supportive of BBB-band issuance. Traditionally, issuers on the lower end of the credit spectrum have looked to the US markets for support, however as the market has developed, Australian corporate BBB-band issuers have been better supported. This is represented in the graph below which highlights the value of AUD BBB-band issuance increasing over the last 5 years. Over time, the amount raised by BBB-band issuers has also increased in the Euro market which has been a general trend over the past 2 years given favourable market conditions.



Source: UBS, Dealogic

Section 3: Hedging by the Benchmark Efficient Entity

As noted above, we assume that the AER determined benchmark efficient entity will hedge the risk free rate using interest rate swaps. In addition:

- where fixed rate debt is issued in the Australian capital markets, it will be swapped back into a floating rate;
- where debt is issued in offshore debt capital markets, principal and coupon amounts will be swapped back into floating rate AUD risk.

Other factors that will influence the cost of hedging – over and above the execution, credit and capital costs of the issuance related swaps – will be:

- deferral – the AER return on debt calculation is based on nominal rates derived during an averaging period while the interest rate hedge set during the averaging period will have a start date set to the commencement of the next regulatory period. Counterparty banks will adjust swap prices for this deferred start period. In a normal yield, the deferral is always a cost;
- tracking error – the AER return on debt calculation is derived from RBA and Bloomberg adjusted and interpolated curves while the AER determined benchmark efficient entity can only hedge risk using interest rate swaps, The DRP component of the calculation cannot be hedged. The difference between the 10 year interest rate swap and the RBA and Bloomberg curves may create tracking error that will reduce the DRP.

The cost analysis below will make reference to bank counterparty execution, credit and capital costs. We define each to be as follows:

- execution costs – financial markets show pricing on a mid-rate basis with bid and offer prices depending upon whether risk is being bought or sold. The bid and offer prices reflect the cost transacting over a mid-rate basis;
- Credit costs – counterparty banks assess risk of default on a two standard deviation basis and apply a cost that – in theory – is compensation for that risk of default;
- Capital costs – a derivative transaction creates a risk weighted asset position for a bank and capital needs to be applied to generate a return on that risk weighted asset.

Section 3.1: Transaction Costs – offshore debt issuance

As noted earlier, total issuance by all corporate issuers across all tenors in the Australian domestic capital markets in 2014 was \$10b. Given lack of access to liquidity domestically, not surprisingly, it has been the practice of the AER determined benchmark efficient entity is to issue foreign currency debt in the long dated offshore debt capital markets and swap both the initial proceeds and all interim cash flows / interest payments back into AUD. UBS is not aware of any firms in the sector that take currency risk and do not swap the proceeds back into AUD using cross-currency swaps.

AusNet is one of the few service providers with publicly available financial accounts. Their financial accounts show that 72% of total debt is raised offshore and swapped back into AUD using cross currency swaps⁹.

The counterparty risk and the associated costs related to cross currency swaps have increased as banks refine credit and capital models to price risk in line with their own regulatory requirements and the Basel III guidelines in regard to measuring appropriate capital ratios.

UBS estimates that the total execution, credit and capital costs associated with a 10 year AUDUSD cross currency swap (to floating AUD bank bill) for a BBB+ or BBB rated AER determined benchmark efficient entity is 18 bppa. This estimate assumes a benchmark issue size of \$500m. No premium has been assumed for liquidity. Given the Lally estimate of aggregate debt levels for the sector of \$44b, it is reasonable to assume that the UBS estimate of total execution, credit and capital costs is conservative.

Methodology

In order to measure the cross currency swap execution, credit and capital costs associated with a 10 year cross currency swap, we look to the US debt capital markets as the deepest and most liquid global capital market.

Each bank calculates cross currency swap credit and capital charges using their own proprietary systems. Variation exists based on whether a bank has adopted Basel III regulatory reforms and whether pricing is adjusted for the funding benefit or cost associated with the swap. Capital charges – the minimum add-on required to cover the cost of capital associated with counterparty risk and the exposure associated with the swap over its life – varies on a bank by bank basis.

The UBS calculation of the credit and capital charges is based on a required capital return assuming a 20% cost to income ratio and 25% target return on equity. Note that this calculation assumes a stress factor of 1.1. The stress factor measures credit value adjustment (“CVA”) value at risk (“VaR”) or how credit risk changes over time. This is the minimum guideline and forms the basis for all pricing of derivative risk at UBS.

The sum of the net credit charge (after adjusting for the funding benefit) plus the required capital return is 17.8bp.

The cost of execution includes both the swap from USD fixed to USD floating and the cross currency basis swap from USD floating rate to AUD floating rate. The cost of executing both swaps is 1.5bppa.

Total credit, capital and execution costs for the BBB+ and BBB rated benchmark efficient entity raising debt in the USD debt capital markets is therefore 19.3bppa. Our analysis reduced this to 18bppa in order to take a conservative approach. As outlined, no premium is added for liquidity or any other additional margin that a bank may apply e.g. a profit component.

It is worth noting that liquidity issues have the potential to have a material and negative impact on the AER determined benchmark efficient entity and its ability to hedge interest rate risk. No comparison can be made with the manner in which interest rate risk may have been hedged in past regulatory periods as the basis for the risk was 5 years. Counterparty risk limits for banks fall away materially after 5 years. Those banks with 10 year credit limits for benchmark efficient entities may reasonably be expected to widen the cost of execution where risk is transacted by several different entities over averaging periods that may overlap or be closely related. This analysis and pricing for transaction and related costs assumes 10 year interest rate risk of up to \$300m per day and a single cross currency swap of up to \$500m. No price has been determined or taken into account to adjust liquidity for what may be hedge requirements of up to \$44b.

Section 3.2: Transaction Costs – interest rate swaps

The draft determination looks back to the previous WACC review as the basis for its view on transaction and related costs associated with swap contracts, arguing that the sector was compensated based on:

- A broad BBB credit rating even though the benchmark credit rating was BBB+;
- A 10 year debt term (risk free rate and DRP) even though the AER determined benchmark efficient entity would have incurred a 5 year risk free rate due to hedging.

Lally¹⁰ agreed with this position:

"NERA (2014, section 4.4.2) also argues that the AER has not to date provided any allowance for the transactions costs of such swaps and this contradicts its belief that the efficient financing practice for firms under the previous regulatory regime was to hedge this risk. However, it is also true that the AER used the ten-year risk free rate at these five-yearly resets rather than the five-year risk free rate, the latter should have been used, and the benefit to the firms from this (ten-year rates are generally higher) outweighs the transactions costs of the swaps (as explained in the previous section)."

"The merits of hedging under the previous regime are clear even in the absence of compensation; doing so would largely eliminate the risk arising from the five-yearly resets of the risk-free rate component, convert the ten-year cost of debt incurred by the firms into five-year debt (which is cheaper on average by at least 0.25%), whilst incurring transactions costs on the swaps of no more than 0.10%. So, doing this would have reduced risk and had an expected payoff of at least 0.15%. Thus, even in the absence of compensation for the transactions costs of the swaps, undertaking these swap contracts would be efficient behaviour. Receipt of compensation for the swap costs would be mere 'icing on the cake'."

We will not comment or debate the position in the past, other than to note that there are execution, credit and capital costs associated with hedging interest rate risk, that those costs have escalated materially since the last regulatory period in line with local and global capital requirements imposed upon banks - particularly Basel III¹¹, the Wall Street Reform and Consumer Protection Act (also known as the Dodd Frank Act) and the fourth Capital Requirements Directive (CRD IV) in Europe - and that for the 2015-2020 JGN regulatory period or 2016-2020 JEN regulatory period, we assume execution, credit and capital costs will be incurred by the AER determined benchmark efficient entity in order to hedge interest rate risk. Interest rate derivatives have now become a "very capital intensive product".

Deutsche Bank Chief Risk Officer, Stuart Lewis commented as follows in October 2014:

*"If I look at the consumption of risk-weighted assets (RWAs) versus the revenues this generates for the bank, those revenues are relatively small, resulting in a very poor return on RWAs," he said. "The gross-ups on derivatives that we face as an institution are substantial. So whatever metrics you use, whether it's return on assets, return on CRD IV or Basel III assets, the one product that sticks out as low return is derivatives instruments – in particular on the core rates side."*¹²

Proprietary trading activity in interest rate swaps has all but disappeared due to global capital requirements and the Dodd Frank Act and this has not been offset by other trading activity elsewhere. Given this, we regard a daily hedge requirement of \$300m for a single entity over consecutive days during an averaging period for a term of 10 years for the 2015-2020 AER determination for JGN or 2016-2020, as an aggressive assumption. We note that fewer banks have capacity to take counterparty risk for a term of 10 years compared to a term of 5 years. Longer dated counterparty risk comes with higher credit and capital requirements.

UBS estimates that the cost of transacting a 10 year interest rate swap for a BBB+ or BBB benchmark efficient entity – for notional risk of up to \$300m – is 5bppa. The total cost would therefore be 10bppa where debt is issued in the Australian debt capital markets and is swapped back to a floating rate. We note that this is at the lower end of similar estimates that calculate the same risk at up to 16bppa¹³.

The UBS estimate is based on a required capital return assuming a 20% cost to income ratio and 25% target return on equity. Note that this calculation assumes a stress factor of 1.1 and comprises:

- Credit charge offset by the funding benefit	1.5bppa
- Cost of capital	2.5bppa
- Execution	1.0bppa

Section 3.3: Cost of Deferral – deferred start interest rate swaps

Each AER determined benchmark efficient entity will have an averaging period over which the return on debt will be determined. While each may vary and will remain undisclosed, the basic parameters are known i.e. it must be determined over a minimum of 10 consecutive business days out to a maximum of 1 year and that it must be set in advance of a given regulatory year.

During the averaging period, the AER is proposing to use a simple average of the return on debt derived from the RBA and BVAL curves extrapolated to 10 years and interpolated to all trading days where necessary. That data will be based on rates applicable on each day during the averaging period.

The AERs determined benchmark efficient entity would need to hedge the risk free rate with a start date set to the beginning of the next regulatory period, which is when the revenue that compensates for the return on debt starts i.e. the swap will have a deferred start.

This mismatch between the spot start used in the RBA and BVAL curves and the deferred start used in the swap is the cost of deferral. The cost of deferral is added to the interest rate swap but it is not adjusted for in the RBA and BVAL curves.

While it is difficult to measure the cost of deferral accurately for any given firm given that the averaging period is not made available publicly in advance and that it is likely to vary across the sector, we have assumed an average deferral period of 3 months in ascribing a value to the cost of deferral i.e. the difference between the averaging period and the start of the next regulatory period. Additional complexity is added with 10% of the return on debt calculation rolling off annually and being reset. There is no means of estimating the shape of the interest rate yield curve in the future to determine deferral costs in line with the return on debt calculation.

We note that the actual deferral period for JGN i.e. the difference between the averaging period (19 January – 16 February 2015) and the commencement of the regulatory period is some 5 months.

We have estimated the cost of deferral – added to the fixed rate for the AER's determined benchmark efficient entity hedging interest rate risk – to be 6bppa.

Tracking error

The AER determined benchmark efficient entity would be expected to adopt similar strategies to that executed over the 2010 - 2015 regulatory period for JGN and the 2011 – 2015 regulatory period for JEN in order to hedge the return on debt. The objective being to minimise any mismatch between the AER methodology for determining the return on debt over time and the actual return on debt. However, there

will always be a mismatch. Under the AER's proposed transition, a service provider is assumed to be in a position to have all debt maturing at the commencement of each regulatory period, re-issue that debt during the averaging period and then ensure that 10% of debt rolls off annually and is refinanced during subsequent averaging periods. This is, in reality, simply not feasible.

A strategy implemented by some firms subject to the AER's previous approach to setting the return on debt has been to hedge interest rate risk (a proxy for the risk free rate) by entering into interest rate swaps during the averaging period – and then over time. The objective is to be in a position to enter into pay fixed interest rate swaps that have a maturity profile that matches the AER's assumed transitional trailing average approach rate where portfolio costs will be reset at a rate of 10% each year.

The DRP remains at risk as there is no financial instrument that allows it to be hedged. Service providers therefore manage the risk by staggering their debt issues over time as per their own internal guidelines that reflect market liquidity, term, accessibility, economic conditions and choice of debt capital market.

We first discuss tracking error with respect to the base rate of interest on that part of the portfolio to which interest rate swaps are being applied. Any service provider executing interest rate swaps during an averaging period with the objective of fixing a proxy for the risk free rate is exposed to risk to the extent that the hedged fixed rate differs from the implied risk free rate associated with the AER return on debt methodology. Specific risks for a service provider hedging a proxy for the risk free rate by using interest rate swaps are as follows:

- If RBA data is used to estimate the return on debt, then this creates tracking risk because this data is only published at month end therefore a service provider cannot track the effectiveness of a daily hedge during execution during the course of a month;
- If the Bloomberg BVAL curve is used to estimate the return on debt, then this creates tracking risk because it is only derived / reported at 4pm Tokyo time, 4pm London time and 4pm New York daily, which means that swap transactions entered outside of these times may not track the curves. There is no disclosure as to the time that rates are used to calculate the curve. The AUD futures market closes at 4.30pm Sydney time. Any swap execution after the close of the Sydney business day and futures market needs to take place through London. Liquidity constraints may or may not be a factor for London swap execution;
- RBA data and Bloomberg data use different methodologies to determine fair value estimates. The Bloomberg BVAL methodology is not publicly available;
- The RBA reports yields, spreads and spreads to Commonwealth Government Securities (CGS) for its BBB benchmark series. Service providers have no means of hedging risk based on a CGS benchmark. Interest rate swaps in Australia are traded on 3 year and 10 year futures plus an adjustment for swap spreads.

It is difficult to place a value on this tracking risk i.e. the difference between the swap rate and the underlying fixed rate component associated with either or both the RBA and Bloomberg methodologies on any given day during the averaging period. Our methodology for valuing the tracking error risk is as follows:

- We examined the daily change in 10 year swap rates over a 30 year period from February 1985 to February 2015. The intent was to calculate the risk between a swap rate derived during Australian futures market hours and one derived outside these hours. Ideally we would have preferred to look at intra-day volatility in swap rates; however Bloomberg only keeps this data

on a short term basis. The Bloomberg historical data showed the average day to day change in rates to be 5.7bppa;

- The daily data that is available from Bloomberg since January 2015 shows that the intra-day volatility in 10 year swap rates is up to 9bppa.

Any attempt by service providers to hedge the fixed rate debt component of the AER return on debt calculation will involve tracking risk given that (a) the RBA and Bloomberg data are not available daily to allow service providers to minimise risk, (b) the methodology to determine fair value has a component that is not publicly available, (c) the Bloomberg data is released after the close of the Sydney trading day and (d) the RBA calculation is measured against CGS rather than the swap rate. The differential between the swap rate and the rate derived based on changes in CGS is 55bppa.



Source: Bloomberg

Given the quantum of risk and the limited data available by which to measure this risk, we valued tracking error risk at 9bppa. This calculation however did not take into consideration swap spread risk – which has been 55bppa historically.

This estimate for tracking error risk does not include any estimate for the value of tracking risk associated with a mismatch between the allowed DRP and the DRP for the AER determined benchmark efficient entity. This tracking risk will be minimised to the extent that a trailing average DRP is compensated for immediately; reflecting the fact that the AER determined benchmark efficient entity's efficient financing costs will reflect a trailing average DRP. However, under the AER's proposed transition the compensation for the DRP is initially based solely on an estimated DRP during a short window of time. There is, therefore, the potential for significant differences to arise between the AER determined benchmark efficient entity's DRP costs and the AER's proposed allowance.

27 March 2015.

Reference sources:

1. We note that the Reserve Bank of Australia ("RBA") adjusted estimate for the return on debt includes debt issued by businesses domiciled in Australia and issued in Australian dollars ("AUD"), United States dollars ("USD") and Euros. The data takes into consideration the cross currency basis swap to convert debt to AUD but it does not include counterparty execution, credit and capital costs
2. The proxy used for the risk free rate is the yield on 10-year Commonwealth Government Securities ("CGS"). As the AER determined benchmark efficient entity has no ability to hedge this rate, we use the 10-year Australian dollar interest rate swap as a proxy for the risk free rate in this report. The difference between the 10yr CGS and swap is the swap spread.
3. Mood's Investor Services October 9 2013 "UK Regulated Utilities: Cash Flow Vulnerable to Low Real Interest Rates". The report provides a useful summary of the hedge strategies used by UK regulated utilities.
4. "Transitional Arrangements for the Cost of Debt" Dr Martin Lally, 24 November 2014, page 21.
5. UBS
6. UBS, Dealogic
7. "Transitional Arrangements for the Cost of Debt" Dr Martin Lally, 24 November 2014, page 21.
8. The US 144a market generally requires issuance of US\$500m or more in a single tranche. There is no requirement for financial covenants. The US Private Placement market allows for customised tranche sizing, smaller issuance across several tenors but it does require financial covenants.
9. AusNet Services Debt Securities Information
<http://www.ausnetservices.com.au/None/Debt+Securities+Information+Folders.html>
10. "Transitional Arrangements for the Cost of Debt" Dr Martin Lally, 24 November 2014, page 31.
11. Basel III (or the Third Basel Accord) is a global, voluntary regulatory framework on bank capital adequacy, stress testing and market liquidity risk. The third installment of the Basel Accords (see *Basel I*, *Basel II*) was developed in response to the deficiencies in financial regulation revealed by the financial crisis of 2007–08. Basel III was supposed to strengthen bank capital requirements by increasing bank liquidity and decreasing bank leverage.
12. Risk.net "Deutsche Bank CRO: derivatives becoming loss leader" 23 October 2014
http://www.risk.net/risk-magazine/news/2377264/deutsche-bank-cro-derivatives-becoming-loss-leader?utm_term=&utm_content=Deutsche%20Bank%20CRO%3A%20derivatives%20becoming%20loss%20leader&utm_campaign=RN.All.DU.A.MF0600&utm_medium=Email&utm_source=RN.DCM.Scheduled_Updates
13. Evans and Peck, SEQ Retail Water Price Review, 4 February 2013

Attachment A – Terms of reference

The Expert will provide an opinion report that:

1. Describes the types of transaction and related costs incurred by entering interest rate swaps, including (where relevant):
 - (a) credit, execution and capital costs;
 - (b) tracking risk; and
 - (c) deferral risk.
2. Recommends an estimate of these costs that, when estimating the return on debt for the forthcoming access arrangement period using the hybrid transition, best satisfies the National Gas and Electricity Rules and Laws.

In preparing the report, the Expert will:

- A. only consider transaction and related costs in respect of hedging transactions;
- B. assume that the benchmark efficient entity adopted the hybrid approach under the previous rules, as per the AER's draft decision on JGN's proposal;
- C. consider whether the benchmark efficient entity has or would be expected to issue debt offshore;
- D. use robust methods and data, where relevant; and
- E. use the averaging period of 19 January to 16 February 2015 (inclusive) to estimate any prevailing parameter estimates needed to estimate the transaction and related costs.

Attachment B – CVs

PETER KINGSTON

Executive Director, Derivatives

Nationality:	Australian
Professional qualifications:	B. Comm, University of Melbourne
Years with UBS:	14
Years within the industry:	25+
Location	Sydney

RELEVANT EXPERIENCE

- Peter is a part of the Australian Derivatives team focusing on the derivative requirements for Australian counterparties
- Peter has 25+ years derivative experience working out of Melbourne, Sydney and Hong Kong—covering interest rate, currency, commodity and credit derivative markets in order to hedge risk throughout the region
- Since joining UBS in 2000, Peter has worked on transactions within the investment banking, debt capital markets, hybrid capital and private equity businesses. Some areas of specific emphasis during that time have included defined benefit superannuation, hedge accounting effectiveness, regulatory capital effectiveness for financial institutions, inflation hedging, derivative underwriting structures, AREIT risk management and distressed debt restructuring
- Infrastructure experience – part of teams involved in the NSW Ports consortium's acquisition of Port Botany and Kembla, NSW Government potential lease of the NSW electricity networks, Queensland Motorways acquisition of the CLEM7 tunnel, closeout of the Brisconnections and Cross City Tunnel debt & derivatives positions, initial submission on the cost for debt for Networks NSW submission to the Australian Energy Regulator. Most recently, he has provided advice to Networks NSW and Transgrid in relation to return on debt submissions to the AER.