

The Allen Consulting Group

June 2009

Final Report to the Queensland Competition Authority

The Allen Consulting Group

The Allen Consulting Group Pty Ltd
ACN 007 061 930, ABN 52 007 061 930

Melbourne

Level 9, 60 Collins St
Melbourne VIC 3000
Telephone: (61-3) 8650 6000
Facsimile: (61-3) 9654 6363

Sydney

Level 12, 210 George St
Sydney NSW 2000
Telephone: (61-2) 8272 5100
Facsimile: (61-2) 9247 2455

Canberra

Empire Chambers, Level 2, 1-13 University Ave
Canberra ACT 2600
GPO Box 418, Canberra ACT 2601
Telephone: (61-2) 6204 6500
Facsimile: (61-2) 6230 0149

Perth

Level 21, 44 St George's Tce
Perth WA 6000
Telephone: (61-8) 6211 0900
Facsimile: (61-8) 9221 9922

Online

Email: info@allenconsult.com.au
Website: www.allenconsult.com.au

Disclaimer:

While the Allen Consulting Group endeavours to provide reliable analysis and believes the material it presents is accurate, it will not be liable for any claim by any party acting on such information.

© The Allen Consulting Group 2009

Contents

<i>Executive summary</i>	v
Background	v
Chapter 1	1
<i>Brief and overview</i>	1
1.1 Background	1
1.2 The Brief	1
1.3 Methodology: selection of comparators	2
1.4 Outline of the study	3
Chapter 2	4
<i>Outlook for the Queensland coal industry</i>	4
2.1 Introduction	4
2.2 Export destinations	4
2.3 Export coal railings forecast	6
2.4 Conclusion	8
Chapter 3	9
<i>Gearing and credit rating</i>	9
3.1 Introduction	9
3.2 Capital structure theory	9
3.3 Gearing and credit rating methodology	10
3.4 Volatility of cash flows	11
3.5 Gearing	13
3.6 Credit Rating	17
3.7 Conclusion on credit rating	19
Chapter 4	21
<i>Current evidence on beta</i>	21
4.1 Introduction	21
4.2 Key characteristics of QR-Coal's operations	21
4.3 Previous beta analysis and regulatory precedents for QR-Coal	24
4.4 Regulatory precedents	25
4.5 Beta estimation methodology	26
4.6 Australian regulated energy businesses	28
4.7 US and Australian coal miners	29
4.8 US and Canadian rail	31
4.9 Australian and New Zealand transport	34
4.10 Conclusions	36

Chapter 5	38
<i>Current evidence on debt margin</i>	<i>38</i>
5.1 Introduction	38
5.2 Cost of debt	38
5.3 Risk Free Rate	38
5.4 Estimating the debt margin	39
5.5 Cost of Debt	40
5.6 Conclusion	44
<hr/>	
Appendix A	46
<i>Selection of comparators</i>	<i>46</i>
A.1 Sector and country selection	46
A.2 Additional filters	46
A.3 Selection of comparable entities	47
<hr/>	
Appendix B	50
<i>Bonds used for Bloomberg FVY estimates</i>	<i>50</i>
<hr/>	
Appendix C	52
<i>Descriptions of comparators</i>	<i>52</i>

Executive summary

Background

QR Network, a subsidiary of QR Ltd, is the manager of the below-rail infrastructure of the Central Queensland Region Coal Region and the Western System, which services coalmines that export through Brisbane. QR Network has submitted its 2009 draft replacement undertaking to the Queensland Competition Authority (QCA). In considering QR Network's reference tariffs, the QCA has engaged the Allen Consulting Group (ACG) to examine the key cost of capital parameters as an update to the work that we undertook in connection with QR's 2006 access undertaking, and to report whether there is evidence indicating that a movement away from the existing parameters is warranted.

The issues for review are: gearing level; credit rating; equity beta; and debt margin. Throughout the document we refer to QR's below rail coal haulage operations as 'QR-Coal'.

Key characteristics of QR-Coal's operations

Underpinning the cost of capital parameters that we have been tasked with reviewing, are the key distinguishing characteristics of QR-Coal that we identified in our previous work:

- **Relative competitiveness of the Queensland coal industry** – Queensland coal is cost competitive in the world market, and particularly the Asian market due to its geographical proximity. This makes demand for QR-Coal's services less sensitive to economic downturns compared with marginal (high cost) coal exporting countries;
- **Uncorrelated demand** – The demand for Australian coal has not been positively correlated with Australian economic growth over the past decade, partly because it has been influenced by industrialisation taking place in Asia and South America. The demand for coal that is fuelling that industrialisation process has been largely uncorrelated with Australian economic growth and the Australian stock market, and with world economic growth and the world stock market index.
- **Certainty of revenue stream** – Various factors make the revenue stream faced by QR-Coal relatively certain. Within regulatory periods, QR-Coal's revenue is protected through a revenue cap framework. This framework guarantees that QR-Coal will receive the forecast revenue for a given regulatory period, albeit potentially with a lag of up to two years. Demand for Queensland coal has demonstrated strong growth since 2006, and recent independent forecasters predict demand will continue growing strongly to 2030. In addition, around 30 per cent of QR-Coal's revenues are subject to take-or pay contracts, which will cushion some of the impact of demand changes spanning regulatory periods. The contracts written under the 2006 Access Agreement are 100 per cent take-or-pay, although these are a small proportion of total railings.

Gearing level

In our previous report we recommended a gearing level (debt/assets) of 55 per cent. Australian regulatory precedents for below-rail coal haulage services have been in the range of 50 per cent to 60 per cent, although in rail services more generally this range has been wider (35 per cent to 60 per cent). For example, in the recent case of the Western Australian freight network (WNR) and urban network (WAGR), a lower gearing level of 35 per cent was applied based on US railway benchmarks. In our previous report we reviewed regulatory precedents and the gearing levels of North American Class 1 railways, but concluded that ‘the relatively more stable cash flows [of] QR-Coal can be expected to be capable of supporting a higher debt proportion than the North American Class 1 railways.’¹

To inform our assessment of the level of gearing that QR-Coal could sustain, we compared the volatility of QR-Coal’s Earnings Before Interest, Tax, Depreciation and Amortisation (EBITDA) to that of other firms. More specifically, we measured the volatility of EBITDA over the period 2001-2007, expressed as an index with a base of 100 in 2001. The volatility measure we applied was the variance of the residuals (deviations of actual observations from the predicted value) for a regression of the natural log of time (measured in years) against the natural log of the EBITDA index. Table ES.1 below demonstrates that there was much higher volatility among the North American railway businesses, Australasian transport businesses and US/Australian coal miners than QR-Coal. The Envestra gas distribution business had relatively stable cash flows, with a similarly low variance of EBITDA as QR-Coal over the period (0.003 compared with 0.004 for QR-Coal). With its relatively stable cash flows Envestra has been able to support a relatively high level of gearing (70 per cent), although the events of the global credit crisis have encouraged many firms with high gearing to de-gear to some extent. Its relatively low EBITDA variance is consistent with QR-Coal being able to support regulatory gearing of 55 per cent.

North American rail businesses are geared in a range of 17 per cent to 40 per cent, and most commonly in the range of 25 per cent to 30 per cent. US coal businesses have been geared lower, at approximately 20 per cent (but ranging from 5 per cent to 60 per cent), and Australian coal businesses have had even lower gearing (average of 13 per cent excluding Centennial Coal).

In the case of Australian transport companies, an average gearing level of 42 per cent has been supported, while a number of firms in that industry have been geared at levels of approximately 55 per cent (Macquarie Airports, Macquarie Infrastructure Group and Virgin Blue Holdings). We believe that QR-Coal is also capable of supporting a gearing level of 55 per cent, and that a business with the relatively stable EBITDA and other characteristics of QR-Coal would be likely to be geared in the range of 50 per cent to 60 per cent.

¹ ACG (May, 2005) *Queensland Rail – Coal: Financing Charges, Capital Structure and Debt margin*, Report to Queensland Competition Authority, pp.26-28.

Table ES.1

RELATIVE VOLATILITY OF EBITDA, 2001-2007

Industry	Gearing	Variance
Transport - Australia	44%	0.308
Transport – New Zealand	33%	0.076
Coal - US	26%	0.123
Coal - Australia	13%	0.162
Rail - US	30%	0.063
Rail - Canada	26%	0.016
QR-Coal		0.004
Envestra (Gas distribution)	70%	0.003

Source: Data from Bloomberg, Queensland Rail

Our review of regulatory benchmarks and current available evidence leads us to conclude that with respect to QR-Coal there is no compelling evidence to shift from the previously adopted gearing level of 55 per cent. On the contrary, the available evidence supports the proposition that a 55 per cent gearing level could be supported by QR-Coal.

Credit rating

In our previous report we recommended a credit rating of BBB+ for QR-Coal geared at 55 per cent. Again we find that there is little direct evidence based on close comparators to QR-Coal's business. While Qantas Airways and Macquarie Airports (geared at 45 per cent and 57 per cent respectively) have recent BBB+ and BBB- ratings respectively, they are not close comparators for QR-Coal's business. Most US coal companies have such volatile earnings that even though they are on average geared at only 26 per cent, they are generally rated in the range of BB- to BB+.

North American railways are rated from B+ (Kansas City Southern, which has uncharacteristically high gearing of 45 per cent and the highest share of industrial/automotive traffic) to A- for Canadian National Railway (which is geared at only 20 per cent and has a relatively higher share of agricultural traffic). However, the volatility of cash flows in these comparator businesses is higher than for QR-Coal, and hence unlikely to provide a reliable guide to QR-Coal's credit rating.

We consider that the regulated electricity transmission and distribution businesses provide the most reliable benchmark for QR-Coal, as both are regulated infrastructure businesses with relatively stable cash flows, and the appropriate rating at 60 per cent gearing has generally been assessed by regulators as BBB+. Having reviewed current evidence, we have not found any compelling evidence to shift from the assumption of a BBB+ rating for QR-Coal at 55 per cent gearing.

Equity beta

In our previous report we recommended a range for the equity beta of between 0.60 and 0.90 and a preferred value of 0.80 for QR-Coal geared at 55 per cent.² As in our previous reports, we have considered a number of comparators drawn from the railroad, coal mining and transport sectors. We consider that in general these sectors do not provide close comparators for a business like QR-Coal's, as they do not share the key characteristics outlined above. While domestic comparators are to be preferred, and there are problems associated with using international comparators, we have also considered North American railway companies and coal miners, as well as New Zealand transport businesses in order to broaden the sample.

QR-Coal's consultant, Synergies, has submitted that due to the fact that equity betas are subject to significant estimation error, statistical procedures such as t-statistics, R squared values, and standard errors (enabling generation of a 'confidence interval') should be applied. We agree with Synergies that beta estimates are subject to considerable estimation error. Moreover, in our view standard confidence intervals understate the true imprecision of beta estimates. However, in the case of QR-Coal's operations, the comparators are generally poor. Hence, the proposal of Synergies mechanically to relate the beta estimate to the confidence interval is not likely to be of value.³ While we agree with Synergies that beta estimation error means a cautious approach should be undertaken, and a beta point estimate should be chosen from the upper end of any identified range, we do not agree that an estimate should be drawn from the upper end of a range of beta estimates for firms that are not considered close comparators to the activities in question.

We do not think that coal mining companies are likely to be close comparators for QR-Coal. A key driver of risk in the coal mining industry is the high volatility of the coal price, which is a source of volatility that is not passed through to QR-Coal, as reflected in its relatively stable regulated revenue stream over the period 2000 to 2008. Indeed, we also found that the average volatility of Earnings Before Interest Taxes, Depreciation and Amortisation (EBITDA) of the comparator groups was on average significantly higher than for QR-Coal's operations. Such evidence relating to absolute cash flow volatility is not determinative in relation to systematic risk, but it is consistent with our view that QR-Coal's key characteristics provide relatively stable cash flows. If cash flows are very stable it is less likely there will be high covariance between the equity returns of a business and the returns on the market.

² We note for completeness that the value the QCA adopted reflected the upper bound of our range, 0.90.

³ Synergies Economic Consulting (August, 2008), *Review of QR Network's Cost of Equity*, pp.42-45.

Similarly, we do not think that the majority of the transport firms provide close comparators for QR-Coal. In transport services a key determinant of systematic risk is the degree to which the product being carried is sensitive to the economic cycle. US railways carry a significantly higher proportion of industrial materials and motor vehicles, and a much lower proportion of agricultural products than the Canadian railways. Railings of industrial products and motor vehicles would be expected to be more highly sensitive to the economic cycle, while railings of agricultural products are governed more by weather conditions that are not expected to be as closely tied to the economic cycle. We consider Canadian railways to be a better comparator for QR-Coal than US Class 1 railways, but they are still not a close comparator, as they carry a high proportion of goods that are highly sensitive to the Canadian economy and stock market. Therefore, we would expect the beta of QR-Coal to be lower than for Canadian railways.

Synergies submitted that there is a positive correlation between domestic GDP and world steel production (0.93 between 2001 and 2007), and between Australia's real GDP and the real GDP of major current and emerging Asian customers for Queensland coal in Japan (0.82), China (0.57) and India (0.55).⁴ We agree with Synergies that these correlations are high, but do not think that these correlations shed much light on QR-Coal's systematic risk. Rather, the more relevant information is the correlation between QR-Coal's cash flows and that of the Australia stock market or Australian GDP.⁵ Therefore, we examined the correlation of Queensland's annual coal exports (as a proxy for QR-Coal revenues) and annual total returns on the Australian AS200 stock market index and found a weak 0.137 correlation for the period from 1993 to 2007. Over the more recent period of 2000 to 2007 we found an even lower correlation of 0.096 between Queensland coal exports and Australian stock market returns. The correlations with Australian economic growth were similarly low, and correlations against the world stock market index (MSCI) and world economic growth were slightly negative.

Synergies considered that the only relevant comparators for QR-Coal's operations are railroads and coal companies, although it also considered that one of Canada's largest coal export terminals, Westshore Terminal, is 'an appropriate comparator to QR Network'⁶, and has stated that its handling charges are 'based on the volume of coal shipped through the terminal.'⁷ We have already discussed the relevance of coal miners and railroads above. Turning to Westshore Terminal, we note that Westshore's charges are also dependent on the coal price, and that a leading Canadian market analyst stated that Westshore is treated as a coal miner by the market.⁸ For this reason, while we have included Westshore in our group of comparators for completeness, we do not consider it to be a close comparator to QR-Coal.

⁴ Synergies (August, 2008), pp.52-54.

⁵ We note that while a low correlation between QR-Coal's cash flows and the Australian stock market may be consistent with a low beta, it is not by itself determinative of a low beta.

⁶ Synergies (August, 2008), p.52.

⁷ Synergies (August, 2008), p. 74.

⁸ The rise in the Port of Tauranga's and Westshore Terminal betas could also be a result of the period over which the beta were measured being clear of the dot-com bubble, which could have imparted downward bias to the beta estimate in 2004.

QR has also argued that it has high operating leverage (approaching 100 per cent), which in turn implies drives its systematic risk. We note that QR has estimated its operating leverage incorrectly, the correct measure being the proportion of its ongoing fixed expenditure requirements to its total cash flow (both in present value terms). Like many regulated businesses, QR-Coal’s revenue includes a large profit element (i.e., a large positive net cash flow) that reduces operating leverage, all else constant. We concluded last time that its operating leverage is similar to that of regulated energy networks, and note that QR-coal has not provided any new evidence to the contrary.

Unlike Synergies, we have included transport businesses in Australia and New Zealand as comparators, even though they too are not ideal comparators for QR-Coal. For example, our 2004 report included the Port of Tauranga in New Zealand, but we considered that after the dot-com ‘bubble’ it was not a close comparator to QR-Coal, since the proportion of revenue accounted for by container traffic had grown strongly and was forecast to continue growing (as container trade is more strongly related to economic cycles).

While we estimated re-levered (to 55 per cent gearing) equity betas using both the Brealey and Myers and Conine approaches, and have reported both, in the text we refer to estimates using the former approach (which are generally slightly higher). Table ES.2 shows a significant degree of disparity in estimated betas, with the US coal sector being the highest (at 3.01) and the Canadian rail and Australian transport sectors being the lowest (at 0.94 and 1.02 respectively). We have already noted that the Canadian rail average is lower than for US rail, which we hypothesise may be due to the carriage of relatively more agricultural products, and less industrial products, or it might simply be the result of estimation error.

Table ES.2

SUMMARY: RAW AND RE-LEVERED EQUITY BETA (55% GEARING), 2004-2008

Industry	Raw equity beta	Gearing	Re-levered Equity Beta	
			Brealey - Myers	Conine
Coal – US	1.76	21%	3.01	2.81
Westshore Terminal	1.31	0%	2.91	2.57
Coal - Australia	1.18	6%	2.44	2.18
Rail – US Class 1	1.21	28%	1.91	1.86
Rail – Canada	0.57	24%	0.94	0.87
Transport - Australia	0.80	42%	1.02	0.99
Transport – New Zealand	0.99	29%	1.50	1.41

Source: Data from Bloomberg Note: Coal-Australia excludes Centennial Coal, which was a marked outlier (with a measured beta of approximately zero)

We also compare the characteristics of QR-Coal with those of Australian regulated electricity and gas transmission and distribution businesses, concluding that the QR-Coal's characteristics suggest an equity beta that should be broadly similar to the beta of the regulated energy businesses. Taking account of these relativities, and the other evidence we have reviewed, it is our opinion that there is no persuasive evidence to depart from our previous recommendation of a range for the levered equity beta of between 0.60 and 0.90 (and a preferred value of 0.80, at the upper end of our range). While we consider that the direct evidence supporting a precise value for the equity beta is not strong, given the lack of appropriately close comparators for the business operations of QR-Coal, in our opinion the available evidence does not support an equity beta for QR-Coal that is different to the range and preferred value that we recommended last time.

Debt margin

The estimation of the debt margin has been made more difficult by the high volatility and low liquidity observed in the debt markets due to the global financial crisis.⁹ Low rated, long dated corporate bonds do not exist in Australia, which requires that a judgement be made about the appropriate debt margin for a 10 year BBB+ rated bond. In addition, the two services that have been used by Australian regulators to predict the yield for 10 year, BBB+ debt – the Bloomberg and CBASpectrum services – are currently predicting very different yields.

- As at 9 April 2009 (adding 12.5 basis points for debt raising transaction costs) we estimate a debt margin of 358 basis points, based on the extrapolated Bloomberg fair value yield for a 10 year BBB+ rated bond relative to 10 year Commonwealth Government Securities.¹⁰
- In contrast, the CBA Spectrum service predicts a yield of 688 basis points for the same debt.

The fact that CBA Spectrum and Bloomberg are currently providing such divergent predictions of fair value yields is of substantial concern, and logically implies that it has become much more difficult to predict debt margins in the current market. Moreover, what is known publicly about the methods applied by the services does not allow a conclusion that one is unambiguously correct and that the other is unambiguously incorrect (in assessing the estimates of Bloomberg and CBA Spectrum we have been constrained by the proprietary nature of the methodologies applied by these services). Our analysis suggests that the CBASpectrum method is likely to overstate the fair value yields at the present time (this is because the values that it takes as the current yields on actual bonds are much higher than those reported by Bloomberg, and we have confirmed that the latter are derived from actual trades from a number of sources), whereas the Bloomberg service may predict yields that are too low (this is because it excludes outliers, almost all of which currently sit above its fair value curve).

⁹ What is being estimated is the cost of debt expressed as the margin over the risk free rate. That is, the cost of debt is simply the debt margin added back onto the risk free rate.

¹⁰ As Bloomberg does not currently report a predicted yield for a 10 year BBB rated corporate bond, we extrapolated based on the Bloomberg differential between an A-rated 8 year bond and the 10 year A-rated bond.

The pricing of the 5 year BBB+ Tabcorp bond that has recently come to the market, also indicates that the CBA Spectrum BBB+ curve is predicting a fair value yield that is likely to be too high, but also provides evidence that the Bloomberg fair value yield is too low. On the other hand, our discussion with bond traders indicates that regulatory risk surrounding Tabcorp has increased its yield over the yields required by bond investors in industry sectors not facing such risks. A problem that is common to both the CBA Spectrum and Bloomberg fair value yields for Australia is that they ignore the potentially important impact of industry sector.

Taking account of the uncertainties associated with bond yield estimation in the current market, we consider that the truth is likely to lie somewhere between the CBA Spectrum and Bloomberg curves, and have looked at the US market to get extra information. In particular, we have also constructed proxy 10 year BBB+ yields by observing the margin paid for US BBB+ debt over the US government bond rate, the yield on US AAA-rated debt and the US interbank swap rate, and then applied the three observed margins in the Australian context (that is, the estimated margins have been added to the Australian government bond rate, AAA yield and the Australian swap rate, respectively). The proxy yields that are calculated using this method imply margins over the risk free rate calculated above of 418, 420 and 458 basis points respectively (including an allowance for transaction costs of 12.5 basis points).

Considering the evidence discussed above, we consider that the cost of debt is likely to be between the estimate provided by the Bloomberg service (albeit, probably above this), but probably not above the cost that is provided by the highest of the margins estimated with reference to the US market. This implies a range of between 358 and 458 basis points (including an allowance for transaction costs), and would recommend the selection of a margin from towards the upper end of this range (we note again our concern that Bloomberg may understate yields).

We recommend selecting a margin from towards the upper end of this range, noting our concern that Bloomberg may understate current yields. We do not recommend using CBASpectrum to set the upper end of any range given that it currently is predicting yields that exceed by a large extent the majority of the observed Australian bond yields.

Considering a range that also draws on US debt market relativities is an approach that we would recommend in the current climate of global financial crisis, but it is not an approach that should necessarily be followed at a future review if there is more reliable bond market data on which to base estimates.

Chapter 1

Brief and overview

1.1 Background

QR Ltd is owner, and QR Network (a subsidiary of QR Ltd), is the manager of the below-rail infrastructure of the Central Queensland Coal Region (including the Goonyella, Blackwater, Newlands and Moura systems) and the Western System, which services coal mines that export through Brisbane. QR Network has submitted its 2009 draft replacement undertaking to the Authority, which has included material dealing with cost of capital issues.

In considering QR Network's reference tariffs, the Authority will need to assess whether QR Network's proposed Weighted Average Cost of Capital (WACC) is reasonable. In the context of QR's current access undertaking, the Authority comprehensively addressed a range of matters about the WACC raised by QR and other stakeholders and engaged the Allen Consulting Group ("ACG") as well as other advisers to provide estimates of key cost of capital parameters.

1.2 The Brief

We have been re-engaged to provide the Queensland Competition Authority ('the Authority') with a report that updates certain cost of capital parameters for the Queensland Below-Rail Network taking account of current market conditions. The Brief requires us to review and update estimates for the following key cost of capital parameters:

- Gearing and credit rating;
- The equity beta; and
- Debt margin.

More specifically, the QCA has requested us to:

- Review previous advice provided to the Authority regarding estimates of these parameters;
- Update the previous advice to reflect current capital market conditions, and/or new research; and
- Based on the updated advice, provide a detailed recommendation for each parameter estimate, including any relevant benchmarks and detailed reasoning.

Finally, we have been asked to provide a commentary on new issues identified by the QCA as having been raised in submissions made by QR-Coal's consultants, Synergies Economic Consulting (Synergies) and CEG.¹¹

¹¹ Synergies (August, 2008); and CEG (2008), *Final Report: Cost of debt and capital raising costs*.

1.3 Methodology: selection of comparators

A key part of the methodology applied in this report is to establish a set of comparator firms that can be used as reference points when considering the benchmark cost of capital parameters for QR-Coal. The ideal comparator for QR-Coal's operations would be a stock exchange-listed business that undertakes the same below-rail coal haulage services as QR. We have undertaken a search for comparable entities using the Bloomberg search functions, but have been unable to find a single business for which the major activity is below-rail services for the haulage of bulk commodities.¹² Hence, the 'comparators' that are referred to in this study are generally weak comparators for QR-Coal.

Our comparator selection methodology is outlined in greater detail in Appendix A below. As in our earlier reports, we have reviewed evidence for the following industries:

- Railroad;
- Coal; and
- Transport.

We also make reference to studies examining the energy transmission and distribution sectors, as we believe that these industries are a useful benchmark of comparison with QR-Coal's operations. This is because energy transmission and distribution is subject to similar forms of price regulation to QR-Coal, are not fully exposed to Australia's stock market and economic cycles, and are subject to a relatively low level of stranding risk compared with most industries. Since there has been a significant amount of analysis undertaken for this sector in connection with the Australian Energy Regulator's (AER) recent review of WACC parameters, we have not attempted to re-estimate the parameters for this sector directly. Instead we have relied on the recently published studies.

To increase the number of observations we have referred to international data, but to maintain relative comparability we have limited the international comparators to countries that have similar financial, governance and institutional frameworks to Australia, i.e.:

- United States
- Canada
- New Zealand

Applying an additional filter of a market capitalisation above \$200 million produced a sample of 50 firms. Since we needed 61 months of price data in order to obtain 60 months (5 years) of returns data for beta estimation, the final comparator sample reduced to 34 firms. Descriptions of the activities of these comparator firms are contained in Appendix C.

¹² While Westshore Terminal, located in Vancouver, Canada, is a coal export terminal, its contracting arrangements make it a poor comparator for QR-Coal. We discuss this issue further in Box 4.1 below.

1.4 Outline of the study

The study is structured as follows:

- Chapter 2 provides an overview of the Queensland coal industry, which is QR-Coal's only customer, and examines independent forecasts of the future growth of Queensland's export coal trade to 2030.
- Chapter 3 looks at precedents and evidence relating to the gearing level and credit rating of QR-Coal. Most previous regulatory determinations have applied a range of gearing from 50 per cent to 60 per cent to below-rail businesses. We could not find evidence that would support a shift away from the currently assumed 55 per cent gearing level. In addition, we could not find any compelling evidence to shift away from the previous assumption of a BBB+ credit rating.
- In Chapter 4 we review previous studies examining the beta of QR-Coal, and regulatory precedents that have been applied to rail businesses in Australia. This chapter also examines current evidence relating to QR-Coal's beta, which is essentially an update of the work that we undertook in the course of the previous review. Our conclusion is that a shift away from the currently applied (55 per cent geared) equity beta of 0.80 is not warranted by the data. While direct evidence of the beta for the QR-Coal business is poor, reflecting the dearth of close comparables for QR-Coal's business, we have found no credible evidence that would indicate that a different beta could be supported.
- Finally, in Chapter 5 we examine current evidence on the debt margin, which is hampered by the volatility in interest rates that has been experienced through the credit crisis, and more importantly by the lack of observations of bonds with greater than 4 years left to maturity. We conclude that in the current environment the Bloomberg service (using extrapolation from its 8 year fair value yield) provides a closer estimate of the fair value yield on a 10 year maturity BBB+ bond, but a range of yields should be considered in the current market.

Chapter 2

Outlook for the Queensland coal industry

2.1 Introduction

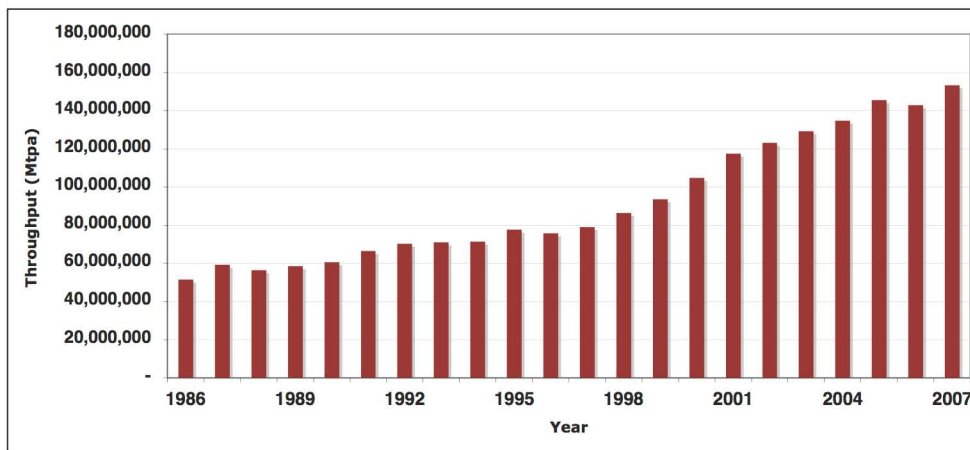
In this chapter we review the outlook for the Queensland coal industry, which is the key determinant of future demand for the services of Queensland Rail’s below rail coal haulage services, as well as the changes in export coal destinations over time. We rely on historical data from the Queensland Department of Natural Resources, and forecasts made by QCA’s specialist consultants, Wood MacKenzie. This review is useful in gaining an understanding of several of the risks faced by QR-Coal in terms of potential:

- Earnings volatility risk (which influences gearing and credit rating); and,
- Systematic risk (due to the country-mix of marginal demand for Queensland export coal, which influences beta).

2.2 Export destinations

Australia is the largest exporter of coal in the world, supplying both thermal and metallurgical coal to export markets. Figure 2.1 shows that total Queensland coal exports have increased from 51.6 Mtpa in 1986 to 153.3 Mtpa in 2006-07.

Figure 2.1
QUEENSLAND COAL EXPORTS 1986-2007

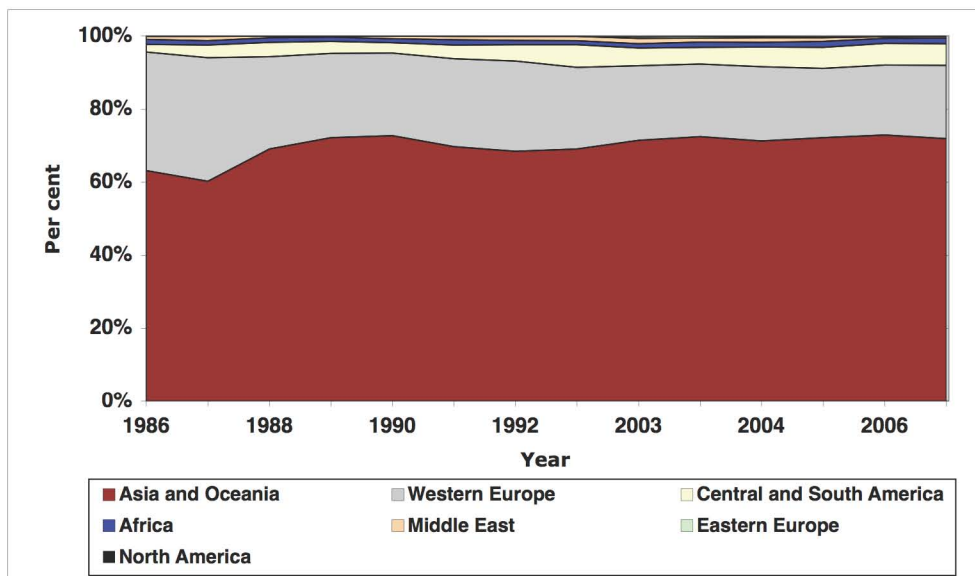


Source: Data from Queensland Department of Natural Resources (2009)

Figure 2.2 shows that the share of Queensland’s total coal exports that goes to Asia has remained relatively constant at approximately 70 per cent since the late 1980s. South America, in particular Brazil, has been growing in importance, whereas Western Europe has declined.

Figure 2.2

QUEENSLAND: REGIONAL COAL EXPORT MARKET SHARES

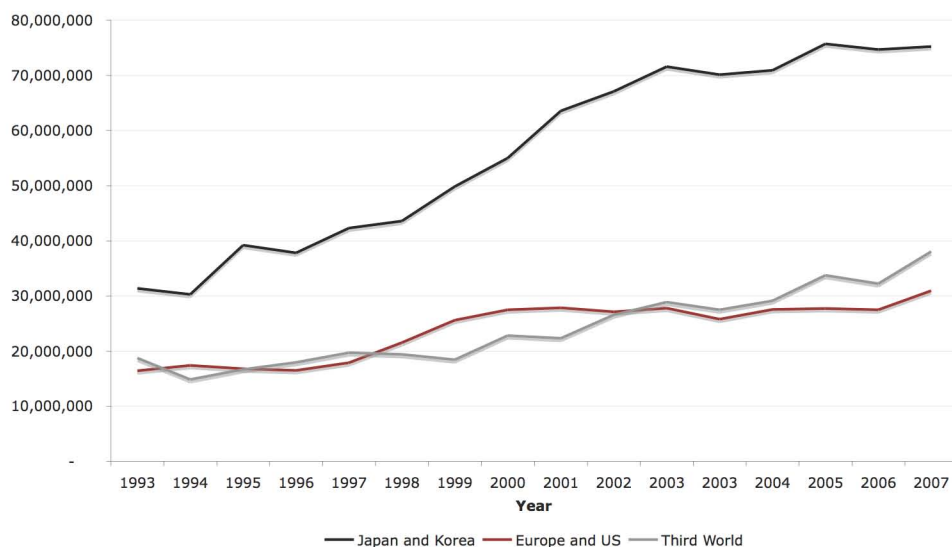


Source: Data from Queensland Department of Natural Resources, Mines and Energy

In Figure 2.3 the total exports of coal from Queensland have been divided by region into Japan and Korea, Europe and US (of which the US is very minor) and the Developing Economies (which includes China, India, Brasil and other developing countries). Exports to Europe reached a plateau around 2000, while exports to Japan and Korea continued growing strongly. More recently, export growth to the Developing Economies has significantly outpaced growth to Europe and Japan/Korea. Growth of coal exports to developing countries is driven by fundamental industrialisation and urbanisation.

Figure 2.3

DEMAND FOR QUEENSLAND EXPORT COAL BY REGION, 1993-2007 (TONNES)



Source: Data from Queensland Department of Natural Resources, Mines and Energy

2.3 Export coal railings forecast

The Central Queensland Coal Region (CQCR) railings forecast submitted by Queensland Rail shows that from financial years 2009 to 2013, QR-Coal's export railings are expected to experience 30.2 per cent growth, with annual growth rates ranging from 11.9 per cent at the start of the period to zero per cent at the end. Consultants Wood MacKenzie were retained by the QCA, and reported in August 2008 based on observation of the unfolding global financial crisis. They forecast slightly lower growth based on the outlook for global demand and assumptions relating to the competitiveness of Queensland coals in the export market. However, both views indicate robust growth for QR-Coal.

Table 2.1

QR EXPORT FORECAST (MILLION TONNES)

CQCR	2008-09	2009-10	2010-11	2011-12	2012-13
QR Export	188.8	211.2	222.2	245.8	245.8
Annual % change		11.9%	5.2%	10.6%	0.0%
WoodMac Exports	174.8	200.2	216.0	226.1	230.9
Annual % change		14.5%	7.9%	4.7%	2.1%

Source: MacKenzie 's Review of Coal Rail Forecast, October 2008

Wood MacKenzie's Review of coal railings forecasts indicates that the demand of metallurgical coal will be relatively strong both in the short and long term. World demand for metallurgical coal imports is forecast to grow at a compound average growth rate (CAGR) of 3.9 per cent to 2025, with Asian countries as the main demand drivers during the period to 2012-13. On the other hand, US, European and Japanese demand is forecast to remain flat on expected low GDP growth, an aging population, mature steel industries, and increasingly, carbon emissions regulations¹³.

Wood MacKenzie has stated that although Australia is in a good position to enjoy the benefits of Asian demand growth, it may face competitive pressures from new sources of metallurgical coals. Whilst China's demand for coal is increasing, it is expected to be met largely from new Mongolian mines. Wood MacKenzie has assumed that Australia will also be competing in India and China with coal from Mozambique and Indonesia's Central Kalimantan province prior to 2013.

As shown in Table 2.2 below, the most recent US Energy Information Administration (EIA) publication on the International Energy Outlook on Energy (2008) has forecast an increase in Australia's dominance of world coal trade in the long run.¹⁴ The reasons that Australian coal is forecast to increase in dominance include:

- Relatively low cost production (being largely open cut and relatively close to the coast);

¹³ Wood MacKenzie (October, 2008), *Review of Coal Railings Forecast*, Prepared for the QCA.

¹⁴ Being published in 2008, this report would have reflected views on the impact of the global financial crisis. Although it is not fully up-to-date, we could not find a more recent independent source.

- Relatively close to expanding markets, particularly to industrialising countries Asia; and,
- Large long-term reserves of export coal.

Table 2.2

WORLD COAL FLOWS BY IMPORTING AND EXPORTING REGIONS- REFERENCE CASE FOR AUSTRALIAN EXPORTS (QUADRILLION BTU)

Coal	Destination	2006	2015	2030			
Coking	Europe	0.82	0.76	0.89			
	Asia	2.31	3.01	3.79			
	Americas	0.21	0.36	0.45			
	Total	3.33	4.13	5.13			
	CAGR		2.4%	1.8%			
Steam	Europe	0.10	0.03	0.09			
	Asia	2.57	4.77	5.39			
	Americas	0.18	0.00	0.04			
	Total	2.85	4.80	5.51			
	CAGR		5.9%	2.8%			
Total			Shares:	Shares:	Shares:		
	Europe	0.91	14.7%	0.79	8.8%	0.97	9.1%
	Asia	4.88	79.0%	7.78	87.1%	9.18	86.3%
	Americas	0.39	6.3%	0.36	4%	0.48	4.5%
	Total	6.18	100%	8.93	100%	10.64	100%
	CAGR			4.2%		2.3%	

Source: Energy Information Administration (June 2008) International Energy Outlook 2008, Official Energy Statistics from the US Government, Chapter 4, See <http://www.eia.doe.gov/oiaf/ieo/coal.html>

The EIA forecasts Australian coal exports to experience strong growth over the period from 2006 to 2030, with a significant portion being contributed by growth in exports to the Asian region. For coking (i.e. metallurgical) coal the world export market is expected to grow by 39 per cent (1.8 per cent CAGR) between 2006 and 2030 while growth of Australian coking coal is expected to grow by 54 per cent (2.78 per cent CAGR). For steaming coal the respective growth rates are 43.5 per cent and 93 per cent. The total percentage of coal exported to the Asian region is expected to increase from 79 per cent in 2006 to 87 per cent in 2015 and remain relatively stable to 2030. The IEA concluded:

Already the world's leading exporter of coal, Australia is projected to dominate future international coal trade. Australia continues to improve its inland transportation and port infrastructure to expedite coal shipments to international markets... Australia remains the primary exporter of metallurgical coal to Asian markets, supplying 75% of Asia's import demand for coking coal over the projection period.

2.4 Conclusion

The demand for Queensland's coal export industry remains strong. Australia is the world's dominant coal exporting nation, and is expected to retain its leading position over the next 20 years or more. Australia is expected maintain this strong position because of the relative efficiency (including geographic location close to Asia) of the Australian coal export industry. This implies resilience in the demand for Australian exports in the event of downturns in demand, since more marginal suppliers would be impacted before a low cost supplier such as Australia.

A key factor in Australia's past and future growth is the growth of exports to developing countries in Asia. Much of this growth to Asia is being driven by increasing steel production, however the growth in demand for steaming coal in Asia and South America is expected to become even more important over the coming decades. Future growth in Queensland's coal exports is likely to be driven by industrialisation and rising living standards in Asia and South America, rather than by growth in the developed economies of Europe and North America.

Chapter 3

Gearing and credit rating

3.1 Introduction

In our previous advice regarding QR-Coal, we recommended a gearing level of 55 per cent.¹⁵ In this chapter we review Australian regulatory precedents on the benchmark capital structures applied to regulated businesses such as energy, water, port and railways. We also consider empirical evidence on the volatility of cash flows experienced by QR-Coal relative to the comparator businesses, empirical gearing levels observed among the comparators, and associated credit ratings.

3.2 Capital structure theory

The term ‘capital structure’ refers to the proportions of debt versus equity that are used to finance the firm’s activities and investments. The idea of an optimal capital structure is one that maximises the enterprise value of the firm (i.e. the sum of debt and equity). Although the optimum capital structure is likely to be a range rather than a specific point, the calculation of a regulatory WACC requires a single number, which is the capital structure assumed by the regulator to be the best estimate of the optimal capital structure, taking account of the regulator’s objective to promote economic efficiency.

Modigliani and Miller (M&M), concluded that in a ‘perfect world’ in which debt and equity are taxed equally, there are no costs of bankruptcy, and no information asymmetries, the capital structure does not change firm value.¹⁶ The raw conclusion of the original M&M paper is not generally accepted as a realistic proposition, rather it is important in directing attention to the factors that are relevant in the determination of optimum capital structure. For example, in a ‘classical’ taxation framework debt is taxed at a lower rate than equity, which suggests that the value of the firm would be increased by increasing the debt component. The theoretical maximum increase in the market value of the firm (ignoring potential costs that are discussed further below) is given by:

$$\Delta V = t_c \Delta D$$

where the Greek ‘delta’ symbol (Δ) refers to ‘change’, V is enterprise value, t_c is the company tax rate and D is the amount of Debt.

¹⁵ ACG (November, 2004) *Queensland Rail – Coal: Financing Charges, Capital Structure and Debt Margin*, Report to Queensland Competition Authority.

¹⁶ Modigliani, F. and M.H. Miller (1958), “The Cost of capital: Corporation Finance and the Theory of Investment”, *American Economic Review*, Vol. 48, No.3, pp.261-297.

A US study found that the actual increase in the value of firms from adding debt finance was approximately 90 per cent of the value implied by the simple formula shown above. If so, adding \$100 million of debt with a company tax rate of 30 per cent would increase enterprise value by \$27 million. However, in Australia, dividend imputation complicates this conclusion. In theory, if dividend imputation were fully effective, then any double taxation of equity would be removed – and there would be no tax-related benefit from debt finance. This is a controversial issue, and empirical evidence estimates that the value of imputation credits ranges from zero, to virtually full value.

A second area where the M&M assumptions may be violated is with respect to the cost of bankruptcy. That is, as higher debt levels increase the chance of bankruptcy, they increase the probability that bankruptcy costs will be incurred. This will imply that any advantage derived from the tax benefit of debt, will be offset as the level of debt increases. Another reason that managers will favour lower debt levels is to maintain financial flexibility, so that the firm may be in a position to raise debt that could finance an unforeseen investment opportunity. Another theory relevant to capital structure is the suspicion of investors that firms with substantial free cash flows available to finance new projects will apply a lower level of scrutiny than is required to maximise shareholder value. On the other hand, taking on more debt could be seen as a positive signal to shareholders that shareholder value will be maximised.

Hence, optimal capital structure is determined by such factors as the business risk inherent to the firms in an industry, taxation and incentive effects, and the expected losses if default occurs. Other things being equal, in industries where firms have higher business risk (i.e. more volatile operating cash flows), firms would be expected to carry less debt.

3.3 Gearing and credit rating methodology

In assessing the credit rating for regulatory purposes, we also review previous regulatory determinations for businesses in the electricity, gas, water and rail sectors. While rail precedents might be considered the closest comparators, there are large differences in operational risks between different types of rail businesses. We consider that QR-Coal shares many common characteristics of regulated energy businesses, such as:

- Five year regulatory periods;
- A control over revenue;
- Relatively stable cash flows;
- Natural monopoly elements; and
- Inelastic demand with respect to price.

In addition, QR-Coal has take-or-pay contracts, and a revenue smoothing arrangement with the QCA (as do some energy transmission businesses), which provides stable cash flows.

When evaluating the risk that may arise from a firm's capital structure, and therefore the associated credit rating, credit rating agencies such as Standard & Poor's (S&P) consider both the business profile and financial profile of the company. If a company faces less risk in its operating environment (i.e. business profile), it will generally be able to sustain greater risk in its financial profile (e.g. higher gearing) for a given rating category. Typically, the business/operating risk of a business will focus on such factors as:

- Regulation – the nature and predictability of the regulatory framework;
- Markets – the outlook for the demand for the product or service, its correlation with the economic cycle and the diversity of the customer base;
- Operations – including the capacity, quality and efficiency of service;
- Competitiveness – how the cost of service compares against benchmarked competitors; and,
- Management quality.

A credit ratings agency would assess the factors above to determine a business profile for the rated entity. In addition, it would review the entity's financial profile, based on the following factors:

- Cash flow analysis, in particular Funds Flow from Operations Interest Cover (FFO/Interest Cover) and future capital expenditure requirements;
- Financial flexibility including the firm's ability to accomplish its financing program without damaging creditworthiness; and
- Profitability as measured by return on average equity, pretax return on average capital and operating margins.

The cash flow analysis undertaken by a ratings agency will look at how volatile the cash flows of the business are relative to the fixed cash commitments such as interest payments, and payments that might be difficult to forestall without affecting the cash generating capacity of the business (eg. capital expenditure). The higher is the gearing of a business, other things being equal, the higher will the fixed cash commitment be, and the lower the credit rating. That is, with higher gearing there will be a higher probability of default. Therefore, in assessing the optimal capital structure, it is important to review the stability of cash flows that could be applied to debt service.

3.4 Volatility of cash flows

Table 3.1 displays estimates of the volatility of cash flows among the comparator firms in the industry/country groups. Cash flow is defined as the index of Earnings Before Interest, Taxes, Depreciation and Amortisation (EBITDA) from a base of 100 in 2001 up to 2007. EBITDA is an estimate of the cash that will be available to service debt, and using an index normalises for different business sizes.

The volatility measure we used was the variance of the residuals (deviations of actual observations from the predicted value) for a regression of the natural log of time (measured in years) against the natural log of the EBITDA index.¹⁷ This measure accommodates differential EBITDA growth rates of businesses, so that a rapidly expanding business, where EBITDA is also expanding smoothly, could have a low variance similar to that of a low EBITDA growth business.

Table 3.1 below shows that compared with QR-Coal, whose variance was 0.004, there was much higher volatility among the North American railway businesses, Australasian transport businesses and US/Australian coal miners. The Envestra gas distribution business had relatively stable cash flows over the period, with a similarly low variance of EBITDA as QR-Coal over the period (0.003 compared with 0.004 for QR-Coal). With its relatively stable cash flows Envestra has been able to support a relatively high level of gearing (70 per cent), although the events of the global credit crisis have encouraged many firms with high gearing to de-gear to some extent.

Table 3.1

RELATIVE VOLATILITY OF EBITDA, 2001-2007 (VARIANCE)

Industry	Gearing	Variance
Transport - Australia	44%	0.308
Transport – New Zealand	33%	0.076
Coal - US	26%	0.123
Coal - Australia	13%	0.162
Rail - US	30%	0.063
Rail - Canada	26%	0.016
QR-Coal		0.004
Envestra (Gas distribution)	70%	0.003

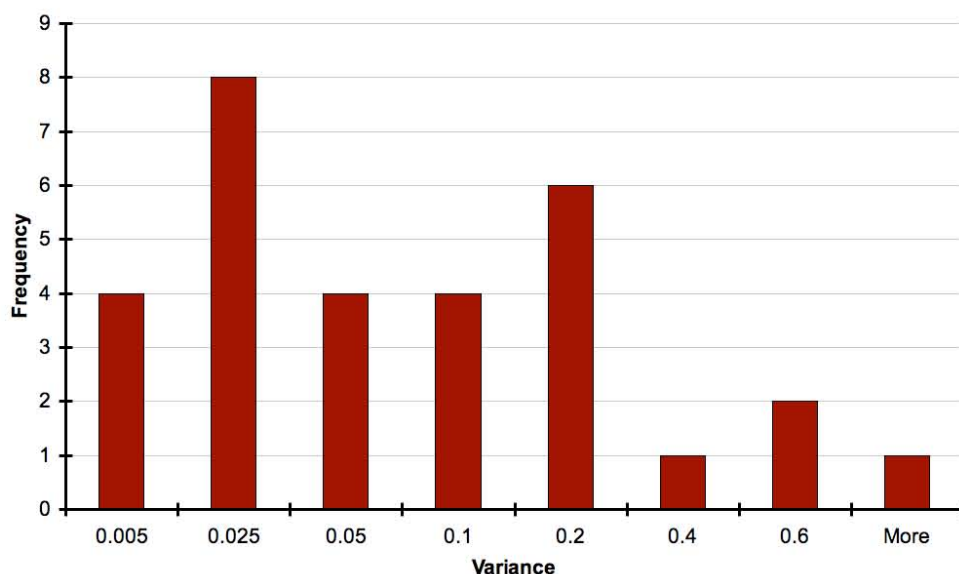
Source: Data from Bloomberg, Queensland Rail

Figure 3.1 shows the histogram of relative volatility among the comparator group, including QR-Coal over the period 2001-2007. QR-Coal was one of the four businesses with an EBITDA volatility of less than 0.005. This places QR into a low cash flow variability category compared with the comparator group. Some firms in the group had a variance exceeding 0.6. Most companies in the comparator group had volatility of 5 to 120 times greater than QR-Coal.

¹⁷ The actual formula applied to the natural log-natural log regression residuals was:

$$\text{Variance} = \frac{\sum (x_i - x_e)^2}{n - 1}$$
 where, x_i is the actual annual observation and x_e is the predicted value from the regression.

Figure 3.1
HISTOGRAM OF RELATIVE EBITDA VOLATILITY FOR QR-COAL AND ITS COMPARATORS



Source: Data from Bloomberg, Queensland Rail

3.5 Gearing

Regulatory precedents - gearing

A comparison of regulatory decisions in 3.2 indicates that there has been a high degree of consistency in benchmark capital structures in industries outside of rail. There has been a consistent application of 60 per cent gearing in the energy sector, and a range of 50 to 60 per cent gearing level in the water industry. QR- Coal has take-or-pay contracts and a revenue cap arrangement with the QCA, which provide the company with relatively stable cash flows that are closer to the stability shown by regulated energy transmission and distribution businesses.

Table 3.3 indicates that regulators have maintained a benchmark capital structure ranging from 50 to 60 per cent for coal rail businesses, although a lower gearing assumption has at times been made for freight and passenger rail.

Table 3.2

REGULATORY GEARING DECISIONS: ELECTRICITY, GAS AND WATER

State	Regulator	Year	Industry	Gearing (%)
QLD	QCA	2001	Electricity	60
Federal	ACCC*	2002	Electricity	60
Federal	ACCC	2003	Electricity	60
ACT	ICRC	2004	Electricity	60
NSW	IPART	2004	Electricity	60
WA	ERA	2005	Electricity	60
SA	ECOSA	2005	Electricity	60
Federal	AER	2008	Electricity	60
QLD	QCA	2001	Gas	60
Federal	ACCC	2003	Gas	60
SA	ECOSA	2006	Gas	60
NSW	IPART	2008	Gas	60
NSW	IPART	2003	Water	60
QLD	QCA	2003	Water	50
ACT	ICRC	2004	Water	60
TAS	GPOC	2004	Water (Bulk)	50
NSW	IPART	2006	Water (Bulk)	60
NSW	IPART	2006	Water (Retail)	60
TAS	GPOC	2007	Water	50
ACT	ICRC	2008	Water	60
VIC	ESC	2008	Water	60

Source: Data from regulatory decisions

Table 3.3

REGULATORY GEARING DECISIONS: RAIL

State	Regulator	Sub-Sector	Year	Industry	Gearing (%)
NSW	IPART	Coal	1999	Rail Access	50 - 60
Federal	ACCC	Freight	2001	ARTC	60
WA	ORAR	Pax	2003	WAGR (urban)	55
WA	ORAR	Freight	2003	WNR (freight)	55
NSW	IPART	Coal	2005	Rail Access	50 – 60
VIC	ESC	Grain	2006	PN, VicTrack	50
Federal	ACCC	Freight	2008	ATRC	50
WA	ERA	Freight	2008	WNR (Freight)	35
WA	ERA	Pax	2008	WAGR (Urban)	35

Source: Data from regulatory decisions

Current market evidence – gearing

In reviewing current market evidence relating to gearing, we are faced with the problem of a lack of close comparator businesses having the characteristics of QR-Coal’s below rail coal haulage business. The group of Australian transport businesses shown in Table 3.4 is found to have a relatively high level of gearing (44 per cent), with a number of businesses (Qantas, Macquarie Infrastructure Group, Macquarie Airports and Virgin Blue Holdings) having gearing levels in the range of 52 per cent to 57 per cent. The average is pulled down by Toll Holdings (22 per cent).

Table 3.4

TRANSPORT: AUSTRALIA, NEW ZEALAND AND CANADA, 2004-2008

	Gearing (TD/(TD + MC))
Australia:	
Transurban Group	0.39
Qantas Airways Ltd	0.53
Toll Holdings Ltd	0.22
Macquarie Infrastructure Group	0.52
Macquarie Airports	0.55
Australian Infrastructure Fund	0.41
Virgin Blue Holdings Ltd	0.57
Mermaid Marine Australia Ltd	0.34
	0.44
New Zealand:	
Auckland International Airport Ltd	0.23
Air New Zealand Ltd	0.45
Port of Tauranga Ltd	0.20
Infratil Ltd	0.48
Mainfreight Ltd	0.19
Freightways Ltd	0.27
Lyttelton Port Co Ltd	0.20
	0.32

Source: Data from Bloomberg

In Table 3.5 a similar picture emerges in respect of railroads in the United States and Canada. The United States Class 1 railroad companies have exhibited an average gearing level of 30 per cent over the last five years (2004-2008), while the gearing of Canadian railways has been slightly lower at 26 per cent. This is below the average 40 per cent gearing level of the US market. The levels of gearing displayed by the Australian transport businesses have been above the general level of gearing among listed businesses, which has been approximately 33 per cent during that period, while Australian coal businesses have had significantly lower than average gearing.¹⁸

¹⁸ Based on the ASX200 index companies over the period from 2002 to 2008, the average market gearing was 33 per cent. Market gearing of the US S&P 500 index for the same period was 40 per cent.

Table 3.5

COAL: UNITED STATES AND AUSTRALIA, 2004-2008

	Gearing (TD/(TD+MC))
United States:	
Peabody Energy Corp	0.21
Consol Energy Inc	0.10
Arch Coal Inc	0.24
Massey Energy Co	0.35
Walter Industries Inc	0.58
Alliance Resource Partners LP	0.15
Natural Resource Partners LP	0.20
Penn Virginia Resource Partners LP	0.24
	0.26
Australia:	
Coal & Allied Industries Ltd	0.06
New Hope Corp Ltd	0.02
Centennial Coal Co Ltd	0.35
Gloucester Coal Ltd	0.10
	0.13

Source: Data from Bloomberg

Table 3.6

RAILROADS: UNITED STATES AND CANADA, 2004-2008

	Gearing (TD/(TD+MC))
United States:	
Union Pacific Corp	0.25
Kansas City Southern	0.45
Burlington Northern Santa Fe Corp	0.24
CSX Corp	0.35
Norfolk Southern Corp	0.28
Genesee & Wyoming Inc	0.23
	0.30
Canada:	
Canadian Pacific Railway Ltd	0.32
Canadian National Railway Co	0.20
	0.26

Source: Data from Bloomberg

Conclusions – gearing

We have found that within the transport, coal and railway sectors, almost every business has higher EBITDA volatility than QR-Coal, which indicates that, other things being equal, QR-Coal is capable of carrying a higher level of debt than the average for those sectors, where average gearing ranges from 13 per cent to 44 per cent. We also found evidence of a number of Australian transport sector businesses with gearing levels in the range of 52 per cent to 57 per cent that experience greater EBITDA volatility than QR-Coal. On the other hand, we also found businesses with EBITDA volatility that was similar to QR-Coal’s low volatility, which had gearing levels lower than 55 per cent.¹⁹

Australian regulators have almost unanimously applied 60 per cent gearing to regulated energy businesses. In the rail sector, the variation in assumed capital structures is small. Rail regulators have generally adopted a gearing level ranging between 50 and 60 per cent, and IPART applied a 50 to 60 per cent range for below-rail coal haulage in New South Wales.

Hence, our review of regulatory benchmarks and current available evidence leads us to conclude that with respect to QR-Coal there is no compelling evidence to shift from the previously adopted gearing level of 55 per cent. On the contrary, the available evidence supports the proposition that a 55 per cent gearing level could be maintained by QR-Coal.

3.6 Credit Rating

Regulatory precedents – credit rating

Table 3.7 displays regulatory precedents for credit ratings in the rail sector in Australia. We find that credit rating ranged from BBB to A, with gearing levels ranging from 35 per cent to 60 per cent. The most relevant precedent, is IPART’s decision on New South Wales below-rail coal haulage, which applied a credit rating range of BBB to BBB+, for a gearing level range of 50 per cent to 60 per cent.

Table 3.7

REGULATORY CREDIT RATING AND GEARING DECISIONS: RAIL

State	Regulator	Sub-Sector	Year	Industry	Gearing	Rating
WA	ORAR	Pax	2003	WAGR (urban)	55%	A
WA	ORAR	Freight	2003	WNR (freight)	55%	A
NSW	IPART	Coal	2005	Rail Access	50-60%	BBB-BBB+
Federal	ACCC	Freight	2008	ATRC	50	BBB
WA	ERA	Freight	2008	WNR (Freight)	35	BBB+
WA	ERA	Pax	2008	WAGR(Urban)	35	A

Source: Data from regulatory decisions

¹⁹ These two businesses were Lyttelton Port Corporation and Auckland Airport.

Empirical evidence – credit rating

Energy transmission and distribution businesses

The level of volatility displayed by regulated energy networks is more likely to be closer to that of QR-Coal than to the other comparator groups we have reviewed, as was reflected in our volatility estimates above. Even in the regulated energy transmission and distribution sector, where there are a number of firms that are close comparators to the reference entity, it is not straightforward to assess the appropriate credit rating at the benchmark level of gearing. It is necessary to sift through the available comparators to derive a group of ‘closest comparators’, whose credit rating is not influenced by government ownership or a parent-subsidiary relationship. In a recent analysis of the appropriate credit rating for a ‘benchmark efficient network service provider’, we concluded that there is no evidence to indicate that a shift from a BBB+ rating is warranted, and this view has recently been endorsed by the AER.²⁰

Australasian transport sector

Table 3.8 displays the credit ratings of the Australasian comparator firms as recorded by Bloomberg. The Australian and New Zealand transport company ratings range from BBB- for Macquarie Airports (with gearing of 55 per cent) to A for Auckland International Airport (with gearing of 23 per cent). Within the Australasian transport sector there is a general relationship that associates lower gearing with higher ratings. This general relationship is also apparent within the other industry sectors.

Table 3.8

CREDIT RATINGS OF COMPARATOR FIRMS: AUSTRALASIAN TRANSPORT

	Gearing	Rating	Date
Macquarie Airports	0.55	BBB-	20/8/2008
Qantas Airways	0.53	BBB+	21/5/2007
Port of Tauranga	0.20	BBB+	21/11/2001
Auckland International Airport	0.23	A	6/5/2008

Source: Data from Bloomberg

North American rail

North American railways, shown in Table 3.9 below, are rated lower than Australasian transport companies for the same level of gearing, and are generally rated higher when gearing is lower. The average rating for North American rail is BBB flat, but more highly geared businesses such as CSX Corp and Kansas City Southern are rated lower, with the latter attracting a low rating of B+. In the next chapter we show a breakdown of railings by the North American railways. Kansas City Southern is shown to have a particularly high component of industrial and vehicle shipments, which tend to be cyclical. In addition, Kansas City Southern’s EBITDA has been growing very strongly over the past 7 years.

²⁰ See ACG (January, 2009), *Credit rating for the ‘benchmark efficient network service provider: Commentary on the AER’s ‘Explanatory Statement’*, Report to Grid Australia, Energy Network Association and Australian Pipeline Association; and AER (May, 2009), *Final Decision, Electricity transmission and distribution network service providers – Review of the weighted average cost of capital (WACC) parameters*, p.5.

Table 3.9

CREDIT RATINGS OF COMPARATOR FIRMS: NORTH AMERICAN RAILWAYS

	Gearing	Rating	Date
Kansas City Southern	0.45	B+	8/2/2007
CSX Corp	0.35	BBB-	8/5/2007
Canadian Pacific Railway Ltd	0.32	BBB	28/4/2008
Union Pacific Corp	0.25	BBB	29/5/2002
Burlington Northern Santa Fe Corp	0.24	BBB	15/2/2007
Norfolk Southern Corp	0.28	BBB+	18/7/2005
Canadian National Railway Co	0.20	A-	18/7/2005

Source: Data from Bloomberg

US coal

The ratings observed in the US coal industry are shown in Table 3.10 below. In the US coal industry the ratings are generally below investment grade, ranging from BB- to BB+. For the same gearing levels, US coal companies are rated several notches down from North American railways, and also several notches below the Australian and New Zealand transport companies. Australian coal companies are not rated, presumably due to their low reliance on debt capital.

Table 3.10

CREDIT RATINGS OF COMPARATOR FIRMS: US COAL

	Gearing	Rating	Date
Walter Industries Inc	0.58	BB-	15/9/2008
Massey Energy Co	0.35	BB-	15/9/2008
Arch Coal Inc	0.24	BB	9/3/2009
Peabody Energy Corp	0.21	BB+	15/9/2008
Consol Energy Inc	0.10	BB+	15/9/2008
Walter Industries Inc	0.58	BB-	15/9/2008

Source: Data from Bloomberg

3.7 Conclusion on credit rating

Having concluded that there is no evidence to suggest a movement away from a regulatory gearing level of 55 per cent, we have also considered the credit rating that is appropriate for QR-Coal at this level of gearing. While regulators have applied ratings from BBB to A for rail businesses in Australia, below-rail export coal haulage in New South Wales has had a BBB+ rating applied by IPART. We also showed that electricity and gas transmission and distribution businesses, which have some similar characteristics to QR-Coal and are assumed to have 60 per cent gearing, were generally provided a BBB+ by regulators.

We found that in general, more highly geared businesses in each of the industry sectors examined had a lower credit rating; however, none of these businesses could be considered a close comparator to QR-Coal. Having considered the evidence, we do not consider there to be a compelling reason to change from QR-Coal's existing credit rating (geared at 55 per cent) assumption of BBB+, and so recommend that this benchmark assumption be retained.

Chapter 4

Current evidence on beta

4.1 Introduction

In the previous QR-Coal review process we provided a number of reports to QCA as follows:

- ACG (November, 2004) *Queensland Rail – Coal: Analysis of Proxy Betas*, Report to Queensland Competition Authority;
- ACG (May, 2005) *Queensland Rail – Coal: Analysis of Proxy Betas and Stakeholder Responses*, Report to Queensland Competition Authority;
- ACG (December, 2005) *Queensland Rail – Coal: Response to comments on QR-Coal proxy beta analysis*, Report to Queensland Competition Authority;

ACG's previous analysis concluded that an appropriate equity beta range (re-levered to 55 per cent) for QR-Coal was likely to be in the relatively wide range of between 0.60 and 0.90. Within the range we concluded that an equity beta point estimate of 0.80 was appropriate. As noted above, the QCA adopted the value at the upper end of our range, namely 0.90.

A major problem encountered in the examination of current evidence on the beta appropriate for QR-Coal is the paucity of direct comparators for QR's below-rail coal haulage services. As we demonstrate in this chapter, there are no satisfactory direct comparators for QR-Coal, and the evidence for listed firms in the transport, coal, and rail sectors must be viewed with substantial caution.

4.2 Key characteristics of QR-Coal's operations

In our previous reports we focussed attention on the key characteristics of QR-Coal's below rail operations, which we have considered to be important in determining QR-Coal systematic risk relative to other regulated businesses. These factors were:

- Uncorrelated demand;
- Operating leverage;
- Relative competitiveness of the Queensland coal industry; and
- Regulated revenue cap structure and take or pay contracts.

We now consider each of these factors in turn.

Uncorrelated demand

In our 2005 report, we stated that:²¹

²¹ ACG (December, 2005), p.3.

QR-Coal’s customers have an international customer base spread mainly across countries whose incremental demand for Australian coal is generally not correlated with Australian GDP. In other words, QR-Coal’s revenue beta with respect to the Australian market can be expected to be low. Because this export demand for Australian coal has been driven by underlying industrialisation in Asia, it has not had a close association with Australia’s economic and stock market cycles.

Synergies submitted that there is a positive correlation between domestic GDP and world steel production (0.93 between 2001 and 2007), and between Australia’s real GDP and the real GDP of major current and emerging Asian customers for Queensland coal in Japan (0.82), China (0.57) and India (0.55),²² and that as a consequence QR-Coal’s volume risk ‘is to some extent systematic in nature’. We agree with Synergies that these correlations are high, but do not consider these to be the most relevant correlations when estimating the systematic risk of QR-Coal. Instead, the key issue is that demand for Australian export coal ‘has not had a close association with Australia’s economic and stock market cycles’. We therefore agree with Synergies that while there may be some systematic volume risk in QR-Coal’s operations, the evidence suggests that it is very low.

In response to Synergy’s comments we examined the correlation between Queensland’s annual coal exports (as a proxy for QR-Coal’s revenue) and the annual returns on the Australian ASX200 stock market total returns index. These results are shown in Table 4.1 below. For the period from 1993 to 2007 we found a low 0.137 correlation, and for the more recent period from 2000 to 2007 an even lower correlation of 0.096. Correlations of Queensland export growth against the Australian GDP growth were 0.168 and 0.118 respectively. Correlations of Queensland’s coal export growth against the world stock market index (MSCI) were -0.011 and -0.077 for the two periods, indicating a very low negative correlation, and there were similarly low negative correlations against world GDP growth.

Table 4.1

QUEENSLAND COAL EXPORTS: CORRELATIONS

Years	ASX-200 Index	MSCI Index	Australia GDP	World GDP
1993-2007	0.137	(0.011)	0.169	(0.003)
2000-2007	0.096	(0.077)	0.118	(0.066)

Source: Data from Bloomberg, Queensland Department of Natural Resources

Operating leverage

Operating leverage measures the extent to which a firm must meet fixed expenditure requirements from its revenue stream. Large fixed expenditure requirements increases the beta of an asset in the same way that having to meet fixed interest payments increases the beta of the equity-financed portion of an asset. When we considered this issue last time, we observed that QR-Coal’s operating leverage is in line with the operating leverage observed for regulated network businesses.

²² Synergies (August, 2008), pp.52-54.

QR-Coal has stated in its submission that:²³

The key driver of QR Network's systematic risk continues to be its high operating leverage.....(noting that it was not previously recognized that QR Network's maintenance costs are effectively fixed in the short-run, which means that QR Network's operating leverage is close to 100% in the short run).

We note that QR has estimated its operating leverage incorrectly, the correct measure being the proportion of its ongoing fixed expenditure requirements to its total cash flow (both in present value terms). Like many regulated businesses, QR-Coal's revenue includes a large profit element (i.e., a large positive net cash flow) that reduces operating leverage, all else constant. We concluded last time that QR-Coal's operating leverage is similar to that of regulated energy networks, and note that QR-Coal has not provided any new evidence to the contrary.

Relative competitiveness of the Queensland coal industry

In 2004-5 we noted that the Australian export coal industry, located in Queensland and New South Wales, is cost efficient by world standards. Queensland's coal mines are situated relatively close to the export ports, the coal is generally mined as open-cut, and is relatively close to a majority of the export market, which is in Asia.

As a result of its relative cost efficiency, the Queensland coal industry is expected to display lower sensitivity to changes in demand than the export coal industries of say, Canada and the United States. In Canada, for example, export coal is railed 1,500 kilometres across the Rocky Mountains to the main export port in Vancouver (Westshore Terminal). Due to industry perceptions that the Australian coal industry has plentiful reserves and cost efficiency, its share of world export trade is expected to increase over time.

This factor of relative cost efficiency suggests that the beta of QR-Coal will be relatively lower, other things being equal, than the beta of similar below-rail export coal operators in countries like the US and Canada.

Regulated revenue cap structure and take or pay contracts

Approximately 30 per cent of the coal shipments made using QR-Coal's rail network are governed by take-or-pay contracting arrangements. These arrangements mean that even if there are short-term reductions in demand for QR-Coal's services, the 30 per cent of revenue that QR-Coal derives from contracted capacity will not vary. In the limiting case the protection that QR-Coal derives for this component of capacity also depends on the financial viability of the shippers. Hence, if there were a very marked down-turn in demand it is possible that some coal exporters could default, in which case they would also default on their take-or-pay contracts with QR-Coal. However, due to Australia's relative cost efficiency, as discussed above, it is considered less likely that there would be a down-turn that would severely impact Australian coal producers, relative to those elsewhere in the world.

Approximately half (by value) of QR-Coal's take-or-pay contracts are for periods that exceed its regulatory cycle of 4 years. Hence, the existence of take-or pay contracts will reduce the variation in QR-Coal's revenue.

²³ QR Network, 2008, QR Network Access Undertaking, Submission, Vol.2, p.76.

Regulated revenue-cap structure

QR-Coal's revenue is subject to a regulated revenue-cap framework that is set every 4 years under the regulatory oversight of the QCA. The previous framework, which applied when we first considered QR-Coal's beta in 2004-2005, provided for a collar and cap relationship under which:

- If shipments are more than 10 per cent below the forecast, Q-R Coal has the discretion to request a price increase to restore its revenue;
- If shipments are between plus and minus 10 per cent of the forecast tonnage, a price-cap operates, providing an incentive to QR-Coal to increase tonnage; and
- If shipments are more than 10 per cent above the forecast tonnage, the QCA has discretion to reduce the price.

This collar and cap pricing arrangement had the capacity to reduce the impact of systematic risk on QR-Coal, by de-coupling its revenue from the Australian economic and market cycles. However, as noted above, any residual risk is likely to be limited by other factors, such as the competitiveness of the Australian coal industry, the likely low level of systematic variation in cash flow, and the impact of take-or-pay contracts, which promote relative stability of cash flows.

More recently, QR-Coal has been under a hybrid revenue cap model, which requires that any over (under) recovery of its approved revenue cap is returned through reference tariff adjustments two years later. Under this arrangement QR-Coal is guaranteed to receive the revenue provided at the beginning of a regulatory period based on volume assumptions made at that time, although with a potential delay of up to two years on a component of the revenue. This new arrangement would further reduce the volatility in QR-Coal's cash flow.

Lastly, we note that the QCA has requested that we provide advice on the basis that the undertaking will retain its current limit on regulator-initiated asset optimisation or stranding (Schedule FB) and also assuming that the QCA would accept accelerated depreciation as a means of managing in advance potential stranding risk if the risk is demonstrated. In our view, this regulatory policy implies a low level of regulator-initiated stranded asset risk and, when combined with the large coal reserves, strong demand and high relative cost efficiency, suggest a low level of market-driven stranded asset risk.

4.3 Previous beta analysis and regulatory precedents for QR-Coal

In 1999 QR-Coal's consultants, Green, Edwell Consulting submitted that an equity beta in the range of 0.80-0.90 was appropriate for a gearing level of 49 per cent.²⁴ Based on a benchmark gearing level of 55 per cent, however, the QCA applied an equity beta of 0.76 in its 2000 decision on QR-Coal.²⁵ The evidence supporting the QCA's decision was contained in its Working Paper 4, which rejected the use of US Class 1 railways as comparators because of their low reliance on coal haulage (which was in any case based on domestic demand for coal in power stations).

²⁴ Green, Edwell Consulting (June, 1999), *Estimation of the Cost of Capital for Queensland Rail's Below Rail Infrastructure*, Prepared for Network Access Group Queensland Rail, p.29.

²⁵ QCA (December, 2000).

For the 2006 review, QR-Coal's adviser employed a portfolio of coal firms as a proxy for QR-Coal, and proposed an equity beta of 1.05 based on a gearing level of 55 per cent.²⁶ We advised that coal companies are subject to greater volume risk than QR-Coal, since they are not regulated, do not have take-or-pay contracts, and are subject to price, exchange rate and demand risks.²⁷ We also agreed with the QCA's previous position that US Class 1 railroads are not close comparators because they are not regulated, are not generally subject to take-or-pay contracts, and are vertically integrated, rather than below rail operators. A high proportion of the goods that are shipped by US Class 1 railroads also are elaborately transformed manufactures (ETMs), whose demand typically is highly sensitive to the state of the economic cycle.

In the absence of closer comparators, we considered that the closest comparator for QR-Coal was the Port of Tauranga in New Zealand, in the period prior to the dot-com bubble, when it was mainly a raw material export port. We also reviewed US Class 1 railway equity betas (1.12 at 55 per cent gearing) notwithstanding our reservations, Australian and New Zealand transport companies (0.97 at 55 per cent gearing), and Australian electricity networks (0.90 at 55 per cent gearing), and concluded that an appropriate equity beta range for QR-Coal was between 0.60 and 0.90. We considered that an equity beta point estimate of 0.80 near the upper end of our recommended range was appropriate. As noted above, the QCA adopted the upper bound of our range, namely 0.90.

4.4 Regulatory precedents

Table 4.2 below sets out regulatory decisions relating to rail operations in Australia. Caution must be exercised as these decisions have been undertaken in combination with gearing levels ranging from 35 per cent to 55 per cent, and have used different re-leveraging formulae. It is apparent, however, that below rail coal haulage has been provided with an equity beta range of 0.76 (QCA 2000) to 0.85 (IPART 1999, 2005 applied an average of 0.70 to 1.0) with 55 per cent gearing (average of 50 per cent to 60 per cent). The QCA's last decision for QR (0.90) was above the middle of this range, was higher than the QCA decision in 2000, and higher than the 0.80 recommended by ACG (i.e. it was at the top of the range recommended by ACG). The other decisions range from 0.66 for the Urban network in Western Australia with 55 per cent gearing, to 1.29 for ARTC with 50 per cent gearing. However, as noted previously, the risk characteristics of these different rail sectors vary considerably.

²⁶ Christensen, Mark (April, 2004), *Review of Cost of Capital Inputs for the 2005 Review of QR's Access Undertaking*, Report prepared on behalf of QR.

²⁷ ACG (May, 2005), *Queensland Rail – Coal: Analysis of Proxy Betas and Stakeholder Responses*, Report to Queensland Competition Authority.

Table 4.2

EQUITY BETA FOR RAIL: REVIOUS REGULATORY DECISIONS

Decision	Regulator (year)	Sector	Debt gearing	Equity beta
Rail Access Corporation	IPART (1999)	Coal	50%-60%	0.70-1.0
QR-Coal	QCA (2000)	Coal	55%	0.76
WA urban network (WAGR)	ORAR (2003)	Pax	55%	0.66
ARTC	ACCC (2008)	Freight	50%	1.29
QR-Coal	QCA (2006)	Coal	55%	0.90
WA urban network (WAGR)	ORAR (2003)	Pax	55%	0.66
WNR (freight)	ORAR (2003)	Freight	55%	1.00
Rail Access Corporation	IPART (2005)	Coal	50%-60%	0.7-1.0
WA urban network (WAGR)	ERA (2008)	Pax	35%	0.46
WNR (freight)	ERA (2008)	Freight	35%	1.00

Source: Regulatory decisions

4.5 Beta estimation methodology

Beta re-levering formula

In our previous analysis of beta for the QCA we applied the Conine formula in de-levering raw beta estimates to the asset beta and re-levering to the benchmark gearing level, which was assumed to be 55 per cent.²⁸ The Conine formula is shown below:

$$\beta_e = \beta_a + (\beta_a - \beta_d) \times (1 - T) \times \frac{D}{E} \quad \text{and} \quad \beta_a = \frac{\beta_e + \beta_d \times (1 - T) \frac{D}{E}}{1 + (1 - T) \frac{D}{E}}$$

where:

β_e = equity beta

β_a = asset beta

β_d = debt beta

D = value of debt

E = value of equity

T = imputation adjusted corporate tax rate

²⁸ See Conine, T. (1980), "Corporate Debt and Corporate Taxes: An Extension," *Journal of Finance*, 35, pp.1033-6. It assumes a passive debt management approach.

In applying the Conine formula the QCA has defined T as the imputation adjusted tax rate taking account of dividend imputation. Hence, $T = t(1 - \gamma)$, where γ = proportion of imputation credits that can be utilised by shareholders. The QCA sets $t = 0.30$ and $\gamma = 0.50$. The Conine formula differs from the simple Brealey and Myers formula to the extent that T is positive, and is equivalent if $\gamma = 1$. While ACG has applied the Conine formula and other generally accepted transformation formulae (such as the Monkhouse formula) in previous assignments, our preference is to apply the simple Brealey and Myers formula, which is expressed as:

$$\beta_a = \beta_e \frac{E}{V}$$

where symbols are as before, and V is the enterprise value of the firm (measured as D plus E). We define the gearing level G as follows:

$$G = \frac{D}{D + E}$$

With an assumed regulatory gearing level of 55 per cent it can be shown that the re-levering factor (ω) that should be applied to the raw beta estimates is:

$$\omega = \frac{(1 - G)}{(1 - 0.55)}$$

In general, we found the Brealey and Myers approach to yield slightly higher beta estimates than the Conine formula. In the tables presented below we have reported both Brealey and Myers and Conine betas, but in the text we have discussed only the Brealey and Myers estimates.²⁹

Beta estimation

To estimate betas we used the Bloomberg 'Historical Studies for Multiple Securities' (XSTD) excel file to calculate raw equity betas, which we then downloaded. Estimates of beta were based on 60 months of monthly observations (5 years) up to and including December 2008 (i.e. January 2004 to December 2008). Re-levering was undertaken based on the average gearing of the relevant business (defined as total debt to total debt plus market capitalisation) measured over the same 60 months of the beta estimation period.

For each country examined (Australia, US, Canada, New Zealand) Bloomberg measures the rate of return (dividend plus capital gain) of the stock and regresses this against the accumulation index of the relevant major market. Bloomberg allows the user to nominate the relevant market indices. We used the ASX Accumulation All Ordinaries Index, the S&P 500 Total Return Index, the S&P/TSX Total return Index, and the NZX All Gross Index respectively for each of the countries listed above.

²⁹ Consistent with our earlier application of the Conine formula, we assumed a debt beta of 0.10, a gamma of 0.50 and corporate tax rate of 30 per cent.

As noted in Chapter 1, and discussed in detail in Appendix A below, the comparators used in this study have been drawn from the Australasian transport sector, the US and Australian Coal mining sector and the North American railways sector, resulting in a group of 34 comparators.

Uncertainty in beta estimation

Synergies has submitted that due to the fact that equity betas are subject to significant estimation error, statistical procedures such as t-statistics, R squared values, and standard errors (enabling generation of a ‘confidence interval’) should be applied. We agree with Synergies that beta estimates are subject to considerable estimation error. Moreover, in our view standard confidence intervals understate the true imprecision of beta estimates. However, in the case of QR-Coal’s operations, the comparators are generally poor. Hence, the proposal of Synergies mechanically to relate the beta estimate to the confidence interval is not likely to be of value.³⁰ While we agree with Synergies that beta estimation error means a cautious approach should be undertaken, and a beta point estimate should be chosen from the upper end of any identified range, we do not agree that an estimate should be drawn from the upper end of a range of beta estimates for inappropriate comparators.

These difficulties in beta estimation have been compounded by recent swings in the level of market volatility, from a relatively low volatility environment (2002 to June 2007) to a high level of volatility (July 2007 to December 2008). Estimation of betas, must therefore depend to a considerable degree on the exercise of judgement that is informed by empirical analysis, rather than on the basis of mechanical formulae.

4.6 Australian regulated energy businesses

Our earlier reports on QR-Coal also made reference to the betas of the Australian regulated energy distribution/transmission sector, which have been reviewed in recent years. ACG has prepared several reports analysing data on equity betas for regulated gas and electricity businesses.³¹ In our most recent report on energy utility betas, undertaken using data for periods up until May 2008, we found “central estimates of an equity beta value for an Australian electricity transmission or distribution business (at a gearing of 60 per cent debt to assets) of 0.70 to 0.90”.³² At a 55 per cent benchmark gearing level this translates to an indicated equity beta range of 0.62 to 0.80.

We consider that the key characteristics of QR’s below-rail regulated coal haulage business (i.e. take-or-pay contracts for a significant component of volume, demand that is relatively uncorrelated to the domestic market, and a revenue cap pricing framework) would indicate a level of systematic risk for this business that is unlikely to be empirically distinguished from energy transmission or distribution.

³⁰ Synergies (August, 2008), pp.42-45.

³¹ We have prepared reports for both regulators and regulated businesses. See: Allen Consulting Group (July, 2002), *Empirical evidence on proxy beta values for regulated gas transmission activities*, Report to the Australian Competition and Consumer Commission; Allen Consulting Group (June 2007), *Empirical evidence on proxy beta values for regulated gas distribution activities*, Report to the Essential Services Commission of Victoria; and, Allen Consulting Group (4 September 2008), *Beta for regulated electricity and distribution*, Report to Energy Networks Association, Grid Australia and APIA.

³² ACG (2 September, 2008), p.i.

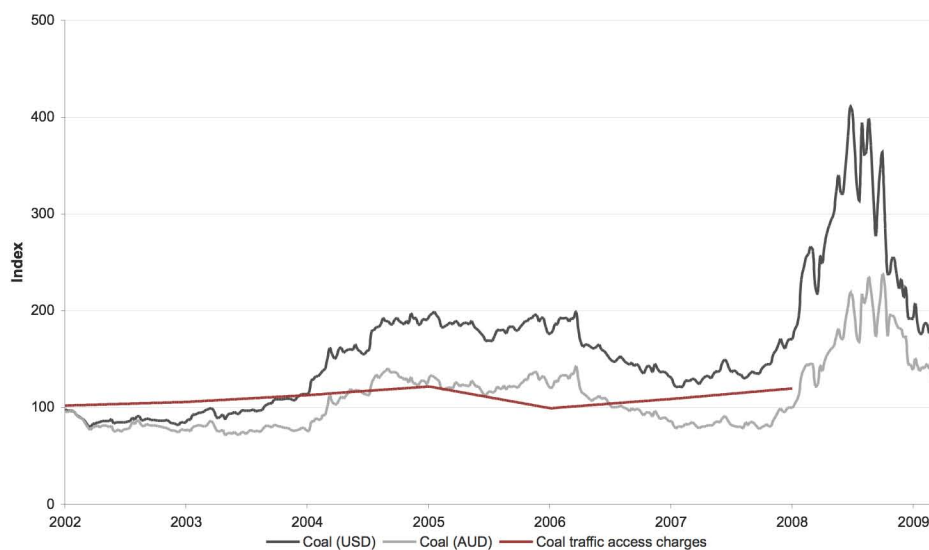
4.7 US and Australian coal miners

In our previous report on the beta of QR-Coal in 2004, we observed estimated betas for the US and Australian coal sectors that were relatively low in terms of our expectations, given that the coal industry is subject to potentially wide fluctuations in the coal price. We also noted in relation to the Australian sample that Coal & Allied Industries is relatively thinly traded. We suggested that the relatively low beta estimates we found for the US and Australian coal sector at that time could have been due to the influence of the dot-com bubble.³³

Figure 4.1 below demonstrates the relative movement of coal prices (expressed in both US dollars and Australian dollars), compared with QR-Coal’s revenue. While all three series display an upward trend, the coal prices have been much more cyclical than QR-Coal’s revenue. For example, between 2006 and 2007 there was almost a halving in coal price from an index value of 200 to 125. The movement down in QR-Coal’s revenue was caused by a shift from one regulatory period to another, and was therefore not correlated with market factors.

Figure 4.1

INDEX OF QUEENSLAND RAIL COAL REVENUE VS COAL PRICE (AUD AND USD)



Source: Data from Bloomberg and Queensland Competition Authority (sourced from QR-Coal)

Although the current world economic downturn can be expected to have a negative impact on coal railings, and eventually may be expected to have some negative impact on the revenue of QR-Coal, this impact (which was taken into account by the Wood Mackenzie report up to October 2008) can be expected to be significantly lower than the movement in the coal price, which has risen and fallen significantly over the past few years. The revenues that will be earned by QR-Coal do not depend on movements in the coal price, but on the volume of railings estimated over a five-year period. Since volume forecasts over the next five years and beyond continue to be strong, QR-Coal’s revenue will follow that estimate taking into

³³ ACG (November, 2004), p.36.

account the regulated asset base (RAB), efficient operating costs and required capital expenditure.

We have updated estimates of equity betas for US and Australian coal mining companies, and Westshore Terminal. We group Westshore with coal miners because we believe it is more like a coal producer, given the uniqueness of its coal loading contracts, which are tied to the Canadian dollar price of coal (see Box 4.1). The raw betas of the coal comparators shown in Table 4.3 below range from 1.18 to 1.76, and the average re-levered betas (re-levered to an assumed 55 per cent gearing) range from 2.44 for Australian coal businesses (excluding Centennial Coal), to 3.01 for US coal businesses.³⁴ The re-levered equity beta for Westshore Terminal, at 2.91, is close to the US average.

It will be noted that only one of the coal comparator companies had an average gearing ratio greater than 55 per cent, with average gearing for United States coal businesses being 21 per cent, and the average gearing for Australian coal businesses being only 6 per cent (excluding Centennial Coal). It is likely that this lower gearing is caused by the relatively high volatility of cash flows experienced by coal companies. Therefore, re-levering coal business betas to three times their natural gearing is liable to produce artificial re-levered beta estimates, since it is unlikely that these businesses could survive with such high levels of gearing.

Box 4.1

WESTSHORE TERMINAL AS A COMPARATOR FOR QR-COAL

Westshore Terminal operates a coal loading terminal in Vancouver for the export of coal, and although not subject to a similar regulatory regime, might be seen as a relatively close comparator for QR-Coal if it were not for the change in its loading rate formula in 2003. Since 1 April, 2003, Westshore's loading rates have been largely tied to the Canadian dollar price of coal. As a result, its risk characteristics have changed significantly, as noted by a Canadian market analyst:³⁵

The nature of Westshore's assets places the company in the bulk material handling and shipping business. However, we believe that, based upon the shipment profile of its existing customer base, combined with the structure of its current loading contracts, Westshore's financial performance more closely mimics that of a metallurgical coal producer as opposed to a direct industry peer.

Furthermore, in our previous report we noted that even without the change in the loading rate formula, Westshore Terminal has characteristics, such as the relatively weak competitive position of the Canadian export coal industry, would suggest higher systematic risk relative to Australian coal export volume, since Canada would be likely to be proportionately more affected by a downturn in world metallurgical coal demand.³⁶

This contradicts the opinion of QR-Coal's consultant, Synergies, which maintains that Westshore's handling charges 'are based on the volume of coal shipped'.³⁷ While this is true in part, it ignores the fact that the price that Westshore Terminal charges is linked to the price of coal, which sets it apart from normal transport companies.

³⁴ Centennial Coal was excluded on the grounds that it is a significant outlier.

³⁵ Kodatsky, Alec, (April, 2005), *Westshore Terminal Income Fund: Going for the coal*, Scotia Capital Report, p.8.

³⁶ ACG (December, 2005), *Queensland Rail – Coal: Response to comments on QR-Coal proxy beta analysis*, Report to Queensland Competition Authority, p.20.

³⁷ Synergies (August 2008), *Review of QR Network's Cost of Equity*, p. 74

Westshore Terminal is found to have a re-levered (to 55 per cent) equity beta of 2.91, which is very close to the US Coal average of 3.01. This is not unexpected given the full exposure of Westshore Terminal to coal price risk since 2003, and accords with the expectation of the Canadian analyst referred to above.

Table 4.3

COAL: US CANADIAN AND AUSTRALIAN EQUITY BETA, 2004-2008

	Raw Beta	Gearing	Re-levered equity beta	
			Brealey - Myers	Conine
United States:				
Peabody Energy Corporation	1.93	0.15	3.63	3.32
Consol Energy Inc.	1.71	0.05	3.60	3.25
Arch Coal Inc.	2.00	0.16	3.71	3.45
Massey Energy Co.	1.93	0.21	3.38	3.15
Walter Industries Inc.	2.13	0.60	1.87	2.13
Alliance Resource Partners	0.90	0.07	1.85	1.59
Average	1.76	0.21	3.01	2.81
Canada:				
Westshore Terminal	1.31	0.00	2.91	2.57
Australia:				
Coal & Allied Industries	0.54	0.05	1.15	0.97
New Hope Corporation Limited	1.22	0.01	2.70	2.38
Centennial Coal Company Limited	-0.03	0.33	-0.04	-0.09
Gloucester Coal Ltd.	1.79	0.12	3.48	3.20
Average	0.88	0.13	1.82	1.61
Average (ex-Centennial)	1.18	0.06	2.44	2.18

Source: Data from Bloomberg

4.8 US and Canadian rail

The beta estimates for US and Canadian rail businesses are displayed in Table 4.4 below. The raw betas of most of the US Class 1 railroads are generally close to unity, however, since these businesses have a relatively low gearing of 28 per cent, the re-levered betas (to 55 per cent gearing) rise to an average of 1.91.

The average raw beta estimate of the two Canadian railway businesses, at 0.57, is significantly lower than for the US Class 1 railroad businesses, and the re-levered (to 55 per cent gearing) average estimate is 0.94. The gearing levels of US and Canadian railways (28 per cent and 24 per cent respectively) are also relatively low compared with average market gearing of 40 per cent in the United States.

The revenue breakdown of the US and Canadian railways is displayed in Table 4.5 below. Much of this activity is sensitive to the economic cycle.

Table 4.4

RAIL: US AND CANADIAN EQUITY BETA

	Raw Beta	Gearing	Re-levered equity beta	
			Brealey - Myers	Conine
United States:				
Union Pacific Corporation	1.15	0.24	1.93	1.87
Kansas City Southern	1.75	0.40	2.33	2.33
Burlington Northern Santa Fe Corporation	1.00	0.25	1.66	1.62
CXS Corporation	1.13	0.33	1.69	1.69
Norfolk Southern Corp	1.04	0.29	1.65	1.60
Genesee & Wyoming Inc	1.19	0.17	2.19	2.05
	1.21	0.28	1.91	1.86
Canada:				
Canadian Pacific Railway Limited	0.68	0.29	1.07	1.02
Canadian National Railway Company	0.45	0.19	0.81	0.71
	0.57	0.24	0.94	0.87

Source: Data from Bloomberg

Automotive and industrial products traffic

According to the Association of American Railroads, the traffic category with the largest railings fall in the 46 weeks to 15 November, 2008 was ‘Motor Vehicles and Equipment’, which fell by 34.5 per cent (significantly higher than the average fall of 9.1 per cent). We would therefore expect a railway with higher automotive railings to have a higher beta, other things being equal.

Agricultural products traffic

Since output is highly dependent on weather patterns, agricultural traffic can be expected to have a potentially high volatility, but a low covariance with the economy or stock market. Hence, we would expect rail companies with a higher proportion of agricultural traffic to have a lower beta, other things being equal.

Coal traffic

While approximately 20 per cent of the freight business of the US Class 1 railways involves the haulage of coal, the majority is thermal, and could not be expected to have a high correlation (or covariance) to economic cycles. This is borne out by some recent statistics from the Association of American Railroads, indicating that for the 46 weeks ending 15 November 2008, there was a 9.1 per cent fall in total traffic on US railroads compared with the corresponding period in 2007. At the same time, traffic in coal rose by 3.4 per cent.³⁸ This suggests that to the extent that US railways carried coal, this was likely to have reduced their beta compared with railways that carried less coal.

Table 4.5

US AND CANADIAN RAILWAY REVENUE BREAKDOWN (%)

	Coal	Agri- culture	Auto & Industrial	Inter- modal	Non freight
United States:					
Kansas City Southern	11.0	24.6	51.9	8.7	3.8
Genesee & Wyoming Inc	11.7	14.1	37.9	0.2	36.2
Union Pacific Corporation	21.2	17.7	39.6	16.8	4.7
CXS Corporation	29.2	13.1	42.5	13.0	2.3
Burlington Northern Santa Fe Corporation	22.0	19.1	28.1	30.8	2.9
Norfolk Southern Corp	11.7	14.1	39.5	19.3	0.0
Average	20.7	16.7	39.9	14.8	8.3
Canada:					
Canadian Pacific Railway Limited	12.3	34.8	22.1	28.4	2.4
Canadian National Railway Company	5.6	33.2	32.6	18.6	9.9
Average	9.0	34.0	27.3	23.5	6.1

Source: Company reports Note: Companies have been arranged by re-levered beta (from highest to lowest)

As noted above, the average re-levered beta (to 55 per cent gearing) of the 6 US railway companies was 1.91, compared with a much lower average of 0.94 for the two Canadian railways. While this differential could be spurious, it is likely that the lower beta of the Canadian railways is due to:

- The significantly higher component of 'Automotive and Industrial' freight carried by US railways (almost 40 per cent compared with 27.3 per cent for the Canadian railways), which we would expect to be associated with greater economic cyclicality, and therefore greater systematic risk (i.e. a higher beta).
- The significantly greater proportion of agricultural goods carried by Canadian railways (34 per cent) compared with the US railways (16.7 per cent).

³⁸ (December, 2008) 'Highlights from the December 2008 Issue', *Railway Age*, Simmons-Boardman Publishing Corp. Accessed at www.railwayage.com/B/traffic.html.

In contrast to 'Automotive and Industrial' freight, QR-Coal's operations would be expected to have a relatively low relationship to the economy and the stock market due to:

- Operating under a regulatory revenue-cap for 4-year periods;
- A strong and diversified demand (with low correlation to Australian and world markets) that at the margin is being determined by underlying industrialisation in the developing Asian and South American economies; and
- A significant component of QR-Coal's haulage capacity being subject to take-or-pay arrangements.

On the basis of these comparisons we would expect that QR's regulated, below rail export coal haulage operations would have an equity beta (geared to 55 per cent) that is significantly below that of the US railways (i.e., significantly below 1.91), and below the Canadian railways (i.e., below 0.94).

4.9 Australian and New Zealand transport

We referred to Australian and New Zealand transport companies in our previous reports to the QCA, and have provided updated beta estimates for these businesses in Table 4.6 below. There is a considerable range of beta estimates among the transport sectors of Australia and New Zealand, reflecting a diverse mix of influences. Again, the average gearing levels were lower than the 55 per cent benchmark assumption, averaging 23 per cent for New Zealand and 42 per cent for Australia. However, for Australia the transport sector gearing level was higher than the average gearing of the Australian market in this period, which was approximately 33 per cent.

The average raw beta for Australian transport was 0.80 and for New Zealand transport was 0.99, and re-levered to 55 per cent the respective betas were 1.02 and 1.50. One difference between the Australian and New Zealand transport groups is that the former includes toll road operators (Transurban Group and Macquarie Infrastructure Group) with a relatively low average re-levered beta (0.73).

Of the transport businesses displayed in Table 4.6, not one of them has the essential characteristics that distinguish QR-Coal's operations. While some businesses have an element of regulatory oversight over part of their cash flows (e.g. Infratil, Auckland International Airport), these businesses are relatively more sensitive to changes in economic conditions. Of the port businesses, the Lyttleton Port Company is of most relevance because approximately half of its revenue comes from coal exports, agricultural produce and imports of fuel. The other half is container trade, which could be expected to be more sensitive to economic cycles. In contrast, we do not think that the Port of Tauranga remains a close comparator given the significant growth of its container trade over the past 5 years (see Box 4.2 below).

Table 4.6

TRANSPORT: AUSTRALIA AND NEW ZEALAND EQUITY BETA

	Raw Beta	Gearing	Re-levered Beta
Australia:			
Transurban Group	0.37	0.37	0.53
Qantas Airways Limited	0.98	0.45	1.19
Toll Holdings Limited	0.52	0.19	0.94
Macquarie Infrastructure Group	0.71	0.53	0.63
Macquarie Airports	0.87	0.57	1.02
Australian Infrastructure Fund	1.07	0.42	1.38
Virgin Blue Holdings	0.79	0.58	0.74
Mermaid Marine Australia Ltd.	1.12	0.28	1.80
	0.80	0.42	1.02
New Zealand:			
Auckland International Airport Limited	0.94	0.23	1.61
Air New Zealand	1.18	0.54	1.21
Port of Tauranga Limited	0.75	0.20	1.33
Infratil Limited	1.49	0.52	1.59
Mainfreight Ltd	1.25	0.09	2.52
Freightways Ltd	1.08	0.27	1.76
Lyttelton Port Company Ltd.	0.25	0.20	0.45
	0.99	0.29	1.50

Source: Data from Bloomberg.

Box 4.2

PORT OF TAURANGA AS A COMPARATOR FOR QR-COAL

In our 2005 report for the QCA we placed some emphasis on the beta for the New Zealand Port of Tauranga, since in earlier periods 50 per cent of its revenue was derived from exports of raw materials, which would have shared some of the characteristics of QR-Coal's operations. However, we recognised that it was an imperfect comparator. In particular, it did not have the protection afforded to QR-Coal by long term take-or-pay contracts, it did not benefit from the revenue smoothing regulatory regime of QR-Coal, and a large and growing proportion of its operations was in container traffic, which is highly sensitive to the state of the economy. Therefore, we relied mostly on observations of the Port of Tauranga's beta estimates for the period before the dot-com bubble (defined as the period of 1998-2001). Furthermore, in 2004 we noted that the Port of Tauranga was expected to continue to shift away from raw materials exports towards greater container traffic, which would make the Port of Tauranga an even less suitable comparator for QR-Coal.

4.10 Conclusions

In an earlier chapter we found that the demand for QR-Coal's services is expected to be strong over the next 20 years. We have seen that the volatility of QR-Coal's revenue, since 2002, has been relatively low compared with the volatility of coal prices. Indeed, the volatility of QR-Coal's EBITDA has been low relative to that of the comparator groups, such as coal mining, railway operation, and general transport.

Based on an analysis of relative market, contractual and regulatory characteristics, we expect that QR-Coal will have an equity beta that is difficult to distinguish from regulated energy utilities, which have in the past generally been assessed by regulators to be in the range of 0.90 to 1.0 with 60 per cent gearing, which translates to a range of 0.80 to 0.89 at 55 per cent gearing. The Australian Energy Regulator's recent Final Decision on WACC parameters for electricity transmission and distribution has determined an equity beta of 0.80 for 60 per cent gearing.³⁹ This translates to an equity beta of 0.71 with 55 per cent gearing.

Very few businesses among the 34 comparators that we examined came close to emulating the underlying cash flow characteristics and low volatility that is experienced by QR-Coal due to specific market, contract and regulatory factors. Those businesses have tended to have lower equity betas compared with many coal, rail and transport businesses that are exposed to volatile coal prices, transport of consumers or consumer goods that is sensitive to the economic cycle. Australian toll road operators, whose revenue streams are relatively stable, generally had equity betas less than unity (re-gearred to 55 per cent). Similarly, the Lyttelton Port Company, which derives a large proportion of its revenue from exports of coal and from agricultural goods, had a beta of 0.45 (re-levered to 55 per cent).

We found US and Australian coal companies to be inappropriate comparators for QR-Coal's operations and likely to have a higher beta than QR-Coal. Although both businesses deal with coal, the mining companies are exposed to volatile coal prices and exchange rate changes, while QR-Coal receives a regulated revenue cap. While we have considered the US and Australian coal mining beta estimates, and the Westshore Terminal beta estimates, we think these will materially overstate the beta of QR (Coal). Given its regulated revenue cap framework, presence of take-or-pay contracts and low threat of regulator-initiated stranding of QR-Coal's assets (as discussed above), we conclude that QR-Coal faces negligible demand and revenue risk.

The Australian transport industry group has a re-levered (to 55 per cent) equity beta of 1.02, and is in fact geared at an average 42 per cent. The volatility of QR-Coal's cash flows is significantly lower than for the Australian transport industry group, and the regulatory, contracting and market features noted above should imply that QR-Coal is exposed to relatively lower systematic risk. We would therefore expect QR-Coal's beta to be lower than for the transport industry group.

³⁹ AER (May, 2009).

The Canadian railway businesses have a lower proportion of automotive and industrial railings and a higher proportion of agricultural product railings than US Class 1 railways. The systematic risk of the Canadian railways can therefore be expected to be lower than for the Class 1 railways and we found this to be supported by their relative beta estimates (average levered beta estimates of 0.94 and 1.91 respectively). However, QR-Coal does not carry any motor vehicles and industrial products, the carriage of which is likely to have a strong relationship to business cycles. We would therefore expect QR-Coal's beta to be lower than the Canadian railways.

In summary, while we consider that the direct evidence in support of forming a precise view on the beta for QR-Coal is not strong, given the lack of appropriately close comparators for the business operations of QR-Coal, in our opinion, the available evidence equally does not support an equity beta for QR-Coal that is different from the range that we previously assessed, that is, a range of between 0.60 and 0.90 and a preferred value of 0.80, which is near the upper end of our recommended range.

Chapter 5

Current evidence on debt margin

5.1 Introduction

In this section we review current market evidence relating to the Australian bond market to assess the appropriate debt margin for QR-Coal's operations under the assumed benchmark gearing and credit rating assumptions. That is, we examine evidence on current debt margins to assess the likely cost of debt to QR-Coal based on adopting a 55 per cent benchmark gearing level, and a benchmark credit rating of BBB+.

5.2 Cost of debt

As part of the estimation of the Weighted Average Cost of Capital (WACC), regulatory practice is to estimate the all-up debt yield (r_d) and to express it as the debt margin, plus the risk free rate on government bonds (r_f). When the risk free rate changes, the debt margin will also change.

$$r_d = r_f + \text{debt margin}$$

The size of the debt margin will depend on the relative risk of the debt, so that higher risk debt will require a higher debt margin to compensate investors for holding that debt. The methodology generally applied by regulators to estimate an appropriate debt margin is to first establish the benchmark gearing level, then estimate the appropriate credit rating that is consistent with the chosen gearing level, and finally, determine the debt margin that is consistent with that credit rating for an assumed tenor of debt. Consistent with the QCA's previous position, which has assumed a 10 year time to maturity for the risk free rate and debt margin, we have adopted a 10 year maturity.

The debt margin should also provide sufficient revenue to the reference entity for it to cover debt raising transaction costs. Most regulators in Australia have applied a 12.5 basis point uplift to the debt margin to cover these costs (although the ACCC/AER use a slightly smaller allowance), and we recommend this amount should be added to the raw margin.

5.3 Risk Free Rate

In regulatory applications in Australia it has become general practice to estimate the risk free rate from the nominal 10-year Commonwealth Government bond yield.⁴⁰ Since we have been engaged to provide an update of the parameters that applied in the previous review of QR-Coal, we have estimated the risk free rate based on a 10 year debt maturity time frame. We obtained yield data on Commonwealth Government bonds closest to 10 year maturity from the Reserve Bank of Australia (RBA), interpolated to derive a 10-year bi-annual yield for the 20 trading days up to 9 April, 2009, and then calculated the equivalent annualised yield, which was 4.46 per cent.

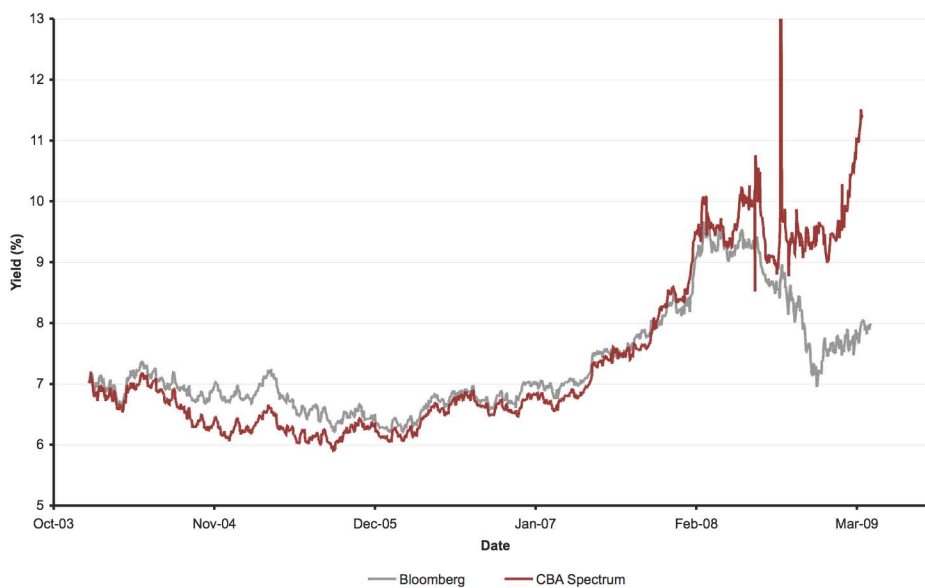
⁴⁰ AER (May, 2009), p.172.

5.4 Estimating the debt margin

There is no readily observable current market yield for QR-Coal’s debt under benchmark gearing, credit rating and term to maturity conditions. Hence, the yield (and therefore the debt margin) under these conditions must be estimated. The market evidence relied upon by regulators has generally been confined to two sources: Bloomberg Fair Value market yield; and/or CBA Spectrum fair value yields.

Figure 5.1 below shows the movement in 10-year Bloomberg BBB yields and 10 year CBASpectrum BBB+ corporate bond yields over the 2003-2009 period.⁴¹ Up to the March quarter of 2008, the CBA Spectrum and Bloomberg yields tracked relatively closely.⁴² However, by mid 2008 the yield differential increased substantially to approximately 350 bp, with the CBA Spectrum yield continuing an upward trend to 11.5 per cent, and the Bloomberg yield remaining relatively stable at approximately 8 per cent. The consequences of the regulator choosing between these services are now significant.

Figure 5.1
BLOOMBERG AND CBA SPECTRUM: 10-YEAR BBB+ BOND FAIR VALUE YIELDS



Source: Data from CBASpectrum, Bloomberg. Note: Bloomberg series includes extrapolated values.

⁴¹ Although Bloomberg only reports fair value yields for a generic BBB corporate bond, most of the bonds used in the estimate have been BBB+. Hence, the Bloomberg BBB bond yield has often been interpreted as a BBB+ yield.

⁴² In 2005 the differential was in the order of 25 bp. See ACG (11 July, 2005), *AGN cost of debt margin*, Memorandum to Mr. Peter Rixson, Manager Projects, Economic Regulation Authority; See also, NERA (May, 2005), *Critique of available estimates of the credit spread on corporate bonds*, A report to NERA.

The fact that CBA Spectrum and Bloomberg are currently providing such divergent predictions of fair value yields is a concern, and this logically implies that it has become much more difficult to predict debt margins in the current market. In assessing the estimates of Bloomberg and CBA Spectrum we have not been able to fully assess the methodologies applied by these services owing to their proprietary nature. However, from what is known publicly about the methods, we do not think it possible to make an unambiguous conclusion that one method is correct and that the other is incorrect. Our reasons for this are as follows.

- *Treatment of outliers* – Bloomberg screens out bonds that it deems to be outliers, although the criteria for this exclusion are not publicly available. Our analysis suggests that, at the present time, its exclusion of outliers has a substantial effect on the position of the curve that it estimates, with almost all of the A and BBB outliers sitting above its ‘fair value’ curve. We do not know whether CBASpectrum removes values that are deemed to be outliers.
- *Reported actual bond yields* – a key difference between the services at the present time is the yield for the actual corporate bonds that each derives from the available market evidence. The yields reported by CBASpectrum are systematically higher than those reported by Bloomberg. We do not know from where CBASpectrum obtains its yields; however, we have confirmed that Bloomberg, calculates the implied yield from actual trades from a number of sources, and consequently we consider the actual yields employed by Bloomberg to be a more accurate reflection of prevailing capital market conditions.
- *Estimation method* – the services apply different methods for converting actual bond yields into the predicted fair value yields, with the CBASpectrum service incorporating data from all bond ratings into the estimation of the ‘curve’ for any credit rating, whereas Bloomberg estimates a curves for each credit rating separately. Given the paucity of bond market information that is currently available, we are inclined to view the method that CBASpectrum employs as better (at the current time at least).

In our view, the inputs (i.e., ‘actual yields’) employed by the CBASpectrum service imply that it is likely to deliver estimates that overstate the fair value yield at the present time. However, Bloomberg’s practice of excluding outliers – and the fact that almost all outliers currently excluded sat above its predicted fair value – may cause that service to understate the fair value yields at the present time. Given our concerns about each of the fair value estimation services, we look at the yields on the actual corporate bonds and other sources of information, as discussed below.

5.5 Cost of Debt

Using Bloomberg data

As there are currently no 10 year BBB+ corporate bonds on issue, we estimated the 10 Year BBB+ yield from Bloomberg based on the following extrapolation of Bloomberg predicted yields, referencing to yields in the next rating band (A):⁴³

⁴³ This is the same approach that has been recommended by the Australian Energy Regulator, and by CEG. See CEG (2008), *Final Report: Cost of debt and capital raising costs*, p.20. Again, we have taken the Bloomberg BBB curve as the effective BBB+ curve based on the observation that most bonds used to construct it are BBB+.

$$\begin{aligned} \text{Estimated 10Year BBB+ yield} &= \text{8Year BBB+ Bloomberg FV yield} \\ &+ \text{10Year A Bloomberg FV yield} \\ &- \text{8Year A Bloomberg FV yield} \end{aligned}$$

Applying the extrapolation approach outlined above to Bloomberg data, the resulting estimated 20-day annualised 10 Year BBB+ yield using the above formula, as at 9 April 2009, was 7.92 per cent. Hence, the resulting debt margin, based on the difference between the estimated annualised BBB+ bond yield (7.92 per cent) and annualised CGS yield (4.46 per cent), was 3.46 per cent. Assuming the 8 year BBB+ yield was correct, this extrapolation approach could have a tendency to under-estimate the yield on 10-year debt.

Comparison of Bloomberg and CBA Spectrum

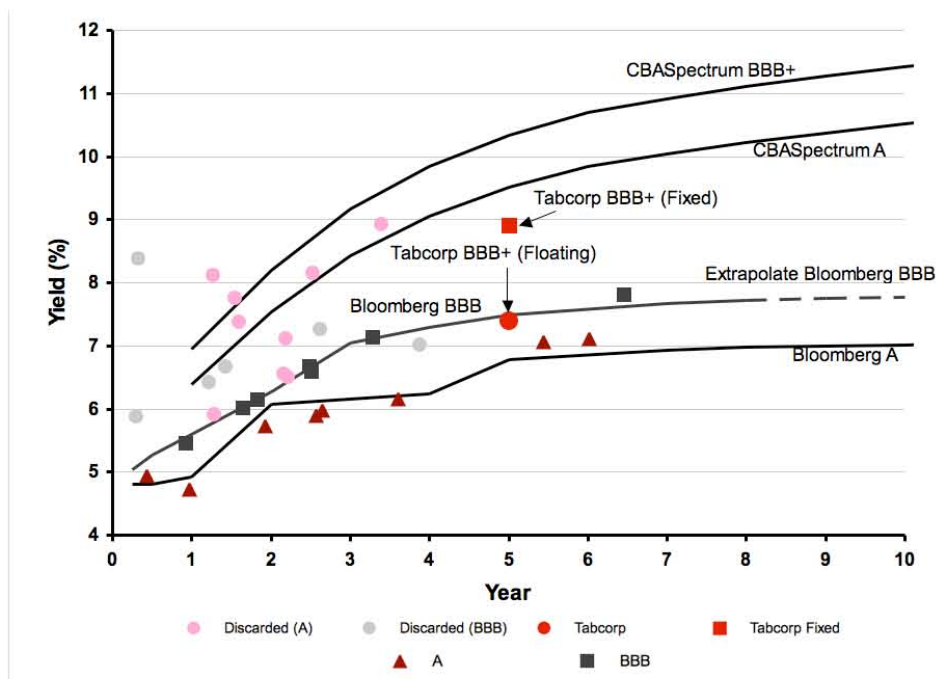
Figure 5.2 below displays the fair value curves from Bloomberg and CBA Spectrum for A and BBB+ ratings that are currently estimated and provided for maturities extending from less than a year to 10 years. While we refer to the 'BBB+ curve' for Bloomberg, it actually fits only a BBB curve. However, since most of these bonds tend to be BBB+, we have taken this to be, in effect, an estimate of the BBB+ fair value curve, and refer to it that way. As noted above, at 10 years maturity the CBA Spectrum curves for a given credit rating lie approximately 330 basis points above the respective Bloomberg curves.

Only 7 bonds (yields and maturities shown as black squares) were used to construct the Bloomberg (BBB+) fair value curve, while a further 7 bonds with generally higher yields than the estimated curve (shown as grey circles) were rejected. One of these bonds, Fairfax Media, had a yield of 21.4 per cent and is not shown in this diagram. Bloomberg advised us that the main reason for exclusion of a bond is that it is considered an outlier, with the exclusion primarily a 'professional judgement' decision made by its analyst each day, based on the bond's characteristics (such as price or yield), although there are also proprietary rules that must be followed.⁴⁴ Only one bond with more than 4 years to maturity (6.5 years to maturity) was used by Bloomberg to generate the BBB+ curve.

A total of 17 bonds were considered in the construction of the Bloomberg (A) fair value curve. However, only 8 of these bonds (shown as maroon triangles) were used by Bloomberg to fit the curve, and there were only two bonds used for this purpose that had a maturity greater than 4 years. Again, it is not clear why 9 bonds were dropped. It is clear that the outlier exclusion process has a substantial effect on the 'curve' that Bloomberg has fitted. While the Bloomberg curves fit the included observations well, all of the outliers sit well above the fitted curves.

⁴⁴ Discussion with Bloomberg analyst dated 14 April 2009.

Figure 5.2
BLOOMBERG AND CBA SPECTRUM FAIR VALUE YIELD CURVES FOR AUSTRALIAN CORPORATE BONDS (9 APRIL, 2009)



Source: Data from Bloomberg, CBA Spectrum. Notes: This chart is a 'snapshot' rather than the 20 day averages elsewhere in this chapter. All individual bond yields (except for Tabcorp) in the chart are from the Bloomberg service. As elsewhere Bloomberg BBB yields are assumed to reflect BBB+ rated bonds.

To provide another perspective we have also shown the indicated yield of the Tabcorp 5 year BBB+ bond. The 1 April, 2009 media release indicated that the bonds would offer an initial yield of 7.39 per cent based on a 425 bp margin over the 3 month Bank Bills Swap Rate (BBSW).⁴⁵ The Tabcorp bond is not directly comparable since it has a variable coupon. An approximate to the equivalent 5-year fixed rate is obtained by adding the Tabcorp bond margin to the 5-year Swap rate (of 4.65 per cent), which implied a yield of 8.9 per cent. This would place the Tabcorp BBB+ (fixed) yield approximately half way between the Bloomberg and CBA Spectrum curves at 5 years to maturity. We note, however, that the Tabcorp bond itself may have special characteristics. We consulted with market traders about the relevance of the Tabcorp bond to the infrastructure sector, and were told that a factor causing a higher yield is the perceived risk facing Tabcorp of losing its franchise.

Referencing the US market

Owing to the divergent views on fair value yields predicted by Bloomberg and CBA Spectrum, we have reviewed the situation in the deeper, more liquid US bond market to obtain extra information. The left hand column in Table 5.1 shows the margin that is derived from the Bloomberg curve (extrapolated to be consistent with 10-year debt and with a 12.5 basis point allowance for debt raising transaction costs). The right-most column shows the result from applying the CBA Spectrum service.

⁴⁵ (1 April, 2009), 'Tabcorp Bonds margin set and offer now open', *Media Release*, p.1.

Table 5.1

ALTERNATIVE YIELD AND DEBT MARGIN ESTIMATES TO 9 APRIL, 2009 (PER CENT)

	Bloomberg Extrapo- lated	vs. US Treasuries	vs. US AAA	vs. US Swap rate	CBA Spectrum
Yield	7.92	8.52	8.54	8.91	11.21
R _f	4.46	4.46	4.46	4.46	4.46
Net Margin	3.46	4.06	4.08	4.45	6.75
Trans. Cost	0.125	0.125	0.125	0.125	0.125
Margin	3.58	4.18	4.20	4.58	6.88

Source: Data from Bloomberg and CBA Spectrum.

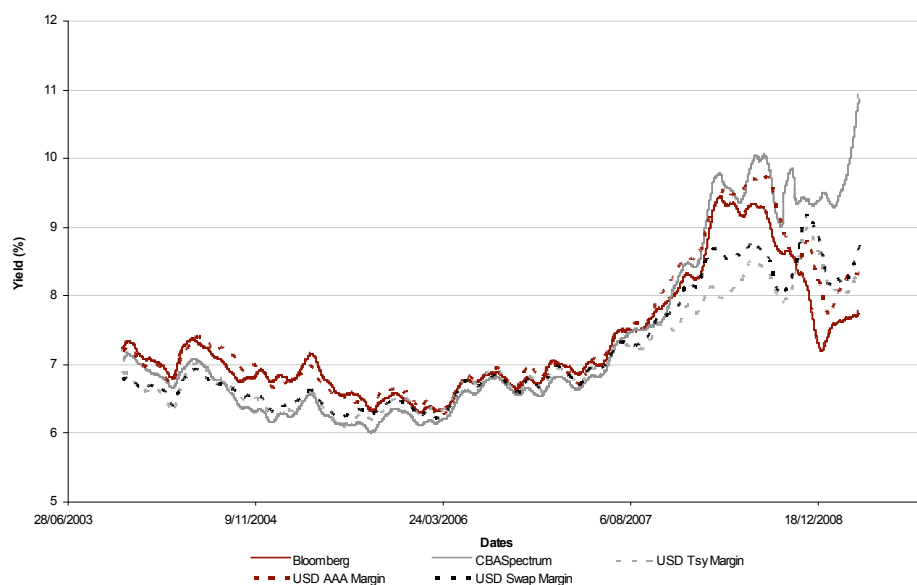
In addition, we have provided the total cost of debt (and hence the debt margin) that would be implied from three different assumptions about how the cost of debt in Australia may be related to the cost of debt in the US, which are as follows:

- *Assumption 1: the margin on BBB+ debt over the equivalent government bond rate is the same in Australia as it is in the US – which would imply a debt yield in Australia of 8.52 per cent, and hence a margin of 4.18 per cent (including the allowance for transactions costs).*
- *Assumption 2: the margin on BBB+ debt over that of AAA-rated debt is the same in Australia as it is in the US – which would imply a debt yield in Australia of 8.54 per cent, and hence a margin of 4.20 per cent (including the allowance for transactions costs).*
- *Assumption 3: the margin on BBB+ debt over the interbank swap rate is the same in Australia as it is in the US – which would imply a debt yield in Australia of 8.91 per cent, and hence a margin of 4.58 per cent (including the allowance for transactions costs).*

Figure 5.3 compares the yields that would have been predicted historically for Australian corporate bonds from US data as described above with the fair value yields that were produced by Bloomberg and CBASpectrum over the same period. This figure suggests that these methods produced estimates of the Australian corporate bond yields that were fairly close to those produced by Bloomberg and CBASpectrum over the period prior between the start of 2004 and late 2007.

Figure 5.3

BLOOMBERG AND CBA SPECTRUM 10-YEAR BBB+ BOND FAIR VALUE YIELDS VS. PREDICTIONS FROM US BOND YIELDS (20 DAY MOVING AVERAGES)



Source: Data from Bloomberg and CBASpectrum.

Accordingly, we would interpret the results set out in Table 5.1 from the relativities being observed in the US as providing support for the proposition that the Bloomberg currently is understating the yield on 10-year, BBB+ rated debt, possibly by around 60 to 100 basis points, as well as support for the proposition that the CBASpectrum service is overstating the current cost of debt.

5.6 Conclusion

The current Australian bond market has been severely affected by the credit crisis. The market is currently virtually closed to new issues, and extremely high volatility has been observed in the trading of the existing stock of bonds. Low rated, long dated bonds do not exist.

The current point estimate for the annualised 10 year Commonwealth Government bond rate is 4.46 per cent, which is what we have used to estimate the margins set out below. We note that if a different risk free rate is used, then the debt margin would also need to be re-estimated, given that corporate bond yields typically do not move one-for-one with government bond rates.

The debt margins that is observed from Australian data is bounded by the predictions from the Bloomberg and CBA Spectrum service, which is between 359 and 687 basis points (including an allowance for transaction costs). As noted above, the fact that there is such a divergence in these estimates is a substantial concern. We have also reported three forms of debt margin observed in the US market, which provide equivalent debt margins in Australia of between 419 and 458 basis points (including an allowance for transaction costs).

Considering the evidence discussed above, we consider that the cost of debt is likely to be between the estimate provided by the Bloomberg service (albeit, probably above this), but probably not above the cost that is provided by the highest of the margins estimated with reference to the US market. This implies a range of between 359 and 458 basis points (including an allowance for transaction costs), and would recommend the selection of a margin from towards the upper end of this range (we note again our concern that Bloomberg may understate yields). We note that CBASpectrum appears to predict yields that exceed by a large extent the majority of the observed Australian bond yields, and so recommend against using this service to set the upper end of the range.

Considering a range that also draws on US debt market relativities is an approach that we would recommend in the current climate of global financial crisis, but it is not an approach that should necessarily be followed at a future review if there is more reliable bond market data on which to base estimates.

Appendix A

Selection of comparators

A.1 Sector and country selection

Comparable entities for QR-Coal's below rail coal haulage services have been chosen from the following industries:

- Railroad;
- Coal; and
- Transport.

To increase the number of observations we have referred to international data, but to maintain relative comparability we have limited the international comparators to countries that have similar financial, governance and institutional frameworks, i.e.:

- Australia
- United States
- Canada
- New Zealand

A.2 Additional filters

Additional filters we applied were:

- Actively traded companies with a market capitalisation greater than \$200 million.
- At least 5 years of trading history to provide at 60 return monthly observations for estimation of the equity beta.
- Finally, we reviewed the Bloomberg business description for each company in the filtered sample to exclude any firms that are not similar to the nominated sector's business profile. For example, firms with diversified businesses involved in activities other than the core activity of each sector. For example, we excluded coal exploration companies.

Bloomberg search results indicate a total of 24 coal comparators from US and Australia, 17 transport comparators from Australia and New Zealand and 8 railroad comparators from North America. We included Westshore Terminals as a coal comparator because of its primary port operations to export coal, with the coal loading charges dependent on the Canadian dollar price of coal. The only Canadian coal company in the sample with a market capitalisation in excess of \$200 million is engaged mainly in exploration for coal in China.

The final sample of comparators used to estimate the beta of QR-Coal is listed in Table A.1 below.

A.3 Selection of comparable entities

Table A.1

COAL COMPARATORS

Country	Name	Include	Reason for Exclusion
AU	Centennial Coal Co Ltd	Yes	
AU	Coal & Allied Industries Ltd	Yes	
AU	Gloucester Coal Ltd	Yes	
AU	New Hope Corp Ltd	Yes	
CN	Westshore Terminals Income Fund	Yes	
US	Arch Coal Inc	Yes	
US	Alliance Resource Partners LP	Yes	
US	Peabody Energy Corp	Yes	
US	Consol Energy Inc	Yes	
US	Massey Energy Co	Yes	
US	Walter Industries Inc	Yes	
AU	Felix Resources Ltd	No	Coal exploration and development company. Involved in developing clean coal technology.
AU	Gujarat NRE Minerals Ltd	No	Insufficient observations
AU	MacArthur Coal Ltd	No	Insufficient observations
AU	Riversdale Mining Ltd	No	Insufficient observations
AU	Whitehaven Coal Ltd	No	Insufficient observations
US	Alliance Holdings GP LP	No	Insufficient observations
US	Alpha Natural Resources Inc	No	Insufficient observations
US	Foundation Coal Holdings Inc	No	Insufficient observations
US	International Coal Group Inc	No	Insufficient observations
US	James River Coal Co	No	Insufficient observations
US	Natural Resource Partners LP	No	Company leases coal reserves to mine operators in exchange for royalty payments
US	Patriot Coal Corp	No	Insufficient observations
US	Penn Virginia GP Holdings LP	No	Insufficient observations
US	Penn Virginia Resource Partners LP	No	Company leases coal reserves to mine operators in exchange for royalty payments

Source: Data from Bloomberg

Table A.2

TRANSPORT COMPARATORS

Country	Name	Include	Reason for Exclusion
AU	Australian Infrastructure Fund	Yes	
AU	Macquarie Airports	Yes	
AU	Macquarie Infrastructure Group	Yes	
AU	Mermaid Marine Australia Ltd	Yes	
AU	Qantas Airways Ltd	Yes	
AU	Transurban Group	Yes	
AU	Toll Holdings Ltd	Yes	
AU	Virgin Blue Holdings Ltd	Yes	
NZ	Auckland International Airport Ltd	Yes	
NZ	Air New Zealand Ltd	Yes	
NZ	Freightways Ltd	Yes	
NZ	Infratil Ltd	Yes	
NZ	Lyttelton Port Co Ltd	Yes	
NZ	Mainfreight Ltd	Yes	
NZ	Port of Tauranga Ltd	Yes	
AU	Asciano Group	No	Insufficient observations
AU	ConnectEast Group	No	Insufficient observations

Source: Data from Bloomberg

Table A.3

RAILROAD COMPARATORS

Country	Name	Include
CN	Canadian National Railway Co	Yes
CN	Canadian Pacific Railway Ltd	Yes
US	Burlington Northern Santa Fe Corp	Yes
US	CSX Corp	Yes
US	Genesee & Wyoming Inc	Yes
US	Kansas City Southern	Yes
US	Norfolk Southern Corp	Yes
US	Union Pacific Corp	Yes

Source: Data from Bloomberg

Final Sample Determination

Table A.4

FINAL SAMPLE DETERMINATION

Railroads	Coal	Transport
Canadian National Railway Co	Centennial Coal Co Ltd	Australian Infrastructure Fund
Canadian Pacific Railway Ltd	Coal & Allied Industries Ltd	Macquarie Airports
Burlington Northern Santa Fe Corp	Gloucester Coal Ltd	Macquarie Infrastructure Group
CSX Corp	New Hope Corp Ltd	Mermaid Marine Australia Ltd
Genesee & Wyoming Inc	Westshore Terminals Income Fund	Qantas Airways Ltd
Kansas City Southern	Arch Coal Inc	Transurban Group
Norfolk Southern Corp	Alliance Resource Partners LP	Toll Holdings Ltd
Union Pacific Corp	Peabody Energy Corp	Virgin Blue Holdings Ltd
	Consol Energy Inc	Auckland International Airport Ltd
	Massey Energy Co	Air New Zealand Ltd
	Walter Industries Inc	Freightways Ltd
		Infratil Ltd
		Lyttelton Port Co Ltd
		Mainfreight Ltd
		Port of Tauranga Ltd

Source: Data from Bloomberg

*Appendix B***Bonds used for Bloomberg FVY estimates**

Table B.1

AUD CORPORATE (A)

Company	Yield	Maturity	Years to Maturity from 24/2/2009	Included
JEMENA LTD	5.005	15-Sep-09	0.44	YES
TELSTRA CORP LTD	4.718	30-Mar-10	0.97	YES
WESTFIELD MANAGEMENT LTD	8.165	15-Jul-10	1.26	
COLONIAL FINANCE LTD	6.027	20-Jul-10	1.28	
BANK OF SCOTLAND PLC/AU	7.9	26-Oct-10	1.55	
CFS RETAIL PROPERTY TR	7.052	12-Nov-10	1.59	
WOOLWORTHS LIMITED	5.817	14-Mar-11	1.93	YES
ROYAL BK OF SCOTLAND/AU	8.378	10-Jun-11	2.17	
STOCKLAND PROPERTY MGMNT	7.604	16-Jun-11	2.18	
COMMONWEALTH PROP FUND	6.713	28-Jun-11	2.22	
BANK OF SCOTLAND PLC/AU	7.319	19-Oct-11	2.53	
SPI ELECTRICITY & GAS	6.108	3-Nov-11	2.57	YES
SPI AUSTRAL FIN PTY LTD	6.19	30-Nov-11	2.64	YES
CFS RETAIL PROPERTY TR	8.899	2-Sep-12	3.40	
TELSTRA CORP LTD	6.408	15-Nov-12	3.60	YES
CIVIC NEXUS FINANCE LTD	7.208	15-Sep-14	5.43	YES
TELSTRA CORP LTD	7.36	15-Apr-15	6.02	YES

Source: Bloomberg

Table B.2

AUD CORPORATE (BBB)

Company	Yield	Maturity	Years to Maturity from 24/2/2009	Included
ENERGY PARTNERSHIP GAS	5.94	29-Jul-09	0.30	
HOLCIM FINANCE AUSTRALIA	N/A	7-Aug-09	0.33	
FGL FINANCE AUSTRALIA	5.605	17-Mar-10	0.94	YES
BRISBANE AIRPORT CORP	N/A	30-Jun-10	1.22	
MIRVAC GROUP FUNDING LTD	6.68	15-Sep-10	1.43	
BANK OF QUEENSLAND LTD	6.05	2-Dec-10	1.65	YES
DEXUS FINANCE PTY LTD	6.469	8-Feb-11	1.83	YES
FAIRFAX MEDIA GROUP FINA	21.363	27-Jun-11	2.21	
ORIGIN ENERGY LIMITED	6.638	6-Oct-11	2.49	YES
TABCORP INVESTMENTS NO.4	6.693	13-Oct-11	2.51	YES
SYDNEY AIRPORT FINANCE	N/A	21-Nov-11	2.62	
COLES GROUP FINANCE	7.424	25-Jul-12	3.29	YES
SNOWY HYDRO LIMITED	N/A	25-Feb-13	3.88	
SANTOS FINANCE LIMITED	7.896	23-Sep-15	6.46	YES

Source: Bloomberg

Appendix C

Descriptions of comparators

Table C.1

COMPANY DESCRIPTION

Company Name	Code	Company Description	Market Cap, \$M (31/12/08)
COAL			
United States:			
Peabody Energy Corporation	BTU	Peabody Energy Corporation mines and markets predominantly low-sulphur coal, primarily for use by electric utilities. The Company also trades coal and emission allowances.	6,065.91
Consol Energy Inc.	CNX	CONSOL Energy Inc. produces high-BTU bituminous coal, and also coalbed methane gas. The Company markets coal primarily to the electric power generation industry, and secondarily to other consumers of coal in the United States. The majority of CONSOL's mines employ longwall mining systems, which are highly mechanized, capital-intensive operations with a low variable cost structure.	5,178.52
Arch Coal Inc.	ACI	Arch Coal, Inc. mines, processes, and markets low-sulphur coal from surface, underground, and auger mines located in the western United States and in the central Appalachian region. The Company markets its coal primarily to electric utilities.	2,327.24
Massey Energy Co.	MEE	Massey Energy Company produces, processes, and sells bituminous, low sulphur coal of steam and metallurgical grades through its processing and shipping centers. The Company currently operates coal mines in West Virginia, Kentucky, and Virginia. Massey provides its coal to utility, industrial, and metallurgical customers.	1,174.01
Walter Industries Inc.	WLT	Walter Industries, Inc. produces and exports metallurgical coal for the global steel industry. The Company also produces steam coal, coal bed methane gas, furnace and foundry coke. Walter Industries also operates a mortgage financing and homebuilding business.	951.45
Alliance Resource Partners	ARLP	Alliance Resource Partners, L.P. produces and markets coal to United States utilities and industrial users. The Company operates its facilities in Kentucky, Illinois, and Maryland.	984.17
Australia:			
Coal & Allied Industries	CNA	Coal & Allied Industries Limited operates underground coal mines and open cut mines at Hunter Valley and Mount Thorley (both located in New South Wales) along with related coal preparation and marketing. The Company exports its coal products to Japan, Asia and Europe.	7,359.70

Company Name	Code	Company Description	Market Cap, \$M (31/12/08)
New Hope Corporation Limited	NHC	New Hope Corporation Limited is a thermal coal production company based in Australia. The Company also has interests in logistics and infrastructure operations in Australia as well.	2,794.04
Centennial Coal Company Limited	CEY	Centennial Coal Company Limited is a thermal and coking coal producer with operations in the Western and Southern Coalfields of New South Wales and in Central Queensland. The Company's coal mines include Berrima, Anvil Hill, Newstan and Ivanhoe. The Company also operates the Cook Colliery and exports its product throughout the world.	1,233.00
Gloucester Coal Ltd.	GCL	Gloucester Coal Ltd. mines and explores coal throughout eastern Australia. The Company's projects include the Duralie Coal Project located in the Gloucester Basin. The Company, through the Stratford Joint Venture, produces coking coal and thermal coal for use in the production of steel.	319.31
RAIL			
United States:			
Union Pacific Corporation	UNP	Union Pacific Corporation, through its subsidiaries, operates as a rail transportation provider. The Company's railroad hauls a variety of goods, including agricultural, automotive, and chemical products, across the United States and portions of Mexico.	24,207.40
Kansas City Southern	KSU	Kansas City Southern, through its subsidiary, is the holding company for transportation segment subsidiaries and affiliates. The Company operates a railroad system that provides shippers with rail freight services in commercial and industrial markets of the United States and Mexico.	1,739.13
Burlington Northern Santa Fe Corporation	BNI	Burlington Northern Santa Fe Corporation, through its subsidiaries, operates a railroad system in the United States and Canada. The Company transports a wide range of products and commodities, including the transportation of containers and trailers, coal, grain, chemicals, metals, minerals, forest products, autos, and consumer goods.	25,917.53
CXS Corporation	CSX	CSX Corporation is an international freight transportation company. The Company provides rail, intermodal, domestic container-shipping, barging, and contract logistics services around the world. CSX's rail transportation services are provided principally throughout the eastern United States.	12,808.42
Norfolk Southern Corp	NSC	Norfolk Southern Corporation (Norfolk Southern) is a Norfolk , Virginia based company that controls a major freight railroad, Norfolk Southern Railway Company. Norfolk Southern Railway Company is primarily engaged in the rail transportation of raw materials, intermediate products and finished goods primarily in the Southeast, East and Midwest and, via interchange with rail carriers, to and from the rest of the United States . Norfolk Southern also transports overseas freight through several Atlantic and Gulf Coast ports. Norfolk Southern provides comprehensive logistics services and offers the most extensive intermodal network in the eastern half of the United States	17,421.64
Genesee & Wyoming Inc	GNWR	Genesee & Wyoming Inc. (GWI) owns and operates short line and regional freight railroads in the United States, Canada, Australia and the Netherlands and owns a minority interest in a railroad in Bolivia. Operations currently include 63 railroads organized in nine regions, with more than 6,800 miles of owned and leased track and approximately 3,000 additional miles under track access arrangements. GWI provides rail service at 16 ports in North America and Europe and performs contract coal loading and railcar switching for industrial customers.	1,098.65

Company Name	Code	Company Description	Market Cap, \$M (31/12/08)
Canada:			
Canadian Pacific Railway Limited	CP	Canadian Pacific Railway Limited is a Class 1 transcontinental railway, providing freight and intermodal services over a network in Canada and the United States. The Company's mainline network serves major Canadian ports and cities from Montreal to Vancouver, and key centers in the United States Midwest and Northeast.	6,303.14
Canadian National Railway Company	CNR	Canadian National Railway Company operates a network of track in Canada and the United States. The Company transports forest products, grain and grain products, coal, sulfur, and fertilizers, intermodal, and automotive products. Canadian National operates a fleet of locomotives and railcars.	20,957.26
TRANSPORT			
Australia:			
Transurban Group	TCL	Transurban Group is involved in the operation of the Melbourne City Link and the Hills Motorway M2 toll roads. The Group is also involved in developing and operating electronic toll systems.	6,874.73
Qantas Airways Limited	QAN	Qantas Airways Limited is an international airline with a network of domestic and intercontinental routes mainly in the Asia-Pacific region. In addition, Qantas operates a catering service and provides travel and holiday tourism services throughout Australia. Qantas provides electronic reservation systems, ground handling, engineering and maintenance services.	5,127.50
Toll Holdings Limited	TOL	Toll Holdings Limited provides express freight transport by road, rail and sea and provides integrated logistics and distribution systems, including specialized warehousing, port operations, vehicle transport and distribution, and rail passenger operations. The Company also provides coastal shipping, refrigerated freight services, bulk liquid transportation and wharf services	4,265.79
Macquarie Infrastructure Group	MIG	Macquarie Infrastructure Group is an infrastructure investment group whose portfolio is comprised of toll road, tunnel and bridge assets located throughout Australia, Europe and North America.	4,110.56
Macquarie Airports	MAP	Macquarie Airports is an infrastructure investment company whose portfolio is comprised of airport assets located throughout the world.	4,124.77
Australian Infrastructure Fund	AIX	Australian Infrastructure Fund is an investment company incorporated in Australia. The objective of the Fund is to provide yield to unit-holders and sustained capital growth of investments. The Company mainly invests in unlisted transport infrastructure assets, with airports comprising the majority of the portfolio, but also investing in seaports, tollroads and rail businesses.	723.53
Australian Infrastructure Fund	AIX	Australian Infrastructure Fund is an investment company incorporated in Australia. The objective of the Fund is to provide yield to unit-holders and sustained capital growth of investments. The Company mainly invests in unlisted transport infrastructure assets, with airports comprising the majority of the portfolio, but also investing in seaports, tollroads and rail businesses.	845.39
Virgin Blue Holdings	VBA	Virgin Blue is an Australian airline that provides passenger services between all of Australia's major cities. Virgin Blue offers low discount airfare to its customers.	315.39

Company Name	Code	Company Description	Market Cap, \$M (31/12/08)
Mermaid Marine Australia Ltd.	MRM	Mermaid Marine Australia Limited provides diversified marine services. The Company operates mainly in the Dampier and North West Shelf in Western Australia and also in the Northern Territory. Mermaid operates crew vessel charters, vessel manning, management and logistics along with operating supply base facilities	195.93
New Zealand:			
Auckland International Airport Limited	AIA	Auckland International Airport Limited owns and operates the Auckland and domestic air passenger and cargo transport services throughout New Zealand and the South West Pacific. The Company also provides engineering and ground handling services.	1,983.04
Air New Zealand	AIR		1,018.68
Port of Tauranga Limited	POT	Port of Tauranga Limited activities include the provision of wharf facilities, back up land for the storage and transit of import and export cargo, berthage, cranes, tug and pilotage services for exporters, importers and shipping companies and the leasing of land and buildings. The Group also operates a container terminal and has bulk cargo marshalling operations.	873.91
Infratil Limited	IFT	Infratil is an owner and operator of businesses in the energy (mainly renewable), airport and public transport sectors. Its energy operations are predominantly in New Zealand and Australia. The Company owns Wellington Airport in New Zealand and airports in Glasgow, Kent and Lübeck. Infratil's public transport services are in Auckland and Wellington, New Zealand.	848.19
Mainfreight Ltd	MFT	Mainfreight Limited provides and supplies freight, warehousing and logistics services throughout New Zealand and Australia. The Company provides freight forwarding services by road, rail, sea and air along with providing international freight forwarding services, customs clearance services and specialized handling of hazardous substances.	474.62
Freightways Ltd	FRE	Freightways Limited provides express package services throughout New Zealand along with providing information management and business mail services. The Company's courier services includes same day and overnight national and international deliveries, freight forwarding services, computer media transport and payroll data deliveries.	411.38
Lyttelton Port Company Ltd.	LPC	Lyttelton Port Company Limited operates and maintains the facilities of the Port of Lyttelton for use by shipping lines, exporters and importers. The Company manages the port facility, land, buildings, berth structures and provides marine and utility services. The Company also offers cargo handling of containers and coal.	260.77

Source: Data from Bloomberg

