The required return on equity commensurate with current conditions in the market for funds

Report prepared for Envestra

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PO Box 29, Stanley Street Plaza
South Bank QLD 4101
Telephone +61 7 3844 0684
Email s.gray@sfgconsulting.com.au
Internet www.sfgconsulting.com.au

STRATEGIC FINANCE GROUP
SFG CONSULTING

Level 1, South Bank House
Stanley Street Plaza
South Bank QLD 4101
AUSTRALIA

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Executive summary and conclusions

Instructions and overview

1. The Strategic Finance Group: SFG Consulting (SFG) has been engaged by Envestra Ltd. to examine the return on equity that is commensurate with the prevailing conditions in the market for funds. This is in the context of National Gas Rule 87(1) which requires that the allowed regulatory return must be commensurate with prevailing conditions in the market for funds.

2. In this report, we use a range of approaches to estimate the return that is expected on equity investments in other comparable firms. When determining whether a proposed allowed return is commensurate with prevailing conditions in the market for funds, one important consideration is whether that allowed return is commensurate with the return that is available from other comparable firms.

3. We note that the Sharpe-Lintner CAPM, using parameter estimates recently adopted by the AER, produces an estimate of the required return on equity that is below the returns that are apparently available from comparable firms. We examine which of the CAPM input parameters might be responsible for that disparity.

4. This report has been prepared by Professor Stephen Gray, Professor of Finance at the University of Queensland and Managing Director of the Strategic Finance Group. A copy of my CV is attached as an appendix to this report. I have been provided with a copy of the Federal Court Guidelines for Expert Witnesses and have prepared this report in accordance with them. I understand that Envestra Ltd. will submit this report to the AER as part of its regulatory proposal.

Conclusions

5. Our key conclusions are as follows:

   a. The expected dividend yield on the set of comparable firms is approximately 10.5% p.a. We obtain this estimate from the forecasts set out in the research reports of equity analysts from major broking houses. We examine forecasts for the same set of comparable firms that are traditionally used by regulators to estimate equity beta and credit ratings. We note that the forecasts are consistent across time (2010-2012), across firms, and across broking houses;

   b. The forecast dividend yields on comparable firms have been quite stable at this level over recent times;

   c. The dividend yields that are available on new equity raised by the set of comparable firms are substantially higher than 10.5% on average. This implies that our estimated dividend (based on traded prices for existing shares) is, if anything, conservative;

   d. The dividend yield is only one component of the return available to shareholders. Shareholders may also benefit from stock price appreciation or capital gains. If stock prices are assumed to increase at a real rate of 0-1% p.a., and if expected inflation is 2.5% p.a., the combined return from dividends and capital gains would be in the range of 13-14%;

e. An important consideration when determining whether a proposed regulatory return on equity, r_e, is consistent with the National Gas Rules is a comparison between that allowed regulatory return on equity and the return on equity that is available to investors in other comparable firms. Final estimates of the total required return on equity that are below even the current dividend yield on comparable firms are not consistent with prevailing conditions in the market for funds. This requires either:

   i. A revision to one or more input parameters, so that the revised values (selected from within the range that is considered to be reasonable) produce an estimate of the required return on equity that *is* consistent with current conditions in the market for funds; or

   ii. A detailed explanation as to why the proposed estimate of the required return on equity can be, in light of the apparent evidence to the contrary, considered to be already consistent with current conditions in the market for funds.

1. Legal and economic context

Overview and context

6. The regulatory estimate of the required return on equity, r_e, is an estimate of the expected return that is required by potential equity investors before they will commit the required amount of equity funding to the benchmark regulated firm.

7. The National Gas Rule (NGR) 87(1) requires that:

> The rate of return on capital is to be commensurate with prevailing conditions in the market for funds and the risk involved in providing the Reference Service.[1]

8. Consequently, under the Rules, the allowed return must be commensurate with the return that is required to attract funds, given the prevailing conditions in the market.

9. An important consideration when determining whether a proposed return on equity, r_e, is consistent with the Rules is a comparison between the allowed regulatory return on equity and the return on equity that is available to investors in other comparable firms. For example, if the allowed return on equity were materially lower than the return on equity available from other comparable firms, that allowed return would not be commensurate with prevailing conditions in the market for funds, as required by Rule 87(1).

10. Consequently, it is important to estimate the expected return on equity that is presently available to investors in firms that are comparable to the benchmark firm that is the subject of regulation.

Use of CAPM

11. We also note that NGR 87(2)(b) provides that:

> In determining a rate of return on capital a well accepted approach that incorporates the cost of equity and debt, such as the Weighted Average Cost of Capital, is to be used; and a well accepted financial model, such as the Capital Asset Pricing Model, is to be used.[2]

12. In this regard, we note that the Capital Asset Pricing Model (CAPM) is an economic model that takes the form of a mathematical equation. One inserts estimates of certain parameters into the CAPM formula and the result is an estimate of the required return on equity. The resulting estimate of the required return on equity is *conditional* on the values of the various parameter estimates that have been used in the CAPM formula.

13. As with any such formula, the reliability and reasonableness of the output depends completely on the inputs that have been used in the formula. If unreasonable estimates of the input parameters are inserted into the formula, the resulting output will also be unreasonable.

14. In the context of the CAPM, there is considerable uncertainty about the values that should be used as the inputs to the formula. This is particularly the case for the estimates of beta and

[1] National Gas Rules Version 4, Rule 87(1).
[2] National Gas Rules Version 4, Rule 87(2)(b).

market risk premium (MRP). If unreasonable estimates of these input parameters are inserted into the formula, the resulting output will also be unreasonable. Symmetrically, if the resulting output is demonstrably unreasonable, this implies that the values of one or more input parameters must have been unreasonable.

15. In our view, an important step when using the CAPM is to consider the reasonableness of the resulting output (i.e., the estimated required return on equity). If, for some reason, the resulting output is considered to be unreasonable, this should lead to a re-examination of the input parameters that were inserted into the CAPM formula.

16. To determine whether the output from the CAPM formula is reasonable, and whether it is commensurate with prevailing conditions in the market for funds, one important consideration would be a comparison between the CAPM estimate of the required return on equity and the return on equity that is available to investors in other comparable firms. For example, if the CAPM estimate was materially lower than the return on equity available from other comparable firms, that estimate would not be reasonable or commensurate with prevailing conditions in the market for funds – notwithstanding that it is an estimate that was produced by the CAPM.

Other financial models

17. We also note that NGR 87(2)(b) uses the CAPM as one example of a "well accepted financial model." If a well accepted model other than CAPM is used to estimate the required return on equity, the same issues about testing for reasonableness would apply. That is, the estimate of the required return on equity from *any* such model is conditional on the input parameter estimates used in the model. No model is capable of automatically correcting for inappropriate or inaccurate input parameters. Consequently, the resulting estimates of the required return on equity should not be mechanically adopted before considering whether they are reasonable and commensurate with the prevailing conditions in the market for funds.

Checks for reasonableness

18. There is debate and uncertainty about what data and what statistical processes should be used to produce estimates of the input parameters. Reasonable minds may differ on these questions and this will result in different estimates of the required return on equity.

19. In our view, having adopted a particular data set, chosen a particular statistical method, and produced a particular estimate of the required return on equity, there is no guarantee that this is commensurate with current conditions in the market for funds. For example, if the available data set is too small there is a high probability of spurious results, the statistical method that is chosen may fail to correct for known biases, and so on.

20. For these reasons, it is our view that any estimate that is produced (using a particular data set and a particular statistical method) should not be mechanically adopted, but should be examined for reasonableness and consistency with the current conditions in the market for funds. For example:

    a. An estimate of the required return on equity that is lower than the required return on debt for the same firm is nonsensical and must be rejected on the basis that the data or statistical methods that have been used have produced an estimate that defies common sense and is clearly inconsistent with the current conditions in the market for funds;

    b. An estimate of the required return on equity that is at historical lows at a time when financial markets are in severe crisis also must be rejected – the particular process that has

been used has produced an estimate that is inconsistent with current conditions in the market for funds.

21. Our view is that these sorts of checks for economic reasonableness should be performed on any estimate of the required return on equity and that estimates produced in a CAPM (or other well accepted financial model) framework are not exempt from this.

22. Moreover, our view is that our estimates of the returns that would be available to investors in comparable firms should also be used to assess economic reasonableness. Questions should be raised about input parameters that lead to an estimate that is substantially below the sort of return that investors might reasonably expect to receive from comparable firms.

23. In summary, our view is that all of the evidence, all of the estimates, all of the checks and tests for economic reasonableness should be considered in a holistic manner. It is inappropriate to mechanically estimate a set of parameters, insert them into a pricing formula, and then to adopt the result without question.

2. Estimates of the required return on equity for comparable firms

Overview and context

24. The expected return on equity available to investors in comparable firms has three possible components:

    a. Dividends;

    b. Capital gains; and

    c. Dividend imputation franking credits.

25. We begin by focusing on the return that is available from cash dividends.

Broker research reports

26. Equity research analysts from broking houses produce research reports on individual firms on a regular basis. These research reports contain many pieces of information including a forecast of the dividend yield of the particular firm for each of the following three to four years, and a 12-month forecast of the firm's stock price.

27. We have obtained broker research reports from a number of broking houses including:

    a. Macquarie Bank;
    b. UBS;
    c. Wilson HTM;
    d. Morgan Stanley;
    e. Credit Suisse;
    f. Ballieu Research;
    g. Goldman Sachs JB Were;
    h. JP Morgan;
    i. RBS Morgans; and
    j. Merrill Lynch.

28. These reports cover a number of firms that might be considered comparable to WAGN:

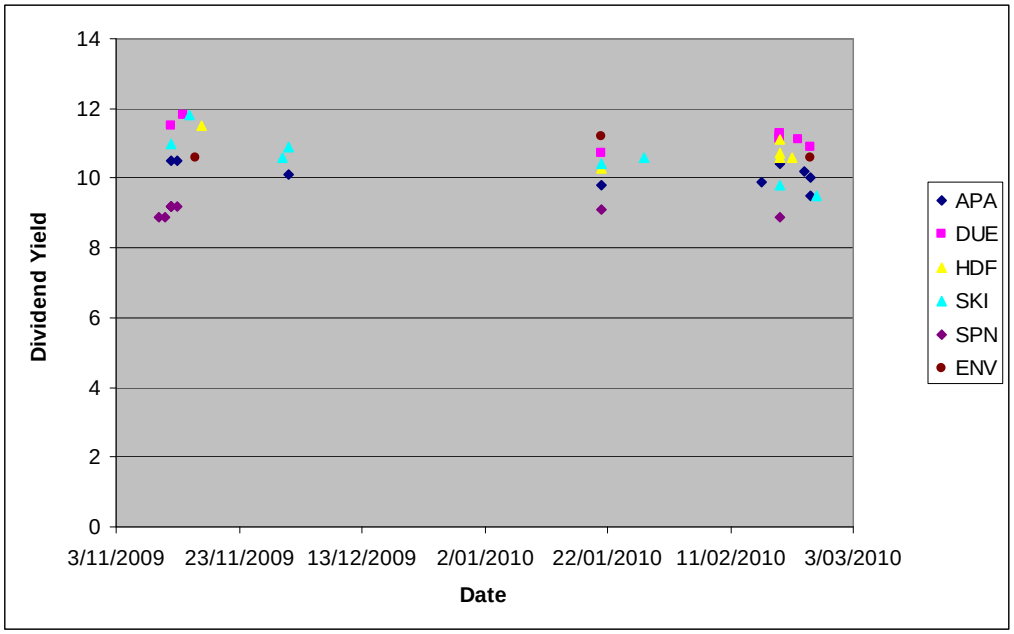
    a. APA Group (APA);
    b. Hastings Diversified Utilities Fund (HDF);
    c. Envestra (ENV);
    d. Spark Infrastructure (SKI);
    e. SP Ausnet (SPN); and
    f. DUET Group (DUE) – a part-owner of WAGN.

29. We note that none of these firms is an exact replica of WAGN, but among all listed firms for which data is available, this set of firms is the most comparable. We note in this regard that this same set of firms is usually used as the basis for the estimates of equity beta and credit rating in regulatory determinations. Moreover, in this report, the focus is on dividend yield forecasts and there is little variation in this variable across firms. Consequently, the inclusion or exclusion of a particular firm (on the basis of it being more or less comparable to WAGN) does not have a material effect on the outcomes of the analysis in this report.

Dividend yield forecasts

30. Figure 1 below sets out the most recent dividend yield forecast for 2010 for each firm in the comparables set. The dividend yield is defined as the dividend per share divided by the price per share. For each firm, a number of different broking houses have made forecasts. The dates on the horizontal axis represent the dates on which the various forecasts were made. In each case, we have the most recent forecast from each broker for each firm. The average forecasted 2010 dividend yield (across all firms and all brokers) is 10.4%.

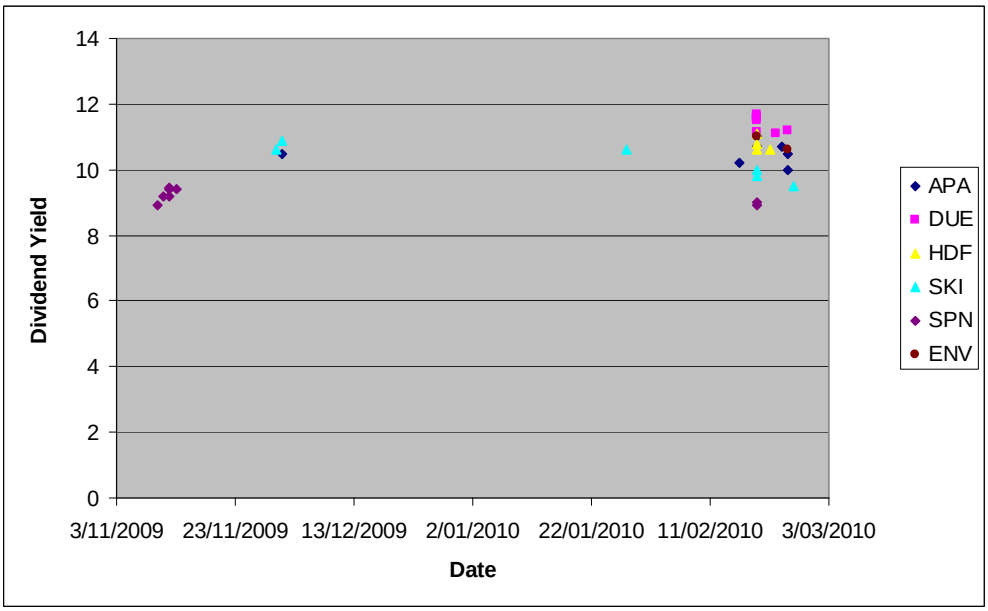
Figure 1. Dividend yield estimate: 2010



Source: Various broker research reports.

31. Figure 2 below sets out the most recent dividend yield forecast for 2011 for each firm in the comparables set. The average forecasted 2011 dividend yield (across all firms and all brokers) is 10.5%.

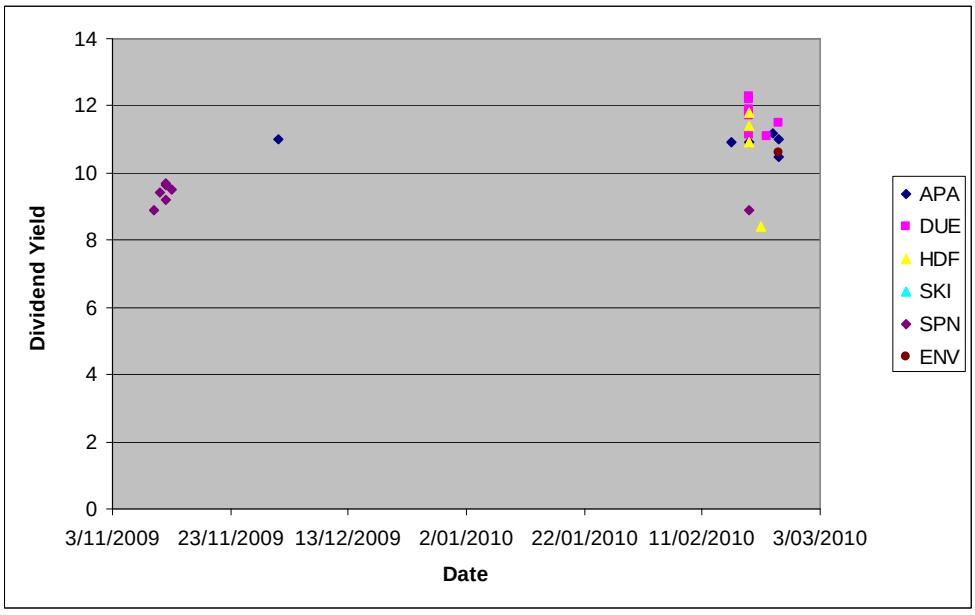
Figure 2. Dividend yield estimate: 2011



Source: Various broker research reports.

32. Figure 3 below sets out the most recent dividend yield forecast for 2012 for each firm in the comparables set. The average forecasted 2011 dividend yield (across all firms and all brokers) is 10.6%.

Figure 3. Dividend yield estimate: 2012



Source: Various broker research reports.

33. Table 1 below summarises the dividend yield forecasts by firm and year. Each cell contains the average dividend yield forecast across brokers.

Table 1. Average dividend yield by firm and year

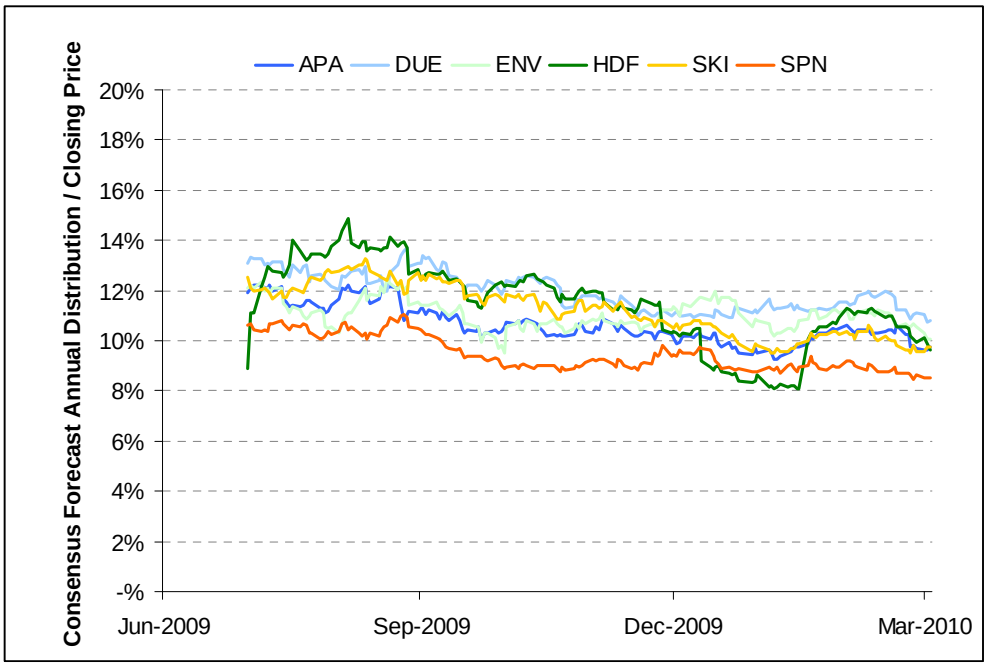
	2010	2011	2012	Average
APA	10.1	10.5	10.9	10.5
DUE	11.2	11.4	11.7	11.4
ENV	10.8	10.8	10.6	10.7
HDF	10.8	10.8	10.6	10.7
SKI	10.6	10.2		10.4
SPN	9.1	9.2	9.4	9.2
Average	10.4	10.5	10.6	10.5

Source: Various broker research reports.

34. The average forecasted dividend yield (across all firms and all years) is 10.5%. That is, the broker research reports suggest that investors should expect to receive a return in the form of dividends of 10.5% p.a. across the set of comparable firms. This would be one consideration that would be made by investors when deciding whether the allowed return on equity for the regulated firm is sufficient to convince them to commit the requisite amount of equity capital.

35. Figure 4 shows the consensus dividend yield forecast (i.e., the mean across all broking firms) for each of the comparable firms over recent months. The figure illustrates that there is some variation over time as the broking houses revise their forecasts of future dividends and as stock prices change. Nevertheless, there is reasonable stability in the dividend yield forecasts around our mean estimate of 10.5%. In other words, there is nothing unusual about the most recent data to indicate that that the current estimate of 10.5% is out of the ordinary in any sense.

Figure 4. Consensus dividend yield forecasts for comparable firms



Source: Bloomberg.

Evidence from recent capital raisings

36. Another source of data that is used to estimate the implied forward-looking required return on equity comes from actual equity capital raisings. Over the last year, four of the firms in the set of comparables have raised equity and a summary of these transactions is set out in Table 2 below. All of these capital raisings were substantial in size, relative to the pre-issue market cap of the firms, and all were issued at substantial discounts.

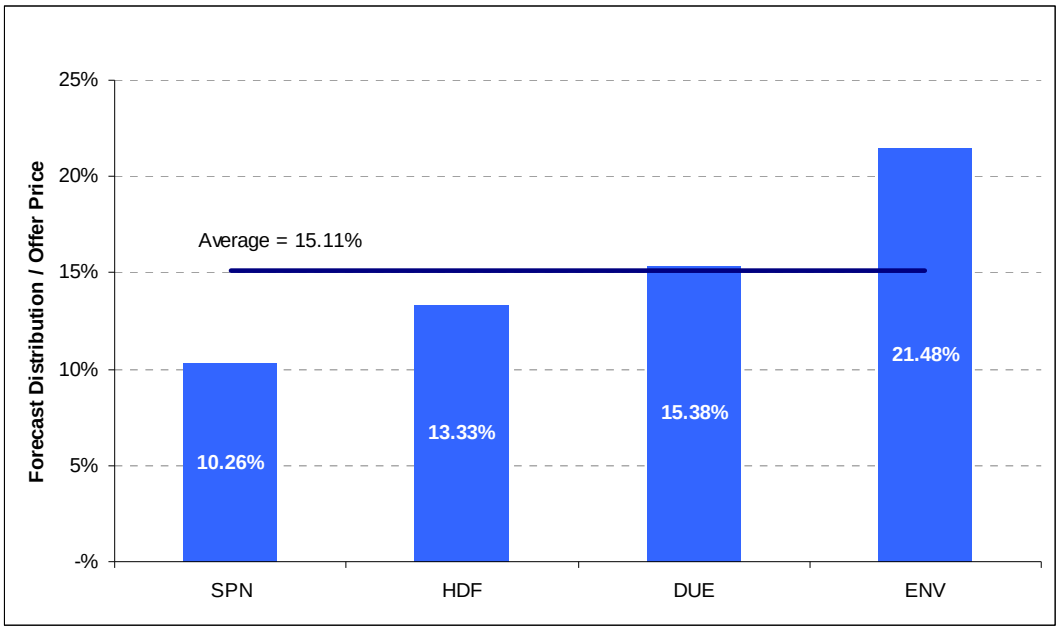
Table 2. Average dividend yield by firm and year

Company	Ann. Date	Amount raised	Issue price	Raising as % of market cap	Disc .to close	Dividend guidance provided
Envestra	22-Dec-08	$111m	$0.30	22%	45%	Expectation that current dividend is to be maintained post issue.
DUET Group	1-Apr-09	$265m	$1.30	23%	24%	The Board's expectation now is that the FY2009 final distribution will be 10 cents per Stapled Security and that the FY2010 full-year distribution is expected to be 20 cents per Stapled Security. This distribution guidance reflects the dilutionary impact of the issue of new securities.
SP AusNet	11-May-09	$408m	$0.78	22%	13%	Distribution guidance for FY10 is 8.0 cpss. Distributions beyond FY10 to be determined based on Operating Cash Flow after funding 100% of maintenance capital expenditure and a portion of growth capital expenditure.
Hastings Diversified Utilities Fund	1-Jul-09	$250m	$0.90	99%	24%	Post the Equity Raising FY2009 distribution guidance has been maintained in line with the most recent guidance of $0.12 per security, implying a 13.3% annualised yield on the offer price of $0.90 per New Security.

Source: Macquarie Capital ECM database, Dealogic.

37. The key piece of information from these capital raisings is the forward-looking dividend yield relative to the offer price. This is the dividend yield on their investment in new shares in the firm that subscribers to the equity issue can expect to receive. This is then an estimate of the dividend yield that the firm must offer in order to attract the requisite amount of equity capital. The forward-looking dividend yield estimates are set out in Figure 5 below.

Figure 5. Forward-looking dividend yields from equity capital raisings



Source: Macquarie Capital ECM database, Dealogic.

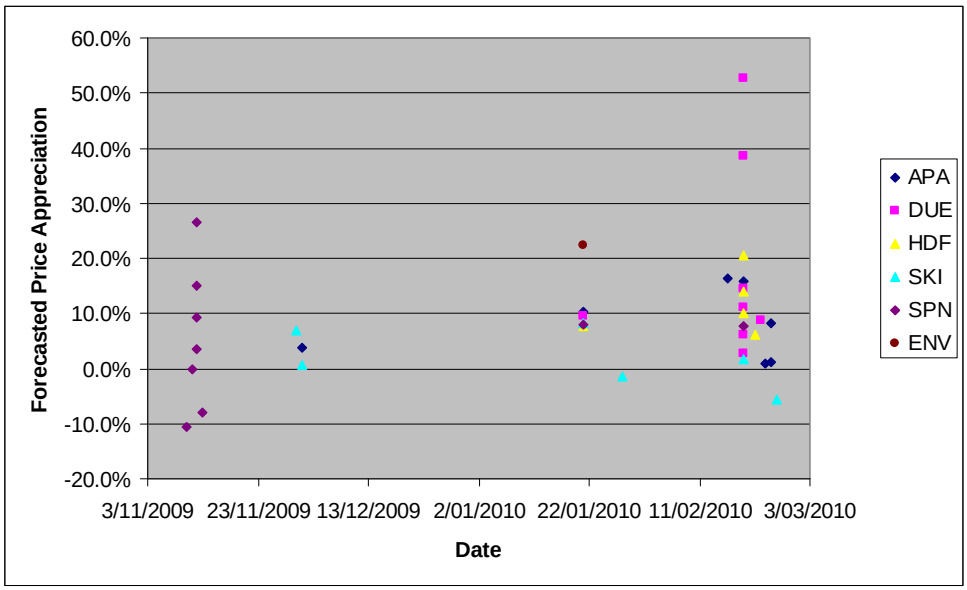
38. The forward-looking dividend yields available to providers of new equity to comparable firms over the last year averages more than 15%. The yield in relation to SP Ausnet was 10.3% and yields on other firms were substantially higher than that.

39. There are few observations (four) and they occurred in response to the events unfolding in relation to the Global Financial Crisis. For this reason, we are careful not to place undue reliance on these forward-looking dividend yields. Rather, we note that they are all at or above our trading yield estimate of 10.5%. Consequently, we conclude that if anything is to be drawn from the results in Figure 5, it is that our trading yield estimate of 10.5% may be somewhat conservative.

Capital gain forecasts

40. Figure 6 below shows the most recent forecasted stock price appreciation for each firm in the comparables set. In each case, the forecasted price appreciation is calculated by comparing the current stock price with the broker's 12-month price target. The dates on the horizontal axis represent the dates on which the various forecasts were made. In each case, we have the most recent forecast from each broker for each firm. The average forecasted stock price appreciation (across all firms and all brokers) is 11.3%. This is further summarised in Table 3 below.

Figure 6. Forecasted price appreciation from broker research reports



Source: Various broker research reports.

Table 3. Average forecasted price appreciation

	2010
APA	8.1%
DUE	18.1%
ENV	22.4%
HDF	11.7%
SKI	1.8%
SPN	5.7%
Average	11.3%

Source: Various broker research reports.

41. In our view, the forecasted price appreciation estimates are less reliable and should receive less weight than the dividend yield forecasts for a number of reasons:

a. The price appreciation forecasts are for a 12-month horizon only, whereas the dividend yield forecasts extend out at least three years;

b. The dividend yield forecasts are tightly clustered – there is relatively little variation across firms, across time, or across brokers. There is more variability in the price appreciation forecasts; and

c. In general, price appreciation is more difficult to forecast, whereas dividends tend to be much more stable over time. That is, forecasts of future dividends are always likely to be more accurate than forecasts of future stock price changes simply because they are more predictable.

42. For these reasons, we place little weight on the forecasts of price appreciation other than to note that they are uniformly positive on average. That is, the equity research analysts are of the view that the stock prices of the comparable firms will be increasing over time. This implies that the

return in the form of dividends (i.e., the dividend yield forecasts above) must be considered to be an absolute lower bound for the return available to shareholders in the comparable firms – shareholders will receive the dividend yield and there is expected to be some stock price appreciation in addition to that.

43. Rather than extrapolating the forecasted one-year stock price appreciation forward through time, we consider a very conservative range of 0-1% for real stock price appreciation. Note that under standard long-term equity valuation models, the growth rate in stock prices is the same as the growth rate in dividends. Consequently, the range of 0-1% real can be thought of as a growth rate in stock prices or dividend payments. The lower end of this range reflects no real growth in which case stock prices and dividends would only increase to keep pace with inflation. The upper end of the range reflects growth of only 1% real, which can be compared with forecasted real growth of 2.5 to 3.5% across the broad economy.[3]

44. A common estimate for long-run expected inflation is 2.5% -- the mid-point of the target band adopted by the Reserve Bank of Australia. I note that short-term inflation expectations are sometimes recovered by comparing the yields on inflation-protected and standard Commonwealth Government Securities. However, this approach is subject to estimation error as the inflation protected bonds are in relatively short supply and the approach can only yield short-term forecasts. For this reason, we adopt 2.5% as the estimate of forecasted inflation in the remainder of this report.

45. Consequently the range for nominal growth in share prices or dividends is 2.5% to 3.5%. Although we do not place substantial weight on the share price appreciation forecasts in Table 3 for the reasons set out above, we do note that that a range of 2.5% to 3.5% is certainly not high relative to the values set out in that table.

Implications for the 87(1) test and reasonableness

46. If investors expect a dividend yield of 10.5% (on average) from comparable firms, and if the expected return in the form of capital gains is considered to be in the range of 2.5% to 3.5% p.a., this amounts to a combined return on equity in the range of 13% to 14% from comparable firms. Consequently, when determining whether a proposed allowed return on equity is commensurate with current conditions in the market for funds, one important consideration is the 13-14% return on equity that investors might reasonably expect to able to obtain on equity investments in comparable firms.

47. We also note that this same consideration should be applied when determining whether the estimate of the required return on equity from CAPM (or other well accepted financial model) is reasonable. As set out above, it is our view that estimates of the returns that would be available to investors in comparable firms should be used to assess the economic reasonableness of any formula-based estimate of the required return on equity. Questions should be raised about the input parameters for any estimate that is substantially below (or substantially above) the sort of return that investors might reasonably expect to receive from comparable firms.

48. In summary, our view is that all of the evidence, all of the estimates, all of the checks and tests for economic reasonableness should be considered in a holistic manner. It is inappropriate to mechanically estimate a set of parameters, insert them into a pricing formula, and then to adopt the result without question.

[3] OECD Economic Outlook, http://www.oecd.org/dataoecd/7/0/20209193.pdf, GDP growth forecasts for 2010 and 2011 are 2.5% and 3.5% respectively.

49. We do not suggest that the CAPM (or other well accepted financial models) should be abandoned in favour of technique set out above. Our view is that the CAPM or other well accepted financial model must be used, consistent with Rule 87(2). However, the estimate of the required return on equity should be compared with the returns that are apparently available from other comparable firms.

50. If there is a substantial divergence between the model's estimate and the returns available on comparable firms, one should be led to re-examine the values of the input parameters that were used in the model.

51. If the original input parameter values and the original estimate of the required return on equity are to be maintained, the proponent should explain why the proposed estimate should be considered to be commensurate with prevailing conditions in the market for funds.

Declaration

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

Professor Stephen Gray
27 September, 2010.

Appendix: CV of Professor Stephen Gray

Stephen F. Gray
University of Queensland
Business School
Brisbane 4072
AUSTRALIA
Office: +61-7-3346 8032
Email: s.gray@business.uq.edu.au

Academic Qualifications

1995 Ph.D. (Finance), Graduate School of Business, Stanford University.
Dissertation Title: Essays in Financial Economics
Committee Chairman: Ken Singleton
1989 LL.B. (Hons), Bachelor of Laws with Honours, University of Queensland.
1986 B.Com. (Hons), Bachelor of Commerce with Honours, University of Queensland.

Employment History

2000-Present Professor of Finance, UQ Business School, University of Queensland.
1997-2000 Associate Professor of Finance, Department of Commerce, University of Queensland and Research Associate Professor of Finance, Fuqua School of Business, Duke University.
1994-1997 Assistant Professor of Finance, Fuqua School of Business, Duke University.
1990-1993 Research Assistant, Graduate School of Business, Stanford University.
1988-1990 Assistant Professor of Finance, Department of Commerce, University of Queensland.

Academic Awards

2006 Outstanding Professor Award, Global Executive MBA, Fuqua School of Business, Duke University.
2002 Journal of Financial Economics, All-Star Paper Award, for Modeling the Conditional Distribution of Interest Rates as a Regime-Switching Process, JFE, 1996, 42, 27-62.
2002 Australian University Teaching Award – Business (a national award for all university instructors in all disciplines).
2000 University of Queensland Award for Excellence in Teaching (a University-wide award).
1999 Outstanding Professor Award, Global Executive MBA, Fuqua School of Business, Duke University.
1999 KPMG Teaching Prize, Department of Commerce, University of Queensland.
1998 Faculty Teaching Prize (Business, Economics, and Law), University of Queensland.
1991 Jaedicke Fellow in Finance, Doctoral Program, Graduate School of Business, Stanford University.
1989 Touche Ross Teaching Prize, Department of Commerce, University of Queensland.
1986 University Medal in Commerce, University of Queensland.

Large Grants (over $100, 000)

- Australian Research Council Linkage Grant, 2008—2010, Managing Asymmetry Risk ($320,000), with T. Brailsford, J.Alcock, and Tactical Global Management.
- Intelligent Grid Cluster, Distributed Energy – CSIRO Energy Transformed Flagship Collaboration Cluster Grant, 2008-2010 ($552,000)
- Australian Research Council Research Infrastructure Block Grant, 2007—2008, Australian Financial Information Database ($279,754).
- Australian Research Council Discovery Grant, 2006—2008, Capital Management in a Stochastic Earnings Environment ($270,000).
- Australian Research Council Discovery Grant, 2005—2007, Australian Cost of Equity.
- Australian Research Council Discovery Grant, 2002—2004, Quantification Issues in Corporate Valuation, the Cost of Capital, and Optimal Capital Structure.
- Australian Research Council Strategic Partnership Grant, 1997—2000, Electricity Contracts and Securities in a Deregulated Market: Valuation and Risk Management for Market Participants.

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Teaching

Fuqua School of Business, Duke University, Student Evaluations (0-7 scale):

- Financial Management (MBA Core): Average 6.5 over 7 years.
- Advanced Derivatives: Average 6.6 over 4 years.
- Empirical Issues in Asset Pricing: Ph.D. Class

1999, 2006 Outstanding Professor Award, Global Executive MBA, Fuqua School of Business, Duke University.

UQ Business School, University of Queensland, Student Evaluations (0-7 scale):

- Finance (MBA Core): Average 6.6 over 10 years.
- Corporate Finance Honours: Average 6.9 over 12 years.

2002 Australian University Teaching Award – Business (a national award for all university instructors in all disciplines).

2000 University of Queensland Award for Excellence in Teaching.
1999 Department of Commerce KPMG Teaching Prize, University of Queensland.
1998 Faculty Teaching Prize, Faculty of Business Economics and Law, University of Queensland.
1998 Commendation for Excellence in Teaching, University-wide Teaching Awards, University of Queensland.
1989 Touche Ross Teaching Prize, Department of Commerce, University of Queensland.

Board Positions

2002 - Present: Director, Financial Management Association of Australia Ltd.
2003 - Present: Director, Moreton Bay Boys College Ltd. (Chairman since 2007).

2002 - 2007: External Risk Advisor to Board of Enertrade (Queensland Power Trading Corporation).