# The required return on equity commensurate with prevailing conditions in the market for funds: Response to Draft Decision

*Report prepared for DBP*

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## Executive summary and conclusions

### Instructions and context

1. This report has been prepared by Professor Stephen Gray, Professor of Finance at the University of Queensland Business School and Managing Director of Strategic Finance Group: SFG Consulting (SFG), a corporate finance consultancy specialising in valuation, regulatory and litigation support advice. I have attached a copy of my CV as an appendix to this report.

2. I have been assisted in preparing this report by Mr David Costello of SFG Consulting, whose role was to check references and calculations. The report was authored by me.

3. For the purposes of preparing this report I was provided with a copy of the Federal Court guidelines *Guidelines for Expert Witnesses in Proceedings in the Federal Court of Australia* dated 5 May 2008. I have reviewed those guidelines and this report has been prepared consistently with the form of expert evidence required by those guidelines. In preparing this report, I have made all the inquiries that I believe are desirable and appropriate and no matters of significance that I regard as relevant have, to my knowledge, been withheld.

4. SFG has been engaged by DBP (various Dampier to Bunbury Natural Gas Pipeline entities) 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.

5. We have previously prepared a report on this matter:

   SFG, 2010, "The required return on equity commensurate with current conditions in the market for funds," 31 March 2010. (**Previous report**).

6. A response to that report appears in the recent Draft Decision:

   Economic Regulation Authority (2011), "Draft Decision on Proposed Revisions to the Access Arrangement for the Dampier to Bunbury Natural Gas Pipeline," 14 March 2011, www.erawa.com.au. (**Draft Decision**).

7. We also note that the AER has recently addressed issues similar to those raised in our previous report in a Draft Decision in relation to Envestra's gas networks:

   Australian Energy Regulator (2011), "Draft Decision: Envestra Ltd: Access arrangement proposal for the SA gas network: 1 July 2011 – 30 June 2016," February, www.aer.gov.au. (**Envestra Draft Decision**).

8. In this report, we have been asked to:

   a. Update the analysis from our previous report;

   b. Respond to the AER's consideration of the relevant issues in the Envestra Draft Decision; and

   c. Respond to the ERA's consideration of our previous report in its Draft Decision.

## Conclusions

9. Our earlier report concluded that 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 investors might reasonably expect to receive from comparable firms. If the reasonably expected return on equity in the comparable firms is materially higher than the allowed return on equity for the regulated firm, there must be questions about the reasonableness of the regulatory estimate (and the individual parameter estimates that led to it) and whether that regulatory estimate is commensurate with prevailing conditions in the market.

10. The AER's recent Envestra Draft Decision[1] identifies four key points in rejecting the use of equity research analyst reports as a cross-check for whether the regulator's estimate of the required return on equity (which is based on the regulator's estimates of input parameters) is commensurate with the prevailing conditions in the market for funds, and consequently whether it passes the 87(1) test. Our conclusions on these four points are summarised in the following table.

| Draft Decision Conclusion | SFG Response |
|---|---|
| The SFG analysis should be afforded no weight as it relies on equity analyst price forecasts, which are unreliable and potentially biased. | The SFG report does *not* rely on price forecasts; it only uses dividend yields. The SFG report uses the same conservative approach to price forecasts as the Envestra Draft Decision uses in producing "the most appropriate return on equity that can be derived from analyst reports. |
| The stapled security structure of comparable firms means that equity analyst forecasts should be adjusted by halving the forecasted dividend. | No analyst for any of the comparable firms has forecasted any decline in dividends. The annual reports for the comparable firms state the objective of dividend increases and the means by which that will be delivered. There is no evidence of any expectation of any comparable firm slashing future dividends. |
| The firms that are analysed are not perfectly comparable to the benchmark firm. | The set of firms used is the same set of comparables that the AER uses to estimate beta, gearing , and credit rating. |
| Updated research reports should be used. | Agreed. The latest available data should always be used to estimate parameters. Updated estimates do not change the conclusions from our previous report. |

11. The most up-to-date equity analyst forecasts of dividend yields for comparable firms suggest that the forward-looking yield is approximately 9%. We add to this a conservative estimate of future capital gains of 2.5% - 3.5%. This suggests that share prices maintain their current real value and experience real growth of 0% – 1%, and so is quite conservative. The Envestra Draft Decision also uses this conservative estimate of share price growth in its calculations of "the most appropriate return on equity that can be derived from analyst reports."[2] This produces a forecasted return on equity (from dividends and capital gains only – not including any assumed value for franking credits) of 11.5% - 12.5% for the set of comparable firms.

[1] Draft Decision, pp. 258-263.
[2] Draft Decision, p. 260.

12. The allowed return on equity in the ERA's DBP Draft Decision provides equity holders in the benchmark firm with a return of 8.4% from dividends and capital gains. This can be compared with an allowed return from dividends and capital gains, from comparable firms, of 11.5% to 12.5%.

13. Since the reasonably expected return on equity in the comparable firms is materially higher than the allowed return on equity for the regulated firm, the model and the individual parameter estimates that have been adopted by the regulator appear to have produced a regulatory estimate that is not commensurate with prevailing conditions in the market.

## 1. Legal and economic context

14. Our previous report, sets out the legal and economic context of the sorts of comparisons and checks for economic reasonableness and consistency with commercial common sense that were advocated in that report.[3]

15. In particular, our earlier report noted that 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. We also noted that 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 reference services.[4]

16. 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.

17. 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 was 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). 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.

18. In this regard, we note that there are two reasons why the CAPM (or any well-accepted financial model) may produce an estimate of the allowed return on equity that is not commensurate with the prevailing conditions in the market:

    a. Every model requires the estimation of a number of input parameters, some of which may be difficult to estimate with great precision and reliability. If these input parameters are mis-estimated due to statistical noise or small sample sizes or for any other reason, the resulting estimate of the allowed return on equity will also be mis-estimated. That is, the use of the CAPM or other well-accepted financial model does not, and cannot possibly, automatically correct for mis-estimated input parameters. There is no guarantee that the output from the CAPM or other well-accepted model will be reasonable and sensible and commensurate with the prevailing conditions in the market – because that output depends on imprecise estimates of several input parameters; and

    b. The ability of a particular model to produce reasonable estimates of the required return on equity may vary, depending on the particular market conditions and on the type of firm. There can be no guarantee that a particular model, even with the best possible estimates of input parameters, will always produce an estimate of the required return on equity that is commensurate with the prevailing conditions in the market.

[3] SFG (2010), pp. 3 - 11

[4] National Gas Rules Version 7, Rule 87(1).

19. We note that the very existence of Rule 87(1) is consistent with our conclusion that using the tools set out in 87(2) does not guarantee an estimate of the required return on equity that is commensurate with the prevailing conditions in the market.

20. The role of this report is to perform the 87(1) cross-check to determine whether the regulatory estimate of the required return on equity is commensurate with prevailing conditions in the market for funds. If the allowed return on equity was 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.

## 2. Updated broker research reports

21. In this section, we update the data from our previous report to use the most recently available analyst research reports. Table 1 below summarises the dividend yield forecasts by firm and year. Each cell contains the average dividend yield forecast across brokers in the sample.

**Table 1. Average dividend yield by firm and year**

| | 2011 | 2012 | 2013 | Average |
|---|---|---|---|---|
| **APA** | **8.46** | **8.87** | **9.30** | **8.88** |
| **DUE** | **11.94** | **12.01** | **12.03** | **12.00** |
| **ENV** | **9.56** | **9.56** | **9.63** | **9.59** |
| **HDF** | **6.36** | **6.48** | **6.39** | **6.41** |
| **SKI** | **8.02** | **8.16** | **8.35** | **8.18** |
| **SPN** | **9.00** | **9.20** | **9.40** | **9.20** |
| **Average** | **8.87** | **9.02** | **9.14** | **9.01** |

Source: Various broker research reports.

22. From Table 1 we conclude that 9% is a reasonable estimate of the dividend yield available from this set of comparable firms.

23. We have also obtained consensus (average) analyst forecasts of distributions (expressed in cents per unit) compiled by Morningstar. These estimates are set out in Table 2 below, which indicates that distributions are expected to increase for all companies in the set of comparable firms.

**Table 2. Consensus distribution payments by firm and year**

| | 2011 (cents per unit) | 2012 (cents per unit) | 2013 (cents per unit) |
|---|---|---|---|
| **APA** | **34.3** | **36** | **37.6** |
| **DUE** | **20** | **20.5** | **21.2** |
| **ENV** | **5.5** | **5.5** | **5.7** |
| **HDF** | **12** | **13.5** | |
| **SKI** | **9.1** | **9.6** | |
| **SPN** | **8.1** | **8.1** | **8.6** |

Source: Morningstar, 25/02/2011

24. In summary, we conclude that the best currently available estimate of the dividend yield available on comparable firms is 9% p.a. and that there is no indication of an expected decline in dividends for any of the comparable firms.

*Reasonable expectation of return on equity from comparable firms*

25. If investors expect a dividend yield of 9% (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 11.5% to 12.5% from comparable firms. We note that the 2.5% to 3.5% nominal capital gain is consistent with share prices just maintaining their real value, and was used by the AER in the Envestra Draft Decision as part of the AER's calculation of "the most appropriate return on equity that can be derived from analyst reports." [5] Consequently, when determining whether a proposed allowed return on equity is commensurate with current conditions in the market for funds, one important consideration is

[5] Draft Decision, p. 260.

the 11.5% to 12.5% return on equity that investors might reasonably expect to able to obtain on equity investments in comparable firms.

*Adjustment for assumed value of franking credits*

26. When comparing the allowed return on equity from the Draft Decision with the return on equity that can reasonably be expected from comparable firms, it is important to ensure that the comparison is performed on a like-with-like basis. In particular, the 11.5% to 12.5% range consists of dividends and capital gains only, whereas the regulatory allowed return also includes an assumed value of franking credits. Specifically, the component of the regulatory return on equity that is due to dividends and capital gains only, using parameter estimates from the Draft Decision, is:

$$r_e \frac{1-T}{1-T(1-\gamma)} = 10.26\% \frac{1-0.3}{1-0.3(1-0.53)} = 8.4\%.$$

27. The derivation of this formula appears in Officer (1994). Its application in perfectly consistent with the way that the assumed value of franking credits is used to adjust the return to equity holders under the National gas Rules.

*Conclusions*

28. The allowed return on equity in the Draft Decision provides equity holders in the benchmark firm with a return of 8.4% from dividends and capital gains. This can be compared with a return from dividends and capital gains, from comparable firms, of 11.5% to 12.5%.

29. Logically, there are three possible reasons for such a divergence between the regulatory estimate of the return on equity and the return that investors might reasonably expect from comparable firms:

    a. The regulatory estimate is too low because the regulator has adopted estimates of beta or MRP (or both) that are too low; or

    b. The regulatory estimate is too low because the regulator has relied on the CAPM and even with the best possible input parameter estimates:

        i. The CAPM systematically under-estimates the required return for firms such as the benchmark firm, and/or

        ii. The CAPM under-estimates the required return for firms such as the benchmark firm in the current market circumstances; or

    c. Our estimate of the return that investors would reasonably expect from comparable firms is too high.

30. That is, there is a divergence between the two estimates either because the regulatory estimate is too low, or because the market-based estimate is too high. There are a number of reasons to support the conclusion that the market-based estimate is not too high:

    a. As set out in Section 3 below, our conclusions remain unchanged if we use current observed dividends rather than equity analyst forecasts. Investors will receive a return of

9%, on average, if the comparable firms are simply able to maintain the dividends that they currently pay, and there is no evidence to suggest that they will be unable to do this; and

b. As set out in Section 2 below, we have adopted a conservative estimate of future capital gains that the AER has recently adopted in its calculations of "the most appropriate return on equity that can be derived from analyst reports."[6]

31. Consequently, if the market-based estimate is not too high, the conclusion must be that the regulatory estimate is too low to be commensurate with current conditions in the market for funds.

[6] Envestra Draft Decision, p. 260.

## 3. Response to AER Envestra Draft Decision

32. The AER's recent Envestra Draft Decision[7] identifies four key points in rejecting the use of equity research analyst reports as a cross-check for whether the regulator's estimate of the required return on equity (which is based on the regulator's estimates of input parameters) is commensurate with the prevailing conditions in the market for funds, and consequently whether it passes the 87(1) test. This section addresses each of those points in turn.

### Use of broker research forecasted price targets

33. Our previous report notes that 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. We stated that the forecasted dividend yields provide a useful estimate of market expectations, but that for various reasons one should *not* rely on the 12-month price forecasts, except to note that no analysts were expecting a price decline in any of the set of comparable firms.[8] We concluded that:

> …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.

34. Our previous report goes on to propose that, rather than adopt the price forecasts set out in broker research reports, we use a conservative estimate of stock price appreciation. This is in keeping with the purpose of the analysis – to determine whether the return on equity allowed by the regulator is reasonable in light of conservative estimates of the returns available to equity investors in other comparable assets. In this regard, we concluded that:

> 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. [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.][9]

[7] Envestra Draft Decision, pp. 258-263.
[8] See paragraph 28 of our earlier report.
[9] SFG (2010), Paragraph 29.

35. In its Envestra Draft Decision (pp. 258-259), the AER also sets out some reasons why broker price forecasts should not be relied upon for the purpose of testing the allowed return on equity against returns available on comparable investments. These reasons largely mirror those set out in our own earlier report. However, the Draft Decision then concludes that the previous SFG report has erred in its reliance on broker price forecasts, concluding that:

> Overlooking this mispricing component is a further shortcoming of SFG's analysis.[10]

36. However, the previous SFG report clearly does *not* rely on broker price forecasts, but rather substitutes very conservative estimates of future price appreciation.

37. Moreover, the AER itself uses the SFG conservative estimates of future price appreciation (2.5% to 3.5% nominal) in determining what it considers to be:

> …the most appropriate return on equity that can be derived from analyst reports…[11]

38. In summary, the AER Draft Decision and the previous SFG report are in perfect harmony in adopting a conservative estimate of 2.5% to 3.5% nominal stock price appreciation for the set of comparable firms.

39. The previous SFG Report does *not* rely on broker price appreciation forecasts, so there can be no "shortcoming" in that regard, notwithstanding any suggestion to the contrary.

### Impact of stapled security structure

*Background and context*

40. The Envestra Draft Decision notes that some of the securities in the set of comparable firms are stapled securities rather than ordinary shares and that the estimated dividend yield requires some adjustment:

> …the AER notes that the 10.5 per cent dividend is upward biased due to it being partially composed of a return of capital (depreciation) component.[12]

41. In this regard, the Envestra Draft Decision quotes a passage from Davis (2010):

> To the extent that this is the case, the capital component of those payments should be deducted from the "dividend" in performing the calculation… it is not apparent that for many such entities these are estimates of dividends *per se* as opposed to estimates of distributions which encompass dividends, interest payments on loan and returns of capital.[13]

[10] Envestra Draft Decision, p. 259.
[11] Envestra Draft Decision, p. 259.
[12] Envestra Draft Decision, p. 259.
[13] Envestra Draft Decision, p. 260.

42. The particular passage from Davis (2010) is in the context of the use of the dividend discount model rather than the SFG comparables analysis, but the point is potentially relevant to both. However, the returns of capital within a stapled structure have no bearing on any of our conclusions – what is relevant is the total distribution to equity holders, and the likely maintenance of that distribution into the future, as set out below.

43. The details of the securities in the set of comparable firms are as follows:

a. Envestra securities now trade as ordinary shares. The loan notes that were previously part of a stapled structure have been repaid. Consequently any forecasted dividends are standard dividends paid on ordinary shares;

b. A number of firms in the set of comparables trade as stapled securities whereby a number of units in different companies and trusts are stapled together. For example, a security in SP Ausnet consists of one share in SP Ausnet Transmission Limited, one share in SP Ausnet Distribution Limited and one unit in SP Ausnet Finance Trust. This kind of security is a collection of equity investments in a number of different business units and should consequently be considered to be an equity investment. Indeed one could think of any shares in a multi-divisional firm to be effectively the same as such a stapled equity security. For example, a share in Wesfarmers is effectively a stapled security consisting of equity in Coles, equity in Bunnings, equity in Office Works, and so on. Securities in APA Group, DUET and HDF have a similar structure. One difference between a stapled security/trust structure and ordinary shares is the technical form of payments in excess of profits in a particular year. Dividends can be paid to shareholders out of profits generated in the current financial year and out of retained profits generated in earlier years. For a trust structure, a "dividend" can only be paid out of current year trust income. Any distribution of non-assessable income, such as a distribution of free cash flow in excess of accounting profit is treated as a return of capital under CGT event E4.[14] The key point here is that all of the trust structures in the set of comparable firms intend the aggregate distribution to equity holders to be maintained or increased for the foreseeable future. There is no intention, suggestion, or need for a decline in distributions in the future; and

c. Spark Infrastructure trades as a stapled security consisting of a unit in the Spark Infrastructure Trust and a loan note. For this firm also there is no suggestion that the aggregate distribution to equity holders would not be maintained or increased for the foreseeable future. Also, the removal of this firm from the set of comparables would not change any of our conclusions.

44. In summary, a number of the comparable firms are structured as trusts rather than companies, but this does not affect the fact that equity holders can reasonably expect that the current level of distributions will be maintained or increased over the foreseeable future.

*Maintenance or growth of future distributions to equity holders*

45. Even for those companies that do have stapled securities that include loan notes, it is unlikely that any adjustment would be required for the purpose at hand. What is required here is an estimate of the future dividends that an owner of the security could reasonably expect to receive. Over time, the capital of the loan note will be repaid. But this does not imply that the annual distribution to owners will fall materially when the loan note is repaid. Consider, for example, a stapled security that consists of one share and a 10% loan note with capital balance of 20 cents.

[14] Income Tax Assessment Act 1997 (Cth), s 104-70(1).

Suppose the firm generates distributable cash flows of 25 cents per year. Also suppose that in one year it pays a dividend of 12 cents, interest of 2 cents and a capital return of 10 cents. In the next year the firm pays a dividend of 13 cents, interest of 1 cent and a capital return of 10 cents. At this point the loan note is fully repaid. The following year, the company may pay all of its distributable cash flows as a dividend of 25 cents. Over this period, the assets of the firm have stayed the same and have generated the same cash flows. Also, the security holder continues to receive the same total distribution.

46. The important issue for the purpose at hand is whether equity investors in the comparable firms might reasonably expect distributions to be maintained, increased or materially decreased sometime in the future. The firms in the set of comparables are well known to be high-yielding companies with stable dividends that appeal to "yield investors" such as retired individuals and some superannuation funds. The management of these companies are acutely aware of their investor bases and seek to provide stable and growing distribution streams into the future. For example:

47. For many years APA group has articulated its goal of increasing dividends by at least the level of inflation. In 2006, APA defined this to be their primary strategic goal:

> Our growing asset base further underpins our strong cash flows, enabling us to deliver on our primary strategic goal, to increase distributions to unit holders by at least CPI annually.[15]

48. By 2009, APA had adopted a higher and more specific growth target:

> The board has adopted financial goals which closely reflect APA's strategic goals, the foundation of which is increasing security holder distributions annually by at least 5% over the cycle.[16]

49. APA re-affirmed this growth target, and noted its past success in achieving it, in its 2010 Annual Report:

> We declared a final distribution for the year of 17.0 cents per security taking the total distribution for the year to 32.75 cents, an increase of 5.6% on last year. This represents APA's sixth consecutive year of increasing distributions…Since listing in 2000, APA has delivered a 5% compound annual growth rate on its distribution…APA's ongoing distribution policy balances the group's need to retain equity in the business to support the funding of its growth prospects whilst also increasing returns to security holders by, on average, at least 5% per annum over the medium term. Barring unforeseen circumstances, APA expects that this distribution increase will be maintained for the 2011 financial year. [17]

50. Similarly, DUET's annual report for at least the last four years has stated that its objective is:

[15] APA 2006 Annual Report, Chairman's Report, p. 2.
[16] APA 2009 Annual Report, p. 46.
[17] APA 2010 Annual Report, Chairman's Report, pp. 8-9.

> to provide stable and predictable distributions for security holders and fund these distributions from operating cash flows. [18]

51. HDUF is also clear about its intention and ability to maintain a stable flow of distributions to investors:

> The ability of the Fund to provide stable ongoing distributions to Security Holders is supported to a significant extent by long term gas haulage contracts entered into with customers. [19]

52. In its most recent annual report, Envestra is also clear in relation to the returns that its investors should expect, in stating its objective of:

> achieving long-term (pre-tax) annual returns to…shareholders (including distributions and capital gains) of at least 12.5%.[20]

53. In summary, it is clear that the firms in the set of comparables have every intention of maintaining or increasing the flow of distributions to equity holders.

*Proposed adjustment in Envestra Draft Decision*

54. The Envestra Draft Decision proposes that an adjustment should be made to deduct from the forecasted dividend yield the amount that relates to any return of capital so that the balance "reflects pure return expectations." [21] The Envestra Draft Decision concludes that a downward adjustment of 5.5% should be applied to the forecasted dividend yield of 10.5% to produce a pure return expectation of 5%. The Envestra Draft Decision provides no details of the AER's calculation of the 5.5% downward adjustment other than to note that it is the outcome of "AER analysis" and is said to be an estimate of "the difference in yield forecast and the maximum yield attributed to profits." [22] There are a number of problems with this calculation:

a. The details of the calculation have not been provided, so it is impossible to verify;

b. It appears as though the calculation uses data from firms that have either no return of capital or no loan note interest as part of their distributions, in which case it cannot represent an estimate of an adjustment in relation to the payment of a return of capital and loan note interest;

c. In any event, the difference between forecasted dividends and profits does not provide an estimate of the future distributions that equity holders in the six comparable companies should reasonably expect. If it did, the statements made by the firms in their annual reports (as set out above) must be grossly misleading; and

d. The economic implications of the proposed adjustment are implausible. The Envestra Draft Decision's conclusion is that the most appropriate way to interpret a set of analyst reports that forecast dividend yields of 10.5% is that the forecasted dividend yield is 5%.

[18] DUET Annual Reports, 2007-2010, p. 1.
[19] Hastings Diversified Utilities Fund, Annual Report, 2009, p. 5.
[20] Envestra Annual Report, 2010, p. 12.
[21] Envestra Draft Decision, p. 260.
[22] Envestra Draft Decision, p. 260, Footnote 10.

In our view, no reasonable person could interpret the set of analyst reports as indicating that a reasonable expectation of the dividend yield on these comparable firms is 5%.

55. For the reasons set out above, we conclude that the adjustment technique proposed in the Envestra Draft Decision[23] should be given no weight.

*Purpose of analysis*

56. At this point it is useful to reconsider the purpose of this analysis. It is clear that the CAPM (or any other well accepted financial model) is unable to correct poorly estimated parameter inputs. Consequently, it is important to test the output of the model (i.e., the estimated required return on equity) for economic reasonableness – not as a test of the model, but as a check of whether a particular set of input parameter estimates produces an output that is reasonable. If the output is considered to be unreasonable, one should be led to re-examine one or more of the parameter input estimates, especially those parameters that are known to be estimated with a high degree of statistical imprecision.

57. One key test of whether the output estimate of the required return on equity is economically reasonable is a comparison with the return on equity that investors might reasonably expect to earn from other comparable firms. That is, a potential investor can either contribute equity capital to the benchmark firm or buy shares in a comparable listed firm. If the reasonably expected return on equity in the comparable firms is materially higher than the allowed return on equity for the regulated firm, there must be questions about the reasonableness of the regulatory estimate (and the individual parameter estimates that led to it) and whether the regulatory estimate is commensurate with prevailing conditions in the market.

58. This then leads to the question of what return a reasonable investor might reasonably expect to receive from an investment in a comparable firm. In this regard, our previous report shows that the evidence from a range of research reports from equity analysts is that:

a. Investors can reasonably expect to receive a return of 10.5% p.a. by way of dividends;

b. There is no suggestion of any expected future decline in the amount of dividends paid on each share; and

c. There is no suggestion of any expected future decline in the share price.

59. In summary, if an investor were to buy shares in one of the comparable firms, and if that firm simply maintained its current dividend (no growth at all) and maintained the real value of its shares (no real growth), the expected return (from dividends and capital gains) would be 9% + 2.5% = 11.5%. This should lead one to question whether the 8.4% regulatory return on equity (also from dividends and capital gains to ensure a like-with-like comparison) would really be sufficient to attract the required amount of equity capital in the current conditions of the market for funds. Moreover, this should also lead one to at least re-examine the CAPM input parameter estimates, especially those that are known to be statistically imprecise.

60. Rather, the AER has effectively argued that the set of comparable firms *in toto* will be unable to maintain their current level of dividends into the future. But there is no evidence of this:

a. The forecasts for all firms from all equity analysts are for maintained or increasing dividends; and

[23] Envestra Draft Decision, p. 260.

b. The comparable firms themselves have clear statements in their annual reports about their objective and intention to maintain or increase distributions to equity holders, and about the means by which they intend to do this.

*Conclusion*

61. In summary, our earlier report showed that the allowed regulatory return is materially lower than the return available on comparable investments, unless one assumes that those comparable investments will be unable to maintain their current level of dividends into the future. That is, the allowed return is not commensurate with prevailing conditions in the market for funds, unless one assumes (as the Envestra Draft Decision does) that comparable firms will have to halve their dividends in future. Consequently, whether or not the Rule 87(1) test is satisfied appears to hinge on the reasonableness of this assumption. Our view is that it is wrong to make the assumption that comparable firms will have to halve their dividends into the future as such an assumption is unsupported by any evidence and contradicted by the available evidence.

## Comparability of companies selected

62. Our earlier report uses the same six comparable firms that the AER has used as the basis for its beta estimation and for other purposes including considerations of capital structure and credit ratings. In relation to forecasts of dividend yields, the Envestra Draft Decision concludes that at least one of the firms in this set of firms is not comparable and consequently that the forecasts of equity analysts cannot be relied upon:

> The AER further considers that broker report forecasts can not be relied upon as the firms analysed are not reflective of the benchmark service provider. For instance, the broker reports suggest that Envestra's gearing ratio is approximately 71 per cent, which is well above 60 per cent assumed for the benchmark service provider. The higher actual gearing of Envestra would be expected to move the equity return upward relative to an equity return based on a benchmark 60 per cent gearing. [24]

63. In response to the Envestra Draft Decision's conclusion on this issue, we note that:

a. Our report uses the same set of comparable firms as the AER uses as the basis for estimates of other parameters, such as equity beta;

b. The results and conclusions are unchanged if Envestra, which is the only firm that is mentioned in this regard in the Envestra Draft Decision, is removed from the sample; and

c. It is unclear that higher gearing does lead to higher dividend yields. The Envestra Draft Decision correctly notes that higher gearing results in a higher expected return on equity. But that gearing itself constrains the firm's ability to pay dividends. In the extreme, equity in a firm that continued to increase gearing to the point that cash inflows were only just sufficient to meet interest payments would be very risky and require a high return (other things equal), but none of this return could be paid in the form of dividends.

[24] Envestra Draft Decision, p. 263.

### Updated broker research reports

64. The Envestra Draft Decision states that the most recently available data should be used for the purpose of determining the allowed return:

> Further, the AER considers the majority of the broker reports provided are outdated and maybe of limited use in estimating the cost of equity for the 2011-2016 access arrangement period. Given that broker reports usually provide 3 year forecasts, Envestra latest broker report (28 April 2008) would be of limited use in determining capital appreciation and dividend yield forecasts that are expected to prevail over the 2011-16 period. The AER questions why SFG did not use more up to date broker reports in its analysis when assessing the cost of capital.[25]

65. We agree that the most up-to-date data should be used for the estimation of all parameters and have now obtained a set of the most recently available broker research reports. These updated figures are set out in Section 2 above.

[25] Envestra Draft Decision, p. 262.

## 3. Response to ERA Draft Decision

### Overview and context

66. The recent Draft Decision[26] rejects the use of equity research analyst reports as a cross-check for whether the regulator's estimate of the required return on equity (which is based on the regulator's estimates of input parameters) is commensurate with the prevailing conditions in the market for funds. In support of this position, the ERA argues that:

> While forecasters have been reluctant to evaluate their own performances, there exists enough evidence to say that the record of economic forecasting is not encouraging.[27]

67. From this, the ERA draws the following conclusion:

> Given the poor record of economic forecasting on which the brokers' research reports are based, the Authority is of the view that it is inappropriate to use the brokers' research reports to derive an estimated cost of equity, particularly for a period with a high level of uncertainty.[28]

68. In our view, this conclusion is unjustified for the following reasons:

a. No evidence is presented to support the assertion that there is a "poor record of economic forecasting on which the brokers' research reports are based." The Draft Decision merely presents a time series graph of dividend yields, real GDP growth rates and inflation and then reports the standard deviation of each series. This is no way supports the assertion of a poor record;

b. As set out in Paragraphs 70 to 76 below, the point being made in our previous report remains even with *no* forecasts at all. One can simply take the *current* dividend yield based on the current dividend payment and the current stock price, all of which is directly observable. The point is that if the comparable firms continue to pay the same dividend that they are currently paying, investors can earn materially higher returns from those comparable firms than they are allowed from the benchmark firm; and

c. The conclusion in the Draft Decision is based on the present market conditions being characterised as "a period with a high level of uncertainty," but when considering the market risk premium, the ERA concluded that the turmoil associated with the financial crisis was now having zero effect on financial markets.

### Role of this analysis is as a cross-check

69. As set out in Section 1 above, it is important to note that our goal in this report is not to produce a point estimate of the allowed return on equity. Rather our purpose is to produce a conservative estimate of the return that a reasonable investor may reasonably expect to receive from an investment in a comparable firm. We then compare the regulator's allowed return with this conservative estimate of the returns available from comparable firms to determine whether the

[26] Draft Decision, pp. 130 – 131.
[27] Draft decision, Paragraph 452.
[28] Draft decision, Paragraph 457.

regulator's process for estimating the allowed return has produced an estimate that is commensurate with the prevailing conditions in the market for funds.

### Use of broker forecasted dividend yields

70. Contrary to the suggestion in the Draft Decision, our approach does not require that analysts are able to accurately forecast dividend yields, inflation and GDP growth. Rather, our intention in presenting information from analysts' research reports was merely to demonstrate that even *the most conservative estimates* that could reasonably be derived from these reports exceed the allowed return on equity proposed in the Draft Decision.

71. As outlined in Section 3 above, our previous report notes that analysts' forecasted dividend yields provide a useful estimate of market expectations, but that for various reasons, one should not rely on the 12-month price forecasts, except to note that no analysts were expecting a price decline in any of the set of comparable firms. We concluded that:

> …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 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.[29]

72. Our previous report thus presents estimates of the forecast dividend yield as an estimate of the absolute lower bound for the return available to shareholders in comparable firms.

73. An even more conservative estimate of the absolute lower bound for the required return on equity is the realised dividend yield in the most recent year. Importantly, this statistic is directly observable and, accordingly, is not subject to any problems of estimation error that could affect any forecast. Table 3 below summarises the dividend yields of comparable firms by firm and year. The first column presents the realised dividend yield in the most recent year, while the second, third and fourth columns present analysts' dividend yield forecasts for each of the first, second and third forecast years respectively. Each cell contains the average dividend yield forecast across brokers.

**Table 3. Average dividend yield by firm and year**

| | 2010A | 2011E | 2012E | 2013E | Average |
|---|---|---|---|---|---|
| **APA** | 8.48 | 8.46 | 8.87 | 9.30 | 8.78 |
| **DUE** | 11.86 | 11.94 | 12.01 | 12.03 | 11.96 |
| **ENV** | 9.40 | 9.56 | 9.56 | 9.63 | 9.54 |
| **HDF** | 7.29 | 6.36 | 6.48 | 6.39 | 6.63 |
| **SKI** | 9.40 | 9.00 | 9.20 | 9.40 | 9.25 |
| **SPN** | 11.51 | 8.02 | 8.16 | 8.35 | 9.01 |
| **Average** | **9.66** | **8.89** | **9.05** | **9.18** | **9.20** |

Source: Broker research reports

74. The average realised dividend yield across all comparable firms in the most recent year is 9.66%, while the average dividend yield across the entire historic and forecast period is 9.20%. Note that, with the exception of DUET Group and Envestra, the one-year ahead forecast dividend yield for

[29] SFG (2010), Paragraph 28.

each of the firms is lower than the realised dividend yield in the last year. This simply reflects the analysts' expectation of share prices increasing at a faster rate than dividends.

75. In summary, if an investor were to buy shares in one of the comparable firms, and if the firm simply maintained its current dividend – with no growth in dividends over time and with no increase in the stock price, ever – that investor would receive a return of 9.66% p.a. on average.

76. This is materially higher than the 8.4% that is available to investors from dividends *and* capital gains *combined* under the Draft Decision, as set out in Paragraph 26. In our view, the fact that an investor can reasonably expect to receive a materially higher return from an investment in a comparable firm suggests that the allowed return in the Draft Decision is not commensurate with the prevailing conditions in the market.

### Residual income approach

77. Our previous report also set out an approach that is based on the Residual Income model that has been used extensively in the valuation literature. This approach simultaneously estimates the implied required return on equity and earnings growth rate that reconciles forecast earnings with the current target price of the same analyst. That is, every analyst in the sample sets out their forecasts of future earnings and a current target price. The Residual Income model is used to infer a required return on equity and forward-looking earnings growth rate that reconciles the forecast and target price for each analyst in a particular stock. The Draft Decision notes[30] that if any particular analyst is systematically optimistic or pessimistic about the future earnings of a particular firm, that optimism or pessimism will be reflected in both sides of the equation (their earnings forecast *and* their target price) and will not contaminate the estimated required return on equity.

78. The Draft Decision concludes that limited weight should be placed on the Residual Income model. We set out the reasons for this conclusion, and our response to each one, below:

a. The details of the Residual Income technique are set out in a working paper that has not yet been published and the ERA's position is that evidence from a working paper is generally given less weight than a published academic paper. We acknowledge this point, but note that in the regulatory setting results and estimates are often computed only for the small set of firms that are relevant – particularly in relation to firm-specific parameters. Studies that examine such a small and targeted set of firms are unlikely to be published. [31]

b. The available data is limited in that there are a small number of comparable firms and a small number of quarterly observations available for each firm.[32] We acknowledge the limitations of the data, but note that similar limitations apply to the ERA's estimates of beta, gearing, and credit rating.

c. The estimates vary across time and over companies.[33] Again, we acknowledge the limitations of the available data. We also note the ERA's reference to the empirical analysis of beta estimates commissioned by the AER for its Review of WACC Parameters.[34] In that analysis, the AER's consultant identified six comparable firms, only

[30] Draft Decision, Paragraph 455.
[31] Draft Decision, Paragraph 458.
[32] Draft Decision, Paragraph 460-461.
[33] Draft Decision, Paragraph 462-464.
[34] Draft Decision, Paragraph 475.

two of which had data for the whole of the relevant sample period. The resulting (re-levered) beta estimates varied significantly from less than 0.3 to more than 1.0. There was also substantial variation across empirical methods, including different estimation techniques (OLS, LAD, etc.) and different sampling frequencies (weekly, monthly, etc.). For example, some of the "comparable" firms have equity beta estimates that are more than five times the estimates for other firms. For some individual firms the estimate doubles or halves if a different variation of the empirical method is used.

That is, there are limitations due to the available data. But these limitations are not unique to the Residual Income estimates of the required return on equity from our previous report. The key question relates to how these inevitable data limitations should be dealt with. Our approach is:

a. To recognise the noise that is inevitably present in the data for individual firms and focus on the average estimate of the required return on equity; and

b. To present the Residual Income estimates as one of a range of estimates of the required return on equity that are produced with a view to determining the sort of required return on equity that would be commensurate with the prevailing conditions in the market for funds.

That is, recognising the limitations of the available data, the Residual Income estimate is one of the range of estimates that would be considered when determining the sort of required return on equity that would be commensurate with the prevailing conditions in the market for funds.

## Declaration

79. 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
17 May, 2011.

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SFG, 2010, "The required return on equity commensurate with current conditions in the market for funds," 27 September.

## Appendix: CV of Professor Stephen Gray

# Stephen F. Gray

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## Academic Qualifications

**1995** Ph.D. (Finance), Graduate School of Business, Stanford University.
Dissertation Title: Essays in Empirical Finance
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.
**1987** Specialist Tutor in Finance, Queensland University of Technology.
**1986** Teaching Assistant in 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.

**Current Research Interests**

Benchmark returns and the cost of capital. Corporate Finance. Capital structure. Real and strategic options and corporate valuation. Financial and credit risk management. Empirical finance and asset pricing.

**Publications**


Chan, K-F., R. Brooks, S. Treepongkaruna and S. Gray, (2011), "Do Trading Hours Affect Volatility Links in the Foreign Exchange Market?" *Australian Journal of Management*, forthcoming.

Chan, K-F., R. Brooks, S. Treepongkaruna and S. Gray, (2010), "Asset market linkages: Evidence from financial, commodity and real estate assets," *Journal of Banking and Finance*, forthcoming.

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Gray, S. (1988), "The Straddle and the Efficiency of the Australian Exchange Traded Options Market," *Accounting Research Journal*, 1(2), 15-27.

**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 10 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 Ltd.)

**Consulting**

Managing Director, Strategic Finance Group: www.sfgconsulting.com.au.

Consulting interests and specialties, with recent examples, include:

- **Corporate finance**
  - ⇒ **Listed multi-business corporation:** Detailed financial modeling of each business unit, analysis of corporate strategy, estimation of effects of alternate strategies, development of capital allocation framework.

- **Capital management and optimal capital structure**
  - ⇒ **State-owned electricity generator:** Built detailed financial model to analyze effects of increased leverage on cost of capital, entity value, credit rating, and stability of dividends. Debt of $500 million issued.

- **Cost of capital**
  - ⇒ **Cost of Capital in the Public Sector:** Provided advice to a government enterprise on how to estimate an appropriate cost of capital and benchmark return for Government-owned enterprises. Appearance as **expert witness** in legal proceedings that followed a regulatory determination.
  - ⇒ **Expert Witness:** Produced a written report and provided court testimony on issues relating to the cost of capital of a cable TV business.
  - ⇒ **Regulatory Cost of Capital:** Extensive work for regulators and regulated entities on all matters relating to estimation of weighted-average cost of capital.

- **Valuation**
  - ⇒ **Expert Witness:** Produced a written report and provided court testimony. The issue was whether, during a takeover offer, the shares of the bidding firm were affected by a liquidity premium due to its incorporation in the major stock market index.
  - ⇒ **Expert Witness:** Produced a written report and provided court testimony in relation to valuation issues involving an integrated mine and refinery.

- **Capital Raising**
  - ⇒ Produced comprehensive valuation models in the context of capital raisings for a range of businesses in a range of industries including manufacturing, film production, and biotechnology.

- **Asset pricing and empirical finance**
  - ⇒ **Expert Witness:** Produced a written report on whether the client's arbitrage-driven trading strategy caused undue movements in the prices of certain shares.

- **Application of econometric techniques to applied problems in finance**
  - ⇒ **Debt Structure Review:** Provided advice to a large City Council on restructuring their debt portfolio. The issues involved optimisation of a range of performance measures for each business unit in the Council while simultaneously minimizing the volatility of the Council's equity in each business unit.

⇒ **Superannuation Fund Performance Benchmarking:** Conducted an analysis of the techniques used by a large superannuation fund to benchmark its performance against competing funds.

- **Valuation of derivative securities**
  - ⇒ **Stochastic Volatility Models in Interest Rate Futures Markets:** Estimated and implemented a number of models designed to predict volatility in interest rate futures markets.

- **Application of option-pricing techniques to real project evaluation**
  - ⇒ **Real Option Valuation:** Developed a framework for valuing an option on a large office building. Acted as arbitrator between the various parties involved and reached a consensus valuation.
  - ⇒ **Real Option Valuation:** Used real options framework in the valuation of a bio-tech company in the context of an M&A transaction.