Further analysis in response to AER Draft Determination in relation to gamma

Prepared for ETSA Utilities

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Context, overview and conclusions

1. In January 2010 we submitted further analysis relating to the estimated value of imputation credits in the note entitled *Response to AER Draft Determination in relation to gamma: Report prepared for ETSA Utilities*. In Section three of that note we presented further dividend drop-off analysis using the methodology of Beggs and Skeels (2006). We were provided with a randomly-selected sample of 150 observations, 4.7% of our sample of 3,201 observations, for which we checked the cum- and ex-dividend share prices, the amount of the dividend and the franking percentage, and reviewed all announcements to the Australian Securities Exchange ("ASX") within a five-day window centred on the ex-dividend date. This involved the review of 236 announcements relating to 95 firms.

2. Following this data review we made corrections to two distributions, and identified 14 observations in which there was a reasonable chance that the announcement conveyed price-sensitive information to the market. We also identified 12 instances in which the dividend was declared in a foreign currency, and repeated our analysis using the Australian dollar dividend amounts recorded by SIRCA, and Australian dollar dividend estimates which would result from conveying at the closing exchange rate reported by the Reserve Bank of Australia ("RBA") on the ex-dividend date. We concluded from this analysis that the adjustments made to our data set had no material effect on the estimate of theta.[1]

3. We have now been asked to perform additional analysis following the receipt of more detailed in formation from the Australian Energy Regulator ("AER") regarding their data concerns. Specifically, we understand that in an email dated 19 January 2010 ETSA Utilities posed the following query to the AER:

> The AER's response to ETSA Utilities' further information request states "examples of questionable observations" are provided in Table 1. Can the AER please confirm whether these are examples from a broader subset of observations it has concerns with or that this is the complete list of observations known to the AER which may be questionable. If there are any additional observations that the AER has concerns with that are not included in Table 1, can the AER please advise ETSA Utilities of these observations.

4. We understand that the AER has responded in an email dated 21 January 2010 as follows:

> The examples set out in the response date 19 January were from a subset of observations. Below is an expanded set of [observations].

5. This expanded set of observations is set out in the appendix to this report.

6. The AER's concerns can be categorised as:

   a. special dividends – the AER notes that Beggs and Skeels (2006) eliminated special dividends from their sample but that they are included in our sample;

   b. stock splits and bonus issues – the AER listed seven firms which were subject to stock splits and bonus issues, which change the number of shares on issue;

[1] The results of this analysis are repeated in the left-hand columns of Table 1 and Table 2 below.

c. contemporaneous price-sensitive announcements – the AER identified three instances in which a firm made a contemporaneous price-sensitive announcements;

d. missing observations – the AER noted two firms which generally pay dividends but which appear infrequently in our sample; and

e. thin trading – the AER identified one firm which is generally thinly traded.

7. In response to the list of concerns provided by the AER, we have performed a range of investigations as set out in the body of this report. This has led us to add some data points to our sample and to revise some existing data points. We show that none of this has any material effect on our results.

8. The AER also expresses concerns about the inclusion of special dividends in our sample. We remain of the view, as set out in our report of 13 January 2010 (Paragraphs 38-41), that special dividends should not be excluded from a dividend drop-off analysis. Nevertheless we re-estimate theta using a sample of observations that excludes all special dividends. We find that this causes the estimate of theta to fall below our original estimate (from slightly over 0.2 to 0.135).

9. We further understand that in an email dated 22 January 2010 ETSA Utilities posed the following query to the AER:

> Can the AER confirm that the table contained in their response of 21 January 2010 contains all observations known to it that are of concern and that there are no other observations of concern identified by the AER. ETSA Utilities requests that if there are any additional observations it has concerns with that it has not yet provided details of to notify ETSA Utilities of the these observations so that ETSA Utilities has an opportunity to address these concerns.

10. We also understand that the AER has responded in an email also dated 22 January 2010 as follows:

> The table contains all observations known to be questionable, however, there are likely to be more that have not been identified by the AER. The AER's primary concern is the quality of the SFG data, which has data issues as raised in the AER WACC review decision.

11. We are unaware of any basis for the AER's conclusion that there are likely to be more observations that require adjustment. Moreover, we have no reason to believe that any additional concerns the AER may raise in the future would have a material effect on our results. We have examined every data point that the AER has identified as questionable. In some cases, we have made adjustments to our data set and in other cases we have concluded that the original data was robust. Whether the contentious observations are corrected or removed has no material effect on the results.

12. Moreover, we have supplied the AER with all of the data and computer code required for all of our estimations and the AER has indicated that it has been able to replicate our results. We note, however, that the AER's estimate of theta continues to be based on estimates from Beggs and Skeels (2006) and Handley and Maheswaran (2008), neither of whom has provided the AER with computer code or data.

Analysis and results

13. In response to the list of concerns provided by the AER (set out in the table in the appendix to this report), we have performed a range of investigations. This has led us to add some data points to our sample and to revise some existing data points. We perform a series of dividend drop-off analyses on different sub-sets of data in order to address the concerns that have been set out by the AER. The results of these analyses are set out in Table 1 and Table 2 below. The various concerns raised by the AER, and an explanation of what we have done to address them, are set out point-by-point in the remainder of this section.

14. **Special dividends.** There is no theoretical reason why special dividends should be treated differently in a dividend drop-off study to ordinary dividends.[2] The categorisation of a dividend as special by a firm is merely the firm's attempt to convey to the market that this level of dividend is not expected to be maintained on an on-going basis. This does not affect the interpretation of dividend drop-off analysis. However, we reviewed all the special dividends announced to the ASX during our sample period, and present results both including and excluding special dividends. There are 130 special dividends in our dataset, which includes 125 observations previously included, plus an additional five observations which did not originally form part of our dataset.

15. **Stock splits and bonus issues.** These changes in corporate structure only contaminate the data when the change takes affect on the ex-dividend date. We have already eliminated four observations on this basis. Of the seven firms identified by the AER as being affected by stock splits and bonus issues, there is only one case where this change took effect on the ex-dividend date (CPU, 25 September 1997) and we have already eliminated that observation. In addition, we had already eliminated observations for TCL with ex-dividend dates of 17 September 1999 or earlier, due to the extreme high prices of this stapled security (around $1,000 – 2,000). The nature of the Beggs and Skeels (2006) regression methodology means that these data points would have been extremely influential, making the analysis potentially unreliable if they had been included.

16. **Contemporaneous price-sensitive announcements.** The AER identified three observations where it considered there to have been a contemporaneous price-sensitive announcement which makes that observation unreliable. One of these observations had already been excluded on this basis (TPI, 27 March 2006). With respect to the other two announcements (KAZ, 10 April 2001 and ONE, 12 February 1999) we present results in Table 1 and Table 2 below after excluding these announcements.

17. **Missing observations.** Our review of the two firms identified by the AER as missing some observations (SCF and STO) resulted in the addition of a further six observations.

18. Our full review of special dividends led us to examine a new data set that contains special dividends only. From this examination, we identified four special dividends that were not included in our original data set. We also identified one dividend in our original data set that was recorded as an ordinary dividend that was actually a special dividend and we have corrected our sample in that regard (the dividend of ICT, 21 November 1997 was adjusted to $0.47 from $0.22 to incorporate a special dividend of $0.25 declared in addition to the ordinary dividend of $0.22). This analysis has also led us to further examine the ordinary dividend record of the relevant firms and we have identified four additional ordinary dividends that have been added to our sample.

19. In total, we have added 14 observations to our data set and have made one correction.

[2] See our report of 13 January, Paragraphs 38-41.

20. **Thin trading.** Our dataset only comprises observations in which we can identify a trade as having occurred on the ex-dividend date. In addition, the requirement that market capitalisation be at least 0.03% of the All Ordinaries Index mitigates against the potential for thin trading to bias the results.

21. **Summary of sub-samples.** In the tables below we present results from 12 alternative specifications of the data.

Results reported in Table 1

22. In Table 1 we present results which rely upon the sample of 3,201 observations used in our note of January 2010. The first column corresponds to the middle column of results in the table accompanying that earlier analysis. For the most recent time period the estimated values of cash dividends and imputation credits are 0.9812 and 0.2372, respectively, or 0.9808 and 0.2379 if some foreign currency dividends are converted at RBA exchange rates.

23. In the middle column we present results from a sample of 3,215 observations, which includes an additional 14 missing observations (from the dataset entitled *Additional2)* and the correction of one data point (ICT, 21 November 1997). We observe that this has an immaterial impact on the results. The final period estimated values for cash dividends and imputation credits are 0.9856 and 0.2274, respectively, in panel (i) and 0.9850 and 0.2289 in panel (ii).

24. In the final column we present the impact of eliminating 130 special dividends from the analysis. In this case there has been a material reduction in the estimated value of imputation credits in the final period, to 0.1327 in Panel (i) and 0.1351 in Panel (ii), and an increase in the estimated value of cash dividends, to 1.0274 in Panel (i) and 1.0262 in Panel (ii). Note that the estimated value of a package of fully-franked dividends has not changed. In Panel (i), excluding 130 special dividends the estimated value of a $1.00 fully-franked dividend is $1.08 (that is $1.0274 + 0.1327 × 0.3 ÷ 0.7 = $1.08); including 130 special dividends we have $0.9856 + 0.2274 × 0.3 ÷ 0.7 = $1.08.

Results reported in Table 2

25. In Table 2 we present results that rely upon the sample of 3,187 observations used in our note of January 2010, which excludes 14 observations where there was a reasonable chance that price-sensitive information was announced to the market close to the ex-dividend date. The first column corresponds to the final column of results accompanying that earlier analysis. For the most recent time period the estimated values of cash dividends and imputation credits are 0.9819 and 0.2345, respectively, or 0.9815 and 0.2351 if some foreign currency dividends are converted at RBA exchange rates.

26. In the middle column we present results from a sample of 3,199 observations, which excludes two additional observations due to potential price-sensitive contemporaneous announcements (ONE, 12 February 1999 and KAZ, 10 April 2001), which includes an additional 14 missing observations (from the dataset entitled *Additional2)* and the correction of one data point (ICT, 21 November 1997). We observe that this has an immaterial impact on the results. The final period estimated values for cash dividends and imputation credits are 0.9859 and 0.2216, respectively, in panel (i) and 0.9853 and 0.2227 in panel (ii).

27. In the final column we present the impact of eliminating 130 special dividends from the analysis. In this case there has been a material reduction in the estimated value of imputation credits in the final period, to 0.1329 in Panel (i) and 0.1353 in Panel (ii), and an increase in the estimated value

of cash dividends, to 1.0251 in Panel (i) and 1.0239 in Panel (ii). Note that the estimated value of a package of fully-franked dividends has not changed. In Panel (i), excluding 130 special dividends the estimated value of a $1.00 fully-franked dividend is $1.08 (that is $1.0251 + 0.1329 × 0.3 ÷ 0.7 = $1.08); including 130 special dividends we have $0.9850 + 0.2289 × 0.3 ÷ 0.7 = $1.08.

28. **Conclusion**. Our additional analysis of special dividends, stock splits/bonus issues, contemporaneous price-sensitive announcements and missing observations did not have material impact on our conclusions made previously on the value of imputation credits estimated from the Beggs and Skeels (2006) dividend drop-off methodology. The exclusion of special dividends, which comprised 4% of our sample, in fact resulted in reduced estimates of the value of imputation tax credits. As discussed above, we see no reason why special dividends should be treated any differently from ordinary dividends.

Table 1. No additional observations eliminated because of contemporaneous price-sensitive information

	January 2010 submission (middle column)			Correction of 1 dividend and addition of 14 missing observations			Elimination of 130 special dividends		
	Cash	Franking	N	Cash	Franking	N	Cash	Franking	N
Panel (i): SIRCA reported A$ dividend estimates									
1 Jul 97 – 30 Jun 99	0.9325 (0.0737)	0.2378 (0.1703)	698	0.9419 (0.0716)	0.2144 (0.1654)	703	0.9333 (0.0759)	0.2399 (0.1699)	691
1 Jul 99 – 30 Jun 00	0.8264 (0.1091)	0.3591 (0.2411)	328	0.8274 (0.1096)	0.3601 (0.2420)	328	0.8249 (0.1072)	0.3755 (0.2486)	316
1 Jul 00 – 30 Sep 06	0.9812 (0.0313)	0.2372 (0.0832)	2,175	0.9856 (0.0306)	0.2274 (0.0822)	2,184	1.0274 (0.0301)	0.1327 (0.0854)	2,078
	Adj-R^2	44.45%	3,201	Adj-R^2	45.01%	3,215	Adj-R^2	43.56%	3,085
Panel (ii): A$ dividend estimates derived from RBA reported exchange rates									
1 Jul 97 – 30 Jun 99	0.9319 (0.0739)	0.2385 (0.1705)	698	0.9442 (0.0709)	0.2105 (0.1646)	703	0.9326 (0.0761)	0.2405 (0.1701)	691
1 Jul 99 – 30 Jun 00	0.8262 (0.1091)	0.3594 (0.2411)	328	0.8271 (0.1096)	0.3608 (0.2420)	328	0.8246 (0.1072)	0.3756 (0.2486)	3116
1 Jul 00 – 30 Sep 06	0.9808 (0.0313)	0.2379 (0.0832)	2,175	0.9850 (0.0307)	0.2289 (0.0823)	2,184	1.0262 (0.0302)	0.1351 (0.0856)	2,078
	Adj-R^2	44.44%	3,201	Adj-R^2	45.02%	3,215	Adj-R^2	43.48%	3,085

Table 2. Additional observations eliminated because of contemporaneous price-sensitive information

	January 2010 submission (3rd column; elimination of 14 observations due to contemporaneous announcements)			Correction of 1 dividend, addition of 14 missing observations and elimination of 2 additional observations due to contemporaneous announcements			Elimination of 130 special dividends		
	Cash	Franking	N	Cash	Franking	N	Cash	Franking	N
Panel (i): SIRCA reported A$ dividend estimates									
1 Jul 97 – 30 Jun 99	0.9337 (0.0729)	0.2351 (0.1707)	695	0.9371 (0.0724)	0.2193 (0.1674)	699	0.9305 (0.0757)	0.2400 (0.1723)	687
1 Jul 99 – 30 Jun 00	0.8262 (0.1093)	0.3550 (0.2420)	327	0.8277 (0.1091)	0.3521 (0.2416)	327	0.8209 (0.1066)	0.3740 (0.2478)	315
1 Jul 00 – 30 Sep 06	0.9819 (0.0315)	0.2345 (0.0835)	2,165	0.9859 (0.0307)	0.2216 (0.0822)	2,173	1.0251 (0.0303)	0.1329 (0.0856)	2,067
	Adj-R^2	44.39%	3,187	Adj-R^2	44.97%	3,199	Adj-R^2	43.25%	3,069
Panel (ii): A$ dividend estimates derived from RBA reported exchange rates									
1 Jul 97 – 30 Jun 99	0.9325 (0.0733)	0.2367 (0.1711)	695	0.9367 (0.0725)	0.2196 (0.1675)	699	0.9299 (0.0758)	0.2404 (0.1725)	687
1 Jul 99 – 30 Jun 00	0.8260 (0.1093)	0.3552 (0.2420)	327	0.8274 (0.1091)	0.3523 (0.2416)	327	0.8206 (0.1066)	0.3741 (0.2478)	315
1 Jul 00 – 30 Sep 06	0.9815 (0.0315)	0.2351 (0.0835)	2,165	0.9853 (0.0307)	0.2227 (0.0822)	2,173	1.0239 (0.0304)	0.1353 (0.0857)	2,067
	Adj-R^2	44.37%	3,187	Adj-R^2	44.95%	3,199	Adj-R^2	43.17%	3,069

Appendix 1: AER list of observations for further consideration

List of questionable observations identified

Code	Issues identified	NOB affected
TCL	Stock split on 29/11/1999 at the ratio of 500 for 1	9 observations
AGG	Stock split on 19/12/2001 at the ratio of 10 for 1	4 observations
BKW	stock split on 19/12/2000 at the ratio of 10 for 1	3 observations
CPU	Bonus of 3 to 1 issued on 25/09/1997	1 observation
CPU	Stock split on 05/10/1999 at the ratio of 4 for 1	4 observations
ONE	stock split on 11/05/1999 at the ratio of 10 for 1	2 observations
FPA	stock split on 10/11/2003 at the ratio of 4 for 1	3 observations
IPL	stock split on 17/09/2008 at the ratio of 10 for 1	3 observations
PSN	thinly traded	4 observations
KAZ	Announcements made around the ex-dividend day (10/04/2001)	1 observation
TPI	Announced a merger proposal around ex-dividend day (27/03/2006)	1 observation
One	Strategic alliance announcement on 16/02/1999	1 observation
SCF	Quarterly dividends are generally paid out: some dividend-paying events are not included	Missing observations
STO	Half-yearly dividends are generally paid out: the sample has only one dividend-paying event	Missing observations
PPT	Special dividends	6 observations
WES	Special dividend $0.65 on 20/02/2006	1 observation
RIO	Special dividend $1.45 on 22/02/2006	1 observation
IPL	Special dividends	2 observations
FPA	Special dividend $0.19 on 15/03/2004	1 observation
BKW	Special dividends	3 observations

Appendix 2: Data sets and computer code

29. We have attached to this report four SAS datasets and a comprehensive version of the computer code that conducts the analysis and generates the results. The attachments are as follows:

a. **additional2.sas7bat**: SAS dataset that contains the 14 additional observations referred to in this report;

b. **dataset_20090821.sas7bat**: main SAS dataset from previous versions of analysis;

c. **specials.sas7bat**: SAS dataset that identifies which observations are special dividends;

d. **market.sas7bat**: SAS dataset that contains stock market returns for the purpose of market-adjusting the returns of individual stocks;

e. **Beggs and Skeels replication 20100201.sas**: SAS program that uses the various datasets and performs the analysis.

References

Beggs, D. J. and Skeels, C.L., (2006), "Market arbitrage of cash dividends and franking credits," *Economic Record*, 82 (258), 239 – 252.

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