CAMBRIDGE ASSESSMENT

The accuracy of forecast grades for OCR A levels in June 2012

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1. Introduction

This report is an update of Statistics Report Series No. 26 (Gill & Rushton, 2011). It investigated the accuracy of forecast grades in OCR A levels, in relation to the final grade. The forecast grades in this report are those reported by teachers to the exam board prior to the final examination session. As such, they may differ somewhat from the predicted grades sent to UCAS as part of the university application process. The deadline for reporting forecast grades to OCR is May whilst UCAS receive predictions during the applications period which ends in January. Hence, by the time OCR receive the forecasts teachers will have more information about students' potential, as more unit results will be available and there will have been more teaching time. For a more detailed time line of the university application process, see Gill & Rushton (2011).

The data for this report were for students certificating in June 2012 in all OCR A level subjects. The report compared the data with the 2011 report in terms of accuracy of forecast grade. There has been one significant change since the last report (which used data from 2009) was produced, with the introduction of the A* grade which was first awarded in the summer of 2010. Thus, the report also investigated the impact of the extra A* grade on the accuracy of forecast grades for A levels.

2. Overall accuracy of forecast grades

Overall, the forecast grade in 2012 was correct 48.29% of the time (see Table 1). This is a lower level of accuracy than in the 2011 report (54.65%). However, this is at least partly due to the introduction of an extra grade (A*), which increased the probability of an incorrect forecast. Forecasts were, in general, more optimistic than pessimistic.

Table 1: Overall accuracy of forecast grades

% Accurate	48.29
% Optimistic	38.70
% Pessimistic	13.00

Table 2 demonstrates that, in the vast majority of cases (91.89%), the forecast grade was correct or was within one grade. The overall accuracy is a little bit lower than the overall accuracy in the 2011 report, in which 93.04% of the forecast grade was correct or was within one grade.

Table 2: Extent of inaccuracy of forecast grades

	%	N
Within 1 grade	91.89	171,512
More than 1 grade out	8.11	15,134

Table 3 shows the accuracy of the forecast grades by school type. Independent and grammar schools were the most accurate at forecasting A level grades. Further

education (FE) colleges were the least accurate. FE colleges and comprehensive schools were the most optimistic. Independent and grammar schools were the least optimistic.

Table 3: Accuracy of forecast grades by school type

School Type	% Accurate	% Optimistic	% Pessimistic	N
City Academy	47.82	38.62	13.56	41,337
Comprehensive	45.51	42.15	12.35	46,895
FE College	43.07	43.18	13.76	6,288
Grammar	51.04	36.80	12.16	9,886
Independent	54.91	31.40	13.69	33,219
Sixth Form College	47.52	39.58	12.90	37,725
Tertiary College	45.67	41.37	12.96	7,583
Total	48.37	38.58	13.04	182,933

The figures in Table 3 are all lower than the report in 2011, but particularly so in independent and grammar schools (68.54% and 60.51% accurate respectively in the 2011 report). This is likely to be due to the introduction of the A* grade, which will have had a bigger impact on the accuracy of forecast grades in these schools because of their high performing students (see table 4).

Table 4: Accuracy of forecast grades by final grade

Final Grade	% Accurate	% Optimistic	% Pessimistic	N
A*	64.36	-	35.64	17,065
A	62.94	20.67	16.39	36,024
B	51.90	33.71	14.39	45,258
C	46.65	44.31	9.04	40,586
D	32.06	62.06	5.88	26,781
E	26.94	71.94	1.12	13,207
U	7.78	92.22	-	4,012
Total	48.29	38.70	13.00	182,933

Overall, it was easier for teachers to correctly forecast higher grades than lower grades (Table 4). In particular grade A * and A were by far the easiest to forecast. This pattern is the most likely reason for the better accuracy in independent and grammar schools, where students achieve higher grades on average. It is also interesting to note that the percentage of optimistic forecasts was higher at lower grades.

The level of accuracy in Table 4 was lower than the report in 2011 at all grades. Accuracy at grade A was 21.16 percentage points lower (84.10% for grade A in the 2011 report), and for the other grades it was around 3 percentage points lower. The difference at grade A was so much greater because of the introduction of the A* grade.

3. Accuracy of A level combinations

3.1 All students

In this section the accuracy of the forecast of the *combination* of A levels taken by individual students is investigated. For this, grades were converted into points as per the UCAS tariff (A*=140, A = 120, B = 100, C = 80 etc) for students taking three A levels (most university offers are for three A level grades). The overall points score based on the forecast grades for each student (*forecast points score)* was then compared with the actual overall points score (*final points score)*.

When considering the accuracy of the forecasts across a combination of subjects there are two possible calculations: actual difference and absolute difference. The *actual difference* (which is more useful when university offers are made in points, due to compensation) is the difference between the forecast points score and the final points score (e.g. forecast points score = 120 + 120 + 100 = 340; final points score = 120 + 80 + 120 = 320; actual difference = 320 - 340 = -20). However, using this measure may hide some inaccuracies if, for instance, an optimistic forecast by one grade in a subject is cancelled out by a pessimistic forecast by one grade in another. An alternative measure is the *absolute difference* (more useful when offers specify grades in particular subjects). This is the (absolute) sum of the differences between each forecast and final grade (e.g. absolute difference 1 = 120 - 120 = 0; absolute difference 2 = 80 - 120 = 40; absolute difference 3 = 120 - 100 = 20; overall absolute difference = 0 + 40 + 20 = 60).

Analysis was undertaken using both these measures. Please note that the analysis is only for students taking three OCR A levels. This reduced the number of students significantly.

On average, the forecasts for combinations of A level subjects were optimistic, with forecast points score slightly above final points score (see Table 5). However, Table 6 shows that most of the differences were very small; 27.6% of overall forecast points scores were exactly right, and 66% were exactly right or within 20 points - equivalent to an increase/decrease of one A level grade.

Table 5: Mean accuracy of A level forecast points score

Variable	Mean
Forecast points score	320.19
Final points score	305.02
Actual difference	-15.17
Absolute difference	32.61

Table 6: Distribution of actual difference between final and forecast points score

Actual Difference	Frequency	Percent
-200	2	0.03
-180	2	0.03
-160	5	0.07
-140	4	0.05
-120	34	0.46
-100	86	1.16
-80	243	3.28
-60	546	7.37
-40	1,174	15.85
-20	1,872	25.27
0	2,046	27.62
20	972	13.12
40	317	4.28
60	82	1.11
80	17	0.23
100	5	0.07
120	1	0.01

The level of accuracy in Table 6 for actual difference was lower than the report in 2011. Only 27.62% of overall forecast points scores were exactly right, compared to 39.10% in the 2011 report, and 66% were exactly right or within 20 points, compared to 72.90% in the 2011 report.

In terms of absolute differences, Table 7 shows that the level of accuracy for absolute difference was also lower than the report in 2011. Only 17.90% of forecasts were exactly accurate in this report, compared to 31.27% in the 2011 report. In this report, 50.97% of forecasts were within 20 points, compared to 60.67% in the 2011 report.

Table 7: Distribution of absolute difference between final and forecast points score

Absolute Difference	Frequency	Percent
0	1,326	17.90
20	2,450	33.07
40	2,105	28.42
60	988	13.34
80	353	4.77
100	117	1.58
120	45	0.61
140	11	0.15
160	8	0.11
180	3	0.04
200	2	0.03

Table 8 shows the A level points score forecasts by school type. For all school types the average forecast was optimistic. As with the individual grades the most accurate forecasts were made by independent and grammar schools. They were also the forecasts that were least optimistic. However, this may be due to the nature of the

students attending these schools. They are likely to be very able students, and therefore it may be easier to forecast their grades correctly.

Table 8: Mean accuracy of A level forecast points score by school type

School Type	N	Mean Forecast	Mean Final	Actual Difference	Absolute Difference
City Academy	1,707	314.55	300.76	-13.79	33.15
Comprehensive	1,429	300.11	280.28	-19.83	36.79
FE College	175	278.17	262.17	-16.00	37.03
Grammar	537	345.47	333.71	-11.77	29.65
Independent	1,851	354.93	344.56	-10.37	25.89
Sixth Form College	1,370	302.50	284.28	-18.22	35.85
Tertiary College	257	300.78	281.25	-19.53	37.43

It is also true for the results in the 2011 report that the most accurate forecasts were made by independent and grammar school and their forecasts were least optimistic.

3.2 Students with a forecast points score of 240 or above (equivalent to three grade Cs or above)

The forecast grades analysed in section 3.1 were for all A level candidates, not just those who were planning to go to university. Thus, this included students of a larger ability range than those for whom a predicted grade is sent to UCAS.

In this section we analyse data for students with both a forecast and final points score of at least 240 (the equivalent of three grade Cs). The accuracy of the forecast points score was slightly better for this group of students. The average forecast was optimistic, by around 14 points (Table 9).

Table 9: Mean accuracy of A level forecast points score (candidate with 3 grade Cs or above)

Variable	Mean
Forecast points score	335.17
Final points score	321.26
Actual difference	-13.91
Absolute difference	30.97

Table 10 shows that the level of accuracy was lower than the report in 2011. Only 28.64% of the students had final points score equal to the forecast, with 67.87% within 20 points. Whereas in the 2011 report, 46.90% of students had final points score equal to the forecast with 82.17% within 20 points.

Table 10: Distribution of actual difference between final and forecast points score (candidate with 3 grade Cs or above)

Actual Difference	Frequency	Percent
-200	2	0.03
-180	1	0.02
-160	3	0.05
-140	4	0.06
-120	20	0.30
-100	50	0.76
-80	185	2.80
-60	463	7.00
-40	1,024	15.49
-20	1,710	25.86
0	1,894	28.64
20	884	13.37
40	284	4.30
60	70	1.06
80	14	0.21
100	4	0.06

In terms of absolute differences (see Table 11), only 18.94% of forecasts were exactly accurate and 53.11% were within 20 points. Whereas in the 2011 report, 39% were accurate and 70.60% were within 20 points.

Table 11: Distribution of absolute difference between final and forecast points score (candidate with 3 grades Cs or above)

Absolute Difference	Frequency	Percent
0	1,252	18.94
20	2,259	34.17
40	1,876	28.37
60	848	12.83
80	267	4.04
100	71	1.07
120	24	0.36
140	7	0.11
160	5	0.08
180	1	0.02
200	2	0.03

Table 12 shows the A level points score forecasts by school type. For all school types the average forecast was optimistic. The least optimistic forecasts were made by independent and grammar schools, with an average difference of 10 points and 11 points respectively. In the 2011 report the forecasts for independent and grammar schools were also the least optimistic, although with an average difference of only 4 points and 9 points respectively.

Table 12: Mean accuracy of A level forecast points score by school type (candidate with 3 grade Cs or above)

School Type	N	Mean Forecast	Mean Final	Actual Difference	Absolute Difference
City Academy	1,516	329.08	316.52	-12.56	31.72
Comprehensive	1,195	320.82	303.00	-17.82	34.39
FE College	127	309.29	293.86	-15.43	33.39
Grammar	518	350.69	339.54	-11.16	28.76
Independent	1,805	358.97	348.91	-10.06	25.33
Sixth Form College	1,160	322.07	304.83	-17.24	34.66
Tertiary College	225	316.71	298.22	-18.49	35.73

3.3 Students with a forecast points score of 360 (equivalent to three grade As or above)

The accuracy of the forecasts for the very highest achieving students was also analysed. For this, only students who were forecast three grade As or above (360 UCAS points or above) were selected. For this group the average forecast was optimistic, by around 11 points (Table 13).

Table 13: Mean accuracy of A level forecast points score (3 grade A or above candidates only)

Variable	Mean
Forecast points score	386.53
Final points score	375.62
Actual difference	-10.91

Results in the 2011 report shows that for this group the average forecast was also optimistic, by around 8 points.

Table 14 shows that 35.44% of the forecasts were accurate and 76.36% were no more than one grade out (within 20 points). This means the forecasts were less accurate than the report in 2011 which shows that 74.56% of the forecasts were accurate and 91.15% were no more than one grade out. This clearly demonstrates that the introduction of the A* grade meant that the accuracy of forecast grades for the group of candidates with three grade As or above decreased dramatically. This is because in the 2011 report it was not possible for the forecast to be pessimistic for these candidates, as they all achieved the maximum points score.

Table 14: Distribution of actual difference between final and forecast points score (3 grade A or above candidates only)

Actual Difference	Frequency	Percent
-120	4	0.14
-100	8	0.28
-80	39	1.36
-60	128	4.47
-40	389	13.58
-20	794	27.72
0	1,015	35.44
20	378	13.20
40	91	3.18
60	18	0.63

Table 15: Mean accuracy of A level forecast points score by school type (3 grade A or above candidates only)

School Type	N	Mean Forecast	Mean Final	Actual Difference
City Academy	586	383.82	374.71	-9.11
Comprehensive	382	382.83	369.90	-12.93
FE College	34	376.47	348.82	-27.65
Grammar	291	388.59	378.08	-10.52
Independent	1,129	391.18	381.15	-10.03
Sixth Form College	373	381.07	368.20	-12.87
Tertiary College	61	380.00	368.52	-11.48

Table 15 shows that for the group of students with 3 grade As or above, the average forecast was optimistic for all school types. The least optimistic forecasts were made by city academy, independent and grammar schools with an average difference of 9, 10 and 11 points respectively. In the 2011 report, the least optimistic forecasts were made by FE Colleges, independent schools and tertiary colleges, all with an average difference of around 6 points.

4. Conclusion

For all students, nearly 92% of the forecast grades were correct or within one grade. The introduction of the A* grade has meant that the overall accuracy of forecast grades decreased on average. This report also shows, by analysis of the *combination* of A levels taken by individual students, that the accuracy of the forecast points score decreased, as a result of the introduction of the extra A* grade.

Reference

Gill T. and Rushton N. (2011). *The accuracy of forecast grades for OCR A levels. Statistics Report Series No.26.* Cambridge Assessment.