

ASSESSING THE VARIANCE IN PUPIL ATTAINMENT: HOW IMPORTANT IS THE SCHOOL ATTENDED?

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APPENDIX TABLES

Table A1. Percentage of variance that was between schools: value added indicators for 5 or more A*-C grades, GCSE points scores and GCSE points scores per entry, 2009/10–2015/16

	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	Change 2009/10– 2015/16
5 or more A*-C grades	5.6	5.4	6.2	6.6	7.8	12.0	7.3	1.7
GCSE Points score	30.1	29.6	30.7	28.6	25.5	28.0	26.0	-4.1
GCSE Points score per entry	14.8	14.7	15.4	16.2	18.1	23.1	17.9	3.1
Number of schools	2,898	2,954	2,907	2,960	2,977	3,021	3,058	
Number of pupils	517,445	521,637	509,616	530,326	516,867	510,140	496,459	

Note: Value added indicators are calculated from a pupil-level regression for each indicator on attainment recorded at the end of primary schooling (the KS2 total points score). The difference between the actual indicator and the model prediction provides a value added score for each indicator.

Table A2a. Decomposition of variance of value added – five or more A*-C grades with pupil characteristics

	2009/10		2010/11		2011/12		2012/13		2013/14		2014/15		2015/16	
	Variance	Share of variance	Variance	Share of variance	Variance	Share of variance	Variance	Share of variance	Variance	Share of variance	Variance	Share of variance	Variance	Share of variance
Var (V)	0.15	1.00	0.16	1.00	0.15	1.00	0.16	1.00	0.17	1.00	0.24	1.00	0.16	1.00
Pupil characteristics:														
Var (xb)	0.01		0.01		0.01		0.01		0.01		0.02		0.00	
Pupil-pupil: ρ	0.14		0.12		0.12		0.10		0.10		0.08		0.10	
Pupil-school: ρ_s	0.05		0.04		-0.01		0.00		0.05		0.05		0.08	
Variance between	0.01	0.05	0.01	0.05	0.01	0.06	0.01	0.06	0.01	0.07	0.02	0.10	0.01	0.06
School effect: Var (φ)	0.01	0.04	0.01	0.04	0.01	0.05	0.01	0.05	0.01	0.06	0.02	0.08	0.01	0.05
Pupil characteristics:														
Var(xb) ρ	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Match contribution:														
Var(xb) ² ρ_s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Variance within	0.14	0.95	0.15	0.95	0.14	0.94	0.15	0.94	0.16	0.93	0.21	0.90	0.15	0.94
Within residual:														
Var (u)	0.14	0.92	0.14	0.91	0.14	0.91	0.14	0.90	0.15	0.90	0.19	0.81	0.15	0.91
Pupil characteristics:														
Var(xb)(1- ρ)	0.01	0.03	0.01	0.04	0.01	0.04	0.01	0.04	0.01	0.03	0.02	0.09	0.00	0.03

Note: Value added indicators are calculated from a pupil-level regression for each indicator on attainment recorded at the end of primary schooling (the KS2 total points score). The difference between the actual indicator and the model prediction provides a value added score for each indicator.

Table A2b. Decomposition of variance of value added – GCSE points with pupil characteristics

	2009/10		2010/11		2011/12		2012/13		2013/14		2014/15		2015/16	
	Variance	Share of variance	Variance	Share of variance	Variance	Share of variance	Variance	Share of variance	Variance	Share of variance	Variance	Share of variance	Variance	Share of variance
Var (V)	11,779	1.00	13,409	1.00	12,813	1.00	13,944	1.00	12,600	1.00	19,226	1.00	10,477	1.00
Pupil characteristics:														
Var (xb)	539		574		518		711		743		2,929		528	
Pupil-pupil: ρ	0.14		0.13		0.14		0.12		0.12		0.08		0.10	
Pupil-school: ρ_s	0.277		0.31		0.32		0.26		0.18		0.09		0.19	
Variance between	3207	0.27	3587	0.27	3553	0.28	3568	0.26	2767	0.22	4600	0.24	2337	0.22
School effect: Var (φ)	2834	0.24	3154	0.24	3145	0.25	3114	0.22	2407	0.19	3881	0.20	2084	0.20
Pupil characteristics:														
Var(xb) ρ	74	0.01	77	0.01	74	0.01	83	0.01	86	0.01	221	0.01	55	0.01
Match contribution:														
Var(xb) ² ρ_s	299	0.03	356	0.03	333	0.03	371	0.03	274	0.02	498	0.03	198	0.02
Variance within	8572	0.73	9822	0.73	9260	0.72	10376	0.74	9830	0.78	14623	0.76	8140	0.78
Within residual:														
Var (u)	8107	0.69	9325	0.70	8816	0.69	9748	0.70	9172	0.73	11915	0.62	7668	0.73
Pupil characteristics:														
Var(xb)(1- ρ)	465	0.04	496	0.04	444	0.03	628	0.05	657	0.05	2708	0.14	472	0.05

Note: Value added indicators are calculated from a pupil-level regression for each indicator on attainment recorded at the end of primary schooling (the KS2 total points score). The difference between the actual indicator and the model prediction provides a value added score for each indicator.

Table A2c. Decomposition of variance of value added – GCSE points per entry with pupil characteristics

	2009/10		2010/11		2011/12		2012/13		2013/14		2014/15		2015/16	
	Variance	Share of variance	Variance	Share of variance	Variance	Share of variance	Variance	Share of variance	Variance	Share of variance	Variance	Share of variance	Variance	Share of variance
Var (V)	46	1.00	50	1.00	44	1.00	50	1.00	52	1.00	92	1.00	54	1.00
Pupil characteristics:														
Var (xb)	3		4		3		4		4		14		3	
Pupil-pupil: ρ	0.14		0.13		0.13		0.12		0.12		0.08		0.11	
Pupil-school: ρ_s	0.12		0.13		0.12		0.13		0.13		0.08		0.15	
Variance between	6	0.13	7	0.13	6	0.14	7	0.14	7	0.14	18	0.19	8	0.15
School effect: Var (φ)	5	0.11	5	0.10	5	0.11	6	0.11	6	0.12	15	0.16	7	0.12
Pupil characteristics:														
Var(xb) ρ	0	0.01	0	0.01	0	0.01	0	0.01	0	0.01	1	0.01	0	0.01
Match contribution:														
Var(xb) ² ρ_s	1	0.02	1	0.02	1	0.02	1	0.02	1	0.02	2	0.02	1	0.02
Variance within	40	0.87	43	0.87	38	0.86	43	0.86	44	0.86	74	0.81	46	0.85
Within residual:														
Var (u)	37	0.80	40	0.80	35	0.80	40	0.79	41	0.79	62	0.67	44	0.81
Pupil characteristics:														
Var(xb)(1- ρ)	3	0.06	3	0.07	3	0.06	3	0.07	3	0.06	13	0.14	3	0.05

Note: Value added indicators are calculated from a pupil-level regression for each indicator on attainment recorded at the end of primary schooling (the KS2 total points score). The difference between the actual indicator and the model prediction provides a value added score for each indicator.

Table A3. Decomposition of school-level variance in value added

	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Five or more A*-C grades – value added							
Composition and school size	0.41	0.45	0.45	0.49	0.42	0.42	0.25
Pupil-teacher ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00
School	0.58	0.55	0.55	0.51	0.58	0.58	0.75
2 x Covariance (composition and size, pupil-teacher ratio)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GCSE Points Score – value added							
Composition and school size	0.48	0.51	0.50	0.49	0.40	0.47	0.35
Pupil-teacher Ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00
School	0.52	0.49	0.50	0.51	0.60	0.53	0.65
2 x Covariance (composition and size, pupil-teacher ratio)	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GCSE Points Score per entry – value added							
Composition and school size	0.47	0.48	0.46	0.52	0.44	0.50	0.42
Pupil-teacher ratio	0.00	0.00	0.00	0.00	0.00	0.00	0.00
School	0.52	0.52	0.54	0.48	0.56	0.50	0.58
2 x Covariance (composition and size, pupil-teacher ratio)	0.00	0.00	0.00	0.00	0.00	0.00	-0.01

Note: Value added indicators are calculated from a pupil-level regression for each indicator on attainment recorded at the end of primary schooling (the KS2 total points score). The difference between the actual indicator and the model prediction provides a value added score for each indicator.