

ONLINE APPENDIX

Table 4*: Raw and Adjusted Changes in Ethnic Achievement Gap Throughout Compulsory Schooling

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Key Stage 1, raw gap</i>	<i>Change from Key Stage 1 to Key Stage 4</i>			<i>Share Explained,</i>	
		<i>raw</i>	<i>EMT adjusted</i>	<i>FMS adjusted</i>	<i>EMT</i>	<i>FMS</i>
<i>Black, Caribbean</i>	-2.68 (0.17)**	-0.25 (0.17)	-0.38 (0.17)**	-0.09 (0.17)	-50.66%	62.28%
<i>Black, Other</i>	-2.79 (0.17)**	2.59 (0.18)**	1.55 (0.18)**	2.81 (0.18)**	40.04%	-8.77%
<i>Bangladeshi</i>	-4.76 (0.28)**	5.17 (0.30)**	2.69 (0.30)**	6.29 (0.30)**	48.04%	-21.76%
<i>Pakistani</i>	-4.95 (0.20)**	3.83 (0.22)**	1.54 (0.22)**	4.45 (0.22)**	59.69%	-16.25%
<i>Indian</i>	-1.13 (0.18)**	5.24 (0.17)**	3.17 (0.17)**	5.34 (0.17)**	39.60%	-1.96%
<i>Chinese</i>	1.72 (0.30)**	6.54 (0.27)**	4.65 (0.28)**	6.67 (0.28)**	28.91%	-2.08%
<i>Other</i>	-0.63 (0.09)**	1.41 (0.09)**	0.77 (0.09)**	1.57 (0.09)**	45.46%	-10.63%
<i>N</i>	469,847	469,847	469,847	469,847		

Note: The first column displays the raw ethnic achievement gap in mathematics at Key Stage 1. The second to fourth columns show the raw and adjusted changes in ethnic achievement gaps between Key stage 1 and 4. Column (3) adjusts for whether English is the pupil's mother tongue, while column (4) adjusts for whether the pupil is eligible for a free school lunch. Columns (5) and (6) display the share of the widening or narrowing of the achievement gap between Key Stage 1 and 4 that can be attributed to English as a mother tongue and free meal status. Test scores are standardized with mean 50 and standard deviation 10. Standard errors in parentheses allow for clustering at the school level. Coefficients with * are statistically significant at the 5 percent level, those with ** at the 1 percent level.

Source: NPD and PLASC, Key Stage 1 exams in 1998 and Key Stage 4 exams in 2007.

**Table 5*: Ethnic Achievement Gaps at the Beginning and End of Compulsory Schooling:
Boys versus Girls**

	(1)		(2)		(3)	
	<i>Key Stage 1, raw gap</i>		<i>Change from KS 1 to KS 4, raw</i>		<i>Share explained by EMT</i>	
	<i>boys</i>	<i>girls</i>	<i>boys</i>	<i>girls</i>	<i>boys</i>	<i>girls</i>
<i>baseline (White British)</i>	50.51	50.01	-0.57	-0.13		
	0.04	0.04	0.04	0.04		
<i>Black, Caribbean</i>	-2.81	-2.53	-0.94	0.32	113.12%	59.73%
	0.22	(0.21)	0.23	(0.20)		
<i>Black, Other</i>	-2.88	-2.70	2.19	2.98	57.93%	61.41%
	0.22	(0.22)	(0.23)	(0.22)		
<i>Bangladeshi</i>	-4.91	-4.60	5.32	5.01	55.19%	48.80%
	(0.36)	(0.32)	(0.37)	(0.32)		
<i>Pakistani</i>	-5.19	-4.71	3.93	3.73	45.00%	35.72%
	(0.23)	(0.23)	(0.24)	(0.25)		
<i>Indian</i>	-1.46	-0.81	5.30	5.18	62.07%	58.96%
	(0.22)	(0.19)	(0.21)	(0.18)		
<i>Chinese</i>	1.79	1.65	6.60	6.48	73.06%	69.23%
	0.44	0.39	0.39	0.37		
<i>Other</i>	-0.70	-0.56	1.41	1.41	55.11%	54.19%
	0.12	0.11	0.11	0.11		
<i>N</i>	233,244	236,603	233,244	236,603	233,244	236,603

Note: The first column displays the raw ethnic achievement gap in Mathematics at Key Stage 1, separately for boys and girls. The second and third columns show the raw and adjusted changes in ethnic achievement gaps between Key stage 1 and 4, again separately for boys and girls. We adjust for whether English is the pupil's mother tongue. Test scores are standardized with mean 50 and standard deviation 10. Standard errors in parentheses allow for clustering at the school level. Coefficients with * are statistically significant at the 5 percent level, those with ** at the 1 percent level.

Source: NPD and PLASC, Key Stage 1 exams in 1998 and Key Stage 4 exams in 2007.

Table 6*: The Impact of English as a Mother Tongue (EMT) and Free Meal Status (FMS) on Mathematics Test Scores at the Beginning and End of Compulsary

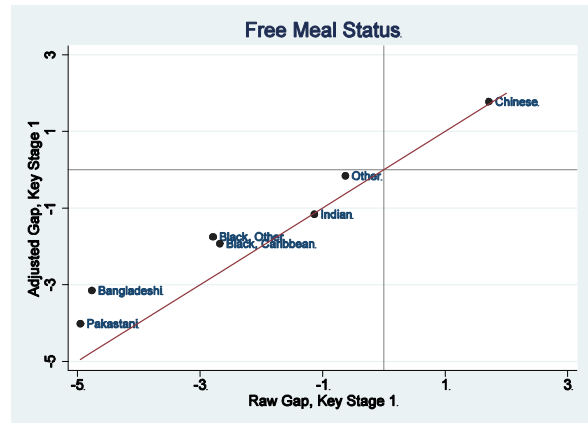
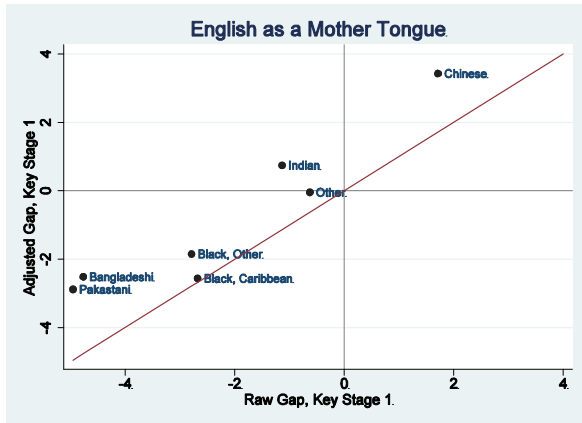
	Key Stage 1			Key Stage 4		
	EMT	FMS	Both	EMT	FMS	Both
<i>English as a Mother Tongue</i>	2.34 (0.13)**		1.91 (0.13)**	-0.24 (0.17)**		-0.92 (0.16)**
<i>Free Meal Status</i>		-4.08 (0.05)**	-4.05 (0.05)**		-6.41 (0.08)**	-6.43 (0.08)**
N	469,847	469,847	469,847	469,847	469,847	469,847

Note: The table reports the impact of two indicator variables, English as a Mother Tongue (EMT) and Free Meal Status (FMS), on Mathematics test scores at Key Stage 1 and Key Stage 4. Test scores are standardized with mean 50 and standard deviation 10. Standard errors in parentheses allow for clustering at the school level. Coefficients with * are statistically significant at the 5 percent level, those with ** at the 1 percent level.

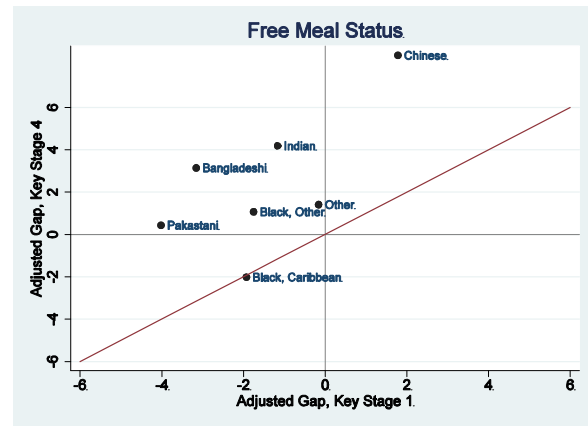
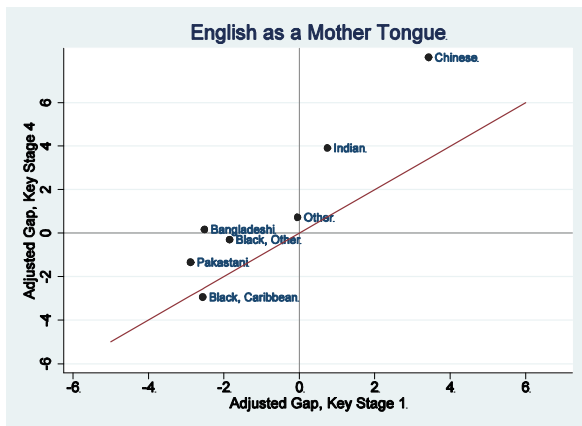
Source: NPD and PLASC, Key Stage 1 exams in 1998 and Key Stage 4 exams in 2007.

Figure 2*: Ethnic Achievement Gaps at the Beginning (Key Stage 1) and End (Key Stage 4) of Compulsory Schooling: The Role of Family Background Characteristics

Panel A: Raw versus Adjusted Ethnic Achievement Gaps (Mathematics), Key Stage 1



Panel B: Adjusted Ethnic Achievement Gaps (Mathematics), Key Stage 1 versus Key Stage 4



Note: In Panel A, we plot the raw ethnic test score gaps in Mathematics at Key Stage 1 against the adjusted ethnic test score gap at Key Stage 1. In Panel B, we plot the adjusted ethnic test score gaps in English at Key Stage 1 against those in Key Stage 4. The left figures adjust for whether English is the pupil's mother tongue, while the right figures adjust for whether the pupil is eligible for free school lunches. Test scores are standardized with mean 50 and standard deviation 10.
 Source: NPD and PLASC, Key Stage 1 exams in 1998 and Key Stage 4 exams in 2007. N=469,847.

**Table 8*: Ethnic Achievement Gaps at the Beginning and End of Compulsory Schooling:
Hanushek and Rivkin (2006)**

<u>Panel A: English</u>		Key Stage 1	Key Stage 4	Share Within
Black, Caribbean	within	-0.209	-0.387	71.87%
	between	-1.168	-1.238	
Black, Other	within	-0.323	0.494	36.49%
	between	-1.631	-0.210	
Bangladeshi	within	-2.053	1.128	48.42%
	between	-4.460	-1.071	
Pakistani	within	-1.533	0.173	41.09%
	between	-3.900	-1.454	
Indian	within	-0.014	1.868	42.79%
	between	-1.328	1.187	
Chinese	within	-0.269	3.510	63.33%
	between	-0.486	1.702	
Other	within	-0.095	0.490	30.25%
	between	-0.696	0.655	
<u>Panel B: Mathematics</u>		Key Stage 1	Key Stage 4	Share Within
Black, Caribbean	within	-1.855	-1.123	-292.75%
	between	-0.822	-1.804	
Black, Other	within	-1.690	0.338	78.37%
	between	-1.098	-0.538	
Bangladeshi	within	-2.228	1.512	72.36%
	between	-2.536	-1.108	
Pakistani	within	-1.878	0.510	62.37%
	between	-3.074	-1.633	
Indian	within	-0.417	2.670	58.90%
	between	-0.717	1.437	
Chinese	within	1.619	6.563	75.61%
	between	0.096	1.691	
Other	within	-0.408	0.421	58.55%
	between	-0.220	0.366	

Note: The table decomposes the English and Mathematics test score gap (estimated by OLS) into a within and between school component, following Hanushek et al. (2006).

Source: NPD and PLASC, Key Stage 1 exams in 1998 and Key Stage 4 exams in 2007.

Table 8:** Ethnic Achievement Gaps at the Beginning and End of Compulsory Schooling:
The Role of Schools

Panel A: Overall Achievement Gaps						
		Key Stage 1		Key Stage 4		Share Within, KS1->KS4
		OLS	FE	OLS	FE	
<i>Black, Caribbean</i>	Coeff	-2.68	-2.37	-2.93	-1.83	-217.09%
	SE	(0.17)**	(0.15)**	(0.20)**	(0.16)**	
<i>Black, Other</i>	Coeff	-2.79	-2.44	-0.20	0.11	98.77%
	SE	(0.17)**	(0.14)**	(0.24)	(0.15)	
<i>Bangladeshi</i>	Coeff	-4.76	-4.46	0.40	2.32	131.09%
	SE	(0.28)**	(0.22)**	(0.26)	(0.21)**	
<i>Pakistani</i>	Coeff	-4.95	-4.00	-1.12	0.85	126.64%
	SE	(0.20)**	(0.15)**	(0.22)**	(0.16)**	
<i>Indian</i>	Coeff	-1.13	-0.62	4.11	4.01	88.41%
	SE	(0.18)**	(0.13)**	(0.21)**	(0.14)**	
<i>Chinese</i>	Coeff	1.72	1.76	8.25	6.68	75.37%
	SE	(0.30)**	(0.28)**	(0.26)**	(0.24)**	
<i>Other</i>	Coeff	-0.63	-0.60	0.79	0.45	74.41%
	SE	(0.09)**	(0.08)**	(0.14)**	(0.08)**	
N		469,847	469,847	469,847	469,847	

Panel B: Boys versus Girls (School Fixed Effect Estimates)							
		Key Stage 1		Key Stage 4		Share Within, KS1-->KS4	
		boys	girls	boys	girls	boys	girls
<i>Baseline (White British)</i>	Coeff	50.45	49.98	49.92	49.80		
	SE	(0.02)**	(0.04)**	(0.02)**	(0.02)**		
<i>Black, Caribbean</i>	Coeff	-2.50	-2.23	-2.45	-1.28	-1759.63%	33.91%
	SE	(0.20)**	(0.19)**	(0.22)**	(0.19)**		
<i>Black, Other</i>	Coeff	-2.49	-2.40	-0.14	0.36	93.08%	107.81%
	SE	(0.19)**	(0.19)**	(0.20)	(0.21)		
<i>Bangladeshi</i>	Coeff	-4.65	-4.26	2.27	2.37	76.88%	75.64%
	SE	(0.28)**	(0.27)**	(0.26)**	(0.26)**		
<i>Pakistani</i>	Coeff	-4.17	-3.84	0.80	0.89	79.17%	78.76%
	SE	(0.19)**	(0.18)**	(0.19)**	(0.21)**		
<i>Indian</i>	Coeff	-0.86	-0.40	3.81	4.20	113.49%	112.75%
	SE	(0.17)**	(0.15)*	(0.17)**	(0.17)**		
<i>Chinese</i>	Coeff	1.84	1.68	6.70	6.67	135.70%	129.83%
	SE	(0.41)**	(0.37)**	(0.34)**	(0.33)**		
<i>Other</i>	Coeff	-0.68	-0.51	0.49	0.42	120.36%	151.59%
	SE	(0.11)**	(0.10)**	(0.10)**	(0.11)**		
N		233,244	236,603	233,244	236,603		

Note: In Panel A, we compare OLS with fixed school (within) estimates of ethnic achievement gaps in Mathematics at Key Stage 1 and Key Stage 4. In the last column, we display the share of the widening or narrowing test score gap between Key Stage 1 and 4 that occurs within schools. In Panel B, we report fixed school (within estimates) of ethnic achievement gaps in English at Key Stage 1 and Key Stage 4 separately for boys and girls. Coefficients with * are statistically significant at the 5 percent level, those with ** at the 1 percent level.

Source: NPD and PLASC, Key Stage 1 exams in 1998 and Key Stage 4 exams in 2007.