Parental Time Investments in Children: The Role of Competition for University Places in the UK

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This paper uses 24-hour diary surveys, coupled with novel administrative student data on college admissions and entry examination scores, to explore whether competition for college slots at elite universities can explain the distinct trends in time investments by parents with different educational attainments in the UK over the past three decades. Parental time plays an important role in the intergenerational transmission of human capital (e.g., Fiorini and Keane 2014), and has important implications in explaining children's adult life outcomes (Heckman and Cunha 2007). Understanding whether there is a growing inequality in the time parents spend with their children and its likely causes is thus crucial for child development and for policies aimed at reducing inequality.

From a theoretical perspective the relationship between parental education and time spent with children can be rationalized using a simple economic model of parental time allocation where individuals derive utility from home-produced goods, leisure goods, and well-cared-for children, subject to the childcare production function and the usual time and budget constraints (see Guryan, Hurst, and Kearney 2008). Under this theoretical framework, higher returns to investment in children from college-educated parents (either because children of college-educated parents have greater potential and opportunities, or because college-educated parents are more efficient in the production of human capital) may result in college-educated parents investing more time in their children than non-college educated parents.

On the basis of the above theoretical framework, Ramey and Ramey (2010) revealed that in the United States the sharp increase in parental time investments, particularly in children's extra-curricular activities on the part of college-educated parents, coincided with increases in the perceived return to attending an elite university coupled with an increase in competition for college slots. The United Kingdom shares many of the competitive

college admissions features with the United States. As in the United States, the UK has a well-defined core of elite universities and a national application process, which is centrally coordinated. Returns to attending elite universities in both countries have also been shown to be remarkably similar at around 6 per cent.

This paper adds to the literature by furthering our understanding of the relationship between competition for college slots and parental time investments. The UK experience can provide a powerful test to assess the generalization of Ramey and Ramey's (2010) model and its implications for college admissions policies more generally. Despite similarities in the college admission process in the two countries, trends in college competition in the United Kingdom did not follow a monotonic trend. Additionally, UK college admission processes are based on previous academic performance to a larger extent than US processes (Jerrim, Vignoles, and Finnie 2012), which may result in parents and children investing in more intensive educational activities in the UK. We also add to the literature on college admissions, which has mainly focused on the US, by gathering and documenting for the first time unique evidence on the competition for slots at elite universities in the UK over the past decades.

I. Parental Time Investments in the UK

A. Diary Data

We use 24-hour time diary surveys from the harmonized UK Multinational Time Use Study Data set (UK MTUS), which covers three decades (1974, 1983, 1995, 2000, 2005) to provide a comprehensive picture of historical trends in parental time investments (see Table A1 in Appendix A). Most studies documenting long term trends in how individuals use their time are based on time-use diaries, which have become the preferred method to collect information on time spent on different activities just as money expenditure diaries have become the gold standard for describing consumption behavior.

The data have been harmonized to minimize differences in measurement across surveys, such as for example the lower number of episodes reported in 1995 and 2005 surveys (see Section I in the Appendix). Additionally, our analysis comparing parental time investments between educational groups over time should reflect changes in actual behaviour rather than changes in survey methodology, as there is no reason to believe that college and non-college educated parents are affected by data collection methods in systematically different ways.

As in previous studies we measure parental time investments as the time caring for children reported as the main diary activity by the respondent. Parental time investment activities include physical and medical care, educational activities, and supervisory childcare (See Table A.1 in the Appendix). We limit the sample to families with children older than 5 years old.

B. Trends in Total Childcare

For comparability with US results, we estimate changes in education gradients in time investments over time by means of a simple OLS model as in Ramey and Ramey (2010) for a sample of 6,262 mothers and 4,831 fathers:

$$(1) \quad CT_{it}=\beta_1 H_{it} + H_{it}\mathbf{T_t}\boldsymbol{\beta_2} + \mathbf{X_{it}}\boldsymbol{\beta_3}+\delta_t+\varepsilon_{it}$$

Where CT_{it} is total time in hours per week in parental time investments by respondent i in year t. H_{it} is a dummy variable that takes value one if educational attainment is some college or more, and $\mathbf{T_t}$ is a vector of survey-year dummies. $\mathbf{X_{it}}$ is a set of controls to hold constant the demographic composition of the sample. We also include survey-period fixed effects δ_t to account for long-term changes in attitudes towards children from both college-educated and less-than-college educated individuals. ε_{it} is the error term clustered at the survey level and taking into account of survey weights (see Table A.2 in the Appendix for summary statistics).

Results from estimating Equation (1) for mothers are presented in Column 1 of Table 1. The average amount of time spent by mothers with their children increased almost six hours per week from 1974 to 2005 (Column 1 of Panel A). Trends in the education gradient in time investments in Panels B and C reveal a divergence in time investments by parental education until the mid-90s, fading away towards the end of the period. Whereas in the 1970s college educated mothers devoted 40 minutes more per week than non-college educated mothers to childcare, the gap in maternal time investments had relatively increased to more than an hour per week in 1983 and, by 1995, college educated mothers invested 3.5 more hours per week than their non-college educated counterparts.

Results from estimating Equation 1 for the sample of fathers in column 3 of Table 1 show that the education gradient for fathers followed a similar pattern to the pattern found for mothers, reaching about one hour per week in 1995, and gradually decreasing afterwards. As shown in Figure A.1 in the Appendix the adjustment in parental time with children took place through changes in leisure time and

unpaid work for women, and paid work and housework for men.

Available evidence from 1983 and 2000 suggests that, although at the end of the period mothers spent roughly the same amount of time with their children independent of their educational levels, this convergence did not occur for time spent in educational activities. In particular, Column 2 of Table 1 shows that whereas by 2000 college educated mothers spent 15 minutes more in general care relative to non-college educated mothers, they invested half an hour more in educational childcare (e.g. teaching children, helping them with homework) than non-college educated mothers. We also find increases in the differential time devoted by college-educated fathers over their non-college counterparts to educational activities during this period, although the magnitudes are lower (Column 4 of Table 1).

Trends in the education gradient in parental time investments are consistent with evidence from children's diary records. Panel C in Columns 5 and 6 show that whereas in the 70s children devoted the same amount of time to homework regardless of their parents' educational background (half an hour for boys and an hour and a half for girls), at the end of the period children from more educated family backgrounds spent almost twice as much time doing homework than children from less well educated backgrounds. In 2000 boys from better educated backgrounds spent two more hours in homework than boys from less well educated backgrounds, while this gap was six hours per week for girls.

The conclusion from table 1 is first that, compared to the US where gaps in time investments between college and non-college educated mothers grew from the mid-90s onwards to over six hours (Ramey and Ramey 2010), in the UK college-educated parents increased the time they spent with their children by twice as much as non-college educated parents from the mid-80s until the mid-90s, but the gap gradually closed thereafter. Second, in contrast to the evidence for the US where increases in parental time investments for college-educated parents focused on children's extra-curricular activities, we also reveal that at the end of the period in the UK college-educated parents and their children spent relatively more time on human capital enhancing activities.

C. Conventional Explanations

Previous literature has suggested several theories to explain why higher parental educational attainment may be associated with larger parental time investments. Most of these theories unfold broadly and gradually. In

contrast we have shown a sharp increase in the education gradient in parental time with children between the mid-80s and 90s, and a subsequent decline after that.

We test for these potential explanations and find that key features in the trends in parental time investments (the time, activities, and educational component) are robust when controlling for household income, work status, and selection into parenthood (results shown in Table A.3 the Appendix). We also use additional data from the International Crime Victims Survey (1989, 1996, 2000, 2005) to estimate trends in men and women's safety concerns by educational attainment. We find that the fears of college-educated individuals about their children' safety are consistently lower than those of their non-college educated counterparts throughout the period, without any sign of convergence. Further evidence from the European Values Study (1981, 1990, and 1999) and World Values Survey Data (2005) suggests that trends in parenting values for college and non-college educated parents cannot account for the trends in the education gradient in parental time investments shown in Table 1 (see Tables A.4 and A.5 in the Appendix).

II. The Role of Competition in the UK

In this section we explore an alternative explanation based on the competition for college slots at elite universities. We show that the trends in the education gradient in parental time investments shown in Table 1 closely coincided with the trends in the competition for college slots and the perceived returns to elite universities in the UK. To that end we gather administrative data at the university level from the Universities Statistical Record (1974/75-1993/94) and the Higher Education Statistical Agency (1994/95-2005/06) and construct a long historical data set of student enrolment numbers and examination results over a period of more than three decades (see Section II in the Appendix for details of these data sets).

A. College Competition and the Education Gradient in Parental Time Investments

Compared to the US, where the increase in demand for college slots that led to increases in the competition at elite university places was driven by demographic factors resulting from the rise in college-bound cohorts beginning in the mid-90s, changes in the demand for college slots in the UK responded to structural factors. As argued in Blanden and Machin (2004), since the mid-70s to the mid-

90s there was an unprecedented increase in the demand for college slots, as measured by the proportion of students staying on beyond the compulsory school leaving age. Following a moderate and steady since the 70s, the introduction of the General Certificate of Secondary Education (GCSE) in 1988 resulted in a step-change of 40 per cent increase in the proportion of students staying on beyond the compulsory school leaving age (from 51 per cent in the late 80s to 70 per cent in the late 90s). From the mid-90s the demand for undergraduate studies showed a much slower rate of growth despite increases in the college education age population after 1998. The slow down in the demand for college slots over this period was a result of the stabilization in the proportion of pupils staying on beyond compulsory education, which remained fairly constant at about 70 per cent of total secondary students from the late 90s onwards, and changes in student funding including the introduction of fees in 1998 (Greenaway and Hayness 2002).

The rise in the demand for college slots up to the mid-90s was not met by corresponding increases in the supply of college slots at elite universities (see Table A.6 in the Appendix). Over this period UK universities were subject to strict rules about student numbers, particularly since the introduction of the Maximum Aggregate Student Numbers (MASN) in 1993, which established caps on the maximum number of students that each university was able to recruit. The unmet demand for college slots at elite universities up to the mid 1990s seems to have resulted in increases in competition. Returns to graduating from an elite university closely followed general movements in the demand for college slots, increasing five fold to 6 per cent up to the mid 90s and remaining fairly constant thereafter (Chevalier 2014). We investigate competition for college slots at elite universities further by looking at enrolment rates and student entry examination scores at elite colleges in the UK.

In the spirit of Bound, Hershbein, and Long (2009) our first competition measure is based on the proportion of full-time students admitted to top-ranking institutions out of the total university enrolment. Unlike in the US, UK students can only apply to a fixed number of universities. By focusing on actual slots, and not the ratio of applications to acceptances, we leave aside the endogeneity problem characteristic of the UK by which elite universities may receive fewer applications than non-elite institutions because only students who are sure to meet their strict entry standards apply to them. Our second competition measure is the relative entry

examination scores at elite colleges compared to entry scores in non-elite colleges. Information on scores is available until 1993. The rationale behind this measure is that increases in competition should be accompanied by increases in the selectivity of elite institutions, which should be reflected in higher average entry scores (Hoxby 2009).

We consider elite colleges those universities that may have been regarded as such since the mid-70s. These are Oxbridge (Oxford and Cambridge), the so-called ancient universities in Scotland and universities founded in the major industrial cities of England before World War I. In order to keep the number of universities constant throughout the period, we also limit the sample to pre-1992 universities (the passage of the Further and Higher Education Act in 1992 granted university status to 48 former polytechnics). Robustness checks show that our results are not driven by different categorization of elite schools or the selection of the sample (see Tables A.6 and A.7 and Figure A.2 in the Appendix).

Panel B in Figure 1 shows that the proportion of students attending elite institutions dropped significantly by about 20 per cent from the mid-80s until the mid-90s. Afterwards, the proportion of students admitted to elite universities stayed fairly constant at 30 per cent. Additionally Panel C in Figure 1 shows that compared to non-elite universities, average examination results for entry to elite universities increased more than three fold until the mid 90s, from being 3 percent higher than non-elite universities in 1974, to 4 percent higher in 1985, and to 10 percent higher in 1993.

The message to take away from Figure 1 is that trends in the competition for college slots at elite universities closely followed trends in the education gradient in parental time documented in Table 1 and represented in Panel A in Figure 1. The high correlation between family background and examination scores in the UK suggests that, in line with economic theory, children from more privileged backgrounds may have been more likely to compete for places at elite colleges as was the case in the US (Jerrim, Vignoles, and Finnie 2012).

B. College Admission and Human Capital Investments in the UK

Ramey and Ramey (2010) found that over the 1987-2000 period college-educated parents increasingly spent more time than non-college educated parents in “general” care and “travel and activities”, as opposed to educational activities. Compared to the US, faced with high levels of competition

for college slots, parents with a college degree in the UK devote more time to human-capital enhancing activities, echoing qualitative evidence from the sociological literature emphasizing parents' anxiety for children's academic achievement and the expectation that parents help children at home after school (Reay 2005). These distinctive aspects of parents' and children's behaviour could be explained by the fact that, despite sharing many features in the college admission process, both countries crucially differ in that college admission decisions are generally based on students' prior educational qualifications, and rarely on subjective assessments of motivation or performance at interview (Jerrim, Vignoles, and Finnie 2012).

III. Conclusion

As previously found for the United States by Ramey and Ramey (2010), we provide evidence that changes in the competition for admission to elite colleges is a plausible explanation for the trends in parental time investments for parents with different educational attainment in the UK over the 1974-2005 period. As in the US, we cannot rule out that high-skilled parents were responding to changes in returns to having children with higher skills as a result from changes in the skill premium, which also increased during the mid-80s and 90s. Further analyses involving countries with changes in the skill premium but not in the college competition or vice versa can be a worthwhile area of future research.

Recent research has shown that more parental time in educational activities can increase children's test scores (Fiorini and Keane 2014). Here we document an alternative channel through which inequality is transmitted across generations by showing that by the end of the period children from more advantaged backgrounds benefit from more parental time in the form of educational activities relative to children from less educated backgrounds. Compared to the US, the UK admissions system places more weight on examination results. Two-generation programs, which educate parents as well as children, may prove to be a valuable policy to reduce inequalities across generations.

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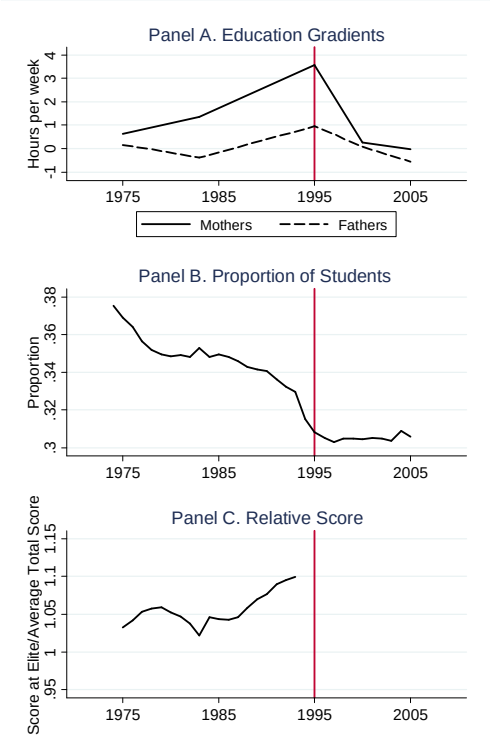

FIGURE 1. EDUCATION GRADIENTS IN TIME INVESTMENTS AND COMPETITION FOR COLLEGE ADMISSIONS AT ELITE UNIVERSITIES

Note: See Appendix for the sample of universities and the categorization of elite universities. Panel A plots the coefficients in Panels B and C of Columns 1 and 3 of Table 1. Panel B shows the proportion of full-time undergraduate students enrolled at elite universities out of the total number of students attending existing Higher Education institutions before the passage of the 1992 Further Education Act. Panel B shows the ratio of average scores of students enrolled at elite universities to average scores of all students. Individual students' scores are calculated summing up scores from their 3 top A-level scores with A's gaining 5 points, B's, 4, C's, 3, D's, 2, and E's, 1 (see Appendix)

Source: MTUS (1974, 1983, 1995, 2000, 2005), University Statistical Records Microdata (1972-1993) and Higher Education Statistical Agency (1994-2005).

TABLE 1— TRENDS IN PARENTAL TIME INVESTMENTS BY EDUCATIONAL ATTAINMENT. UK (1974-2005)

	Mothers		Fathers		Girls	Boys
	(1) Total Care	(2) Teaching	(3) Total Care	(4) Teaching	(5) Homework	(6) Homework
Panel A. Year dummies						
year_1974	-1.05***		-0.49***		-3.01***	-2.15***
	(0.048)		(0.031)		(0.086)	(0.083)
year_1983	ref.	ref.	ref.	ref.	ref.	ref.
year_1995	4.38***		2.28***			
	(0.065)		(0.056)			
year_2000	1.62***	0.21**	0.73***	0.12**	0.96***	3.03***
	(0.037)	(0.005)	(0.040)	(0.004)	(0.073)	(0.161)
year_2005	4.69***		3.39***			
	(0.105)		(0.027)			
Panel B. College educated						
Some college or more	1.36***	0.15***	-0.38***	-0.02	2.45**	6.79***
	(0.005)	(0.002)	(0.071)	(0.010)	(0.289)	(0.256)
Panel C. Interaction terms						
Some college*year_1974	-0.74***		0.54***		-2.46***	-6.98***
	(0.043)		(0.062)		(0.113)	(0.429)
Some college*year_1983	ref.	ref.	ref.	ref.	ref.	ref.
Some college*year_1995	2.19***		1.33***			
	(0.061)		(0.174)			
Some college*year_2000	-1.10***	0.32**	0.46***	0.05*	4.39***	-4.70***
	(0.016)	(0.011)	(0.099)	(0.005)	(0.338)	(0.312)
Some college*year_2005	-1.39***		-0.19**			
	(0.025)		(0.067)			
constant	2.31**	-0.31	1.79	0.04	9.11	1.17
	(0.691)	(0.381)	(1.044)	(0.122)	(4.719)	(4.628)

Notes: Each column comes from a different regression. The equation is $CT_{it}=\beta_1 H_{it} + H_{it}\mathbf{T_t}\boldsymbol{\beta_2} + \mathbf{X_{it}}\boldsymbol{\beta_3}+\delta_t+\varepsilon_{it}$. In all specifications H_{it} is a dummy variable of parental education (=1 college educated), $\mathbf{T_t}$ is a vector of dummies for the survey year, δ_t are survey-period fixed effects, and ε_{it} is the error term clustered at the survey level. In columns 1 and 3 CT_{it} is total time in hours per week devoted to childcare; in columns 2 and 4 CT_{it} is time in hours per week devoted to teaching care. In columns 1-4 X_{it} include controls parents' ages, marital status, a quadratic in the number of children, and a vector of dummies to control for the day of the week the diary was reported, ref. 24-35 year-olds, Sunday), and the samples include mothers (fathers) 18-64 who are not students or retired, co-resident with at least a child 5-17 in the house and no children under 5. In columns 5 and 6 the dependent variable is children's homework time, X_{it} include controls for children's ages, and a vector of dummies to control for the day of the week the diary was reported, ref. 24-35 year-olds, Sunday), and the sample includes all children 14-17years-old. The omitted year is labelled ref. in each column.

*Source:*MTUS (1974-2005)

*** Significant at the 1 percent level.

** Significant at the 5 percent level.

Data Appendix

This document is a companion online appendix to "Parental Time Investments in Children in the UK: The Role of College Competition." It contains a description of the Multinational Time Use Study (MTUS), the Universities Statistical Record (USR), and the Students in Higher Education Institutions datasets. It also offers both intuitive explanation and empirical tests for alternative hypotheses.

I. TIME USE DATA

We use the Multinational Time Use Study (MTUS), an ex-post harmonized cross-time cross-national comparative time-use database that aggregates daily activities in 40 time use categories with approximately 30 standardized demographic variables (see Fisher and Gershuny 2013 for a description of the time-use surveys in the MTUS). Issues of comparability across time are particularly important in the 1995 and 2005 light diary surveys. Light diaries are time budget instruments suitable for use as add-on components to other surveys without unduly increasing respondents' burden (Gershuny and Smith 1995). Both the 1995 and the 2005 diaries, together with a pilot 2001 diary, were administered alongside OMNIBUS Studies. In these two cases respondents could only choose among 30 pre-coded activities, unlike the 1974, 1983, and 2000 surveys where responses were freely indicated by respondents and then coded by the research teams. Gatenby (2003) assessed the UK light diary methodology by comparing the full scale 2000 time use survey to a 2001 light diary survey, and obtained comparable results for the main categories of activity, including childcare.

As in Ramey and Ramey (2010) we select mothers and fathers aged 18 to 64 who are neither retired nor students whose youngest child is at least 5 years old to ensure that time devoted to childcare on the part of their parents is actually invested in older children. We use two measures of parental time investments: total time investments and teaching care. Table A.1 describes how these variables are constructed from the original activity codes. In addition to the year of the survey, our specification includes a dummy variable indicating whether the individual's educational attainment is some college or more, together with the interaction of this dummy with the survey year. As controls we also include a vector of dummies controlling for the age group of the individual (ages 18-24, 25-34, 35-44, 45-54, and 55-64), marital status, the number of children, the number of children squared, and a vector of dummies to control for the day of the week the diary was reported (reference Sunday), though results hold when only controlling for age, as in Ramey and Ramey's (2010) benchmark specification. We also use MTUS proposed weights in our calculations. These ensure population together with day of the week and seasonal representativeness, and assign zero weights to low quality diaries, i.e. diaries having

more than 90 minutes of missing time, fewer than 7 episodes, missing two or more of four basic activities, or being filled by a diarist of unknown age or sex. Descriptive statistics are provided in Table A.2. Time that children spend in homework and study are constructed from the original activity codes as shown in Table A.1. We can only include observations from the 1974, 1983, and 2000 surveys, as the 1995 and 2005 surveys are not household surveys and consequently do not offer information on maternal education for the children who fill out the diaries.

We also test conventional explanations to the trends in the education gradient in the UK. The selection into parenthood hypothesis suggested by Bianchi, Robinson, and Milkie (2006) and Ramey and Ramey (2010) argues that college-educated women and men who decide to become parents may have greater motivation to invest heavily in children than parents who did not go to college. Income effects may also explain why more educated parents spend more time with their children, as long as children are considered normal goods whose consumption increases with income (Guryan, Hurst, and Kearney 2008). Different time investments by parents with different levels of education could also vary with working arrangements if, for example, jobs undertaken by college educated mothers offer more flexible working schedules and better childcare provisions (Ramey and Ramey 2010; Sayer and Gornick 2012). Composition effects may also explain trends in the gap in time investments by parental education if the marginal college educated parent at the beginning of the period differs from the marginal college educated parent at the end of the period (Aguiar and Hurst 2007). Columns 1 and 2 in Table A.3 show the same pattern of time investments by education as in Table 1 when considering non-parents, ruling out selection into parenthood as a potential explanation of the education gradient. Columns (3) and (4) in Table A.3 show that income is not a significant determinant of time devoted to childcare. Trends in the education gradient of parental time investments remain virtually unchanged compared to our results of Table 1. Columns (5) and (6) in Table A.3 show that results in Table 1 are mainly driven by non-working mothers, which suggests that changing working practices may not be behind the trends in parental time investments by educational attainment in the UK. Columns (7) and (8) in Table A.3 show that results in Table 1 are robust to using an alternative measure of parental education as in Aguiar and Hurst (2007).

Another explanation argues that college-educated parents may be more concerned about children's physical safety than non-college educated parents, resulting in college-educated parents spending more time accompanying their children in their activities (Sayer, Bianchi, and Robinson 2004). Lastly, a recent hypothesis in the literature argues that changes in parenting values influence college-educated parents to a larger extent than non-college educated ones (Sayer, Gauthier, and Furstenberg 2004;

Sullivan 2010). We formally test for the possibility that safety concerns may be behind the trends in the education gradient by estimating a model similar to that in Equation (1) using data from the International Crime Victims Survey (ICVS) for the years 1989, 1996, 2000, and 2004 (van Kesteren, 1989-2005). We use respondents' answer on how likely they thought that a burglary would take place in their house in the coming year (which has been part of ICVS questionnaire since 1989), and answers to the question 'How safe do you feel when walking alone on the street after dark' (in the ICVS since 1996) to measure security concerns. As in Equation (1), our main independent variable is college attendance, constructed as an indicator value that takes value one if the respondent completed more than the 12 years of education coinciding with the definition from the MTUS used in our main analysis. We select all individuals aged 18-65 who are not student or retired, obtaining a total sample of 12,787 individuals. Trends in safety concerns for college and non-college educated parents shown in Panel C in Table A.4 do not seem to match trends in the education gradient shown in Table 1.

We test whether parental time investments in children by educational attainment can be accounted for by different parenting ideologies by estimating a model similar to that in Equation (1) using information from the European Values Study (1981, 1990, and 1999) and World Values Survey Data, 2005 (WVS, 2005-2007). In these surveys respondents are presented with a list of qualities that "children can be encouraged to learn at home", and are asked to choose up to five qualities that they consider to be particularly important. The qualities listed are independence, hard work, feeling of responsibility, tolerance and respect, thrift, saving money and things, determination, perseverance, religious faith, and obedience. We use principal component analysis to summarize these measures in one single parenting values index. For both men and women, the first principal component index heavily weights the lack of emphasis on obedience and the stress on independence and perseverance. We interpret higher values in the parenting values index as indicative of a parenting style more in line with the concerted cultivation approach, which places more emphasis in reasoning rather than directing children's behaviour (Lareau 2003; Vincent and Ball 2007). Our sample is composed of all mothers (fathers) aged 18-65 who are not student or retired. Our final sample has 2,043 observations. Panel A in Table A.5 shows that parents increasingly value independence over obedience. Panel C shows that trends in parenting values by parents with different educational attainment do not match the trends in the education gradient shown in Table 1.

II. College Competition Data

To study competition for college admissions we rely on data from the Universities' Statistical Record (USR) and the Higher Education Statistics Agency (HESA). The USR collected longitudinal individual student records from the early seventies till 1993/1994 when HESA was established. We use these administrative data from the anonymised individual records for the full population of undergraduate students at university from 1974/75 to 1993/94. The full dataset contains information on about 6,200,000 students – about 270,000 per cohort. For the 1994/95 to 2005/06 period we use the statistic Students in Higher Education Institutions provided by HESA.

As measures of competition for college at elite universities we use the proportion of total students that gain a scarce slot in these institutions (Bound, Hershbein, and Long 2009) and the relative entry score of students admitted to elite universities compared to non-elite universities (Hoxby 2009). We calculate the ratio of average scores of students attending elite universities to the average scores of all students attending pre-1992 higher education institutions. USR computes individual average scores by summing up scores from each student's 3 top A-level scores with A's gaining 5 points, B's, 4, C's, 3, D's, 2, and E's, 1. Approximately 77% of all full-time students took at least one A-level exam. When excluding Scottish students, usually subject to the Scottish Certificate of Education Higher grades, this proportion increases to 87%. We select all undergraduate students attending pre-1992 institutions with positive A-level scores, but our results are robust to including just English and Welsh students with A-levels. HESA does not have information on students' grades for our period of analysis and therefore only trends from 1974 to 1993 are offered.

Following Barnes (1996), we consider elite universities Oxbridge (Oxford and Cambridge), the so-called ancient universities in Scotland and universities founded in the major industrial cities of England before World War I. Our results are robust to different definitions of elite institutions. Tables A.6 and A.7 and Figure A.2 show total enrolment rates and average entry scores for our alternative definitions of elite schools (Oxbridge and Russell Group founders). Oxford and Cambridge as a more stringent definition (see Bhattacharya, Kanaya, and Stevens 2012 for an assessment of admissions to Oxford), and Russell Group founders (Birmingham, Bristol, Cambridge, Edinburgh, Glasgow, Imperial College London, Leeds, Liverpool, London School of Economics, Manchester, Newcastle, Nottingham, Oxford, Sheffield, Southampton, University College London, and Warwick) as a more flexible definition. The Russell Group is an association of research-intensive prestigious UK universities created in 1994 (Abbot and Leslie 2004; Chowdry et al. 2013), which on average confer higher returns to their graduates (Chevalier and Conlon 2003).

In order to compute comparable proportions of students at elite universities over time and across the two data sources used, we select from USR full-time undergraduate students, as defined by HESA (full-time students, plus students in sandwich years and expending an obligatory year away from the university (eg language students abroad). We prefer this measure to alternative aggregates offered by HESA such as total full- and part-time UK students because by including foreign students and excluding part-time students we are better able to capture competition for scarce slots. Results remain virtually unchanged when using total UK students to compute enrolment. The 1992 Further and Higher Education Act granted university status to 48 former polytechnics, resulting in an artificial increase in the total number of students counted as being in Higher Education (Greenaway and Haynes, 2003). We therefore select pre-1992 institutions for the whole period to compute our indicators of competition for college. Results are robust to the inclusion of post-92 universities (see Table A.6).

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Figures

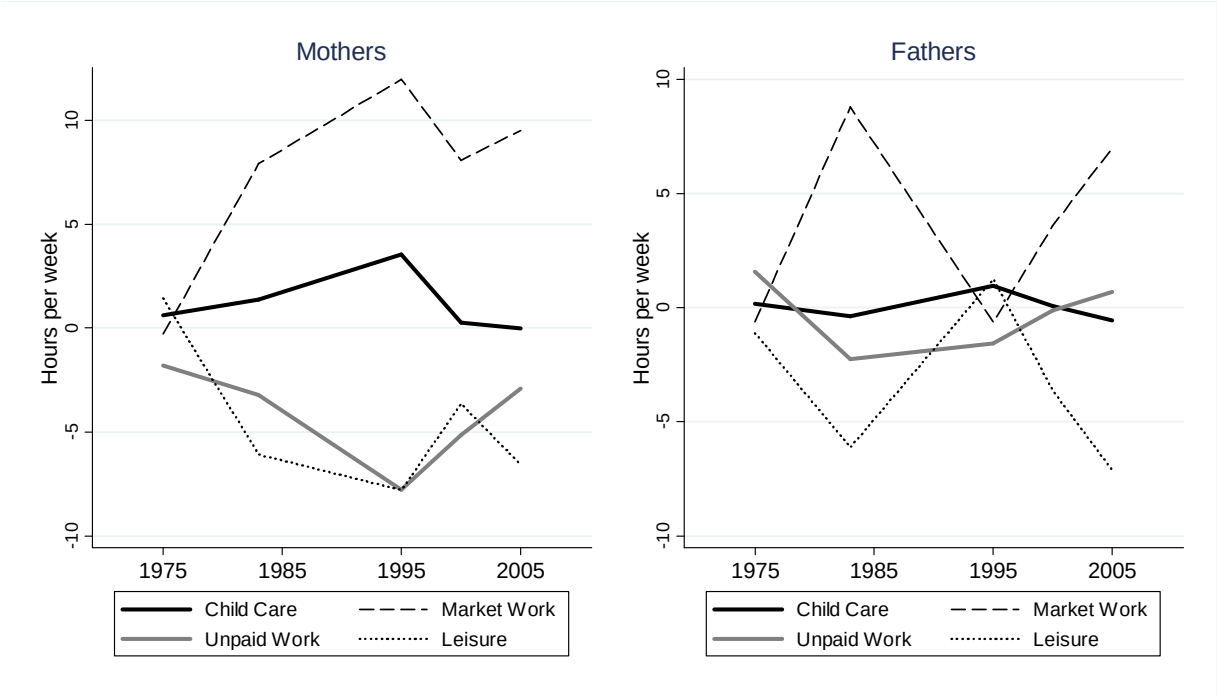

FIGURE A.1. TRENDS IN OVERALL TIME USE BY PARENTS BY EDUCATIONAL ATTAINMENT.

Notes: The graphs in this Figure plot the estimated coefficients β_1 and $\boldsymbol{\beta_2}$ in the equation $Y_{it}=\beta_1 H_{it} + H_{it}\mathbf{T_t}\boldsymbol{\beta_2} + \mathbf{X_{it}}\boldsymbol{\beta_3}+\delta_t+\varepsilon_{it}$. The dependent variable Y_{it} is hours per week spent on market work, unpaid work, leisure and personal care and total childcare. Market work includes all paid work and related commuting, unpaid work comprises housework, food preparation, shopping, and domestic travel, and leisure and personal care consists of any other uses of time, not previously included. In all specifications H_{it} is a dummy variable of parental education (=1 college educated), $\mathbf{T_t}$ is a vector of dummies for the survey year, δ_t are survey-period fixed effects, X_{it} include controls parents' ages, marital status, a quadratic in the number of children, and a vector of dummies to control for the day of the week the diary was reported, ref. 24-35 year-olds, Sunday), and ε_{it} is the error term clustered at the survey level. The samples include all mothers (fathers) 18-64 who are not students or retired, where mother is defined as having a child under the age of 18 in the house.

Source: MTUS (1974-2005)

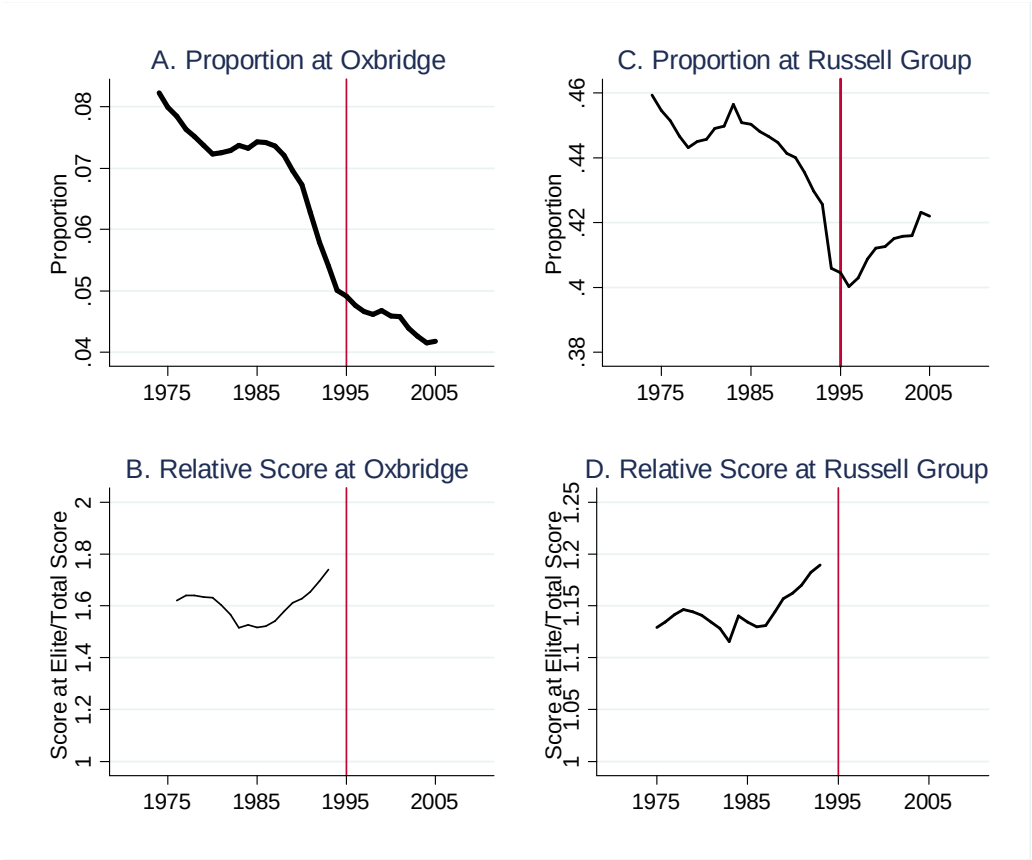

FIGURE A.2. COMPETITION FOR COLLEGE ADMISSIONS AT OXBRIDGE AND RUSSELL GROUP UNIVERSITIES

Note: Oxbridge stands for Oxford and Cambridge Universities. The Russell Group includes Birmingham, Bristol, Cambridge, Edinburgh, Glasgow, Imperial College London, Leeds, Liverpool, London School of Economics, Manchester, Newcastle, Nottingham, Oxford, Sheffield, Southampton, University College London, and Warwick Universities which founded the group in 1994. Panels A and C show the proportion of full-time undergraduate students enrolled at elite universities out of the total number of students attending existing Higher Education institutions before the passage of the 1992 Further Education Act that granted university status to previous further education institutions. Panels B and D show the ratio of average scores of students enrolled at elite universities to average scores of all students. In Panels B and D the sample includes only students with A-level scores. Individual students' scores are calculated summing up scores from their 3 top A-level scores with A's gaining 5 points, B's, 4, C's, 3, D's, 2, and E's, 1.

Source: University Statistical Records Microdata (1972-1993) and Higher Education Statistical Agency (1994-2005).

Tables

TABLE A.1. ACTIVITIES IN TOTAL TIME INVESTMENTS, TEACHING CARE, AND CHILDREN'S HOMEWORK AND STUDY

		1983	2000
Parental time investments	physical, medical child care, supervise, accompany, other child care read to, talk or play with child; teach, help with homework	1101 Feed and food preparation for babies and children 1102 Wash, change babies 1103 Put children to bed/get them up 1104 Babysit other people's children 1105 Other care of babies 1106 Medical care of babies, children & adults 1107 Reading to, or playing with babies, children & adults 1109 Supervising children 1110 Other care of children 1111 Childcare–unspecified 1108 Help children with homework	3800 Unspecified childcare 3810 Unspecified physical care and supervision 3811 Feeding the child 3819 Other specified physical care 4270 Unspecified childcare as help 4271 Physical child care as help 3840 Accompanying child 3830 Reading, playing and talking with child 3890 Other specified childcare 4273 Read/talk to child as help 4274 Accompany child as help 4279 Other specified childcare as help 3820 Teaching the child 4272 Teaching a child as help
Parental teaching time	teach, help with homework	1108 Help children with homework	3820 Teaching the child 4272 Teaching a child as help
Children's homework time	Study and homework	3301 Studying 3302 Computer activities (educational, programming)	2120 Homework 2210 Free time study 7220 Computing-programming 7230 Unspecified computing for information 7231 Internet search 7239 Other information by computer 7250 Unspecified other computing 7251 Unspecified internet use

*Source:*MTUS (1983-2000)

TABLE A. 2. DESCRIPTIVE STATISTICS OF CONTROLS.

	Mothers					Fathers				
	1974	1983	1995	2000	2005	1974	1983	1995	2000	2005
Some college or more	0.08	0.17	0.14	0.27	0.24	0.10	0.16	0.26	0.25	0.32
	(0.3)	(0.4)	(0.3)	(0.4)	(0.4)	(0.3)	(0.4)	(0.4)	(0.4)	(0.5)
Age 18-24	0.11	0.10	0.03	0.06	0.04	0.18	0.13	0.06	0.10	0.10
	(0.3)	(0.3)	(0.2)	(0.2)	(0.2)	(0.4)	(0.3)	(0.2)	(0.3)	(0.3)
Age 25-34	0.18	0.15	0.25	0.19	0.19	0.10	0.10	0.13	0.12	0.08
	(0.4)	(0.4)	(0.4)	(0.4)	(0.4)	(0.3)	(0.3)	(0.3)	(0.3)	(0.3)
Age 35-45	0.42	0.54	0.57	0.48	0.56	0.34	0.39	0.51	0.42	0.45
	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)	(0.5)
Age 45-54	0.26	0.19	0.15	0.25	0.20	0.34	0.30	0.27	0.32	0.32
	(0.4)	(0.4)	(0.4)	(0.4)	(0.4)	(0.5)	(0.5)	(0.4)	(0.5)	(0.5)
Age 55-64	0.04	0.02	0.00	0.01	0.01	0.03	0.08	0.04	0.05	0.05
	(0.2)	(0.1)	(0.0)	(0.1)	(0.1)	(0.2)	(0.3)	(0.2)	(0.2)	(0.2)
Married	0.85	0.76	0.66	0.73	0.59	0.78	0.86	0.90	0.87	0.84
	(0.4)	(0.4)	(0.5)	(0.4)	(0.5)	(0.4)	(0.3)	(0.3)	(0.3)	(0.4)
Number of children	1.86	1.79	1.73	1.81	1.68	2.00	1.87	1.62	1.81	1.66
	(1.0)	(0.8)	(0.7)	(0.8)	(0.7)	(1.1)	(0.8)	(0.7)	(0.8)	(0.7)
N. obs	2251	1307	165	2092	447	2104	775	116	1595	241

Notes: This table shows means and standard deviations of controls used in the analysis by survey year. The samples include all mothers (all fathers) 18-64 who are not students or retired, where mother is defined as having a child under the age of 18 in the house. Sample weighting used.

*Source:*MTUS (1974-2005)

TABLE A.3 TRENDS IN COLLEGE EDUCATION GRADIENTS-ROBUSTNESS CHECKS

	Selection into parenthood		Income effects		Working Arrangements		Definition of education	
	(1) Mothers	(2) Fathers	(3) Mothers	(4) Fathers	(5) Working	(6) Non-working	(7) Mothers	(8) Fathers
Panel A. College educated								
Some college or more	0.09	-0.15***	1.57***	-0.53**	1.39***	1.82***	1.09***	-0.01
	(0.091)	(0.017)	(0.069)	(0.140)	(0.028)	(0.083)	(0.086)	(0.081)
Panel B. Interaction terms								
Some college*year_1974	0.08**	0.27***	-0.99***	0.48***	-0.56***	-2.19***	-0.88***	0.36**
	(0.019)	(0.044)	(0.126)	(0.029)	(0.042)	(0.267)	(0.023)	(0.098)
Some college*year_1983	ref.	ref.	ref.	ref.	ref.	ref.	ref.	ref.
Some college*year_1995	0.23***	0.16**	2.32***	1.24***	0.59***	12.32***	2.46***	0.97***
	(0.021)	(0.040)	(0.100)	(0.199)	(0.040)	(0.370)	(0.132)	(0.141)
Some college*year_2000	-0.31***	-0.06***	-1.22***	0.37*	-0.71***	-1.37***	-0.83***	0.10
	(0.044)	(0.012)	(0.092)	(0.128)	(0.028)	(0.157)	(0.075)	(0.089)
Some college*year_2005	-1.01***	-0.77***			-1.02***	1.17***	-1.12***	-0.55***
	(0.030)	(0.019)			(0.038)	(0.167)	(0.087)	(0.106)
Income 2			-1.07	0.04				
			(0.520)	(0.132)				
Income 3			-0.56	0.42				
			(0.598)	(0.239)				
constant	1.11*	0.19	3.19***	1.44	2.39**	0.27	2.30**	1.74
	(0.441)	(0.186)	(0.352)	(0.990)	(0.575)	(1.527)	(0.693)	(1.026)

Notes: Each column comes from a different regression. The equation is $CT_{it}=\beta_1 H_{it} + H_{it}\mathbf{T_t}\boldsymbol{\beta_2} + \mathbf{X_{it}}\boldsymbol{\beta_3}+\delta_t+\varepsilon_{it}$. In all specifications CT_{it} is total time in hours per week devoted to childcare, H_{it} is a dummy variable of parental education (=1 college educated), $\mathbf{T_t}$ is a vector of dummies for the survey year, X_{it} include controls parents' ages, marital status, a quadratic in the number of children, and a vector of dummies to control for the day of the week the diary was reported, ref. 24-35 year-olds, Sunday), δ_t are survey-period fixed effects, and ε_{it} is the error term clustered at the survey level. In columns (1) and (2) the samples include mothers (fathers) 18-64 who are not students or retired, co-resident with at least a child 5-17 in the house and no children under 5 plus all women (men) without children. Columns (3) and (4) select mothers (fathers) 18-64 who are not students or retired, co-resident with at least a child 5-17 in the house and no children under 5 and include income categories as explanatory variables. (The reference category is the lowest quartile of the income distribution on each survey. Income2 refers to the second and third quartiles and Income3, to the fourth quartile.) Column (5) (column (6)) includes working (nonworking) mothers 18-64 who are not students or retired, co-resident with at least a child 5-17 in the house and no children under 5. In columns (7) and (8) the sample includes mothers (fathers) 18-64 who are not students or retired, co-resident with at least a child 5-17 in the house and no children under 5 and the college education dummy takes value 1 if the individual belongs to the top 30th percentile of the education distribution. In columns (9) and (10) the samples include mothers (fathers) 18-64 who are not students or retired, co-resident with at least a child under 5 years old. Standard errors in parentheses.* significant at 10% ** significant at 5%; *** significant at 1%.

Source: MTUS (1974-2005)

TABLE A.4. TRENDS IN WOMEN AND MEN'S SAFETY FEARS BY EDUCATIONAL ATTAINMENT

	Female		Male	
	(1) Likelihood of burglary	(2) Feelings of unsafety	(3) Likelihood of burglary	(4) Feelings of unsafety
Panel A. Year dummies				
year_1989	ref.		ref.	
year_1996	0.06***	ref.	0.02***	ref.
	(0.002)		(0.004)	
year_2000	0.00	-0.02**	-0.02***	-0.02***
	(0.002)	(0.003)	(0.003)	(0.000)
year_2004_5	0.06***	0.02***	-0.02**	0.05***
	(0.002)	(0.001)	(0.003)	(0.001)
Panel B. College educated				
Some college or more	0.02***	-0.06***	0.01*	-0.02***
	(0.002)	(0.001)	(0.003)	(0.001)
Panel C. Interaction terms				
Some college*1989	ref.		ref.	
Some college*1996	-0.04***	ref.	-0.07***	ref.
	(0.001)		(0.002)	
Some college*2000	-0.05***	0.03***	-0.03***	0.01**
	(0.001)	(0.002)	(0.001)	(0.001)
Some college*2005	-0.11***	-0.00	-0.04***	-0.05***
	(0.001)	(0.001)	(0.004)	(0.002)
Constant	0.08***	0.13***	0.06***	0.04**
	(0.005)	(0.010)	(0.010)	(0.006)

Notes: Each column comes from a different regression. The equation is $Y_{it}=\beta_1 H_{it} + H_{it}\mathbf{T_t}\boldsymbol{\beta_2}+ \mathbf{X_{it}}\boldsymbol{\beta_3}+\delta_t+\varepsilon_{it}$. In all specifications H_{it} is a dummy variable of educational attainment (=1 college educated), $\mathbf{T_t}$ is a vector of dummies for the survey year, X_{it} include controls for individuals' ages and marital status (ref. 24-35 year-olds), δ_t are survey-period fixed effects, and ε_{it} is the error term clustered at the survey level. In columns (1) and (3) Y_{it} is the likelihood of respondents' house being burgled in the coming year (1=very likely) and in columns (2) and (4) Y_{it} is an indicator of whether they feel unsafe when walking alone in their area after dark (1=very unsafe). The samples include all women (men) 18-64 who are not students or retired (no information on number of children for 2005 but results similar when selecting parents). Standard errors in parentheses. * significant at 10% ** significant at 5%; *** significant at 1%.

Source: International Crime Victims Survey Data, 1989-2005.

TABLE A.5.TRENDS IN PARENTING STYLES BY EDUCATIONAL ATTAINMENT

	(1) Female	(2) Male
Panel A. Year dummies		
year_1981	ref.	ref.
year_1990	0.40***	0.41***
	(0.008)	(0.008)
year_1999	0.61***	0.85***
	(0.005)	(0.012)
year_2005	0.72***	1.04***
	(0.020)	(0.014)
Panel B. College educated		
Some college or more	0.11***	0.60***
	(0.009)	(0.005)
Panel C. Interaction terms		
Some college*1981	ref.	ref.
Some college*1990	0.13***	-0.27***
	(0.007)	(0.010)
Some college*1999	0.13***	-0.55***
	(0.008)	(0.008)
Some college*2005	0.10***	-0.59***
	(0.012)	(0.011)
Constant	-0.37***	-0.60***
	(0.020)	(0.059)

Notes: Each column comes from a different regression. The equation is $Y_{it}=\beta_1 H_{it} + H_{it}\mathbf{T_t}\boldsymbol{\beta_2} + \mathbf{X_{it}}\boldsymbol{\beta_3}+\delta_t+\varepsilon_{it}$. In all specifications H_{it} is a dummy variable of parental education (=1 college educated), $\mathbf{T_t}$ is a vector of dummies for the survey year, X_{it} include controls for parents' ages and marital status (ref. 24-35 year-olds), δ_t are survey-period fixed effects, and ε_{it} is the error term clustered at the survey level. The dependent variable Y_{it} is a composite measure of child-rearing values computed applying principal component analysis to the respondents' rankings on the qualities that children can be encouraged to learn at home from the following list: independence; hard work; feeling of responsibility; tolerance and respect; thrift, saving money and things; determination, perseverance; religious faith; and obedience. The samples include all mothers (fathers) 18-64 who are not students or retired. Standard errors in parentheses. * significant at 10% ** significant at 5%; *** significant at 1%.

Source: European Values Study (1981, 1990, and 1999) and World Values Survey Data, 2005.

TABLE A.6. TOTAL ENROLMENT AND PROPORTION OF ENROLMENT IN DIFFERENT GROUPS OF INSTITUTIONS

Year	All Universities	Pre-92 Universities	Oxbridge		Elite Universties			Russell Group	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Enrolment	Enrolment	Enrolment	Proportion Out of pre-92	Enrolment	Proportion Out of pre-92	Proportion Out of All	Enrolment	Proportion Out of pre-92
1974	214,746	214,746	17,661	0.082	80,603	0.375	0.375	98,636	0.459
1975	224,166	224,166	17,933	0.080	82,742	0.369	0.369	101,915	0.455
1976	234,773	234,773	18,427	0.078	85,462	0.364	0.364	105,968	0.451
1977	245,798	245,798	18,767	0.076	87,584	0.356	0.356	109,777	0.447
1978	254,058	254,058	19,117	0.075	89,384	0.352	0.352	112,595	0.443
1979	261,093	261,093	19,256	0.074	91,266	0.350	0.350	116,195	0.445
1980	267,566	267,566	19,362	0.072	93,281	0.349	0.349	119,305	0.446
1981	270,168	270,168	19,597	0.073	94,308	0.349	0.349	121,348	0.449
1982	268,085	268,085	19,536	0.073	93,316	0.348	0.348	120,604	0.450
1983	263,053	263,053	19,391	0.074	92,803	0.353	0.353	120,103	0.457
1984	266,352	266,352	19,519	0.073	92,786	0.348	0.348	120,098	0.451
1985	267,953	267,953	19,915	0.074	93,696	0.350	0.350	120,683	0.450
1986	271,848	271,848	20,192	0.074	94,656	0.348	0.348	121,778	0.448
1987	276,462	276,462	20,366	0.074	95,599	0.346	0.346	123,509	0.447
1988	286,016	286,016	20,607	0.072	98,030	0.343	0.343	127,194	0.445
1989	301,870	301,870	21,005	0.070	103,073	0.341	0.341	133,206	0.441
1990	317,777	317,777	21,410	0.067	108,318	0.341	0.341	139,921	0.440
1991	341,616	341,616	21,444	0.063	114,887	0.336	0.336	148,825	0.436
1992	371,638	371,638	21,543	0.058	123,487	0.332	0.332	159,729	0.430
1993	402,069	402,069	21,730	0.054	132,573	0.330	0.330	171,162	0.426
1994	943,239	426,283	21,345	0.050	134,313	0.315	0.142	173,058	0.406
1995	972,493	441,601	21,725	0.049	136,130	0.308	0.140	178,689	0.405
1996	997,661	461,565	21,981	0.048	140,866	0.305	0.141	184,775	0.400
1997	1,022,606	475,868	22,178	0.047	144,108	0.303	0.141	191,755	0.403
1998	1,032,897	485,911	22,451	0.046	148,146	0.305	0.143	198,646	0.409
1999	1,027,450	486,250	22,780	0.047	148,220	0.305	0.144	200,430	0.412
2000	1,037,870	490,060	22,485	0.046	149,280	0.305	0.144	202,220	0.413
2001	1,069,215	509,345	23,325	0.046	155,550	0.305	0.145	211,460	0.415
2002	1,111,305	532,385	23,410	0.044	162,440	0.305	0.146	221,410	0.416
2003	1,141,840	549,350	23,400	0.043	166,760	0.304	0.146	228,545	0.416
2004	1,165,465	564,755	23,455	0.042	174,425	0.309	0.150	238,985	0.423
2005	1,198,810	575,090	24,055	0.042	175,925	0.306	0.147	242,700	0.422
1974-2005	18,327,958	11,605,570	669,368	0.058	3,784,017	0.326	0.206	4,965,224	0.428

Notes: Pre-1992 universities exclude those polytechnics granted university status by the 1992 Further and Higher Education Act and any university founded afterwards. Oxbridge includes Oxford and Cambridge Universities. Elite Universities are Oxford, Cambridge, St. Andrews, Glasgow, Aberdeen, and Edinburgh, all founded in the Middle Ages, and Birmingham, Liverpool, Manchester, Leeds, Sheffield, and Bristol, founded in the major industrial cities of England before World War I. The 17 founding members of the Russell Group in 1994 are Birmingham, Bristol, Cambridge, Edinburgh, Glasgow, Imperial College London, Leeds, Liverpool, London School of Economics, Manchester, Newcastle, Nottingham, Oxford, Sheffield, Southampton, University College London, and Warwick. Columns 4, 6, and 9 calculate the proportion of students attending the group of universities indicated over the total number of students attending pre-92 institutions. Column 7 calculates this proportion over the total number of students attending all universities, including post-1992 institutions.

Source: University Statistical Records Microdata (1972-1993) and Higher Education Statistical Agency (1994-2005)

TABLE A.7. AVERAGE SCORES AND RELATIVE SCORES IN DIFFERENT GROUPS OF INSTITUTIONS

Year	Pre-92 Universities	Oxbridge		Elite Universties		Russel Group	
	(1) Average Scores	(2) Average Scores	(3) Relative Scores	(4) Average Scores	(5) Relative Scores	(6) Average Scores	(7) Relative Scores
1974	7.333	11.686	1.59	7.563	1.03	8.282	1.13
1975	7.304	11.696	1.60	7.542	1.03	8.249	1.13
1976	7.269	11.786	1.62	7.574	1.04	8.245	1.13
1977	7.272	11.929	1.64	7.660	1.05	8.299	1.14
1978	7.306	11.981	1.64	7.724	1.06	8.375	1.15
1979	7.407	12.097	1.63	7.843	1.06	8.476	1.14
1980	7.505	12.245	1.63	7.901	1.05	8.561	1.14
1981	7.706	12.355	1.60	8.063	1.05	8.741	1.13
1982	7.897	12.357	1.56	8.192	1.04	8.910	1.13
1983	8.099	12.273	1.52	8.278	1.02	9.035	1.12
1984	8.056	12.286	1.53	8.425	1.05	9.187	1.14
1985	8.155	12.366	1.52	8.508	1.04	9.250	1.13
1986	8.163	12.416	1.52	8.512	1.04	9.222	1.13
1987	8.063	12.426	1.54	8.432	1.05	9.120	1.13
1988	7.900	12.472	1.58	8.358	1.06	9.039	1.14
1989	7.789	12.563	1.61	8.336	1.07	9.010	1.16
1990	7.754	12.611	1.63	8.350	1.08	9.012	1.16
1991	7.685	12.714	1.65	8.371	1.09	8.992	1.17
1992	7.511	12.731	1.70	8.230	1.10	8.881	1.18
1993	7.318	12.738	1.74	8.046	1.10	8.706	1.19
1974-1993	7.675	12.286	1.60	8.095	1.05	8.780	1.14

Notes: Oxbridge includes Oxford and Cambridge Universities. Elite Universities are Oxford, Cambridge, St. Andrews, Glasgow, Aberdeen, and Edinburgh, all founded in the Middle Ages, and Birmingham, Liverpool, Manchester, Leeds, Sheffield, and Bristol, founded in the major industrial cities of England before World War I. The 17 founding members of the Russell Group in 1994 are Birmingham, Bristol, Cambridge, Edinburgh, Glasgow, Imperial College London, Leeds, Liverpool, London School of Economics, Manchester, Newcastle, Nottingham, Oxford, Sheffield, Southampton, University College London, and Warwick. Columns 3, 5, and 7 show the ratio of average scores of students enrolled at elite universities to average scores of all students. The sample includes only students with A-level scores. Individual students' scores are calculated summing up scores from their 3 top A-level scores with A's gaining 5 points, B's, 4, C's, 3, D's, 2, and E's, 1.

Source: University Statistical Records Microdata (1972-1993)