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“SKIMMING THE CREAM”: THE IMPACTS OF CORESIDENCE AT THE UNIVERSITY OF OXFORD

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In a letter to William Hayter, Warden of New College from 1958 to 1976, Lord Franks¹ wrote “the equality of the sexes is a test of Oxford’s seriousness of purpose in living up to the proper ideals of a great university” (Oxford Magazine 1965: 325). For much of its history Oxford failed this “test of serious purpose”. It was not until 1920 that Oxford accepted women as full members able to take the BA degree but in 1927 it placed a quota on the number of women undergraduates and the quota was not lifted until 1957 (Ferdinand 2015).² Treasurers from the women’s colleges were excluded from the Estate Bursar’s Committee until 1960 and from the Proctorial cycle until 1977 (Howarth 1994a: 352, 356).³ By the 1960s pressure was building within and without Oxford to increase the number of women and to introduce coresidence, that is, men and women living in the same college which was an established feature of other major British universities (Hicks 2004). The academic argument for admitting more women was compelling: the percentage of female candidates admitted was half that of males despite women having better A-level passes than men (Howarth 1994a:366, Brock 1994:750).

In his recent history of the University of Oxford Laurence Brockliss (2016: 577) acknowledged that “Most male dons accepted the case for increasing the female presence in the University. The minority who were uneasy with the idea of coeducation were soon reconciled to the idea once they grasped that it would have a positive effect on standards.”⁴ Few tutors bridled at the prospect of replacing weaker male

¹Lord Franks was chairman of a major university commission tasked to report on questions about the size and shape of the University.

²Oxford’s Limitation Statute stated that the number of women could not exceed 840 or one-sixth of the student body (Dyhouse 2003:171).

³The responsibilities of Proctors included seeing that the statutes and regulations of the university were observed, dealing with aspects of discipline, handling complaints about university matters, and proper conduct of university examinations.

⁴The terms “coeducation” and “coresidence” were often used interchangeably. As Brian Harrison pointed out to us, at a collegiate university such as Oxford the two are distinct. Without coresidence the opportunities for co-education were quite limited unless a student was sent to an outside tutor and had a two person tutorial with a member of the opposite sex. We use the term “coresidence” because the

undergraduates with first-class women, and none wanted to see their college slip down the Norrington ranking by failing to join the bandwagon. ⁵ There was no difficulty either in recruiting many more women of a high calibre" (p.577)⁶. Traditionalists such as Dacre Balsdon argued that neither men nor women liked being taught by women and others such as Henry Bell, an early proponent of coresidence at New College, argued that women were more successful if taught by men (Dyhouse 2002: 289-290; Hart 1989: 217). These arguments, if true, did not augur well for the position of women fellows in a post-coresidence Oxford and, indeed, the main opposition to coresidence came from the women's colleges.⁷ Peter Ady, a Fellow of St. Hugh's, wrote "what makes the women's colleges hesitate is that it is difficult to predict how they themselves will be affected as institutions" (Ady 1964: 138). Ady felt that the men's colleges would "skim the cream" of the best students at the women's colleges. The women's colleges feared that not only would they lose the brightest women but they would attract the dullest men. Kathleen Kenyon, the Principal of St. Hugh's, concluded "we should get the dregs. Only men who failed to make the grade at a man's college would try to creep in this way, and only a man who saw no hope of getting a fellowship elsewhere would accept one at a college where it would require a effluxion of time

debate was about men and women living and being educated together in the colleges.

⁵The Norrington Table, first published in 1964, is a ranking of Oxford colleges by final examination results. In the original Norrington Table a First Class degree scored three points, a Second Class degree two points, and a Third Class degree one point. From 1986 onwards a First was worth five points, Second Class Division I worth three points, Second Class Division II two points, and a Third Class degree one point. While Oxford aimed to increase average quality by replacing lower caliber men with higher caliber women in the men's colleges, at the University of London the argument for increasing quality through coresidence was to admit men to the women's colleges (Dyhouse 2003:171).

⁶Other benefits of coresidence for the men's colleges were: it would 'civilize' the men; reflect more truthfully the broader society; make life easier for the lonely or shy of either sex; and be more "natural" (Stockton 1972:4).

⁷The situation was different at Cambridge where coresidence preceded that at Oxford. "Despite some anxieties", Newnham and Girton did not oppose the men's colleges in admitting women (Howarth 1994a:374). See Malkiel (2016) for an excellent discussion of the debates over coresidence at Oxford and Cambridge and also coeducation at elite colleges and universities in the US.

of some thirty years before petticoat government disappeared” (Brock 1994: 747). Howarth (1994b:144) disputed this claim. She stated that the women’s colleges that decided to accept men did so in the expectation of attracting better candidates and “in a spirit of long-run confidence in the modern world of sexually-integrated work-places and equal opportunity codes.” The impact of coresidence on the women’s colleges is an empirical question which we will investigate and we shall show that “petticoat government” disappeared much faster than Kenyon could have imagined.

Lady Mary Ogilvie, the Principal of St Anne’s College, declared that if coresidence were to occur “women would remain an appendage to the [former men’s] college” and that the “consciously masculine traditions” of the men’s colleges were ill-suited to dealing with issues of importance to women. She was concerned further that women academics and administrators would be even less welcome in male colleges than female students and that their numbers at Oxford would fall (Hicks 2004). The head of the Franks Commission, Lord Franks, also thought that coresidence could “inflict great damage on the existing women’s colleges” (Malkiel 2016: 544-45). Some of the proponents of coresidence, such as de Ste. Croix of New College, recognized the potential for a conflict between the interests of the women’s colleges and the broader interests of women at Oxford but concluded that the former might have to be sacrificed to the latter (de Ste. Croix 1964).

Dyhouse (2002) discussed the mistrust between men and women over protecting and furthering women’s education at Oxford. She noted that the division over coresidence, despite the strong positions discussed above, was not a simple male-female division as is often thought. There were men and women on both sides of the issue. For instance, in 1964 sixteen female fellows wrote a letter to the Observer expressing their support for coresidence and four years later thirty-three female fellows wrote a letter to the Oxford Magazine supporting coresidence. Students were exposed to these opposing views and some, such as Exeter’s John Gray, contribute to the debate (Gray 1969). In general

undergraduates supported coresidence and often voted in favour of it before such a vote was held in the Governing Body of the college. Sally Kenney (C.1980-82), the first female Junior Common Room President at Magdalen College, recalled that women “were welcomed by some, tolerated by others, loathed by a few” (Ferdinand 2015:81).⁸

Three possibilities to increase the number of women at Oxford were debated: replace men in men’s colleges with women; expand the present women’s colleges; and create new mixed colleges (Vaughan 1964: 25). At Oxford in 1963-64, the percentage of undergraduates who were female was 16% (Hart 1989: 217). As shown in Table 1, this percentage was similar to that of the 1930s and 1950s. At other UK universities in the mid-1960s 38% of undergraduates were female. G.E.M. de Ste. Croix, a Fellow of New College, thought that 35% female undergraduates was a reasonable target for Oxford. Between 1957 and 1964 the number of women matriculating at Oxford increased from 349 to 452 by increasing the size of the women’s colleges, the option favoured by the Franks Commission and the option most favoured by the women’s colleges (Hicks 2004). However, the women’s colleges were planning only to expand by a further 120 places or so. Even if they increased that number to 140, the percentage of female students would only be 18% of undergraduate students and even if the women’s colleges created 200 new places or if two new mixed colleges of at least 275 were founded the proportion of female students would only be 20% (de Ste. Croix 1964:5).⁹ Speaking for many at Oxford, de Ste. Croix wrote “There can be no significant change until some of the men’s colleges become mixed.” This was the option least favoured by the women’s colleges.

⁸Coresidence was also a highly contentious issue at the University of London in the 1950s and at Cambridge, U.K. In Cambridge, U.S., at Harvard coresidence was raising temperatures: Skiddy von Stade, dean of freshmen, wrote “I do not see highly educated women making startling strides in contributing to our society in the foreseeable future. They are not, in my opinion, going to stop getting married and/or having children. They will fail in their present role as women if they do”, cited in Hicks (2004). As at Oxford, such views did not carry the day.

⁹Stockton (1972) and the Robbins Report presented similar calculations.

On June 25, 1964 the governing body of New College excited and outraged fellow Fellows by passing a resolution declaring a wish to amend its statutes to permit admission of women. In the previous term the members of the Junior Common Room at New College had voted by a 2:1 majority to admit women. Expansion options two and three were pushed into the background. In 1971, eighteen Oxford colleges met to discuss increasing the admission of women and how to go about doing so (Hicks 2004, Ferdinand 2015). Finally, in 1974 Brasenose, Hertford, Jesus, St. Catherine's, and Wadham offered one hundred places to women.¹⁰ A moratorium was placed on further coresidence for five years and, reportedly, the University wished to proceed cautiously with coresidence but some colleges were reluctant to do so and in 1979 a further thirteen men's colleges admitted female students (Ferdinand 2015). There followed what M. McKendrick of Cambridge colourfully described as "a lemming-like rush towards the seas of coresidence" (quoted in Dyhouse 2002:295). The last male college to admit women, Oriel, did so in 1985 and the last private permanent hall of residence, St. Benet's Hall, admitted women in 2016. The last women's college to admit men, St. Hilda's, did so in 2008.

Despite over a decade of often heated debate over the admission of women to men's colleges, twenty years after coresidence, Janet Howarth (1994a: 375) wrote "Its consequences remain to be investigated." In the ensuing twenty years the impact of coresidence has been mentioned in histories of particular women's colleges but surprisingly there has been no attempt that we are aware of to quantitatively test the numerous claims for and against coresidence, in particular, whether there was a reduction in the representation of female academics and a weakening in the academic standing of the women's colleges.

¹⁰The year before, Balliol became the first male college to elect a woman as a fellow and tutor. The admission of 100 female students did not meet with universal approval. Margaret Warnock, a philosophy fellow of St Hugh's from 1949 to 1966, remarked "to admit 100 women between five men's colleges is, precisely, to treat women as a special class of underprivileged persons" (Warnock 1972:5). Warnock was no stranger to exception: in 1956 she became the first married fellow of St. Hugh's.

The aim of this paper is to present and evaluate the often competing claims that were made at the time about the impact of coresidence on the colleges and female students and academics.

Claims of the Impact of Coresidence

Hypothesis 1: *Coresidence would increase the percentage of female students*

Did coresidence result in a percentage of female students than would have been the case without coresidence? Richards (2015:92) claimed that coresidence "greatly increased the number of women undergraduates and their self-confidence in the mixed colleges....the admission of women was a great success. Few revolutions have been so happy and successful." We will determine whether coresidence led to a greater percentage of women attending Oxford than would otherwise have been the case by examining female enrollment after events of coresidence.

The claim of a "successful" revolution is harder to evaluate because so many competing claims were made regarding the intended and unintended consequences of coresidence. It is to these claims that we now turn.

Hypothesis 2: *There were many "high caliber" female students who were unable to gain admission to the University.*

Brockliss claimed that "there was no difficulty in recruiting more women of high calibre". Dr. Pirie of New College (Pirie 1965:321) asserted that there "are many more girls than places" and an editorial in the Oxford Magazine (1964) agreed.¹¹ However, Margaret Hubbard a Fellow of St. Anne's from 1957 to 1986, was skeptical. Hubbard pointed out that in 1961 only 4.9% of girls took two or more A-levels

¹¹The fact that women outperformed men in university exams at that time suggested that there might be more high caliber women who could be recruited to Oxford (Hicks 2004:245).

compared to 8.1% of boys. The challenge of finding adequately prepared girls was particularly difficult in the sciences, math, and classics. Hubbard (1965: 312) claimed that finding adequate numbers of women would mean “accepting applicants men’s colleges would deem ‘a hair-raising risk’”. Lucy Sutherland, Principal of Lady Margaret Hall, was skeptical about attracting more able women because their professional interests were in infant and primary teaching and other non-graduate occupations and their personal interest was towards early marriage (Dyhouse 2002:291-292). Janet Vaughan, Principal of Somerville College from 1945 to 1967, thought increasing the number of women at Oxford would benefit the University and the world although she was “prepared to hazard a guess that [increasing the number of women] might lead to an increase of women in the Third Class” (Vaughan 1964:24).¹² Rosemary Murray, the president of New Hall at Cambridge, also believed that the pool of able women was limited and consequently argued for a slow increase in the admission of women to Cambridge (Dyhouse 2002: 295).

If the average entrance scores, most commonly measured by A-levels or examination results, of women after coresidence were no lower than before then Brockliss and Pirie are correct. If scores fell then Hubbard and Vaughan were correct.

Hypothesis 3: *The women’s colleges would lose their best students to the mixed colleges and those colleges would replace “low caliber” men with “higher caliber” women.*

Although it was possible that the admission of more women would draw solely from the “reserve army” of high caliber women who had previously been excluded from Oxford, the women’s colleges believed that they would be, at least in part, a source of women for the mixed colleges. Ferdinand (2015) noted

¹²These views are similar to those expressed in the 1940s by the heads of some of the women’s colleges. For example, Lynda Grier, Principal of LMH, maintained “that even the stupid men she taught had more ‘mental audacity’ than women” and Margery Fry, Principal of Somerville, confessed to a fear that the expansion in size of the women’s colleges may lead to “over femininity” (Dyhouse 2003:175, 176).

that the women's colleges feared that the best female students would gravitate towards the better-endowed men's colleges which, because of their greater wealth, were able to offer larger scholarships to students and higher salaries to fellows.¹³ These bright women would replace less able men. The principal of St Hilda's described this as "the stupid-men-out-clever-girl-in-argument" (Dyhouse 2003: 177). Dyhouse (2004:174) observed that mixed colleges quickly gained popularity among male students and the "academic quality of their entrants improved". Thus "women students, once an embarrassment, had become both resource and bait".

It may be that the "best" women (and men) had a stronger preference for residing in and being taught in a coeducational setting and if Oxford did not adopt coresidence it would lose bright students of both sexes to other universities. There is some evidence to support this preferences argument. Dyhouse (2002:293) cites evidence that Oxford was attracting fewer male applicants per place than many other British universities and an early report on post-coresidence admissions found an almost 25 percent drop in applications to the women's colleges (Carritt cited in Hicks 2004).

But was it the case that the brightest women were more likely to apply and be admitted to the newly mixed former men's colleges to replace low caliber males? If this claim is true the average admission scores and examination results of female applicants to the mixed colleges would have exceeded those of the women's colleges and the average scores and examination results of all students at the coresidence colleges would have increased. If the "reallocation of bright women" argument is correct, then the average entrance scores and examination results of women at the women's colleges should fall (unless they could draw equally bright women from the general pool of applicants). If the scores and

¹³A writer in the Spectator (2014) suggested another motivation for women to seek admission to a men's college: "Bright ambitious women didn't want people to think they'd only got into Oxford because of positive discrimination", that is, because some people believed women's colleges had lower entry standards.

examination results did not fall it implies that the coresidence colleges drew female students from the “reserve army” of high caliber women.

Hypothesis 4: *Coresidence was Bad for Female Academics*

Janet Vaughan of Somerville argued that if coresidence was adopted it should include the appointment of female academics and administrators at men’s colleges. Mary Warnock of St. Hugh’s supported increasing the number of women at Oxford but opposed coresidence which, she believed, would not help the cause of women as a whole and may do it positive harm in the long-run. She had particular concerns about the impact of coresidence on female fellows. By preferring qualified female candidates to men, the existence of women’s colleges led to a higher percentage of female faculty at Oxford than the national average (Hicks 2004: 245). Warnock foresaw “a time when every college will have its statutory woman fellow, and no more” (Warnock 1972:6). Warnock was not alone in fearing the impact of coresidence on female fellows. In his recollections of the meeting between Brasenose and the heads of the women’s colleges, Graham Richards remarked “Lucy Sutherland, Principal of Lady Margaret Hall, in particular was totally opposed” because “her view was that the whole point of women’s colleges was to provide jobs for women academics. The needs of undergraduate women were very much secondary” (Richards 2015:90). Whether this was the case or not, the women’s colleges firmly believed that if the men’s colleges admitted women, they would hire very few women, and if the women’s colleges admitted men they would have to hire male academics and “if women academics had to compete with men for jobs, the prevailing prejudices would reduce their chances of academic employment” (Malkiel 2016: 549). This view was shared by Elaine Griffiths of St. Anne’s who saw the role of women’s colleges as “preserv[ing] job opportunities for women academics who are otherwise strongly disadvantaged” (Smith 2012: 12). It should be noted that coresidence was played out against a background of the Sex

Discrimination Act of 1975 which made it illegal for the University to associate lectureships with a women's college (Howarth 1994b).

We will investigate whether coresidence resulted in an increase or decrease in the number of female fellows. Did the newly coresident male colleges elect female dons? Did the women's colleges when they admitted male students also elect male fellows? Early signs were not hopeful for women faculty: the newly mixed men's colleges elected few female fellows while some of the women's colleges appointed a substantial number of men (Hicks 2004, Dyhouse 2003). But what was the longer-term outcome?

Hypothesis 5: *Coresidence and the Norrington Table*

However much dons decry the attention paid to the Norrington Table, in an increasingly competitive higher education environment reputation and rankings are important in attracting students, faculty, and financial resources (Hibbert 1988, Rolfe 2003, Dill 2009, Monk and Ehrenberg 1999). Brockliss cited the potential for coresidence to boost a college's rank as one factor in garnering support in the men's colleges and opposition from the women's colleges.

If the most academically able students preferred to reside in a mixed college then, all else equal, coresidence should be associated with an increase in a college's Norrington rank.

Brockliss (2016) stated that the women's colleges consistently ranked at the top of the Norrington Table in the mid- to-late 1960s. The average rank of Lady Margaret Hall from 1964 to 1969 was 11 out of 28, for Somerville, St. Anne's, St. Hilda's, and St Hugh's 6, 9, 8, and 14 respectively (based on data in Hibbert 1988: 281). After the last women's college accepted men, the average rankings for the formerly women's colleges from 2009 to 2013 were 24, 24, 17, 21, and 19 respectively. We will investigate whether coresidence was associated with this decline.

The Research Design and Methods

The research will use data from the 28 colleges of the University of Oxford that existing in 1964. These colleges enrolled 91 percent of undergraduate students at the University of Oxford in 2015.

Methods

To empirically investigate hypotheses H1, H4, and H5 we will use event analysis methods where the event of interest is the point in time when a college moves from single gender residence to co-residence.

Let E_{ct}^J

be a dummy variable that equals 0 before college J switches from single gender to co-residence and equals 1 after. Then

$$Y_{ct} = \alpha_t + \beta_1' X_{ct} + \sum_{k=-r}^s \gamma_{ck} E_{c(t+k)}^J + \delta_c + \epsilon_{ct}$$

where α_t are time fixed effects such as changes in the application environment that affect all colleges

consistently or the effects of the Sex Discrimination Act, δ_c are college fixed effects such as size,

history, and culture, X_{ct} are time-varying covariates such as whether the head of college is male, and

ϵ_{ct} is a random error term. By including $E_{c(t+k)}^J$ we have allowed the effect of a switch from single

residence to co-residence to have both leading and lagging effects on the outcome variable Y_{ct} . We

also envision allowing for the effect of $E_{c(t+k)}^J$, i.e. γ_{ck} , to depend on the college to some extent.

More specifically, the effect will depend on whether the college was the one that initiated the event or not ($c = J$ or $c \neq J$) and whether the college was at the time of the event an all-male, all-female or mixed college. For example, if Y_{ct} is a college's Norrington ranking at time t , then it is possible that a dip in college J ranking ($Y_{Jk} < 0$ for $k < 0$) may lead it to switch from single to co-residence after which its ranking begins to improve ($Y_{Jk} > 0$ for $k \geq 0$). Colleges other than the one making the switch may be affected negatively ($Y_{ck} < 0$ for $k \geq 0$) with differential effects depending on whether the college is all-female ($c = F$), all-male ($c = M$) or mixed ($c = B$).

Findings

Hypothesis 1

The data shown in Table 1 suggests that coresidence resulted in a greater representation of women at Oxford. According to Bolton (2014) the percentage of female undergraduates was slightly less than 20 percent from the 1930s until 1970/71. It increased by almost 50 percent during the 1970s when the 1974 initial experiment with coresidence began and when the "great expansion" of 1979 occurred. There was a further 39 percent increase in the 1980s when six more colleges introduced coresidence. The percentage increase since 1990 has not been so dramatic (17 percent) but, of course, the base was higher.

The increasing share of undergraduates who are female translated into higher absolute numbers primarily because of the growth in their share of students rather than an increase in the total number of students. Most of the growth in the number of undergraduates at Oxford occurred before 1974 and relatively little thereafter. In 1923-24 there were 4,163 undergraduate students, 5,023 in 1938-39, 7,323

in 1949-50, 8,975 in 1960-61, and 10,947 in 1970-71 (Thomas 1994: 190). In 2015 there were 11,603 undergraduate students (University of Oxford 2016. Gazette Supplement: Student Numbers 2015).

Figure 1 graphs yearly data on the proportion of women undergraduates from 1930 through 2016. The vertical bars are drawn at years where colleges changed from unisex residence to co-residence and the numbers indicate how many colleges changed in that particular year. So, by 1980, twenty-four colleges were co-resident. While the proportion of Oxford women undergraduates began trending upward after 1960, the trend appears to steepen after 1974, at least until about 1990. To test this more formally, a linear spline regression model was estimated with a single knot point at the year 1974 using yearly data on the proportion of Oxford women undergraduates from 1960 – 1990. Model estimates imply that the slope of the trend for the percentage of undergraduate women increased from 0.5% per year before 1974 to 1.5% per year after 1974 (p-value < 0.001).

Hypothesis 2

Brockliss and Perie claimed that many able women were excluded from Oxford while Hubbard, Sutherland, Vaughan, and Murray were, at best skeptical. The available evidence suggests that the lack of places at Oxford before coresidence did lead to the exclusion of female students with better academic achievement than males who were admitted. Brock (1994:750) reported that more than 56 percent of women admitted to Oxford had three A-level passes with grades of AAC/ABB or better compared with fewer than 52 percent of males. Similarly, McCrum (1996:373) found that women admitted to Oxford in 1974 performed 4.4 percent better at A-levels than men.

An associated question is ‘how large was the pool of bright women’? That is, as the admission of women increased did the quality decrease? Data reported by McCrum (1996:373) showed an increase in women’s A-level scores from 12.166 in 1974 to 13.182 in 1991 even though the number of women admitted increased substantially- women increased from 20 percent of acceptances in 1973 to 40

percent in 1983 (DeWitt and Nixon 1988:12). However, women's A-levels relative to those of men decreased: women scored 4.4 percent better than males in 1974 but only 1.8 percent better in 1979 and by the late 1990s they performed similarly to men (McCrum 1996:369). This relative decline occurred because the A-level results of men improved more than did those of women as bright women replaced less able men among those admitted.

Using data from the Universities' Statistical Record, we examined national A-level results for women and men that first entered university in the 1973-4 academic year in particular we looked at the A-level scores for the best three passes for the entire universe of students attending university by gender and for Oxford students separately.¹⁴ As shown in Figure 2, the number of first-year women attending university who scored 15 points (3 A's) was 1065, of whom 147 or 13.8% went to Oxford. The number of first-year women attending university who scored 14 was 1415 of whom 113 (8%) attended. Among first-year men attending university 2585 scored 15 on their best three A levels and 530 or 20.5% attended Oxford. Thus, the evidence supports Brockliss and Perie that there was an adequate pool of able women who before coresidence could have but did not find a place at Oxford.

Further evidence in support of the claim that there were additional bright women who could be admitted to Oxford is found in examination results. In the 10 years after coresidence 8.6 percent of women were awarded Firsts compared with 15.4 percent of men. In the ten years before this time the respective percentages were 9.2 percent and 10.7 percent.¹⁵ This finding does not mean that the women admitted after coresidence were academically less able than men. Greenstein argues that the women recruited into the men's colleges replaced less able male applicants, that is, "bright women in,

¹⁴A total of 15 possible points is possible on the 3 best A-level passes where a grade of A, B, C, D and E on an exam is given 5, 4, 3, 2, and 1 point, respectively.

¹⁵Calculations by the authors based on data provided by Brian Harrison initially gathered by Daniel Greenstein for Volume 8 of the History of the University of Oxford (1994).

stupid men out". The absolute numbers taking final exams supports this contention. Until the 1960s men accounted for 80 to 90 percent of those sitting final exams. However, with coresidence the absolute number of males fell sharply from 2,029 in 1976 to 1,612 in 1986. Over the same period the number of women sitting final exams increased from 519 to 1,024. There was also a compositional shift by subject and gender that contributed to the change in finals results by gender. The mixed colleges tended to attract women who displaced less able men in the arts leading to an increase in the proportion of men reading sciences and a fall in the percentage of women doing so. The percentage of Firsts awarded in the sciences was five to 15 percentage points higher than in the arts. As Malkiel (2016; 586) remarked, "By all accounts, women held their own academically." Numbers increased greatly with only a slight decrease in the most prized outcome of an Oxford education: a First, and, perhaps equally prized by most dons, the dumping out of the duller chaps.

Thus, the preponderance of the available evidence suggests that up to the mid-1970s there was an ample supply of able women who were most likely not admitted to Oxford because of a shortage of places in the women's colleges. With coresidence these able women replaced less able men in the former men's colleges. As proponents of coresidence argued, this lifted the overall standard of the University.

Hypothesis 3

It appears that bright women displaced less able men in the mixed colleges but is there any evidence to support the argument that the women's colleges lost their brightest lights to the mixed colleges? We have been unable to locate data on the A-level results of entering students by college but there are examination results for women in the mixed colleges and the women's colleges that are an adequate proxy measure of the academic quality of students. Greenstein (1987) calculated the percentage of

Firsts awarded to women in mixed colleges and women's colleges from 1977 to 1986 and separately by arts and sciences. Based on the data reported in his table on page 6, in eight of the ten years women in the mixed colleges outperformed women in the women's colleges in the percentage of Firsts awarded. This superior performance is unlikely to be explained by a different subject distribution between the types of colleges because in six of the years women in mixed colleges had a superior performance in arts and a superior performance in sciences in nine of the ten years. The women's colleges had a higher percentage of Thirds in nine years in arts and seven in sciences and when Second class degrees were separated into 2.1 and 2.2 in 1986 women in the mixed colleges had a higher percentage of Seconds that were 2.1 than women in the women's colleges. Brock (1994: 750) compared the distribution of degrees awarded by class in 1989 for women in mixed and women's colleges and found that women in the former were awarded a higher percentage of Firsts and a lower percentage of Thirds. The available evidence supports the concern expressed by the women's colleges that relatively brighter female students would gravitate towards the former men's colleges, that is, "skimming of the cream" seems to have occurred although we have no evidence either way that the men admitted to formerly women's colleges were the "dregs" of male applicants although David Smith (2012: 17) of St. Anne's noted in his history of the college that "the pool of first-choice applicants, female and male, available to the former and continuing women's colleges became less enticing than it had been."

Further calculations based on data in Greenstein (1987:6) showed that in the five years (1977-1981) after the first women in mixed colleges sat finals nine percent of women in mixed colleges were awarded Firsts compare to 8.4 percent of women in women's colleges. In the next five years (during which two of the formerly women's colleges first admitted men) 9.6 percent of women in the mixed colleges were awarded Firsts compared to 6.4 percent of women in the women's colleges. Women in the mixed colleges improved their performance in both arts and sciences and women in women's colleges

performed worse in both. Clearly, “bright girls” reallocated from women’s colleges to the formerly all-male colleges.

Hypothesis 4

Progress in appointing women to academic posts was slow. In the decade after coresidence the percentage of female undergraduates almost doubled, and the number of female postgraduates rose by 50 percent but the percentage of fellows who were female increased from 13 percent to only 14 percent and the percentage in the professoriate from three to five percent (Brock 1994: 749). Women held only five percent of fellowships at formerly male colleges but men held 43 percent of the fellowships at the two formerly female colleges who first admitted men in 1979 (DeWitt and Nixon 1988: 11). Hornsby et al. (1987: 2) calculated that between the initial year of coresidence and 1985 the mixed colleges appointed 216 men and 30 women. In 1985 three-quarters of the formerly men’s colleges had either no or one woman in a permanent post. At Cambridge the situation was similar: by 1985 women held only 9.4 percent of the fellowships at mixed colleges (Malkiel 2016: 532). Part of the reason for this state of affairs was that women were much less likely than men to apply for these posts. Of the 50 academic posts filled in 1988 there were no female applicants for 20 percent of them. However, over the same period the number of women holding research fellowships increased from 29 to nearly 100 (Hart 1989: 219). Hart predicted that many of the reasons for the “shortfall” of women in academic posts should decrease as more women were appointed to Junior Research Fellowships and other research positions. In contrast, the appointment of men to academic positions in the women’s colleges at Oxford moved very rapidly and, in the case of St Hugh’s, preceded coresidence. At St. Anne’s the fellowship rapidly became mixed: between 1979 and 1991 nine fellows were added but only one was female (Smith 2012).

As Brock (1994: 749) concluded: “The women on college governing boards elected many men to fellowships: the men elected few women.”

Table 2 shows the percentage of academic positions held by women expressed as a percentage of those held by men in the first five male colleges to adopt coresidence and in the formerly women’s colleges.¹⁶ Academic positions include fellows, research fellows, senior research fellows, junior research fellows, head of house, professorial fellows, supernumerary fellows, fixed-term fellows, canons with academic appointments, “additional” fellows, fellows by special election, and fellows not on foundation. This is a broad definition of academic positions and includes positions that colleges control wholly or with the University and all are paths to inclusion in the academic life of the colleges and the University. Fellows on the Governing Body of colleges is a smaller group and has a lower representation of women and has changed more slowly than the broader definition of academic positions we employ.

As can be seen in Table 2, in none of the formerly male colleges did the percentage of positions held by women exceed 5 percent of the positions held by men five years after coresidence. It was not until 15 years after the initial admission of female undergraduates that women in any of the pioneering male colleges held one-tenth of the positions held by men and it was forty years before one of them, Jesus, had females holding half as many of its academic positions as men. In two of the five pioneering college’s women hold only one-quarter the number of positions currently occupied by men.

Women’s colleges appear to have taken different approaches to changing the gender composition of their academic staff. The different approaches may reflect the different plans or cultures of the colleges.

For example, Trehub (2016) noted that “the original mission of female education and the woman’s

‘voice’ survives emphatically at Lady Margaret Hall (LMH)”, so much so that Trehub described LMH as “a

¹⁶These data were compiled from the University Calendar for all years from 1969-70 to 2015-16. The calendar lists all categories of fellows by name and college. Identification of gender was aided by the inclusion of two or more first names, identifiers such as ‘Miss’ or ‘Mrs’. In cases where gender was unclear we checked college websites and Google to identify gender.

woman's-college-which-now-admits-men" while St. Anne's "comes across as if it has always had a student body diversified ...by gender". Similarly, Somerville aimed for equality in numbers of male and female students which may have influenced its gender mix of fellows. While Lady Margaret Hall may have begun coresidence as a predominantly women's college that admitted men, it quickly became something different. Women held a majority of academic positions only until 1986 and ten years after coresidence women held about 60 percent as many academic posts as men. That position has not changed. St. Anne's has followed a similar path whereby men and women held an equal number of posts in the late 1980s but now women hold only forty percent as many posts as held by men. At Somerville five years after coresidence women held three times as many academic posts as men. By 2009 there were equal numbers of male and female academics but now men outnumber women at Somerville by two to one. St Hilda's has been the slowest of the former women's colleges to appoint men. Five years after coresidence women outnumbered men in academic positions by four to one and this had only fallen to three to one by 2015. St. Hugh's has traveled a very different path to the other formerly women's colleges. Although St Hugh's was the third women's college to admit male undergraduates, unlike the other women's colleges it elected males to academic positions several years before it admitted male undergraduates. In the year St Hugh's first admitted undergraduate men there were slightly more men in academic posts than women and the appointment of men rapidly outpaced that of women by the early 1990s so that 15 years after coresidence women held only one-third as many academic appointments in the college as men and today it is less than twenty percent.

In 1974, the first year of coresidence, males held 924 academic positions in the colleges under study and women held 156 (17 percent of positions held by men). In 2015 males held 1,391 academic positions and females 554 (40 percent). Thus, the number of positions held by men increased by 50 percent but the number of positions held by women increased by a factor of 3.5. However, in 2015 there were six fewer women academics in the formerly women's colleges than in 1974. Over the same period the

women's colleges added 228 academic positions which, on net, all went to men. It is possible that there were insufficient qualified women to fill the new positions but Hornsby et al. (1987) dismiss this argument claiming that the pool of potential qualified applicants far exceeded the number of appointments made.

Table 3 shows regression results where the percentage of academic positions in a college held by women is the outcome variable. Column (1) of the table presents the estimation results for a model that includes college fixed effects, year fixed effects, a dummy variable that equals one in years when a college has coresidence, the interaction of this coresidence variable with a dummy variable indicating whether the college was originally a women's college, and a dummy variable indicating whether the head of college is male. Column (2) of Table 3 presents the estimation results for a model that also includes a variable indicating whether a college was not in the first group of colleges to have coresidence in 1974 and the interaction of this variable with whether the college was originally a women's college.

The estimates from column (1) imply that coresidence increased the percentage of female faculty members in colleges that were originally men's colleges by a statistically significant 9.7 percentage points and decreased the percentage of female faculty members in colleges that were originally women's colleges by a statistically significant 52.0 percentage points. The estimates from column (2) indicate that coresidence increased the percentage of female faculty members in colleges that were originally men's colleges by a statistically significant 7.7 percentage points and decreased the percentage of female faculty members in colleges that were originally women's colleges by a statistically significant 50.7 percentage points. Moreover, the results show that the percentage of female faculty members in men's colleges that did not initiate coresidence in 1974 increased by a statistically significant 1.7% percentage points while after 1974 women's colleges reduced their percentage of female faculty members by a

statistically significant 6.8% percentage points. In both estimations, we also find that a male head of college was associated with a statistically significantly lower percentage of female faculty.

In Table 4 we present estimates that allow the effects of coresidence to vary over time. Specifically, we allow for effects to vary two years prior to coresidence and for nine years post coresidence. Again, the model estimates in column (2) of the table differ from that of column (1) in that they also include a variable indicating whether a college was not in the first group of colleges to have coresidence in 1974 and the interaction of this variable with whether the college was originally a women's college. Figures 3 and 4 graph the estimated effects of coresidence over time, along with the 95% upper and lower confidence levels (UCL and LCL), for originally women's and men's colleges, respectively. As can be seen from the figures, the magnitude of the effect increased over time for both women's and men's colleges. Moreover, there appears to be some evidence that women's colleges decreased their percentage of female faculty just before becoming coresident while men's colleges increased their percentage of female faculty just before becoming coresident. These results support the conclusions reached above that coresidence improved the employment position of female academics at the men's colleges and worsened it at the women's colleges. In these estimations that allow for time varying coresidence effects, we continue to find that a male head of college was associated with a statistically significantly lower percentage of female faculty.

A positive impact of coresidence on the employment of female faculty was felt because of the expansion of numbers of women in the men's colleges rather than in the women's colleges. Lady Mary Ogilvie and Peter Ady of St Anne's were not correct when they predicted that coresidence would cause a fall in the overall number of female academics. But they would most likely have been surprised that this did occur at the women's colleges.

Ogilvie and Ady were also concerned that the number of female administrators would decline. A key administrative appointment that could potentially have a significant impact on the culture and practices of a college and its students is the Head of House (head of college) as the regression results in Table 3 show. Since the beginning of coresidence there have been 119 appointments of Head of House at formerly male colleges. Of these seven have been women, the first appointed in 1993 and two more the year after. None of the original five male colleges to adopt coresidence have appointed a female head and of the 68 appointments of head at the next 13 male colleges to admit women only five appointments went to women. The odds of a woman being appointed Head of House at a formerly male college are 1 in 16. In contrast at the formerly women's colleges there have been 25 appointments of Head of which seven have gone to men. The odds of a man being appointed head of a women's college are 1 in 4. Without knowing the ratio of women to men in the application pool that meet the qualification for Head of House one cannot conclude that these odds present a prima facie case of bias. The regression results reported in Table 3 underline the importance of the gender of the person heading the college: where the head is male, the employment of women in academic positions in the college is eight percentage points lower than where the head is female. Because we are controlling for college fixed effects this result cannot be explained by "college culture" or other college specific effects nor because we are controlling for year fixed effects can it be explained by "but this just reflects the times in which male head X served".

Hornsby et al. (1987:3) argued that "it is critical for both female and male students to see men and women in positions of equal standing and academic authority if they are to receive the rounded education that Oxford aspires to provide". They further argued that "so long as women remain in a small minority in positions of authority in universities, those institutions will remain powerless to influence attitudes to the role of women in society". To the extent that the representation of women among Heads of House and among academic positions reflects the position of women in senior positions in the

University- with the exception of the current Vice Chancellor- Oxford appears to have a way to go before it has sufficient female role models for students and can speak with authority about the role of women in society.

Hypothesis 5

The regression results reported in Table 5 and 6 provide support for the wisdom of fellows in the male colleges who first adopted coresidence who saw it as a way to improve their academic standing in the university and justify the fears of fellows in the women's colleges that they would lose their brightest prospective students and thus their position near the top of the Norrington Table. These tables present estimates for models similar to those presented in Tables 3 and 4 except that now the dependent variable is the college's Norrington ranking and they also include the percentage of female faculty as a control variable.

From column (1) of Table 5 we see that adopting coresidence improved the Norrington rank of formerly men's colleges by a statistically significant 5 places (a larger rank number is a decrease in academic results) but admitting men had no impact on the rank of the women's colleges (the interaction term cancels out the impact of the direct effect). In column (2) we see that the initial wave of coresidence in 1974 had no impact on the academic success of the other men's colleges but it did have a significant negative impact on the women's colleges worsening their ranking by about eight places and improved the ranking of the men's colleges who first adopted coresidence by three places.. The graphs of the implied estimates from Table 6 of the effect of coresidence on Norrington rankings over time for women's and men's colleges are presented in Figures 5 and 6 along with the 95% UCL and LCL. In general, the estimates are more imprecise than those for the percentage of female faculty and are mostly statistically insignificant for both men's and women's colleges (although one can reject the null hypothesis that the effects are equal over time, $p\text{-value} < 0.001$). The estimates of column (2) of Table 6

however, still show that the initial wave of coresidence in 1974 had a significant negative impact on the women's colleges' rankings.

The comments made by Balsdon and Bell referred to above imply that female academics would produce inferior academic results from their students than if those students were taught by men. There is no empirical support for this view- the percentage of female fellows had no impact on a college's Norrington rank. However, there is some evidence from Table 6 that a male head of college improved the college's Norrington rank.

Conclusion

Oxford in the 1960s and early 1970s debated how to increase the representation of women among its student body. Coresidence, initially the admission of female undergraduates to men's colleges, was the vehicle chosen. A decade of often heated debate resulted in support from the men's colleges because they thought that it would allow them to attract bright female students and rid themselves of the dullest of their male applicants resulting in improved examination results and an improvement in their Norrington Table ranking. Strong opposition was expressed by the women's colleges because they believed they would lose their brightest female students to the mixed colleges, be stuck with dull male students and fellows, lose their place at the top of the Norrington Table, and women would lose academic jobs to men. There was also concern as to whether sufficient additional bright young women existed to fill additional places at Oxford.

In this paper we have presented empirical data from existing sources and new econometric analysis to test these hypotheses. The men's colleges were wise to adopt coresidence. They were able to attract bright young women and rid themselves of dull young men. As a consequence, they improved their academic results and their standing in the Norrington Table. In a brief overview of the history of women's colleges at Oxford, Lucy Prochaska, then Principal of Somerville, wondered why the "collective

record of the women's colleges does not translate into a more brightly shining identity" (Prochaska 2014: 11). The answer may lie in what Peter Ady feared would be a consequence of coresidence: the "relative decline, or even in time an eclipse" of the women's colleges (Ady 1964: 138). We have shown that the examination results of women at the mixed colleges exceeded those of women at the women's colleges, consistent with the fear that the mixed colleges would "skim the cream" of bright female students.

Coresidence also resulted in very large falls in the Norrington Table for the women's colleges. Fears of a lack of sufficient additional bright young women to fill places at the University were unfounded.

We have also shown that coresidence resulted in a very slow increase in women academics employed at formerly men's colleges but a very rapid increase in men employed at the former women's colleges.

While it is true that the number of women holding academic positions has increased substantially this has happened only at the formerly men's colleges, and, as Brock noted, this increase is truer for "junior Oxford" than for "senior Oxford" (Brock 1994:749), that is, the higher one looks up the academic ladder at Oxford the fewer women are seen- even though today one can see a female at the very top. However, one does not see many women at the head of colleges. Indeed, since coresidence the odds of a woman being appointed head of house at one of the formerly men's colleges is 1:16 while the odds of a man being appointed to head a formerly female college is 1:4. At the end of her study of coresidence at the universities of Oxford and London, Carol Dyhouse (2002: 297) concluded "Only when women share equally with men in the teaching, learning and governance of mixed colleges might one expect accusations of betrayal, alongside the legacy of mistrust, to be relegated to history." Oxford has made considerable progress towards equality in teaching and governance but perhaps not sufficient to confine accusations of betrayal and the legacy of mistrust to history.

Table 1

Percentage of Oxford Undergraduates, Female 1938/39 – 2015/16

Years	Percentage
1938/39	17.5
1955/56	15.4
1970/71	19.4
1980/81	29.8
1990/91	40.31
2000/01	44.92
2010/11	46.04
2015/16	47.12

Sources: P. Bolton (2014) 1938/39 – 1980/81, for 1990/91 onward
University of Oxford Gazette Supplement, Student Numbers, various years.

Table 2

Academic Positions held by Women as a Percentage of those held by Men: Years after College Introduced Coresidence

College	5 Years After	10 Years After
Brasenose	0.0	4.3
Hertford	3.4	6.5
Jesus	4.0	8.0
St. Catherine's	3.4	5.1
Wadham	2.3	2.4
Lady Margaret Hall	151	59
St. Anne's	125	95
St. Hilda's	415	-
St. Hugh's	58	38
Somerville	270	127
College	15 Years After	30 Years After
Brasenose	10.7	19.4
Hertford	8.5	6.5
Jesus	4.0	27.7
St. Catherine's	7.3	19.6
Wadham	9.0	24.3
Lady Margaret Hall	53	44
St. Anne's	63	44
St. Hilda's	415	-
St. Hugh's	33	18*
Somerville	102	46**
College	40 Years After	
Brasenose	25.6	
Hertford	25.4	
Jesus	50.0	
St. Catherine's	38.6	
Wadham	41.2	

* 29 years after coresidence

**21 years after coresidence

Table 3**Linear Regression Estimates of the Determinates of Percent Women Faculty**

Variable	(1)	(2)
Coresidence	0.097 *** (0.011)	0.077 *** (0.011)
Coresidence × Originally Female College	-0.617 *** (0.023)	-0.584 *** (0.025)
Male Head of College	-0.079 *** (0.014)	-0.079 *** (0.014)
Not coresident in 1974 x I(Year ≥ 1974)	-	0.016 *** (0.006)
Not coresident in 1974 x I(Year ≥ 1974) × Originally Female College	-	-0.084 *** (0.022)
R-squared	0.9303	0.9313

Notes: Estimations also include year and college fixed effects. Robust standard errors

Table 4

Linear Regression Estimates of the Determinates of Percent Women Faculty

Variable	(1)	(2)
Coresidence ₋₂	-0.016 (0.015)	-0.016 (0.015)
Coresidence ₋₁	-0.004 (0.015)	-0.004 (0.015)
Coresidence ₀	0.021 (0.014)	0.021 (0.014)
Coresidence ₊₁	0.045 *** (0.014)	0.045 *** (0.014)
Coresidence ₊₂	0.050 *** (0.015)	0.050 *** (0.015)
Coresidence ₊₃	0.045 *** (0.016)	0.045 *** (0.016)
Coresidence ₊₄	0.042 *** (0.015)	0.042 *** (0.015)
Coresidence ₊₅	0.067 *** (0.016)	0.067 *** (0.016)
Coresidence ₊₆	0.089 *** (0.016)	0.089 *** (0.016)
Coresidence ₊₇	0.099 *** (0.016)	0.099 *** (0.016)
Coresidence ₊₈	0.088 *** (0.017)	0.088 *** (0.017)
Coresidence ₊₉	-0.089 *** (0.018)	0.089 *** (0.018)
Coresidence _{≥10}	0.139 *** (0.022)	0.139 *** (0.022)
Coresidence ₋₂ × Originally Female College	-0.031 (0.046)	-0.031 (0.046)
Coresidence ₋₁ × Originally Female College	-0.045 (0.040)	-0.045 (0.040)
Coresidence ₀ × Originally Female College	-0.190 *** (0.036)	-0.190 *** (0.036)
Coresidence ₊₁ × Originally Female College	-0.273 *** (0.025)	0.273 *** (0.025)
Coresidence ₊₂ × Originally Female College	-0.295 *** (0.024)	-0.295 *** (0.024)
Coresidence ₊₃ × Originally Female College	-0.318 ***	-0.318 ***

	(0.025)	(0.025)
Coresidence ₊₄ × Originally Female College	-0.350 ***	-0.350 ***
	(0.038)	(0.038)
Coresidence ₊₅ × Originally Female College	-0.354 ***	-0.354 ***
	(0.027)	(0.027)
Coresidence ₊₆ × Originally Female College	-0.404 ***	-0.404 ***
	(0.030)	(0.030)
Coresidence ₊₇ × Originally Female College	-0.431 ***	-0.431 ***
	(0.031)	(0.031)
Coresidence ₊₈ × Originally Female College	-0.449 ***	-0.449 ***
	(0.039)	(0.039)
Coresidence ₊₉ × Originally Female College	-0.496 ***	-0.496 ***
	(0.036)	(0.036)
Coresidence _{≥10} × Originally Female College	-0.719 ***	-0.719 ***
	(0.024)	(0.024)
Male Head of College	-0.044 ***	-0.044 ***
	(0.010)	(0.010)
Not coresident in 1974 x I(Year ≥ 1974)	-	0.031 ***
		(0.009)
Not coresident in 1974 x I(Year ≥ 1974) × Originally Female College	-	0.710 ***
		(0.024)
R-squared	0.9605	0.9605

Notes: Estimations also include year and college fixed effects. Robust standard errors are

Table 5
Linear Regression Estimates of Determinates of Norrington Rankings

Variable	(1)	(2)
Percent Female Faculty	-3.254 (2.412)	-2.193 (2.445)
Coresidence	-4.976 *** (1.172)	-3.094 ** (1.264)
Coresidence × Originally Female College	4.907 ** (1.974)	2.440 (2.065)
Male Head of College	-1.137 (0.804)	-1.006 (0.807)
Not coresident in 1974 x I(Year ≥ 1974)	-	1.933 (1.845)
Not coresident in 1974 x I(Year ≥ 1974) × Originally Female College	-	6.855 *** (1.741)
R-squared	0.4272	0.4362

Notes: Estimations also include year and college fixed effects. Robust standard errors are presented in parentheses. One, two and three asterisks indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

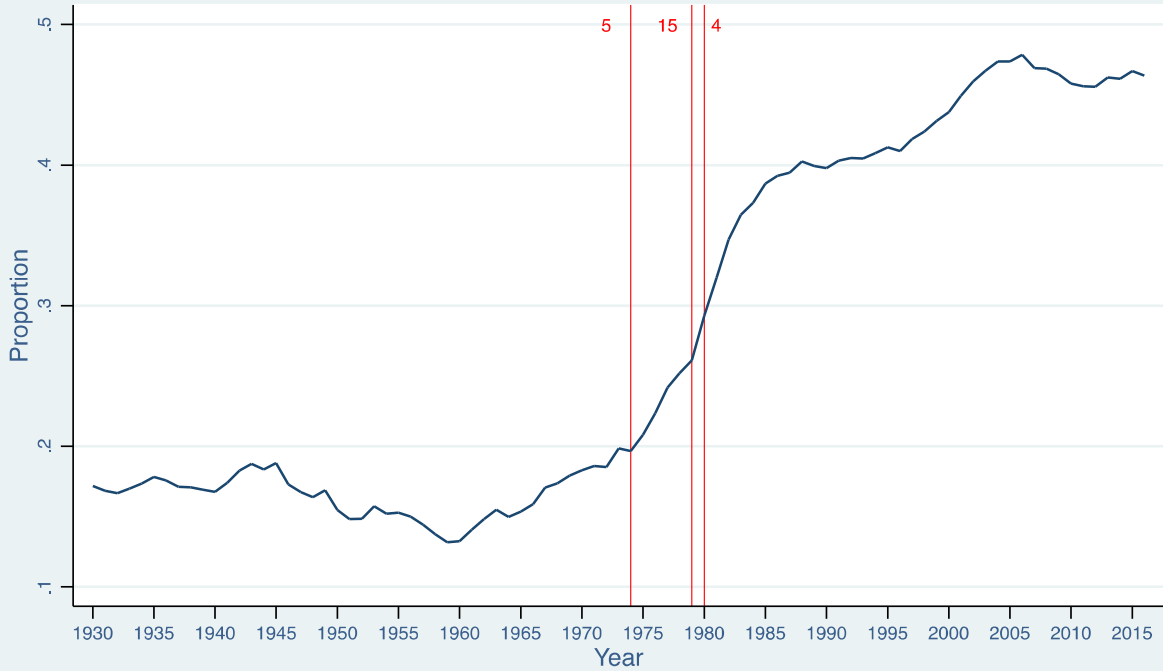
Table 6
Linear Regression Estimates of Determinates of Norrington Rankings

Variable	(1)	(2)
Coresidence ₋₂	2.270 (4.009)	2.270 (4.009)
Coresidence ₋₁	4.190 (4.351)	4.190 (4.351)
Coresidence ₀	6.936 * (4.214)	6.936 * (4.214)
Coresidence ₊₁	0.433 (4.229)	0.433 (4.229)
Coresidence ₊₂	3.389 (4.490)	3.389 (4.490)
Coresidence ₊₃	2.706 (4.690)	2.706 (4.690)
Coresidence ₊₄	2.170 (4.278)	2.170 (4.278)
Coresidence ₊₅	0.070 *** (4.067)	0.070 (4.067)
Coresidence ₊₆	-1.200 (4.229)	-1.200 (4.229)
Coresidence ₊₇	-0.921 (4.293)	-0.921 (4.293)
Coresidence ₊₈	-6.488 (4.751)	-6.488 (4.751)
Coresidence ₊₉	-4.099 (5.087)	-4.099 (5.087)
Coresidence _{≥10}	-0.824 (4.183)	-0.824 (4.183)
Coresidence ₋₂ × Originally Female College	0.222 (4.346)	0.222 (4.346)
Coresidence ₋₁ × Originally Female College	-4.612 (4.831)	-4.612 (4.831)
Coresidence ₀ × Originally Female College	-7.499 (4.659)	-7.499 (4.659)
Coresidence ₊₁ × Originally Female College	-3.455 (4.402)	-3.455 (4.402)
Coresidence ₊₂ × Originally Female College	-2.604 (5.415)	-2.604 (5.415)
Coresidence ₊₃ × Originally Female College	-3.343 (4.183)	-3.343 (4.183)

	(5.404)	(5.404)
Coresidence ₊₄ × Originally Female College	-4.045 (4.752)	-4.045 (4.752)
Coresidence ₊₅ × Originally Female College	-1.683 (5.470)	-1.683 (5.470)
Coresidence ₊₆ × Originally Female College	-0.132 (5.679)	-0.132 (5.679)
Coresidence ₊₇ × Originally Female College	-1.239 (4.245)	-1.239 (4.245)
Coresidence ₊₈ × Originally Female College	10.376 ** (4.971)	10.376 ** (4.971)
Coresidence ₊₉ × Originally Female College	-3.305 (5.428)	-3.305 (5.428)
Coresidence _{≥10} × Originally Female College	-2.113 (4.069)	-2.113 (4.069)
Percent Female Faculty	1.178 (4.929)	1.178 (4.929)
Male Head of College	-1.917 ** (0.864)	-1.917 ** (0.864)
Not coresident in 1974 x I(Year ≥ 1974)	-	-2.957 ** (1.480)
Not coresident in 1974 x I(Year ≥ 1974) × Originally Female College	-	14.868 *** (4.193)
R-squared	0.5123	0.5123

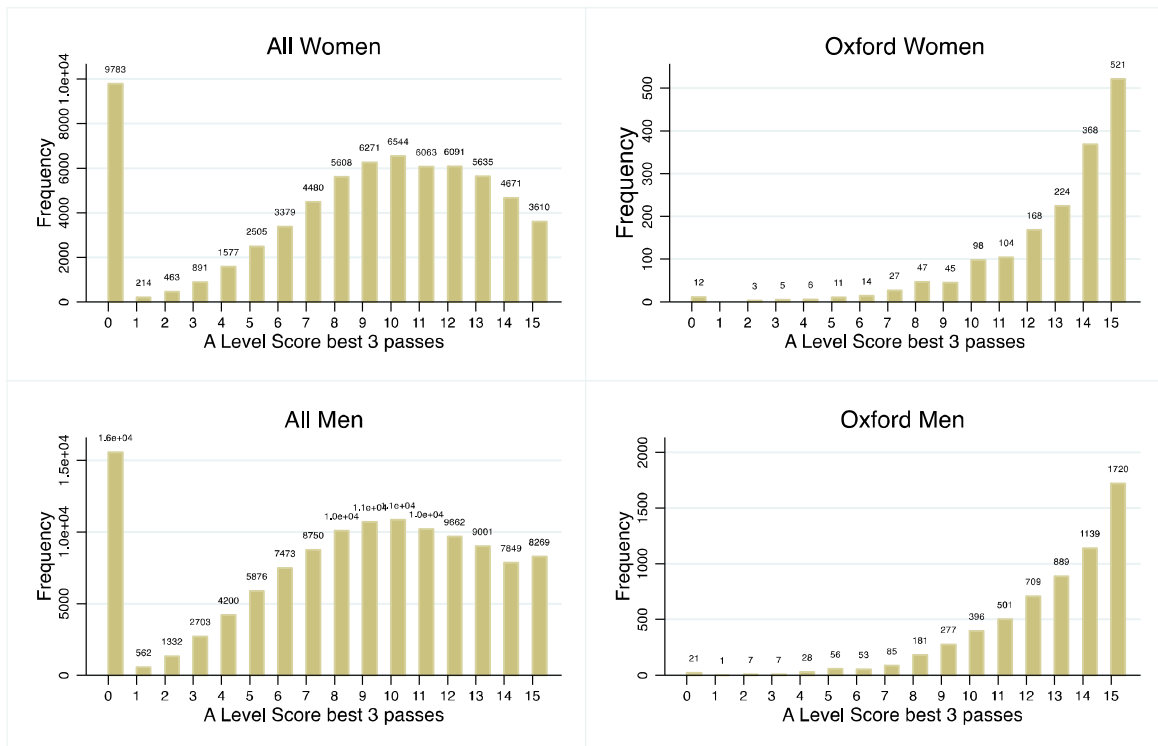
Notes: Estimations also include year and college fixed effects. Robust standard errors are

Figure 1
Proportion of Undergraduate Women
University of Oxford: 1930 - 2016



Notes: The red vertical lines indicate years when colleges changed from uni-gender residence to co-residence. The number next to each line indicates the number of colleges that changed to co-residence in that year.

Figure 2
A Level Score Best 3 Passes First Enrolled 1973-74



Source: Universities' Statistical Record
Notes: A = 5, B = 4, C = 3, D = 2, E = 1

Figure 3
Estimated Effect of Coresidence on the Proportion of Female Faculty
Formerly Women's Colleges

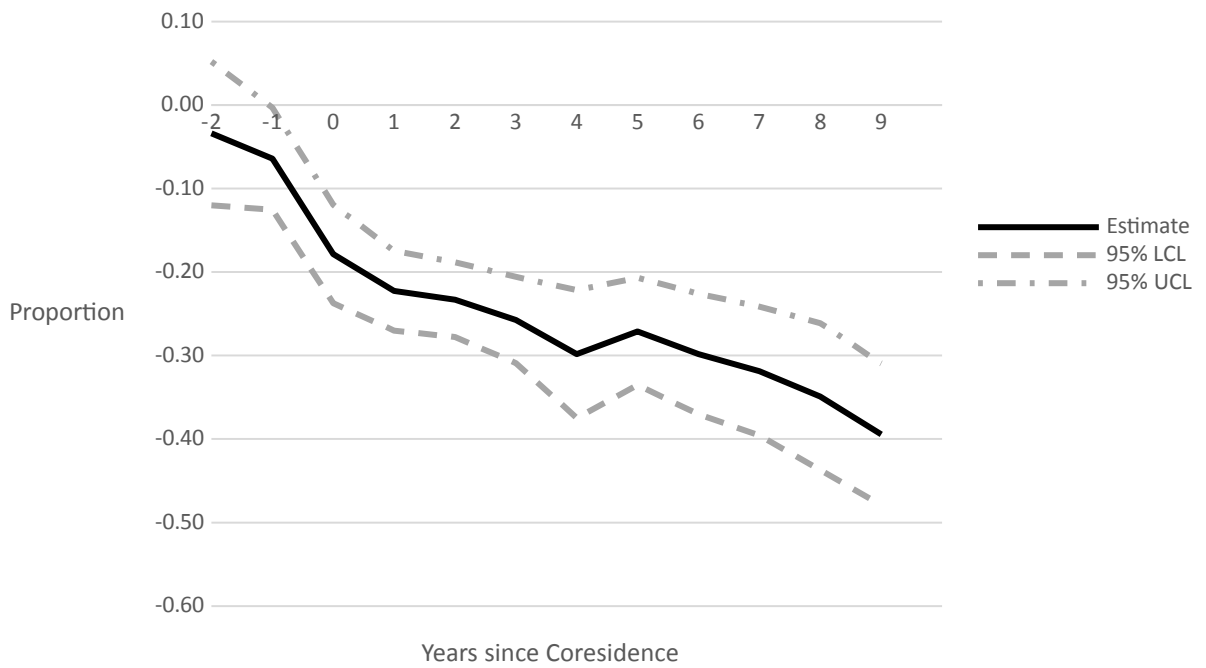


Figure 4
Estimated Effect of Coresidence on the Proportion of Female Faculty
Formerly Men's Colleges

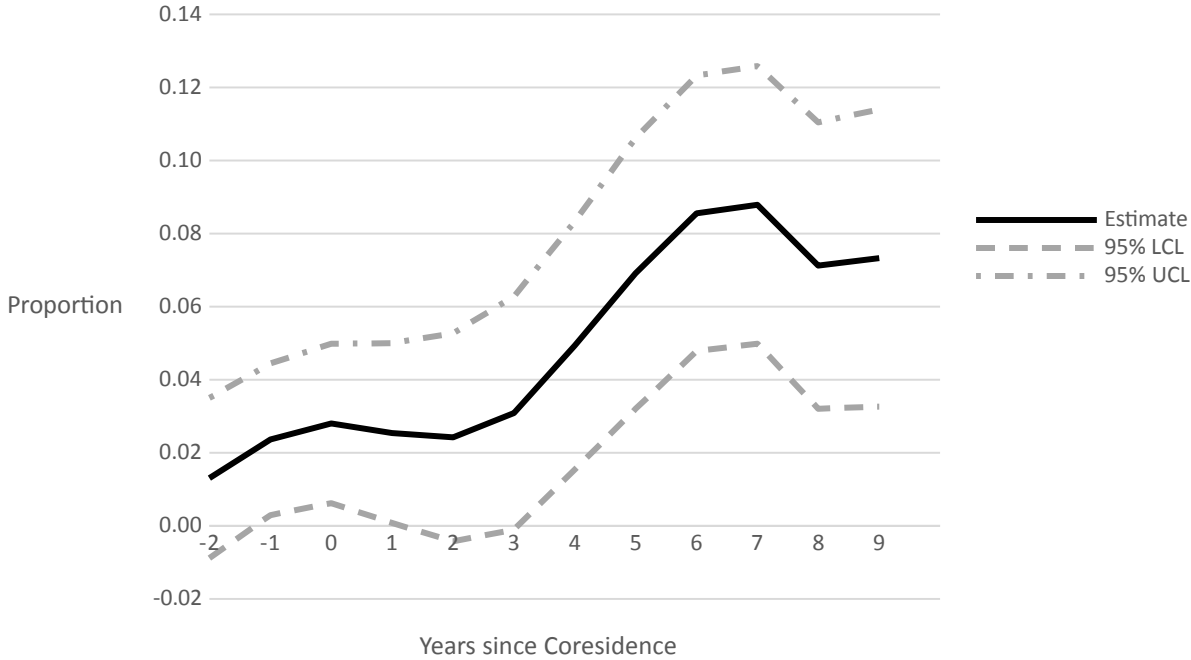


Figure 5
Estimated Effect of Coresidence on the Norrington Ranking
Formerly Women's Colleges

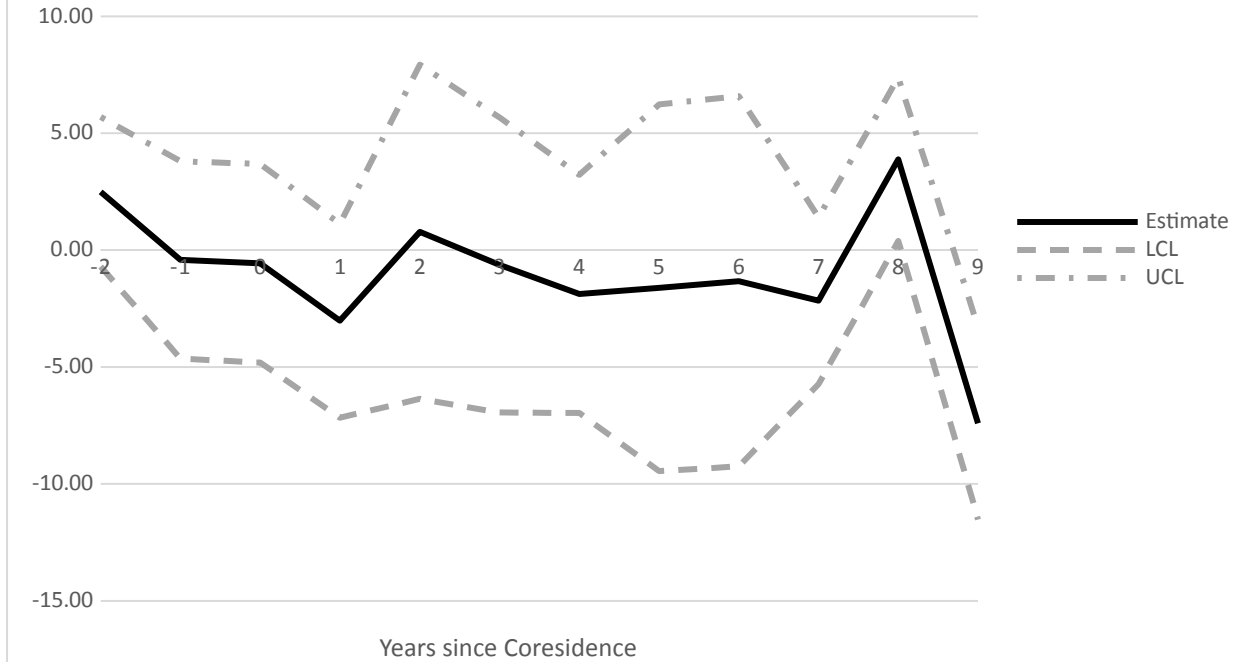
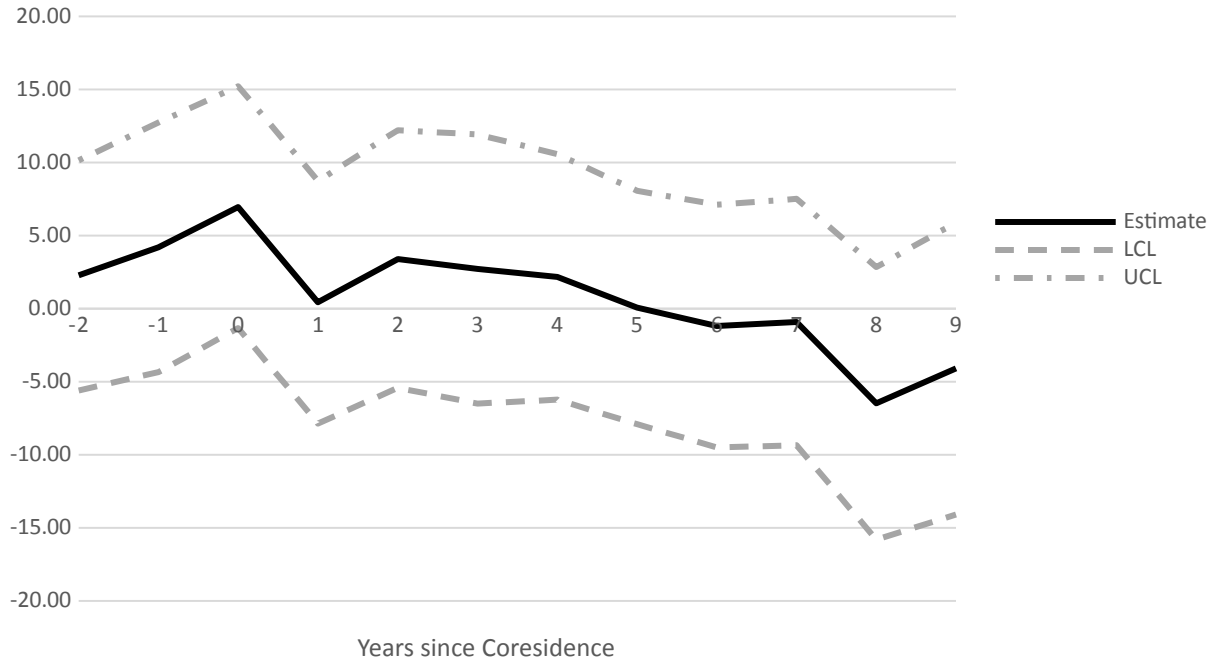


Figure 6
Estimated Effect of Coresidence on the Norrington Ranking
Formerly Men's Colleges



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Appendix

Table A1
Ordered Probit Estimates of Determinates of Norrington Rankings

Variable	(1)	(2)
Percent Female Faculty	-0.462 (0.393)	-0.297 (0.401)
Coresidence	-0.771 *** (0.183)	-0.483 ** (0.198)
Coresidence × Originally Female College	0.738 ** (0.322)	0.355 (0.340)
Male Head of College	-0.173 (0.142)	-0.154 (0.143)
Not coresident in 1974 x I(Year ≥ 1974)	-	0.266 (0.284)
Not coresident in 1974 x I(Year ≥ 1974) × Originally Female College	-	1.091 *** (0.268)
pseudo R-squared	0.0856	0.0878

Notes: Estimations also include year and college fixed effects. Robust standard errors are presented in parentheses. One, two and three asterisks indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table A2**Fractional Logistic Regression Estimates of the Determinates of Percent Women Faculty**

Variable	(1)	(2)
Coresidence	4.482 *** (0.721)	2.883 *** (0.427)
Coresidence × Originally Female College	-8.690 *** (0.628)	-6.993 *** (0.462)
Male Head of College	-0.340 *** (0.107)	-0.341 *** (0.107)
Not coresident in 1974 x I(Year ≥ 1974)	-	11.698 *** (0.672)
Not coresident in 1974 x I(Year ≥ 1974) × Originally Female College	-	- 35.172 *** (0.901)
pseudo R-squared	0.3697	0.3711

Notes: Estimations also include year and college fixed effects. Robust standard errors are presented in parentheses. One, two, and three asterisks indicate statistical significance at the 10%, 5%, and 1% levels.

