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Elite Higher Education, the Marriage Market and the Intergenerational Transmission of Human Capital

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Elite Higher Education, the Marriage Market and the Intergenerational Transmission of Human Capital*†

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Abstract

We use administrative records on university applicants, their spouses and their children to estimate the marriage market and intergenerational effects of being admitted to a more elite university-program, i.e. a program that is both objectively more selective and subjectively more preferred by the applicant. We exploit unique features of the Chilean university admission system which centrally allocates applicants based on university entrance scores to identify causal effects using a regression discontinuity design. Moreover, the Chilean context provides us with the necessary data on (completed) marriage and fertility decisions and with measures of spouse and child quality. We investigate the effect of admission to a more elite program on three sets of outcomes. First, we find that it does not affect the likelihood of marriage or of having a child. Second, being admitted to a higher ranked program has substantial effects on spouse quality, but only for female applicants. Their husbands perform 0.2 standard deviations better on the admission test and are 10 p.p. more likely to have been admitted to a top university. Also, females are more likely to have husbands whose mother is college educated and working (by 12 p.p.), and whose fathers are in high ranked occupations (by 21 p.p.). Third, children of both male and female applicants admitted to a more elite program perform 0.1 standard deviations better on a national standardized test. Making use of data on child investment, our results suggest important resource effects for men, while for women results are consistent with genetic endowment effects.

JEL-Classification: I23, I24, J12.
Keywords: Assortative mating, child quality, elite higher education, intergenerational mobility, returns to education quality, regression discontinuity design, Chile.

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1 Introduction

The longrun effects of elite higher education on individuals and on society as a whole are widely debated among researchers, policy makers and the public. The widespread interest in the subject derives from the fact that in many countries higher education systems are characterized by rather extreme quality differences between the best and the worst schools and the observation that the countries' elites often come from a very limited number of top universities. Despite the attention that this issue attracts, the empirical evidence on which the surrounding debates have to rely is still rather slim.

Evidence is particularly scarce with respect to questions regarding the impact of elite education on individuals' family formation and fertility decisions. We currently know very little about how the quality of higher education influences an individual's opportunities in the marriage market and what it implies for the number and 'quality' of her/his children. This is an important gap in the economic literature, since decisions regarding marriage and children are arguably among the most crucial lifetime decisions. Investigating whether and to what extent the quality of the higher education experience matters for these outcomes is therefore paramount for understanding the role of the quality of higher education in determining individuals' longrun wellbeing. At the same time the issue is highly relevant also from a societal point of view. Who marries and has children with whom is an important determinant for (household) inequality and its transmission across generations.

There are good reasons for why the quality of the attended educational institution might affect an individual's marital chances and decisions. First, it crucially affects the social environment and pool of potential partners at an age at which many partnerships are formed. Second, it can affect the individual's attractiveness in the market (via signalling ability, social status, labor market potential etc). Also there is ample anecdotal evidence which suggests that marriage market considerations play an important role in students' educational choices. For instance, top universities in the US explicitly advertise to prospective students the increased probability of finding a high-quality spouse that comes with the admission to their institutions.[1] If the admission to a better university-program helps applicants in finding a better partner, then this should also have direct effects on the genetic endowment of their children. Of course, applicants' children should also benefit more indirectly from a better partner and from the better education of the applicant him/herself. This may happen through higher income, via a more valuable social network or simply through better parenting skills.

This paper analyzes the role of elite higher education in individuals' family formation decisions and in the intergenerational transmission of human capital. In particular, we first show that the admission to a more elite program neither has an effect on the likelihood to get married nor on individuals' fertility decisions (including the number and timing of children). On the other hand, we find that female applicants find husbands of substantially higher 'quality' upon admission to a more elite university-program.

[1]See the article "Tigers in love" by Hillary Parker, *Princeton Alumni Weekly*, February 3, 2010, and the post "In defense of 'sketchy' grad students", *The Unofficial Stanford Blog*, July 30, 2011. Also, Gregory Mankiw refers to Harvard University as "the nation's most elite dating service", see the article "A Guide to Top-Down Dating" by Charles Wells, *The Harvard Crimson*, August 20, 2009. Finally, there is an increasing number of dating websites designed exclusively for the purpose to help students from top universities to find partners from top universities, such as "Ivy Date" (Ivy Leagues schools, MIT, Stanford, Oxford, Cambridge and LSE), "nChooseTwo" (Harvard, MIT and BU), "Date My School", "Date Harvard SQ", etc, see the compilation of dating websites provided by *Flyby* of *The Harvard Crimson*, on May 2, 2011.

Moreover, for both female and male applicants we find strong positive effects on the 'quality' of their children.

Estimating the longrun effects of admission to a more elite university-program is challenging for two reasons. First, it requires a context which allows to disentangle the causal effect of elite university-programs from the selection of particular types of students into those programs (e.g. high ability, privileged background etc). The second difficulty consists in being able to match university applicants with longrun data on their spouses and children and in the availability of measures for spouse and child 'quality'. The Chilean context allows us to overcome both obstacles. On the one hand, the features of the university admission system in Chile allow us to cleanly identify causal effects. This system centrally allocates applicants based solely on their university admission score and their preference ranking over university-programs. The allocation of students to university-programs honors higher scoring students' requests subject to pre-established slot constraints. We exploit this setting to implement a regression discontinuity approach which compares applicants who just scored above the cutoff to the higher ranked university-program with those who just missed the threshold.

The second important advantage of the Chilean context is the availability of the necessary data on marriage and fertility outcomes as well as the existence and availability of suitable measures of spouse and child 'quality'. In particular, we digitized archival records containing administrative data on university applicants from 1990 to 1993, whose marriage and fertility decisions are completed. Moreover, we supplement these data with information from more recent cohorts (applicants in 2001/02), for whom we have more detailed data on the family background of the applicants and spouses. Making use of individuals' national identification number, we had applicants matched with information on their spouses and children based on administrative marriage registry data from the Chilean Ministry of Justice.

Our objective of evaluating the impact of being admitted to a more elite program on spouse quality requires the availability of appropriate quality measures. Ideally, such measures should satisfy the following two properties: i) they should capture the characteristics that partners care about most, and ii) they should be predetermined with respect to the formation of the couple (marriage), so that they are not influenced by joint decisions of the couple. The two main measures of spouse quality that we use in this paper are spouses' performance on the national university entrance test and their university admission outcomes. In addition we also use spouses' family background (such as type of high school and the education and occupation of the spouses' parents) for younger cohorts for whom this information is available.

These measures satisfy both of the desirable properties. First, our quality measures directly measure an individual's ability (admission test score) and social status (family background, admission outcomes). Moreover they also capture an individual's labor market potential, since the latter depends to a large degree on ability, education and social networks. All these spouse characteristics are aspects that individuals have been shown to care about (see, among others, Fisman, Iyengar, Kamenica, and Simonson (2006) and Lee (2015)). Second, the vast majority of individuals sit the university entrance test between age 18 and age 20. Since at that age only very few individuals are already married, entrance test scores and admission results can be considered predetermined (of course, family background is predetermined as well). This important property distinguishes our variables from potential alternative measures like labor market or health outcomes, which typically depend on joint decisions of the couple (for instance, one partner might sacrifice her/his own career in favor of the other). Finally, observe that the rates with which females and males apply to university are roughly the same. Thus, our quality measures are equally available for both sexes, which is particularly useful for comparisons across gender.

The Chilean context also provides us with quality measures for applicants' children. In particular, in Chile children have to take standardized cognitive tests in school, which consist of a mathematical and a verbal part. Moreover, we also have data on the type and quality of the schools which applicants' children attend. We use this latter variable as a proxy for applicants' (monetary) investment into their children, to shed light on the mechanisms behind the intergenerational effects.

Since the goal of this paper is to estimate the longrun effects of being admitted to a more elite university-program, it is important to carefully specify what we mean by 'more elite'. In our context, the meaning of 'more elite' (or equivalently also 'higher ranked') is twofold. On the one hand, it refers to the fact that the program is objectively more selective (i.e. the admission cutoff is higher). On the other hand, it means that the program is subjectively more preferred by the applicant. In our estimation, we focus on applications to the top five universities. Thus, the higher ranked university-programs are also clearly more elite in the colloquial sense of the term; this interpretation would be more difficult to justify if we considered also university-programs towards the bottom end of the quality distribution.[2] The difference in peer quality experienced by applicants just admitted to the more elite program (compared to those who just miss the cutoff) is about half a standard deviation in terms of the test score distribution.

In this paper we focus on three sets of results. The first set of results concerns the effect of being admitted to a higher ranked program on individuals' marriage and fertility decisions. The direction of these effects is a priori unclear. The admission to a more elite program implies that the applicant is more likely to meet with more high quality potential partners (peers and people in their social networks). On the other hand, the final marriage probability depends on the value that individuals assign to the possibility of remaining single. If the value of this option is sufficiently low, individuals below the cutoff will sooner or later lower their standards and accept lower quality partners available to them. Similarly, the admission to a more elite program increases career possibilities and thus the opportunity costs of children. But if it also increases the likelihood of finding a higher quality and/or higher earning spouse, the individual might even be more likely to have children. Our results show that the admission to a higher ranked program does not affect applicants' likelihood to get married or to have children nor the timing or number of children.

Our second set of results refers to the question if the admission to a higher ranked program has effects on the 'quality' of the spouse. We find that women who are admitted to a more elite program have husbands who perform up to 0.2 standard deviations better on the standardized admission test. Also their husbands are up to 10 percentage points more likely to having been admitted to a top university. We do not find any effects in terms of these two measures of spouse quality for male applicants. For younger cohorts we also have data on spouses' family background. We show that being admitted to a higher ranked program has positive effects in terms of spouses' family background for women, but again not for men. In particular, women admitted to a higher ranked program are significantly more likely to

[2] In Chile, all top five universities have at least 20% of students with very high scores on the admission test (i.e. above the 90th percentile). The average test scores of the two top universities (Pontificia Universidad Catòlica de Chile and Universidad de Chile) are about two standard deviations above the lowest ranked universities.

have husbands whose mother went to college (by 12.5 pp) and participates in the labor force (by 12 pp) and whose fathers have high ranked occupations (by 21 pp).

We also provide evidence on the mechanisms through which these marriage market effects might accrue. Making use of data on whether an applicant's spouse is from the same university(-program) or not, we find that for less than 20% of applicants the effect might have been driven by the university as meeting place (less than 6% have a spouse from the same program). While this suggests that universities as meeting places are part of the story, back-of-the-envelope calculations show that the estimated effects cannot fully be explained by individuals marrying someone from their own university(-program). Thus, other mechanisms such as changes in the social networks that go beyond the change of the direct peers in the program/university and/or the fact that the applicant becomes more attractive upon admission to a more elite university-program, must contribute to the result as well. In principle, one reason for becoming more attractive might be a higher labor market potential. However, this story seems to be at odds with the fact that we find important marriage market effects only for women, who have a weak attachment to the labor force, while we do not find evidence of marriage market effects for men.

A remarkable aspect of the results on spouse quality is the asymmetry in the effects between men and women. While somewhat surprising at first sight, we show in a simple model in the Online Appendix that this asymmetry is consistent with the fact that females have been found to care more about their partners' ability and social status than males (see among others Fisman, Iyengar, Kamenica, and Simonson (2006) and Lee (2015)). Moreover, this asymmetry acquires particular interest when looked at from the following perspective. In most OECD countries, women attend college at higher rates than men. Since labor force participation rates of college educated women are substantially lower than those of their male counterparts, it is difficult to rationalize such high participation rates through labor market returns only. Instead it seems more likely that there must be other important forms of returns. Our results lend support to one important hypothesis put forward by Goldin (1997), according to which marriage market returns are particularly important for female students (see also Goldin (2006), Goldin, Katz, and Kuziemko (2006) and Bailey and Dynarski (2011)).[3]

The fact that women's marriage market returns to (the quality of) education are both sizable and likely not driven by labor market success also has implications for a wider set of prominently discussed issues that surround the question of how individuals take their educational decisions. In particular, our results suggest that, in particular in the case of female applicants, it might not be advisable to rely only on individual labor market outcomes when trying to infer whether or not the applicants have been subject to constraints in their educational decisions (lack of information, credit constraints etc).

The third set of results that we report show that the admission to a higher ranked program affects not only the applicants themselves, but instead also has intergenerational effects. Our analysis shows that there are important effects on the children of both female and male applicants. Children of applicants who are just admitted to the higher ranked program perform 0.1 standard deviations higher on a national standardized test than the children of those applicants who just miss the threshold.

To shed some light on possible channels, we estimate the causal effects of elite education on child

[3]Our results support this hypothesis under the assumption that one can generalize from the existence of marriage market returns to education 'quality' to marriage market returns being important also in the quantity dimension.

investment. In particular, we use data on one of the most important (monetary) inputs into child quality, namely the type and quality of children's schools. In Chile, private expenditures on pre-primary, primary and secondary education are extremely important, tuition fees are high and private schools are considered best in terms of quality and associated social status.

We find that the admission to a more elite university-program leads to higher investments into children for male applicants, but not for female applicants. This suggests that for male applicants the child quality effects are due to a resource effect. This hypothesis is further strengthened by the fact that, in the case of male applicants, we do not find evidence of genetic endowment effects, since the spouses of applicants on either side of the admission cutoff are of the same quality (as are the applicants themselves). The genetic endowment effect might be more important in the case of female applicants, whose spouses' ability strongly improves with the admission to a higher ranked program. The fact that, for females, we do not find any effect on one of the most important monetary expenditures in child quality indicates that in their case resource effects play a less central role. Thus, while we find similar intergenerational effects for male and female applicants, the underlying mechanisms appear to be quite different.

We believe that the lessons learned from the Chilean case can provide important insights also for other countries with strongly vertically differentiated university systems (e.g. France, Mexico, Turkey, United Kingdom, United States, and many others). Countries such as the Unites States are similar to Chile also in other important dimensions, for example in terms of a central role of private expenditures at every stage in the education system. Tuition fees of Chilean universities are among the highest in the world and similar to the United States when adjusted for purchasing power. Also in terms of the degree of inequality both countries are at the higher end of the spectrum (for further details, see Section 2.1).

This paper contributes to several different strands of the literature, as discussed in more detail below. First, our paper is directly relevant for the literature on the longrun effects of the quality of education. In particular, there is very little evidence on the causal effects of the quality of education on family formation decisions and intergenerational outcomes.

Second, this paper is related to the literature on the economics of match/marriage formation. We show that education and the quality of educational institutions are important in determining who matches with whom. Third, our results are relevant for the literature on determinants of fertility decisions by analyzing the effect of education quality on completed fertility, timing of children and number of children.

Lastly, this paper informs the 'intergenerational mobility' literature. It analyzes causal mechanisms behind intergenerational correlations which are particularly relevant in the upper part of the income and ability distribution and for which there is little evidence up to date.

Related Literature

The literature on the longrun effects of the quality of education is still rather slim, despite the fact that quality differences among schools and among universities can be enormous (see e.g. Hoxby (2009) for evidence on strong vertical differentiation in the US university system). Notable exceptions, which estimate the effects of university quality in the labor market and/or in terms of academic outcomes, are the seminal papers by Berg-Dale and Krueger (2002), Black and Smith (2004), Black and Smith (2006), Dale and Krueger (2011) and more recent papers making use of regression discontinuity designs by Cohodes and Goodman (2014), Goodman, Hurwitz, and Smith (2015), Hoekstra (2009), MacLeod, Riehl, Saavedra, and Urquiola (2015), Saavedra (2009) and Sekhri and Rubinstein (2010). Also see the review by Deming, Goldin, and Katz (2012) and Deming, Yuchtman, Abulafi, Goldin et al. (2014) on the effects of different types of post-secondary education such as for-profit institutions versus non-selective public institutions. The following recent papers use the same methodological approach to estimate effects of *school* quality on academic outcomes, Abdulkadiroglu, Angrist, and Pathak (2014), Clark (2010), Duflo, Dupas, and Kremer (2011), Jackson (2010), Jackson (2013), Pop-Eleches and Urquiola (2013) and Dobbie and Fryer (2014) and on parental valuation, see Black (1999).[4] What differentiates our paper from this literature is its focus on intergenerational and marriage market effects.

Even though in all societies the family is the most important social institution and the decision whom to marry is arguably one of individuals' most important life-time decisions, our knowledge about how education impacts its formation is still limited (notable exceptions on marriage markets are Becker (1973), Becker (1974), Goldin (1997), Goldin (2006) and Goldin, Katz, and Kuziemko (2006)). In terms of elite education, Goldin and Katz (2008) document career and family life cycles of three cohorts of Harvard graduates. Further papers analyzing the effect of education on marriage market outcomes are by Chiappori, Iyigun, and Weiss (2009) and Chiappori, Salanie, and Weiss (2011), who adopt a structural approach to provide evidence on the marital college premium. Oreopoulos and Salvanes (2011) estimate returns to years of schooling in terms of the probability to be married.[5] With respect to this literature, the novel contribution of our paper is to identify causal effects of elite higher education on individuals' marriage market outcomes, including the 'quality' of the spouse, and to provide evidence on intergenerational effects.

Lastly, another important related literature is the one on intergenerational mobility. In past decades, documenting the persistence between parents and children's outcomes has been an active area of research. For studies on the intergenerational correlation of earnings, see for example Solon (1992) and Bjoerklund and Jaentti (1997), and on the intergenerational persistence of education, see for example Chevalier, Denny, and McMahon (2009) and Machin, Salvanes, and Pelkonen (2012). A recent paper by Chetty, Hendren, Kline, and Saez (2014) documents important features of intergenerational mobility in the United States and shows that intergenerational mobility varies substantially across areas within the U.S. While the authors explore the factors correlated with upward mobility, they do not causally identify mechanisms that determine mobility.[6]

More generally, evidence on causal mechanisms behind the intergenerational transmission of income and education is limited. The papers that analyze the causal effect of parents' education on children's education make use of changes in educational policies, such as compulsory schooling laws (see, e.g.,

[4]Examples of papers which analyze the effect of school quality making use of assignment lotteries are Cullen, Jacob, and Levitt (2006), Deming (2011) and Deming, Hastings, Kane, and Staiger (2014) who analyze effects on academic performance and behavioral outcomes such as crime. Gould, Lavy, and Paserman (2004) make use of a natural experiment on Ethiopians in Israel to estimate the effect of the early schooling environment on the performance in high school. Kirkeboen, Leuven, and Mogstad (2014) use a regression-discontinuity approach in the context of higher education to examine the effect of field of study.

[5]Other papers show that marriage market considerations play a role in individuals' educational decisions, see, e.g., Attanasio and Kaufmann (2012) and Lafortune (2012).

[6]A recent paper by Olivetti and Paserman (2013) estimates intergenerational correlations of earnings and correlates changes in those measures with changes in degrees of assortative mating.

Black, Devereux, and Salvanes (2005) and Oreopoulos, Page, and Stevens (2006)). Black and Devereux (2011) provide a detailed survey of this literature.[7] Two recent papers which analyze the causal effect of parents' income on children's income or cognitive achievement are Lefgren, Lindquist, and Sims (2012) and Dahl and Lochner (2012) making use of an instrumental variable approach.

With respect to this literature our novel contribution is twofold. First, we identify substantial intergenerational effects for individuals in the upper part of the ability distribution. The existing literature, which focusses on the effect of changes in compulsory schooling laws or on the opening of colleges, for example, identifies results for individuals further down the ability distribution.

Second, our paper differs from the rest of the literature on intergenerational effects also in terms of the identification strategy. To the best of our knowledge, our paper is the first to identify intergenerational effects by comparing the children of individuals just admitted to a higher-ranked university-program to those that just miss the threshold. Notice that the discontinuities that we are using are present in the university allocation process every year and thus we do not need to rely on a historical policy reform.

2 Data Description and Institutional Details

2.1 Institutional Background

Higher Education System in Chile

Many countries feature university systems that exhibit a large degree of heterogeneity in the quality of their institutions, with highly selective 'elite' institutions at the top of the quality distribution and less selective institutions at the bottom (see, for example, France, Mexico, Turkey, the United States, the United Kingdom etc). Chile is one such country.

In Chile, the two top-ranked and most elite universities are Universidad de Chile (UC) and Pontificia Universidad Catolica de Chile (PUC). These two universities are also among the oldest and most recognized educational institutions in Latin America. Students at these two institutions perform –on average– two standard deviations higher on the university entrance test than students at the lowest ranked universities. Table 1 shows that in terms of the fraction of high performing students, the top two universities have more than 50% of students scoring higher than 700 points (equivalent to the 90th percentile in the test score distribution). The other three universities ranked among the top five in Chile in the 1990s still have more than 20% of students scoring above the 90th percentile, while the worst universities only have around 5% of high performing students.[8]

For the analysis of causal effects of the admission to a higher ranked university-program, it is crucial

[7] Also related is the literature which investigates the effect of parents' schooling on children's health outcomes. For example, Currie and Moretti (2003) and McCrary and Royer (2011) estimate the effect of years of schooling of the mother on fertility and children's birth weight and prematurity. While the former find important effects of women's college education on infant health, the latter find small effects of changes in compulsory schooling laws which affect women with few years of schooling. Further papers which analyze the relationship between schooling and fertility are Black, Devereux, and Salvanes (2008) and Duflo, Dupas, and Kremer (2015). A recent paper by Clark and Bono (2014) shows that elite school attendance in the UK decreased women's fertility, making use of instrumental variables methods that exploit the school assignment formula.

[8] The scale of the entrance test is between 0 and 800 points with an average of about 600 points for university applicants, who need to achieve at least 450 to be eligible to apply.

to understand the allocation process of students to universities/degree programs of different qualities. We analyze applications to the so-called 'traditional' (public and private) universities, which are organized in the Council of Rectors of the Chilean Universities (CRUCH). CRUCH universities are more prestigious than non-member universities. According to the OECD report (2009) on tertiary education in Chile, "Virtually all young people in Chile, given a free choice, would rank their preferences as follows: (1) CRUCH universities (2) private non-CRUCH universities (3) professional and technical institutions. This ranking reflects institutions' relative prestige and perceived potential to boost future income [...]". Thus basically everyone who plans to attend university applies through the centralized system.

This dominant position of CRUCH universities was even more pronounced at the beginning of the 1990s, when the applicants who compose our main sample applied to university (cohorts 1990-1993). The opening of new (and thus non-traditional) private universities had only been allowed during the late Pinochet regime (second half of the 80s). Only few of the private universities which arose in that period even had the goal to offer quality services (many lacked any form of accreditation). Those who did try to adopt a quality oriented strategy were too young to have acquired a solid reputation. Therefore, at the beginning of the nineties, private universities outside CRUCH only attracted a small minority of students overall (around 10% according to the OECD report (2009)) and even less among students who are good enough to apply to the country's top universities.

Admission to CRUCH member institutions and the allocation of entering students to degree programs within the CRUCH system is decided in a centralized procedure. This centralized system is administered by DEMRE, a unit of the Universidad de Chile that acts in the name of all CRUCH universities. The basic qualification for admission to the CRUCH universities is the school-leaving certificate. In addition, applicants have to sit a university entrance test, the so called Prueba de Selección Universitaria (henceforth, PSU), which is similar to the SAT test in the US. The general PSU consists of a verbal and a mathematical part. Depending on the degree programs that students intend to apply to, they may also have to sit more subject specific tests. Even though it is not necessary for entry to technical and certain professional institutions, a large majority of school-leavers take the PSU test, since it also serves as a signal for potential employers. Admission to CRUCH institutions is confined to those school-leavers who achieve a PSU score above a certain threshold (450 points out of 800). After learning their score, students who score above this minimum apply through DEMRE for slots at CRUCH universities. In their applications they may list up to eight options in the order of their preference. Each option has to specify a degree program in a specific university. In this respect, the Chilean university system is organized like the European system. That is, students apply for a specific degree program when entering university. For the interpretation of our results, it is important to point out that the constraint of being allowed to list only eight degree programs is hardly binding for anyone. Indeed, close to 99% of applicants are admitted to their first to fifth choice, 99.8% of applicants appear on at most 6 wait lists. There is basically no applicant who appears on 8 wait lists (less than 0.01%).

Once students have submitted their application, including the list of their eight choices, DEMRE proceeds to allocate students to the available slots, which have been announced beforehand. The allocation is determined by a Gale-Shapley mechanism and is based solely on students' submitted preference rankings and their admission scores, which are weighted averages between the PSU entrance test score and the school-leaving grade (NEM, Notas de Enseñanza Media). Students are admitted to their most preferred university-program for which their score is high enough. Applicants who fail to make the cut for a specific degree program are waitlisted. Program cutoffs are thus determined through the allocation process. Consequently, they are unknown at the time of application and cutoffs vary considerably from year to year (as we explain in more detail in Section 3). For later reference we point out that the allocation mechanism is such that submitting a non-truthful ranking of the eight options can only hurt but never benefit the applicant.

We provide further background facts on Chile in the Online Appendix.

2.2 Data and Descriptive Statistics

2.2.1 Data

We digitized archival records containing administrative data on university applicants from the early 1990s.[9] In particular, we use data on four cohorts of applicants (1990 to 1993), who are in their forties nowadays and who have basically completed their marriage and fertility history (as shown in Section 4.1). We have detailed information on applicants' admission scores and on the admission decision; that is we know to which programs individuals have been admitted or waitlisted.

Making use of individuals' national identification numbers, applicants were matched with information on their spouses and children using administrative marriage registry data from the Chilean Ministry of Justice. As outcomes for the spouses we use their performance on the national university entrance test as well as whether and to which university they were admitted. In terms of test score and admission data for the spouses, we use digitized and digitally available data from 1989 to 2006.[10]

As outcomes for the children, we use their performance on a mandatory standardized cognitive test taken in fourth grade, which contains a math and a verbal part. We have data on the so-called "SIMCE" test for 2005 until 2012. Furthermore, in 2005 to 2008 those data include information on the school the child attended (i.e. the school identification number) and we can therefore match our data with data on the type (private, private subsidized or public) and quality of the school attended (i.e. in terms of ability and family background of peers).

We supplement our spouse quality results for our main sample (i.e. for applicants in 1990-1993) with additional results and robustness checks for applicants from the years 2001-2002. The main reason for resorting to these later cohorts is that in addition to all the information that we have for the older cohorts, for them we also know the complete preference rankings over the (up to) eight degree programs that they list in their applications and we have more detailed information about their family background.

[9] During Pinochet's military regime from 1973 to 1989, the university system experienced profound changes (see OECD report (2009) on higher education in Chile). They affected in particular the best and by far largest university at the time, the Universidad de Chile (UC). For example, UC's Presidents were designated by the Military Regime and UC was completely restructured. Provincial campuses were separated, cojoined with other provincial campuses and designated as separate universities. Since the university landscape thus changed profusely during this time and the application data before 1989 does not contain national identification numbers necessary for our data merges, our analysis focuses on the time after Pinochet's dictatorship.

[10] As discussed in the background section, divorce is very uncommon in Chile. In our date we do not observe whether a couple divorced, but we do observe whether an individual remarried. In the rare case of remarriage we use the first spouse of the individual (less than 4% of individuals remarry) and show that results are robust to excluding those who remarry.

2.2.2 Descriptive Statistics

Tables 2 and 3 present descriptive statistics of our data on university applicants applying to a program at one of the top five universities in 1990 to 1993 (which is the case for 51% of applicants). In our analysis we focus on first-time applicants aged 18 to 20 who apply to university shortly after finishing high school. This is true for the large majority of applicants (87%). Thereby we exclude applicants who –for example– start working after high school and then return to university later on, since for them it is more likely that they have already gotten married before applying to university.

The first two columns of Table 2 display summary statistics for this sample of applicants, for women and men respectively. Columns (3) and (4) show results for the matched sample, i.e. restricting the sample of (female and male) applicants to those who are married and can be matched to their spouse's test scores, and the last two columns present results for the sample of matched applicants in close proximity of the threshold (using a bandwidth of six score points above and below the threshold, which is the largest bandwidth for which we will present our main results).

The average age of our sample is 41.5. 70% of the male and female applicants are married by that age and 90% of those who are married have children. As we show in Section 4.1, the individuals in our sample have basically completed their marriage and fertility history at that age. The average number of children of the (male and female) university applicants is two, while the age at first birth is around 29 for female and 30 for male applicants.

A comparison of columns (1), (3) and (5) shows that characteristics of female applicants are very similar in the full sample, matched sample and the matched marginal sample (similarly for male applicants comparing columns (2), (4) and (6)). The age is basically the same and also the admission scores (total PSU score and both math and verbal scores) are very similar across different samples (the matched sample is scoring slightly higher, while the marginal sample is extremely similar to the full sample in terms of characteristics). A comparison of male and female applicants shows that male applicants score higher on the university admission test, in particular on the math part of the test (similar gender differences have been shown for the SAT math scores in the US).

Since one of the main objectives of the paper is to analyze the effect of admission to a more elite program on spouse quality, we match the sample of married university applicants with information on their spouses' test scores and university admission. Depending on the sample period we can match between 62% (1990-1993) and 73% (1993) of the spouses of female applicants; the corresponding numbers for male applicants are between 80% and 82%. The figures of 73% for females and 82% for males are likely to be not far from the achievable upper bound on the match rate. To see this, notice that there are two reasons for why we might not be able to assign a test score to a spouse: either the spouse has never taken the tests or she/he took it before 1989 (we have data on test scores between 1989 and 2006). Since males tend to have younger spouses, it is unlikely that male applicants from 1993 have a wife who took the test five years or more before them, i.e. before 1989. Thus 82% is likely to be close to the maximally achievable match rate. While for female applicants from 1993, it is somewhat more likely that they might have a spouse who took the test before 1989, also for them 73% is likely not far from the highest possible match rate. This follows from the fact that according to Chilean Census data (2002), 21.5% of college-educated women have spouses without any higher education (the corresponding number for males is 27%).

Table 2 shows that spouses score lower on average than the applicants themselves. This is due to the fact that applicants need to have scored a minimum number of points (450 out of 800) in order to be eligible to apply for university, while some of the spouses have scored below this threshold.

The other main outcome of interest is children's performance on a standardized test (see Table 3 for descriptive statistics). As mentioned above, women have completed their fertility by age 39, men by age 42. Between half and 57% of the female applicants have children who are old enough to have taken the mandatory standardized test in elementary school depending on the sample of applicants (i.e. 1990-1993 versus 1990-1991); for male applicants, the corresponding figures are 42% to close to half. Interestingly, the children of female applicants score about 6 points higher on both the verbal and math part of the test. Also it can be seen that the children of the university applicants score substantially higher than their peers at school. About 90% of the applicants' children attend a private (or subsidized private) school and about 83% attend a high socioeconomic status school (80% of the children of male applicants).[11]

3 Empirical Strategy and Description of the Treatment

3.1 Empirical Strategy

Identifying the causal effect of admission to a higher ranked university-program is challenging for well-known reasons. Individuals in higher ranked programs differ from individuals attending less selective ones. In general, their cognitive ability is higher, they come from a more privileged social background etc. These characteristics lead these individuals to have different outcomes, e.g. in terms of spouse and child 'quality', which makes it difficult to disentangle the causal effect of admission to a higher ranked program from the selection effect.

We address this challenge using a regression-discontinuity approach. In particular, we exploit the fact that the Chilean university admission system centrally allocates applicants based solely on their admission score and their ranking of the up to eight university-programs that they list on their applications. More specifically, the allocation mechanism is a Gale-Shapley mechanism, where the priority order is determined by the admission score. Starting from the individual with the highest admission score, applicants are assigned to the program they like most among all those programs in which there are still some slots available.

Two important observations on this allocation mechanism are in order. First, it is well known that under Gale-Shapley mechanisms individuals have no incentive to misrepresent their preferences. That is, the ranking of the eight programs that individuals list on their applications correspond to their true preference rankings over those programs. Second, the constraint that individuals may list only up to eight programs is essentially irrelevant since this constraint is almost never binding: about 99% of applicants are admitted to one of their first five programs and only 0.01% of applicants are not admitted to one of their first seven programs. We can thus safely assume that the (up to) eight programs that individuals list

[11] Schools are classified into five categories based on the socioeconomic composition of the children, from very privileged to less privileged. We combine the top two categories into an indicator for having peers of "high" socioeconomic background.

correspond to their (up to) eight top choices among those programs to which they believe they have any chance of being admitted.

The test score of the last individual admitted to a given program defines the cutoff score for that program. Since the cutoff scores are an outcome of the allocation process, they are uncertain from an ex ante point of view. In fact, the cutoff scores vary considerably from year to year (on average by about 12 points from one year to the next). This means that for applicants in close neighborhoods of the cutoff, the admission outcome is a random event. We exploit this fact with our regression discontinuity approach and base our analysis only on observations that are never further than 6 points from the cutoffs; in some specifications we only consider observations in a 2-point window around the cutoffs.

The above described allocation process yields a large number of quasi-experiments: For each program, an applicant can either be admitted to the higher-ranked program or not. Students with scores close to the cutoff score can be expected to be very similar, but they are treated differently depending on which side of the cutoff they end up. The treatment effect can therefore be measured by comparing the outcomes of the individuals in the upper neighborhood of the threshold with the outcomes of individuals in the lower neighborhood of the threshold.[12] Since around 160-170 programs are offered at the five top universities each year, the total number of cutoffs on which our analysis is based is 663 (for all four years from 1990 to 1993). To pool all cutoffs, we normalize the scores of applicants by the cutoff scores (i.e. we subtract the score of the last person admitted to a specific program from the scores of all applicants to this specific program). Thus an individual is admitted to the higher ranked program if her normalized score is positive and waitlisted for the higher ranked program if her normalized score is negative. Since scores are measured on a scale between 0 and 800 with two digits after the decimal point, the forcing variable is 'almost continuous'.

We estimate the following equation.

$$y_{ij} = \alpha_j + \beta \mathbb{1}_{\{s_{ij} \geq 0\}}(s_{ij}) + \delta s_{ij} + \gamma s_{ij} \mathbb{1}_{\{s_{ij} \geq 0\}}(s_{ij}) + u_{ij}. \tag{1}$$

Here y_{ij} indicates the outcome variable of interest, e.g. the quality of the spouse of applicant i who appears on the application list of program j. Since individuals can apply to multiple programs, a given individual i may appear multiple times, each time associated with a different j.[13] We therefore cluster standard errors at the individual level. Notice though that in practice this issue is of little relevance. Since we focus on very narrow windows around the cutoffs, instances of applicants who appear more than once in our data are exceptional cases.[14] s_{ij} is the admission score of individual i for program j, normalized by the cutoff admission score of program j. This variable assumes a negative value if and only if the individual's admission score falls short of the cutoff score for program j. $\mathbb{1}_{\{s_{ij} \geq 0\}}$ is an indicator function that assumes the value 1 if and only if s_{ij} is positive, i.e. exactly when individual i is admitted to program j.

The interpretation of the above equation is straightforward. An individual's admission score not only determines whether or not she is admitted to a program, but it is also a measure for the individual's

[12] See Hahn, Todd, and van der Klaauw (2001) and Imbens and Lemieux (2008) for overviews of the RD approach.

[13] For example, an individual who is admitted to her third choice, will appear as waitlisted for her first and second choice.

[14] The fraction of individuals who appear more than once is slightly more than 1%.

ability. Since in general we would expect higher ability individuals to match with higher ability spouses and to have higher ability children, we should allow spouse and child quality to depend directly on the individual's admission score (see Figures 1 and 2 and their discussion in Section 2.1). Therefore we control in our equation for individual's own score s_{ij}. In doing so we allow for different slopes on the two sides of the cutoff (δ below the cutoff and $\delta + \gamma$ above the cutoff). The constant α_j is allowed to depend on the program index j, in order to capture the idea that average spouse and child quality might differ across programs. Since our data refer to four different cohorts of applicants applying to university between 1990 and 1993, in the estimation of the above equation we include program-year fixed effects. Our hypothesis is that an individual's mating prospects change with the admission into a higher ranked program. Thus, we allow for the possibility that the outcome variable jumps at the admission threshold. The size of this jump is captured by the parameter β which is thus the parameter of interest.

When applying a regression discontinuity approach, a researcher has to deal with the question within which bandwidth around the cutoff to include observations in the estimation. On the one hand, including observations that are farther from the threshold yields more statistical power; on the other hand, the farther one moves away from the cutoff the more dissimilar the observations become on the two sides of the cutoff, thereby increasing the concern of selection. One of the crucial advantages of our setting consists in the fact that it allows for a simple solution to this tradeoff. The fact that we have many thresholds means that even if we consider only the few observations in a very close neighborhood of every cutoff, we still retain sufficiently many observations to obtain statistically reliable results. More specifically, we estimate the above equation using only observations that lie in a window of ±6 points of the cutoffs (the range of the admission score is 450 to 800 points). Moreover, we also report the results for fully non-parametric estimations which are based on observations that lie even closer to the cutoff. In these estimations we use for each program only the pair of the closest observations (one on either side of the cutoff), provided these observations lie within either ±4 points from the cutoff (in a more permissive specification), or within ±2 points from the cutoff (in the more restrictive specification). The estimation method that we apply in these cases essentially amounts to taking the difference in the outcomes (e.g. spouse score) of the two individuals on either side of the cutoff and then averaging over these differences (compare Duflo, Dupas, and Kremer (2011) who apply the same approach to test for ability peer effects in schools). The comparison of the results for the two estimation methods (linear model (1) vs the non-parametric estimation) will give a good sense of the robustness of our results. We will return to the robustness question also in more explicit terms in Section 4.2.3.

Before presenting the main results, we first test whether there is any evidence of manipulation in terms of who is admitted to the higher-ranked program. Table A.1 in the Online Appendix shows that there are no significant differences in terms of characteristics of applicants just above versus just below the cutoff and all coefficients are close to zero for the different bandwidths/specifications. In addition we show that also applicants' preferences over programs are balanced above and below the cutoff. In doing so we adapt an approach to our setting that is used in Jackson (2010). Jackson (2010) captures differences in preferences over schools by comparing the average test scores in schools which individuals on either side of the cutoff rank first in their applications. Since for the cohorts in our main sample (1990-1993) we do not observe the complete ranking of programs that they have submitted with their application, but only observe the admission outcomes we cannot apply the exact same strategy.[15] We explain the exact details of our adaption of the strategy of Jackson (2010) in the Online Appendix. The results in Table A.18 suggest that preferences are balanced for marginal applicants above and below the cutoff.

3.2 The Meaning of 'More Elite'

In this section we want to further clarify the exact definition/meaning of the treatment we analyze and our use of the expression 'more elite'. As explained above, our estimates measure what difference it makes for the longrun outcomes of applicants to score above the cutoff of a program as opposed to missing that admission cutoff. To be able to interpret these estimates, it is necessary to clarify what it means to miss the admission cutoff to a program. If an applicant fails to make the cutoff for a given program (Program A say), she will be assigned to another program (Program B say) that she has listed on her application. Given the allocation mechanism used to assign applicants to programs, it follows that Program B must be 'worse' than Program A in the following two senses. First, Program B must be a program that the individual has ranked below Program A in her application. Second, Program B must have a lower admission threshold.[16] While the selectivity of the programs (captured by the admission cutoffs) is a fully objective criterion, the second criterion according to which A dominates B, the applicant's preference ranking, is likely to depend also on applicant-specific idiosyncrasies (e.g. the fit between her talents and the programs' requirements). Thus, the treatment that we are studying is to move an individual from a given program into a 'better' program, where the latter program is both objectively more selective and subjectively more preferred by the individual.

The term 'more elite' that we are using throughout our paper should be interpreted in the sense of this treatment. That is, the statement 'Program A is more elite than Program B for an applicant' means that the Program A is higher ranked both in objective terms (selectivity) and in the applicant's preferences. The use of the term 'elite' in this context is justified by the fact that we focus on programs in the top-five universities, which are generally considered as the 'most elitist' ones (in the colloquial sense of elitist); this interpretation would be more difficult to justify if we considered also university-programs towards the bottom end of the quality distribution.

[15]The fact that for the cohorts 1990-93 we only observe admission outcomes means that we only know which programs each applicant has ranked above the program to which she/he has been admitted (i.e. every program where she/he is waitlisted), but we do not know how the individuals ranked those programs among themselves. Thus, we do not know which one was the top choice and so we must adopt a bounding procedure. However, we can apply the exact same strategy as Jackson (2010) to the cohorts 2001-2002 for which we have the complete program rankings that they have submitted with their applications. The corresponding results reported in Table B.4 show that for the young cohorts preferences are balanced.

[16]To see why this second condition must be satisfied, consider an applicant who ranks in her application the three programs A, B and C in the order A, B, C. Suppose that B has the highest admission cutoff while C has the lowest one. In such a situation the applicant can never end up in Program B. If she is good enough to clear the cutoff of A she will be assigned to that program and not appear on the admission list or wait list of any other program. If instead she is not good enough to make the cutoff for A, then she cannot possibly 'fall into' B since the cutoff of B is even higher than the one of A. Thus she can only end up in C, the program with a lower cutoff than A.

3.3 Education Quality versus Alternative Channels and Further Robustness Checks

We estimate the effect of admission to a more preferred and more selective program and interpret the estimated effects as the consequences of the implied change in school quality ('education quality interpretation'). In principle it is possible though that higher ranked programs have other characteristics (other than quality, broadly defined) which might (also) drive the estimated effects.

To provide evidence that supports our education quality interpretation, we first show that more elite programs are not only more selective in the sense that they have higher cutoff scores, but that they are also characterized by a substantially higher average peer quality (as measured by peers' average entrance test score). In Table 5 we show results for two different definitions of peers. First, we compute the average peer quality over all peers (lower panel) and second, we use only peers of opposite sex (upper panel), since those are directly part of the pool of potential marriage partners. Table 5 shows that women admitted to a more elite program have (male) peers who score about 33 points higher on the math score and 23 points higher on the verbal score, which is equivalent to close to half a standard deviation in terms of the overall test score distribution. For men, (female) peers score around 28 points higher in math and 20 points higher in terms of verbal score.

In a second step we test whether several other (plausible) mechanisms might also be driving our results. In particular, we investigate alternative channels related to the geographic location of the universities at which programs are taught, to the affiliation of some universities with the Catholic Church and to the similarity of peers. We present those results in the section after the main results (see the second part of Section 4.2.3).

The final part of our empirical strategy is to present a series of robustness checks for our main results (see the first part of Section 4.2.3). First, we show that our results are not affected by selection. Selection is a potential concern, since we cannot match all applicants to their spouses' test score. Second, we present further evidence on the robustness of our results with respect to the exact specification of our regression. Finally, we show that results do not depend on how we deal with the (rare) case of remarriage.

4 Results

In this section we present our three main sets of results. In Section 4.1 we discuss the effect of being admitted to a higher ranked program on the chances of getting married and on the number and timing of children. In Section 4.2 we report our findings on how the quality of applicants' spouses are affected upon admission to a more elite program. Finally, Section 4.3 focuses on the intergenerational effects of education quality, i.e. we study how the quality of applicants' children changes with applicants' educational treatment.

4.1 Marriage and Fertility Decisions

4.1.1 Completed Marriage and Fertility Histories

To analyze the longrun effects of admission to a more elite program on individuals' marriage and fertility decisions, it is important to observe individuals when their marriage and fertility history is completed; i.e. when those individuals who will ever marry (and have children) have already done so (had them). In the following we show that this is indeed the case for our sample of applicants.

The university applicants in our sample are between 39 and 45 and on average 41.5 years old. The fraction of married individuals in our sample is 70-71% for both male and female applicants. Regressing the likelihood to be married on age dummies, we find that marriage rates are around 68% at age forty and remain constant at 72% from age 42 onwards for both male and female applicants (see Table 4).[17]

The likelihood of having a child (conditional on being married) is around 90% in our sample. For women, the likelihood of having a child remains basically constant from age 39 onwards. For men, the fraction of applicants with a child stabilizes around age 42 at a rate of 91% (see Table 4). This pattern can be seen in Figure 3, which displays the cumulative probability of having had a child by a certain age (for men and women separately). Furthermore, Figure 3 shows that by age 29 half of all female university applicants have children, while men reach this likelihood around age 30.

4.1.2 Effects on Marriage and Fertility Decisions

Whether and in which direction the admission to a more elite program should affect individuals' marriage and fertility decisions is a priori unclear. On the one hand, moving to a higher ranked program means that the individual is exposed to more high quality peers, whose social networks are also likely to be composed of higher quality individuals. This would suggest that for any given quality standard that an individual might set for a future spouse, it should become easier to find such a partner.

On the other hand, it is reasonable to assume that the standards that an individual sets in her/his search for a spouse are adjusted to the opportunities that she/he faces. In particular, one would expect this to happen if the option to remain single is sufficiently unattractive. In that case, individuals will sooner or later lower their expectations and accept lower quality partners available to them. Due to such effects, it is a priori possible that the final marriage rate below the cutoff is no smaller than above the cutoff and so the question becomes a fundamentally empirical one.[18]

Table 6 shows that the admission to a higher ranked program does not affect the likelihood to get married, neither for men nor women. The estimated coefficients are all close to zero and not significant.

Also the sign of the effect of being admitted to a more elite program on fertility is a priori unclear.

[17] These figures can be corroborated by Chilean Census data (2002), which show that among the college-educated aged 40 to 50 (i.e. for individuals who are slightly older than the ones in our study), 74% are married and this rate remains stable also for older individuals (aged 50 to 60). As a comparison, in the United States among college-educated individuals aged 40 to 50, around 70% of women (72% of men) are married or in a consensual union (US Census data, 2010). Here we focus on marriage as the most direct definition of a committed partnership, also because cohabitation is relatively uncommon in Chile (see section 2.1).

[18] Similar arguments apply to the younger cohorts from 2001-02 which we use for further supporting evidence.

The improvement in an applicant's career prospects that comes with the admission to a higher ranked program means that the opportunity costs of having children increase. On the other hand, if individuals admitted to more elite programs marry better spouses who contribute more to the household income, then there will be a countervailing wealth effect. We will show in the next section that this might be a relevant factor at least for female applicants.

According to Table 6, the probability of having a child is not affected by the admission to a higher ranked program. Also the number of children and the timing (as measured by the age at first birth) are the same for applicants above and below the cutoff.

4.2 Effects on Spouse Quality

4.2.1 Main Results: Effects on Spouse's Score and University Admission

In the previous section we have shown that the admission to a higher ranked program does not affect the probability of getting married or of having children (nor the timing or number of children). In this section we analyze whether being admitted to a higher ranked program affects *who* the applicant marries. That is, we investigate if the quality of the spouse changes at the admission cutoff.

The first step towards the objective of measuring the 'quality' of spouses is to identify appropriate quality indicators. Of course, measures of spouse quality should capture characteristics that individuals value in their spouses. At the same time, the indicators that are used should not depend on any decisions that are influenced by the interaction of the couple. But that essentially means that they should be predetermined with respect to marriage. In what follows we will argue that the three quality measures that we use in this paper satisfy both properties. For the main sample of applicants (1990-1993), we capture spouse quality through the spouses' university admission scores (both verbal and math) and through the spouses' university admission outcomes. To provide additional support for our findings and further interesting evidence, we also study spouse quality for the younger cohorts who applied to university in the years 2001 and 2002. For these younger cohorts we also have information about spouses' family background, which we can therefore use as a further quality indicator.

Individuals' family background certainly satisfies the condition of being predetermined with respect to marriage. But the same also holds for the other two quality measures. Since the vast majority of individuals sit the university admission test before age 21 and at that age only very few of them are already married (only 3% or less among college-educated men and women, according to Chilean Census data), entrance test scores and admission results can be considered predetermined as well. This important property distinguishes our variables from potential alternative measures like labor market or health outcomes, which typically depend on joint decisions of the couple. For instance, there are many couples who opt for a 'single income partnership' in which one of them takes over more responsibility at home (managing the household and raising the children), while the other focuses the attention on pursuing a career. In such a case the labor market income would not be a very meaningful quality indicator of either of the two spouses, since it would lead us to underestimate the quality of the spouse who stays at home and to overestimate the quality of the spouse who works.

University admission scores and university admission outcomes capture the spouse's cognitive ability and educational attainment. Together they therefore also constitute a good proxy for spouses' labor market potential. Finally, the family background of a spouse is an indicator for her/his social status and family wealth. Ability, education, labor market potential and social status are all dimensions which individuals have been shown to value in their partners (see, e.g., Fisman, Iyengar, Kamenica, and Simonson (2006) and Lee (2015)). Not only is the spouse's labor market potential often an important determinant of the overall household income, but the ability and education of a spouse directly affect his/her 'consumption value', and what the spouse can contribute to the couple's children both in terms of genetic endowment and in terms of information/education.

Our quality measures exhibit a further desirable property which is convenient in the empirical analysis. Since the rates at which females and males sit the university admission test and apply for university are similar, our data allow for meaningful gender comparisons.

Spouse's Performance on the Admission Test

First, we analyze the effect of being admitted to a more elite program on spouses' quality as measured by spouses' performance on the university entrance test. Table 7 shows that women who are admitted to a higher ranked program find a spouse who scores around 27 points higher on the math test and around 17 points higher on the verbal test. The estimated effects are large, highly significant and very robust across different specifications and bandwidths. For male applicants on the other hand, the estimated coefficients are small and not significantly different from zero.

The estimated effects are extremely stable with respect to the bandwidths on which we rely and the estimation method that we use. The effect on spouse's math score varies between 26.9 (window 2) and 27.7 (window 6) and is significant on 1% for bandwidths 6 and 4 and on 5% for bandwidth 2. The effect on spouse's verbal score varies between 16.4 and 19.1 and is significant on 5% or 10% (depending on bandwidth).

Notice also that in the estimation of Equation 1, in which we use bandwidth ± 6, the coefficients on the linear term of the forcing variable (i.e. applicants' own score) are not significantly different from zero. This is a further indication that the bandwidth that we are using is small enough for the functional form not to play a role.

The magnitude of the effects is large. 27 points on the math test (17 points on the verbal test) are equivalent to having a spouse who performs 20% of a standard deviation higher in math (15% of a standard deviation in terms of spouses' test score distribution for the verbal part of the test). Another way to illustrate the magnitude of the jump is as follows: Figure 1 shows the correlation between applicants' and their spouses' test scores. Per additional score point of the applicant, his/her spouse is performing 0.5 points higher on the test. Since the distance between the closest observation above and below the cutoff is about 3 points (in the case of the smallest bandwidth 2), the scores of the spouses should only differ by 1.5 points when comparing those two individuals. Instead the difference in terms of spouse score for the individuals closest to the cutoff from above and below is more than eighteen times as large for the math score and about twelve times as large for the verbal score.

Figures 4 and 5 show the effects of admission to a more elite program on spouse score graphically (for women and men, respectively). As explained earlier, the forcing variable on the x-axis is the normalized admission score, i.e. the admission score of individual i for program j minus the cutoff admission score of program j. Since the figures aggregate information for many different programs and years, we normalize spouse scores by subtracting program-year specific intercepts, so that all programs have a common intercept (in other words, we take out program-year fixed effects). This does not affect the size of the jump, which is still the absolute point difference in spouses' math and verbal scores between individuals to the right and to the left of the cutoff.

Figure 4 displays a jump in spousal score for female applicants (in terms of husbands' math and verbal score). The jump becomes even more pronounced when focussing on the most narrow ±2 bandwidth which is as indicated by the two dotted lines. For men on the other hand no jump in their wives' scores is apparent (see figure 5).

Spouse's Admission to Top Universities

In this section we present our findings for the spouse quality indicator 'university admission results'. In particular, we show what the admission to a more elite program implies for the spouse's likelihood to be admitted to a top university. For a definition of the notion 'top universities' that we adopt here, see Section 2.1.

While being admitted to a higher ranked program has no effect on whether the spouse applied to university, it has large effects for female applicants in terms of their husbands' likelihood of having been admitted to a top (2,3,4 or 5) university. For male applicants on the other hand, the corresponding coefficients are small and not significant.

Table 8 shows that female applicants admitted to a higher ranked program are around 8 to 10 percentage points more likely to find a spouse who was admitted to a top university. Results are highly significant, in particular in the case of admission to one of the top two universities, and relatively stable across bandwidths and specifications (coefficients vary between 6 and 9 percentage points and all of them are significantly different from zero). For men on the other hand, estimated coefficients are all small and insignificant. Figures 6 and 7 show those results graphically, for women and men respectively.

4.2.2 Further Results, Implications and Discussion

Spouse's family background: So far we have discussed the effect of elite education on two important spouse outcomes that individuals have been shown to care about, spouses' ability and spouses' university admission outcomes. Of course, there might be further dimensions that individuals care about in their spouse, such as family background and physical attractiveness. While we do not have data on spouses' family background for the main cohorts analyzed in this paper (nor on physical attractiveness), we have data on spouses' family background for applicants applying in 2001 and 2002. For these cohorts we once again find evidence of positive effects for female applicants.[19] For them, being admitted to a higher ranked program substantially increases the likelihood of having a spouse from a privileged background (see Table B.3 in the Online Appendix). In particular, female applicants admitted to a higher ranked program are 12 percentage points more likely to have a husband whose mother went to college. Also

[19]We thank two anonymous referees for the interesting suggestions to look at spouses' admission outcomes and spouses' family background.

they are 20 percentage points more likely to have a husband whose father has a high-ranked occupation. Lastly, female applicants are 12 percentage points more likely to have a husband whose mother is working/in the labor force. For male applicants on the other hand we do not find significant effects on their wives' family background.

Asymmetry of effects by gender: As shown above, being admitted to a higher ranked program has important effects for female applicants on finding a higher ability spouse, a spouse from a top university and from a privileged family background, but we do not find significant effects for male applicants. Interestingly, this asymmetry in returns is consistent with what is known in the literature about how males and females trade-off different quality dimensions. Fisman, Iyengar, Kamenica, and Simonson (2006) and Lee (2015) show that women care more about ability and social status than men do. In the Online Appendix, we sketch a very simple model that shows how such asymmetries in preferences may lead to gender differences in marriage market returns.

College enrollment puzzle: As mentioned in the introduction, the fact that college enrollment rates are similar for men and women (or even higher for women) in a large majority of OECD countries is puzzling given the lower labor force attachment of women.[20] One hypothesis that has been put forward in the literature to explain this puzzling fact, stresses the existence of important marriage market returns, in particular for women (see, among others, Goldin (1997)). The results of this paper support this hypothesis. While our findings refer to the quality dimension of college, the fact that the marriage market returns to quality are sizable suggests that they are likely to also play a role in the decision about whether to go to college at all.

University as a meeting place: To provide some evidence on the underlying mechanisms for the observed marriage market effects, we first aim to assess if the results might be exclusively driven by the fact that by crossing the admission threshold to a more elite program, individuals are more likely to find a high quality spouse among their direct program or university peers. Our results suggest that while this 'meeting place channel' contributes to the overall effect that we measure, it is highly unlikely to be the only channel. To see this observe first that only 20% of applicants have been admitted to the same university as their spouse in a window of $+/-$ four years (25% above the cutoff and 15% below the cutoff; see Table 9). Moreover, less than 6% of applicants are married to a spouse from the same program.

Of course, the fact that for up to 25% of couples, both spouses have been admitted to the same university/program within four years of each other does not necessarily imply that they have indeed met there. Instead it is likely that this figure overestimates the number of partnerships that formed at the university. In what follows we therefore only use it in the sense of an upper bound on the fraction of marriages that might have started at the same university. Notice also that more than a quarter of the individuals who might have met their spouse at the university would have gone to the same university even if they had missed the cutoff for the program to which they have been admitted (because the program they would have 'fallen into' in that case would have been again at the same university). Since for these individuals crossing the admission threshold does not imply a change in the university, their marriage

[20]In the US there is a 12 p.p. gap in the labor force participation rates of college-educated men and women, which rises to close to 20 p.p. for married individuals according to Census data from 2010. Also in Chile the gap is about 20 p.p. for married men and women of similar ages, the average gap is 16 p.p. according to Census data from 2002. In addition women are more likely to work part-time or, more generally, fewer hours.

market returns cannot be ascribed to the (university) meeting place channel. This means that this channel can be relevant for at most 19% (i.e. three quarter of 25%) of the couples. If the effects that we estimate (which are up to 27.7 points for math and 19.1 points for verbal) were entirely due to these 19% of couples, then their returns would have to amount to more than 145 points in terms of the math score and to 100 points in terms of the verbal score. These numbers roughly correspond to the differences in the average math and verbal score between the very best and the very worst university. That individuals might experience such extreme returns seems highly unlikely.

Other potential channels: Instead further mechanisms are likely to play a role as well, such as the fact that the individuals admitted to a more elite program enter a different social network (and marry, for example, friends or relatives of peers etc.) or that the applicant becomes more attractive to potential partners because the admission to the higher ranked program signals higher ability and higher social status etc. Another channel that might play a role goes through the labor market. That is, applicants who are admitted to a higher ranked program might become more successful in the marriage market, because of their superior performance in the labor market. Considering the labor force attachment of both genders, this channel should be most relevant for male applicants. But for men, we do not find any evidence of marriage market returns. Instead we measure large marriage market returns only for female applicants who tend to participate less often in the labor force than their male counterparts (by more than 20 p.p.) and who also tend to work fewer hours in case they are active in the labor force. Thus, it seems unlikely that labor market performance is the primary driving force for the effects that we measure.

Marriage market effects by field of application: In Table 10 we show how marriage market effects differ by field of application.[21] The results in this table should not be interpreted as returns to a specific field of study. Instead, these findings are supposed to show how the effects that we measure are distributed across different admission cutoffs which we group by field of study.[22]

Table 10 shows that there are substantial effects of admission to a more elite program for women applying to the field of 'education', to 'humanities and art' and to the field of 'medicine, health and social work'. For male applicants, on the other hand, we do not find significant effects for any field of application.

Interestingly, these results are consistent with stylized facts for the US that can be found in the sociology literature and with anecdotal evidence discussed in the popular press. Both sociologists and journalists/bloggers refer to the fact that women seeking 'Mrs. degrees' typically focus on 'easy' fields of study, since those constitute the most effective way to signal their commitment to family and to not wanting to pursue a career themselves (see, e.g. Hamilton (2014)). One can even find online guidelines for women who want to obtain an 'Mrs degree', which give advice on which majors to choose. Some of them expressly mention the major 'education' as a good way to signal their intentions.[23]

[21] We would like to thank an anonymous referee for the interesting suggestion to analyze marriage market effects by field of application.

[22] While estimating the returns to specific fields would certainly be an interesting issue it goes far beyond the scope of this paper. Doing so would require to impose (strong) assumptions regarding how returns depend on the interaction between (observable and unobservable) characteristics of the applicants, the fields (which the applicants decide to list) and the selectivity of the various programs.

[23] See for instance the article '7 Definitive Ways to Getting Your MRS Degree' at http://thoughtcatalog.com/isla-sofia/2014/03/7-definitive-ways-to-getting-your-mrs-degree/.

Marriage market effects by applicants' social background: Another interesting question is whether the effects of elite education differ for applicants' from different social backgrounds. As mentioned earlier, we do not have data on family background for our main cohorts from 1990-1993, but we have such information for younger cohorts of individuals applying in 2001/2002. For those we know which type of school the applicant attended (private or not) and her parents' education and occupation.

Tables B.1 and B.2 display the effect of admission to a more elite program on spouse quality by applicants' family background (for female and male applicants, respectively). The upper (lower) panels of the tables show results for applicants from more (less) privileged background, such as for applicants from private (versus public) high schools, whose father/mother went to college (or not) and so forth.

Table B.1 shows that being admitted to a more elite program has particularly large effects for women from a more privileged background. Estimated effects vary between 21 and up to 48 points for female applicants from a privileged background. Moreover, these effects are always significant (mostly on the 5% or even 1% level). Effects for women from less privileged background are substantially smaller and not significant. In the most extreme case, female applicants from private high schools have returns that are more than four times as large as the returns for applicants who did not attend a private high school. Our findings for spouses' verbal scores are similar. That is, for women from a privileged background the effects are between 25 and 38 points (always highly significant on at least 5%), and they are often about 50% to up to 100% higher than those of women from a less privileged background. For men, we do not find significant effects independently of their social background (see Table B.2). The finding that it is women from a privileged background who enjoy the highest marriage market returns to elite education is in line with stylized facts discussed in the sociology literature, according to which more affluent women are more likely and more successful in pursuing an 'Mrs. degree' (see among others, Hamilton (2014)). One important social implication of this distribution of the returns across social groups is that elite education might amplify pre-existing (household) inequalities through the marriage market channel.

4.2.3 Marriage Market Results: Robustness Checks and Discussion

In this section we first discuss several robustness checks for the results on spouse quality. In the second part of the section we investigate potential alternatives to our 'returns to education quality'-interpretation of our results. Due to space constraints we relegate the corresponding tables to the Online Appendix.

Potential Selection Concerns: The first issue that we address is the fact that even though we observe spouse outcomes for the large majority of married applicants, we do not observe them for everyone. One of the reasons for this is that we have data on test scores and university admission between 1989 and 2006, but some spouses might have taken the test/applied to university before 1989.[24] The other reason for missing test scores is that the spouse has never taken the test.

The first important question is whether the likelihood to observe spouse outcomes is the same above

[24] We do not have data before 1989 because of important changes in the university system and data availability during Pinochet's dictatorship. For further details on this, see Section 2.1). Thus test scores of spouses who have taken the test in 1988 or earlier are not observable to us.

and below the cutoff. This is indeed the case as Table A.2 (Online Appendix) shows. The likelihood to have test score data on the applicants' spouses does not differ between applicants just above versus just below the threshold. This also means that it is not very likely that the composition of applicants changes at the admission cutoff. Given that the overall match rate is the same on either side of the cutoff, any differences in the composition would have to perfectly cancel out.

This last observation notwithstanding, we conduct additional tests to provide direct evidence for the fact that the same types of individuals are matched above and below the cutoff. We show that there are no significant differences between the individuals just admitted to a higher ranked program versus those who just miss the cutoff, neither regarding their characteristics nor in terms of their preference rankings over programs. Table A.3 shows that there are no significant differences in terms of age of female applicants above and below the threshold and coefficients are virtually zero. For men, coefficients are also close to zero, but the coefficient for window 4 is significant on 10% (though small with less than 0.09 years of age difference), while the ones in window 6 and 2 are not significant.[25] Table A.18 compares applicants' preferences above and below the cutoff for the sample of applicants matched to their spouses. To obtain these results we adapt an approach by Jackson (2010). For more details we refer the reader to the paragraph before Table A.18 in the Online Appendix (see also Section 3). Results in Table A.18 suggest that preferences are balanced for the sample of marginal applicants matched with their spouses (above versus below the cutoff).

Finally, we also show that results remain remarkably stable when we increase the match rate and thereby reduce the potential for selection. In particular, we show that results remain virtually unchanged, if we use individuals who apply in the period 1991-1993 (i.e. when we take out year 1990) or in the period 1992-1993 (i.e. when we take out both 1990 and 1991) or focusing only on applicants in 1993. With each additional (early) year that is removed from the original sample, it becomes less likely that the remaining individuals have a spouse that has taken the test before 1989. In fact, the fraction of spouses for whom we observe test/admission outcomes increases by about a fifth, to up to 73% and 82% for female and male applicants respectively (see Table A.4).

If selection was an important driving force of our findings, then the three subsamples (in particular the last one focusing only on 1993) should produce estimates that differ in important ways from the estimates obtained from the complete sample, since the potential for selection is reduced substantially. Instead, the returns that we measure for the three subsamples are almost identical to each other and to those of the main sample. This strongly suggests that results are not driven by selection.

Table A.5 shows results on spouse quality in terms of math and verbal scores for our main sample of applicants in 1990 to 1993, and for the three above mentioned subsamples of applicants. As can be seen from the table, the relevant estimates remain virtually identical (around 27 points for math and around 17 points for the verbal part). Due to the loss in statistical power, the level at which the results for applicants from 1992-1993 and 1993 are significant decreases somewhat. Table A.6 presents results on spouse quality as measured by the quality of university the spouse was admitted to. Again we find that results are remarkably similar (or, if anything, larger for later applicants); also in this case the decrease

[25] For the cohorts from 2001/2002 for whom we report results in the Online Appendix we have detailed information on applicants' background characteristics (parental education and occupation, type of high school attended etc.). It can be shown that for the sample of married and matched applicants all characteristics are balanced (i.e. there is no evidence of selection).

in the sample sizes translates into lower significance levels.

To conclude, the three different types of robustness checks all point in the same direction and indicate that results are not driven by differential selection of matched applicants into the sample above versus below the threshold.

Education Quality versus Alternative Stories: Throughout the paper we have (implicitly) interpreted our estimates as effects of the difference in the education quality that individuals above and below the admission cutoff experience. Notice though that based on the analysis that we have conducted thus far, we cannot rule out the possibility that programs differ in dimensions other than quality (broadly defined) and that those differences might (also) drive the estimated effects. In what follows we therefore test whether our results might be (partly) driven by other plausible factors. In particular, we investigate alternative channels related to the geographic location of the universities at which programs are taught, to the universities' affiliation with the Catholic Church, and to the similarity of the peers in the programs.[26]

Geographic location: In principle it is possible that our results are (partly) driven by the change in geographic location that the admission to a higher ranked program often implies. The most direct way to test for this would be to separately estimate the marriage market returns for individuals for whom the admission implies a change in location (different-city types) and for individuals for whom the location is unaffected by the admission decision (same-city types). If both groups of individuals enjoy similar returns, we could conclude that the geographic location cannot be the main driver behind our results.

Unfortunately, for our main sample of applicants (1990-93) we only observe the type of the applicant (same-city types vs different-city types) for those below the cutoff, but not for those above the cutoff. Since the latter are admitted, they do not appear on the admission/wait lists of any other programs that they rank lower and so we do not know if they would have stayed in the same city had they missed the cutoff. Still though, the individuals above the cutoff all experience the same location. If this location does not interact with their type (so that both types above the cutoff can be expected to have spouses of a similar quality), then we can assess the role of the geographic location by comparing all individuals above the cutoff with just same-city types below the cutoff. The corresponding estimates are reported in A.7. The table shows that the magnitude of the estimates is very similar to the one for the full sample: up to 24.5 points in math (vs up to 27 points in the full sample) and up to 17 points in verbal (vs up to 19 points in the full sample). This indicates that geographic location cannot be the driver of our results under the assumption that the applicants' type does not interact with the location.

If the type of applicant and the location interact, then we have to distinguish two cases: either the same-city types above the cutoff do better then their different-city counterparts or vice versa. In the first case, our strategy of comparing all types above the cutoff with only same-city types below the cutoff means that we underestimate the returns of same-city types. Given the size of the effects that we find (24.5 points), the conclusion would again be that geographic location is not a driver of our results. The only case in which there would be scope for geographic location to play a role is the one where admitted different-city types do better than admitted same-city types. While for applicants in 1990-93 we cannot

[26]We thank an anonymous referee for suggesting several alternatives to our education-quality interpretation.

test directly whether location and preference types interact in this way, we can do so for applicants in 2001-02. For them we find that above the cutoff, it is the same-city types who have the better spouses. Same-city types' spouses have math (verbal) scores of 613 (585) points versus 599 (565) points for different city types. In light of this fact, we conclude that it is highly unlikely that geographic location contributes much to our results.

Finally notice that for the cohorts from 2001-02 we can also directly estimate the effect of being admitted to the higher ranked program separately for the two types of individuals. The corresponding results (see Table B.5) show that the magnitude of the effects is similar for both types.

Universities' affiliation with the Catholic Church. To assess if the affiliation with the Catholic Church of some universities might in some way drive our results, we test whether higher ranked programs are more (or less) likely offered by catholic universities. Table A.8 shows that for female applicants higher ranked programs are neither more nor less likely to be at a catholic university. Thus the catholic factor does not appear to affect our results for women. For men, higher ranked programs are slightly less likely to be catholic (around 4 percentage points less likely). If we restrict attention to programs at the four non-catholic schools among the top five universities, then the higher ranked program is even less likely to be catholic (by around 24 p.p.). This notwithstanding the results remain virtually unchanged. Thus, the (absence of) effects for men is highly unlikely to be due to fact that higher ranked universities are less likely catholic.

To conclude, none of the possible alternative mechanisms discussed above seems to be driving our results.

4.3 Effects on Child Quality

4.3.1 Main Results

It is safe to assume that providing their children with the best opportunities to succeed in life is paramount for all parents. Thus the 'quality'/performance of applicants' children can be seen as a crucial indicator for applicants' longrun wellbeing. To understand the long run effects of elite education, it is therefore of prime importance to analyze how it affects applicants' children.

But this is not the only reason for why it is important to study whether the educational experience of parents influences their children. The question of how economic advantages are transmitted across generations is also an important determinant of inequality. Despite the long-standing interest that this issue has attracted (and continues to attract), we still know rather little about the causal mechanisms behind the observed correlations between the economic outcomes of different generations, in particular for the upper part of the ability distribution. With our analysis we identify a causal relationship between the quality of the parents' higher education and the performance of their children. We thus uncover one of the mechanisms by which human capital is transmitted across generations.

More specifically, in this section we analyze how the admission to a higher ranked program affects the performance of applicants' children on a mandatory standardized cognitive test. The so-called SIMCE test has to be taken by all children in fourth grade. It is composed of a mathematical and a verbal part.

Our findings are reported in Table 11 and displayed separately for the verbal and the mathematical part of the test. The admission to a higher ranked program increases the performance of female applicants' children by about 7-8 points on the verbal part of the test. The estimated effect is significant on 5% and very robust across different specifications and bandwidths. The effect on children's math score is somewhat less stable and only significant for bandwidth 4. The estimated effects are quite sizable and equivalent to about 10% of a standard deviation.

Interestingly, in contrast to our findings on spouse quality, we find very similar results also for male applicants. In particular, the effects on male applicants' children are also around 7-8 points for the verbal part and slightly larger for the math part (see the last three columns of Table 11). While the coefficients remain remarkably stable for all three bandwidths, in the case of men they are not significant for the smaller two bandwidths due to relatively small sample sizes (only around 300 or less observations).

Figures 8 and 9 provide a graphical representation of these results. They show that the test scores of both female and male applicants' children exhibit pronounced jumps at the admission cutoff.

4.3.2 Effects on Parental Investment into Children's School Quality

The goal of this section is to shed some light on the underlying mechanisms behind the observed intergenerational effects of the admission to a more elite program. For this purpose, we investigate how applicants' investment into their children changes with the admission to a higher ranked program. In particular, we use direct data on one of the most important (monetary) inputs into child quality, namely children's school (and thus also peer) quality. In Chile, private expenditures on pre-primary, primary and secondary education are extremely important (see Section 2.1). Private schools are considered best in terms of quality and associated social status and tuition fees are high.[27]

Admission to a higher ranked program might increase child investment for two reasons. First, the admission to a more elite program might increase the resources that are available to the household. Second, with the admission to a better program the applicant's information and preferences may change in a way that induces the household to invest a larger fraction of the household's income into children's education (e.g. due to differences in social network). The fact that we have direct data on child investment has the important advantage that we are able to capture both channels.

We use three different variables to measure the quality of schools: school type (private vs public), average SIMCE test scores of peers and socioeconomic background of peers (for definitions and details on these variables, see Section 2.2.2). To match the information about the quality of schools with our data on children's test score results, we exploit the fact that the latter contains school identifiers for some of the years. More precisely, we can match school quality data with the SIMCE test score data for all years up to 2008. Since this means that we have to exclude part of our sample of children from consideration, we first verify if for the remaining subset of children the admission to a more elite program has similar effects on children's test scores compared to the ones that we have measured for the full sample (further

[27] Monthly tuition for private schools range from US$200 to US$4,000 per month (i.e. PPP$700 to PPP$14,000), in addition to yearly enrollment fees, which can be from US$300 to US$3,000 or more (i.e. between PPP$1,000 to PPP$10,500), see e.g., http://www.thechilepages.com/schools-in-chile-2/private-schools-in-chile/ .

robustness checks are conducted in the following section). From the first two columns of Table 12 we can see that this is the case. In fact, the estimates that we obtain for the subsample of older children are even somewhat larger than those for the full sample. On the other hand we lose statistical power due the reduced sample size. For women, effects are significant on 10% for the verbal score, while the coefficient for the math score is similar in magnitude as before (8 points) but not significant. For men effects are significant on 10% for the math score.

Columns 3 to 6 of Table 12 show the main findings of this subsection, namely the effects of admission to a higher ranked university on our four measures of school quality (peers' performance on the math and verbal part of the SIMCE test in Columns 3 and 4, likelihood of a private school in Column 5 and likelihood of a school with high socioeconomic background peers in Column 6). For female applicants being admitted to a higher ranked program has no effect on the type/quality of their children's school. There is neither an effect on the quality of the child's peers (coefficients are even negative, but not significant) nor an effect on the type or the socioeconomic composition of the school (coefficients are virtually zero). In the case of male applicants on the other hand, the admission to a higher ranked program substantially increases the likelihood of the applicants' children to attend a private school and to attend a school with high socioeconomic background peers. The magnitude of the effects is large: an increase of 18 percentage points in the likelihood to attend a private school and 34 percentage points in the likelihood to attend a high socioeconomic status school. The effects are also highly significant (on 1%). In terms of the performance of the peers at school, coefficients are positive and around 3-4 points, but not significant.

The differences between male and female applicants in terms of effects on child investment are quite striking. One potential explanation for our finding that female applicants do not increase investments into their children upon admission to a higher ranked program is that for them, being admitted to a more elite program does not lead to the same increase in terms of available household resources as it does for males.[28]

Irrespective of the explanations behind the asymmetric impact of elite education on child investment, the above discussed results allow us to draw interesting conclusions regarding the channels through which elite education affects child quality. In particular, they suggest that increased monetary investments may play a major role for child quality effects only in the case of male applicants. Of course, it is in principle possible that also children of female applicants benefit from other monetary investments that we do not observe. But it would be surprising, if in a country like Chile where private expenditures in schooling are so important, households would decide to focus monetary investments on everything but schooling.

Our assessment of the role of direct monetary investments in explaining the intergenerational effects of elite education is further supported by our findings regarding spouse quality. In particular, in the case of female applicants those findings provide us with a natural alternative explanation for the child quality

[28]Given the substantially lower labor force attachment of females (see section 2.1), it is conceivable that the income of male applicants is affected more strongly than the income of female applicants when they cross the admission threshold. On the other hand, our findings on spouse quality suggest that unlike for males, female applicants' household income should be positively affected through a higher quality spouse. Notice though that while the probability of a female applicant's spouse of being admitted to one of the five top universities increases by around 8 percentage points, for male applicants this probability increases from 50% to 100%. Thus, far more of them can reap the labor market benefits of admission to a top university. Overall, it is thus not unlikely that household resources increase by more for male applicants than for female applicants.

effects, which is absent in the case of male applicants: the genetic endowment channel. We have seen earlier that only female applicants find more able spouses, when they are admitted to a higher ranked program; in the case of male applicants we did not find any such evidence. Thus, in the case of male applicants, the 'aggregate ability' of the applicant and his spouse does not change upon admission to a more elite program. This implies that also the inherited ability of the children of male applicants on either side of the cutoff should be the same. In the case of female applicants instead, it is natural to assume that the difference in the ability of the spouses translates into differences in the innate abilities of the children.

To sum up, our results show that, while the admission to a more elite program has very similar intergenerational effects for male and female applicants, the underlying mechanisms appear to be quite different.

4.3.3 Child Quality Results: Robustness

In this section we provide robustness checks for the results on child quality and parental investment in school quality that are analogous to the ones we have shown for the results on spouse quality. We again relegate the corresponding tables to the Online Appendix. In particular, we aim to address the problem that we do not observe child outcomes for all individuals with children, since some of the children are too young to have taken the SIMCE test.

Table A.12 shows that there are no differences in the likelihood of matching applicants to their children's score between applicants just above and below the cutoff. Also, characteristics and preferences over programs are balanced when comparing marginal applicants above and below the cutoff for the sample of applicants matched to their children's scores (see Tables A.3 and A.18).

We can increase the match rate (at the cost of reducing sample sizes) by focusing on the earlier cohorts (see Table A.14). In particular, the match rate increases from 49% to 57% when focusing on applicants in 1990-1991 instead of 1990-1993, i.e. by more than 16%. Despite the large differences in the match rates across these samples (and thus very different scopes for selection), results are very stable (see Table A.13). Coefficients remain around 7-8 points for female applicants on their children's verbal scores. The effects for male applicants are even slightly larger when focusing on earlier cohorts.

We conclude that neither of the robustness checks indicate that our results concerning the intergenerational effects of elite education might be subject to selection problems.

In the same way, we also provide robustness checks for our results on school quality. Table A.15 shows that the match rate to schools is again balanced above and below the cutoff. Also, results on school quality are very similar (and, if anything, stronger) if we focus on earlier cohorts of applicants which increases the match rate and reduces any potential for selection (see Table A.16). Lastly, characteristics and preferences of the matched applicants are the same above and below the cutoff (see Tables A.3 and A.18). Again none of the robustness checks shows evidence of selection in terms of our results on parental investment into children's schooling.

5 Conclusion

In this paper we analyze the longrun effects of admission to a more elite program on individuals' (completed) marriage and fertility decisions (including number and timing of children), on spouse quality and on child quality. To identify causal effects of being admitted to a more elite program we exploit the convenient features of the centralized Chilean university admission system to implement a regression discontinuity design. Our approach amounts to comparing applicants just admitted to a more preferred and more selective program with those who just miss the cutoff.

While we find that the admission to a more elite program does not affect individuals' marriage or fertility decisions, we find important effects on spouse quality for female applicants (in terms of spouses' entrance test scores, university admission outcomes and family background). For male applicants, we do not find significant effects in terms of these dimensions of spouse quality.

Moreover, we analyze whether being admitted to a more elite program carries also intergenerational effects on applicants' children. We find that both male and female applicants just admitted to the more elite program have children who perform substantially better on standardized tests. The mechanisms behind the intergenerational transmission of elite higher education, however, differ in important ways between male and female applicants. In particular, we find evidence of important resource effects for male applicants but not for female applicants. For women, on the other hand, genetic endowment effect appear to be more important than in the case of male applicants. The latter implies that elite education can have important longrun effects which are not priced in the market, suggesting that using child (and spouse) quality as proxies for the longrun effects on individuals' wellbeing has the advantage that it can capture those important non-monetary effects.

Our results have important implications also from a social perspective. First, they suggest that the education system influences (household) inequality not only through affecting individuals' own labor market earnings, but also by influencing who marries whom and thus which households are formed. Second, they shed light on the role of elite education as one of the causal channels behind the observed persistence in outcomes, such as education and earnings, across generations.

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APPENDIX

Figures

Figure 1: Correlation between applicants' and their spouses' test scores

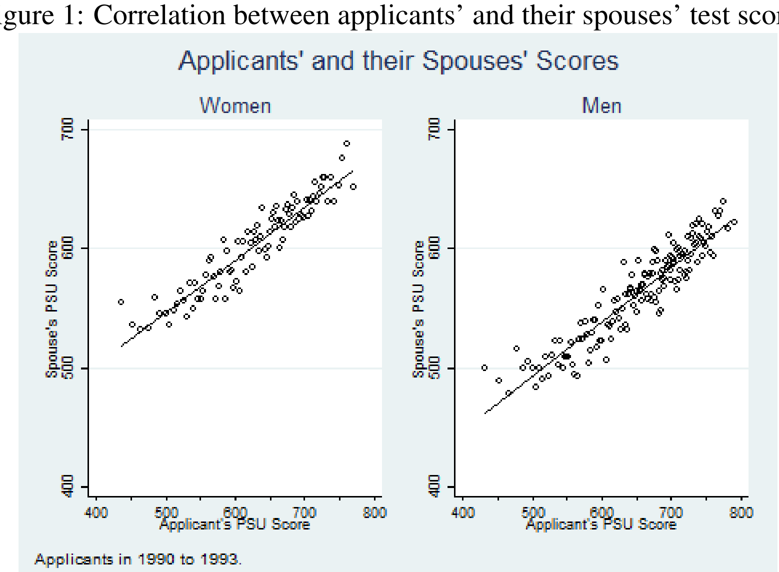


Figure 2: Correlation between applicants' and their children's test scores

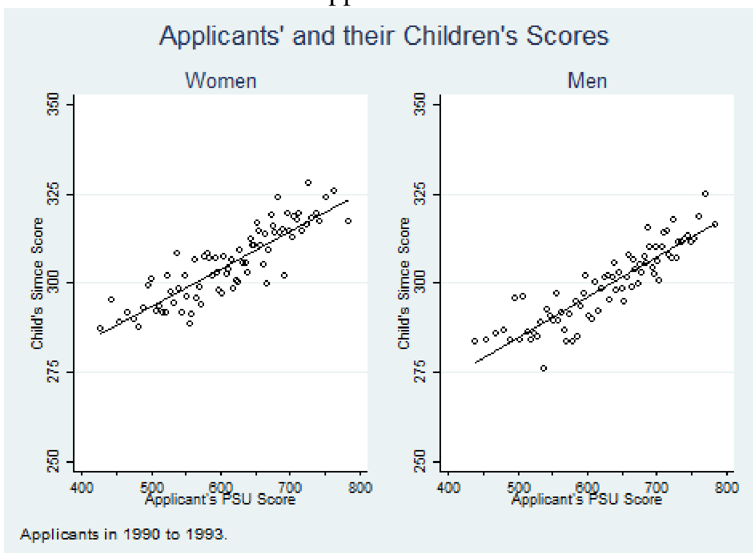


Figure 3: Fertility by age (conditional on marriage)

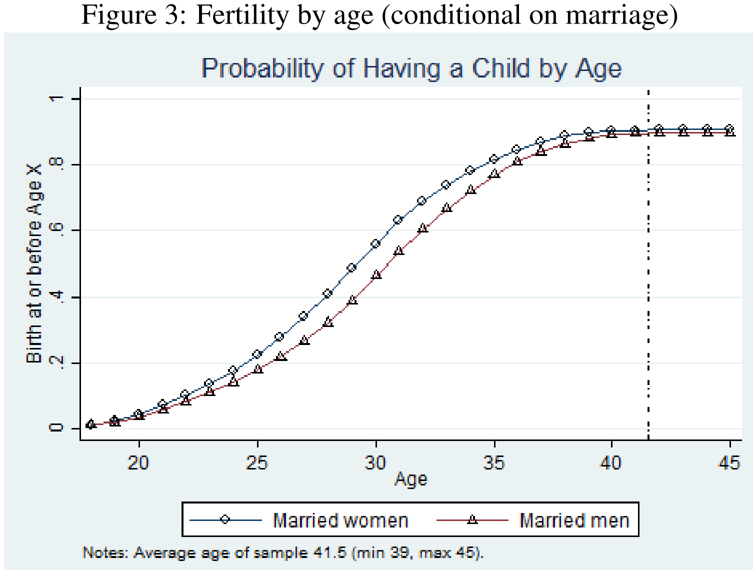


Figure 4: Women: Effect of admission to a more elite university-program on spouse's score

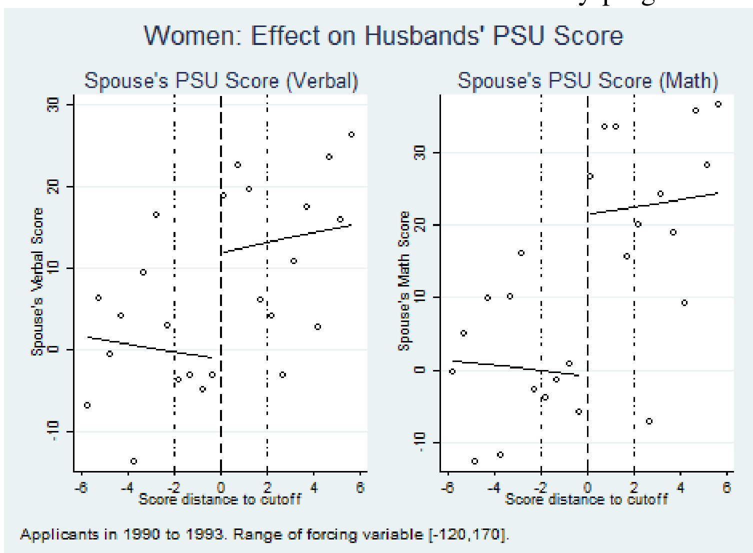


Figure 5: Men: Effect of admission to a more elite university-program on spouse's score

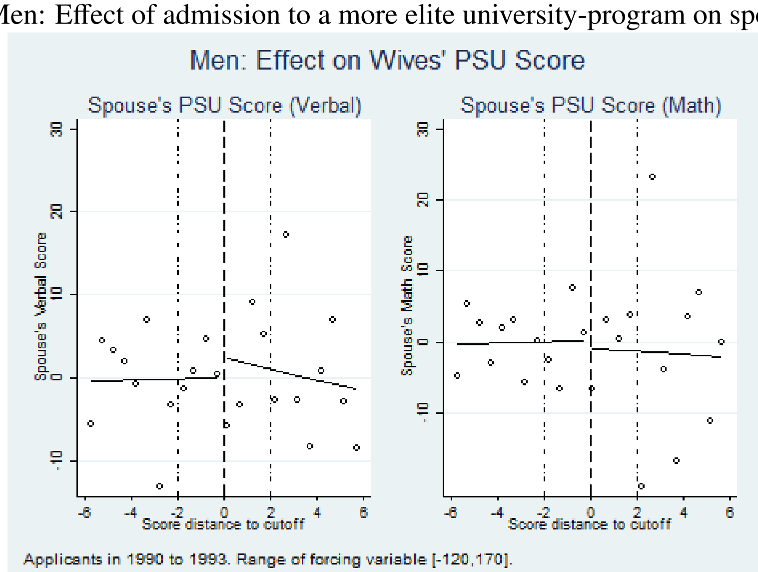


Figure 6: Women: Effect of admission to a more elite university-program on spouse's university attainment

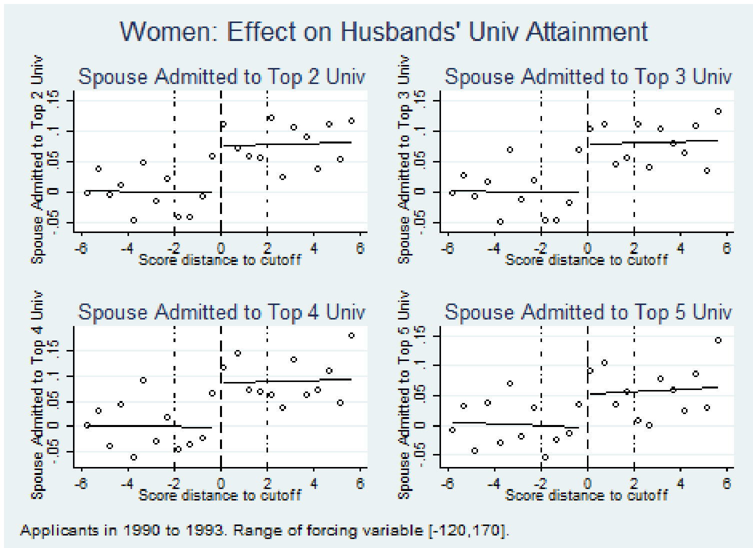


Figure 7: Men: Effect of admission to a more elite university-program on spouse's university attainment

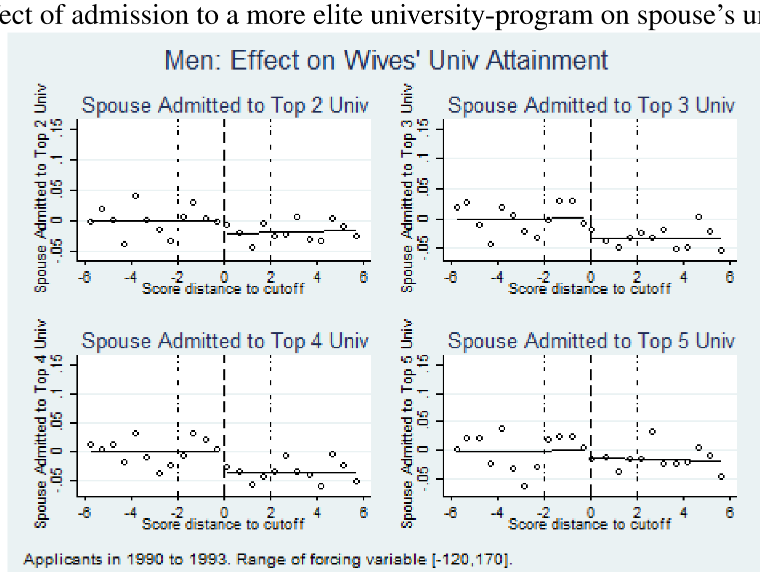


Figure 8: Women: Effect of admission to a higher-ranked university-program on children's scores

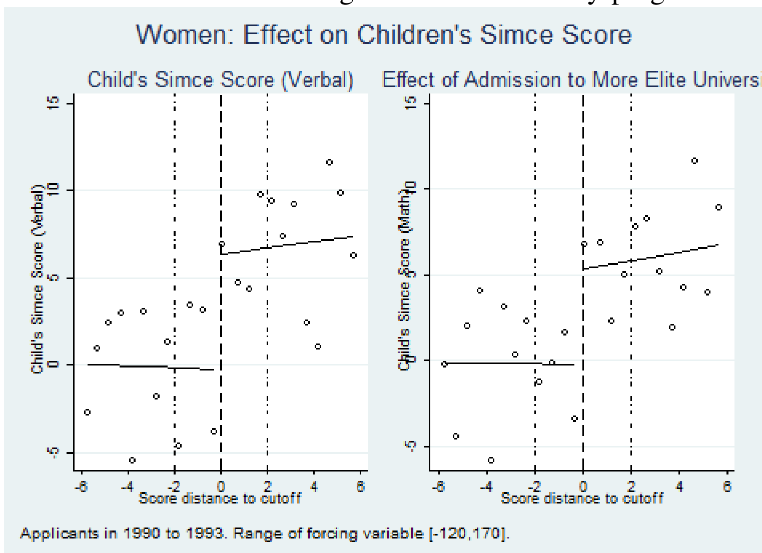
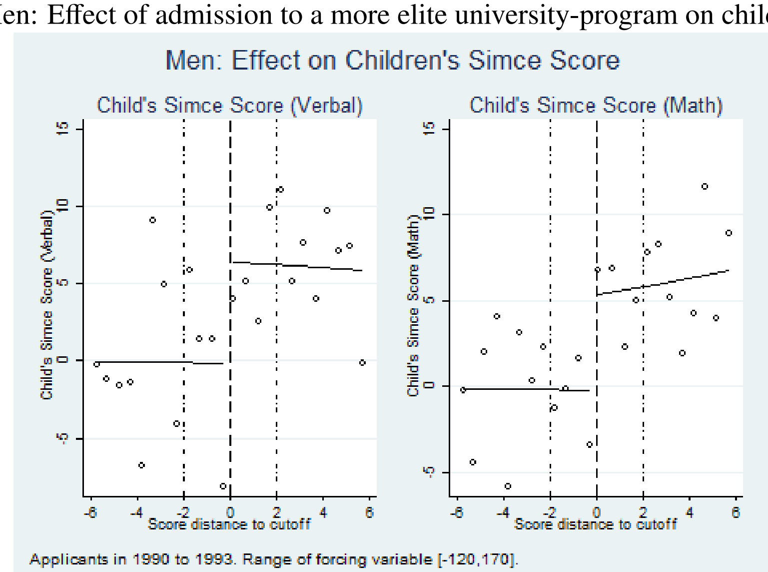


Figure 9: Men: Effect of admission to a more elite university-program on children's scores



Tables

Table 1: Selectivity of Chilean Universities

Rank	Univ. Name	Frac. PSU above 700	Aver. PSU
1	Pont Univ Catol de Chile	53%	676.4
2	Univ de Chile	52%	686.2
3	Univ de Valparaiso	21%	621.9
4	Univ de Concepcion	21%	605.0
5	Univ Tecnica Federico Santa Maria	20%	587.7
6	Univ de Santiago de Chile	19%	630.0
7	Pont Univ Catol de Valparaiso	19%	622.0
8	Univ Austral de Chile	15%	590.4
9	Univ de la Frontera	15%	587.1
10	Univ de Talca	13%	585.8
11	Univ de la Bio-Bio	12%	575.8
12	Univ de la Serena	11%	551.3
13	Univ de Antofagasta	10%	547.1
14	Univ Catolica del Norte	10%	576.1
15	Univ de Magallanes	10%	538.4
16	Univ Tecnol Metropol	10%	595.1
17	Univ de Atacama	10%	528.7
18	Univ de Tarapaca	9%	540.3
19	Univ de los Lagos	9%	512.2
20	Univ Metropol de Cienc de la Educ	8%	567.1
21	Univ de Playa Ancha	8%	537.7
22	Univ Arturo Prat	8%	528.3
23	Univ Catol de Temuco	8%	535.8
24	Univ Catol del Maule	7%	551.3
25	Univ Catol de la Sant Concepcion	6%	555.8

Based on applications from 1990 to 2000. PSU Score of 700 points is equivalent to the 90th percentile.

Table 2: Summary statistics

	Full Sample		Matched Sample		Marginal Sample	
	Women	Men	Women	Men	Women	Men
	(1)	(2)	(3)	(4)	(5)	(6)
Married	0.702	0.705	1	1	1	1
	(0.457)	(0.456)	(0)	(0)	(0)	(0)
Age	41.43	41.46	41.28	41.44	41.38	41.51
	(1.351)	(1.345)	(1.317)	(1.319)	(1.335)	(1.340)
Applicants' PSU Score	620.3	642.8	629.2	653.6	617.9	642.0
	(85.29)	(84.52)	(83.48)	(81.80)	(81.52)	(81.61)
Applicants' Math Score	631.2	669.5	642.7	682.4	630.2	668.0
	(103.5)	(98.95)	(101.3)	(94.99)	(99.40)	(95.30)
Applicants' Verbal Score	609.5	616.2	615.7	624.9	605.6	616.1
	(86.90)	(90.54)	(85.10)	(88.46)	(83.20)	(87.74)
N of indiv	18924	23337	8187	13093	2430	3437
Cond. on Marriage						
Having a Child	0.908	0.897	0.910	0.902	0.916	0.908
	(0.289)	(0.304)	(0.287)	(0.297)	(0.278)	(0.290)
Number of Children	2.024	1.980	2.037	2.005	2.026	2.012
	(1.133)	(1.133)	(1.129)	(1.132)	(1.082)	(1.103)
Age at First Birth	29.03	30.07	29.34	30.38	29.37	30.27
	(4.888)	(5.058)	(4.841)	(4.924)	(4.847)	(4.948)
Spouse Matched	0.616	0.796	1	1	1	1
	(0.486)	(0.403)	(0)	(0)	(0)	(0)
Spouses' PSU Score	602.5	560.9	602.5	560.9	601.3	558.8
	(108.8)	(112.0)	(108.8)	(112.0)	(108.3)	(110.4)
Spouses' Math Score	619.7	561.9	619.7	561.9	618.9	559.8
	(127.7)	(129.2)	(127.7)	(129.2)	(126.3)	(127.4)
Spouses' Verbal Score	585.3	559.8	585.3	559.8	584.3	557.5
	(106.9)	(109.5)	(106.9)	(109.5)	(107.6)	(107.8)
N of indiv	13290	16454	8187	13093	2439	3452

Applicants in 1990 to 1993 applying to top 5 universities. Table displays means of variables with standard errors in parentheses.

Table 3: Summary statistics

	Full Sample		Matched Sample		Marginal Sample	
	Women	Men	Women	Men	Women	Men
Cond. on Marr. and Child						
Child Matched	0.505	0.420	1	1	1	1
	(0.500)	(0.494)	(0)	(0)	(0)	(0)
Child's Verbal Score	306.5	300.7	306.5	300.7	305.7	300.2
	(39.76)	(42.19)	(39.76)	(42.19)	(39.84)	(40.57)
Child's Math Score	306.2	299.4	306.2	299.4	305.4	298.7
	(41.07)	(43.60)	(41.07)	(43.60)	(41.33)	(42.55)
School Peers' Verbal Score	289.6	283.2	289.6	283.2	288.1	283.3
	(21.37)	(22.14)	(21.37)	(22.14)	(21.06)	(21.39)
School Peers' Math Score	285.7	278.2	285.7	278.2	284.2	278.4
	(24.50)	(25.28)	(24.50)	(25.28)	(24.40)	(24.19)
School Private	0.916	0.886	0.916	0.886	0.910	0.896
	(0.284)	(0.325)	(0.284)	(0.325)	(0.296)	(0.316)
School High SES	0.850	0.775	0.850	0.775	0.836	0.795
	(0.357)	(0.418)	(0.357)	(0.418)	(0.371)	(0.404)
N of Indiv	12904	15447	6520	6494	2068	1933

Applicants in 1990 to 1993 applying to top 5 universities. Table displays means of variables with standard errors in parentheses.

Table 8: Effect of admission to a more elite university-program on spouse quality (spouse's university admission outcomes)

	WOMEN			**MEN**		
	Win 6	Win 4	Win 2	Win 6	Win 4	Win 2
Spouse Applied to Univ	0.007	0.000	-0.011	0.012	0.001	-0.005
	(0.031)	(0.031)	(0.035)	(0.029)	(0.032)	(0.036)
N of applications	4328	930	706	4745	826	636
R^2	0.149	0.546	0.563	0.149	0.557	0.553
Spouse Admitted to						
Top 2 Univ	0.092^{***}	0.058^{**}	0.067^{*}	-0.012	0.021	0.033
	(0.034)	(0.028)	(0.037)	(0.025)	(0.024)	(0.031)
Top 3 Univ	0.088^{**}	0.061^{**}	0.074^{*}	-0.020	0.010	0.020
	(0.036)	(0.030)	(0.038)	(0.026)	(0.027)	(0.035)
Top 4 Univ	0.099^{**}	0.070^{**}	0.083^{*}	-0.024	0.020	0.031
	(0.041)	(0.035)	(0.045)	(0.030)	(0.030)	(0.037)
Top 5 Univ	0.076^{*}	0.064^{*}	0.088^{*}	0.004	0.004	0.020
	(0.043)	(0.037)	(0.046)	(0.032)	(0.032)	(0.039)
N of applications	2391	684	432	3584	712	488
R^2	0.262	0.531	0.545	0.172	0.536	0.548

Applicants in 1990 to 1993 applying to top 5 universities. Window 6: flexible linear controls for applicants' own score. Windows 4 and 2: using only closest observations above and below the cutoff. All specifications contain program-year fixed effects. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 4: Marriage and fertility timing

	Being Married		**Having a Child** (cond. on marriage)	
	Women	Men	Women	Men
Age 39	-0.076***	-0.072***	-0.013	-0.044***
	(0.014)	(0.013)	(0.011)	(0.011)
Age 40	-0.042***	-0.037***	-0.005	-0.023***
	(0.010)	(0.009)	(0.007)	(0.007)
Age 41	-0.025***	-0.033***	-0.003	-0.022***
	(0.010)	(0.008)	(0.007)	(0.007)
Age 42 (Omit. Cat.)	0.723***	0.725***	0.905***	0.908***
	(0.007)	(0.006)	(0.005)	(0.005)
Age 43	0.003	0.004	0.024***	0.007
	(0.010)	(0.009)	(0.008)	(0.007)
Age 44	-0.034**	-0.006	0.012	0.002
	(0.016)	(0.014)	(0.012)	(0.011)
Age 45	0.025	-0.049	-0.014	0.016
	(0.042)	(0.033)	(0.031)	(0.027)
Mean of Dep Var	0.702	0.705	0.908	0.897
	(0.457)	(0.456)	(0.289)	(0.304)
N of Indiv	18926	23338	13292	16455
R^2	0.003	0.002	0.002	0.002

Outcome: Being married or having a child (conditional on marriage). Sample: Applicants in 1990 to 1993 applying to top 5 universities. The average age of the sample is 41.5, 75% of sample are 41 and older and 94% are 40 and older. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: Effect of admission to a more elite university-program on peer quality

	WOMEN			MEN		
	Win 6	Win 4	Win 2	Win 6	Win 4	Win 2
Peer Qual Opp Gender						
Peers' Math Score	30.549***	32.590***	33.685***	28.929***	25.124***	27.635***
	(3.017)	(3.058)	(3.858)	(2.470)	(3.368)	(3.912)
Peers' Verbal Score	22.553***	23.371***	22.717***	20.971***	16.812***	20.738***
	(2.790)	(2.772)	(3.634)	(2.070)	(2.768)	(3.329)
Peer Quality All						
Peers' Math Score	27.755***	29.715***	30.211***	24.399***	20.672***	23.139***
	(2.577)	(2.565)	(3.080)	(1.868)	(2.721)	(2.789)
Peers' Verbal Score	20.325***	19.285***	20.992***	18.481***	14.788***	18.082***
	(2.144)	(2.051)	(2.527)	(1.610)	(2.149)	(2.491)
N of applications	2162	622	396	3290	655	450
R^2	0.897	0.931	0.931	0.909	0.926	0.932

Applicants in 1990 to 1993 applying to top 5 universities. Window 6: flexible linear controls for applicants' own score. Windows 4 and 2: using only closest observations above and below the cutoff. All specifications contain program-year fixed effects. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 6: Effect of admission to a more elite university-program on marriage and fertility

	WOMEN			MEN		
	Win 6	Win 4	Win 2	Win 6	Win 4	Win 2
Being Married	-0.029	-0.037	-0.033	-0.022	0.005	-0.002
	(0.024)	(0.029)	(0.032)	(0.023)	(0.028)	(0.031)
N of applications	6119	1020	854	6695	938	770
R^2	0.111	0.461	0.456	0.113	0.556	0.555
Cond on Marriage						
Having a Child	0.001	-0.002	-0.008	-0.016	-0.011	0.003
	(0.018)	(0.019)	(0.022)	(0.018)	(0.022)	(0.024)
Number of Children	0.069	0.076	0.050	0.006	-0.042	0.014
	(0.068)	(0.068)	(0.077)	(0.068)	(0.073)	(0.081)
N of applications	4328	930	706	4745	826	636
R^2	0.142	0.508	0.519	0.159	0.517	0.528
Cond on Marr and Child						
Age at First Birth	0.058	0.295	0.199	-0.259	0.291	0.301
	(0.319)	(0.353)	(0.409)	(0.318)	(0.396)	(0.446)
N of applications	3957	850	646	4270	743	578
R^2	0.179	0.548	0.544	0.177	0.568	0.570

Applicants in 1990 to 1993 applying to top 5 universities. Window 6: flexible linear controls for applicants' own score. Windows 4 and 2: using only closest observations above and below the cutoff. All specifications contain program-year fixed effects. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 7: Effect of admission to a more elite university-program on spouse quality (test score)

	WOMEN			**MEN**		
	Win 6	Win 4	Win 2	Win 6	Win 4	Win 2
Spouse's Math Score	27.701***	27.387***	26.954**	-2.067	-6.775	-4.276
	(10.399)	(8.818)	(11.278)	(8.475)	(8.367)	(10.194)
Spouse's Verbal Score	16.361*	19.148**	17.331*	1.454	-4.903	0.617
	(8.857)	(7.430)	(9.590)	(7.179)	(7.501)	(9.112)
N of applications	2391	684	432	3584	712	486
R^2	0.331	0.586	0.573	0.255	0.559	0.559

Applicants in 1990 to 1993 applying to top 5 universities. Window 6: flexible linear controls for applicants' own score. Windows 4 and 2: using only closest observations above and below the cutoff. All specifications contain program-year fixed effects. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 9: Effect on the probability of having a spouse from the same university/program

	WOMEN			**MEN**		
	Win 6	Win 4	Win 2	Win 6	Win 4	Win 2
Spouse Admitted to Same University	0.090**	0.117***	0.100**	0.052**	0.072***	0.051*
	(0.037)	(0.033)	(0.042)	(0.023)	(0.025)	(0.029)
Same Program	0.075***	0.058***	0.060**	0.039***	0.048***	0.053***
	(0.023)	(0.019)	(0.026)	(0.013)	(0.013)	(0.017)
N	2391	684	432	3584	712	486
R^2	0.276	0.543	0.530	0.177	0.502	0.503

Applicants in 1990 to 1993 applying to top 5 universities. Window 6: flexible linear controls for applicants' own score. Windows 4 and 2: using only closest observations above and below the cutoff. All specifications contain program-year FE. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 10: Effect of a more elite university-program by field of application

	Education	Humanities, Arts	Soc Science Business, Law	Nat Science Computing	Engineering	Medicine, Health
Women						
Spouse's Math Score	74.940**	53.840*	-38.543	20.116	13.846	42.700*
	(30.191)	(27.010)	(24.345)	(27.357)	(59.559)	(25.146)
Spouse's Verbal Score	45.960*	35.360*	-11.729	-2.930	18.462	38.060
	(24.742)	(19.838)	(21.164)	(21.090)	(50.765)	(23.995)
N	50	50	70	86	26	100
R^2	0.679	0.723	0.673	0.563	0.257	0.412
Men						
Spouse's Math Score	-65.417	8.950	0.951	10.347	-23.523	28.768
	(40.407)	(38.664)	(25.979)	(24.863)	(17.650)	(33.125)
Spouse's Verbal Score	-41.375	41.300	3.171	15.724	-25.432	11.018
	(40.003)	(31.935)	(20.243)	(22.336)	(15.702)	(30.620)
N	24	40	82	98	132	56
R^2	0.662	0.432	0.558	0.515	0.583	0.422

Applicants in 1990 to 1993 applying to top 5 universities. Effects by field of application (education, humanities and art, social sciences/business/law, natural sciences and computing, engineering, health and social work). Window 2: using only closest observations above and below the cutoff. All specifications contain program-year fixed effects. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 11: Effect of admission to a more elite university-program on child quality

	WOMEN			**MEN**		
	Win 6	Win 4	Win 2	Win 6	Win 4	Win 2
Child's Verbal Score	7.654**	6.399**	8.237*	8.533**	6.458	8.782
	(3.891)	(3.068)	(4.204)	(4.138)	(6.174)	(7.100)
Child's Math Score	4.569	6.212*	2.860	7.306*	8.501	11.685
	(3.992)	(3.226)	(4.272)	(4.264)	(7.228)	(7.780)
N of applications	2009	610	340	1889	326	250
R^2	0.326	0.520	0.524	0.304	0.786	0.786

Applicants in 1990 to 1993 applying to top 5 universities. Window 6: flexible linear controls for applicants' own score. Windows 4 and 2: using only closest observations above and below the cutoff. All specifications contain program-year fixed effects. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 12: Effect of admission to a more elite university-program on child investment (type and quality of child's school)

	Child Score		**School/Peer Quality**			
			Peers' Scores		School	
	Verbal	Math	Verbal	Math	Private	High SES
Women	16.796*	8.513	-3.927	-4.768	-0.007	-0.022
	(8.701)	(8.559)	(3.920)	(4.561)	(0.055)	(0.073)
N of applications	702	702	702	702	702	702
R^2	0.524	0.538	0.612	0.608	0.619	0.568
Men	4.481	14.712*	4.379	2.934	0.179***	0.345***
	(9.252)	(8.889)	(4.666)	(5.139)	(0.068)	(0.083)
N of applications	624	624	624	624	624	624
R^2	0.465	0.530	0.509	0.530	0.495	0.555

Applicants in 1990 to 1993 applying to top 5 universities. Window 6: flexible linear controls for applicants' own score. All specifications contain program-year fixed effects. Standard errors in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

ONLINE APPENDIX: NOT FOR PUBLICATION

A Additional Results and Robustness Checks for Applicants in 1990 to 1993

Figure A.1: Correlation between individuals' and their spouses' years of education

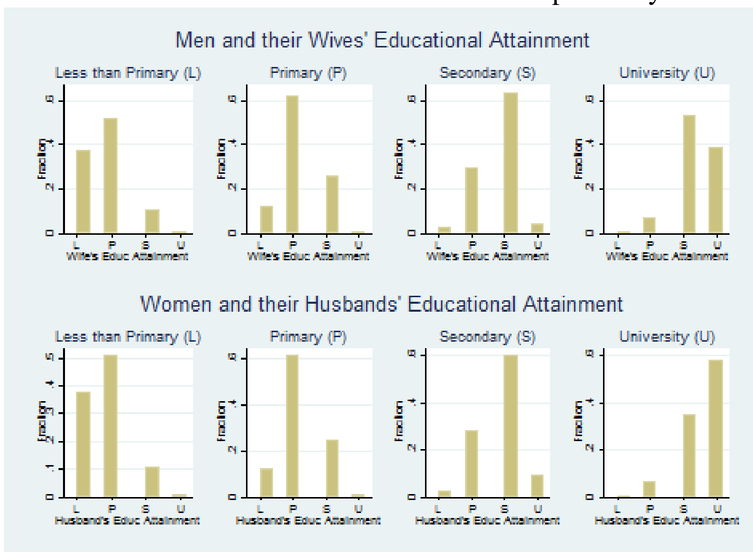


Table A.1: Manipulation test: Balancedness of characteristics above and below the cutoffs

	Applicants		
	Win 6	Win 4	Win 2
Applicant's Gender	-0.010	-0.022	-0.007
	(0.016)	(0.025)	(0.025)
N of applications	12745	1160	1112
R^2	0.261	0.622	0.621
Applicant's Age	0.026	-0.002	0.015
	(0.026)	(0.042)	(0.043)
N of applications	12745	1160	1112
R^2	0.723	0.858	0.862

Applicants in 1990 to 1993 applying to top 5 universities. Window 6: flexible linear controls for applicants' own score. Windows 4 and 2: using only closest observations above and below the cutoff. All specifications contain program-year fixed effects. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.2: Effect of admission to more elite univ-program on spouse quality: Selection test

	WOMEN			**MEN**		
	Win 6	Win 4	Win 2	Win 6	Win 4	Win 2
Spouse Matched	-0.047	-0.024	-0.042	0.012	0.010	-0.005
	(0.031)	(0.032)	(0.036)	(0.026)	(0.031)	(0.035)
N of applications	4328	930	706	4745	826	636
R^2	0.169	0.505	0.513	0.155	0.481	0.491

Applicants in 1990 to 1993 applying to top 5 universities. Window 6: flexible linear controls for applicants' own score. Windows 4 and 2: using only closest observations above and below the cutoff. All specifications contain program-year fixed effects. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.3: Balancedness of characteristics for different samples

	WOMEN			**MEN**		
	Win 6	Win 4	Win 2	Win 6	Win 4	Win 2
Full Sample						
Age of Applicant	0.001	-0.017	0.011	0.037	-0.051	-0.069
	(0.038)	(0.045)	(0.049)	(0.036)	(0.050)	(0.056)
N of applications	6087	1018	853	6661	937	770
R^2	0.736	0.860	0.856	0.737	0.845	0.847
Sample with Matched Spouse						
Age of Applicant	0.028	0.003	0.106	0.003	-0.089*	-0.066
	(0.063)	(0.055)	(0.069)	(0.050)	(0.054)	(0.066)
N of applications	2363	679	429	3561	709	484
R^2	0.784	0.862	0.866	0.765	0.862	0.864
Sample with Matched Child						
Age of Applicant	-0.091	0.049	0.071	-0.010	-0.069	-0.038
	(0.071)	(0.057)	(0.079)	(0.077)	(0.070)	(0.087)
N of applications	2002	609	339	1836	470	289
R^2	0.771	0.845	0.838	0.779	0.838	0.841
Sample with Matched School						
Age of Applicants	-0.052	0.027	-0.080	-0.032	-0.023	-0.098
	(0.141)	(0.091)	(0.145)	(0.173)	(0.128)	(0.202)
N of applications	699	224	100	613	178	82
R^2	0.859	0.861	0.861	0.835	0.792	0.757

Applicants in 1990 to 1993 applying to top 5 universities. Window 6: flexible linear controls for applicants' own score. Windows 4 and 2: using only closest observations above and below the cutoff. All specifications contain program-year fixed effects. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.4: Fraction of applicants with matched spouses for different cohorts.

	Spouse Matched	
	Women	Men
Applicants in		
1990-1993	0.619	0.794
	(0.486)	(0.404)
N of applications	17448	21223
1991-1993	0.658	0.806
	(0.474)	(0.395)
N of applications	12935	15661
1992-1993	0.691	0.815
	(0.462)	(0.388)
N of applications	8524	10447
1993	0.726	0.816
	(0.446)	(0.387)
N of applications	4211	5139

Table displays means and standard errors in parentheses.

Table A.5: Effect of admission to a more elite univ-program on spouse quality (test score): Robustness

	WOMEN			MEN		
	Win 6	Win 4	Win 2	Win 6	Win 4	Win 2
Applicants 1990-1993						
Spouse's Math Score	27.701***	27.387***	26.954**	-2.067	-6.775	-4.276
	(10.399)	(8.818)	(11.278)	(8.475)	(8.367)	(10.194)
Spouse's Verbal Score	16.361*	19.148**	17.331*	1.454	-4.903	0.617
	(8.857)	(7.430)	(9.590)	(7.179)	(7.501)	(9.112)
N of applications	2391	684	432	3584	712	486
R^2	0.331	0.586	0.573	0.255	0.559	0.559
Applicants 1991-1993						
Spouse's Math Score	27.609**	27.596***	27.924**	-3.254	-11.060	-6.467
	(11.997)	(10.072)	(12.537)	(9.934)	(9.845)	(12.079)
Spouse's Verbal Score	16.977*	20.235**	24.033**	-6.460	-13.974	-8.017
	(10.145)	(8.385)	(10.341)	(8.523)	(8.729)	(10.748)
N of applications	1833	520	330	2615	536	362
R^2	0.339	0.590	0.604	0.263	0.552	0.546
Applicants 1992-1993						
Spouse's Math Score	23.785*	21.780*	29.395*	-5.760	-8.397	0.945
	(13.923)	(12.449)	(15.197)	(11.953)	(11.556)	(14.903)
Spouse's Verbal Score	11.072	8.263	15.575	-4.730	-17.204	-3.004
	(11.904)	(10.550)	(12.950)	(10.346)	(10.864)	(13.656)
N of applications	1283	350	228	1773	358	236
R^2	0.320	0.544	0.565	0.256	0.527	0.479
Applicants 1993						
Spouse'S Math Score	38.923**	34.494*	38.283*	-15.706	-7.609	-4.754
	(18.578)	(17.906)	(20.474)	(16.768)	(14.409)	(19.016)
Spouse's Verbal Score	14.892	15.093	16.033	-12.736	-10.506	-1.175
	(16.397)	(15.425)	(18.511)	(14.520)	(13.869)	(17.960)
N of applications	661	172	120	852	174	114
R^2	0.324	0.542	0.549	0.302	0.611	0.562

Robustness check: different cohorts of applicants applying to top 5 universities. Window 6: flexible linear controls for applicants' own score. Windows 4 and 2: using only closest observations above and below the cutoff. All specifications contain program-year fixed effects. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.6: Effect of admission to a more elite univ-program on spouse quality (spouse admitted to top univ): Robustness

	WOMEN			MEN		
	Win 6	Win 4	Win 2	Win 6	Win 4	Win 2
Applicants in 1990-1993						
Spouse Adm to Top 2 Univ	0.092***	0.058**	0.067*	-0.012	0.021	0.033
	(0.034)	(0.028)	(0.037)	(0.025)	(0.024)	(0.031)
Top 3 Univ	0.088**	0.061**	0.074*	-0.020	0.010	0.020
	(0.036)	(0.030)	(0.038)	(0.026)	(0.027)	(0.035)
Top 4 Univ	0.099**	0.070**	0.083*	-0.024	0.020	0.031
	(0.041)	(0.035)	(0.045)	(0.030)	(0.030)	(0.037)
Top 5 Univ	0.076*	0.064*	0.088*	0.004	0.004	0.020
	(0.043)	(0.037)	(0.046)	(0.032)	(0.032)	(0.039)
N of applications	2393	684	432	3587	712	488
R^2	0.262	0.531	0.545	0.172	0.536	0.548
Applicants in 1991-1993						
Spouse Adm to Top 2 Univ	0.111***	0.088***	0.106**	-0.003	0.013	0.038
	(0.040)	(0.033)	(0.043)	(0.029)	(0.027)	(0.037)
Top 3 Univ	0.102**	0.088***	0.109**	-0.006	0.013	0.033
	(0.041)	(0.034)	(0.044)	(0.031)	(0.030)	(0.040)
Top 4 Univ	0.100**	0.087**	0.076	-0.001	0.032	0.055
	(0.048)	(0.041)	(0.052)	(0.036)	(0.034)	(0.044)
Top 5 Univ	0.077	0.083*	0.088	0.024	0.011	0.041
	(0.050)	(0.043)	(0.053)	(0.037)	(0.037)	(0.046)
N of applications	1835	520	330	2617	536	364
R^2	0.238	0.520	0.528	0.177	0.518	0.514
Applicants in 1992-1993						
Spouse Adm to Top 2 Univ	0.084*	0.086**	0.118**	0.006	0.014	0.059
	(0.047)	(0.040)	(0.052)	(0.034)	(0.033)	(0.045)
Top 3 Univ	0.084*	0.077*	0.110**	0.021	0.025	0.067
	(0.049)	(0.042)	(0.055)	(0.037)	(0.037)	(0.050)
Top 4 Univ	0.117**	0.077	0.092	0.038	0.059	0.109**
	(0.057)	(0.051)	(0.067)	(0.042)	(0.040)	(0.051)
Top 5 Univ	0.086	0.060	0.083	0.066	0.042	0.101*
	(0.059)	(0.054)	(0.066)	(0.044)	(0.042)	(0.055)
N of applications	1285	350	228	1775	358	238
R^2	0.215	0.483	0.499	0.185	0.554	0.547
Applicants in 1993						
Spouse Adm to Top 2 Univ	0.062	0.087	0.083	0.020	0.034	0.079
	(0.065)	(0.056)	(0.072)	(0.048)	(0.046)	(0.067)
Top 3 Univ	0.078	0.087	0.100	0.006	0.011	0.044
	(0.066)	(0.063)	(0.078)	(0.051)	(0.049)	(0.072)
Top 4 Univ	0.147*	0.134*	0.117	0.014	0.046	0.061
	(0.077)	(0.079)	(0.098)	(0.060)	(0.050)	(0.065)
Top 5 Univ	0.132	0.157*	0.117	0.007	0.034	0.061
	(0.081)	(0.082)	(0.098)	(0.063)	(0.054)	(0.070)
N of applications	663	172	120	853	174	114
R^2	0.255	0.485	0.482	0.176	0.574	0.570

Robustness check: different cohorts of applicants applying to top 5 universities. Window 6: flexible linear controls for applicants' own score. Windows 4 and 2: using only closest observations above and below the cutoff. All specifications contain program-year fixed effects. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.7: Effect if lower ranked university-program is in the same city

	Lower Ranked Prog in Same City					
	Women			Men		
	Win 6	Win 4	Win 2	Win 6	Win 4	Win 2
Spouses' Math Score	24.464*	19.528**	21.436*	-9.121	-2.162	5.709
	(13.627)	(9.774)	(12.813)	(10.772)	(10.034)	(12.453)
Spouses' Verbal Score	16.855	14.784*	13.423	-10.388	-5.411	-1.762
	(11.870)	(8.812)	(11.850)	(9.213)	(8.947)	(11.057)
N of applications	1735	504	298	2652	530	344
R^2	0.368	0.565	0.563	0.284	0.567	0.574

This table displays coefficients on the dummy "Being Above the Cutoff" using the same regression specification as for the main result for the sample of university applicants whose lower ranked university-program is in the same city. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.8: Are higher ranked universities more likely catholic?

	WOMEN			**MEN**		
	Win 6	Win 4	Win 2	Win 6	Win 4	Win 2
University Catholic	-0.004	0.023	0.023	-0.012	-0.065**	-0.047
	(0.030)	(0.029)	(0.036)	(0.024)	(0.029)	(0.035)
N of applications	2390	684	432	3584	712	486
R^2	0.391	0.509	0.504	0.369	0.499	0.524

Applicants in 1990 to 1993 applying to top 5 universities. Window 6: flexible linear controls for applicants' own score. Windows 4 and 2: using only closest observations above and below the cutoff. All specifications contain program-year fixed effects. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.9: Do applicants in more elite programs marry more similar spouses?

	WOMEN			MEN		
	Win 6	Win 4	Win 2	Win 6	Win 4	Win 2
Diff to Spouse in Math Score	37.407***	23.847**	30.147**	-0.743	-6.520	-9.303
	(12.564)	(10.321)	(13.153)	(10.087)	(9.704)	(12.324)
in Verbal Score	10.910	10.437	16.246	-1.957	-5.105	-3.922
	(11.177)	(8.179)	(10.519)	(8.715)	(8.682)	(10.674)
N of applications	2076	622	382	3121	684	436
R^2	0.256	0.573	0.588	0.217	0.521	0.525

Applicants in 1990 to 1993 applying to top 5 universities. Window 6: flexible linear controls for applicants' own score. Windows 4 and 2: using only closest observations above and below the cutoff. All specifications contain program-year fixed effects. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.10: Further robustness: Using different specifications

	WOMEN		MEN	
	Quadr.	Linear	Quadr.	Linear
Spouse's Math Score	44.780***	27.291***	-3.733	-2.067
	(14.977)	(10.403)	(12.258)	(8.475)
Spouse's Verbal Score	36.601***	16.562*	-4.399	1.454
	(12.757)	(8.862)	(10.381)	(7.179)
N of applications	2390	2390	3584	3584
R^2	0.332	0.331	0.255	0.255

This table displays coefficients on the dummy "Being Above the Cutoff" using observations within a bandwidth of [-6,6] around the cutoff and a quadratic and linear specification (allowing for different slopes to the right and left of the cutoff). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.11: Effect of admission to a more elite univ-program on spouse quality (dropping applicants who remarried)

	WOMEN			MEN		
	Win 6	Win 4	Win 2	Win 6	Win 4	Win 2
Spouses' Math Score	25.856**	25.439***	30.210***	-7.259	-11.050	-9.435
	(10.927)	(9.192)	(11.525)	(8.755)	(8.202)	(10.150)
Spouses' Verbal Score	18.144*	18.466**	21.898**	-1.993	-9.676	-5.460
	(9.331)	(7.723)	(9.868)	(7.440)	(7.484)	(9.168)
N of applications	2225	656	400	3364	704	476
R^2	0.339	0.577	0.582	0.263	0.566	0.563

Applicants in 1990 to 1993 applying to top 5 universities, but dropping the individuals who remarry (less than 4%). Window 6: flexible linear controls for applicants' own score. Windows 4 and 2: using only closest observations above and below the cutoff. All specifications contain program-year fixed effects. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.12: Effect of admission to a more elite univ-program on child quality: Selection test

	WOMEN			MEN		
	Win 6	Win 4	Win 2	Win 6	Win 4	Win 2
Child Matched	0.021	-0.025	-0.036	0.001	-0.027	-0.018
	(0.030)	(0.031)	(0.036)	(0.029)	(0.033)	(0.036)
N of applications	4455	930	706	4844	826	636
R^2	0.177	0.544	0.533	0.165	0.530	0.558

Applicants in 1990 to 1993 applying to top 5 universities. Window 6: flexible linear controls for applicants' own score. Windows 4 and 2: using only closest observations above and below the cutoff. All specifications contain program-year fixed effects. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.13: Effect of admission to a more elite univ-program on child quality: Robustness

	WOMEN			MEN		
	Win 6	Win 4	Win 2	Win 6	Win 4	Win 2
Applicants in 1990-1993						
Child's Verbal Score	7.654**	6.399**	8.237*	8.533**	6.458	8.782
	(3.891)	(3.068)	(4.204)	(4.138)	(6.174)	(7.100)
Child's Math Score	4.569	6.212*	2.860	7.306*	8.501	11.685
	(3.992)	(3.226)	(4.272)	(4.264)	(7.228)	(7.780)
N of applications	2009	610	340	1889	326	250
R^2	0.326	0.520	0.524	0.304	0.786	0.786
Applicants in 1990-1992						
Child's Verbal Score	6.364	6.224*	6.234	9.407**	11.090***	11.652**
	(4.178)	(3.403)	(4.726)	(4.473)	(4.016)	(4.717)
Child's Math Score	3.847	6.228*	1.057	10.808**	11.968***	12.362**
	(4.338)	(3.647)	(4.850)	(4.584)	(4.376)	(4.975)
N of applications	1696	508	288	1551	382	240
R^2	0.294	0.494	0.510	0.292	0.521	0.579
Applicants in 1990-1991						
Child Verbal Score	8.686*	7.595*	8.301	6.225	6.373	11.645**
	(4.901)	(4.097)	(5.619)	(5.223)	(5.042)	(5.803)
Child Math Score	5.120	4.581	1.961	9.366*	9.395*	14.508***
	(4.977)	(4.414)	(5.835)	(5.233)	(5.257)	(5.501)
N of applications	1239	358	212	1141	260	176
R^2	0.284	0.467	0.494	0.276	0.539	0.613

Robustness check: different cohorts of applicants applying to top 5 universities. Window 6: flexible linear controls for applicants' own score. Windows 4 and 2: using only closest observations above and below the cutoff. All specifications contain program-year fixed effects. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.14: Fraction of applicants with matched child for different cohorts.

	Child Matched	
	Women	Men
Applicants in		
1990-1993	0.490	0.410
	(0.500)	(0.492)
N of applications	16426	19518
1990-1992	0.530	0.446
	(0.499)	(0.497)
N of applications	12541	14957
1990-1991	0.567	0.478
	(0.495)	(0.500)
N of applications	8560	10139

Table displays means and standard errors in parentheses.

Table A.15: Effect of admission to a more elite univ-program on child investment (school quality): Selection test

	WOMEN			MEN		
	Win 6	Win 4	Win 2	Win 6	Win 4	Win 2
Child's School Matched	0.011	-0.007	-0.009	-0.004	0.028	0.035
	(0.023)	(0.022)	(0.025)	(0.020)	(0.024)	(0.026)
N of applications	4455	930	706	4844	826	636
R^2	0.156	0.528	0.530	0.157	0.498	0.499

Applicants in 1990 to 1993 applying to top 5 universities. Window 6: flexible linear controls for applicants' own score. Windows 4 and 2: using only closest observations above and below the cutoff. All specifications contain program-year fixed effects. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.16: Effect of admission to a more elite univ-program on child investment (school quality): Robustness

	Child Score		School/Peer Quality			
			Peers' Scores		School	
	Verbal	Math	Verbal	Math	Private	High SES
Applicants in 1990-1993						
Women	16.796*	8.513	-3.927	-4.768	-0.007	-0.022
	(8.701)	(8.559)	(3.920)	(4.561)	(0.055)	(0.073)
N of applications	702	702	702	702	702	702
R^2	0.524	0.538	0.612	0.608	0.619	0.568
Men	4.481	14.712*	4.379	2.934	0.179***	0.345***
	(9.252)	(8.889)	(4.666)	(5.139)	(0.068)	(0.083)
N of applications	624	624	624	624	624	624
R^2	0.465	0.530	0.509	0.530	0.495	0.555
Applicants in 1990-1992						
Women	16.187*	5.935	-1.350	-3.380	0.021	-0.003
	(9.404)	(9.184)	(4.209)	(4.948)	(0.058)	(0.077)
N of applications	592	592	592	592	592	592
R^2	0.505	0.527	0.598	0.596	0.608	0.554
Men	12.922	21.923**	5.046	2.824	0.222***	0.364***
	(9.876)	(9.548)	(5.093)	(5.558)	(0.071)	(0.091)
N of applications	514	514	514	514	514	514
R^2	0.430	0.497	0.460	0.483	0.453	0.504

Robustness check: different cohorts of applicants to top 5 university-programs. Window 6: flexible linear controls for applicants' own score. All specifications contain program-year fixed effects. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table A.17: Effect of admission to a more elite univ-program on enrolment

	Win 6	Win 4	Win 2
Enrolment	0.509***	0.500***	0.497***
	(0.016)	(0.019)	(0.026)
N of applications	9251	6309	3327
R^2	0.397	0.373	0.360

Applications to top 5 universities and enrolment in 2007. All specifications contain program and year fixed effects. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Balancedness of Preferences

In the following we explain how we test if preferences over programs change at the cutoff. We adapt an approach by Jackson (2010) who assesses differences in preferences of secondary school applicants (above vs below the admission cutoff) by comparing schools (rank by rank, i.e. first-choice schools, then second-choice schools etc) in terms of students' average test scores. The information about preference rankings that is needed to implement Jackson (2010)'s strategy is available to us only for the cohorts 2001-02, but not for the cohorts 1990-93. Thus, while in the case of the former we show that there is no sign of manipulation by directly applying Jackson (2010)'s approach (see Table B.4), we cannot do so in the case of the latter, since for those we only have the following information: a) the programs to which applicants were admitted, b) the set of programs where they are waitlisted. For these programs we only know that applicants ranked them above the program where they were admitted; we do not know how they were ranked among themselves.

Using this information we can compute and compare upper and lower bounds for the quality of first-ranked programs of applicants on either side of the cutoff.[29] For those admitted to their first or second choice, we know exactly what their first choice is. Applicants admitted to higher choices are on multiple wait lists and any of the corresponding (wait list) programs could be the top choice. The quality of the top choice is bounded by the highest peer quality among these wait list programs. As lower bound we use the average peer quality. Using the average amounts to assuming that individuals' preferences and peer quality are independent. From the cohorts in 2001-02 we know though that individuals tend to rank higher peer quality programs higher. Thus, the average underestimates the quality of the top choice.

It is important to understand that these bounds are always tighter above the cutoff than below it. To see this, consider an individual above the cutoff and her exact counterpart on the other side of the cutoff. The latter is necessarily accepted at a program with a higher rank then the program under consideration. Thus below the cutoff the set of candidates for the top choice is larger, which in turn implies less precise bounds. Under the assumption of a constant top choice quality we should therefore expect that the upper (lower) bound decreases (increases) at the cutoff. This is exactly what we find in the data (see Table A.18).

To go beyond this result regarding the direction in which the bounds change, notice that from the cohorts 2001-02 we know that the quality of the true top choice lies about half way between the two bounds. Combining this additional assumption with the hypothesis that preferences are the same on either side of the cutoff, one would expect the changes in the bounds to be symmetric. Again this is what we find in the data: while the upper bound decreases by up to 3 points, the lower one increases by up to 3 points. To further elaborate on this, we combine the bounds with the (essentially half-half) weights obtained from 2001-02 to impute a top choice quality indicator. Table A.18 shows that changes of this imputed indicator are always small and insignificant for women. In the case of male applicants changes result significant in a few cases. Notice though that also in their case the estimates are small and often even switch sign.

To sum up, all aspects of the available evidence for the cohorts 90-93 indicate that preferences do not jump at the threshold. The combination of this evidence and the far more extensive evidence for the cohorts 2001-02 (which all points in the same direction) strongly suggests that preferences are balanced.

[29] The top choice is the only choice that must be among the programs to which an individual is accepted or waitlisted. Information about choice $n > 1$ is unavailable for all applicants who are accepted in choice $n - 1$ or better.

Table A.18: Balancedness of preferences of applicants above/below cutoff to more elite univ-programs: Comparing peer quality of first-choice programs

	WOMEN			MEN		
	Win 6	Win 4	Win 2	Win 6	Win 4	Win 2
Full Sample						
Lower Bound	-2.714***	-3.117***	-2.772**	-3.616***	-1.302	-0.839
	(0.924)	(1.026)	(1.128)	(0.820)	(1.236)	(1.288)
Upper Bound	3.296***	2.741***	3.036***	2.793***	4.259***	3.803***
	(0.903)	(0.852)	(0.952)	(0.719)	(0.931)	(0.934)
Using Weights	0.711	0.222	0.539	0.037	1.868*	1.807*
	(0.856)	(0.864)	(0.952)	(0.711)	(1.030)	(1.059)
N of applications	6087	1018	853	6661	937	770
R^2	0.946	0.977	0.977	0.961	0.970	0.975
Sample of Matched Spouse						
Lower Bound	-2.958*	-2.863**	-3.618**	-3.199***	-0.932	-0.973
	(1.679)	(1.157)	(1.419)	(1.107)	(1.431)	(1.468)
Upper Bound	2.375	3.317***	2.600**	3.386***	4.900***	3.661***
	(1.480)	(0.966)	(1.181)	(0.987)	(1.133)	(1.036)
Using Weights	0.082	0.660	-0.074	0.555	2.392**	1.668
	(1.525)	(0.997)	(1.205)	(0.956)	(1.201)	(1.184)
N of applications	2363	679	429	3561	709	484
R^2	0.949	0.981	0.982	0.965	0.970	0.981
Sample of Matched Children						
Lower Bound	-3.264	-2.957**	-2.829*	-6.163***	-3.458**	-4.924**
	(2.061)	(1.245)	(1.635)	(1.693)	(1.723)	(2.039)
Upper Bound	4.467**	4.500***	5.302***	1.539	4.078**	3.752
	(1.954)	(1.213)	(1.733)	(1.557)	(1.725)	(2.424)
Using Weights	1.143	1.294	1.806	-1.773	0.838	0.021
	(1.928)	(1.126)	(1.495)	(1.462)	(1.546)	(1.961)
N of applications	2002	609	339	1836	470	289
R^2	0.945	0.978	0.980	0.973	0.974	0.977
Sample of Matched Schools						
Lower Bound	-2.241	-1.748	-3.934	-9.432**	-4.659	-12.304**
	(3.419)	(2.350)	(3.497)	(4.043)	(3.034)	(4.578)
Upper Bound	8.202**	6.068**	6.376	-1.128	1.507	-3.174
	(3.898)	(2.359)	(4.355)	(2.676)	(2.023)	(2.540)
Using Weights	3.712	2.707	1.943	-4.699	-1.144	-7.100**
	(3.299)	(2.118)	(3.432)	(3.176)	(2.404)	(3.319)
N of applications	699	224	100	613	178	82
R^2	0.972	0.974	0.967	0.979	0.975	0.978

Applicants in 1990 to 1993 applying to top 5 universities. Window 6: flexible linear controls for applicants' own score. Windows 4 and 2: using only closest observations above and below the cutoff. All specifications contain program-year fixed effects. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

B Additional Results and Robustness Checks for Applicants in 2001 and 2002

Table B.1: Effect of admission on female students' spouse quality: By social background

	Indiv.'s	**Parental Education and Occupation**					
Indiv from	High School	College		Top Occup		Not Worker	
background d =	Private	Father	Mother	Father	Mother	Father	Mother
Spouse's Math Score							
Effect of admission							
on indiv with $d = 1$	47.997***	32.486**	26.778*	26.771**	29.945**	21.372*	23.555*
	(14.650)	(14.164)	(14.362)	(13.373)	(14.870)	(12.469)	(12.308)
on indiv with $d = 0$	10.978	14.993	18.498	15.464	18.416	25.365	-11.088
	(12.904)	(13.352)	(13.217)	(14.365)	(13.110)	(20.349)	(30.690)
Spouse's Verbal Score							
Effect of admission							
on indiv with $d = 1$	38.811***	36.298***	30.073**	25.224**	30.038**	24.986**	27.431**
	(13.648)	(13.144)	(13.303)	(12.208)	(13.735)	(11.375)	(11.251)
on indiv with $d = 0$	19.520*	17.824	21.602*	23.799*	22.863*	25.949	-21.473
	(11.509)	(11.800)	(11.798)	(12.744)	(11.769)	(17.451)	(28.325)
N of applications	2072	2072	2072	2072	2072	2072	2072
R^2	0.418	0.418	0.415	0.414	0.414	0.413	0.413

This table displays coefficients on the dummy "Being Above Cutoff" interacted with "Being an individual from background $d = 0, 1$". All specifications control linearly for individuals' own score (allowing for different slopes on either side of the cutoff) and contain program and year fixed effects. Standard errors are clustered at the student level and displayed in parentheses.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.2: Effect of admission on male students' spouse quality: By social background

	Indiv.'s	**Parental Education and Occupation**					
Indiv from	High School	College		Top Occup		Not Worker	
background d =	Private	Father	Mother	Father	Mother	Father	Mother
Spouse's Math Score							
Effect of admission							
on indiv with $d = 1$	6.753	2.124	-14.490	1.764	1.494	0.496	1.970
	(16.219)	(15.234)	(15.414)	(14.795)	(16.475)	(14.377)	(14.064)
on indiv with $d = 0$	-0.485	5.353	16.049	7.668	3.142	13.592	-15.376
	(15.153)	(16.084)	(15.505)	(17.094)	(15.116)	(22.682)	(36.901)
Spouse's Verbal Score							
Effect of admission							
on indiv with $d = 1$	14.801	21.277	3.350	16.341	15.348	12.453	12.935
	(14.016)	(13.755)	(13.462)	(12.907)	(14.047)	(12.622)	(12.399)
on indiv with $d = 0$	11.193	5.132	20.596	8.340	11.719	11.349	-20.479
	(13.266)	(13.306)	(13.512)	(14.979)	(13.248)	(18.993)	(31.710)
N of applications	1939	1939	1939	1939	1939	1939	1939
R^2	0.406	0.409	0.410	0.402	0.403	0.400	0.405

This table displays coefficients on the dummy "Being Above Cutoff" interacted with "Being an individual from background $d = 0, 1$". All specifications control linearly for individuals' own score (allowing for different slopes on either side of the cutoff) and contain program and year fixed effects. Standard errors are clustered at the student level and displayed in parentheses.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.3: Effect of admission to a more elite univ-program on spouse's family background

	Socioeconomic Background of Spouse							
	School	College		Top Occup		Worker		No Work
	Priv	Father	Mother	Father	Mother	Father	Mother	Mother
Women	0.031	0.035	0.125**	0.209***	0.100	-0.180***	-0.027	-0.119*
	(0.051)	(0.060)	(0.060)	(0.060)	(0.062)	(0.045)	(0.020)	(0.070)
N	286	246	246	246	246	246	246	246
R^2	0.423	0.607	0.562	0.615	0.523	0.557	0.498	0.481
Men	-0.036	0.008	0.054	0.038	0.038	-0.018	0.000	0.004
	(0.052)	(0.054)	(0.057)	(0.058)	(0.058)	(0.041)	(0.024)	(0.060)
N	276	266	266	266	266	266	266	266
R^2	0.506	0.588	0.485	0.525	0.485	0.507	0.555	0.488

This table displays coefficients on the dummy "Being Above the Cutoff" using the same regression specification as for the main result (window 2), while the dependent variables measures the spouse's socioeconomic background (in terms of individual and parental characteristics). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.4: Balancedness of preferences of applicants above/below cutoff: Comparing peer quality of first-choice (and higher-choice) programs

	WOMEN			MEN		
	Win 6	Win 4	Win 2	Win 6	Win 4	Win 2
Full Sample						
First Choice Prog	0.099	-0.228	-0.582	0.444	-0.444	-0.346
	(1.333)	(2.031)	(2.073)	(1.169)	(1.858)	(1.929)
N of applications	11918	1278	1148	12170	1308	1188
R^2	0.781	0.834	0.851	0.819	0.850	0.857
Second Choice Prog	2.423*	0.963	1.388	-0.637	-0.971	-0.021
	(1.355)	(2.096)	(2.187)	(1.253)	(2.135)	(2.231)
N of applications	11722	1253	1127	11964	1283	1164
R^2	0.770	0.825	0.835	0.792	0.798	0.804
Third Choice Prog	0.926	-0.753	-0.188	-1.710	-2.157	-3.158
	(1.438)	(2.288)	(2.416)	(1.407)	(2.233)	(2.346)
N of applications	10939	1178	1058	11132	1194	1079
R^2	0.739	0.796	0.805	0.744	0.801	0.807
Fourth Choice Prog	0.618	-0.328	0.556	-1.133	2.355	4.798*
	(1.700)	(2.743)	(2.859)	(1.629)	(2.722)	(2.855)
N of applications	9009	962	864	9120	1019	921
R^2	0.679	0.802	0.816	0.703	0.785	0.791
Matched Sample						
First Choice Prog	2.464	0.043	-1.162	2.114	5.058*	6.151**
	(2.712)	(2.823)	(3.288)	(2.795)	(2.786)	(3.080)
N of applications	3008	668	428	2438	486	304
R^2	0.849	0.861	0.884	0.876	0.883	0.920
Second Choice Prog	6.989**	3.818	0.794	0.714	0.035	0.785
	(2.740)	(2.732)	(3.393)	(3.024)	(2.951)	(3.568)
N of applications	2951	653	418	2396	481	301
R^2	0.845	0.874	0.878	0.858	0.873	0.893
Third Choice Prog	2.124	4.253	-0.638	2.370	1.364	5.220
	(3.156)	(3.361)	(4.024)	(3.467)	(3.613)	(4.336)
N of applications	2720	604	393	2243	455	285
R^2	0.803	0.830	0.850	0.820	0.834	0.855
Fourth Choice Prog	-1.966	4.388	-3.953	-4.143	3.930	2.239
	(3.810)	(4.067)	(4.840)	(4.316)	(4.170)	(5.246)
N of applications	2156	477	309	1789	368	227
R^2	0.768	0.828	0.855	0.789	0.856	0.876

Applicants in 2001 and 2002. All specifications contain program-year fixed effects. Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.5: Effect depending on whether next-preferred university-program is in a different city or not

	Next-pref Prog in Diff City		**Next-pref Prog in Same City**	
	Women	Men	Women	Men
Spouse's Math Score	33.541	14.508	20.083	-1.660
	(29.471)	(29.934)	(16.495)	(19.031)
Spouse's Verbal Score	30.547	-9.137	25.253*	22.064
	(25.084)	(23.487)	(15.161)	(16.591)
N of applications	685	639	1387	1300
R^2	0.622	0.676	0.483	0.453

This table displays coefficients on the dummy "Being Above the Cutoff" using the same regression specification as for the main result for the sample of university applicants who list as their next-preferred university-program a program which is in a different city (the same city). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.6: Are peers in more elite univ-programs more similar to applicant?

	WOMEN			MEN		
	Win 6	Win 4	Win 2	Win 6	Win 4	Win 2
Diff to Av Peer of Opp Sex						
Diff in Private HS	0.004	0.020	0.047	-0.039	-0.001	-0.062*
	(0.033)	(0.024)	(0.034)	(0.031)	(0.023)	(0.032)
Diff Fa College	0.015	0.007	0.028	-0.030	-0.013	-0.005
	(0.035)	(0.024)	(0.038)	(0.032)	(0.022)	(0.032)
Diff Fa High School	-0.025	-0.006	-0.022	-0.043	-0.026	-0.038
	(0.036)	(0.024)	(0.038)	(0.032)	(0.022)	(0.034)
Diff Mo College	-0.017	0.015	0.024	0.043	0.038*	0.007
	(0.033)	(0.023)	(0.033)	(0.030)	(0.022)	(0.032)
Diff Mo High School	-0.030	0.006	-0.006	-0.002	-0.013	-0.030
	(0.033)	(0.024)	(0.036)	(0.031)	(0.022)	(0.031)
Diff Fa Occup Top 3	-0.023	-0.065***	-0.023	-0.018	-0.013	-0.022
	(0.034)	(0.024)	(0.037)	(0.032)	(0.022)	(0.033)
Diff Mo Occup Top 3	0.022	-0.007	0.045	0.065**	0.057**	0.065**
	(0.033)	(0.023)	(0.032)	(0.029)	(0.022)	(0.031)
Diff Fa Worker	0.045	0.029	0.055*	0.035	0.028	0.054*
	(0.029)	(0.022)	(0.032)	(0.026)	(0.022)	(0.029)
Diff Mo Worker	0.034*	0.018	0.010	0.002	0.021	0.024
	(0.020)	(0.016)	(0.026)	(0.020)	(0.017)	(0.021)
N of applications	2055	618	284	1933	591	276
R^2	0.303	0.430	0.460	0.318	0.428	0.442

This table displays coefficients on the dummy ”Being Above the Cutoff” using the same regression specification as for the main result for the sample of university applicants, while the dependent variables captures the absolute difference between the applicant’s characteristic and the average of the characteristic of the opposite-sex classmates. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.7: Effect on match rate by partner type

	WOMEN		MEN	
	Matched Spouse	Matched Partner	Matched Spouse	Matched Partner
Likelihood of Match	-0.037	-0.002	0.007	0.011
	(0.039)	(0.049)	(0.043)	(0.051)
N of applications	2072	2072	1939	1939
R^2	0.349	0.339	0.362	0.352

This table displays coefficients on the dummy ”Being Above the Cutoff” using the same regression specification as for the main result (window 6). * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table B.8: Effect depending on whether next-preferred program is at a different university or not

	Next-pref Univ Diff		**Next-pref Univ Same**	
	Women	Men	Women	Men
Spouse's Math Score	27.727*	12.397	45.378*	-2.059
	(16.804)	(20.170)	(26.519)	(29.704)
Spouse's Verbal Score	17.785	6.287	55.257**	24.410
	(15.156)	(17.784)	(26.633)	(25.252)
N of applications	1321	1224	751	715
R^2	0.467	0.459	0.626	0.584

This table displays coefficients on the dummy ”Being Above the Cutoff” using the same regression specification as for the main result for the sample of university applicants who list as their next-preferred university-program a program which is at a different versus at the same university. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

C Why asymmetric returns for men and women? A simple theoretical model.

In this section we use a simple model to show that asymmetries in marriage market returns might be due to differences in the way in which men and women trade off different characteristics of their potential partners. Given the purely illustrative purpose of the model and the space constraints that we face, we will impose some rather stark assumptions to avoid unnecessary technical complexities (essentially, the model that we outline is a caricature of a world where women seek to obtain 'Mrs. degrees'). Still it should become clear from the analysis that the forces that drive the desired results in our framework would be present also in more general settings.

The specifics of the setup: There is a unit mass of women and a unit mass of men who have to decide about their education (high quality vs low quality) and their marriage partner. Men and women differ in terms of ability ($a \in [0,1]$) and in terms of beauty ($b \in [0,1]$). Both characteristics are distributed uniformly and independently in both populations. A man who marries a women of beauty b obtains a payoff of b. Women do not care at all about beauty but only care about a man's ability and his education (since those determine his income potential). If a woman marries a man of ability a she gets a payoff of a in case he has attended the low quality university and of $2a$ if he has attended the high quality university. Both women and men prefer to stay single if they do not get a sufficiently able/beautiful partner. In particular, we assume that they are not willing to marry unless the partner generates a payoff of at least $\underline{w} < 1/2$.

Which university an individual attends has implications both for the labor market and the marriage market. On the one hand graduating from the elite university carries a return in the labor market that is high enough so that all men would want to attend the elite university irrespective of the marriage market consequences. In the case of women we assume that at least those who expect to remain single would want to attend the elite university for labor market reasons (women who expect to marry may or may not be motivated by labor market returns). The relevance of the education decision for the marriage market lies in the fact that the two educational groups define distinct marriage markets in the sense that it is costless to meet people within ones own educational group, while meeting someone from the other educational group generates a cost of c. For simplicity we assume that only males have to pay this cost. The access to high quality education is restricted. That is, at the top university there are enough slots for the smarter half of the population only (which the university can identify via a perfectly discriminating admission test).

Equilibrium definition and analysis: An equilibrium of the above model specifies a) the educational decisions of all individuals, and b) a matching between women and men. In equilibrium all educational choices need to be optimal. Moreover, the equilibrium matching must be such that there is no pair of individuals who would prefer to be with each other rather than staying with their current partners.

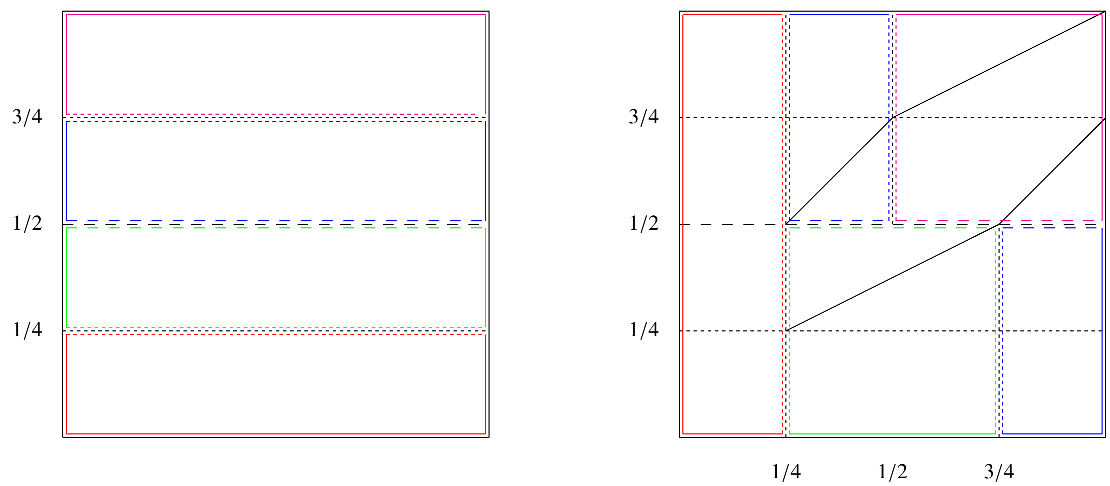
It can be verified that the following is an equilibrium of our economy:

- The more able half of both the female and the male populations attend the higher quality university.
- Every man with ability below $\underline{w}$ and every woman with beauty below $\underline{w}$ remains single.
- Every man with $1 - c/2 < a \leq 1$ is matched with a women in $[1/2, 1] \times [1 - c, 1]$; this matching is such that for every $0 < \varepsilon < c/2$ we have that a man with $a \in [1 - \varepsilon, 1]$ gets a wife in $[1/2, 1] \times [1 - 2\varepsilon, 1]$.

- Men with $a \in [1/2, 1 - c/2]$ randomize (uniformly) between paying to meet women with low education and meeting women with high education. The matching that is generated satisfies the following condition: for every $0 < \varepsilon < (1 - c)/2$ we have that a man with $a \in [1/2, 1 - c/2 - \varepsilon]$ is either married to a woman in $[1/2, 1] \times [1 - c - \varepsilon, 1 - c]$ (with probability 1/2) or to a woman in $[0, 1] \times [1 - \varepsilon, 1]$.

- Low educated men with $a \in [\underline{w}, 1/2]$ are all matched with the low educated women in $[0, 1/2] \times [\underline{w}, (1 + c)/2]$. In particular, the matching is such that for every $0 < \varepsilon < 1/2 - \underline{w}$, $a \in [1/2 - \varepsilon, 1/2]$ for a man implies a wife in $[0, 1/2] \times [(1 + c)/2 - 2\varepsilon, (1 + c)/2]$.

We represent this equilibrium in the following figure for the case $c = 1/2$ and $\underline{w} = 1/4$. Beauty (ability) is measured along the horizontal (vertical) dimension.



(a) Male students (b) Female students

The colors of the areas indicate who is matched with whom. Consider for instance students with characteristics in the magenta regions. This color tells us that the most able quarter of the male students is matched with the most beautiful half of the more able half of the female students. Of course the idea is that also within these groups the more able male students are matched with the more beautiful female students. Similar observations apply to the groups indicated in the colors blue and green.

In the case of the blue populations it is important to note that all male students in blue attend the better university. But unlike their magenta counterparts they do not restrict their attention to female partners within their educational class. Instead half of them pay the cost $c = 1/2$ to look for a partner in the lower educational group. In fact, the most able students in this group, i.e. those with type $(a, b) = (3/4, b)$, $b \in [0, 1]$, are just indifferent between getting one of the most beautiful highly educated women who are still available (those with type $(a, b) = (a, 1/2)$, $a \in [1/2, 1]$ or paying the cost c and marrying one of the most beautiful women with low quality education (those with type $(a, b) = (a, 1)$, $a \in [0, 1/2)$).

The red regions represent the individuals who are not getting married.

The marriage market returns of elite education: We are now ready to compute the return that attending the elite university generates (in terms of spouses' ability). For the sake of concreteness we compute these returns for the parameter configuration that corresponds to the economy represented in the above figure ($c = 1/2$, $\underline{w} = 1/4$). From the figure we can see that for the lowest ability male students who still attend the elite university the expected ability of the partner is $1/2$. For male students just below the admission threshold of the elite university the expected ability of the partner is instead $1/4$. Thus the ability return to crossing the threshold is $r_m = 1/4$

In the case of female students the quality of the partners depends on their beauty. Using once more the above figure it can be verified that the partner quality just above ($\bar{q}$) and just below the threshold ($\underline{q}$) is given by the following two functions (which are also represented in panel (b) the above figure).

$$\underline{q}(b) = \begin{cases} -1/4 + b & \text{if } b \in [3/4, 1] \\ 1/8 + b/2 & \text{if } b \in [1/4, 3/4]. \end{cases} \qquad \bar{q}(b) = \begin{cases} 1/2 + b/2 & \text{if } b \in [1/2, 1] \\ 1/4 + b & \text{if } b \in [1/4, 1/2]. \end{cases}$$

Notice that for $b \in [0, 1/4]$ the partner quality is not specified since the least beautiful quarter of the female population remains single.

The gain in terms of partner quality that crossing the admission threshold confers is therefore

$$r_f(b) = \begin{cases} 3/4 - b/2 & \text{if } b \in [3/4, 1] \\ 3/8 & \text{if } b \in [1/2, 3/4] \\ 1/8 + b/2 & \text{if } b \in [1/4, 1/2]. \end{cases}$$

Notice that $r_f(b) > 1/4 = r_m$ for all $b \in (1/4, 1)$. Thus, all marginal women who marry enjoy a larger return than their male counterparts do.