

The Race between the Labor and the Marriage Market*

Preliminary Draft

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Abstract

We document a large gap between college-graduating women's predicted and realized labor force participation, investigate its sources, and propose a solution. To do so, we field a panel survey and an experiment on >1,500 college students, in two of the largest universities in Pakistan. A month before graduation, women believe they have about the same likelihood (76.8%) as their male peers to be working six months later. In contrast with these gender similarities in baseline beliefs, we uncover large employment gaps six months later: only 38.0% of women were employed, compared to 64.4% of men. We propose a potential explanation: the existence of an unanticipated post-graduation race between the marriage and the labor market. In this context, mounting post-graduation pressure to find a marriage match gradually diverts women away from the labor market. Misperceptions about this race generate overoptimistic beliefs about employment prospects. We find that experimentally shifting the timing of students' job search earlier increases women's employment by 26.5% (7.5 ppt) six months later, but has no effect on men's. This treatment effect is driven by women for whom applying earlier plausibly enables them to "beat" the marriage market.

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1 Introduction

Traditional human capital theory posits that education and training play a crucial role in shaping job prospects and income. But this framework fails to explain a puzzling trend in South Asia: women's increased access to higher education over the past few decades has not translated into higher labor force participation ([Addati et al., 2018](#)). This disconnect prompts a simple question: why do many women invest time and money in getting a college degree that they will never use in professional careers?

The existence of marriage market returns to education is well-documented ([Adams and Andrew, 2021](#)) and provides a simple explanation for women's educational investment: to secure a better groom. If securing a better match on the marriage market was the sole motive for acquiring a college degree, the current low labor force participation amongst college-graduating women would reflect their preferences, given the prevailing gender norms. If, however, women also have labor market ambitions, the current rate of labor force participation reflects a wedge between women's aspirations and their realized outcomes.

Our paper quantifies the mismatch between college-graduating women's preferred and realized labor force participation, investigates its sources, and proposes a solution supported by experimental evidence. We do so in Pakistan, a country where the share of women in college has almost doubled in the past twenty years, yet female labor force participation remains amongst the lowest worldwide: 26% for all women and 33% for college-educated women (Pakistan Labor Force Survey, 1999-2018).

We start by unpacking *whether and when* the mismatch emerges. To do so, we field a series of surveys following a panel of >1,500 students graduating from two of the largest universities in Lahore (one public and one private) in 2022 and 2023, respectively. The first wave of these surveys captures a range of expected labor market outcomes in the month preceding students' graduation. Strikingly, men and women have very similar beliefs about the likelihood that they will find a job within six months of graduation (76.8% women believe they will be working six months later, this same statistic is 80% for men). Most women (61.3%) also report that they think being a housewife is not as fulfilling as being a working woman, revealing an intrinsic preference – and not just a financial need – for paid employment. We track students' outcomes three months later, and find that women's stated intention to work is more than just cheap talk. The vast majority of women (78.8%) were in the labor force three months later, and their rate of labor force participation was similar to men's (86.3%). Thus, across a range of measures, there is consistent evidence that at graduation, women intend to work (as much as their

male peers). However, women's beliefs about their future labor supply are misaligned not only with the national averages, but also with their own beliefs about *other* women in their cohort. Both men and women think that their female classmates' likelihood of employment is low (50.5% and 51.8%, respectively) compared to that of their male classmates' (66.1% and 71.8%, respectively). Thus, women recognize that constraints to female labor force participation will bind for many women in their cohort, but they expect to *personally* overcome these constraints.

We track women's realized labor market outcomes six month after graduation and find that they fall considerably short of their expectations. Only 60.3% of female students were in the labor force, and only 38.0% were gainfully employed. In contrast, 77.3% of male students were in the labor force and 64.4% were employed. At baseline, both men and women overestimated their employment prospects, but women are much more overoptimistic: men overestimated by 15.2 ppt whereas women overestimated by 38.8 ppt. However, men and women predicted their peers' likelihood of employment nearly accurately, and women's realized labor supply is much closer to their predictions for other women (overestimated by 13.8ppt) than their beliefs about themselves (overestimated by 38.8 ppt). Thus, women's overoptimism is not driven by a general misperception about the barriers to female labor force participation. Rather, women seem to overestimate their own ability to overcome these barriers.

Next, we investigate *why* this mismatch occurs. We consider a range of supply- and demand-side predictors of the gender gap in realized labor market outcomes, and find that the usual suspects are unable to substantially explain it. Controlling for a battery of students' baseline characteristics (e.g. GPA, college major, industry of search, wage and non-wage preferences, as well as beliefs about market wages) reduces the gender employment gap of 26.4% by only 1.7 ppt. Further controlling for search effort (number of job applications sent) only modestly shrinks the gap, which remains at 20.6%. Typical demand-side explanations also do little to reduce the gap: conditional on applying, women are as likely as men to receive a request for interviews, and they are 5.9 ppt *more* likely to convert that into a job offer. We find, instead, that the mismatch occurs mainly because women reject job offers at higher rates than men: conditional on receiving at least one job offer, women are 18.9 ppt (52.5%) more likely than men to remain unemployed at six months. Moreover, the gender gap in employment widens over time because women turn down job offers at higher rates over time. This leads us to explore what changes distinctively in the lives of women, but not men, in the six months following graduation.

A natural place to turn to is the marriage market. We find that after graduation, the marriage market unfolds rapidly for women: 51% of women expect to be married within 2 years of graduation and 76% expect to be married within 3 years of graduation. In parallel, the share of women who received at least one marriage offer post-graduation grows dramatically to 19% three months after graduation, and 31% six months after graduation.

What could explain the simultaneous rise in marriage market pressures and job offer rejections? We hypothesize that an unanticipated race between the labor and the marriage market unfolds post graduation. In this context, mounting post-graduation pressure to find a marriage match gradually diverts women away from the labor market. Misperceptions about this race generate overoptimistic beliefs about employment prospects. If this is the case, the timing of job search should distinctively matter for women: applying early (before the marriage market unfolds) should increase women's (not men's) downstream likelihood to work. We first find descriptive evidence that the timing of job search is highly predictive of women's future employment prospects, whereas the same does not hold for men. Women who had applied to a job earlier (within 3 months of graduation) were 72% (20.4 ppt) more likely to be working six months later, and there is no analogous effect on men. But of course, there is selection in who chooses to apply early: early applicants may be more intrinsically motivated and therefore, the correlation between the timing of their application and their labor market outcomes may just be the result of their unobservables. To get at the causal effect of application timing on employment, we turn to an experiment that we designed to exogenously shift application timing.

We fielded a survey experiment at the public university in Lahore, in June 2023. This survey experiment was conducted with students who participated in our baseline survey and were due to graduate in August ($\approx 2,000$ students). A randomly selected group of the above sample was offered a small monetary incentives (\approx USD 30), which they would receive if they proved to us that they had applied to at least four *relevant* jobs by August 15th (that is about a month after their graduation). 46% of the women (and 44% of the men) we offered this treatment to ended up taking it. The control group was offered no reward. The goal of this experiment was to nudge students to apply to jobs earlier than they otherwise would and we indeed find a large effect on the timing of applications: while in the control group 46.1% of women have applied to zero jobs by September, in the treatment group that share goes down to 26.3%. The effects are similar for men. We then turn to the effect of this shift in application timing on employment and marriage market

outcomes.

To do so, we follow up with our experiment sample six months later (in January 2024). We first find large and significant ($p < 0.01$) intent-to-treat effects on female labor force participation: 66.1% of the women assigned to the treatment group are in the labor force, while only 56.6% of the women in the control group are, a 9.5ppt difference ($p < 0.01$). We also find large treatment effects on the likelihood of working: women in the treatment group are 7.5 ppts ($p < 0.05$) more likely than women in the control group to be working by mid-September, a 22.3% difference. These results hold even after controlling for the number of applications sent and job offers received by the students, suggesting the treatment effect is driven by the shift in the timing of application that it generates, rather than due to the increase in search effort that stems from it. In parallel, we find no negative effects on the marriage market outcomes we measure: women in the treatment group are just as likely to have received a marriage proposal as women in the control group (Column 7), and they have also received on average the same number of marriage offers as the control group (Column 8). We also proxy for the quality of marriage offers received by looking at the share that comes from men with a bachelor's degree or more. We find no treatment effect on marriage offers quality either.

We hypothesize that our treatment positively impacted some women's likelihood of employment because it increased their chances of "beating" the timing of the marriage market pressures. The fact that our intervention only has an effect on women (not men) and that this effect persists after controlling for search effort provide suggestive evidence that the marriage market forces are at play. We now provide an additional test for the prevalence of the race between the marriage and the labor markets. We posit that, if this race prevails, then our treatment should be most effective on the women who, at baseline (pre-treatment), have not yet felt the marriage market pressures. In other words, the women for whom we are not arriving "too late". To operationalise this test, we leverage the fact that, at baseline, women answered the question: "In how many years from now do you expect you may potentially get married?". The female median answer is 3. Therefore, we separate women into the group believing they will get married in less than 3 years (i.e. women who are already subject to the marriage market pressures at baseline), and the others. Table 7 Columns 1 and 2 show that our treatment effects on labor market outcomes (LFP and employment) are entirely driven by the group of women who were not experiencing, pre-treatment, the pressures from the marriage market. For this group, the magnitudes of the treatment effects are very large: 6 months later they are 18.1ppts

(53%) more likely to be employed than their counterparts in the control group. In contrast, women who already believe they will get married soon at baseline experience no treatment effects on their employment likelihood. The marriage market outcomes are not statistically different for the two groups of women and do not differ from the control group's. For men, the effects of treatment are equally null on both groups and on all outcomes.

At baseline, a majority of women declare they want to work and the experiment shows that applying early drastically increases women's chances of realizing this preference. So what initially prevented women who want to work from starting their job search earlier? While we cannot provide a definitive answer to this question, we have evidence for several possible explanations. First, we document that, at baseline, women are overoptimistic about the speed at which they can find a job once they start searching. Second, we show that women who had not experienced the pressures from the marriage market at baseline (that is, the group who thought their marriage was in more than three years) very rapidly adjust that estimate down: at baseline, the average woman in that groups think her marriage is in 57.4 months (about 5 years from graduation), by six months after their graduation, they have revised that estimate down to 29 months (about three years from graduation). In other words, the marriage market unfolds much faster than these women had anticipated. In contrast the women who, at baseline, already felt the pressure from the marriage market do not revise their marriage expectation timeline at 6 months. Strikingly, our treatment effects on employments are driven by the women in the group that had misperceived the speed at which the marriage market would unfold. Finally, for the subset of women that did receive marriage offers at the six-month mark, we asked women the share of men in this pool of marriage proposals that they believe would let them work. That share is strikingly low, both in absolute terms (women consider that less than a quarter of the marriage offers they received are from men that would let them work) and relative to these same women's initial beliefs: 69.3% of them think, at baseline, that they'll find a partner that will let them work.

We contribute to a large literature that documents barriers to female labor force participation in South Asia. This literature identifies social norms and intrahousehold constraints (e.g., women's weak bargaining power, gendered division of childcare, and lack of spousal support for women's work) as some of the leading explanations ([Marcos, 2023](#); [Lowe and McKelway, 2021](#); [Agte and Bernhardt, 2023](#)). This body of work typically focuses on women's labor supply post-marriage or child birth. However, we show that most women in South Asia drop out of the labor force well before either marriage or fertility constrain

their labor supply, i.e., within six months of graduating college. In shifting the focus to college-graduating women, we document a new constraint that binds earlier: a sharp increase, post-graduation, in the pressure women face from the marriage market to prioritize finding a marriage match. This relates most closely to [Subramanian \(2021\)](#) who finds that families' opinions about jobs limit women's job applications in a similar sample of as-yet mostly unmarried women in Lahore.

A related literature tests interventions to increase women's labor supply. Some of these involve large investments in non-wage amenities e.g., [Field and Vyborny \(2021\)](#) increased women's job search in Pakistan by providing a women-only transport service to and from work. [Ho et al. \(2023\)](#) offer women in India remote jobs with flexible schedules and see increased take-up of job offers by women. Similarly, a range of studies reviewed in [Halim et al. \(2023\)](#) show that improved access to childcare increases women's labor force participation. However, such interventions are costly to scale, especially in developing countries. A number of more light-touch interventions have also been tested in the literature.

Among these, some have focused on the family; for instance, [McKelway \(2023\)](#) targeted women's husbands and in-laws with information about available jobs, and found positive impacts on women's take-up of jobs. However, the results faded over time, and [Dean and Jayachandran \(2019\)](#) found no effects of a similar intervention in a similar setting. Others have focused on women's aspirations. [Orkin et al. \(2023\)](#) conducted short workshops to raise women's aspirations. While the workshop was effective compared to a placebo workshop, it had no effect in comparison to a cash transfer treatment. Similarly, [Ahmed et al. \(2021\)](#) exposed female undergraduates in Lahore to a video-based role-model intervention and found no effects in the first 15 months, but positive effects once Covid-19 hit. The light-touch intervention we propose targets a novel barrier to female labor force participation: the unanticipated post-graduation race between the labor and the marriage market. This intervention is both low cost and very effective: its positive effects on women's employment are almost immediate and persist, with even larger magnitudes, six months later.

Our paper also speaks to the literature on the gendered returns to education. We add to the papers in this literature that show that labor market returns to education are different by gender but positive (e.g., [Goldin and Katz \(1999\)](#)). We also relate to the literature on positive marriage market returns to education ([Goldin, 1992](#); [Adams and Andrew, 2021](#); [Chiappori et al., 2018](#); [Attanasio and Kaufmann, 2017](#); [Lafortune, 2013](#); [Andrew and](#)

[Adams, 2022](#)). For the most part, these paper consider both markets (and the associated returns) as independent. Our contribution is to shed light on their interdependence, providing evidence of a post-graduation race between them.

This paper finally contributes to a growing literature on beliefs about labor market outcomes. [Wiswall and Zafar \(2018\)](#) and [Cortés et al. \(2022\)](#) are a closely related set of papers that measure gender gaps in the labor market preferences of college students in the U.S. Many papers in this literature focus on biased beliefs about wages. For instance, [Jäger et al. \(2024\)](#) show that workers, on average, underestimate the wages that they could make at their outside option, while [Roussille \(2024\)](#) provides evidence that women hold downward-biased beliefs about how much to ask for in their salary negotiation. [Bursztyn et al. \(2020\)](#) show that local disapproval for women’s work is overestimated, especially amongst men. In all three papers, a light-touch intervention, correcting those biases, has large effects on labor market decisions (e.g. the decision to search for a new job or to negotiate higher wages). Other papers look into biased beliefs at the extensive margin, i.e. (future) labor supply. For instance, [Mueller et al. \(2021\)](#) document an optimistic bias in jobseekers’ beliefs about the job-finding rate. Focusing on the labor supply of women, [Kuziemko et al. \(2018\)](#) show that, in the U.S., they overestimate their likelihood of working after having a child. Our paper documents a novel instance of women’s biased belief about their labor supply: college-graduating women, in Pakistan, are over-optimistic about their likelihood of working after graduation and this can be at least partly explained by the unanticipated race that unfolds, post-graduation, between the marriage and the labor market.

2 Evidence on Labor Market Mismatch

2.1 Context

Our study is set in Pakistan, the 5th most populous country, globally. Male labor force participation in Pakistan has remained consistently high at 81%, while only 26% of women participate in the labor force. Women’s engagement with the labor force is notably low in Pakistan, even when compared to countries with similar levels of economic development (see Appendix Figure [A.5](#)). However, gender gaps in college education have shown a remarkable decline over the years. In 1999, proportionally twice as many men as women (ages 18-35) held college degrees, but as shown in Figure [1a](#), this discrepancy nearly

disappeared by 2018. Despite these large strides in women’s educational attainment, the percentage of college-educated women in the labor force has plateaued at 32.5% for the past twenty years (Figure 1b). Many countries across South Asia, North Africa, and the Middle East have observed similar improvements in women’s education without a corresponding rise in their labor force participation (see [Jayachandran \(2021\)](#) and [Dinkelman and Ngai \(2022\)](#) for comprehensive reviews).

Large gender differences characterise Pakistan’s marriage markets as well. Data from Pakistan’s Demographic Health Survey (2017-18) reveals that women marry considerably earlier than men: 61% of women but only 24% of men (ages 25-49) were married by age 22. This pattern also holds for more educated sub-groups: women with higher education marry at age 25 on average – 3.3 years earlier than men with similar educational backgrounds. These statistics reflect prevalence of the male breadwinner norm, wherein men are expected to secure financial stability before marriage, resulting in more delayed age at marriage. Meanwhile, women not only marry earlier, but also marry older partners, leading to an average age gap of 6.5 years between spouses. The majority of marriages in Pakistan are arranged by the family. Despite this, a significant percentage of women, particularly those with higher education (92%), report having a say in the selection of their marriage partner.

In this context, we study and run an experiment on the labor and marriage market trajectories of college-educated men and women at two major universities in Lahore. One university is a large, mid-tier private university, and the other is Pakistan’s largest and oldest public university. 45% of students at the private university, and 59% of students at the public university are female. The public university draws students from around the country, while students at the private university are mostly from Lahore, the second largest city in Pakistan. Both universities offer a comprehensive range of majors in the social sciences, physical sciences and humanities.

2.2 Survey Design

Baseline Survey: In each university, we survey the graduating cohort while they are still on-campus, one month prior to their graduation date. The survey was conducted in June 2022 at the private university, and in June 2023 at the public university. We invited 2,434 graduating students (1,109 female and 1,325 male) to participate at the private university,

and 1,986 (1,379 female and 607 male) students to participate at the public university.¹ Of these 4,420 invited students, 3,639 participated in our survey (corresponding to a high response rate of about 82%).² In our descriptive analysis, we pool the responses of students across both universities as they turn out to be quite similar. At baseline, we elicit students' intentions to participate in the labor market, their reservation wages, and beliefs about market and own wages, as well as second order beliefs about their peers. We also elicit their beliefs about their marriage outcomes (e.g., history of marriage offers and beliefs about the number of years until marriage). We limit our sample to students that do not register for a master the year after college graduation, so that we only study students that can plausibly be in the labor market. As described in Section 3, we additionally ran an experiment at the public university that was aimed at increasing the labor force participation of women. We therefore only keep in our analysis sample for this section the control group at the public university (50% of the surveyed graduating population), such that their labor market outcomes are not influenced by our treatment.

Own Belief Elicitation In order to measure students' beliefs about their upcoming labor force participation we have two main questions. The first one asks students for their reservation wage for four work schedules (Full-Time onsite, Part-Time onsite, Full-Time remote, Part-Time remote) and allows them to leave the question unanswered if they do not intend to work with this particular schedule.³ We consider that the student intends

¹We stratified the sample by majors, excluding majors with fewer than 25 students. We invited all students in a given major to participate up to a cap of 200 female and 100 male students per major. For a few majors, this ceiling was hit and in such cases, sub-groups of students in the major were randomly and incrementally invited to participate until the target was reached.

²The response rate for our survey is high compared to that of other surveys conducted on similar populations. For instance, the response rate of Questroom graduating students in Cortés et al. (2022) was 20%, the response rate for Bertrand et al. (2010)'s survey of University of Chicago MBA students was 31% while the response rate was around 10% to 12% across the 28 universities that participated in the recent Global COVID-19 Student Survey Jaeger et al. (2021). We think this high response rate was encouraged by the reward we offered for responding to the survey: a KFC meal! See Appendix Figure A.6 for a picture of our food stand.

³The exact wording of the question is: Imagine that you have graduated from your current degree and are offered a job with 4 possible schedules, which corresponds to [the job title they prefer]. The four possible schedules are: Full-Time (40 hours per week, 9am to 5pm, Monday to Friday) onsite, Part-Time (25 hours per week, 9am to 2pm, Monday to Friday) onsite, Full-Time remote, Part-Time remote. There are no additional jobs currently available that are of interest to you so if you reject this job, you will be unemployed for the foreseeable future. What is the minimum monthly starting salary for which you would be willing to work for any of the following work schedules? Note: you may reject any or all schedules if you would not work on that schedule for any salary. Consider that in all options, the job and the employer are identical in all respects except the schedule, and the job is located in your preferred city. The job is a 20 minute drive away from your house and is representative of other similar jobs in the industry in terms of career growth

to be in the labor force at baseline if they provide a reservation wage for at least one of the schedules. The second question is probabilistic: “On a scale from 0 (very unlikely) to 100 (very likely), how likely is it that you will be working within 6 months of graduating? Work includes working for a private firm or running your own business.” At the public university, where the survey was run a year after the private one, we also asked students a binary version of this question: “Do you intend to be working (e.g., for a firm or in your own/family business) in the next 6 months after you graduate?”. We additionally ask a number of questions about the marriage market, including when they may potentially get married. At the public university, we also asked students when they expect to receive their first marriage offer.

Second-Order Belief Elicitation We also asked students their beliefs about the future employment of their peers. In particular, we asked students the following probabilistic question: “Out of 10 randomly selected male students in your cohort at UCP, how many of them do you think would be employed within 6 months after graduating?”. We repeated the question replacing “male” with “female”. The goal of this exercise is to test whether people’s own beliefs differ meaningfully from their beliefs about their peers.

Follow-up Surveys We then track students via phone surveys, at first, three months after graduation, and then six months after graduation. These follow-up surveys allow us to compare labor and marriage market beliefs prior to graduation with realized outcomes after graduation, and also assess how these realizations evolve with time. Of the 3,639 students who responded to our baseline survey, 2,607 responded to our 3 months survey and 2,333 responded to our follow-up 6 months survey. The 3 months and 6 months response rates are therefore respectively, 72% and 64%. Our response rate is considerably higher than what is typical in the literature for phone surveys.⁴ For the rest of our analysis, whenever comparing baseline beliefs with realised outcomes, we use the overlapping sample that responded to the baseline and the six months follow-up survey. For the

opportunities, non-wage benefits etc.

⁴We achieved this by calling students many (at least 3) times, systematically recording and varying the day/hour of the call to maximise our chances of response, and recording contact numbers of family members in case the student’s own contact details change. Appendix Tables B.4 and B.3 show that the baseline, 3 months and 6 months follow-up samples that we use for descriptive and experimental analysis, respectively, have very similar observables. Our sample for descriptive analysis simply excludes the subgroup of students who were randomly assigned to treatment. Our experiment sample includes all treatment and control students at the public university.

descriptive analysis, we drop observations where we are missing any of the key variables that we typically use as controls (e.g., GPA, belief about working in six months, schedule preferences), as well as respondents who were treated in the experiment. This gives us a sample of 1,533 respondents from both universities for the descriptive analysis.

2.3 Sample Characteristics

The main characteristics of our baseline sample are shown in Table 1. The last column of the table reports the p-value of the test of equality of the means across gender. Women make up about half of the sample. Men and women are comparable in terms of age, around 22 years old. Women's GPAs are, on average, about 10% higher than men's.

There are no gender differences in the social norms men and women subscribe to, as measured by questions in the World Values Survey. On average 40.4% of students agree that being a housewife is just as fulfilling as being a working woman, and 52.6% agree that when jobs are scarce, men have more right to a job than women. As shown in Appendix Figure A.10, students at these universities have slightly more liberal gender norms compared to the national average of college students. Men in our sample are 18.9 ppt less likely to agree that being a housewife is just as fulfilling as being a working woman than the average male college student in Pakistan. Similarly, women are 26.8 ppt less like to agree that being a housewife is just as fulfilling as being a working woman than the average female college student in Pakistan. In addition, both men and women in our sample are about 30 ppt less like to agree that when jobs are scarce, men have more right to a job than women. Thus, the barriers to female labor force participation that we document in this paper are plausibly more severe elsewhere in the country.

Men are significantly more likely to report majoring in Engineering and CS than women (31.3% vs. 9.6%), while women are significantly more likely to major in Sciences (20.9% vs. 11.5%), Life Sciences (20.1% vs. 7.7%) and Humanities and Languages (24% vs. 19.7%).

Both men and women come from similar parental backgrounds; on average, 36.3% have college-educated mothers and 48.7% have college-educated fathers. 5.4% have a working woman while 83.8% have a working father. In addition, they have on average similar wealth, as approximated by ownership of 5 asset classes.⁵ The key gender difference is that women are 13 ppt less likely to report having internet at home.

⁵We chose these assets from a more exhaustive list of assets captured in the Pakistan Social Living Standards Measurement (PSLM) Survey revealed them to be most predictive of household income.

2.4 Baseline Beliefs about Labor Market Outcomes

First-order Beliefs: We find that women hold labor market aspirations at the time they graduate. To illustrate this, we focus on the first two bars of Figures 2a and 2b. The former two measure students' baseline intended labor force participation rates, while the latter two show students' baseline beliefs about the likelihood of finding a job within 6 months of graduation. In Figure 2a, we see that strikingly, almost 100% of both male *and* female students report that they intend to work after college.⁶ Moreover, Figure 2b shows that women feel as optimistic as men about their chances of finding a job within 6 months: they believe they have a 76.8% chance, which is only 2.8 ppt lower than what their male peers reported.

To test the credibility of these stated preferences, we track students' realized job search behavior three and six months after graduation. We find that many women indeed actively search for a job shortly after graduating: the 3rd and 4th bars in Panel (a) of Figure 2 show that at three months, 78.8% of women are in the labor force (i.e., they are employed or spent at least one hour searching for work in the past week) vs. 86.3% of men. This suggests that marriage prospects are not the sole motive for acquiring an education; at the time they graduate from college, women also hold labor market ambitions.

Second-order Beliefs: We find that even though women express strong labor market ambitions for themselves, male *and* female students have much lower expectations about the labor market outcomes of *other* women. This implies that men and women recognize barriers to female labor force participation, but women feel optimistic that they will personally overcome these to achieve the same outcomes as those of their male peers. We illustrate these facts using Figure 3, which compares the first and second order beliefs of male and female students about employment. Specifically, we asked respondents about the likelihood that their male would find a job within 6 months. We asked respondents the same question about their female peers.

Various pieces of evidence in Figure 3 point to the fact that women may be too optimistic about their future labor supply. To start with, we note that women reveal through their second order beliefs about men's employment, that they consider themselves almost as likely as their male peers to find a job within 6 months: the fourth and fifth bars of Figure 3 show that women estimate men's chances of finding a job within six months at 71.8%, and

⁶As described in Section 2.2, we consider that the student intends to work at baseline if they provide a reservation wage for at least one of the four schedules we proposed to them.

their own chances at 76.8%. This is inconsistent with the large gender gaps in the national average labor force participation of college graduates, described in the introduction.

Next, comparing men's belief about themselves to men's beliefs about other men in the cohort (the 1st and 2nd bars), and then repeating this exercise for women (i.e. comparing the 4th and 6th bars) of Figure 3, we observe that both men and women are more confident about their own prospects of employment than about the employment prospects of their peers. However, women are relatively more optimistic than men: while men estimate that they have a 13.5 ppt (17%) higher chance than other men of being employed within six months (79.6% vs. 66.1%), women estimate that their own chances of employment in six months are 25.0 ppt (33%) higher than the chances of other women in their cohort (76.8% vs. 51.8%).

Finally, men and women broadly agree on the likelihood that their peers will find a job within 6 months. In particular, both men and women think that their female peers' likelihood of employment is low (50.5% and 51.8%, respectively). Meanwhile, both men and women think that their male peers' likelihood of employment is high (66.1% and 71.8%, respectively). Thus, at baseline, both men and women recognize that constraints to female labor force participation will bind for many women in their cohort. But at odds with their beliefs about other women, women think that they personally can escape these barriers.

2.5 Benchmarking Beliefs against Realized Labor Market Outcomes

Defining Realized Labor Market Outcomes: We consider that a respondent is in the labor force if they are either working (for pay) or actively searching for a job. We define active search at three months after the baseline survey as having either sent at least one application to a job posting since graduation, or having interviewed for a job (found through other channels than a formal application) or having received a job offer. At six months, we consider that a student is still actively searching if they have sent at least one application to a job posting in the last month, interviewed for a job (found through other channels than a formal application) in the last month or received a job offer in the last month.

First-order Beliefs To compare individuals' beliefs about their labor market outcomes with their realized labor force participation and employment, we fielded follow-up surveys three and six months after graduation. As the third and fourth bars of Figure 2a demonstrate, three months after graduation, there is a small, 8.1 ppt, gender gap in re-

alized labor force participation. This means that women's stated intention to work at baseline were more than just cheap talk. The vast majority of women were in the labor force three months later, and their rate of labor force participation (78.8%) was similar to men's (86.3%). However, the gender gap in labor force participation widens to 17.0 ppt at six months, when 60.3% of women are in the labor force, while 77.3% of the men are. We turn to looking at employment outcomes in Figure 2b. There we find large gender gaps even at 3 months: the 3rd and 4th bars of Figure 2b show that three months after graduating, only 33.5% of women were employed, compared to 55.0% of men. Over time, a higher share of men and women found jobs; the 5th and 6th bars of Figure 2b show that 64.4% of men and 38% of women were employed 6 months after graduation. Nonetheless, the relative increase over time is considerably smaller for women, resulting in persistent gender gaps in employment, which rose from 21.5 ppt at 3 months to 26.4 ppt at six months.

Comparing these realized outcomes to baseline beliefs, we find that both men and women are overoptimistic about their own likelihood of working six months after graduation: men believe at baseline that they have a 79.6% chance of working at six months while the share of working men at six months is 64.4%. For women, the baseline belief about employment 6 months later is 76.8%, while their realized employment rate is only 38.0%. These patterns of over-optimism are also consistent with Section 2.4, where we show that both men and women are more confident about their own prospects of finding a job within six months than about their peers'. However, as in Section 2.4, the degree of overoptimism is significantly higher amongst women: while men overestimate their own likelihood of working by 15.2 ppts, women overestimate it by 38.8 ppt. In sum, in stark contrast with the gender similarities that we document at the onset of job search, we uncover large gender gaps in realized outcomes. From this comparison, it becomes evident that there is a significant mismatch between college-graduating women's preferences at graduation and their realized employment outcomes.

Second-order Beliefs It is worth noting that both men and women hold reasonably accurate second order beliefs about their peers. We showed in Section 2.4 that, at baseline, men estimate other men's likelihood of employment at six months to be 66.1%, and women provide a similar guess, at 71.8%. These two estimates turn out to be very close to the realized share of employed men six months later (64.4%). Similarly, at baseline, men and women, respectively, estimated their female peers' likelihood of employment at six months to be

50.5% and 51.8%, respectively. Though their predictions for men were more accurate, these two estimates predict correctly that realized female employment at six months is substantially lower than men's (at 38.0%). Therefore, reinforcing the conclusion of Section 2.4, women's overoptimism about their own likelihood of employment does not result from a general misunderstanding of women's likelihood of working. Rather, women are well-aware that barriers loom at large that prevent other women from participating in the labor force, but they seem to overestimate their own ability to overcome these barriers.

2.6 The Race between the Marriage and the Labor Market: Descriptive Evidence

In Sections 2.4 and 2.5, we documented two main facts. First, while men and women have similar beliefs about their labor force participation and likelihood of employment at the time of college graduation, we find that, six months later, large gender gaps appear between men and women's labor market outcomes. Second, women's realized outcomes fall short of their initial expectations: while they thought, at baseline, that their chances of being employed six months later were 76.8%, their realized employment is 38.8 ppt smaller, at 38.0%. In this section, we explore two follow-up questions. First, can men and women's observables explain some of the gender gaps in realized outcomes? In other words, is the gap in employment between men and women predictable based on either the usual supply-side observable characteristics (e.g. differences in GPA, major or industry of job search)? We also explore the extent to which some demand-side factors, such as gender differences in the call back or hiring rate of firms, plays a role. Second, distinct from the exploration of how demand- and supply-side factors can explain the gender gap in outcomes, we investigate whether baseline predictors of future employment have differential impacts on men vs. women.

Ruling Out the Usual, Supply-Side Suspects Using universities' administrative data on student characteristics (e.g. major and GPA) as well as detailed search questions from our three and six month follow-up surveys, we are able to explore potential explanations for the gender gap in labor force participation and employment.

We start with potential differences in human capital, as measured by GPA. Panel (a) of Appendix Figure A.1 provides the distribution of GPA, separately for men and women and illustrates that women have, on average, higher GPAs than men. This remains true

even after controlling for the major in which they graduate (Panel (b) of Appendix Figure A.1). Thus, women are similarly, if not more, skilled than men. We also find that men and women’s preferences over work schedules are not different: as illustrated in Appendix Figure A.2, there are no gender differences in preferred hours of work, and the majority of women (70.6%) say they would prefer an on-site job (vs. 76.4% of men). Finally, Panel (a) of Appendix Figure A.3 shows the raw distribution of reservation wages for full time, onsite schedules, separately for men and women. We find that women’s reservation wage are, on average, 16.7 ppt lower than men’s. This remains true even after controlling for GPA (linearly) as well as major and industry fixed effects (Panel (b) of Appendix Figure A.3). It therefore seems unlikely that the gender gap in employment can be explained by women having unrealistic expectations about the labor market (e.g., women exclusively searching for high-paid remote, part-time jobs).

To test the impact of student characteristics on the gender employment gap more formally, we regress the six month employment dummy on a gender dummy, and progressively add controls. The goal of this exercise, shown in Table 2, is to understand the extent to which the gender employment gap can be explained by observable factors. Column 1 starts with the raw gender employment gap, at 26.4 ppt. Column 2 adds education controls (GPA and major), Column 3 further controls for industry of search (we construct this by asking students for their preferred job title at baseline)⁷, Column 4 adds preferences over non-wage amenities (preference for hours of work and an on-site vs. remote job), Column 5 additionally controls for the reservation wage of a full-time onsite job if available (other preferred schedule if not), Column 6 controls for their baseline belief about own likelihood to work at six months, and finally, Column 7 controls for job search effort, proxied by the number of job applications sent between graduation and six months post-graduation. The main result is that even after controlling for granular information about students’ human capital, wage and non-wage amenities or job search effort, the gender employment gap remains large and significant, at 20.6 ppt. We do a similar exercise with labor force participation in six months and find the same pattern. Appendix Table B.5 shows that the labor force participation gap is only reduced by 2.8 ppt from 17.0 ppt after controlling for GPA and major, industry, preferences for non-wage amenities, reservation wage, and beliefs about own likelihood to work at six months.

⁷For those who did not want to search for a job, we impute industry by asking them for the most commonly preferred job title amongst students in their major

Ruling Out the Usual, Demand-Side Suspects We now investigate whether demand-side factors explain women’s low endline employment. In particular, we collect detailed information on the number of interviews, job offers (including wages) and job acceptances received by both men and women. This way, controlling for detailed candidates’ characteristics, we can test whether they are more or less likely to be interviewed or get a job offer.

First, we test whether demand-side explanations reduce the gender employment gap. In Column 8 of Table 2, in addition to student observables, we control for the number of interview requests received, a measure of market response to candidates’ job search effort. This leaves the gender gap in employment largely unaffected relative to Column 7. In Column 9, we add another demand-side control: the number of job offers received. This *increases* the gender gap in employment by 2.3 ppt. This pattern of results can be explained by Table 3, which shows in Column 1 that there are no gender differences in the number of job applications sent by men and women, implying that gender gaps in labor force participation are largely driven by the extensive margin. Column 2 shows that there are also no differences in call-backs: similar students have a similar likelihood of receiving an interview request, regardless of gender. However, Column 3 shows that women are 5.9 ppt *more* likely to receive at least one job offer. This corroborates the finding in [Gentile et al. \(2023\)](#) that, as education levels rise, demand factors plays less of a role in explaining the gender gap in labor market outcomes.

We further saturate the gender gap in number of interviews and number of job offers received at six months with a vast range of controls. Appendix Table B.6 shows that the gender gap in interview offers received at six months remains null even when we condition on various student observables: GPA and major, industry, preferences for non-wage amenities, reservation wage, beliefs about own likelihood to work at six months, number of job applications sent, and work history. Moreover, there is a gender gap *in favor of* women when it comes to job offers. Appendix Table B.7 shows that unconditionally, women get 31% more job offers than men six months after graduating. Controlling for student observables typically *increases* this gap, with women getting 36% more offers than men after we account for GPA and major, industry, preferences for non-wage amenities, reservation wage, beliefs about own likelihood to work at six months, *and* search effort (number of applications sent), work history and number of interviews. Thus, firms’ demand for female workers does not drive gender gaps in labor market outcomes.

Women reject more job offers as the marriage market unfolds Table 3 documents the job search and hiring journey of male and female students after graduation. By documenting each step of this journey, we show that the key mechanism driving the gender employment gap is women's tendency to reject job offers at higher rates than men. Column 4 highlights that six months after graduation, conditional on having received at least one job offer, women are 18.9 ppt (52.5%) more likely to remain unemployed – i.e., to turn down the received job offer(s) – compared to similar men. Moreover, the gender gap in employment widens over time because women turn down job offers at higher rates over time. Column 1 of Table 5 shows that for every month that goes by since graduation, the likelihood that a male student remains unemployed despite having received a job offer increases by 3.2 ppt ($p < .10$). This likelihood goes up by 4.1 ppt, to 7.3 ppts, for women ($p < .10$). This could, however, be driven by the possibility that the quality of jobs and unemployed workers is decreasing over time, i.e., as more time passes since the current cohort graduated, the best jobs are taken up by the best workers, and worse quality offers remain for those who are still in the market. In Column 2, we control for the offered salary and see that it in fact makes the coefficient in Column 1 larger: for each additional month post-graduation, the likelihood that a woman rejects job offers is now 4.5 ppt ($p < .10$) higher than the likelihood for men. In Column 3, we control additionally for workers' baseline reservation wage to account for the potentially different composition of workers who continue to be unemployed for longer. Again, we observe that the results in column 2 are stable. Thus, it appears that as women spend more time at home post-graduation, their attachment to the labor market weakens within six months, and they turn down job offers at higher rates.

In light of this, we explore what changes uniquely in the lives of women, but not men, in the six months following graduation. The unfolding of the marriage market is a natural explanation. We collect detailed information in our follow-up surveys on the quantity and arrival rate of marriage offers. Using these data, Figure 4a shows that at baseline, most women expect to marry not long after graduation, and considerably earlier than men: 51% of women expect to be married within 2 years of graduation and 76% expect to be married within 3 years of graduation. Meanwhile, only 37% of men expect to be married within two years, and only 59% expect to be married within 3 years. In parallel, though marriage may still be a couple of years away for these women, marriage offers start accumulating imminently after they graduate. Figure 4b shows that the share of women who received at least one marriage offer post-graduation grows dramatically from 2% at graduation to 19% three months after graduation, and 31% six months after graduation. Conversely

for men, the rate of arrival is much lower: 9% had received at least one marriage offer by three months after graduation, and 17% had received at least one offer six months post-graduation.

The simultaneous rise in marriage offers received, and job offers rejected implies potential competition between the labor and the marriage market. If there is mounting pressure, post-graduation, to find a marriage match, it may gradually divert women away from the labor market. If this is the case, the timing of job search should distinctively matter for women but not for men, i.e., applying early (before the marriage market unfolds) should increase women's (but not men's) likelihood of working.

We first find descriptive evidence that the timing of job search is highly predictive of women's future employment prospects, whereas the same does not hold for men. Table 4 assesses whether there are labor market returns to applying earlier. For students who applied within three months of graduating, we consider their labor market outcomes six months after graduation. For students who applied within six months of graduating, we consider their labor market outcomes nine months after graduation, using an additional wave of nine month follow-up data from the private university where we tracked a minimal set of outcomes in this survey round. Constructing our panel in this way allows us to ensure that we account for a sufficient and constant period of time between students' applications and their outcomes. Column 1 of Table 4 shows that women who had applied to a job earlier (within 3 months of graduation) were 18.4 ppt (58%) more likely to be in the labor force six months after graduation than women who applied later, but there is no analogous gain of earlier application for men. This effect persists (at 19.1 ppt) in Column 2, after controlling for students' GPA, major, occupation, belief about employment in six months, and reservation wage. Column 3 shows returns to early application on the likelihood of employment: women who applied earlier (within 3 months of graduation) were 19.1 ppt (138%) more likely to be working six months after graduation. The effect is only marginally attenuated to 18.9 ppt in Column 4, which controls for the same student observables as in Column 2. Meanwhile, the payoff to men for earlier application is noisier but negative and much smaller in relative magnitude. But of course, there is selection in who chooses to apply early: early applicants may be more intrinsically motivated and therefore the correlation between the timing of their application and their labor market outcomes may be driven by positive selection. To get at the causal effect of application timing on employment, we turn to an experiment that we designed to exogenously shifts the application timing.

3 Experimental Evidence on the Timing of Job Search

3.1 Experimental Design

Experiment Description We fielded a survey experiment at the public university in Lahore, in June 2023. This survey experiment was conducted with students who participated in our baseline survey and were due to graduate in August ($\approx 2,000$ students). A randomly selected group of the above sample was offered monetary incentives, which they would receive if they proved to us that they had applied to at least four *relevant* jobs by August 15th (that is about a month after their graduation). 40% of the students were offered PKR 5,000 (\approx USD 30) while 10% were offered PKR 20,000.⁸ The control group was offered no reward. Students were told that to obtain their rewards they must provide the research team with a proof of their applications. This was implemented by asking them to fill out a brief online questionnaire, attaching screenshots of their applications including the date of application and the title of the job. This allowed us to ensure that students indeed applied to real jobs that were relevant to their college degree.

The goal of this experiment is to provide students with a nudge to apply to jobs earlier than they otherwise would. Given that the reward is small and one-time only we consider that it should not have any wealth effect on students' labor supply. Additionally, to the extent that our treatment is successful and increases the employment of women in the treatment group, we consider that the Pakistani labor market remains large enough that there should be no spillover (e.g. crowd-out or wage) effects on the control group. In other words, our treatment group remains atomistic in this market.

Balance and Attrition Table B.3 Columns 1 to 4 shows that the treatment and control groups are balanced at baseline, indicating a successful randomization procedure. Attrition is relatively low: 14.7% at 3 months follow up and 25.3% at 6 months. Moreover, the treatment and control groups are balanced in both follow up waves (see Table B.3 Columns 5 to 8 for the 3 months follow up and Columns 9 to 12) and we do not find differential attrition (Table B.4), at the exception of the distribution of majors at the 3 months follow-up, where Humanities and Languages become less represented (24.5% of the baseline sample but 23.2% of the 3 months follow-up sample) and Science more represented (22.6% of the baseline sample but 23.9% of the 3 months follow-up sample). Given that we find no differential attrition on any other dimension and that the 6 months sample reverts back to

⁸We pull the two treatment groups together as they provide similar results.

the baseline distribution of majors, we do not think this modest variation should impact the interpretation of our results. In addition, most of our analysis is performed using the six months sample.

Take-up 46% of the women (and 44% of the men) we offered this treatment to ended up taking it. How do the compliers differ from the non-compliers? Figure ?? shows the coefficients from a regression of a dummy equal to one if an individual assigned to the treatment group is a complier on a large set of baseline individual characteristics. We find that one's field of study is highly predictive of compliance: for both men and women, compliers are much more likely to be from an engineering / computer science department than from Humanities or Life Sciences. Interestingly, female compliance is positively correlated with baseline beliefs about employment at 6 months, while that is not true for men. Additionally, two other baseline factors predict take-up for women. First, women who have done an internship in the past are more likely to take-up, in line with their likely stronger labor force attachment than the average graduating woman. Second, women whose beliefs about when they will get married are below median (3 years) are more likely to take up as well. There are many plausible explanations for this but the one we'll provide evidence on is that these women are better aware of the race between the labor and the marriage market than the other women because they are more likely to be exposed to the marriage market and its pressures pre-graduation.

3.2 Treatment Effect on Labor Market Outcomes

Effect on applications right after the deadline Our treatment has a strong intent-to-treat effect on the likelihood that a woman sends at least one application around graduation date: while in the control group 46.1% of women have applied to zero jobs by September, in the treatment group that share goes down to 26.3%. One could also have expected that our treatment would just mechanically result in a peak at the 4 job applications requirement but Panel A of Figure 6 illustrates a shift to the right of the entire distribution of female applications. This implies that once treated women started applying, many did not stop at the formal fulfilment of the treatment requirement but rather intensified their job search beyond it.

Treatment Effect on Applications over Time Figure 8 Panel A shows the share of women that have applied to at least one job, over time and separately for treatment and control.

By December, there remains a persisting (and statistically significant) 15ppt (22%) difference between the two groups: 82% of the treatment group women had applied to at least one job, vs. 67% of the control group. Strikingly, while the treatment does shift earlier the timing of application for men⁹, this effect fades over time: by December, 71% of the control men had applied to at least one job, which is not significantly different from 78% for treatment men.

Treatment Effect on Job Offers and Employment The effect on job offers starts materialising at the end of the month of August: as illustrated in Figure 8 Panel C treated women are 34% more likely than control ones to have received at least one job offer. The effect on likelihood of employment becomes significant a month later, as illustrated in Figure 8 Panel E: in September, 23% of treated women (vs. 17% of control women) are working. This difference remains statistically significant and of similar magnitudes over time. Table 6 Column 1 shows that, by December, there is a persisting and statistically significant 9.5pt difference (22.4%) in the share of women that received a job offer. Column 2 shows that treated women are 7.5ppt (22.3%) more likely to be employed than control women ($p < 0.05$). Figure 8 Panels D and F illustrate the fact that the treatment effects on labor force participation and employment are non-existent for men.¹⁰

Treatment Effect on Wages Table 6 Column 5 shows that working women in the treatment group make the same wages as working women in the control group, indicating that their higher job finding rate does not mean they compromise on wages. This result holds even after we control for GPA, major and industry fixed effects as well as baseline reservation wages (Column 6).

Treatment Effect on Labor Force Outcomes: Channels The treatment may impact women's employment outcome through two main channels. The first is by altering search effort: we indeed find that women in the treatment group are more likely to apply to a job and also have a higher average number of applications by December. The second channel is that, for a given number of applications and even job offers, women in the treatment group apply and receive offers earlier. Under our hypothesis that the labor market increasingly

⁹By end of August, X% of treated, vs. Y% of control, men have applied to at least one job

¹⁰The share of men working is about the same as the share of men who received a job offer. This is not because all men accept one of the job offer they receive, but rather because some of the men are self-employed or work in the family business, while working women are almost exclusively working in firms.

competes with the marriage market over time, receiving a job offer earlier should, all else equal, lead to a higher employment rate ⁶ Column 3 shows that controlling for the number of applications sent and job offers received by a graduate leaves the effect of the treatment on employment likelihood almost unchanged, while adding a control the month of the first application takes the treatment effect coefficient down to zero. This evidence suggests the treatment effect is driven by the shift in the timing of application that it generates, rather than due to the increase in search effort that stems from it.

3.3 Treatment Effect on Marriage Market Outcomes

Table ⁶ Columns 7 to 10 show that, six months out, there are no negative effects on the marriage market outcomes we measure: women in the treatment group are just as likely to have received a marriage proposal as women in the control group (Column 7), and they have also received on average the same number of marriage offers as the control group (Column 8). We also proxy for the quality of marriage offers received by looking at the share of them that come from men with a bachelor degree or more. We find that there is no statistical difference between the control and treatment group women in the education level of the marriage offers received (Column 9).¹¹ Finally, women's belief about when they will get engaged are not affected by the treatment either (Column 10). There are several interpretations to these findings and we are still collecting data to distinguish between them. One interpretation through the lens of a simple model we are developing is that women in the treatment group are no less likely to get marriage offers, but it's the nature of the marriage offers they receive that differ (e.g. they receive marriage offers from more liberal men). Another possibility is that in-laws are in fact open to women's employment but non-working women are less encouraged to start searching for a job and/or they can only find a job that is compatible with their future husband's preferences.

3.4 Heterogeneity in Treatment Effects

We hypothesized that our treatment positively impacted some women's likelihood of employment because it increased their chances of "beating" the timing of the marriage market pressures. The fact that our intervention only has an effect on women (not men) and that this effect persists after controlling for search effort provide suggestive evidence

¹¹Note here that the sample size is smaller because we only asked that question to the relevant subset of respondents, that is women that already received a marriage offer.

that the marriage market forces are at play. We now provide an additional test for the prevalence of the race between the marriage and the labor markets. We posit that, if this race prevails, then our treatment should be most effective on the women who, at baseline (pre-treatment), have not yet felt the marriage market pressures. In other words, the women for whom we are not arriving “too late”. To operationalise this test, we leverage the fact that, at baseline, women answered the question: “In how many years from now do you expect you may potentially get married?”. The female median answer is 3. Therefore, we separate women into the group believing they will get married in less than 3 years (i.e. women who are already subject to the marriage market pressures at baseline), and the others. Table 7 Columns 1 and 2 show that our treatment effects on labor market outcomes (LFP and employment) are entirely driven by the group of women who initially were not experiencing the pressures from the marriage market. For this group, the magnitudes of the treatment effects are very large: 6 months later they are 18.1ppts (53%) more likely to be employed than their counterparts in the control group. In contrast, women who already believe they will get married soon at baseline experience no treatment effects on their employment likelihood. For men, the effects of treatment are equally null on both groups. The marriage market outcomes are not statistically different for the two groups of women and do not differ from the control group’s.

3.5 Misperceptions about the Race

At baseline, a majority of women declare they want to work and the experiment shows that applying early drastically increases women’s chances of realizing this preference. Presumably, if women had known timing mattered this much, they would have applied to jobs earlier. Said differently: we hypothesize that misperceptions about the race between the labor and the marriage market are at play. We shed light on three possible misperceptions. First, misperceptions about the pace at which the marriage market will unfold. Second misperceptions about how the job market will unfold. And last

So what initially prevented women who want to work from starting their job search earlier? While we cannot provide a definitive answer to this question, we have evidence for several possible explanations. First, we document that, at baseline, women are overoptimistic about the speed at which they can find a job once they start searching. Second, we find that shifting women to early search helps them correct this initial bias.

4 Conclusion

This study presents novel findings establishing that college-educated women in Pakistan intend to work upon graduating from college. However, within six months of graduation, most of them are drawn away from the labor market due to the dynamics of the marriage market. Traditional demand and supply-side explanations do not explain the gender employment gap, or the mismatch between women’s expected and realized labor supply; at the time of graduation, women have more human capital (higher GPA conditional on choice of major), lower reservation wages, and no differential preference for non-wage amenities relative to their male peers. Moreover, they are just as likely as men to receive call-backs for interviews, and more likely than men to receive a job offer. But conditional on receiving a job offer, they are more likely to reject it and remain unemployed. This rejection of received job offers is what drives gender gaps, and the mismatch in women’s desired and realized outcomes. Moreover, the gap widens over time: as women spend more time at home, they become increasingly more likely to turn down received job offers and remain unemployed instead. This is because, in the background, marriage offers start compounding as women are still navigating the labor market. Meanwhile, the rate of arrival of marriage offers is much lower for men. Consequently, the timing of job search emerges as pivotal for women, but not for men, as evidenced by the fact that women who had applied earlier were almost twice as likely to work compared to women who had applied later, while there were no returns to early application for men. Informed by this insight, we ran an experiment where we used a small financial incentive to shift the timing of students’ job search earlier, and found that it increased women’s employment notably. As predicted, it had no effect on men’s employment. The treatment effect was driven by women for whom applying earlier plausibly enabled them to “beat” the marriage market.

Our study offers valuable insights for shaping cost-effective and scalable policies aimed at bolstering female employment. The key takeaway is that intervening early, while women are still in college, is crucial. At this time, they have strong labor market aspirations, and weak marriage market exposure. College counseling programs or role model interventions that induce women to apply earlier, and inform them about realistic job search durations (including the upcoming competition with the marriage market) may be effective strategies. Additionally, modest financial incentives can serve as a powerful tool for reshaping job search behaviors among both genders.

More broadly, our results show that understanding the mechanisms that drive low female labor force participation is critical to designing effective policies. Women’s em-

ployment has remained non-responsive to a large host of attempted interventions in South Asia. Meanwhile, our light-touch intervention that targeted a specific barrier to female labor force participation increased women's labor supply substantially.

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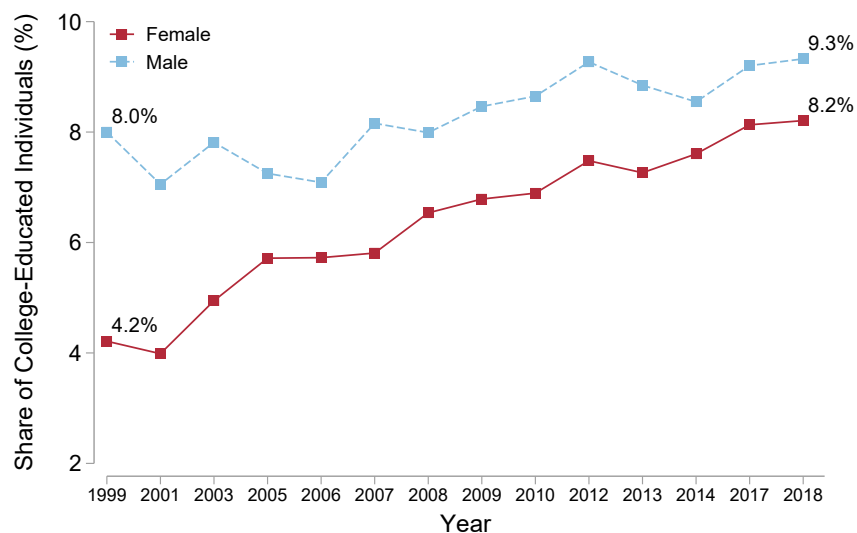
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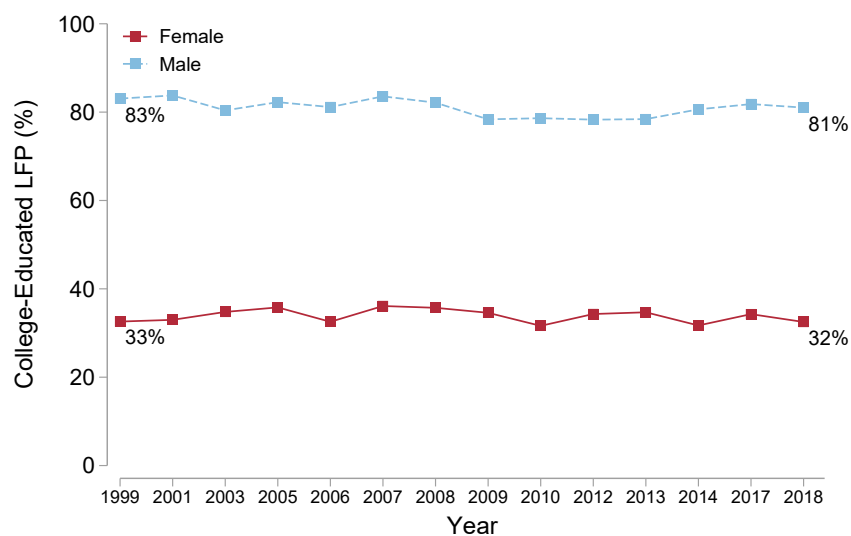
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Figures

Figure 1



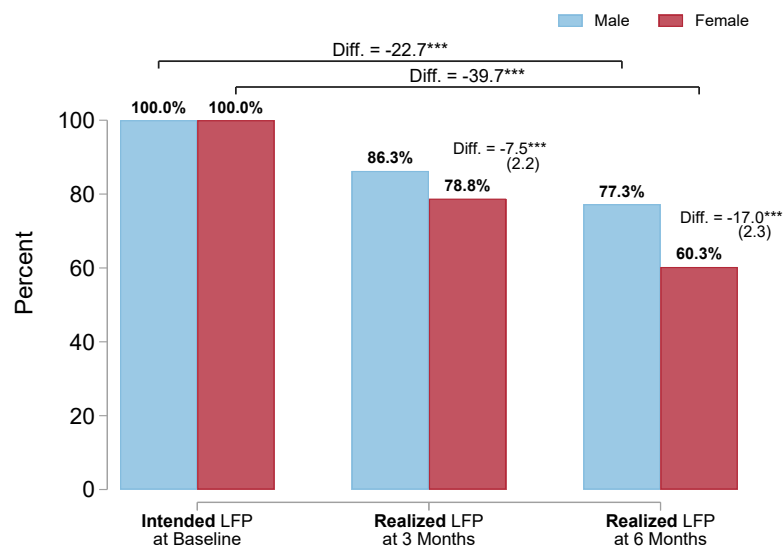
(a) College Participation in Pakistan



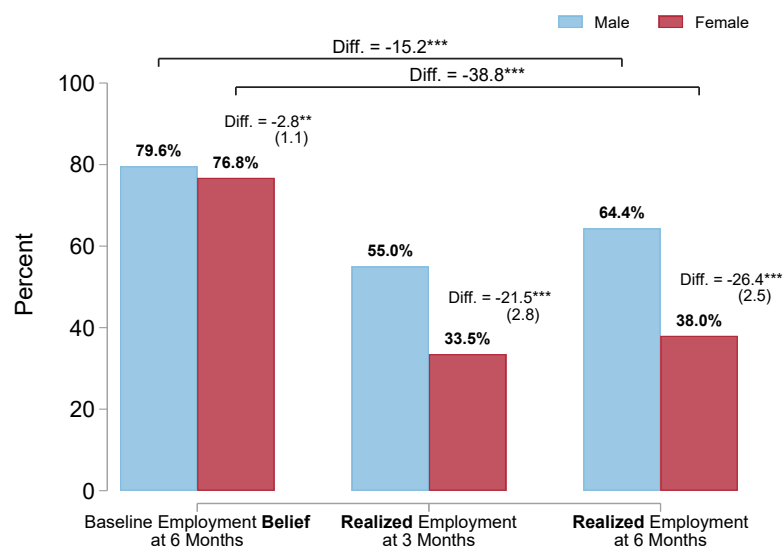
(b) Labor Force Participation in Pakistan

Notes: The figure shows that gender gaps in college education are closing over time but female labor force participation of college educated women remains flat at 32%. Panel a) Share of College-Educated Individuals from 1999 to 2018 by gender between 18 and 35 b) College-Educated Labor Force Participation from 1999 to 2018 by gender between 18 and 35. Pakistan Labor Force Surveys, 1999-2018

Figure 2: Baseline beliefs vs. Realized LFP and Employment



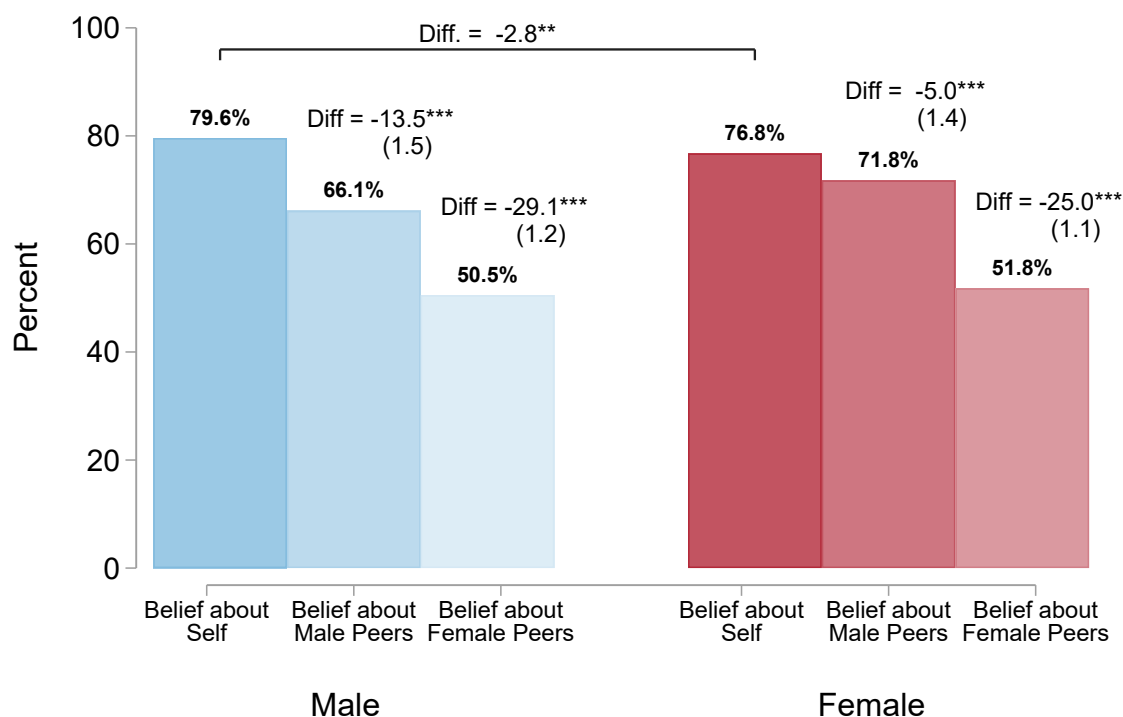
(a) LFP



(b) Employment

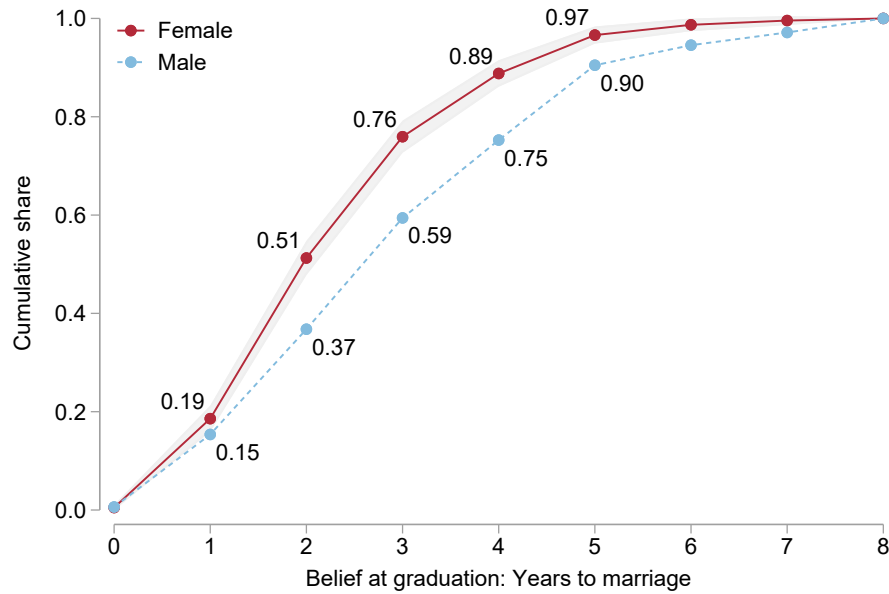
Notes: The figure shows that all women intend to work at baseline and most are in the labor force 3 months later. But large gender gaps in labor force participation and employment emerge six months after graduation. 783 male and 750 female respondents who answered a baseline survey; 590 male and 589 female for LFP (589 male and 588 female for Employment) respondents answered a 3-month follow-up survey; 783 male and 750 female respondents who answered a 6-month follow-up survey.

Figure 3: Belief on likelihood of employment within 6m of graduation lowest for female classmates

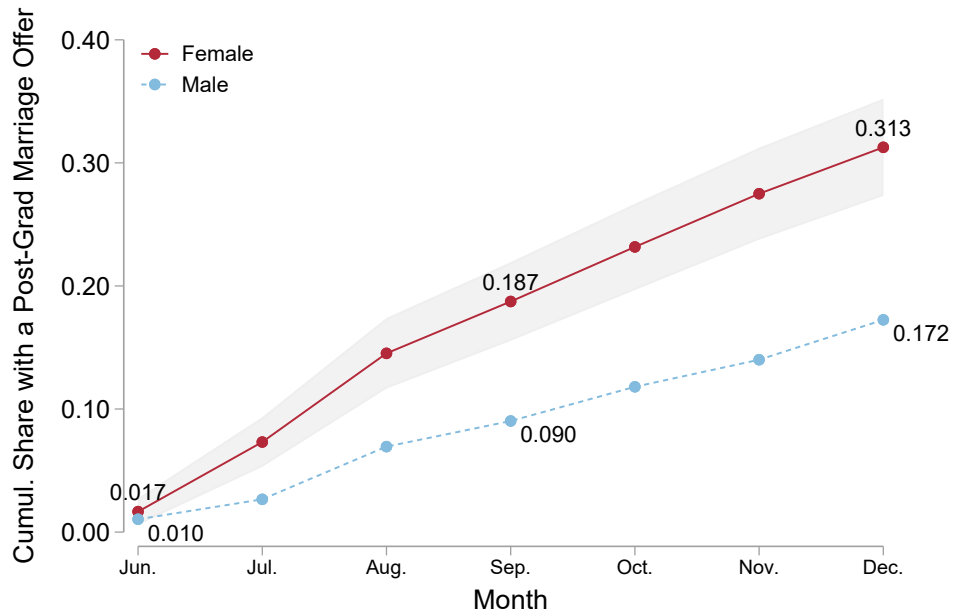


Notes: The figure shows that women consider themselves as likely as men to work six months after graduation. But believe that other women are considerably less likely to work. 783 male and 750 female respondents who have beliefs about self. 377 male and 459 female respondents who have second-order beliefs about male peers. 782 male and 750 female respondents who have second-order beliefs about female peers. In all samples, respondents answered a baseline survey and 6-month follow-up surveys.

Figure 4: Mounting pressures from the marriage market



(a) Respondent belief at baseline: Year by when they will be married



(b) Share of respondents with at least one marriage offer

Notes: The figure shows that the marriage market unfolds shortly after graduation for women but not men. Panel (a) shows baseline beliefs of respondents at both universities, excluding students in the treatment group of the experiment. Panel (b) additionally screens out students who were already engaged or married at the time of graduation.

Figure 5: Compliers Selection

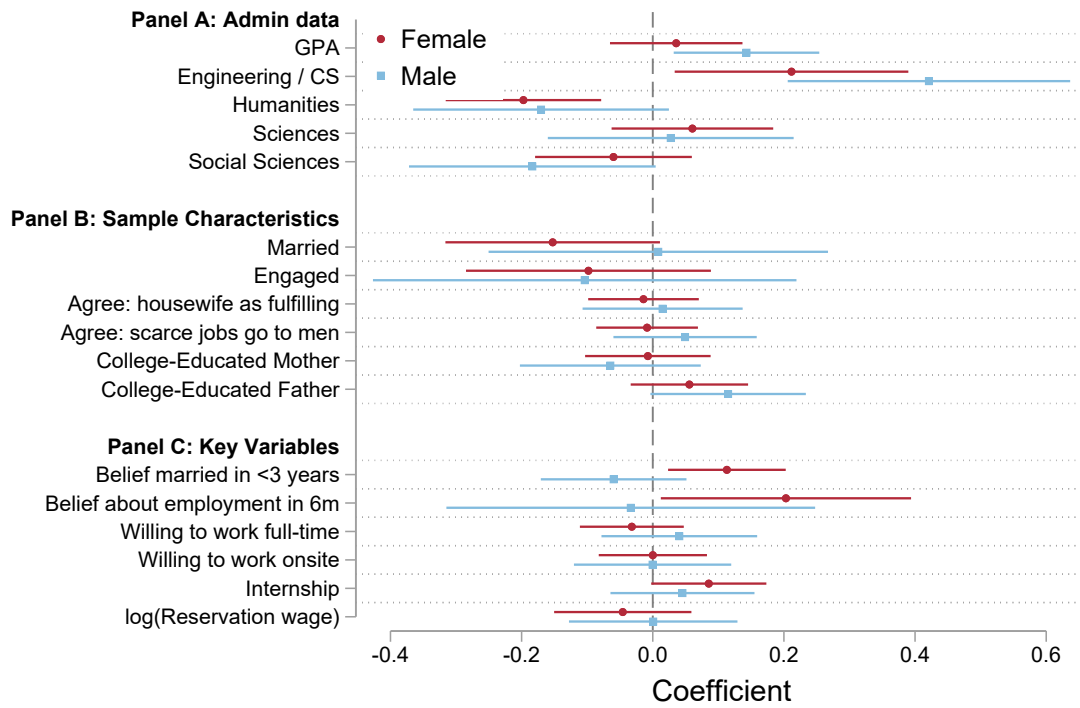
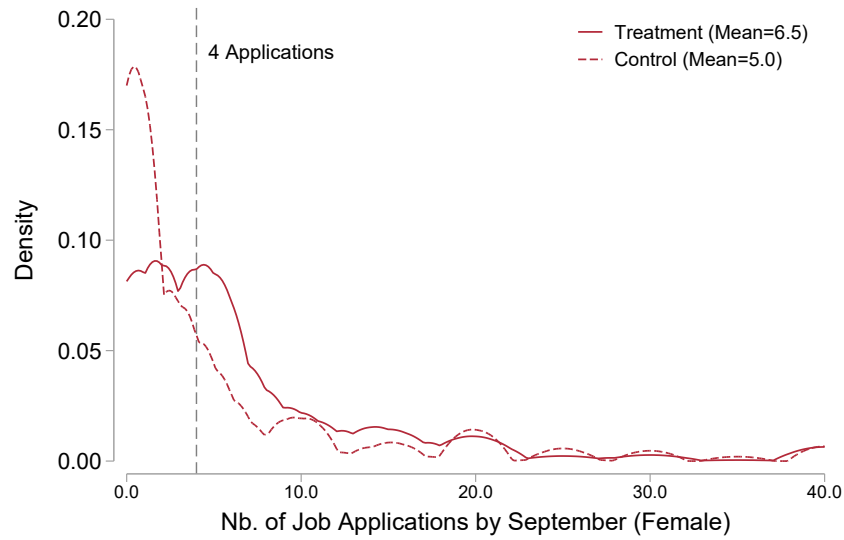
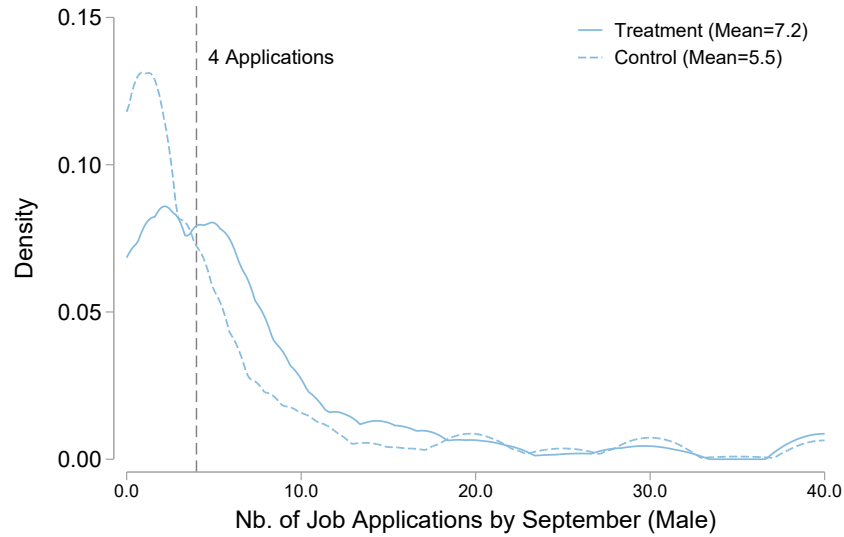


Figure 6: Density of Number of Job Applications (3 months follow-up)



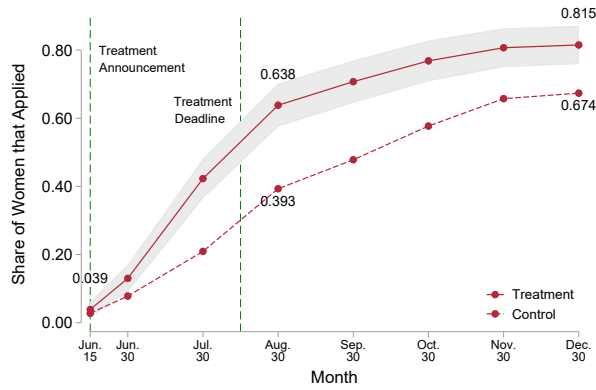
(a) Density of Job Applications (Female)



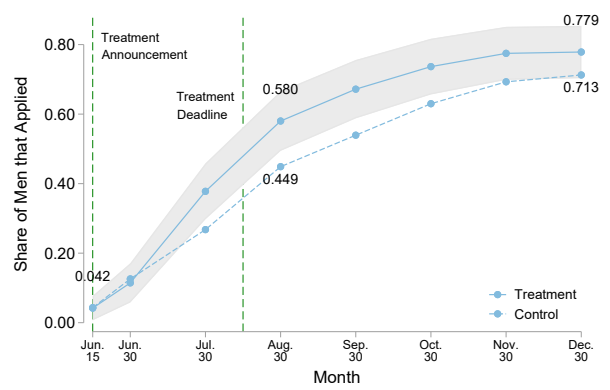
(b) Density of Job Applications (Male)

Notes: The figures show that our intervention shifted the treatment group's number of job applications above the required threshold (of 4 applications), with men and women in treatment sending 1.5-1.7 more applications, on average, than the control group. Densities are based on responses to the survey by graduates at 3-month follow-up survey. 470 female respondents are in the treatment group, and 447 are in the control. 243 male respondents are in the treatment group, and 250 are in the control.

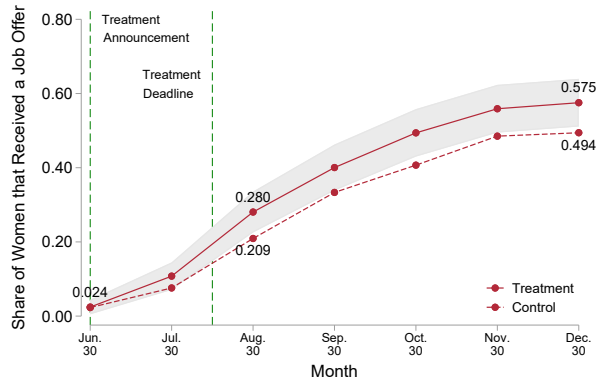
Figure 7: Treatment Effects on Labor Market Outcomes



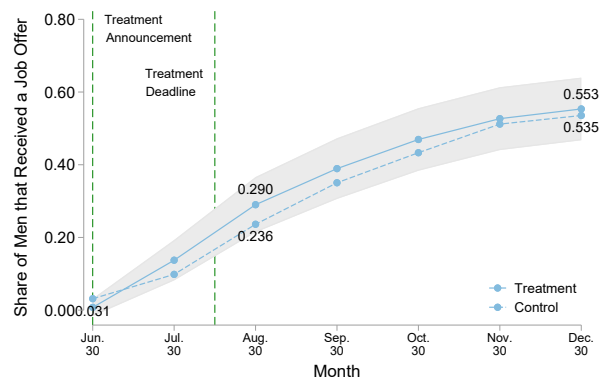
(a) Share of Women that Applied



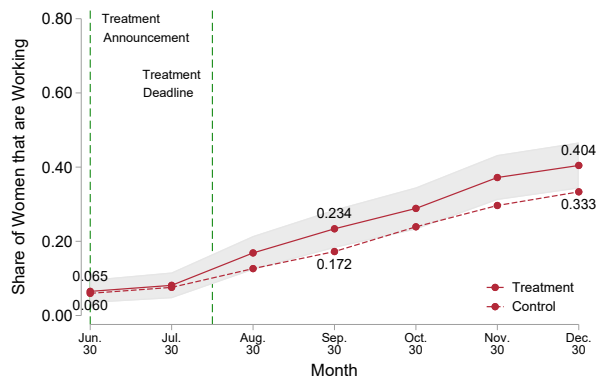
(b) Share of Men that Applied



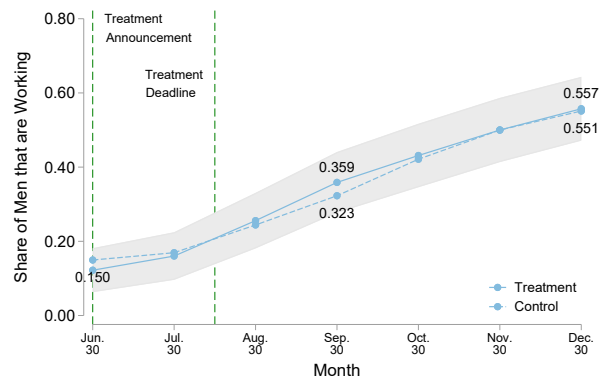
(c) Share of Women that Received a Job Offer



(d) Share of Men that Received a Job Offer



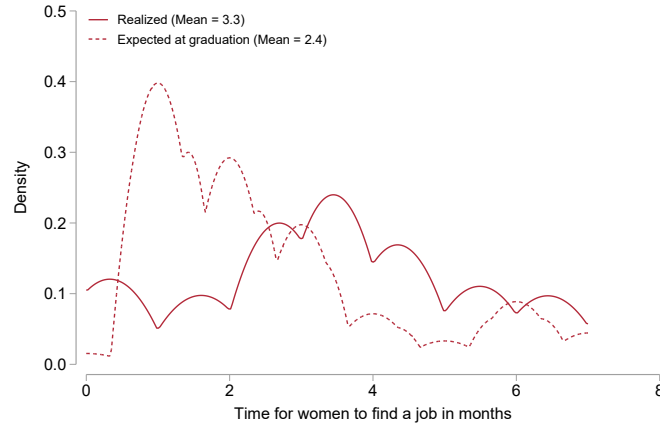
(e) Share of Women that are Working



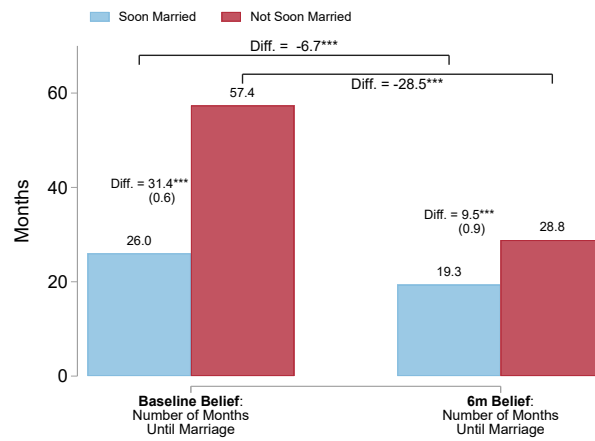
(f) Share of Men that are Working

Notes: Among 348 working women, only 344 provided the starting month of work. Among 288 working men, only 285 provided the starting month of work.

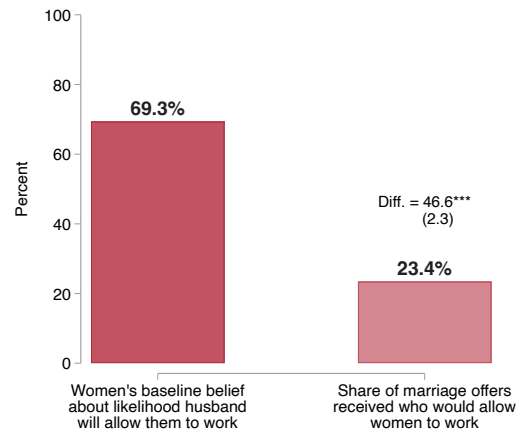
Figure 8: Misperceptions about the race



(a) Female Job Search Timing



(b) Belief: Marriage Timing



(c) Belief: Marriage Offers, Attitude about Female Work

Notes: The sample for Panels (a) and (c) only consists of control group students at the public university; these data are unavailable in the survey fielded at the private university. Panel (b) covers the full descriptive sample.

Tables

Table 1: Descriptive statistics by gender

	All	Male	Female	Diff.	p-value
Nb. Observations	1,533	783	750		
Age	22.6	22.8	22.3	0.6	0.00
GPA	3.15	3.01	3.30	-0.29	0.00
Married	4.2	2.8	5.7	-2.9	0.01
Engaged	6.00	5.49	6.53	-1.04	0.27
<i>Majors:</i>					
Engineering / Computer Science	20.7	31.3	9.6	21.7	0.00
Humanities and Languages	21.8	19.7	24.0	-4.3	0.23
Life Sciences	13.8	7.7	20.1	-12.5	0.00
Sciences	16.1	11.5	20.9	-9.4	0.00
Social Sciences	27.7	29.9	25.3	4.6	0.14
<i>WVS Values:</i>					
Agree: housewife as fulfilling	40.4	42.4	38.3	4.1	0.29
Agree: scarce jobs go to men	52.6	54.4	50.8	3.6	0.14
<i>Parental Background:</i>					
College-Educated Mother	36.3	34.7	37.9	-3.1	0.02
College-Educated Father	48.7	47.4	50.0	-2.6	0.05
Working Mother	5.4	4.5	6.0	-1.5	0.45
Working Father	83.8	81.4	85.2	-3.8	0.33
<i>Family Wealth:</i>					
Household with Car	50.1	46.9	51.9	-5.0	0.34
Household with Motobike	91.2	91.2	91.2	0.0	1.00
Household with Internet	87.2	78.9	91.9	-13.0	0.00
Personal Laptop	85.7	87.1	85.0	2.1	0.56
Personal Smartphone	100.0	100.0	100.0	0.0	

Notes: respondents who answered a baseline survey. The working mother question was answered by 282 male and 505 female public university students, and the working father question by 209 male and 407 female public university students. The family wealth questions were answered by 216 male and 408 female public university students. Robust standard errors are calculated with the university FE. For the working mother, working father and family wealth variables errors for p-values are robust standard errors.

Table 2: Gender Differences in Employment at 6 months

Dep. Var.: Working at 6 months	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Female	-0.264*** (0.025)	-0.247*** (0.027)	-0.233*** (0.028)	-0.232*** (0.028)	-0.229*** (0.028)	-0.223*** (0.028)	-0.206*** (0.028)	-0.203*** (0.027)	-0.226*** (0.027)
Male Mean Dep. Var.	.64								
Education		X	X	X	X	X	X	X	X
Industry			X	X	X	X	X	X	X
Non-wage preferences				X	X	X	X	X	X
Reservation wage					X	X	X	X	X
Employment beliefs						X	X	X	X
Search effort and work history							X	X	X
Nb. interviews								X	X
Nb. offers									X
Adj R-squared	0.069	0.090	0.096	0.096	0.096	0.120	0.138	0.163	0.191
Nb. observations	1,533	1,533	1,533	1,533	1,533	1,533	1,533	1,533	1,533

Notes: respondents who answered a baseline survey and 6-month follow-up survey. Education – cumulative GPA and 8 university majors fixed effects. Industry – 10 SOC sub-major groups fixed effect based on semantic occupation classification. Non-wage preferences – onsite or remote work binary and preferred numbers of work. Reservation wage – normalised to full-time for part-time work. Employment beliefs – the belief at the baseline survey about the probability of being employed in 6 months. Search effort and work history – a cumulative number of job applications at the 6-month follow-up and internship binary. Nb. interviews – a cumulative number of job interviews at the 6-month follow-up. Nb. offers – a cumulative number of job offers at the 6-month follow-up. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3: Women reject job offers more frequently than men

	Nb. Apps	Received Interview	Received Offer	Turndown	Turndown	Working
	(1)	(2)	(3)	(4)	(5)	(6)
Female	0.201 (0.644)	0.007 (0.029)	0.059** (0.029)	0.187*** (0.042)	0.164*** (0.043)	-0.229*** (0.028)
Male Mean Dep. Var.	7.10	0.54	0.49	0.36	0.36	0.64
Education	X	X	X	X	X	X
Industry	X	X	X	X	X	X
Reservation wage	X	X	X	X	X	X
Offered salary					X	
Adj R-squared	0.046	0.033	0.026	0.059	0.074	0.097
Nb. observations	1,533	1,533	1,533	627	580	1,533

Notes: respondents who answered a baseline survey and 6-month follow-up survey. Nb. Apps – the number of jobs applied since graduation. Received Interview – binary which equals 1 if had at least one interview since graduation. Received Offer – binary which equals 1 if had at least one job offer since graduation. Turndown – binary which equals 1 if received at least one job offer since graduation but not currently working, 0 if received at least one job offer since graduation and currently working in a private firm. Working – binary which equals 1 if currently working. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Timing of job search is highly predictive of women's employment

	LFP		Working	
	(1)	(2)	(3)	(4)
Applied early	0.184*** (0.047)	0.191*** (0.049)	0.191*** (0.038)	0.189*** (0.040)
Applied early*Male	-0.151** (0.065)	-0.139** (0.066)	-0.100* (0.059)	-0.078 (0.061)
Male	0.257*** (0.054)	0.243*** (0.059)	0.294*** (0.048)	0.280*** (0.052)
Constant	0.317*** (0.039)	-0.202 (0.145)	0.138*** (0.029)	-0.259* (0.133)
Controls		X		X
Nb. observations	1,082	1,082	1,082	1,082

Notes: Controls – cumulative GPA, 8 university majors fixed effects, 10 SOC sub-major groups fixed effect based on semantic occupation classification, belief about employment in 6 months after the baseline survey and reservation wage, normalised to full-time for part-time work. For students who applied within six months of graduating, we consider their labor market outcomes nine months after graduation, using an additional wave of nine month follow-up data from the private university where we tracked a minimal set of outcomes in this survey round. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Rejection of job offers over time

Dep. Var.: Turndown	(1)	(2)	(3)
Month of Job Offer	0.032*	0.017	0.017
	(0.019)	(0.019)	(0.019)
Female	-31.155*	-34.214*	-33.840*
	(18.005)	(17.854)	(17.930)
Female*Month of Job Offer	0.041*	0.045*	0.044*
	(0.024)	(0.023)	(0.023)
Constant	-23.802*	-12.423	-12.190
	(14.127)	(14.268)	(14.286)
Offered salary		X	X
Reservation wage			X
Adj R-squared	0.051	0.070	0.069
Nb. observations	733	724	723

Notes: Respondents from the public university, who were assigned to the control arm of the experiment. The graph is limited to this sample because timing of job offer is unavailable in the data collected at the private university. The estimates are less precise due to the smaller sample. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 6: Treatment Effect on Labor and Marriage Market Outcomes

	Labor Market							Marriage Market			
	LFP	Working		Turndown		log(Wage)		Proposed	Nb. Proposals	Educated	Belief:
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	Proposal	Month to Eng.
Treatment	0.095*** (0.032)	0.075** (0.032)	0.067** (0.030)	0.043 (0.037)	-0.090** (0.041)	-0.042 (0.085)	-0.010 (0.072)	0.015 (0.035)	0.088 (0.152)	-0.066 (0.048)	-0.500 (0.964)
Treatment*Male	-0.103** (0.049)	-0.061 (0.054)	-0.066 (0.050)	-0.036 (0.059)	0.099 (0.067)	-0.078 (0.119)	-0.128 (0.104)	-0.001 (0.053)	0.020 (0.214)		2.124 (1.814)
Male	0.210*** (0.035)	0.216*** (0.039)	0.217*** (0.036)	0.173*** (0.043)	-0.220*** (0.049)	0.361*** (0.089)	0.358*** (0.081)	-0.144*** (0.038)	-0.663*** (0.152)		2.263* (1.299)
Constant	0.566*** (0.024)	0.336*** (0.023)	0.188*** (0.022)	0.685*** (0.096)	0.538*** (0.031)	3.674*** (0.065)	2.965*** (0.325)	0.377*** (0.025)	1.488*** (0.109)	0.635*** (0.035)	21.636*** (0.683)
Nb. applications			X	X							
Nb. offers			X	X							
Month of application				X							
Extra controls							X				
Nb. observations	1,443	1,443	1,443	1,083	912	551	551	1,233	1,233	428	1,158

Notes: Extra controls – cumulative GPA, 8 university majors fixed effects, 10 SOC sub-major groups fixed effect based on semantic occupation classification and reservation wage, normalised to full-time for part-time work. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 7: Heterogeneity by Pre-Treatment Marriage Market Pressure

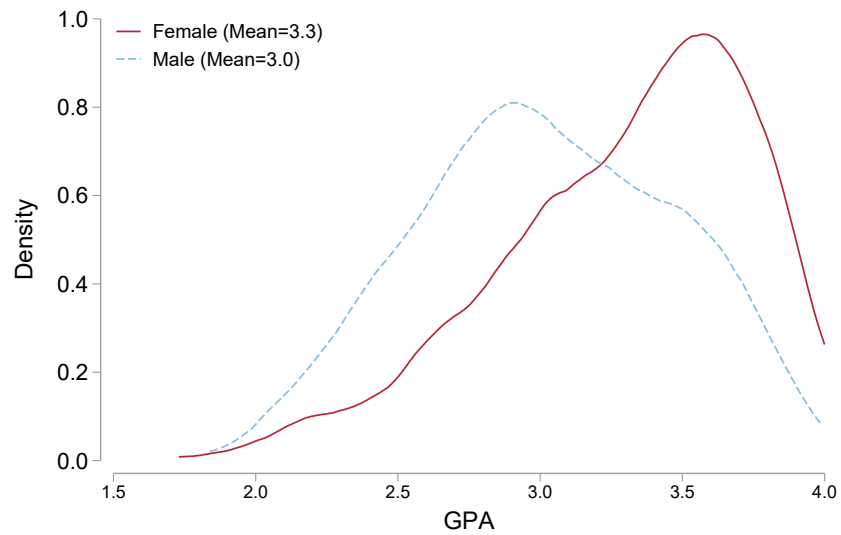
	Labor Market							Marriage Market			
	LFP	Working		Turndown		log(Wage)		Proposed	Nb. Proposals	Educated Proposal	Belief: Month to Eng.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Treatment	0.229*** (0.064)	0.181*** (0.066)	0.136** (0.063)	0.139* (0.074)	-0.230*** (0.079)	-0.064 (0.175)	-0.127 (0.154)	0.062 (0.056)	0.223 (0.196)	0.119 (0.129)	2.219 (2.090)
Treatment*Believes will marry soon	-0.176** (0.074)	-0.140* (0.075)	-0.091 (0.071)	-0.128 (0.085)	0.189** (0.092)	0.020 (0.200)	0.154 (0.173)	-0.057 (0.070)	-0.155 (0.273)	-0.216 (0.138)	-4.190* (2.305)
Treatment*Male	-0.246*** (0.087)	-0.143 (0.095)	-0.136 (0.088)	-0.116 (0.101)	0.185 (0.113)	-0.116 (0.225)	-0.054 (0.191)	-0.060 (0.080)	-0.247 (0.296)		-2.026 (3.183)
Treatment*Believes will marry soon*Male	0.192* (0.106)	0.101 (0.117)	0.097 (0.108)	0.105 (0.126)	-0.091 (0.142)	0.094 (0.267)	-0.063 (0.229)	0.092 (0.106)	0.426 (0.409)		5.613 (3.833)
Believes will marry soon	0.072 (0.057)	-0.006 (0.054)	-0.001 (0.052)	0.032 (0.064)	-0.046 (0.069)	-0.121 (0.156)	-0.162 (0.134)	0.270*** (0.049)	1.152*** (0.192)	0.079 (0.110)	-7.390*** (1.692)
Male	0.261*** (0.066)	0.181*** (0.070)	0.197*** (0.065)	0.169** (0.077)	-0.227*** (0.086)	0.268 (0.179)	0.207 (0.152)	0.016 (0.058)	0.115 (0.219)		2.205 (2.453)
Believes will marry soon*Male	-0.064 (0.079)	0.054 (0.084)	0.031 (0.078)	0.015 (0.094)	0.002 (0.105)	0.122 (0.206)	0.209 (0.174)	-0.204*** (0.075)	-1.028*** (0.291)		-1.950 (2.817)
Constant	0.510*** (0.050)	0.340*** (0.048)	0.191*** (0.047)	0.668*** (0.106)	0.571*** (0.059)	3.766*** (0.137)	3.081*** (0.333)	0.177*** (0.039)	0.635*** (0.136)	0.565*** (0.104)	27.102*** (1.536)
Nb. applications			X	X							
Nb. offers			X	X							
Month of application				X							
Extra controls							X				
Nb. observations	1,443	1,443	1,443	1,083	912	551	551	1,233	1,233	428	1,158

Notes: Extra controls – cumulative GPA, 8 university majors fixed effects, 10 SOC sub-major groups fixed effect based on semantic occupation classification and reservation wage, normalised to full-time for part-time work. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

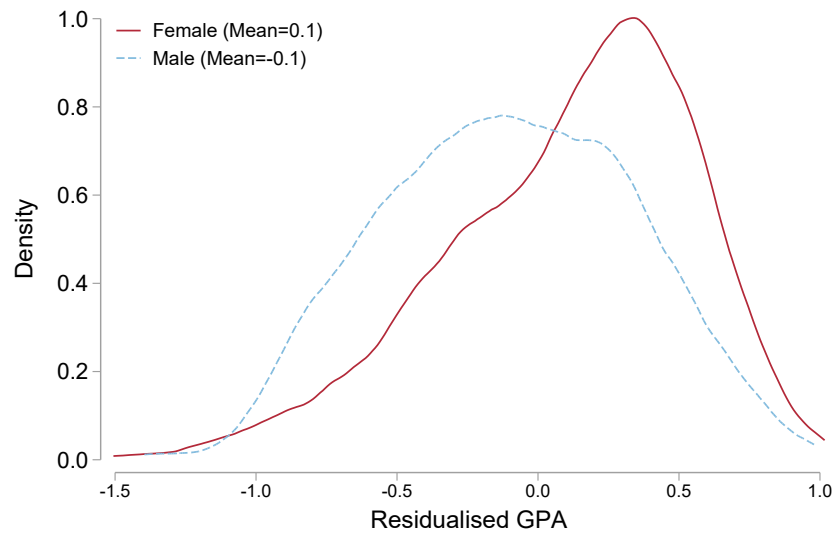
Appendix

A Appendix Figures

Figure A.1: Are Women Lower Ability?



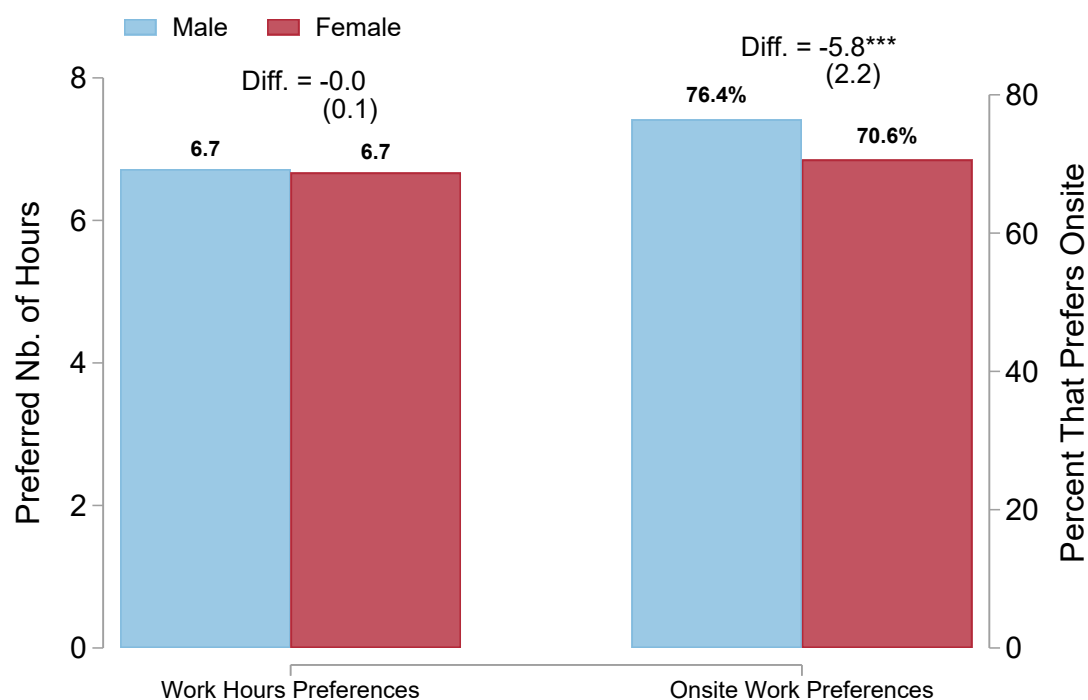
(a) Density of GPA



(b) Density of Residualised GPA

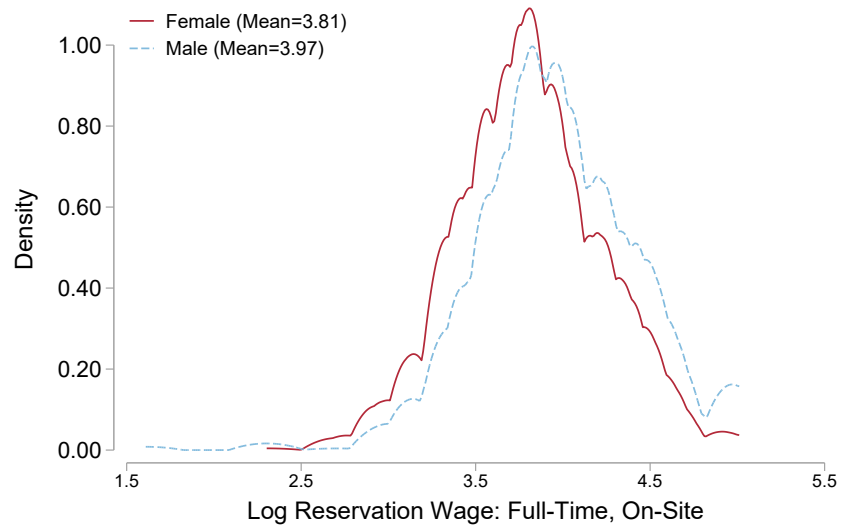
Notes: 858 male and 863 female respondents who answered a base-line survey. Panel (b) shows the gpa residualised on major FE.

Figure A.2: No gender difference in preferred work hours and job location

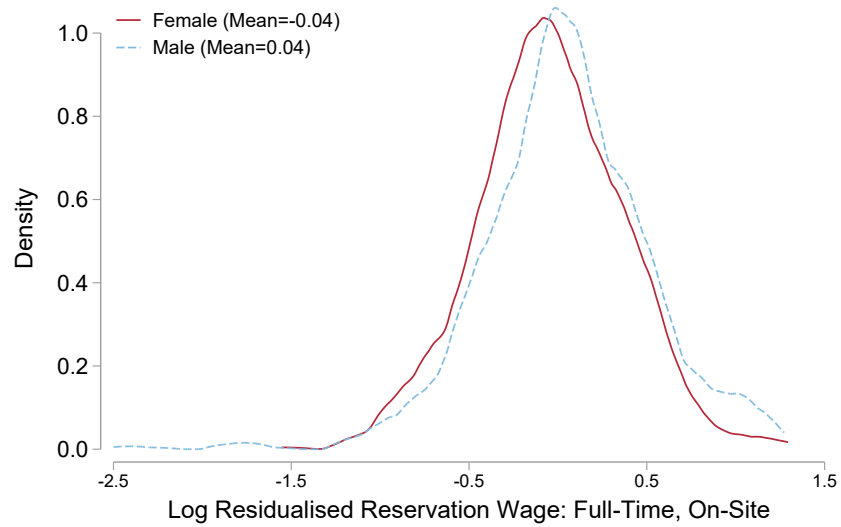


Notes: Descriptive sample from both universities. Work hours preferences reflects number of hours the student would like to work. On-site preferences is an indicator that the student would like to work on-site.

Figure A.3: Reservation Wage: Full-Time, Onsite



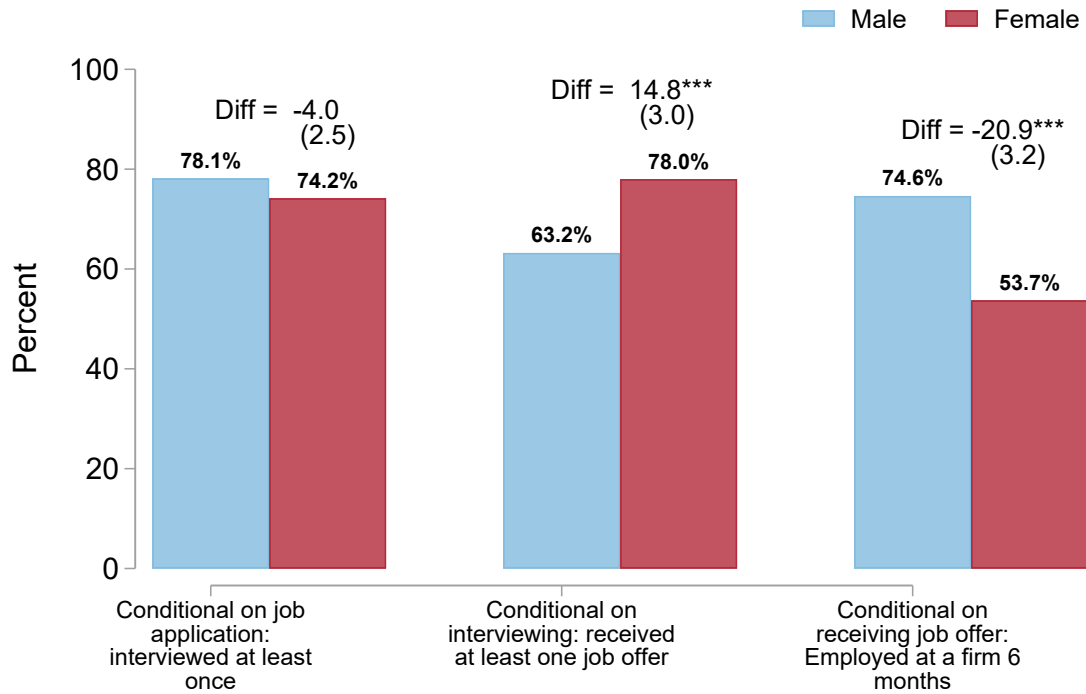
(a) Density of Reservation Wage



(b) Density of Residualised Reservation Wage

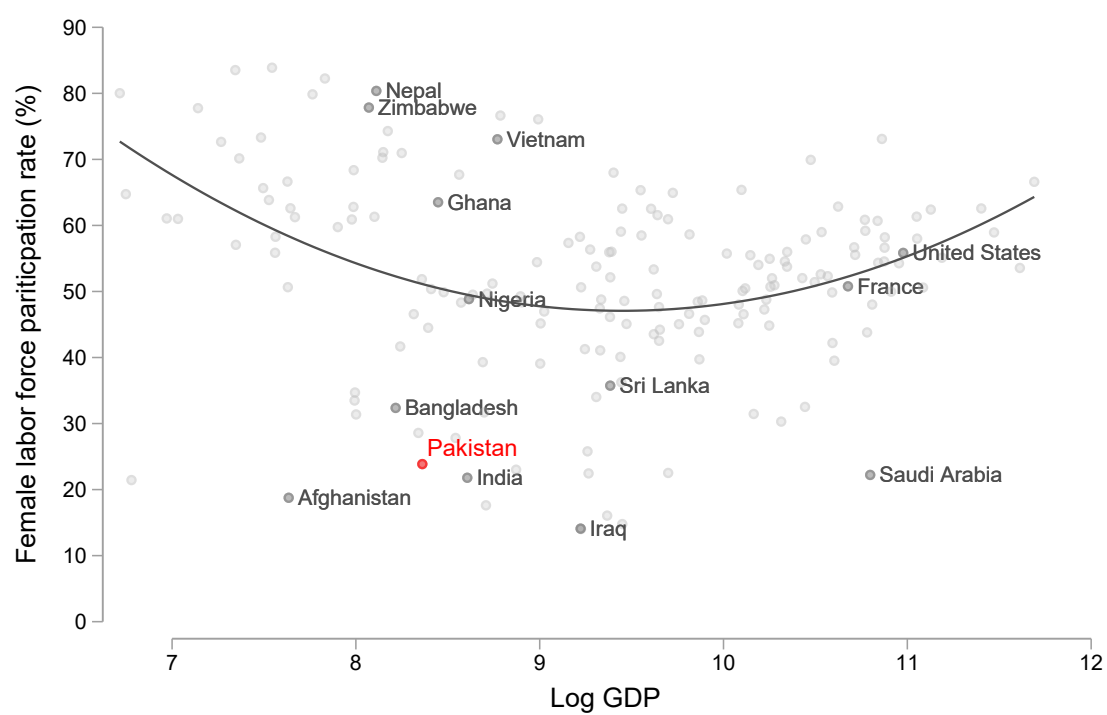
Notes: 628 male and 490 female respondents who answered a baseline survey. Panel (b) shows the reservation wage residualised on GPA, major FE and industry FE. The reservation wage is the log of wages in PKR.

Figure A.4: Firms do not Hire Women?



Notes: Descriptive sample from both universities. First two bars: conditional on applying, candidate got at least one interview. Second two bars: conditional on interviewing candidate got at least one job offer. Last two bars: conditional on receiving a job offer, whether respondent is employed at six months follow up.

Figure A.5: Female Labor Force Participation vs. (Log) GDP, Across Countries



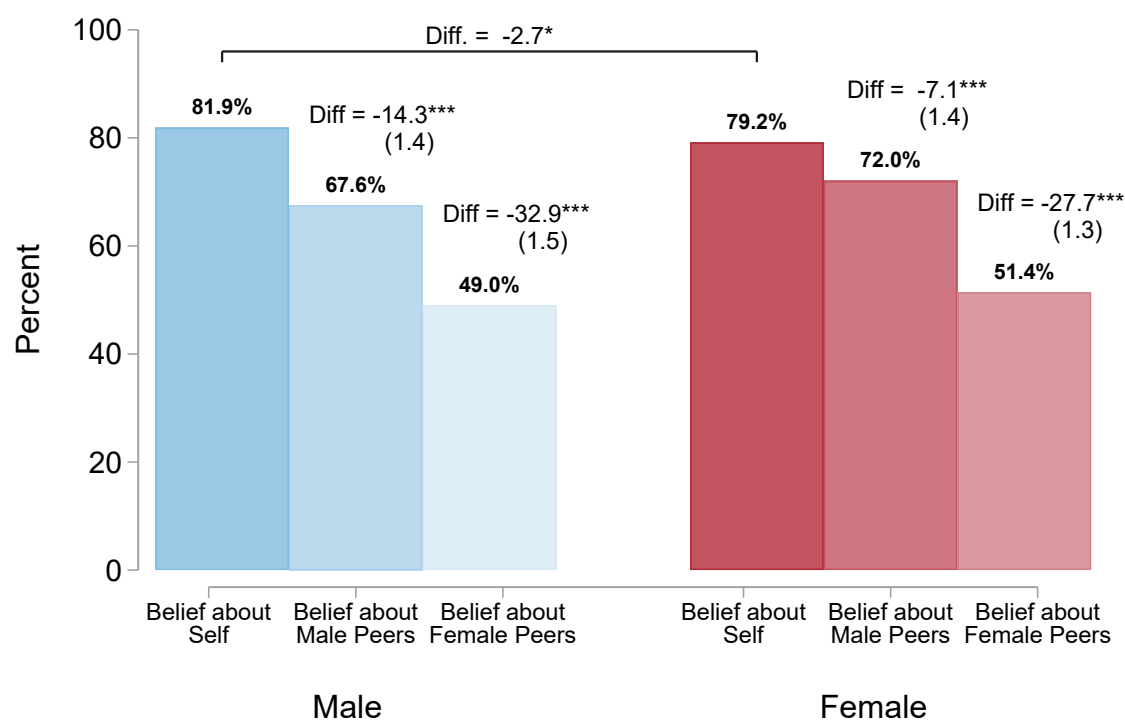
Notes: World Bank 2015

Figure A.6: Survey Incentives



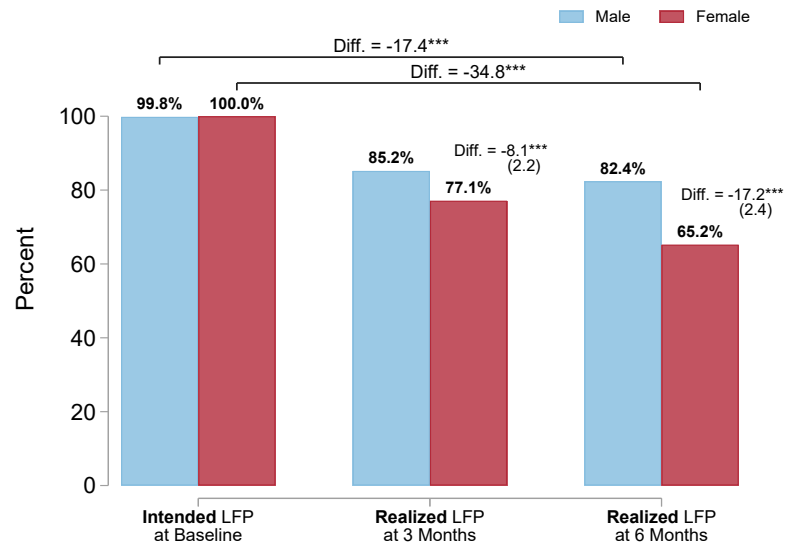
Notes: June 9, 2022 - this photo shows one of our food stands being set up during early days of data collection at the private university. Students were given vouchers to collect their meals from the food stand at a specified time after completion of the survey.

Figure A.7: Belief on likelihood of employment within 6m of graduation (all waves respondents)

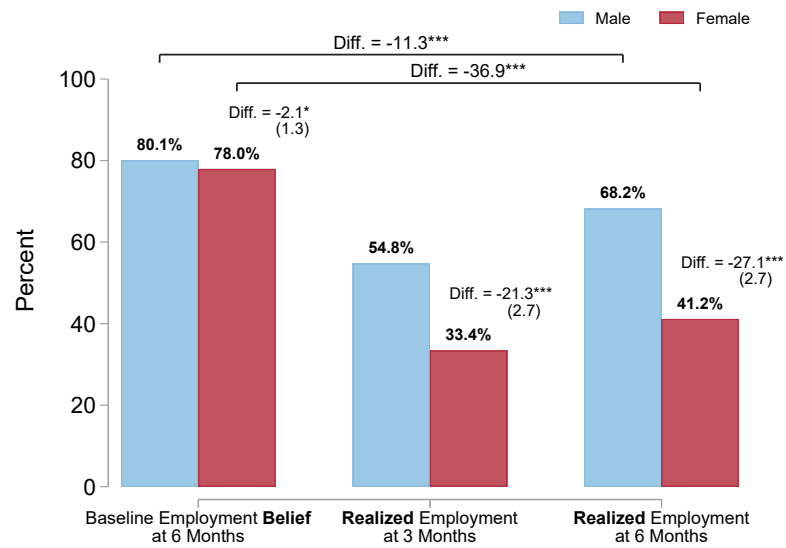


Notes: 325 male and 396 female respondents who have second-order beliefs and answered a baseline survey, 3-month follow-up and 6-month follow-up surveys.

Figure A.8: Baseline beliefs vs. Realized LFP and Employment (Constrained)



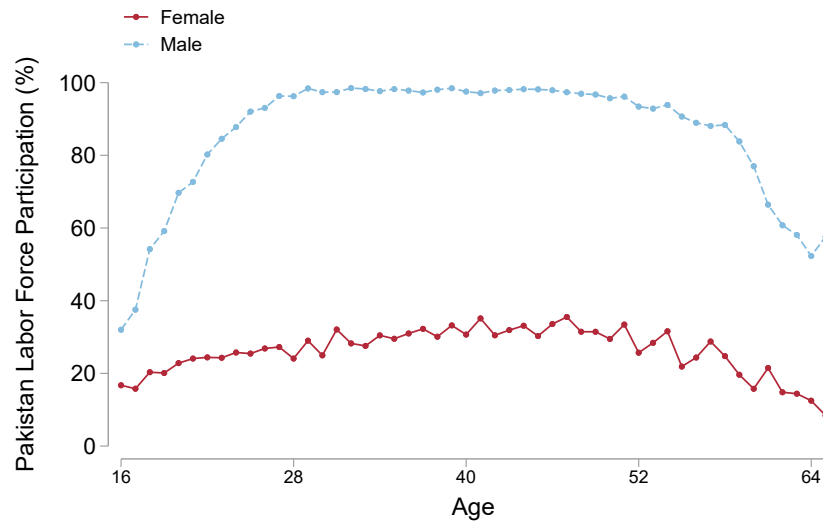
(a) LFP



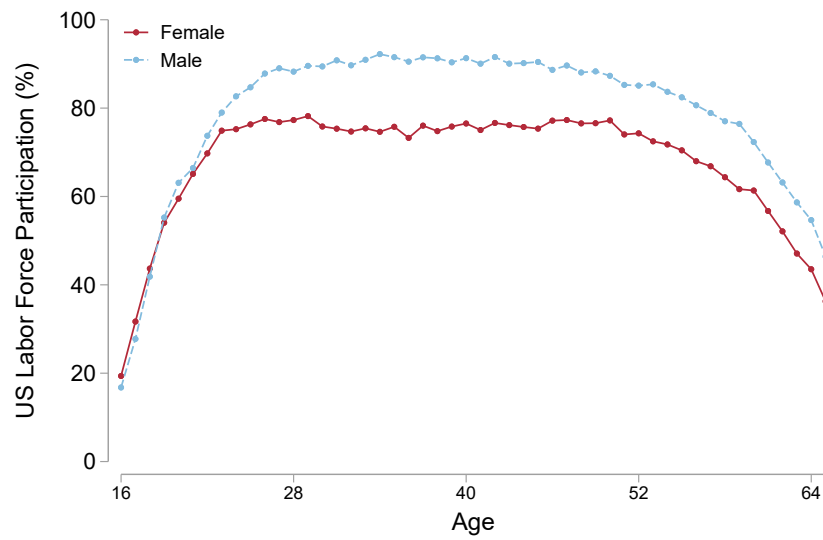
(b) Employment

Notes: 642 male and 656 female respondents who answered a baseline survey, 3-month and 6-month follow-up surveys.

Figure A.9: Labor Force Participation



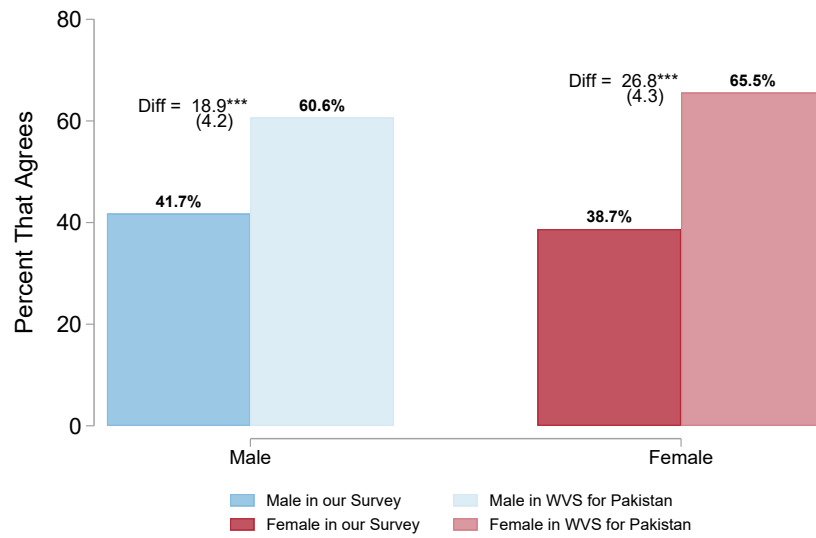
(a) Pakistan



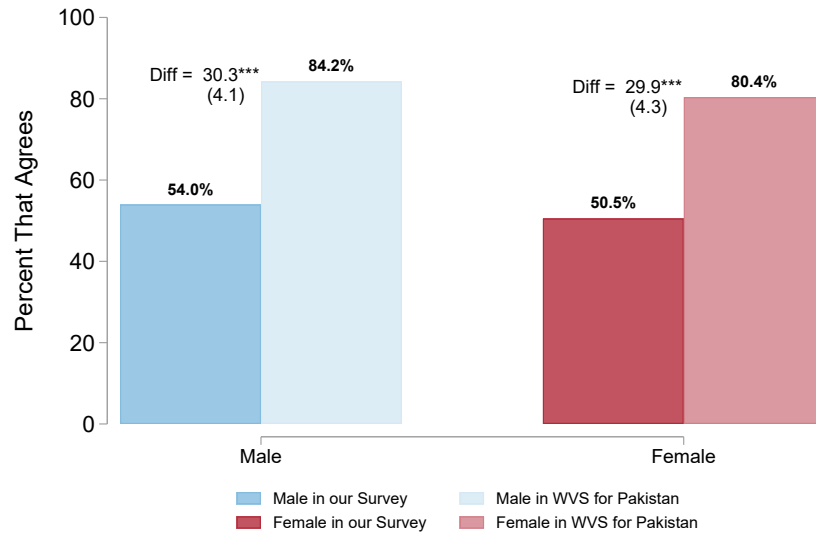
(b) US

Notes: Panel a) Source: PLFS 2018 Panel b) CPS 2018

Figure A.10: A Progressive Panel



(a) Being a Housewife is Just as Fulfilling as Being a Working Woman



(b) When Jobs are Scarce Men Have More Right to a Job than Women

Notes: Questions replicated from the World Values Survey (WVS), and benchmarked against data from WVS.

B Appendix Tables

Table B.1: Descriptive Statistics by Gender/University

	Private University					Public University				
	All	Male	Female	Diff.	p-value	All	Male	Female	Diff.	p-value
Nb. Observations	1,974	1,080	894			805	287	518		
Age	22.4	22.6	22.1	0.5	0.00	22.7	23.1	22.4	0.7	0.00
GPA	3.1	3.0	3.2	-0.3	12.45	3.3	3.1	3.4	-0.3	8.66
Married	4.7	3.1	6.6	-3.5	0.00	4.7	3.1	5.6	-3.5	0.09
Engaged	6.7	5.1	8.6	-3.5	0.00	5.2	3.5	6.2	-3.5	0.08
<i>Majors:</i>										
Engineering / Computer Science	23.1	36.3	7.2	29.1	0.00	9.3	9.8	9.1	29.1	0.75
Humanities and Languages	18.2	18.9	17.4	1.4	0.41	26.3	26.8	26.1	1.4	0.81
Life Sciences	15.6	7.5	25.4	-17.9	0.00	20.2	16.7	22.2	-17.9	0.06
Sciences	13.8	7.0	21.9	-14.9	0.00	20.7	24.4	18.7	-14.9	0.06
Social Sciences	29.3	30.3	28.1	2.2	0.28	23.4	22.3	23.9	2.2	0.60
<i>WVS Values:</i>										
Agree: housewife as fulfilling	42.8	43.2	42.3	1.0	0.67	34.5	35.5	34.0	1.0	0.66
Agree: scarce jobs go to men	50.0	50.5	49.4	1.0	0.65	54.0	57.1	52.3	1.0	0.19
<i>Parental Background:</i>										
College-Educated Mother	41.5	42.2	40.7	1.5	0.50	28.6	21.3	32.6	1.5	0.00
College-Educated Father	53.9	53.1	54.9	-1.9	0.41	42.6	38.0	45.2	-1.9	0.05

Notes: respondents who answered a baseline survey by university. Robust standard errors for p-values.

Table B.2: Descriptive Sample Attrition: Baseline, 3-month and 6-month Follow-Ups

	Baseline (1)	3m Follow-Up				6m Follow-Up			
		Non-Attritors (2)	Attritors (3)	Δ Attritors (4)	p-value (5)	Non-Attritors (6)	Attritors (7)	Δ Attritors (8)	p-value (9)
Nb. Observations	2,779	1,895	884			1,721	1,058		
Panel A: Administrative data									
GPA	3.14	3.16	3.10	0.05	0.01	3.16	3.11	0.05	0.01
<i>Majors:</i>									
Engineering / Computer Science	19.11	19.00	19.34	-0.35	0.83	19.47	18.53	0.94	0.54
Humanities and Languages	20.58	19.37	23.19	-3.82	0.02	21.56	19.00	2.56	0.10
Life Sciences	16.95	17.68	15.38	2.29	0.13	13.89	21.93	-8.04	0.00
Sciences	15.80	18.10	10.86	7.24	0.00	16.68	14.37	2.31	0.10
Social Sciences	27.56	25.86	31.22	-5.36	0.00	28.41	26.18	2.23	0.20
Panel B: Survey Responses (Sample Characteristics)									
Married	4.71	5.12	3.85	1.27	0.12	4.59	4.91	-0.32	0.70
Engaged	6.26	6.33	6.11	0.22	0.82	5.98	6.71	-0.73	0.45
Agree: housewife as fulfilling	40.41	39.58	42.19	-2.62	0.19	40.21	40.74	-0.53	0.78
Agree: scarce jobs go to men	51.17	53.35	46.49	6.86	0.00	52.24	49.43	2.80	0.15
College-Educated Mother	37.78	35.78	42.08	-6.30	0.00	36.90	39.22	-2.33	0.22
College-Educated Father	50.63	48.18	55.88	-7.70	0.00	48.93	53.40	-4.48	0.02
Panel C: Survey Responses (Key Variables)									
Intended LFP	99.86	99.89	99.77	0.12	0.49	99.88	99.81	0.07	0.64
Belief about own employment in 6m	77.42	77.85	76.43	1.42	0.14	78.50	75.63	2.87	0.00
Belief about women's employment in 6m	51.18	50.87	51.90	-1.03	0.30	51.20	51.13	0.08	0.93
Willing to work onsite	72.06	72.46	71.15	1.31	0.50	73.58	69.57	4.01	0.03
Reservation wage	54.34	53.83	55.42	-1.59	0.15	54.52	54.04	0.48	0.64

Notes: Attritors and Non-Attritors by different stages of the survey. Robust standard errors are calculated with the university FE.

Table B.3: Experiment Sample Treatment Assignment Balance: Baseline, 3-month and 6-month Follow-Ups

	Baseline				3m Follow-Up				6m Follow-Up			
	Control	Treatment	Diff.	p-value	Control	Treatment	Diff.	p-value	Control	Treatment	Diff.	p-value
Nb. Observations	931	1,001			811	836			689	753		
Panel A: Administrative data												
Female	64.98	66.33	-1.35	0.53	64.98	66.27	-1.29	0.58	63.13	65.21	-2.07	0.41
GPA	3.32	3.31	0.00	0.90	3.32	3.32	0.00	0.89	3.32	3.33	-0.01	0.69
<i>Majors:</i>												
Engineering / Computer Science	8.16	6.39	1.77	0.14	7.64	6.46	1.19	0.35	7.55	6.64	0.91	0.50
Humanities and Languages	25.35	23.78	1.57	0.42	23.67	22.73	0.95	0.65	26.27	21.91	4.36	0.05
Life Sciences	21.27	20.88	0.39	0.83	21.70	20.93	0.77	0.70	21.19	21.78	-0.59	0.79
Sciences	21.80	23.28	-1.47	0.44	23.06	24.64	-1.58	0.45	22.35	24.17	-1.82	0.41
Social Sciences	23.42	25.67	-2.26	0.25	23.92	25.24	-1.32	0.53	22.64	25.50	-2.86	0.20
Panel B: Survey Responses (Sample Characteristics)												
Married	4.40	5.29	-0.89	0.36	4.19	5.14	-0.95	0.36	3.92	4.78	-0.86	0.42
Engaged	5.16	3.90	1.26	0.18	4.56	3.47	1.09	0.26	4.79	3.19	1.60	0.12
Agree: housewife as fulfilling	34.59	28.17	6.41	0.00	34.40	27.75	6.65	0.00	34.54	28.95	5.59	0.02
Agree: scarce jobs go to men	53.71	52.45	1.26	0.58	54.13	50.48	3.65	0.14	53.41	52.46	0.95	0.72
College-Educated Mother	28.79	28.57	0.21	0.92	28.36	29.07	-0.71	0.75	27.72	28.02	-0.30	0.90
College-Educated Father	44.15	42.56	1.59	0.48	44.02	43.06	0.96	0.70	43.25	42.10	1.15	0.66
Panel C: Survey Responses (Key Variables)												
Intended LFP	100.00	100.00	0.00		100.00	100.00	0.00		100.00	100.00	0.00	
Belief about own employment in 6m	80.98	80.17	0.80	0.38	80.62	80.07	0.54	0.59	81.26	80.84	0.42	0.69
Belief about women's employment in 6m	51.29	50.62	0.67	0.46	50.91	50.37	0.54	0.58	51.15	50.08	1.07	0.30
Willing to work onsite	70.57	69.13	1.44	0.49	71.52	69.50	2.02	0.37	71.26	68.92	2.34	0.33
Reservation wage	53.62	52.56	1.07	0.35	53.09	52.57	0.53	0.67	53.13	52.85	0.27	0.83

Notes: Robust standard errors for p-values.

Table B.4: Attrition in the Experiment: Baseline, 3-month and 6-month Follow-Ups

	Baseline	3m Follow-Up				6m Follow-Up			
		Non-Attritors	Attritors	Δ Attritors	p-value	Non-Attritors	Attritors	Δ Attritors	p-value
Nb. Observations	1,932	1,647	285			1,442	490		
Panel A: Administrative data									
GPA	3.31	3.32	3.26	0.06	0.04	3.33	3.28	0.05	0.04
<i>Majors:</i>									
Engineering / Computer Science	7.25	7.04	8.42	-1.38	0.43	7.07	7.76	-0.68	0.62
Humanities and Languages	24.53	23.19	32.28	-9.09	0.00	23.99	26.12	-2.13	0.35
Life Sciences	21.07	21.31	19.65	1.66	0.52	21.50	19.80	1.70	0.42
Sciences	22.57	23.86	15.09	8.77	0.00	23.30	20.41	2.89	0.18
Social Sciences	24.59	24.59	24.56	0.03	0.99	24.13	25.92	-1.79	0.43
Panel B: Survey Responses (Sample Characteristics)									
Married	4.87	4.68	5.96	-1.29	0.39	4.37	6.33	-1.96	0.11
Engaged	4.50	4.01	7.37	-3.36	0.04	3.95	6.12	-2.17	0.07
Agree: housewife as fulfilling	31.26	31.03	32.63	-1.61	0.59	31.62	30.20	1.42	0.56
Agree: scarce jobs go to men	53.05	52.28	57.54	-5.27	0.10	52.91	53.47	-0.56	0.83
College-Educated Mother	28.67	28.72	28.42	0.30	0.92	27.88	31.02	-3.14	0.19
College-Educated Father	43.32	43.53	42.11	1.43	0.65	42.65	45.31	-2.66	0.31
Panel C: Survey Responses (Key Variables)									
Intended LFP	100.00	100.00	100.00	0.00		100.00	100.00	0.00	
Belief about own employment in 6m	80.56	80.34	81.84	-1.49	0.21	81.04	79.15	1.89	0.08
Belief about women's employment in 6m	50.94	50.64	52.70	-2.06	0.11	50.59	51.98	-1.39	0.19
Willing to work onsite	69.82	70.49	65.96	4.53	0.13	70.04	69.18	0.86	0.72
Reservation wage	53.07	52.82	54.50	-1.67	0.30	52.98	53.33	-0.34	0.80

Notes: Attritors and Non-Attritors by different stages of the survey. Robust standard errors for p-values.

Table B.5: Gender Differences in Labor Force Participation at 6 months

Dep. Var.: LFP at 6 months	(1)	(2)	(3)	(4)	(5)	(6)
Female	-0.170*** (0.023)	-0.167*** (0.025)	-0.152*** (0.026)	-0.149*** (0.026)	-0.147*** (0.026)	-0.142*** (0.025)
Male Mean Dep. Var.	.77					
Education		X	X	X	X	X
Industry			X	X	X	X
Non-wage preferences				X	X	X
Reservation wage					X	X
Employment beliefs						X
Adj R-squared	0.033	0.050	0.058	0.058	0.058	0.082
Nb. observations	1,533	1,533	1,533	1,533	1,533	1,533

Notes: respondents who answered a baseline survey and 6-month follow-up survey. Education – cumulative GPA and 8 university majors fixed effects. Industry – 10 SOC sub-major groups fixed effect based on semantic occupation classification. Non-wage preferences – onsite or remote work binary and preferred numbers of work. Reservation wage – normalised to full-time for part-time work. Employment beliefs – the belief at the baseline survey about the probability of being employed in 6 months. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table B.6: Gender Differences in the Number of Interviews at 6 months

Dep. Var.: Nb. Interviews at 6 months	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Female	-0.211* (0.128)	-0.156 (0.140)	-0.076 (0.141)	-0.055 (0.142)	-0.080 (0.143)	-0.056 (0.142)	-0.052 (0.117)
Male Mean Dep. Var.	1.87						
Education		X	X	X	X	X	X
Industry			X	X	X	X	X
Non-wage preferences				X	X	X	X
Reservation wage					X	X	X
Employment beliefs						X	X
Search effort and work history							X
Adj R-squared	0.001	0.022	0.032	0.033	0.034	0.048	0.387
Nb. observations	1,533	1,533	1,533	1,533	1,533	1,533	1,533

Notes: respondents who answered a baseline survey and 6-month follow-up survey. Education – cumulative GPA and 8 university majors fixed effects. Industry – 10 SOC sub-major groups fixed effect based on semantic occupation classification. Non-wage preferences – onsite or remote work binary and preferred numbers of work. Reservation wage – normalised to full-time for part-time work. Employment beliefs – the belief at the baseline survey about the probability of being employed in 6 months. Search effort and work history – a cumulative number of job applications at the 6-month follow-up and internship binary. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table B.7: Gender Differences in the Number of Offers at 6 months

Dep. Var.: Nb. Offers at 6 months	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Female	0.397*** (0.103)	0.253** (0.112)	0.346*** (0.115)	0.371*** (0.114)	0.394*** (0.115)	0.422*** (0.113)	0.445*** (0.105)	0.461*** (0.100)
Male Mean Dep. Var.	1.27							
Education		X	X	X	X	X	X	X
Industry			X	X	X	X	X	X
Non-wage preferences				X	X	X	X	X
Reservation wage					X	X	X	X
Employment beliefs						X	X	X
Search effort and work history							X	X
Nb. interviews								X
Adj R-squared	0.009	0.015	0.028	0.040	0.042	0.074	0.212	0.301
Nb. observations	1,533	1,533	1,533	1,533	1,533	1,533	1,533	1,533

Notes: respondents who answered a baseline survey and 6-month follow-up survey. Education – cumulative GPA and 8 university majors fixed effects. Industry – 10 SOC sub-major groups fixed effect based on semantic occupation classification. Non-wage preferences – onsite or remote work binary and preferred numbers of work. Reservation wage – normalised to full-time for part-time work. Employment beliefs – the belief at the baseline survey about the probability of being employed in 6 months. Search effort and work history – a cumulative number of job applications at the 6-month follow-up and internship binary. Nb. interviews – a cumulative number of job interviews at the 6-month follow-up. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table B.8: Female effect with controls

	Nb. Apps	Received Interview	Received Offer	Turndown	Working
Female	0.201 (0.644)	0.007 (0.029)	0.059** (0.029)	0.187*** (0.042)	-0.229*** (0.028)
Male Mean Dep. Var.	7.10	0.54	0.49	0.36	0.64
Education	X	X	X	X	X
Industry	X	X	X	X	X
Reservation wage	X	X	X	X	X
Adj R-squared	0.046	0.033	0.026	0.059	0.097
Nb. observations	1,533	1,533	1,533	627	1,533

Notes: respondents who answered a baseline survey and 6-month follow-up survey. Education – cumulative GPA and 8 university majors fixed effects. Industry – 10 SOC sub-major groups fixed effect based on semantic occupation classification. Reservation wage – normalised to full-time for part-time work. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table B.9: Female effect with controls (extra)

	Interviews	Received Interview	Nb. Offers	Received Offer	Working	Working
Female	-0.121 (0.115)	0.008 (0.027)	0.325*** (0.107)	0.051* (0.027)	-0.254*** (0.027)	-0.250*** (0.026)
Male Mean Dep. Var.	1.87	0.54	1.27	0.49	0.64	0.64
Education	X	X	X	X	X	X
Industry	X	X	X	X	X	X
Nb. Apps	X	X				
Interviews			X	X		
Nb. Offers					X	
Received Offer						X
Adj R-squared	0.375	0.153	0.159	0.188	0.154	0.178
Nb. observations	1,533	1,533	1,533	1,533	1,533	1,533

Notes: respondents who answered a baseline survey and 6-month follow-up survey. Education – cumulative GPA and 8 university majors fixed effects. Industry – 10 SOC sub-major groups fixed effect based on semantic occupation classification. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table B.10: Treatment Effect on Main Variables (3mfu)

	Labor Market						Marriage Market		
	LFP	Working	Turndown	log(Wage)			Proposed	Nb. Proposals	Educated Proposal
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Treatment	0.116*** (0.026)	0.056** (0.027)	0.050* (0.027)	-0.117*** (0.044)	0.137 (0.089)	0.117 (0.074)	0.014 (0.027)	0.021 (0.094)	-0.010 (0.040)
Treatment*Male	-0.058 (0.041)	-0.011 (0.050)	-0.025 (0.048)	0.111 (0.078)	-0.367*** (0.127)	-0.302*** (0.110)	-0.027 (0.039)	-0.160 (0.133)	
Male	0.110*** (0.031)	0.140*** (0.035)	0.150*** (0.033)	-0.215*** (0.055)	0.588*** (0.092)	0.432*** (0.082)	-0.083*** (0.028)	-0.309*** (0.100)	
Constant	0.693*** (0.020)	0.250*** (0.019)	0.180*** (0.020)	0.651*** (0.031)	3.449*** (0.069)	2.835*** (0.347)	0.208*** (0.019)	0.790*** (0.068)	0.568*** (0.028)
Nb. applications			X						
Nb. offers			X						
Extra controls						X			
Nb. observations	1,648	1,648	1,646	730	483	483	1,469	1,469	633

Notes: Extra constols – cumulative GPA, 8 university majors fixed effects, 10 SOC sub-major groups fixed effect based on semantic occupation classification and reservation wage, normalised to full-time for part-time work. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table B.11: Compliers and Non-Compliers: Main Variables (6mfu)

	Labor Market							Marriage Market			
	LFP	Working		Turndown		log(Wage)		Proposed	Nb. Proposals	Educated Proposal	Belief: Month to Eng.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Complier	0.184*** (0.036)	0.151*** (0.038)	0.099*** (0.037)	0.034 (0.042)	-0.126*** (0.046)	0.062 (0.093)	0.027 (0.080)	0.028 (0.042)	0.139 (0.181)	-0.043 (0.056)	-0.331 (1.131)
Complier*Male	-0.117** (0.055)	-0.041 (0.065)	-0.053 (0.061)	-0.011 (0.066)	0.116 (0.077)	-0.174 (0.136)	-0.221* (0.119)	-0.073 (0.062)	-0.298 (0.241)		2.494 (2.193)
Non-Complier	-0.007 (0.041)	-0.012 (0.038)	0.031 (0.036)	0.059 (0.047)	-0.034 (0.054)	-0.245** (0.110)	-0.081 (0.102)	0.000 (0.044)	0.026 (0.188)	-0.094 (0.059)	-0.713 (1.245)
Non-Complier*Male	-0.073 (0.063)	-0.065 (0.066)	-0.073 (0.062)	-0.075 (0.078)	0.069 (0.088)	0.114 (0.152)	0.024 (0.137)	0.072 (0.067)	0.339 (0.278)		1.822 (2.243)
Male	0.210*** (0.035)	0.216*** (0.039)	0.218*** (0.036)	0.173*** (0.043)	-0.220*** (0.049)	0.361*** (0.089)	0.358*** (0.081)	-0.144*** (0.038)	-0.663*** (0.152)		2.263* (1.300)
Constant	0.566*** (0.024)	0.336*** (0.023)	0.195*** (0.022)	0.683*** (0.099)	0.538*** (0.031)	3.674*** (0.065)	2.985*** (0.329)	0.377*** (0.025)	1.488*** (0.109)	0.635*** (0.035)	21.636*** (0.683)
Nb. applications			X	X							
Nb. offers			X	X							
Month of application				X							
Extra controls							X				
Nb. observations	1,443	1,443	1,443	1,083	912	551	551	1,233	1,233	428	1,158

Notes: Extra controls – cumulative GPA, 8 university majors fixed effects, 10 SOC sub-major groups fixed effect based on semantic occupation classification and reservation wage, normalised to full-time for part-time work. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table B.12: Compliers and Non-Compliers: Main Variables with Believes about Marriage Soon (6mfu)

	Labor Market							Marriage Market			
	LFP	Working		Turndown		log(Wage)		Proposed	Nb. Proposals	Educated Proposal	Belief: Month to Eng.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Complier	0.402*** (0.063)	0.327*** (0.079)	0.203** (0.079)	0.170** (0.086)	-0.306*** (0.087)	0.060 (0.201)	-0.104 (0.176)	0.008 (0.066)	0.068 (0.246)	0.149 (0.160)	4.176 (2.556)
Complier*Male	-0.334*** (0.089)	-0.186* (0.112)	-0.149 (0.105)	-0.139 (0.114)	0.217* (0.125)	-0.135 (0.256)	-0.046 (0.219)	-0.032 (0.092)	-0.191 (0.341)		-3.448 (3.831)
Non-Complier	0.071 (0.081)	0.047 (0.078)	0.080 (0.074)	0.104 (0.091)	-0.127 (0.102)	-0.287 (0.202)	-0.177 (0.185)	0.111 (0.071)	0.365 (0.237)	0.101 (0.142)	0.398 (2.482)
Non-Complier*Male	-0.181 (0.111)	-0.122 (0.115)	-0.137 (0.107)	-0.093 (0.132)	0.146 (0.147)	-0.080 (0.255)	-0.056 (0.234)	-0.082 (0.100)	-0.281 (0.375)		-0.777 (3.707)
Male	0.261*** (0.066)	0.181*** (0.070)	0.198*** (0.065)	0.169** (0.077)	-0.227*** (0.087)	0.268 (0.180)	0.205 (0.153)	0.016 (0.058)	0.115 (0.220)		2.205 (2.457)
Believes will marry soon	0.072 (0.057)	-0.006 (0.054)	-0.002 (0.052)	0.031 (0.064)	-0.046 (0.070)	-0.121 (0.156)	-0.165 (0.135)	0.270*** (0.049)	1.152*** (0.192)	0.079 (0.111)	-7.390*** (1.695)
Complier*Believes will marry soon	-0.280*** (0.075)	-0.224** (0.090)	-0.130 (0.088)	-0.173* (0.097)	0.239** (0.102)	-0.007 (0.226)	0.169 (0.195)	0.021 (0.082)	0.072 (0.331)	-0.216 (0.171)	-5.969** (2.781)
Non-Complier*Believes will marry soon	-0.102 (0.093)	-0.082 (0.090)	-0.069 (0.085)	-0.064 (0.106)	0.128 (0.120)	0.048 (0.242)	0.123 (0.222)	-0.139 (0.089)	-0.394 (0.341)	-0.240 (0.157)	-2.623 (2.800)
Believes will marry soon*Male	-0.064 (0.079)	0.054 (0.084)	0.032 (0.078)	0.015 (0.094)	0.002 (0.105)	0.122 (0.206)	0.213 (0.176)	-0.204*** (0.075)	-1.028*** (0.291)		-1.950 (2.822)
Complier*Believes will marry soon*Male	0.280** (0.113)	0.176 (0.139)	0.125 (0.132)	0.167 (0.143)	-0.089 (0.161)	-0.070 (0.306)	-0.249 (0.263)	-0.050 (0.124)	-0.116 (0.462)		6.917 (4.627)
Non-Complier*Believes will marry soon*Male	0.155 (0.135)	0.080 (0.141)	0.095 (0.132)	0.017 (0.165)	-0.105 (0.185)	0.356 (0.319)	0.186 (0.290)	0.223* (0.134)	0.914* (0.529)		4.568 (4.629)
Constant	0.510*** (0.050)	0.340*** (0.048)	0.199*** (0.047)	0.665*** (0.108)	0.571*** (0.060)	3.766*** (0.137)	3.091*** (0.339)	0.177*** (0.039)	0.635*** (0.137)	0.565*** (0.104)	27.102*** (1.539)
Nb. applications			X	X							
Nb. offers			X	X							
Month of application				X							
Extra controls							X				
Nb. observations	1,443	1,443	1,443	1,083	912	551	551	1,233	1,233	428	1,158

Notes: Extra controls – cumulative GPA, 8 university majors fixed effects, 10 SOC sub-major groups fixed effect based on semantic occupation classification and reservation wage, normalised to full-time for part-time work. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.