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# Gender gaps in career opportunities: a look at graduates in the field of business and economics in Uruguay

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## Abstract

Based on a novel dataset, we examine the gender gaps in the career opportunities of university graduates in accountancy, administration and economics in Uruguay. We find no significant gender differences in graduation marks, time to degree or the likelihood of attaining upper-level job positions shortly after graduation. However, the gaps emerge 7 years after graduation. We show that women are 10% points less likely than men to advance in the job ranking. Additionally, their probability of working full-time is 17% points lower. These chances are reduced even further when children are present. From the supply side, soon after degree women express a stronger preference than men for job stability and free time outside work. Our findings point to a “glass ceiling effect” that persists even within a specific and highly-rewarded skill group and a gender-balanced field of study in the country.

**Keywords** Business, Economics, Gender, Graduates, Labor market career

**JEL code** I23, J16, J24, J44

## 1 Introduction

The progress of women in relation to men has been remarkably visible when it refers to education. Over the last 20 years, the female likelihood of having a tertiary degree has surpassed that of men, both in high and middle-income countries (Blau & Kahn, 2017; Marchionni et al. 2018). However, this situation has not necessarily translated into equal labor market opportunities. The speed of career advancement has been slower for women and the gender wage gaps have been increasing in the upper percentiles of the wage and earnings distribution. This pattern tends to widen over the lifecycle and becomes stronger in highly rewarding occupations

(Goldin 2014; Albrecht et al. 2018; Francesconi and Parey 2018).

This paper examines the magnitude and timing of gender differences in the career opportunities for graduates in the fields of accountancy, economics and administration in Uruguay. We study the labor market performance of the cohort of students who obtained their degree in 2012, following them 4 and 7 years after graduation. We explore whether gender is related to their likelihood of reaching higher job positions and full-time employment some years after degree completion. By focusing on a professional field typically regarded as highly profitable, this evidence allows for an assessment of the “glass ceiling effect”, including both explicit gender-discriminating rules and the more subtle barriers that hinder women’s career advancement.

Uruguay is an upper-middle income economy, with a high Human Development Index, where women have been more educated than men since the mid-20th

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century. Besides, female university graduates are predominant (60%), a pattern that also appears in the fields of accountancy, business and economics -disciplines that typically lead to high-paying occupations (UDELAR., 2023).

In the study, we use data from the first follow-up of graduates from the country's single public university, Universidad de la República (hereafter UDELAR, for its Spanish acronym).<sup>1</sup> UDELAR is also the largest university in the country and enjoys a solid and well-established reputation. It is featured by its totally free-entrance. This means that all graduate courses, across all disciplines, are completely free of charge and enrollment is not subject to any admission test. This democratic entrance rule also applies to the private university system and differs from the way university systems are organized in most countries. Despite this condition of equality, relative to men, women do not fully attain the benefits of pursuing college majors. Several scholars show that highly educated women in the country face the same constraints in terms of labor segregation, hours worked and wages as the average female worker (Borraz and Robano 2010; Espino et al. 2014; Alves et al. 2016; CEPAL/ONU-Mujeres 2020).

Based on the available survey, we explore the point at which gender differences in young professionals' career paths begin to emerge. Specifically, we track the labor market positions of graduates from the Faculty of Economics and Administration at the start of their careers in 2012 and then again 4 and 7 years later (in 2016 and in 2019). Data refer to the graduates' background (i.e., parental education, type of secondary education), their family composition, job position and valuation of employment attributes. We merge these records with the individuals' university graduation marks and their time to degree.

In our empirical approach, we use ordered probit models to examine whether gender is associated with the probability of graduates achieving higher job positions and longer working hours across the three survey waves. We pay attention to the extent at which these probabilities vary depending on family composition. We apply the same empirical framework to assess the relationship between gender and the preference for certain job attributes. We also compute linear models to estimate how much gender explains the variation in time to degree completion and average university grades of students. By focusing on graduates from identical programs, we avoid biases linked to gender-based sorting across majors. This is a largely discussed source of gender wage gaps among college graduates (Altonji et al. 2016; Blau & Kahn, 2017;

Bertrand 2018). Furthermore, as we take into consideration whether women and men were similar at the start of their labor market careers, we can isolate differences in the speed of career advancement.

We find that gender differences are negligible at graduation, but substantial gaps emerge seven years later. This is reflected in women's lower probability of attaining managerial positions and their higher likelihood of occupying lower ranks compared to men. These results account for the presence of a "glass ceiling effect" even for a very specific skill group and for a gender-balanced educational choice. They also suggest that female professionals in these fields could be subject to direct or subtle discrimination, as gender-based disparities tend to persist regardless other conditions. Though our evidence is not causal in nature, we find that family composition plays a role, because women with little children face greater disadvantages in terms of job opportunities and full-time employment. Regarding job characteristics, women place a greater value on job stability and free time out of work than men.

Our paper contributes to the literature on earning gender gaps over the lifecycle of university graduates, particularly of those from finances, business and economics. A common finding in studies of developed countries is that the gender wage gap is small at entry into the labor market, but widens after a few years (Bertrand et al. 2010; Albrecht et al. 2018; Bütikofer et al. 2018; Piazzalunga 2018; Francesconi and Parey 2018). In this paper, we extend the analysis of the timing of the gender wage gap to a developing country, adopting a complementary approach that focuses on vertical mobility along the career ladder. Remarkably, we find that career opportunities for similar female and male graduates diverge as soon as 7 years after degree, a result that resembles those of previous studies. This coincidence calls the attention on the similarity of constraints experienced by women in certain professions, beyond the institutional conditions and economic development of the countries.

We also contribute to the discussion on the factors underlying the "glass ceiling". We show that women's probability of reaching top-level positions or working full-time varies with family composition, and that women's preferences regarding working conditions differ from those of men. The result is consistent with the studies arguing that along with a different treatment of male and female workers within organizations (Azmat & Petrongolo, 2014), gender inequality in career opportunities within the same profession might be linked to female family responsibilities (Bertrand et al. 2010; Bertrand 2018; Altonji et al. 2016; Goldin et al. 2017) or to gender differences in preferences for work arrangements such as proximity to home, shorter hours, or job stability

<sup>1</sup> Since December 2012, the country has had an additional public university with a very specific focus (the Uruguayan Technological University). It offers tertiary education in technological fields, exclusively outside the country's capital.

(Goldin 2014; Bertrand 2018; Redmon and McGuiness 2019; Wiswall and Zafar 2018).

Our paper also relates to the research on gender biases in the students' performance at university. The studies find that, despite a timelier career completion and lower dropout rates, women achieve lower final academic grades than men (Bertrand et al. 2010; Aina et al. 2011; Francesconi and Parey 2018). These gender differences might affect the labor market prospects of the young professionals. Following this line of research, our paper shows that male and female graduates do not differ significantly in academic performance, underscoring the crucial role of labor market constraints in the country.

Finally, our results are based on a newly released dataset on graduates who completed their degree in a large and public university with no admission systems or barriers to enrollment. Note that both, the empirical setting and the available records differ from those applied to the research on the labor market outcomes of graduates in other Latin American countries. Most of them -some very recently released- are based on data about admission exams and university fees- for example in Brazil (Borges et al., 2024), Chile (Aguirre et al. 2024) or Colombia (MacLeod et al. 2017).

In this paper we proceed as follows: Sect. 2 presents the Uruguayan context, Sect. 3 describes the data and Sect. 4 details the methodology. In Sect. 5, we present the results and Sect. 6 concludes.

## 2 The Uruguayan setting

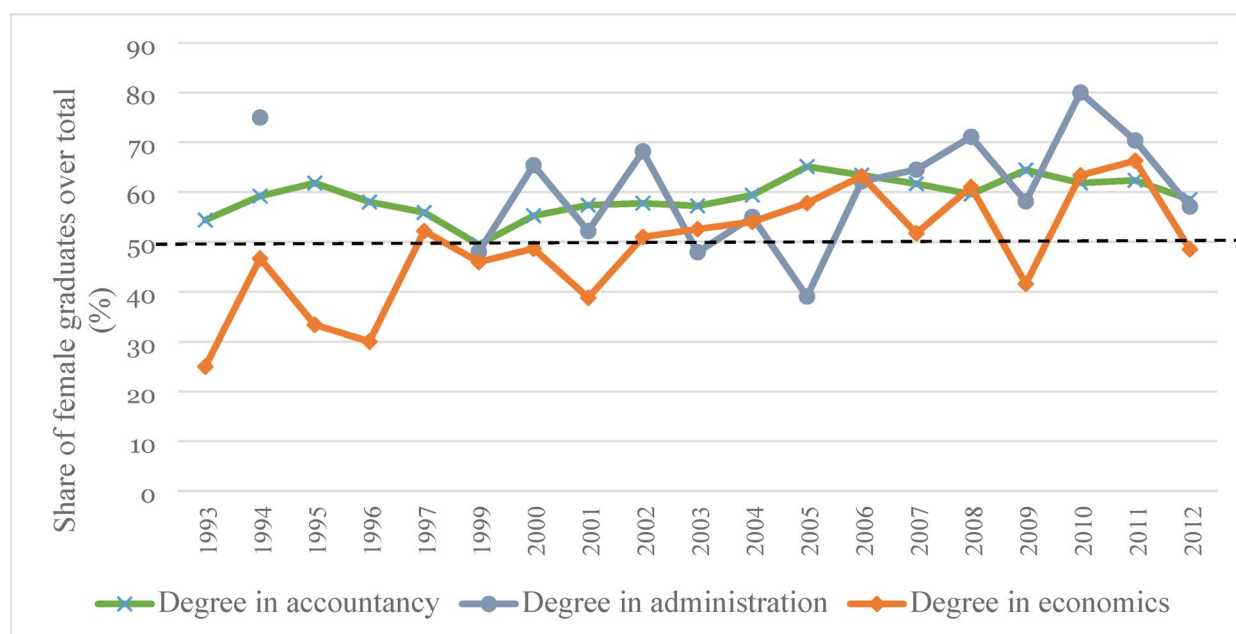
Uruguay has been one of the first Latin American countries to close the education gender gap, measured by average years of schooling (Ñopo 2012). Indeed, among people with tertiary education (that is, those with 12 or more years of schooling), the share of women has largely surpassed that of men since the mid-20th century. Figure 1 illustrates this persistent, long-term trend for those born between 1975 and 1990.

Source: Authors' own calculations based on harmonized National Household Surveys (National Statistics Office).

The country has traditionally relied the training of professionals and academics upon UDELAR, a large and prestigious public university. Until the 1980s, UDELAR has been the only higher education institution in the country. Even today, despite the diffusion of private universities and the establishment of a new public university in 2012, it concentrates more than 86% of the total enrollment (UDELAR., 2023).

Women enrolled at UDELAR have reached 63% by 2010s. In line with the international evidence, they mostly pursue degrees at the fields of art, humanities and social sciences to the detriment of science, technology, engineering and mathematics. Accordingly, female graduates account for half of the total in medicine or health sciences; they explain almost 70% of degrees obtained in humanities and social sciences but they represent 30% of engineering graduates (DGPLAN, 2019).

In UDELAR, the Faculty of Economics and Administration (FCEA for its Spanish acronym) offers academic degrees in accountancy, administration and economics.



**Fig. 1** Share of population with 12 or more years of schooling, by gender. Cohorts born between 1975–1990

In the first two, graduates have been female-dominated since the 1990s. In economics, the number of female graduates has tended to equal, although for the 2012 cohort, males continued to be the majority (Figure A-1 in the Appendix).

Female labor participation rates have been high for women with some tertiary education (Espino et al. 2017). On average, the rates for women with 12 or more schooling years rose from about 40% in the late 1980 to 56% in 2019. For those who have completed tertiary education the rates have reached 90% (CEPAL/ONU-Mujeres 2020). Consistently, among all university students, 80% of women have already entered the labor market at the time of graduation (DGPLAN, 2017).

As more educated female cohorts enter the labor market, arguments related to the traditional human capital theory (i.e., schooling years) have lost ground to explain the gender pay differences. Studies in Uruguay show that although the gender education gap among highly qualified wage earners is negligible, the hourly gender pay gap remains around 15% (CEPAL/ONU-Mujeres 2020). Indeed, despite their high labor participation and employment rates, highly educated women face the same constraints regarding gender segregation, hours worked and wages as the average female worker (Espino et al. 2014; Soria 2021). This situation has been associated with a persistent “glass ceiling effect” in the upper-tail of the earnings distribution (Borraz and Robano 2010; Alves et al. 2016).

Among academics, gender gaps are particularly wide in the areas of technology, biology or engineering (MIM-CIT 2020). In economics and business, a recent strand of research has documented gender gaps in scientific productivity and in the perception about professional and technical issues (Amarante et al. 2021, 2023). However, the presence of a glass ceiling effect in the professional career of graduates in these fields has not been discussed.

### 3 Data

Our analysis builds upon a recently released dataset on graduates in economics, accountancy and administration from UDELAR in year 2012. This database is only available for that graduate cohort and compiles information about their personal and family background, further studies and job tenure at the time they obtained the degree (in 2012) as well as 4 and 7 years afterwards (in 2016 and 2019, respectively). Although the data does not allow comparisons with previous or subsequent cohorts, they are illustrative about the current gender disparity in the labor market opportunities of these degree holders.

Notably, in 2012- the starting point of our data- there was a reform in the content and duration of the Faculty’s course programs. As a result, one 4-year curricula replaced the previous one, which established a regular

completion time of 5 academic-years plus an additional period (usually, another year) to write a graduation thesis. This change means that the 2012 graduate cohort includes some individuals who completed their degree under the previous course-graduation program, as well as those who followed the new Academic Plan 2012. In the empirical approach, we have verified that this condition does not affect our results.

In the paper, we have matched the graduates’ database with the academic records of each individual (e.g., course-approvals, exams, grades). Based on this raw information from UDELAR, we have computed graduation marks, time to degree and scores at specific subjects. We have also combined the available data with records from a compulsory survey that students complete at their first enrollment at university which includes age at university entry, region of residence, parent’s education, type of secondary education. We consider all these academic and personal data because they may account for different dimensions of the graduates’ ability or productivity. Besides, they are part of the information an employer might consider at the time of hiring.

Our analysis considers all graduates who obtained their first degree in 2012 and entered university between 2001 and 2008. This enables us to focus on the labor market experience of first-time graduates at the beginning of their careers. Including graduates who delayed their degree by over 11 years would have made this sort of analysis less plausible.<sup>2</sup> After these decisions, our population includes 420 people, representing 60% of graduates from the FCEA in 2012 and 7% of the total number of those who obtained one degree from UDELAR that year.

Among the students of economics, accountancy and administration belonging to 2001–2008 entry cohorts (regardless of whether they obtained a degree), females make up 56%.<sup>3</sup> On average, students’ entry age is 19.3 (women are rather younger) and most of them have finished secondary education at a public institution from the capital city (these figures are higher for female students). Almost half of the students have parents with a high level of education, defined as more than 12 years of formal schooling.<sup>4</sup> This raises a caveat about the real meaning of the “free and open” access to university education. Also, it is interesting to note that parental education levels are higher for men. Besides, women do slightly better than men in the first course of mathematics but

<sup>2</sup> The 1990 study program (under which our graduates were trained) formally established that the time to degree should be –approximately- 6 years (5 years to complete courses and almost another one to write a final thesis). However, the real average time to graduation was 8 years.

<sup>3</sup> We consider “active entry students” those who have enrolled and obtained any grade in the first course in mathematics, as a signal of having enrolled and developed academic activities.

<sup>4</sup> Table A-4 summarizes variable details.

the overall mark is rather poor: 3.55 in 12. In 2012, the year of our survey, only 24% of all these students had completed a successful degree attainment: women outperform men in this academic indicator (Table A-1 in the Appendix).

Table 1 reports the summary statistics about the 2012 graduates across the three waves of the panel. On average, they are almost equally split between men and women, their university entry age is 18 years old, around 50% come from a public secondary school and only 37% complete the upper secondary cycle in regions different from the capital city (Montevideo). Again, in these statistics, female averages are rather above those of men. Besides, parental education is high for most graduates (67% and 72% for female and male, respectively). The percentages are higher than the -already high- figures observed for students (Table A-1).

**Table 1** Summary statistics for graduates across waves

	Mean			Mean (Wave 1)	
	Wave 1	Wave 2 <sup>+</sup>	Wave 3 <sup>+</sup>	Women	Men
Female (dummy=1)	0.48	0.48	0.48	-	-
Age at university entry	18.20	18.20	18.23	18.04	18.35
Upper secondary public school	0.51	0.51	0.54**	0.55	0.47
Upper sec. outside capital city	0.37	0.37	0.38	0.47	0.28
Upper sec. abroad	0.00	0.00	0.01	0.01	0.00
Parent's high education	0.70	0.69	0.67	0.67	0.72
Grade in mathematics (course 1)	6.67	6.69	6.68	6.77	6.58
Mean graduation grade	5.66	5.66	5.64	5.61	5.70
Time to degree	7.81	7.81	7.89	7.79	7.82
Age at graduation	25.92	25.93	26.02	25.76	26.06
Employment	0.91	0.97	0.98	0.90	0.92
<i>Enrollment cohort</i>					
2001	0.10	0.10	0.11	0.12	0.07
2002	0.09	0.09	0.10*	0.06	0.11
2003	0.10	0.10	0.09	0.08	0.12
2004	0.12	0.12	0.11	0.14	0.11
2005	0.22	0.22	0.21	0.20	0.25
2006	0.21	0.21	0.21	0.23	0.19
2007	0.13	0.13	0.13	0.14	0.12
2008	0.02	0.02	0.02	0.02	0.02
<i>Career</i>					
Accountancy	0.77	0.77	0.77	0.83	0.71
Administration	0.01	0.01***	0.01	0.01	0.01
Economics	0.22	0.22	0.22	0.16	0.27
<i>Observations</i>	420	412	297	203	217

This table reports the mean values of the variables used in the analysis, disaggregated by wave, and by gender (for wave 1). + statistical differences are estimated in relation to wave 1. Table A-4 summarizes variable details. Significance at the 1, 5 and 10% levels is indicated by \*\*\*, \*\* and \*, respectively

Authors' own calculations based on data from UDELAR

In addition, the mean graduation grade (5.66 over 12) and the graduation age (25.92) are similar between men and women. Most of graduates have enrolled between 2005 and 2006 (around 43%). A clear majority of them have obtained a degree in accountancy (77%), albeit there are gender differences, because 83% of women chose that field, compared to 71% of men. 22% of the sample chose Economics as their preferred field of study, but this is higher for men (27% vs. 16%). The share of those with a degree in administration is almost negligible for both genders (around 1%). It is important to note that this sample size does not allow us to reliably identify differences in behavior across sub-fields of study. Finally, most of graduates are employed (beyond their gender): the average percentage is 90% in 2012 and 97–98% in the ensuing waves. We will return to this point further on.

Overall, graduates and students are not identical. The profile of graduates appears to highlight certain features already seen in enrolled students, i.e. they mostly belong to the capital city, they belong to socioeconomic advantaged households and they are younger than those enrolled (18.2 and 19.3). However, for graduates, women do not stand out for their better academic records in relation to men.

A significant concern regarding the data is the variation in response rates across survey waves. While the response rate in the second wave (2016) has been extremely high—almost 98%—the number of graduates decreases in wave 3, which might affect our sample. To verify whether respondents in wave 3 do not differ systematically based on observable individual characteristics, we estimated a probit model of participation in wave 3 conditional on participation in wave 1. Table 2 shows that no variable is statistically significant, except for attendance at a public secondary school, though its statistical significance is very weak. This implies that, although smaller, the sample in wave 3 does not differ significantly from the population that participated in the first survey.

Table A-2 in the Appendix presents the mean difference tests for the graduates' characteristics; similarly, except for public secondary school attendance, no statistical differences are found between wave 3 and the previous ones. We control for secondary school attendance in all our regressions.

Our main outcome variable refers to the job positions attained by graduates, used as a *proxy* of career opportunities. For each wave, this variable is built by combining two others: employment type and closeness between the job type and the graduate's major. Employment type is a multiple-category variable representing different kind of jobs, such as manager or executive, administrative staff, sales worker, independent worker; teacher, professional or technician. The list also includes the category "not working". The second variable captures graduates'

**Table 2** Selection into wave 3

Determinants of participation	Wave 3 respondent
Female (dummy= 1)	-0.019 (0.138)
Age at university entry	0.034 (0.065)
Upper secondary public school	0.304* (0.182)
Upper sec. outside capital city	-0.143 (0.186)
Parent's high education	-0.155 (0.159)
Grade in mathematics (course 1)	0.015 (0.033)
Mean graduation grade	-0.002 (0.065)
Time to degree	0.165 (0.248)
Employment	-0.190 (0.240)
Accountancy	-0.051 (0.175)
Administration	-0.424 (0.600)
Constant	-1.505 (3.150)
Enrollment cohort fixed effects	Yes
Observations	420

Dependent variable is participation in wave 3 given participation in wave 1. This table presents estimated coefficients of explanatory variables from a probit regression modelling of participation in wave 3 conditional on participation in wave 1. Table A-4 summarizes variable details. Robust standard errors in parenthesis. Significance at the 1, 5 and 10% levels is indicated by \*\*\*, \*\* and \*, respectively

Authors' own calculations based on data from UDELAR

perceptions of how closely their current job aligns with their major, on a scale from “non-related” or “partially related” to “very related”. We take this scale as an indicator of increasing prestige and rewards associated with educational credentials.

Based on these variables, we categorize the data regarding the employment status of graduates into an ordered categorical variable with the following classifications: (1) “Not employed” (a residual category which gathers people who are not working, though the survey does not specify whether they are unemployed or not actively seeking employment); (2) “Non-technical job or non-related to the major”; (3) “Dependent or independent job related to the major”; (4) “Professional, technical or teaching position”; (5) “Managerial or directive position”. Moving up in job positions implies the attainment of roles that more closely align with graduates’ academic qualifications and foster their professional development.

Alternatively, we computed a variable on weekly working hours which organizes responses into another

ordered categorical variable ranging from “up to 30 weekly hours”, “between 30 and 40 hours” to “more than 40 hours”. Finally, we used data about perceptions on the relevance of some employment attributes (stability, autonomy, free time, earnings and prestige), available for waves 2 and 3. Responses were organized into a 5-point Likert-type scale ranging from “not important” to “very important”. The survey did not include questions about earnings: they only appeared in the first wave and just referred to broad discrete bins, so we could not obtain consistent series. In Table 3, we show information about our main variables of interest together with other characteristics of the population. We distinguish between women and men for all three waves.

As already mentioned, over 90% of graduates are employed: the share of those outside the labor market is very small and similar between women and men (except for men in wave 2). At first sight, the starting point of labor careers is similar by gender. Statistically significant differences appear in some positions in waves 2 and 3 and they are more visible in the case of weekly working hours. Besides, in waves 2 and 3 most of graduates live with a couple. The presence of children increases with time: it is negligible at graduation, it raises to one fifth of our population in wave 2 and to 40%, approximately, in wave 3 while data do not show statistically significant gender differences. Instead, gender gaps in favor of men emerge in post-graduate studies (differences reach more than 10% points) and job tenure, in wave 2.

Table A-3 in the Appendix summarizes the averages related to job attributes across waves. Four years after graduation, women report a higher appreciation than men for almost all inquired domains (autonomy, income, free time out of work, and prestige). However, in wave 3, the difference holds just for free time and emerges in the case of stability.

#### 4 Estimation strategy

We begin our study by examining the academic performance of the graduates on the panel during their time as students. We estimate linear models to explore the variables associated with the marks they obtained at the first course of mathematics (Mathematics I), the mean graduation mark and the time to degree.

Next, to discuss the career opportunities after graduation we use ordered probit models. We assume that  $JobPosition^*$  is an unobservable or latent variable that captures the job position of graduates. The job position outcome can be expressed using the following linear relationship:

$$JobPosition_i^* = \beta X_i + \epsilon_i \tag{1}$$

**Table 3** Summary statistics for dependent and post-graduation variables across waves

	Wave 1 (2012)			Wave 2 (2016)			Wave 3 (2019)		
	Women	Men	Difference	Women	Men	Difference	Women	Men	Difference
<i>Job position</i>									
Not employed	0.1	0.08	0.02	0.01	0.05	-0.04	0.02	0.01	0.01
Non-technical job	0.16	0.19	-0.03	0.04	0.04	0	0.09	0.06	0.03
Basic job related to the major	0.61	0.59	0.02	0.1	0.06	0.04	0.14	0.06	0.08
Professional, technical or teaching	0.13	0.12	0.01	0.74	0.69	0.05	0.6	0.65	-0.05
Managerial or directive	0	0.02	-0.01	0.11	0.15	-0.05	0.15	0.22	-0.07
<i>Hours worked</i>									
Up to 30 h	0.06	0.08	-0.02	0.09	0.02	0.07	0.26	0.12	0.14
30 to 40 h	0.34	0.26	0.07	0.31	0.24	0.07	0.38	0.35	0.03
More than 40 h	0.6	0.65	-0.05	0.6	0.74	-0.14	0.36	0.53	-0.17
<i>Other characteristics</i>									
Lives with partner	0.32	0.22	0.1	0.7	0.68	0.02	0.78	0.73	0.06
Children under the age of 6 (at least 1)	0.03	0.02	0.01	0.21	0.15	0.05	0.44	0.41	0.03
Postgraduate studies (studying or finished)	-	-	-	0.37	0.46	-0.09	0.44	0.58	-0.14
Job tenure (years)	-	-	-	3.27	3.91	-0.64	4.98	5.14	-0.16
<i>Observations</i>	203	217		199	213		143	154	

This table reports mean values for female and male graduates in each wave and the t-test of differences in means. Job positions and hours worked are ordered categorical variables; Lives with partner, children under 6 and post-graduate studies are dummies, where a value of 1 indicates presence. Data on post-graduate studies and job tenure are just available for the last two waves. Table A-4 summarizes variable details. Significance at the 1, 5 and 10% levels is indicated by \*\*\*, \*\* and \*, respectively

Authors' own calculations based on data from UDELAR

where  $i$  represents graduate individuals;  $\beta$  denotes the parameters to be estimated;  $X_i$  is a vector of independent variables affecting an individual's job position; and  $\epsilon_i$  is a random error term assumed to follow a normal distribution.

Based on the latent variable  $JobPosition^*$ , the observed job positions can be classified according to a 5 point-ordered scale as follows:

$$job\ position_i = \begin{cases} 1\ if & -\infty < JobPosition_i^* & \leq \alpha_1 & (Not\ working) \\ 2\ if & \alpha_1 < JobPosition_i^* & \leq \alpha_2 & (Non - technical\ position) \\ 3\ if & \alpha_2 < JobPosition_i^* & \leq \alpha_3 & (Basic\ position\ related\ to\ the\ major) \\ 4\ if & \alpha_3 < JobPosition_i^* & \leq \alpha_4 & (Professional,\ technical\ or\ teaching\ position) \\ 5\ if & \alpha_4 < JobPosition_i^* & \leq +\infty & (Managerial\ or\ directive\ position) \end{cases}$$

where  $\alpha_j$  are threshold values for estimating each job position ( $j=1$  to 5).

The predicted probability of individuals to attain any of the job positions  $j$  can be summarized in Eq. (2):

$$Pr(job\ position_i = j) = Pr(\alpha_{j-1} < \beta_{1j}x_{1i} + \beta_{2j}x_{2i} + \dots + \beta_{kj}x_{ki} + \epsilon_i \leq \alpha_j) \quad (2)$$

The ordered probit models are estimated for the three waves of cross-sectional data of respondents. Thus, the unit of observation is a surveyed individual at her graduate year and then 4 and 7 years later. We compute average marginal effects of being a woman (in comparison to man) on these probabilities. This enables us to assess the extent to which gender correlates with the likelihood of occupying specific positions as graduates advance in their labor market careers.

The models include a wide array of controls related to background characteristics, family, academic performance and job tenure. Regressions also consider career and enrollment cohort fixed effects. All this information seeks to reduce the effect of unobservable variables that may cause differences between the probabilities of women and men to attain the highest job positions after graduation.<sup>5</sup>

In the estimations, we have interacted the dummy for female graduates with academic and family variables. We seek to observe whether the career opportunities of women are differently affected by these variables in relation to men. Particularly, we have assessed whether the presence of little children had a different relation with job positions, depending on gender.

Additionally, we have computed transition probabilities between job positions from one wave to the following, using separate equations for men and women. In this case, we have included the job positions of each

individual in the previous wave to the set of controls. The model can be written as follows:

$$Pr(job\ position_t = s / job\ position_{t-1} = j), \quad (3)$$

$$s, j = 1, \dots, 5$$

where  $s, j$  are job positions in the current ( $t$ ) and the previous wave ( $t-1$ ), respectively.

## 5 Results and discussion

### 5.1 Gender gaps in graduates' academic performance as students

Table 4 shows that, among students who graduated in 2012, there is no evidence of gender bias across alternative measures of academic performance, such as mean grades in the first mathematics course, average graduation grades, and time taken to complete the degree. All variables are interacted with the female dummy to test whether returns vary by gender, and we find no statistically significant effects. Only the highest level of parental education is significantly associated with better performance in the first mathematics course, while choosing accountancy as a major is linked to lower grades compared with economics, both in mathematics and overall.

Among those enrolled in the 2001–2008 cohorts, female students had significantly higher grades in the first Mathematics course, and also showed a significantly greater probability of graduation (Table A-5). In both cases, the gap widens as we add background and interaction controls, meaning that the difference in favor of women does not respond to individual characteristics. As a result, female students appear to begin their academic careers with better prospects than their male counterparts. However, by the time of graduation, they no longer maintain this relative advantage. This finding is consistent with the results reported by Francesconi and Parey (2018) for Germany. One possible explanation is the higher dropout rate for male students, which may result in a selected group of higher-performing men among the graduates. However, as these authors note, other factors may be involved, such as men catching up with women in academic skills, or programs being better aligned with male abilities.

Overall, at graduation, apart from family education, no individual characteristic appears to explain the observed academic outcomes. In particular, gender does not seem to influence academic performance at the time of graduation.

<sup>5</sup> Given the sample size, it was not possible to compute separate regressions for each career.

**Table 4** Determinants of academic performance of 2012 graduates

	Grade in Math. I (a)	Mean graduation grade (b)	Time to degree (c)
Female	1.468 (3.908)	-0.692 (1.984)	0.007 (0.482)
Age at university entry	-0.009 (0.134)	-0.015 (0.068)	-0.005 (0.016)
Upper secondary public school	-0.120 (0.404)	0.047 (0.205)	0.009 (0.050)
Upper sec. outside capital city	0.331 (0.432)	0.020 (0.219)	-0.069 (0.053)
Parent's high educ.	0.791** (0.376)	0.221 (0.191)	-0.052 (0.046)
Accountancy	-0.607* (0.359)	-0.697*** (0.182)	0.013 (0.044)
Administration	-0.613 (1.353)	-0.365 (0.687)	0.083 (0.167)
Female x age at univ. entry	-0.009 (0.209)	0.049 (0.106)	-0.001 (0.026)
Female x upper sec. public school	0.117 (0.591)	-0.182 (0.300)	-0.002 (0.073)
Female x upper sec. outside capital city	-0.733 (0.607)	-0.382 (0.308)	0.065 (0.075)
Female x parent's high educ.	-0.980* (0.524)	0.103 (0.266)	-0.014 (0.065)
Female x accountancy	-0.100 (0.574)	-0.034 (0.291)	0.015 (0.071)
Female x administration	0.374 (2.142)	1.712 (1.088)	0.183 (0.264)
Constant	5.030** (2.533)	5.348*** (1.286)	11.471*** (0.312)
Enrollment cohort fixed effects	Yes	Yes	Yes
Observations	417	417	417

Each column corresponds to a linear regression with different dependent variables accounting for academic performance: grade in Mathematics I (column a), mean graduation grade (column b) and time to degree (column c). Sample corresponds to individuals observed at their graduation (wave 1). Each cell reports the estimated coefficient on different explanatory variables. Table A-4 summarizes variable details. Robust standard errors in parentheses. Significance at the 1, 5 and 10% levels is indicated by \*\*\*, \*\* and \*, respectively

Authors' own calculations based on data from UDELAR

## 5.2 Gender differences in career opportunities

### 5.2.1 A look at job positions

We start by assessing the influence of gender and other covariates in the probability of reaching different job positions. Table A-6 shows that estimates exhibit different patterns across waves. At graduation and 4 years later (waves 1 and 2), gender is not significantly related to job positions. Instead, in wave 1 graduates are more likely to move up in job positions if they are older and have high graduation grades. In wave 2, the academic performance stops being statistically significant and the probability of occupying the lowest job positions relates negatively to the age at university entry and the presence of children under 6 years. Both effects seem to be connected to the regular cycle of graduates' labor market experience as they age. The most relevant result corresponds to the third wave: 7 years after graduation, women are more

likely to occupy the lowest job positions in the ranking compared to men.

Table 5 reports the estimates of the average marginal effect of gender in wave 3 including different sets of controls. Seven years after graduation women are between 3.9 and 4.4% points more likely than men to be at the bottom of the job ranking, that is to hold jobs either unrelated to their majors or very basic. Complementarily, the chances of reaching the upper job position is 10% points higher for male than for female graduates. Note that the gender gap (i.e., the female coefficients) increases after adding controls for background and family conditions, academic records and job tenure. This suggests that the gender divergence in the probability of occupying different job positions is not associated with observable factors related to personal, family, academic, or job tenure characteristics.

**Table 5** Average marginal effect of being a woman on the probability of achieving job positions (wave 3)

Female coefficient controlling for...	Job positions in wave 3				
	Not working	Non-technical	Basic related to major	Teach., prof., technical	Managerial
a) Individual background. Enrollment cohort and career FE					
Female	0.014* (0.008)	0.039** (0.017)	0.037** (0.016)	-0.002 (0.010)	-0.089** (0.036)
b) Individual and family background. Enrollment cohort and career FE					
Female	0.015* (0.008)	0.040** (0.017)	0.038** (0.016)	-0.002 (0.011)	-0.091** (0.036)
c) Individual and family background and academic records. Enrollment cohort and career FE					
Female	0.015* (0.008)	0.041** (0.017)	0.039** (0.016)	-0.002 (0.011)	-0.093*** (0.035)
d) Individual and family background, academic records and job tenure. Enrollment cohort and career FE					
Female	0.016** (0.008)	0.044** (0.017)	0.041** (0.016)	-0.002 (0.011)	-0.099*** (0.035)
Observations	294	294	294	294	294

Dependent variable is job position in wave 3 expressed in a 5-point ordered scale where 1 stands for “non-working” graduates; 2 for “non-technical jobs or non-related to the major”; 3 for “dependent or independent basic job related to the major”; 4 for “professional, technical or teaching positions” and 5 for “managerial or directive positions”. Sample corresponds to graduates observed 7 years after degree completion (wave 3). The table reports the coefficients for the partial effect of a female dummy indicating how the probabilities of various job positions change for women relative to men, while all other variables are held at their means. Each line (a-d) corresponds to a different ordered probit model: (a) controls for individual background (including age at first entry at university, public high-school attendance, high-school outside the capital city or abroad and parent’s education); (b) additionally controls for family background (e.g., marital/living status and presence of at least one child under 6 years old); (c) additionally controls for academic records (mean graduation grades, age at graduation and postgraduate studies); (d) adds controls for job tenure. Table A-4 summarizes variable details. All regressions include enrollment cohort and career FE. Robust standard errors in parentheses. Significance at the 1, 5 and 10% levels is indicated by \*\*\*, \*\* and \*, respectively

Authors’ own calculations based on data from UDELAR

According to the estimates, the only position for which gender does not seem to be relevant is the one related to teaching, professional and technical jobs. However, given the whole picture, we do not attribute this finding to the absence of gender inequalities, but to limitations in the available data. Remember that in this study, this job position comprises a wide range of occupations, which might make it difficult to untangle clear gender effects.

To assess the robustness of these baseline results, we replicated the regressions while controlling for graduation under 2012 Academic Plan and the grade obtained in the first mathematics course. As an alternative specification, we estimate the regressions using an expanded sample that includes all students who graduated in 2012, regardless of whether this was their first time obtaining a degree (Table A-7). In all cases, gender differentials emerge only in wave 3 and indicate a disadvantage for women in attaining middle and top job positions. We do not find any statistically significant effects for the new controls.

Table 6 reports the estimated coefficients for the interaction between gender and several factors—family background, academic performance, and job tenure—evaluated under different conditions in wave 3. These coefficients indicate whether being a woman, under various circumstances, leads to differences in the likelihood of attaining different job positions compared with men.

We find that, compared to graduates without children, having at least one child under the age of six increases women’s probability—relative to men—of occupying

low- and middle-level job positions. Age at graduation also has gender implications: although the youngest female graduates are more likely than men to occupy professional and technical jobs, they are at a disadvantage when it comes to reaching upper-level positions. Post-graduate studies have an interesting influence on gender gaps in labor market outcomes: they reduce the magnitude of the gap favoring men in upper-level positions, but increase the statistical significance of the coefficient compared to the case without further studies. This could suggest that the barriers to women’s advancement in the labor market are stronger among more career-oriented professionals. A similar pattern emerges when considering the longest job tenure.

These results reveal substantial gender differences in career opportunities emerging as early as seven years after graduation. Moreover, these gender gaps are persistent over time: factors such as family situation, academic credentials or job tenure may exacerbate or mitigate them, but an underlying disadvantage for women remains. This implies that women’s chances of attaining higher-level positions are persistently lower than men’s, regardless of individual, academic or labor market conditions.

The estimates in Table 7 show how the job positions of male and female graduates have evolved over time. Following Eq. 3, the estimates on the main diagonal correspond to the probability of holding the same job position between waves 2 and 3, whereas those below (above) the

**Table 6** Changes in the average marginal effect of being a woman on the probability of attaining job positions (wave 3)

Female coefficient interacted with...	Job positions in wave 3				Managerial
	Not working	Non-technical	Basic related to major	Teach., prof., technical	
a) Children under the age of 6					
At least 1	0.015*	0.046**	0.049**	0.026	-0.135**
	(0.009)	(0.023)	(0.022)	(0.025)	(0.058)
None	0.016	0.041*	0.036*	-0.016	-0.078*
	(0.011)	(0.022)	(0.020)	(0.015)	(0.042)
b) Graduation age					
10% youngest	0.008	0.026	0.033*	0.129**	-0.196**
	(0.005)	(0.016)	(0.020)	(0.052)	(0.081)
Median	0.020**	0.040**	0.035**	0.014	-0.110***
	(0.009)	(0.016)	(0.015)	(0.011)	(0.038)
c) Post-graduate studies					
Currently enrolled	0.016*	0.043**	0.040**	-0.006	-0.094**
	(0.010)	(0.021)	(0.019)	(0.015)	(0.043)
None	0.016	0.044*	0.043*	0.003	-0.106*
	(0.010)	(0.024)	(0.022)	(0.019)	(0.055)
d) Job tenure					
Sample average	0.016**	0.044**	0.042**	-0.005	-0.097***
	(0.008)	(0.018)	(0.016)	(0.012)	(0.035)
Longest tenure in the sample	0.025*	0.057*	0.044*	-0.042	-0.084*
	(0.015)	(0.029)	(0.023)	(0.027)	(0.043)
Observations	294	294	294	294	294

Dependent variable is job position in wave 3 expressed in a 5-point ordered scale where 1 stands for "non-working" graduates; 2 for "non-technical jobs or non-related to the major"; 3 for "basic dependent or independent job related to the major"; 4 for "professional, technical or teaching positions" and 5 for "managerial or directive positions". Sample corresponds to graduates observed 7 years after degree completion (wave 3). The table reports the coefficients for the partial effect of a female dummy interacted with variables related to the family, the academic performance, and the job market tenure. The estimates indicate how the probability of being in various job positions changes for women relative to men under different circumstances, holding all other variables at their means. Each line (a–d) corresponds to an ordered probit model estimated for the following circumstances: (a) graduates with at least one child under six versus those with no children; (b) the 10% youngest at graduation (aged 23) versus those at the median of the graduation-age distribution (aged 26); (c) graduates currently enrolled in postgraduate studies versus those with no postgraduate studies; and (d) graduates with the sample-mean job tenure (5.3 years) versus those with the longest tenure (9 years). Regressions include individual background, family, academic, and job controls. Table A-4 summarizes variable details. All regressions include enrollment cohort and career FE. Robust standard errors in parentheses. Significance at the 1, 5 and 10% levels is indicated by \*\*\*, \*\* and \*, respectively

Authors' own calculations based on data from UDELAR

diagonal indicate an improvement (a deterioration) in occupational ranking.

For both male and female graduates, the highest probability of maintaining employment between waves corresponds to upper-level positions (i.e., technical, professional, or managerial roles). However, the likelihood is higher for men than for women in each case. than for women. In fact, women are substantially more likely to remain in basic jobs.

The data below the diagonal show that from wave 2 to wave 3 women and men have positive and statistically significant chances of scaling up from basic or professional positions to the upper part of the ranking. But, the probabilities are considerably higher for men. A similar pattern emerges when we examine the probability of moving from outside the labor market. Instead, women have better chances than men to move from non-technical to basic or professional posts. Alternatively, in all cases, when it comes to the probability of moving down the job ranking, women's chances are higher than men's (note that the probabilities for women are either higher

in magnitude or statistically significant while those for men are not). Overall, transitions between waves appear to be less smooth for female than for male graduates.

### 5.2.2 Gender differences in working hours

Gender gaps might also emerge in relation to work arrangements. Table 8 shows the average marginal effect of being a woman on the probability of working different weekly hours. Again, we find no gender gaps at graduation but estimates show that being a woman progressively reduces the probability of full-time work over time. In wave 2, women are more prone than men to work up to 30 h and this probability gets more than doubled in wave 3.

When using interactions, we observe that 4 and 7 years after graduation the family variables further reduce the female probability of holding full-time jobs in relation to men. In general, the strongest effect corresponds to children. These results are in line with the literature that discusses the effect of child care responsibilities on women's labor market performance (Bertrand et al. 2010; Albrecht

**Table 7** Estimates of transition probabilities between waves 2 and 3 by gender

Women in wave 2					
Women in wave 3	Job positions				
Job positions	Not working	Non-technical	Basic related to major	Tech., prof...	Managerial
Not working	<b>0.000</b>	0.047	0.128**	0.018*	0.000
Non-technical	0.002	<b>0.136*</b>	0.231***	0.073***	0.002
Basic related to the major	0.000	0.190***	<b>0.230***</b>	0.133***	0.010s
Teach., prof, technical	0.000	0.576***	0.398***	<b>0.655***</b>	0.346**
Managerial	0.000	0.052	0.014	0.121***	<b>0.641***</b>
Men in wave 2					
Men in wave 3					
Not working	<b>0.044</b>	0.109	0.026	0.016	0.000
Non-technical	0.117	<b>0.192**</b>	0.084	0.061***	0.002
Basic related to the major	0.094**	0.123***	<b>0.076*</b>	0.061***	0.004
Teach., prof, technical	0.654***	0.540***	0.680***	<b>0.683***</b>	0.305***
Managerial	0.090	0.037	0.134	0.179***	<b>0.689***</b>

Dependent variable is job position in wave 3 expressed in a 5-point ordered scale. The sample corresponds to graduates observed 7 years after degree completion (wave 3). In the upper panel, the sample only comprises female graduates (140 individuals) while in the bottom panel, the sample corresponds to male graduates (152 observations). The table reports the estimated probabilities of reporting each job position in wave 3 given the job position in the previous wave based on ordered probit models. Regressions are computed separately for women and men. The estimates on the main diagonal correspond to the probabilities of reporting the same job position in waves 3 and 2; those above the diagonal correspond to the probabilities of reporting a lower job position in wave 3 compared to wave 2; while those below the diagonal correspond to the probabilities of reporting an upper one. Regressions include individual background, family, academic, and job tenure controls. Table A-4 summarizes variable details. All regressions include enrollment cohort and career FE. Robust standard errors in parentheses. Significance at the 1, 5 and 10% levels is indicated by \*\*\*, \*\* and \*, respectively.

Authors' own calculations based on data from UDELAR

et al. 2018; Bütikofer et al. 2018). It is interesting to note that the effect of children on female weekly hours disappears for graduates who have continued their studies (Table A-8). Then, more career-oriented professionals -that is, those who pursue post-graduate studies- appear to reduce the gender gap in working hours related to family responsibilities.

### 5.2.3 Gender differences in preferences for job attributes

Finally, we present results regarding female and male preferences for some job attributes. We have focused on 5 features that graduates rank on a Likert-type scale from “not important” to “very important”. Table 9 summarizes the average marginal effect of being a woman on the probability of rating one attribute as “very important”. According to the estimates, there are no gender differences in the appraisal about the relevance of autonomy and income. However, in both waves, women report a greater consideration for stability and time outside of work than men. Female graduates are more likely to value prestige than their male counterparts just in wave 2. These results are consistent with the literature that documents women’s preferences for greater flexibility at the workplace and their lower preference for risks or competition (Bertrand 2018; Goldin 2014; Wiswall and Zafar 2018).

In sum, the gender gaps in the probability of achieving higher-level job positions might be influenced by female preferences for shorter working hours and for some job attributes. Although far from conclusive, the estimates in

Tables 8 and 9 suggest that besides pure discrimination, also women’s preferences might influence their career opportunities. Notwithstanding, these preferences are, of course, shaped by the same gender norms that explain discrimination, i.e., those socially approved behaviors, ideals and practices attributed to both genders, that usually situate women in disadvantage in relation to men.

## 6 Concluding remarks

Based on a novel dataset that follows one university cohort that completed the degree in economics, accountancy, or administration, we find that gender does not affect the opportunities of graduates at the onset of their labor market careers. However, seven years after graduation, being a woman reduces the likelihood of attaining top labor market positions and working full-time, while increasing the value placed on stability and free time. Although we cannot examine wages directly, we can provide evidence of gender differences in job positions, which are directly linked to pay gaps between men and women. In this sense, our results are related to those for developed countries that report diverging gender pay gaps soon after university, particularly in the case of the group of graduates under analysis.

According to our estimates, during their time as students, women have better academic prospects than men (though they are not particularly advantaged in socioeconomic terms in relation to them). However, for those who effectively obtain their degree, gender does not seem to

**Table 8** Average marginal effect of being a woman on the probability of weekly hours worked with interactions (waves 1, 2 and 3)

	Working hours		
	Up to 30 h	30 to 40 h	More than 40 h
Wave 1			
a) Female	0.016 (0.017)	0.028 (0.030)	-0.043 (0.047)
Observations	376	376	376
Wave 2			
a) Female	0.042*** (0.014)	0.108*** (0.033)	-0.150*** (0.045)
Female interacted with...			
b) Children under the age of 6			
At least 1	0.178*** (0.055)	0.269*** (0.064)	-0.447*** (0.094)
None	0.019 (0.013)	0.063 (0.039)	-0.083 (0.051)
c) Couple			
Yes	0.047*** (0.017)	0.129*** (0.039)	-0.177*** (0.053)
No	0.026 (0.026)	0.057 (0.055)	-0.083 (0.081)
Observations	396	396	396
Wave 3			
a) Female	0.115*** (0.036)	0.053*** (0.019)	-0.168*** (0.052)
Female interacted with...			
b) Children under the age of 6			
At least 1	0.223*** (0.063)	0.047 (0.030)	-0.270*** (0.074)
None	0.051 (0.040)	0.037 (0.029)	-0.088 (0.068)
c) Couple			
Yes	0.130*** (0.039)	0.072*** (0.025)	-0.202*** (0.059)
No	0.054 (0.086)	0.013 (0.020)	-0.067 (0.103)
Observations	294	294	294

Dependent variable is working hours expressed in a 3-point ordered scale where 1 stands for "up-to 30 hours"; 2 for "30-40 hours"; 3 for "more than 40 hours". Sample in wave 1 corresponds to graduates in 2012; for wave 2, it includes graduates 4 years after degree completion and for wave 3 the sample includes individuals 7 years after graduation. The table reports the estimated coefficients for the partial effect of a female dummy (wave 1) and a female dummy plus its interaction with the presence of children and a couple (waves 2 and 3). The estimates show how the probability of falling into different hour brackets changes for women relative to men, given various family characteristics and holding all other variables at their means. Each line (a-c) corresponds to a different ordered probit model, with lines (b) and (c) including interaction terms. Regressions include individual background, family, academic, and job tenure controls. Table A-4 summarizes variable details. All regressions include enrollment cohort and career FE. Robust standard errors in parentheses. Significance at the 1, 5 and 10% levels is indicated by \*\*\*, \*\* and \*, respectively

Authors' own calculations based on data from UDELAR

be relevant in explaining graduation marks or the time taken to graduate.

Seven years after graduation, women are between 3.9 and 4.4% points more likely than men to hold jobs that are either unrelated or only loosely related to their field of study. Moreover, their chances of reaching the upper job positions are 10% points lower. The presence of little children reinforces the constraints on women's careers (both, in terms of job positions and weekly hours of work). Interestingly, post-graduate studies have a very subtle effect on these probabilities in the case of the employment position.

Notably, gender itself emerges as the main constraint for the professional career of graduates. In fact, family conditions, academic outputs and job tenure play a role, but they do not create the disadvantage. This pattern does not only reflect a pervasive glass ceiling effect: it suggests that the mechanisms at work might be related to a combination of pure labor market discrimination (related to structural or organization barriers at the workplace and prevailing gender norms), family responsibilities, and women's preferences. In fact, women show an early lower propensity than men to be employed full time, a feature that tends to increase with time. They also reflect a greater consideration for stability and free time outside work. These latter might be related to family-care responsibilities, but also to gender attitudes and to how women value certain attributes of jobs in relation to men. Though our data do not allow us to untangle the relative importance of these factors, our results are suggestive about the mechanisms at play.

The analysis focuses on the difficulties that women face in advancing their careers within a field of study that, at least in Uruguay, typically does not present significant barriers to entry or completion. The findings suggest that if gender gaps emerge so clearly in this type of career, the results may be even more pronounced in professional fields where women's presence is lower (as highlighted in the literature). Moreover, the results raise concerns about other fields in which women constitute the majority of graduates: if the factors underlying glass ceilings are more closely related to gender norms and family responsibilities, these dynamics may persist regardless of the field of study. This remains an open question for future research.

**Table 9** Average marginal effect of being a woman on the probability of rating job attributes as “very important” (waves 2 and 3)

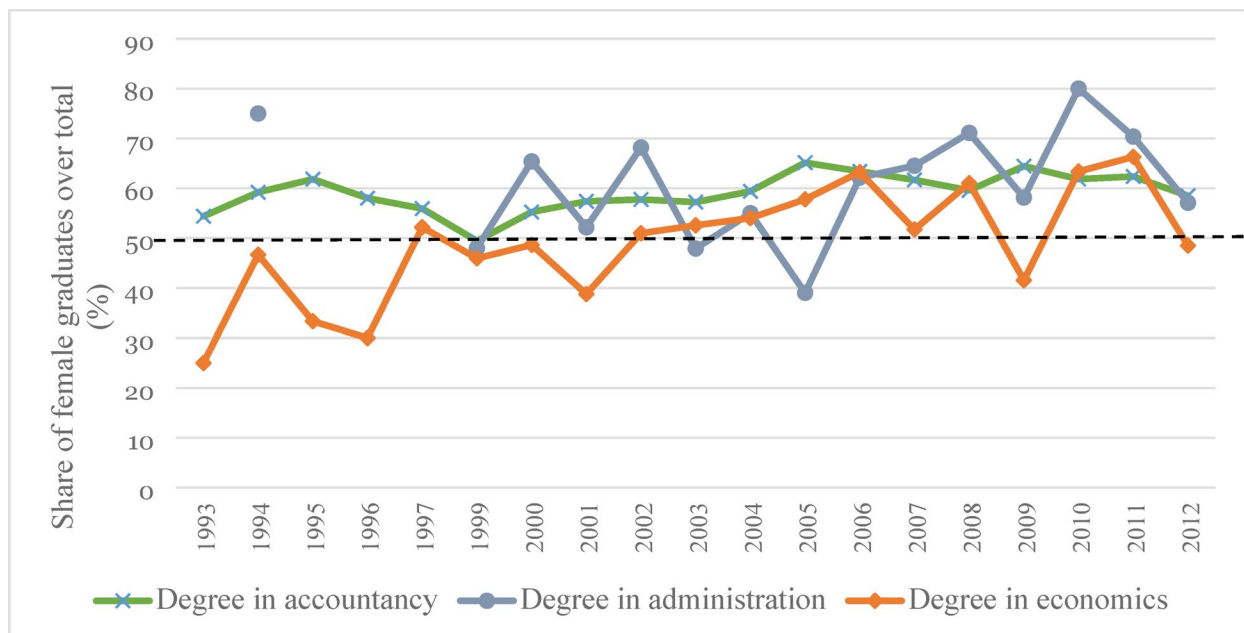
Coefficient	Job attributes					
	Autonomy	Stability	Income	Time	Prestige	
		Wave 2				
Female	0.081 (0.050)	0.281*** (0.047)	0.051 (0.046)	0.240*** (0.046)	0.062** (0.026)	
Observations	396	396	396	396	396	
		Wave 3				
Female	0.040 (0.060)	0.235*** (0.056)	-0.050 (0.052)	0.139** (0.055)	-0.000 (0.026)	
Observations	279	279	279	279	279	

Dependent variable in each column refers to one job attribute. Sample in wave 2 corresponds to graduates observed 4 years after degree completion while that in wave 3 corresponds to those observed 7 years after graduation. The table reports the coefficients for the partial effect of a female dummy on the probability of rating the job attribute as “very important” in a regression that ranks the preferences of graduates on a Likert-type scale from “not important” to “very important”. Regressions include individual background, family, academic, and job tenure controls. Table A-4 summarizes variable details. All regressions include enrollment cohort and career FE. Robust standard errors in parentheses. Significance at the 1, 5 and 10% levels is indicated by \*\*\*, \*\* and \*, respectively

Authors’ own calculations based on data from UDELAR

### Appendix

See Figure 2 and Tables 10, 11, 12, 13, 14, 15, 16, 17



**Fig. 2** Share of female graduates in accountancy, administration and economics (%). The university’s administrative records do not register any graduate in administration in 1993 or between 1995 and 1998. Source: Authors’ own calculations based on data from UDELAR

**Table 10** Descriptive statistics for student cohorts between 2001 and 2008

	Total	Women	Men	Difference
Female (dummy= 1)	0.56	-	-	
Age at university entry	19.26	19.13	19.42	-0.29***
Upper secondary public school	0.69	0.71	0.66	0.05***
Upper sec. outside capital city	0.41	0.43	0.38	0.06***
Upper sec. abroad	0.01	0.01	0.00	0.00***
Parent's high education	0.48	0.43	0.54	-0.10***
Grade in Mathematics (course 1)	3.55	3.61	3.47	0.15**
Share of graduated up to 2012	0.24	0.26	0.21	0.05***
<i>Observations</i>	11,159	6,301	4,858	

Age at university entry ranges from 17 to 55 years and mark in Mathematics ranges from 0 to 12 points. See Table A-4 for variable details. Significance at the 1, 5 and 10% levels is indicated by \*\*\*, \*\* and \*, respectively

Authors' own calculations based on data from UDELAR

**Table 11** T-test for mean differences between wave 3 and previous waves

	Averages	
	Wave 3 (vs. W1)	Wave 3 (vs. W2)
Female (dummy= 1)	0.48	0.48
Age at university entry	18.23	18.22
Upper secondary public school	0.54**	0.54*
Upper sec. outside capital city	0.38	0.38
Parent's high education	0.67	0.67
Grade in mathematics (course 1)	6.68	6.68
Mean graduation grade	5.64	5.64
Time to degree	7.89	7.88
Age at graduation	26.02	26.02
Employed	0.90	0.90
<i>Enrollment cohort</i>		
2001	0.11	0.11
2002	0.10*	0.11*
2003	0.09	0.09
2004	0.11	0.12
2005	0.21	0.21
2006	0.21	0.21
2007	0.13	0.13
2008	0.02	0.02
<i>Career</i>		
Accountancy	0.77	0.77
Administration	0.01	0.01
Economics	0.22	0.22
<i>Observations</i>	297	295

Significance at the 1, 5 and 10% levels is indicated by \*\*\*, \*\* and \*, respectively

Authors' own calculations based on data from UDELAR

**Table 12** Summary statistics for preferences about workplace attributes

	Total	Women	Men	Difference
Relevance of:				
				Wave 2
Autonomy	2.44	2.51	2.38	0.13**
Stability	2.55	2.55	2.55	0.00
Income	2.34	2.39	2.29	0.10*
Free Time	2.65	2.79	2.53	0.26***
Prestige	1.90	1.98	1.83	0.15***
Relevance of:				Wave 3
Autonomy	2.49	2.50	2.48	0.02
Stability	2.57	2.72	2.44	0.28***
Income	2.30	2.29	2.31	-0.02
Free Time	2.71	2.81	2.62	0.19***
Prestige	1.84	1.84	1.84	0.00

This table reports mean values for preference variables. All of them contain values ranging from 1 to 5 (1: "not important" to 5: "very important"). Significance at the 1, 5 and 10% levels is indicated by \*\*\*, \*\* and \*, respectively

Authors' own calculations based on data from UDELAR

**Table 13** Definition of dependent and control variables

<b>Variable name</b>	<b>Description</b>
<i>Dependent variables</i>	
Grade in mathematics	Grade at first mathematics course. Range from 0 to 12
Mean graduation grade	Grade at graduation. Range from 0 to 12
Time to degree	Years from enrollment to graduation
Job position	1 = Not employed 2 = Non-technical job or non-related to the major 3 = Basic job related to the major 4 = Professional, technical or teaching position 5 = Managerial or directive position
Hours worked	1 = Up to 30 weekly hours 2 = Between 30 to 40 h 3 = More than 40 h
<i>Control variables</i>	
<i>Individual</i>	
Female	1 = woman; 0 = otherwise
Age at university entry	Age at career enrollment
Upper secondary public school	1 = public; 0 = private
Region of secondary schooling	1 = Montevideo (capital city) 2 = rest of the country 3 = abroad
Parental education	0 = secondary education or less (medium or low) 1 = some tertiary education (high)
Employment	1 = employed; 0 = otherwise
Age at graduation	Age at career graduation
Enrollment cohort	Range from 2001 to 2008
Career	1 = Accountancy 2 = Administration 3 = Economics
<i>Family background</i>	
Lives with partner	1 = living with a partner; 0 = otherwise
Children under the age of 6	1 = at least one child; 0 = otherwise
<i>Human capital</i>	
Post graduate studies	1 = postgraduate studies ongoing or completed; 0 = otherwise
Job tenure	Years of tenure

Authors' based on data from UDELAR

**Table 14** Gender differences in academic records for student cohorts 2001–2008

	Math's I mark			Graduation probability		
	(a)	(b)	(c)	(d)	(e)	(f)
Female	0.151** (0.064)	0.230*** (0.061)	0.980** (0.487)	0.052*** (0.008)	0.057*** (0.008)	0.144*** (0.048)
Age at university entry		−0.236*** (0.012)	−0.220*** (0.017)		−0.021*** (0.001)	−0.018*** (0.002)
Upper secondary public school		−0.777*** (0.078)	−0.551*** (0.119)		−0.070*** (0.010)	−0.055*** (0.014)
Upper sec. outside capital city		0.128* (0.068)	0.055 (0.109)		0.056*** (0.008)	0.029** (0.013)
Parent's high educ.		1.115*** (0.064)	1.010*** (0.097)		0.103*** (0.008)	0.087*** (0.012)
Female * age at univ. entry			−0.031 (0.024)			−0.005** (0.002)
Female * upper sec. public school			−0.412*** (0.158)			−0.026 (0.020)
Female * upper sec. outside capital city			0.121 (0.139)			0.046*** (0.017)
Female * parent's high educ.			0.181 (0.129)			0.028* (0.016)
Constant	3.610*** (0.093)	8.068*** (0.261)	7.691*** (0.352)	0.335*** (0.014)	0.715*** (0.028)	0.672*** (0.035)
<i>Test for joint signification of female</i>						
Chi-squared			5.89			12.65
P_value			0.00			0.00
Enrollment cohort FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11,159	11,159	11,159	11,159	11,159	11,159
Share female	0.56					

Each column corresponds to a linear regression with different control variables. The dependent variable in columns a-c is the grade in Mathematics I, and in columns d-f is the graduation probability. The observations correspond to the enrollment cohorts 2001 to 2008. Each cell reports the estimated coefficient on the different explanatory variables. Table A-4 summarizes variable details. Robust standard errors in parentheses. Significance at the 1, 5 and 10% levels is indicated by \*\*\*, \*\* and \*, respectively

Authors' own calculations based on data from UDELAR

**Table 15** Average marginal effects of selected controls on the probability of job positions

Selected variables	Job positions									
	Not working	Non-technical		Basic related to major		Tech., prof...	Managerial			
<i>Wave 1</i>										
Female	0.009	(0.017)	0.009	(0.017)	-0.006	(0.012)	-0.010	(0.019)	-0.002	(0.004)
Age at university entry	0.067***	(0.015)	0.068***	(0.015)	-0.045***	(0.012)	-0.076***	(0.018)	-0.014**	(0.006)
Mean mark at graduation	-0.013*	(0.007)	-0.014*	(0.007)	0.009*	(0.005)	0.015*	(0.008)	0.003	(0.002)
Age at graduation	-0.071***	(0.016)	-0.072***	(0.016)	0.048***	(0.012)	0.081***	(0.019)	0.014**	(0.006)
Children under 6 (at least 1)	-0.030	(0.050)	-0.035	(0.068)	0.013*	(0.007)	0.044	(0.091)	0.009	(0.021)
<i>Wave 2</i>										
Female	0.001	(0.009)	0.001	(0.007)	0.001	(0.011)	-0.000	(0.003)	-0.002	(0.025)
Age at university entry	-0.015*	(0.008)	-0.014*	(0.007)	-0.021*	(0.011)	0.005	(0.006)	0.045**	(0.021)
Mean mark at graduation	-0.004	(0.004)	-0.004	(0.003)	-0.006	(0.005)	0.001	(0.002)	0.012	(0.011)
Age at graduation	0.008	(0.008)	0.007	(0.007)	0.010	(0.010)	-0.002	(0.004)	-0.022	(0.022)
Children under 6 (at least 1)	-0.019	(0.009)	-0.019*	(0.009)	-0.032*	(0.017)	-0.012	(0.021)	0.082	(0.051)
<i>Wave 3</i>										
Female	0.016**	(0.008)	0.043***	(0.017)	0.041***	(0.016)	-0.002	(0.011)	-0.100***	(0.036)
Age at university entry	-0.010*	(0.006)	-0.027**	(0.012)	-0.025**	(0.011)	0.001	(0.007)	0.063**	(0.026)
Mean mark at graduation	-0.002	(0.002)	-0.006	(0.006)	-0.005	(0.006)	0.000	(0.002)	0.013	(0.014)
Age at graduation	0.009	(0.006)	0.025**	(0.012)	0.023**	(0.011)	-0.001	(0.006)	-0.057**	(0.026)
Children under 6 (at least 1)	-0.009	(0.006)	-0.023	(0.016)	-0.022	(0.016)	0.001	(0.006)	0.055	(0.039)

Dependent variable is job position expressed in a 5-point ordered scale. Sample in wave 1 corresponds to graduates in 2012 (420 observations); for wave 2, it includes graduates 4 years after degree completion (409 observations) and for wave 3 the sample includes individuals 7 years after graduation (294 observations). The table reports the estimated coefficients for the partial effect of each variable based on ordered probit regressions. Estimates indicate how the probabilities of the different job positions change with a unit change in the explanatory variable, while all other variables are held at their means. Regressions include individual background, family, academic, and job tenure controls. Table A-4 summarizes variable details. All regressions include enrollment cohort and career FE. Robust standard errors in parentheses. Significance at the 1, 5 and 10% levels is indicated by \*\*\*, \*\* and \*, respectively

Authors' own calculations based on data from UDELAR

**Table 16** Robustness checks. Average marginal effect of being a woman on the probability of achieving job positions (wave 3)

Job positions	Expanded sample			Baseline sample with additional controls		
	a	b	c	d	e	f
	Wave 1	Wave 2	Wave 3	Wave 1	Wave 2	Wave 3
Not working	-0.001 (0.012)	-0.001 (0.005)	0.013** (0.005)	0.008 (0.017)	0.000 (0.009)	0.015* (0.008)
Non-technical	-0.001 (0.016)	-0.001 (0.006)	0.039*** (0.013)	0.008 (0.017)	0.000 (0.008)	0.041** (0.017)
Basic rel. to major	0.001 (0.011)	-0.00s1 (0.010)	0.035*** (0.012)	-0.005 (0.012)	0.001 (0.012)	0.039** (0.016)
Tech., prof, teaching	0.001 (0.014)	0.000 (0.004)	-0.007 (0.007)	-0.009 (0.019)	-0.000 (0.003)	-0.002 (0.011)
Managerial	0.000 (0.003)	0.002 (0.017)	-0.080*** (0.026)	-0.002 (0.004)	-0.001 (0.025)	-0.092*** (0.035)
Observations	681	671	501	417	409	294

Dependent variable is job position in wave 3 expressed in a 5-point ordered scale. In columns (a-c) the "expanded sample" corresponds to all graduates in 2012 (not only first-time graduates). In columns (d-e), the baseline sample corresponds to first-time graduates in 2012 (wave 1); for wave 2, it includes graduates four years after degree completion, and for wave 3, it includes graduates seven years after graduation. The table reports the coefficient for the partial effect of a female dummy, indicating how the probabilities of occupying various job positions change for women relative to men, while holding all other variables at their means. Each column corresponds to a different ordered probit model. Regressions include individual background, family, academic, and job tenure controls. In columns (d-e), we additionally control for a dummy indicating graduation under the rules of the 2012 Academic Plan and for grades in the first Mathematics course. Table A-4 summarizes variable details. All regressions include enrollment cohort and career FE. Robust standard errors in parentheses. Significance at the 1, 5 and 10% levels is indicated by \*\*\*, \*\* and \*, respectively

Authors' own calculations based on data from UDELAR

**Table 17** Average marginal effect of being women interacted with presence of children and post-graduate studies, 4 and 7 years after graduation (waves 2 and 3)

Female dummy interacted with		Working hours		
		Up to 30 h	30 to 40 h	More than 40 h
		Wave 2		
Post-graduate studies and				
a) children under the age of 6	0.111 (0.090)	0.146 (0.113)	−0.257 (0.189)	
b) no children	0.013 (0.012)	0.058 (0.051)	−0.072 (0.063)	
Not enrolled at any postgraduate program and...				
a) children under the age of 6	0.216*** (0.066)	0.319*** (0.067)	−0.536*** (0.097)	
b) no children	0.025 (0.021)	0.064 (0.051)	−0.089 (0.071)	
Observations	396	396	396	
		Wave 3		
Post-graduate studies and...				
a) children under the age of 6	0.101 (0.083)	0.037 (0.034)	−0.139 (0.111)	
b) no children	0.031 (0.047)	0.026 (0.038)	−0.057 (0.084)	
Not enrolled at any postgraduate program and...				
a) children under the age of 6	0.319*** (0.087)	0.047 (0.051)	−0.367*** (0.096)	
b) no children	0.078 (0.070)	0.052 (0.049)	−0.130 (0.116)	
Observations	294	294	294	

Dependent variable is working hours expressed in a 3-point ordered scale where 1 stands for “up to 30 hours”; 2 for “30–40 hours”; 3 for “more than 40 hours”. Observations in wave 2 correspond to graduates four years after degree completion, and for wave 3, individuals seven years after graduation. The table reports the estimated coefficients for the partial effect of a female dummy and its interactions with postgraduate studies (or the absence of any postgraduate program) and the presence or absence of children. The estimates indicate how the probabilities of falling into different hour brackets change for women relative to men, depending on whether graduates pursue postgraduate studies and/or have children, while holding all other variables at their means. Each line (a-b) corresponds to a different ordered probit model. Regressions include individual background, family, academic, and job tenure controls. Table A-4 summarizes variable details. All regressions include enrollment cohort and career FE. Robust standard errors in parentheses. Significance at the 1, 5 and 10% levels is indicated by \*\*\*, \*\* and \*, respectively

Authors' own calculations based on data from UDELAR

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### Author contributions

All authors contributed to the study conception, design and writing and have read and approved the final manuscript.

### Declarations

#### Competing interests

The authors have no relevant financial or non-financial interests to disclose and no competing interest to declare that are relevant to the content of this article.

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