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DO WOMEN ASK FOR LOWER SALARIES? THE SUPPLY SIDE OF THE GENDER PAY GAP

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Do women ask for lower salaries?

The supply side of the gender pay gap

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Abstract

We explore a new rich dataset of online asking prices from a large online job application platform in Argentina. We find that women, on average, ask for a significant 6% significant less than men, a gender ask gap that increases with the “level” of the position (proxied, alternatively, by the seniority of the position and its average requested wage), virtually disappears for women in the 45-64 range, and is significantly smaller for female-dominated occupations, as measured by the female-to-male ratio.

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Introduction

The gender gap usually denotes observable differences between men and women that are influenced by the social environment. In the workplace, it refers to systematic differences in job opportunities and salaries (controlling for the characteristics of the job and the employee). Statistics have shown that men often earn more for the same work than women, a difference that may reflect that men work more hours (an aspect compounded by the fact that they work highly-paid overtime) or tend to work relatively more in high-pay activities (horizontal gap), to prevail in top positions within a company (vertical gap), or to be offered lower pay for the same work. Most of these analyses are based on outcomes (actual wages being paid), as it is usually assumed that the gap is driven by a demand bias: for a number of reasons, a male society is willing to pay less for a woman than for a man doing the same task.² But is it not possible that the gender gap is already embedded in the labor supply? To what extent the gender pay gap reflects an “ask gap”? More specifically: do women ask for less, for the same exact job?

Many factors can determine gender-driven differences in labor supply. For starters, men and women may exhibit gender differences in preferences or self-assessments regarding specific occupational choices. Cortes & Pan (2017) based on features described in the BLS’s Occupational Information Network (or O*NET), document that the female-to-male-ratio (FMR) increases for occupations in a softer competitive environment, exhibiting a larger social contribution, or enjoying greater flexibility and a lower intensity in physical effort; and that more competitive and inflexible environments are associated with a larger gender gap. Kleinjans, Krassel & Dukes (2017) argue that women display a preference for jobs with “occupational prestige” and high *social standing* (at the expense of a lower wage). Finally, Correll (2001) reports that occupational choices are gender determined: males are perceived (by males and females) as better equipped for math (despite weak supporting empirical evidence in this regard), which in turn may determine performance self-assessment and, ultimately, occupational choices.

In addition, it has been pointed out that women prefer to work in female-friendly environments. For example, Lordan and Pischke (2016) find a strong positive relationship between female satisfaction and *the female-to-male-ratio*, both in the occupation and in the firm, while males either like or are indifferent to the share of males in an occupation. Barbulescu and Bidwell (2013) find that women prefer jobs with better anticipated work-life balance and lower identification with stereotypically masculine jobs, which results in lower expectations of job offer success in male dominated jobs. Another aspect highlighted by the

² See, i.a., Arulampalam, Booth and Bryan (2007), Tijdens and Van Klaveren (2012) and Doherty, Levine, Moldavskaya & Xiong (2017).

literature relates to *women's relative propensity to wage bargain*. On this front, the evidence is mixed. Early studies find that women are less likely than men to initiate negotiations (Babcock & Laschever 2003; Babcock et al 2007), and experimental research has shown that women choose competitive pay-offs to a lesser extent than men (as Datta Gupta et al, 2006 suggests, because of higher risk aversion; see also Niederle & Vesterlund, 2005). However, Artz, Goodhall & Oswald (2016) finds no evidence that women are less prone to requesting wage raises than men, while Kaschner, Kugler, Reif & Brodbeck (2013), based on a meta-analysis of 24 studies that explore gender differences related to *wage negotiations*, conclude that women have a lower, albeit minor, propensity to negotiate, and Freund, Hüffmeier, Mazei & Stuhlmacher (2014), in another meta-analysis of 51 studies of *negotiation outcomes*, find that men tend to reach better economic outcomes than women but the difference narrows for women with negotiation experience, or when negotiation ranges are explicitly communicated (a result also reported by Leibbrandt & List (2012)).

Existing studies on the supply-side determinants of the gender gap based *quantitative data on actual asked wages* are relatively scarce and yield mixed results. Based on survey where recent social science graduates in Sweden are asked to report their respective bids “for the initial job they got in their field of major”, Save-Soderbergh (2007) finds that women “consistently submit lower wage bids than men do” (due to “lack of incentives to self promote”). Alternatively, Galperin, Cruces and Greppi (2017), based on a field experiment where 2800 freelancers were asked to apply for a job using an online platform for short-term contracts in Spain (Nubelo), find that “women don't ask for less”.³ Closer to the spirit and methodology of our paper, Moreno et al. (2011), using data from a job intermediation service of the Peruvian Ministry of Labor and Employment Promotion, find that, among indigenous applicants to secretarial positions, females tend to ask for wages 7% below those of males with comparable skills.

In this note, we try to fill the empirical gap in this research agenda by exploiting a new rich dataset containing online asking prices from Navent – ZonaJobs, a large online job application platform in Argentina. The dataset, which includes more than 1.9 million observations of people applying online for different jobs in the Greater Buenos Aires area, involves 5887 ads, each of which is characterized by the type of job posted (the “title of the ad”), the position, and the modality of the job (full or part time). In all cases, for each ad, applicants provide a wage bid, as well as the applicant's age and gender. Importantly, no wage or negotiation range is provided by the employer in the job posting. Table 1 summarizes the dataset.

³ It is interesting to note that, contrary to findings in previous studies (Babcock and Laschever, 2003; Niederle and Vesterlund, 2005), both studies test the propensity to choose a bargaining setup of men and women and find no gender difference in this regard.

These data allow us to identify a gender gap from the supply side, namely, a systematic difference between the salary asked by men and women of comparable skills for the same position, after controlling for age (a proxy for experience) and the job type.

Table 1

Area	Gender			Average age	Position						Average wage
	Total	Women	Men		Management / Senior Management / Directors	Chief / Supervisor / Manager	Senior / Semi-Senior	Junior	Others		
Supplying and Logistics	106510	21818	84692	30.2265	1075	5737	72626	19999	7073	18233	
Administration, Accounting and Finance	367738	200833	166905	30.1072	3303	13912	225432	108425	16666	19452	
Customs and Foreign Trade	21606	9062	12544	29.0867	0	2140	13232	5662	572	20643	
Customer Service, Call Center and Telemarketing	80819	52798	28021	27.8392	136	4432	41263	26226	8762	12655	
Trade, Sales and Business	287681	146697	140984	28.8438	2761	18007	208772	42158	15983	15877	
Communication, Institutional and Public Relations	5779	3271	2508	29.3357	0	825	2555	1015	1384	18567	
Design	9946	5804	4142	27.9408	0	0	6720	2211	1015	16418	
Education, Teaching and Research	1392	565	827	32.0288	126	469	767	30	0	20256	
Gastronomy and Tourism	46917	26064	20853	27.9709	78	2691	33523	2577	8048	12295	
Management	3897	1411	2486	35.9655	2075	262	1545	0	15	35989	
Civil Engineering and Construction	17087	5298	11789	31.7564	0	2528	9772	3006	1781	24793	
Engineering	20045	5392	14653	30.9879	1232	2014	11991	4423	385	27809	
Legal	20444	11810	8634	30.8518	303	460	12764	5099	1818	23272	
Marketing and Advertising	36074	19462	16612	28.8522	0	3163	18804	12347	1760	21937	
Mining, Oil and Gas	1156	222	934	32.3651	0	66	821	269	0	29048	
Crafts and Others	63859	19084	44775	28.9768	73	3064	29057	19247	12418	13949	
Production and Manufacturing	86111	15596	70515	30.2506	641	13010	40858	19944	11658	18080	
Human Resources and Training	60846	39177	21669	30.1173	531	2176	38653	16804	2682	21002	
Health, Medicine and Pharmacy	31133	20315	10818	29.7695	0	1549	18304	6679	4601	16132	
Secretary and Reception	138117	128777	9340	27.6188	0	287	95096	22649	20085	13831	
Insurance	7281	3427	3854	29.8818	0	214	4481	2514	72	18490	
Technology, Systems and Telecommunications	36122	7409	28713	29.4525	92	1554	22201	11210	1065	19332	

Note: Authors' elaboration.

We find that:

1. Women, on average, ask for significantly less than men: the gender gap (the female-to-male asked wage ratio) is about 6%.
2. This gender gap increases with the "level" of the position, which we proxy, alternatively, by the seniority of the position and by its average requested wage.
3. The gender gap virtually disappears for women in the 45-64 range, suggesting that the well documented gender gap associated with maternity age may indeed influence women's wage bidding behavior.
4. The gender gap is significantly smaller for female-dominated occupations, as measured by the female-to-male ratio both at the ad- and the sector-level, which may indicate that lower expectations associated with masculine jobs, again, may influence women wage bids and translate into a wider gender gap in asked wages for male-dominated positions.

Ultimately, the results highlight that a significant gender gap do exist in the supply side (before any interaction between employer and employee occurs) that tends to mirror some of the characteristics of the gender gap typically found in actual employment arrangements.

Methodology and results

To measure the supply-side gender pay gap, we first filter the database and keep only those ads where there were at least 5 men and 5 women applying for the job. That leaves us with 4141 ads. Then, we classified each ad in one of the 22 economic sectors showed in Table 1. To reduce the dimensionality of the regression, we group bids by the applicant's age into four age groups: 17-24, 25-44, 45-64, and over 64. At the most aggregated level, we run ad-by-ad regressions of the type:

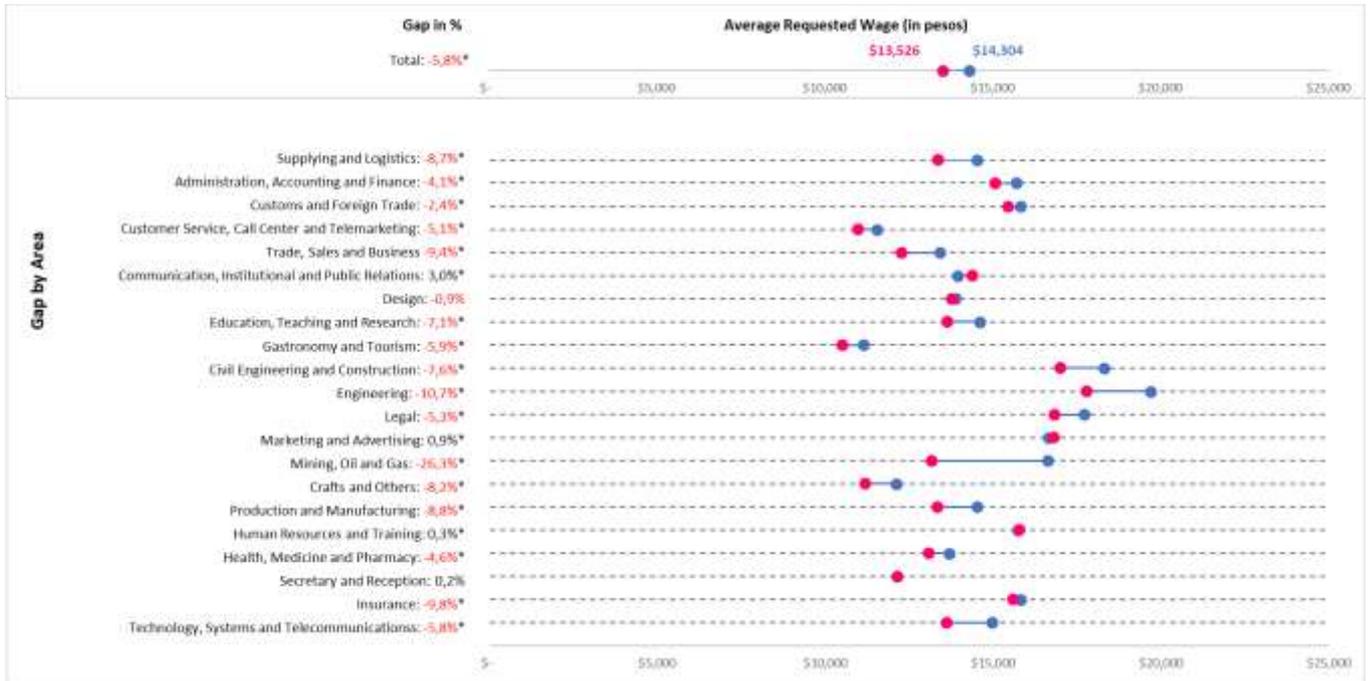
$$\ln(w_{i,j}) = \alpha_0 + \alpha_1 \text{gender}_i + \sum_{g,i} \beta_g \text{age}_{g,i} + \text{ad}_j + \mu_{i,j}$$

where gender_i is a dummy variable adopting the value one if applicant i is a woman and zero otherwise, $\text{age}_{g,i}$ is an age dummy identifying the age group g of applicant i , and ad_j is an ad fixed effect that controls for all ad-specific characteristics.

Using this base specification, we find that, in 79% of the cases, women requested a lower wage than men did: on average, men and women requested AR\$ 14,304 and AR\$13,526, respectively, placing the average gender pay gap at a significant -5.8%.

Next, we estimate the average gender wage bid gap for each economic sector by re-running regression (1) within sectors. In 17 of the 22 economic sectors in which we divided the sample women ask for a lower average wage than men, and the results are statistically significant at 5% level and range from 1% to 24% (the only two exceptions with a positive gap being the communication and institutional relation sector, and the human resources sector, with small but significant 2% and 0.3% gaps). Figure 1 report the results.

Figure 1



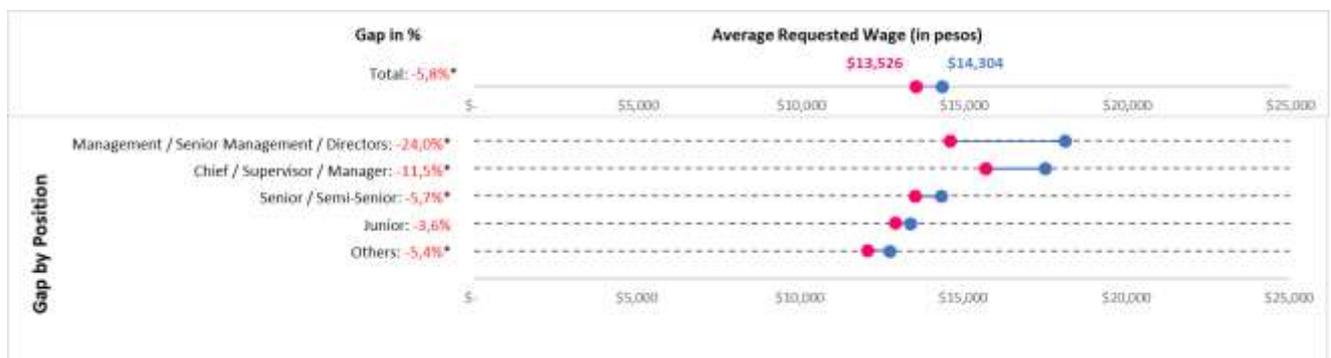
Note: authors' elaboration. * Statistically significant at 5%.

What's behind the supply-side gender gap?

The literature suggests a number of potential drivers of the gender gap reported in the previous section. While these aspects, many of these the reflection of demand-side biases, cannot be directly tested in asked wages, the data reveals interesting patterns that may support some of the literature's insight.

Is the widely reported glass ceiling (the wider gender wage and participation gaps at the top of the career ladder) internalized by female applicants at the time of bidding for a job? For example, Guvenen, Kaplan & Song (2014) document steep differences between genders in their share in the Top 1% of the earnings distribution even when this gap was narrowing in the last decades. Similarly, Livingstone, Pollock & Raykov (2016) found comparable patterns in the evolution of gender differences in the access to managerial jobs, with a persistence of the gap despite a recent narrowing. To explore this hypothesis, we estimate our base specification splitting the sample in five position levels: high management, middle management, senior/semi senior, junior and other. Figure 2 shows the results: while, on average, women request a lower wage than men's in all positions, the supply-side gender gap increases, and is substantially larger, as we move up the company ladder.

Figure 2



Note: authors' elaboration. * Statistically significant at 5%.

The same pattern is revealed when we re-estimate the model by wage ranges. To do that, we rank ads by their average requested wage, group ads in quintiles, and rerun our standard specification by quintile. The results, reported in Figures 3, confirm that the supply-side gender gap tends to widen for higher paid positions. While the correlation between gap and wage level may alternatively reflect a link between the gender gap and the skill intensity of the job (given the well-known correlation between education level and wages), the pattern of this finding, which indicates a wider gap only for top wages, seems more in line with the previous result, specifically associated with top positions.

Figure 3



Note: Authors' elaboration. * Statistically significant at 5%.

Next, we test whether the gender gap relates to age, which in principle could be regarded as an alternative proxy for seniority, albeit with one important caveat: a larger gender gap for older female applicants may be capturing the well-documented fact that the gender gap widens (and the age-adjusted seniority declines) as women go (or expect to go) through maternity. To examine this hypothesis, we rerun our specification for our 4 age groups. The results in Figure 4 show that the gender gap virtually disappears for applicants in the 45-64 age group (against gaps of 5% and 6% for age groups 17-24 and 25-44, respectively), at odds with the positive correlation with seniority and wage, which suggests that maternity discount may indeed be internalized by women at the time of bidding for a new job.

Figure 4



Note: authors' elaboration. * Statistically significant at 5%.

Does the gender gap reflect segregation issues? Does women's preference for a female friendly environment translate as a premium for male-dominated positions, or as a discount to overcome a gender entry barrier. To shed light on this hypothesis, we test whether the gender gap is wider in male occupations relative to female occupations. We define the degree of femininity empirically, based on the female-to-male ratio (FMR) corresponding to each position, and to each sector. More precisely, first we rank ads according to its FMR, divide the sample in quintiles and rerun the specification. Figure 5 report the results: feminine environments command a lower gender gap, a finding a priori consistent with the

internalization by female applicants of a gender-specific entry barriers or self-assessment downward biases when it comes to male-dominated activities.

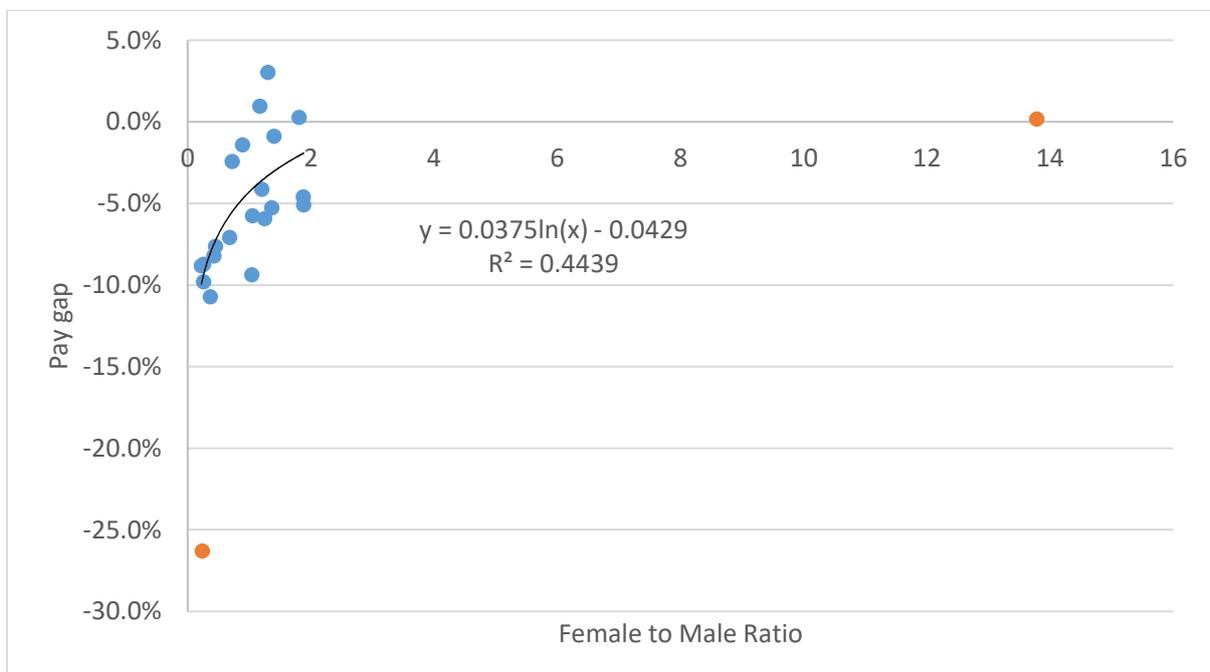
Figure 5



Note: authors' elaboration. * Statistically significant at 5%.

The same pattern is also discernible across sectors: activities with higher FMR (measured as the number of female-to-male applicants for ads in the sector) are associated with a lower gap, as Figure 6 indicates. Abstracting for the two obvious outliers (secretarial work, on the far right, and mining oil and gas, at the bottom), there is a significant positive link between the FMR and the gender gap.

Figure 6



Final remarks

The purpose of this note was exploratory: to examine, based on an unusually rich dataset of job applications, whether, alongside the many varieties and sources of a gender pay gap already identified in the literature, there is a supply-side gender “ask” gap, namely, a pattern of systematic underbidding by women relative to men facing exactly the same job search. Indeed, we identified a significantly gender ask gap (close to 6% on average) that increases with the seniority of the position and with the average requested wage, declines with the female-to-male ratio of the position, and virtually disappears for women beyond maternity age (45-64 age range).

We can only speculate as to why this gap exists, since the data is silent about important aspects such as negotiation biases, self-assessment or priors that female and male applicants hold when they apply to a job. The pattern, however, is not inconsistent with some of the findings in previous work, particularly regarding the link between maternity and pay gaps, and between the latter and the femininity of the occupation, and support the view that women tend to internalize stylized facts of the actual labor market, as they ask for less in situations in which they ultimately are, on average, paid less. The relation between the ask and pay gaps (e.g., to what extent the former is the reflection or the driver of the latter?) remains open to future research.

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