

ARE WOMEN ASKING FOR LOW WAGES?
GENDER DIFFERENCES IN COMPETITIVE BARGAINING STRATEGIES AND ENSUING
BARGAINING SUCCESS*

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Abstract

Men's and women's labor market outcomes differ along pay, promotion and competitiveness. This paper contributes to this topic by presenting results in a related unexplored field using unique field data on individual wage bargaining. We find striking gender differences. Like men, women bargain, but they submit lower wage bids and are offered lower wages than men. Both women and men use self-promoting or competitive bargaining strategies, but women self-promote at lower levels. Employers reward self-promotion, but the larger the self-promotion is, the larger the gender gap in bargaining success. Women therefore lack the incentives to self-promote, which helps to explain documented gender disparities.

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1 Introduction

The labor market outcomes of men and women differ along a variety of dimensions. Even after controlling for a broad range of demographic and background characteristics, women earn significantly less than men (Blau and Kahn, 2003, for an international comparison; Edin and Richardson, 2002, and Albrecht et al., 2003, for Sweden¹). Although the number of women in top-ranking position has increased, the levels are still low (Bertrand and Hallock, 2001; Wolfers, 2006). Standard economic explanations for such occupational differences include preferences, ability differences or labor market discrimination. Another explanation is that men and women respond differently to competitive environments, (Gneezy et al 2003; Gneezy et al 2009) or have different inclinations regarding competitiveness (Gupta et al. 2005; Niederle and Vesterlund, 2007). Such differences by gender may then develop into disparate labor outcomes.

In this paper, several of these issues are addressed by investigating gender differences in the labor market from the new perspective of individual wage bargaining. In particular, I examine whether men and women differ in their bargaining strategies and whether the ensuing bargaining success, that is, the payoff to a strategy, differs by gender.

Empirical evidence on gender differences in real individual wage bargaining is limited. The exceptions are Babcock and Laschever (2003) and Gerhart and Rynes (1991) who provide interesting results using anecdotes on wage bargaining or the probability to renegotiate an initial wage offer, respectively.² Hall and Krueger (2008) instead analyze the incidences of wage posting and bargaining for newly hired workers. This study therefore contributes to this topic by presenting results in a relatively unexplored field. Individual bargaining over wages is, however, one of the main components of interaction in the labor market. If gender differences in bargaining strategies exist and the ensuing outcomes differ, this may suggest an explanation for why women are less represented in competitive working environments, less represented in high-paying jobs, and/or less likely to compete for promotion.

¹ As in most countries, the average raw gender wage gap in Sweden has narrowed since the 1960s. In 1968, the average raw gender wage gap was almost 30 percent while the equivalent for 1991 was 20 percent. However, since 1991 the raw gender wage gap has increased slightly (Albrecht et al., 2003). These developments are mainly driven by corresponding developments in the overall wage distribution (Edin and Richardsson, 2002).

² See also the interesting special issue of the *Negotiation Journal* which nicely summarizes findings on gender differences in the propensity to negotiate, in altruism and cooperation, and in competitiveness, Bohnet and Bowles (2008).

I explore a unique dataset from two Swedish surveys conducted in 1999 and 2000 that are comprised of recent graduates within the social sciences. The data thus contain a homogenous population of young graduates with short labor market careers. This limits issues of selection due to career interruptions due to family concerns, job changes, or participation selection. In addition, the surveys incorporate important control variables for differences in labor market opportunities, outside options and individual attributes.

Sweden is commonly known to have a high level of centralized wage bargaining. However, in recent decades, wage setting become more decentralized. In the past 40 years, Sweden has moved from a strongly egalitarian, centralized wage-setting system to one in which wages are set locally. In particular, for the professions considered here, the applicable three-year wage agreements stipulate local wage setting for those in the private sector, the public sector and the municipal sector (National Mediation Office, 2001).³ Hence, there is room for wage improvements following the wage bargaining that occurs upon acceptance of a job.

Respondents were asked to report whether they were asked to state an explicit *wage bid* to the employer before accepting the job and, if so, the level of the wage bid. Moreover, they were asked to state the *offered wage*. This would also be the wage they accepted. Some respondents reported not being asked about a wage bid and hence are assumed to have applied for a job with wage posting. The data thus allow for comparisons using the posted wage group as a control group.

In order to establishing whether there are gender differences in bargaining and bargaining outcomes, I focus on four issues. The first issue concerns gender differences in the propensity to choose to apply for a job with wage bargaining as a part of the application process as compared to choosing a job with a posted wage. Previous studies have found that women are less likely than men to initiate negotiations (Babcock and Laschever 2003; Babcock et al 2006; Greig 2008; Hall & Krueger, 2008). Recent experimental research has also shown that women choose competitive pay-offs to a lesser extent than men (Gupta et al, 2005; Niederle and Vesterlund, 2007). In addition, women may not choose to bargain if they are more risk averse than men, as suggested by some studies (Croson and Gneezy 2009; Eckel and Grossman 2008; Sundén and Surette, 1998).

³ There are some few exceptions, e.g., within the county council where a first year minimum wage level is granted.

The second issue investigated is whether men and women ask for different wages. Women may, for example, submit lower wage bids than men do if they face a monopsonistic labor market, have a higher level of family responsibilities and/or are restricted in choosing a job due to the coordination of spouse job locations.⁴

Third, this paper explores the use of competitive or self-promoting bargaining strategies by looking at how much applicants overbid or underbid a similar applicant. A competitive strategy may reflect several aspects of the applicant. The overbidding of a similar candidate may, for example, reveal information on personal attributes that are not observable to the employer.⁵ If this is the case, then a competitive strategy may be seen as a self-promoting strategy; alternatively, the case of underbidding can be viewed as a self-devaluing strategy. The value of such self-promoting is assumed to be upper-bounded by a loss in credibility and thereby a possible loss of the job opportunity. Naturally, the overbidding measure will also reflect differences in bargaining behavior that depend on heterogeneity in unobserved productivity. This can either be actual gender differences in unobserved productivity or self-assessed gender differences in unobserved productivity. Therefore, the differences in the use of competitive strategies will also capture how much the applicant is willing to bargain for these attributes.

Following sociological research, we may expect gender differences in employing such strategies given the well-documented tendency in sociological research (Smith and Powell, 1990) that men more often than women “self-enhance”. That is, they positively differentiate between their own characteristics or behaviors relative to the same characteristics and behaviors in other people. According to this line of research, men tend to self-enhance to a greater extent than women do.⁶ Psychological literature has also found that women tend to be more cooperative in bargaining than men (Walters et al., 1998), although the difference is slight. Holm (2000) also finds that both men and women tend to behave significantly more “hawkishly” (or non-

⁴ Yet, considering that the average age for women in Sweden at their first marriage was 29.9 in 1998 and 30.4 in 1999 and that the equivalent for men was 32.4 and 32.9 (Statistics Sweden, 2000), such considerations should not be too predominant for the individuals in the sample where women (men) are 27 (28) years on average. Likewise, the average age for females having their first child in Sweden was approximately 28.5 years in both 1999 and 2000 (Statistics Sweden, 2000). Therefore, given the relatively high age, along with Sweden having generous public parental child-care benefits (with a share earmarked for the father), the choice of jobs should not be too different between men and women in the sample.

⁵ There is empirical evidence (see Agell and Lundborg, (1995) and (2003) or Cambell and Kamlani (1997) for survey evidence and Fehr and Falk (1999) for experimental evidence) that suggests such a role for wage bidding.

⁶ Paralleling these findings regarding a difference in subjective ability rating, females appear to expect less in terms of wage gains due to the possession of a college degree (Brunello et al, 2004; Chevalier 2007).

cooperatively) toward women when bargaining, although this kind of discrimination against women worked as a coordination device that boosted the earnings of both sexes.⁷

Fourth, this paper attempts to assess whether men and women are equally successful given the same self-promoting strategy if all other observable characteristics are held equal. Bowles et al. (2007) suggest that bargaining poses a challenge for women because it calls for a type of dominative masculine behavior (i.e., the competitive assertion of one's self-interest) that contradicts the prescriptive norms of feminine behavior.

The empirical analysis of these four issues reveals interesting findings. Different from previous literature, I find that women choose a job with bargaining to the same extent as men. However, women ask for lower wages than men do when controlling for relevant job and individual attributes. Women also receive lower counter-offers than men do. One interesting difference, though, is that although wage offers are higher for both men and women who have bargained, *ex post*, there is a higher unadjusted gender wage gap in individually-bargained wages as compared to posted wages. Also, after adjusting the wage gap, the difference between the groups remains at one percentage point.

The use of self-promoting strategies also differs by gender. Women do not necessarily use self-promoting strategies or overbidding less often than similar men do, but rather they do so at lower levels. Restricting the sample to those who strictly overbid a similar candidate, women overbid by 9.4 percent as compared to men who overbid by 12.9 percent on average.

Overbidding, or self-promoting, strategies are rewarded by employers. Women, however, receive a lower payoff relative to men from the same self-promoting strategy, especially among the more successful bargainers. But among the most successful bargainers, gender differences are not so large. Instead, gender differences are mostly explained by the fact that women do not overbid to the same extent that men do. If women were to compete by using more overbidding, gender differences would thus be reduced. Nevertheless, the lower payoff to overbidding creates weaker incentives for women to employ competitive or self-promoting strategies. Hence, this may explain why women refrain from entering competitive working environments and/or are less represented in high-paying jobs.

⁷ Hultin and Szulkin (1999) also find that gender wage differentials are affected by the gender composition of an establishment's managerial staff. The negative effect on women's wages due to a high male representation among managers and supervisors was three times as strong within organizations with a highly decentralized wage-setting process as it was for females in general. The data in this paper, however, reveals no information on the sex of the employer.

The paper is organized as follows. Section 2 describes the empirical model. Section 3 presents the data, and Section 4 discusses the results. Section 5 concludes.

2 Empirical Model

A. Adjusted Wage Bids and Wage Offers

To analyze gender differences in bargaining behavior and bargaining outcomes, I estimate adjusted wage gaps with a standard Mincer wage model to adjust for crucial wage-generating characteristics:

$$W_i^k = \delta_0 + \beta_1 FEMALE + \beta_2 X_i + \beta_3 Z_i + \nu_i. \quad k = W^{off}, W^{bid} \quad [1]$$

W_i^k is the dependent wage variable for individual i , and it is either the offered wage, W^{off} , or the wage bid, W^{bid} . Gender differences are captured in the *FEMALE* dummy variable, which indicates a female applicant. X_i is a vector of applicant qualifications, and Z_i is a vector of job-employer characteristics. Finally, ν_i is a random error term capturing individual heterogeneity in unobserved productivity. Note that for the adjusted wage gap in wage bids, the random error term captures both objectively defined and self-assessed unobserved productivity. For the adjusted wage gap in wage bids, additional controls are also added to adjust for an applicant’s outside options and thereby bargaining power.

B. Competitive Bargaining Strategies or Overbidding

To assess the extent to which men and women differ in how competitively they bargain, I look at the amount of over- or underbidding applicants employed in their bargaining. Overbidding or underbidding is found by relating the wage bid to a “reference wage bid” that is supposed to capture the wage bid that the employer may have expected given the applicant’s and the job’s characteristics. The reference wage bid is derived by regressing the wage bid according to equation [1], and from this, a “market wage bid” is predicted for each applicant who chooses to bargain over his or her wages, $REF.BID_i$. The ratio of the wage bid and the reference bid thus become the level of overbidding of a similar applicant:

$$OVERBID_i = \frac{BID_i}{REF.BID_i}. \quad [2]$$

Overbidding occurs when the measure $OVERBID_i$ is above 1 because at that point the applicant asks for a higher wage than would a similar applicant in terms of job and applicant qualifications. This is then considered a competitive strategy. When this measure is below 1, the applicant is underbidding a similar applicant.

To assess gender differences in bargaining outcomes, or, bargaining success, we similarly derive a measure of bargaining outcome relative to what the applicant may have expected given the job and applicant characteristics. A “reference wage offer” is derived by estimating equation [1] for the entire sample, and from this, an expected wage offer, $REF.OFFER_i$, is predicted for each applicant. Bargaining success is then measured by the ratio of the wage offer and a reference wage offer:

$$BARGSUCCES S_i = \frac{OFFER_i}{REF.OFFER_i} . \quad [3]$$

When the success measure is above 1 (or below 1) the applicant receives an offer higher (or lower) than that predicted by his or her wage-generating characteristics or job attributes.

Bargaining success is measured with two alternative specifications of the reference wage offer by including or not including a gender dummy. By including the gender dummy in the reference wage offer, I take into account that men and women may be valued differently in the market; that is, there is the commonly found negative wage premium for women. Therefore, men and women do not serve as substitutes for a similar candidate. Note that with this specification, women’s overbidding is undervalued.

Finally, to elicit gender differences in the payoff from a competitive bargaining strategy, I estimate the following model such that:

$$BARGSUCCES S_i = \alpha + \beta_F FEM + \beta_{ob} OVERBID_i + \beta_{FEMob} FEM * OVERBID + \varepsilon_i . \quad [4]$$

β_{ob} measures the effect of self-promoting on bargaining success, i.e., the payoff at different levels of overbidding relative to a similar applicant, and the interaction term, $FEM * OVERBID$, which specifically measure the extent to which men and women have different payoffs from a competitive strategy.

3 Data

The data on bargaining behavior was collected as a unique part of two annual surveys in 1999 and 2000 of all university graduates in Sweden by Jusek⁸, the Swedish trade union for white-collar workers. The graduates had to have at least three years of university education and to have majored in one of the following five fields: law, business administration and economics, computer and systems science, personnel management or social science. Only individuals who fulfilled the above requirements and were born later than 1964 were included in the survey sample.⁹

Two wage variables are used in the analysis.¹⁰ The first is the applicant's *wage bid*, that is, the wage requested to the employer they accepted working for. The second wage variable is the *offered wage* (or starting salary) at the time at which employment begins. Both of these are given as monthly gross wages.¹¹ For those who work part-time, the survey explicitly states that the wage should be converted into a full-time monthly gross wage.

Table 1 reports the summary statistics for the wage data. The total data set includes 1,911 individuals from the 1999 survey and 2,054 from the 2000 survey with approximately 53 percent stating an explicit wage bid.

Mean statistics suggest that on average, women ask for lower wages than men do. The unadjusted female relative wage bid is approximately 5.8 percent lower than that of males, and the difference is statistically significant at the 99 percent level. Furthermore, men have a larger spread in their wage bids. Unadjusted wage offers are also lower for women as compared to men, especially among those who have chosen to bargain over their wage. Thus, the data point toward

⁸ The Swedish Association of Graduates in Law, Business Administration and Economics, Computer and Systems Science, Personnel Management and Social Sciences.

⁹ The response rate reported by Jusek for the 1999 survey was 63 percent for both years out of a total of 4,000 Swedish graduates for September 1997 to September 1998 and 4,500 graduates between September 1998 and September 1999. No particular bias in response rates is reported by Jusek.

¹⁰ A third wage measure, the current wage, is also available in the survey. As this measure was given directly after the questions on the wage bid and the offered wage, the error of reporting the offered wage as the current wage should be minimized.

¹¹ The gross monthly wages are used rather than an hourly wage measure. Even though the surveys include information on hours worked per week, the measure is ambiguous due to the formulation of the question, whereby the respondents cannot mark up exactly 40 hours worked per week. They must choose either "work less than 40 hours" or "41-45 hours per week". The exclusion of the alternative 'exactly 40 hours' may thus have meant that respondents misclassified their working hours. In addition, individuals who have stated a wage bid below SEK 10 000 are excluded (3 individuals), since the wage bid is more likely to refer to part-time than to full-time employment.

an increase in the gender wage gap with individual wage bargaining. However, similar to Granqvist and Regner (2008), who analyze Swedish wage data, wages are in general lower among those who chose posted wages as compared to jobs with local wage bargaining. Also, Hall and Krueger (2008) find in a US survey data that posted wages are more important for less heterogeneous jobs requiring lower levels of education. Thus, it is possible that there is a selection of more able applicants into the jobs with individually bargained wages as compared to posted wages. However, in the following context, such selection should be of limited concern as we consider the relative wage gaps by gender conditional on having bargained rather than on the underlying causality of bargaining versus posted wages.

Table 2 reports the summary statistics for the control variables. The controls for applicant qualifications include the field of major, age and having qualified or unqualified post-graduate job experience.¹² To control for differences in market opportunities we include work sector (i.e., private, governmental or municipal sector) and job location.¹³ Applicants of temporary employment contracts (that is, trial-period employment, project-based work or substitute contracts and trainees) are separated from applicants of permanent employment contracts. We also add controls for the outside options of an applicant as a measure of their bargaining power. Assuming unobservable productivity is positively correlated with the probability of getting a job, time spent searching for a job¹⁴ and the number of jobs applied for prior to accepting the current employment are included.¹⁵ These variables may also capture a wage bid adjustment to employer-employee matching quality.

¹² In both of the surveys subjects were able to indicate whether they had had any employment between graduation and the current position, thus covering postgraduate work only. In the survey from 2000, respondents could also indicate whether or not their work was “qualified” or “unqualified” (with no further interpretation given in the survey). In the pooled sample, only those who marked qualified experience are included in the category of qualified work experience, while those with any work experience are pooled with those who marked having unqualified work experience. Note that since the type of job experience cannot be distinguished, qualified work experience will be underestimated.

¹³ Some individuals reported working in a sector denoted “other” and are dropped (45 individuals), as the survey lacks any information as to what is defined as “other.” Individuals working outside Sweden are also dropped (25 working in Nordic countries, 37 in other parts of Europe and 12 outside Europe) along with those being self-employed (14 individuals), or who participate in labor market programs (67 individuals).

¹⁴ Note that the group of no search time includes (i) individuals who were accepted to a job position before graduation, (ii) those who returned to a previous employer from the time before their university studies, or (iii) those who found their jobs within a month of graduation.

¹⁵ However, time spent searching for the job may also have a contrary effect. Assuming that individuals with more time to search will also learn more about how to find a good job match, then we could find a positive effect on wage bids depending on the time spent in job search.

There are already some gender differences worth noting. First, men and women have to some extent majored in different fields.¹⁶ More men are employed in the private sector, and they are older on average than the women.¹⁷ There are also some differences between the groups that applied for a job requiring wage bargaining and those that applied for jobs with posted wages. Gender differences between these groups, however, are small. This latter finding could then be taken as evidence that there are no particular selection effects along gender lines.

4 Results

A. The Propensity to Bargain over Wages

The first noteworthy finding from the data is that there is no gender difference in the choice of a job requiring individual wage bargaining. The share of women who choose jobs with bargaining is 54 percent, while the equivalent for men is 53 percent. This is particularly interesting, as Babcock and Laschever (2003) find that only 7 percent of women compared to 57 percent of men tried to improve their initial wage offer by negotiation. Hall and Krueger (2008) also find a lower share of females bargaining for their wages. Moreover, experimental findings suggest that women are less likely to choose competitive payoffs (Gupta et al, 2005; Niederle and Vesterlund, 2007). Similar to the findings in this paper, Gerhart and Rynes (1991) report no gender difference in the propensity to bargain, yet the authors find a lower share of 21 percent who renegotiated the offered wage. An important difference between the current study and Gerhart and Rynes' study is that they refer to the option of renegotiating an initial wage offer, whereas in this study, the data refer to the actual wage bid given by the applicant.

B. Gender Differences in Adjusted Wage Bids

The Mincer model of wage bids reported in Table 3 suggests gender differences in wage bargaining. After controlling for a broad range of factors, women still ask for lower wage bids

¹⁶ Women noted that they work less than 40 hours per week to a greater extent than men; see footnote 16. As regards those who chose to bargain (posted wages), 21 (18) percent of the women work part time while the equivalent for men is 14 (12) percent. Yet, given the age of the individuals included in the sample, it is reasonable to assume that few applied for part-time work as the average age for females having their first child in Sweden is approximately 28 years in both 1999 and 2000 (Statistics Sweden, 2000). A t-test, moreover, reveals that the share of women over 28 years is smaller than the share of over 28 men in the group that noted "work less than 40 hours." The difference is also statistically significant at the 5 percent level.

¹⁷ The higher average age among men may be explained by the compulsory military service for young men in Sweden.

than men do. Female applicants ask for approximately 3 percent lower wages than men do; this value ranges from 2.9 to 3.5 percent depending on the number of controls. Wage bargaining is also adjusted to job and applicant characteristics in the anticipated directions. Wage bids vary with field of major, job sector, and whether the applicant is applying for temporary jobs. Moreover, applicants ask for higher wages when they have experience, especially when it is qualified experience. Outside options also appear to change bargaining behavior. Applicants who have searched for more than nine months increase their wage bids, suggesting that a long search time may have an informational value in terms of job-match quality.¹⁸ Moreover, applicants ask for lower wages as they apply for more jobs, suggesting that bargaining power decreases with a worsened outside options.

C. Gender Differences in Adjusted Wage Offers

As in many previous studies on the gender wage gap we find that women are offered lower wages, even when education, experience, age and other work-specific characteristics are controlled, as reported in Table 3. Dividing the sample between those with a posted wage and those who individually bargained over their wages, we find that the gender gap in offered wages is approximately 3.2 percent in the context of individual bargaining versus 2.6 percent in the context of posted wages. Thus, not only is there a gender difference in bargaining behavior, but there is also a larger gap in the *post*-bargaining outcome.

D. Gender Differences in Overbidding

However, based on the above Mincer model, we cannot evaluate if women simply ask for low wages or if both men and women consistently ask for “too” high wages relative to similar candidates but women do so to a lesser extent. To identify the level of competitive bargaining or overbidding, we predict an expected wage bid for each applicant using the estimates reported in Table 3 column 1, excluding the gender dummy. Alternatively, we predict a gender-adjusted reference wage bid from estimations with the female dummy included.¹⁹

¹⁸ Another possible explanation could however be that respondents misclassified their search time. Within this group, 27 percent have had a job for more than six months prior to the current one, in comparison to 11 percent for the whole sample. However, the correlation between postgraduate work experience and searching for more than 9 months is no greater than 0.19 for unqualified work and 0.28 for qualified work experience.

¹⁹ These results are not reported but are available from the author.

Women overbid a similar applicant less often than men do, and if they do, they overbid by a smaller amount, as is clear from Table 4. On average, a woman who strictly overbids a similar candidate, whether they be a man or woman, overbids with 9 percent, while men do so by 13 percent. Yet with a gender-adjusted reference wage bid, women overbid a similar candidate to a larger extent than men do, and they do so by a higher amount on average. This emerges from the fact that when the reference wage takes gender into account, the reference wage for a female applicant is significantly lower than that of a male applicant due to the significant negative gender dummy in the reference wage regression. Therefore, more women have a ratio above 1. But again, among those who strictly overbid, women overbid similar male or female applicants by a lower amount as compared to men.

In Figure 1, the gender differences in overbidding are illustrated by the conditional distributions of overbidding using gender-adjusted reference wages. As men's distribution lies to the right of the women's distribution, it suggests a higher level of overbidding among the males, especially for high levels of overbidding. A non-parametric Kolmogorov–Smirnov test also rejects the hypothesis that the distributions are similar (p -value= 0.01). Considering the level of underbidding, we find the opposite pattern. If a man underbids a similar applicant, then he underbids by a higher level than women do, although the gender difference is not so large. In summary, women use competitive bargaining less often, and when they do, it tends to be of a lower magnitude.

D. Gender Differences in Successful Bargaining

How successful are the applicants? Summary statistics on bargaining success, that is, how much higher wage the applicant was offered relative to a reference wage offer, are reported in Table 5. First, we note that approximately 57 percent of both men and women obtained a higher wage offer than that explained by their wage-generating characteristics. However, the bargaining success of female applicants is lower than that of male applicants. Men are on average offered 5.3 percent higher wages following bargaining than a similar candidate, while the same return is 2.1 percent for women. Comparing only those who strictly succeeded, men have a 3.8 percent higher wage premium as compared to women. With a gender-adjusted reference wage offer, average differences by gender are lower in magnitude, but they are the same if we consider those applicants who strictly succeed.

E. Gender Differences in Successful Bargaining for a Given Competitive Strategy

However, what is the payoff for a given overbidding strategy in terms of successful bargaining? Due to heteroskedasticity concerns, we use two non-parametric regression models to estimate equation [4], that is, either a robust regression of iteratively re-weighted least squares or a quantile regression model. Moreover, if overbidding influences the conditional distribution of the bargaining success other than at the mean, a quantile regression model constitutes a superior way of describing the entire distribution as compared to OLS, see Koenker and Hallok (2001). Note that standard errors are obtained by bootstrap methods. The estimates of equation [4] are reported in Table 6. OLS results are estimated using robust standard errors.

The OLS estimates suggest that an applicant who overbids by a measure of 1 is offered a 1.006 points higher wage offer than that explained by their wage-generating characteristics. Moreover, there is no difference by gender. Yet, with a robust regression technique accounting for heteroskedasticity, we find that on average, females are less successful in their bargaining. Controlling for a gender difference in overbidding, gender differences in bargaining success are reduced but still present. By including an interaction term of being a female applicant and overbidding, we obtain interesting results. The effect of both being female and overbidding has a negative impact on the success rate; see column 4. It is not the fact of being female that reduces the wage offer, but larger overbidding is less rewarded if it comes from a female applicant. For example, assume that an applicant decides to overbid a similar applicant by 10 percent. If the applicant is female, this strategy is rewarded by an 11.7 percentage-point higher offered wage, while the equivalent for a male is 13.0 percentage-points. Hence the success rate of female applicants is 90 percent (11.7/13) of the success rate of male applicants. Similar results are obtained if we gender-adjust the wage offer and wage bids, as reported in columns 1 to 3 in Table 7.

F. Gender Differences in Successful Bargaining by Quantiles

Comparing the effect of overbidding at different quantiles of bargaining success, we first note that the effect is much larger in the 75th quantile as compared to the 25th quantile; see Table 6, columns 4 through 7. Thus, gender differences appear to be driven not among the least successful bargainers but among the more successful ones. In Figure 3, we also plot the predicted

differences of overbidding in the highest quantile as compared to the lowest quantile of bargaining success. Note that these differences are all significant at the 99 percent level.

Yet if we compare the median to the 75th quantile, we note that female overbidders are treated more negatively in the median group than among the most successful. There the interaction term and the gender dummy coefficients almost net out (0.082-0.083). Hence, differences in these groups are mainly explained by female applicants overbidding to a lesser extent on average. These results are also robust to a gender-adjusted specification; see columns 4 to 6 in Table 7.

Finally, in Table 8, we report estimates from a model in which overbidding is defined by the ratio of the wage bid to a gender-adjusted reference wage *offer*. This overbidding does not capture how much more the applicant asked for as compared to similar applicants but how much the applicant asked for in relation to what the employer is likely to offer. A high level of overbidding would suggest asking for more than what is expected, given the applicant's wage-generating characteristics. Hence, high overbidding could be considered competitive behavior against the employer. Gender differences in success rates are now higher, showing that women with a strong competitive behavior are less successful as compared to men who do the same. Quantile regressions further reveal that in response to competitive behavior both women in the median and the 75th quantile receive lower wage offers as compared to men.

G. Discussion

One explanation to these gender difference in payoff to a competitive strategy in wage bargaining may be associated with the gender differences in motivation and pay found in Agell and Bennmarker (2002). Although women enjoy a lower return from their bargaining and are thus less successful, employers may feel they will not respond by reducing their efforts to the same extent that men would.

The results also resemble experimental findings in Bolwes et al. (2007), in which simulated female applicants were less likely to be hired as compared to male applicants if they asked for a higher wage than that posted. Moreover, the willingness of employees to work with an applicant who had asked for a higher wage than the posted wage decreased for women but not for men.

Alternatively, the last result could suggest that women come up against a “glass ceiling” when the scope for bargaining or the use of competitive bargaining strategies is large despite having the same wage-generating characteristics as men who are successful in such strategies. Assuming that in higher-paying jobs or in high-profile jobs, employers allow for larger wage distributions, the results may also then parallel the results found in Albrecht et al. (2003) according to which the gender log wage gap in Sweden increases throughout the wage distribution and actually accelerates at the upper end of the distribution. Additionally, if the level of the wage bid is seen as a sign of unobservable productivity, the findings may suggest that employers find women’s signals to be less credible.²⁰

Consequently, if women are aware of the lower marginal gain from increasing their relative wage bid, the incentive to overbid in bargaining declines relative to men’s. Women would find themselves in a vicious circle, such that if they do not ask for higher wages they will not be given them. Hence incentives for self-promoting bargaining strategies may explain the finding that female wage bids are lower.

5 Concluding Remarks

Men’s and women’s choices and outcomes in the labor market differ along many dimensions. Differences in bargaining strategies may capture many of these disparities. For example, the use of self-promoting strategies may be necessary to influence the probability of being promoted. Alternatively, they may be necessary when applying for a better paid job.

The general conclusion to be drawn from this paper is that gender differences do exist in both wage-bargaining behavior and bargaining outcomes. It is found that women both ask for lower wages and receive lower counter-offers from employers. These results are robust to the inclusion of controls for individual- and employer-specific characteristics.

Gender differences were found in the use of competitive bargaining strategies. Women self-promoted less. First, if this arises due to self-perceived ability differences or self-

²⁰ Another explanation could of course be that men and women have an objective difference in ability such that women have worse university performance with lower grades. However, the empirical evidence suggests the opposite. In a report on all Swedish university graduates for 1995/1996, it is found that women had a higher performance score (number of credits achieved per semester) than men by 5 percent. If only looking at the social science majors, the gender difference was 6 percent. Moreover, 18 percent of the women compared to 12 percent of the men were found in the upper end of the high-school grade distribution, Statistics Sweden and the National Board for Higher Education (1998).

enhancement, then gender wage differentials may be exacerbated by individual wage bargaining to a greater extent than if the employer uses a wage-offer posting. Second, if the economic incentives are weaker for women as suggested by this study, then women may decide to choose occupations in which self-promotion or competition is less likely to be important.

As this study is unique, the results regarding individual wage-bargaining differences are striking but preliminary. Therefore, in view of the findings in this paper, a stronger focus on bargaining behavior, when assessing the different outcomes for men and women in the labor market, is a useful direction for future research.

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Figures

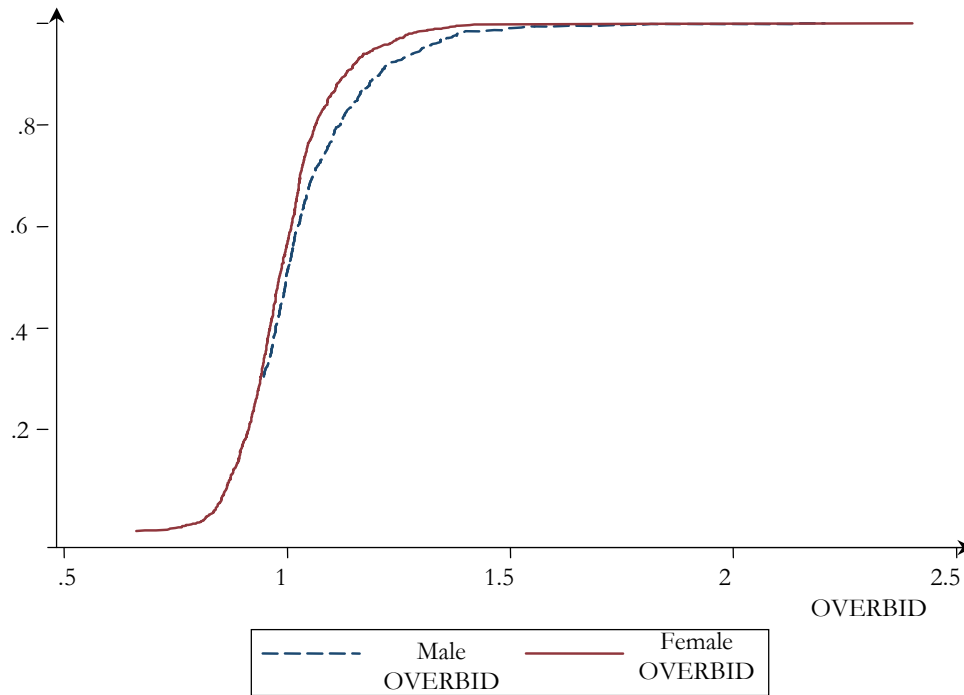


Figure 1 The Conditional Distribution of Overbidding for Men (dashed line) and Women (solid line).

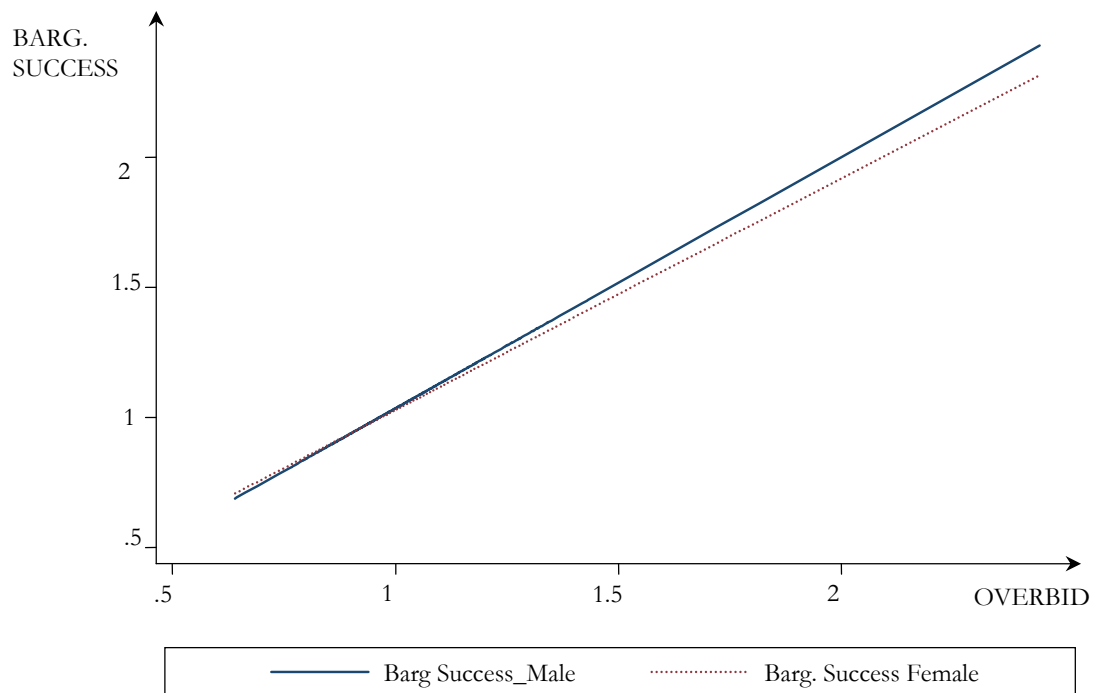


Figure 2 Gender Differences in Bargaining Success Conditional on Overbidding, following Robust Regression Estimates in Table 4

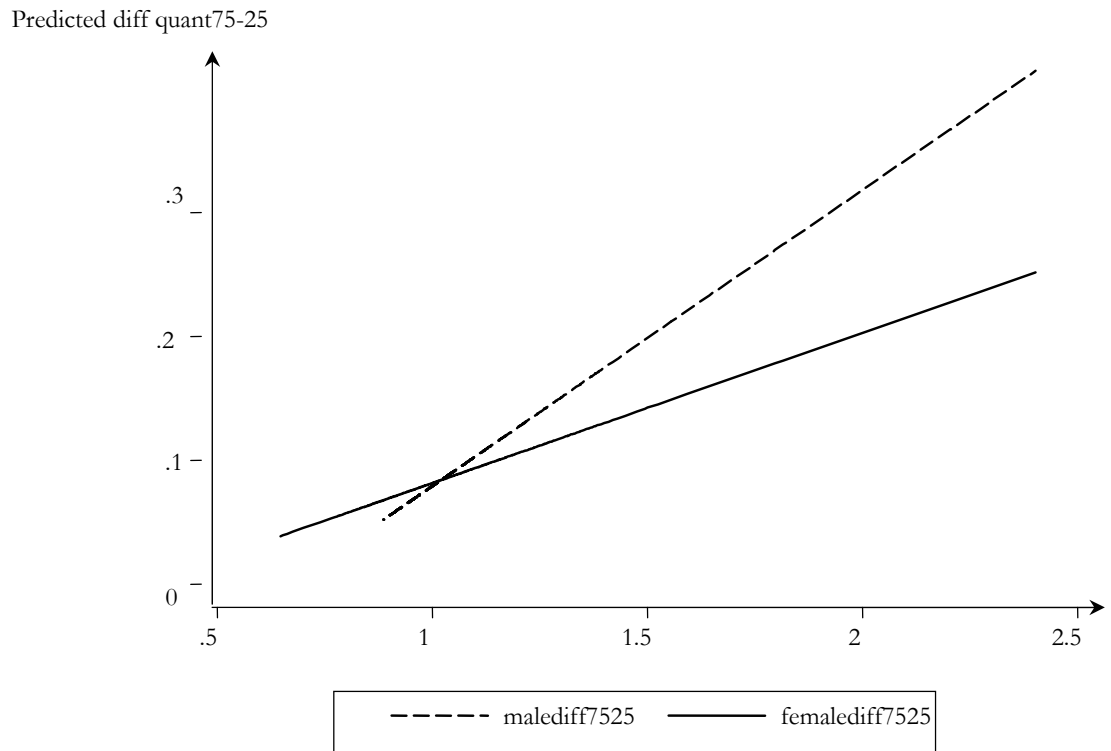


Figure 3 The Predicted Difference from Overbidding in the 75th Quantile Relative to Overbidding in the 25th Quantile for Men (dashed line) and Women (solid line) separately.

Tables

Table 1
Descriptive Statistics on Wage Bids and Wage Offers

	<i>Male</i>		<i>Female</i>		<i>Raw Gender Wage gap</i>
	Mean	St. dev	Mean	St. dev	
<i>Bargainers</i>					
Wage Bid (SEK)	19 31***	3 288.5	18 196	2 663.9	0.942
In. Wage Bid	9.85***		9.80		
<i>Bargainers</i>					
Wage Offers (SEK)	18 63*** ^a	3 311.1	17 517 ^a	2 560.2	0.938
In. Wage Offers	9.82***	9.76			
<i>Posted Wage</i>					
Wage Offers (SEK)	16 925***	2 964.1	16 047	2 337.6	0.948
In. Wage Offers	9.72***	9.67			
Observations	901	1222	812	1030	

Notes

Numbers in parentheses are standard deviations. ***/**/* denote statistical gender differences at the 1/5/10 percent levels respectively in a t-test of equal variance. a/b/c denote statistical difference between bargainers and non-bargainers at the 1/5/10 percent levels, respectively.

Table 2
Descriptive Statistics

	<u>Barg.Male</u>	<u>BargFemale</u>	<u>PWMale</u>	<u>PWFemale</u>
	Mean	Mean	Mean	Mean
MBA	47 % ** a	42 % ^a	40 % **	35 %
Law	9 % *** a	13 % ^a	29 % **	33 %
Comp.& System Science	27 % *** b	14 % ^a	17 % ***	10 %
Personnel Management	4 % *** a	10 % ^a	2 % **	7 %
Social Science	13 % ***	21 % ^a	11 % ***	16 %
Age	28.4 ***	27.5	28.0 ***	27.2
No work experience	58 % *** a	47 % ^a	68 % ***	59 %
Unqualified work exp	25 % *** a	35 % ^a	20 % ***	27 %
Qualified work experience	17 % ^a	17 % ^b	12 % *	14 %
Temporary†	22 % *** a	35 % ^a	40 % ***	48 %
Trainee	10 % *** a	7 % ^a	16 %	15 %
Metropolitan ††	69 %	66 % ^a	67 % ***	61 %
Search < 1 month‡	45 % ***	40 %	52 % ***	47 %
Search 1-3 months	16 %	15 %	19 %	21 %
Search 3-6 months	14 %	14 %	13 %	13 %
Search 6-9 months	9 % ***	14 %	8 %	9 %
Search > 9 months	15 % *	17 %	8 % **	10 %
Applied 1-5 jobs‡‡	53 % *	48 %	63 %	60 %
Applied 6-20 jobs	29 %	27 %	24 %	26 %
Applied 21-50 jobs	12 % **	17 %	9 %	9 %
Applied >50 jobs	6 %	8 %	4 %	5 %
Observations	901	1222	812	1030

Notes

“Barg” refers to those choosing a job involving individual wage bargaining and “PW” refers to those choosing a job with a posted wage. † Employment contracts are permanent or temporary (trial period, project basis or substitute contract.). ††. Metropolitan areas: Stockholm, Gothenburg and Malmo. ‡ Search <1 month includes individuals who received a job offer prior to graduation, who returned to same employer as before studying, and those who searched for less than a month. ‡‡ Only available for 1999. ***/**/* denote statistical gender differences at the 1/5/10 percent levels respectively in a t-test of equal variance. a/b/c denote statistical difference between bargainers and non-bargainers at the 1/5/10 percent levels, respectively.

Table 3
Regression Results of a Standard Mincer Wage Model for the Wage Bids and Wage offers

	<i>Dependent Variable: Wage Bids</i>				<i>Dependent Variable: Wage Offers</i>					
	Barg		Barg (1999)		All		Barg		PW	
Female	-0.029***	0.006	-0.035***	0.008	-0.027***	0.004	-0.032***	0.006	-0.026***	0.006
Law	-0.012	0.009	-0.013	0.013	-0.038***	0.006	-0.012	0.009	-0.035***	0.009
Comp & Sys. Science	0.051***	0.007	0.033***	0.011	0.072***	0.006	0.063***	0.008	0.079***	0.009
Personnel Man.	-0.028***	0.011	-0.039**	0.018	-0.022**	0.009	-0.021*	0.011	-0.037**	0.015
Social Science	-0.038***	0.008	-0.031***	0.011	-0.030***	0.006	-0.038***	0.008	-0.024**	0.010
Governmental Sector	-0.039***	0.007	-0.035***	0.010	-0.047***	0.005	-0.040***	0.007	-0.036***	0.008
Municipal Sector	-0.031***	0.010	-0.037***	0.014	-0.019**	0.009	-0.024**	0.011	-0.033**	0.016
Temporary contr.	-0.023***	0.006	-0.030***	0.009	-0.038***	0.005	-0.027***	0.006	-0.034***	0.007
Trainee	0.008	0.009	0.019	0.012	-0.008	0.006	0.007	0.010	-0.006	0.008
Metropolitan Area	0.060***	0.006	0.062***	0.008	0.065***	0.004	0.070***	0.006	0.059***	0.006
Age	0.014***	0.001	0.013***	0.001	0.011***	0.001	0.013***	0.001	0.006***	0.001
Unqual. Work Exper.	0.024***	0.007	0.042***	0.009	0.036***	0.005	0.037***	0.007	0.013*	0.007
Qualif. Work Exper.	0.087***	0.009			0.104***	0.006	0.113***	0.008	0.075***	0.009
Search 1-3 months	-0.017**	0.008	-0.016	0.011						
Search 3-6 months	-0.010	0.009	-0.003	0.013						
Search 6-9 months	-0.003	0.010	0.011	0.014						
Search >9 months	0.036***	0.009	0.046***	0.013						
Applied 6-20 Jobs			-0.039***	0.009						
Applied 21-50 Jobs			-0.042***	0.011						
Applied >50 Jobs			-0.060***	0.015						
Survey 2000	0.042***	0.006			0.045***	0.005	0.033***	0.006	0.055***	0.007
Constant	10.741***	0.069	10.704***	0.098	10.497***	0.056	10.657***	0.072	10.071***	0.084
R-squared	0.313		0.306		0.323		0.309		0.307	
Adjusted R-squared	0.307		0.293		0.320		0.304		0.302	
F-value	53.207		23.307		134.416		67.182		57.828	
Observations	2123		1022		3965		2123		1842	

Notes

Standard errors are in italics. All values are in SEK. ***/**/* denote statistical significance at the 1/5/10 percent levels respectively. Barg” refers to those choosing a job involving individual wage bargaining and “PW” refers to those choosing a job with a posted wage. For a variable description, see Table 2.

Table 4
The Distribution of Overbidding or Competitive Bargaining Strategies

	<i>All</i>		<i>Male</i>		<i>Female</i>	
	Mean	St. dev	Mean	St. dev	Mean	St. dev
Overbid	1.008	0.131	1.024***	0.146	0.996***	0.116
Overbid < 1	0.924	0.056	0.925	0.058	0.924	0.056
Percentage	54 %		51 %		57 %	
Overbid > 1	1.108	0.123	1.130***	0.137	1.090***	0.107
Percentage	46%		49 %***		43 %***	
Overbid F	1.008	0.130	1.011***	0.144	1.027	0.122
Overbid F < 1	0.925	0.057	0.920**	0.059	0.928**	0.055
Percentage	55%		56 %		53 %	
Overbid F > 1	1.108	0.121	1.129***	0.137	1.094***	0.108
Percentage	45 %		44 %*		47 %*	

Notes

Mean Overbid, which is defined as the ratio of the wage bid and a reference wage bid predicted for each individual using the same controls as in Table 3 column 1, except for the gender dummy. Overbid|F is defined as the ratio of the wage bid and a reference wage bid predicted for each individual using the same controls as in Table 3 column 1 including a gender dummy. ***/**/* denote a statistically significant gender difference at the 1/5/10 percent levels, respectively.

Table 5
The Distribution of Successful Bargaining

	<i>All</i>		<i>Male</i>		<i>Female</i>	
	Mean	St. dev	Mean	St. dev	Mean	St. dev
Barg. Success	1.034	0.140	1.053***	0.158	1.021***	0.123
Barg. Success > 1	1.117	0.127	1.138***	0.150	1.100***	0.103
Percentage	57 %		60 %***		55 %***	
Barg. Success < 1	0.925	0.058	0.930	0.057	0.922**	0.060
Percentage	43%		40 %		45 %	
Barg. Success F	1.034	0.139	1.040*	0.156	1.030*	0.122
Barg. Success F > 1	1.118	0.126	1.137***	0.150	1.105***	0.104
Percentage	56 %		54 %		58 %	
Barg. Success F < 1	0.925	0.057	0.927	0.150	0.926	0.060
Percentage	44 %		46 %		42 %*	

Notes

Mean Barg. Success, which is defined as the ratio of the wage offer and a reference wage offer predicted for each individual using the same controls as in Table 3 column 4, except for the gender dummy. Barg. Success |F is defined as the ratio of the wage offer and a reference wage offer predicted for each individual using the same controls as in Table 3 column 4 including a gender dummy. ***/**/* denote a statistically significant gender difference at the 1/5/10 percent levels, respectively.

Table 6
The Bargaining Payoff to Overbidding a Reference Wage Bid

	<i>Dependent Variable: Bargaining Success</i>						
	Robust reg	Robust reg	Robust reg	OLS	25 th Quantile	50 th Quantile	75 th Quantile
Female	0.044 (0.037)	0.044 (0.037)	-0.005*** (0.003)	0.068*** (0.021)	-0.038 (0.025)	0.043* (0.025)	0.082*** ^A (0.022)
Fem*Overbid	-0.050 (0.038)	-0.050 (0.038)		-0.073*** (0.021)	0.035 (0.025)	-0.052** (0.024)	-0.083*** ^A (0.022)
Overbid	0.936*** (0.033)	0.936*** (0.033)	0.926*** (0.008)	0.968*** (0.014)	0.808*** (0.017)	0.943*** (0.017)	1.047*** ^A (0.017)
Constant	0.094*** (0.033)	0.094*** (0.033)	0.107*** (0.011)	0.065*** (0.015)	0.181*** (0.018)	0.096*** (0.017)	0.022 ^A (0.017)
Pseudo R-sq					0.3884	0.4628	0.5455
R-squared	0.727	0.727					
F-value	1027.51	1027.51	3978.12	2716.0			
p-value	0.000	0.000	0.000	0.000			
Observations	2123	2123	2123	2123	2123	2123	2123

Notes

Robust standard errors are in parentheses. ***/**/* denote statistical significance at the 1/5/10 percent levels, respectively. A indicates a statistically significant difference between the 75th and 25th quantile at the 1 percent level. The dependent variable is the bargaining success defined as the ratio of the offered wage and a predicted reference wage offer, using the same control variables as in Table 3, column 3, except for the gender dummy. Overbid is defined as the ratio of the wage bid and a reference wage bid predicted for each individual using the same controls as in Table 3, column 1, except for the gender dummy.

Table 7
The Bargaining Payoff to Overbidding a Gender-adjusted Reference Wage Bid

	<i>Dependent Variable: Bargaining Success/F</i>						
	OLS	Robust reg	Robust reg	Robust regr	25 th Quantile	50 th Quantile	75 th Quantile
Female	0.048 (0.037)	-0.004 (0.005)	-0.004* (0.002)	0.069*** (0.021)	-0.047* (0.025)	0.052** (0.026)	0.077*** ^A (0.022)
Fem*Overbid F	-0.053 (0.038)			-0.075*** (0.021)	0.045* (0.025)	-0.061** (0.026)	-0.079*** ^A (0.024)
Overbid F	0.937*** (0.033)		0.924*** (0.011)	0.967*** (0.014)	0.806*** (0.017)	0.946*** (0.018)	1.044*** ^A (0.017)
Constant	0.093*** (0.032)	1.017*** (0.004)	0.108*** (0.011)	0.066*** (0.015)	0.183*** (0.018)	0.093*** (0.019)	0.026 ^A (0.017)
Pseudo R-sq					0.3861	0.4603	0.5395
R-squared	0.727						
F-value	1002.56	0.78	3853.07	2625.62			
p-value	0.000	0.3775	0.000	0.000			
Observations	2123	2123	2123	2123	2123	2123	2123

Notes

Robust standard errors are in parentheses. ***/**/* denote statistical significance at the 1/5/10 percent levels, respectively. ^A indicates a statistically significant difference between the 75th and 25th quantile at the 1 percent level. The dependent variable is the bargaining success defined as the ratio of the offered wage and a predicted reference wage offer, using the same control variables as in Table 3, column 3, including the gender dummy. Overbid|F is defined as the ratio of the wage bid and a reference wage bid predicted for each individual using the same controls as in Table 3 column 1, including the gender dummy.

Table 8
The Bargaining Payoff to Overbidding a Reference Wage Offer

	<i>Dependent Variable: Bargaining Success</i>						
	OLS	Robust regr	Robust reg	Robust reg	25 th Quantile	50 th Quantile	75 th Quantile
Female	0.057 (0.036)	0.004 (0.005)	-0.010** (0.003)	0.089*** (0.020)	-0.002 (0.027)	0.058*** (0.025)	0.073*** ^A (0.021)
Fem*Overbid2	-0.065* (0.035)			-0.097*** (0.019)	-0.005 (0.026)	-0.066*** (0.020)	-0.080*** ^A (0.020)
Overbid2	0.901*** (0.030)		0.900*** (0.010)	0.954*** (0.013)	0.796*** (0.017)	0.923*** (0.014)	1.027*** ^A (0.015)
Constant	0.099*** (0.030)	1.017*** (0.004)	0.103*** (0.010)	0.048*** (0.014)	0.168*** (0.017)	0.084*** (0.015)	0.008 ^A (0.016)
Pseudo R-sq					0.3945	0.4728	0.5578
R-squared	0.729	0.030	0.804	0.809			
F-value	959.754	0.779	4347.081	2988.97			
p-value	0.000	0.377	0.000	0.000			
Observations	2123	2123	2123	2123	2123	2123	2123

Notes

Robust standard errors are in parentheses. ***/**/* denote statistical significance at the 1/5/10 percent levels, respectively. A indicates a statistically significant difference between the 75th and 25th quantile at the 1 percent level. The dependent variable is the bargaining success defined as the ratio of the offered wage and a predicted reference wage offer, using the same control variables as in Table 3, column 3, except for the gender dummy. Overbid2|F is defined as the ratio of the wage bid and a reference wage offer predicted for each individual using the same controls as in Table 3, column 4, excluding the gender dummy.

Table 9
The Bargaining Payoff to Overbidding a Gender-Adjusted Reference Wage Offer

	<i>Dependent Variable: Bargaining Success F</i>						
	Robust regr	Robust reg	Robust reg	OLS	25 th Quantile	50 th Quantile	75 th Quantile
Female	0.004 (0.005)	-0.010** (0.003)	0.089*** (0.020)	0.057 (0.036)	-0.002 (0.027)	0.058*** (0.025)	0.073*** ^A (0.021)
Fem*Overbid2 F			-0.097*** (0.019)	-0.065* (0.035)	-0.005 (0.026)	-0.066*** (0.020)	-0.080*** ^A (0.020)
Overbid2 F		0.900*** (0.010)	0.954*** (0.013)	0.901*** (0.030)	0.796*** (0.017)	0.923*** (0.014)	1.027*** ^A (0.015)
Constant	1.017*** (0.004)	0.103*** (0.010)	0.048*** (0.014)	0.099*** (0.030)	0.168*** (0.017)	0.084*** (0.015)	0.008 ^A (0.016)
Pseudo R-sq					0.3945	0.4728	0.5578
R-squared	0.030	0.804	0.809	0.729			
F-value	0.779	4347.081	2988.97	959.754			
p-value	0.377	0.000	0.000	0.000			
Observations	2123	2123	2123	2123	2123	2123	2123

Notes

Robust standard errors are in parentheses. ***/**/* denote statistical significance at the 1/5/10 percent levels, respectively. A indicates a statistically significant difference between the 75th and 25th quantile at the 1 percent level. The dependent variable is the bargaining success defined as the ratio of the offered wage and a predicted reference wage offer, using the same control variables as in Table 3, column 3, including for the gender dummy. Overbid2|F is defined as the ratio of the wage bid and a reference wage offer predicted for each individual using the same controls as in Table 3, column 4, including the gender dummy.

Appendix Table 1

The Bargaining Payoff to Overbidding a Reference *Wage Bid* for Men and Women Separately

	<i>Dependent Variable: Bargaining Success</i>							
	25 th Quantile	50 th Quantile	75 th Quantile	OLS	25 th Quantile	50 th Quantile	75 th Quantile	OLS
Overbid	0.851*** (0.021)	0.885*** (0.017)	0.965*** ^A (0.013)	0.884*** (0.017)	0.806*** (0.023)	0.946*** (0.017)	1.044*** ^A (0.022)	0.937*** (0.018)
Constant	0.136*** (0.021)	0.145*** (0.018)	0.103*** (0.014)	0.141*** (0.017)	0.183*** (0.024)	0.093*** (0.017)	0.026 (0.023)	0.093*** (0.019)
Pseudo R-sq	0.3856	0.4389	0.5056		0.3854	0.4840	0.5733	
R-squared				0.697				0.744
F-value				2802.526				2618.993
p-value				0.000				0
Observations	1222	1222	1222	1222	901	901	901	901

Notes

Robust standard errors are in parentheses. ***/**/* denote statistical significance at the 1/5/10 percent levels, respectively. A indicates a statistically significant difference between the 75th and 25th quantile at the 1 percent level. The dependent variable is the bargaining success defined as the ratio of the offered wage and a predicted reference wage offer, using the same control variables as in Table 3, column 3. Overbid is defined as the ratio of the wage bid and a reference wage bid predicted for each individual using the same controls as in Table 3, column 4.