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Gender at work: Incentives and self-sorting

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ABSTRACT

This paper analyses the relationship between workers' gender and monetary incentives in an experimental setting based on a double-tournament scheme. The participants must choose between a piece-rate payment or a performance prize. The results show that women fail to reveal their type, and are less sensitive than men to the monetary incentives of the tournament. In addition, the tournament scheme induces males, but not females, to signal their ability and to select the contract which is more profitable for them.

1. Introduction

The gender pay gap is a widespread and well known phenomenon (Castagnetti and Rosti, 2009). Generally people tend to explain it as a matter of discrimination *tout court*: since it is well-known that the most of societies are chauvinist, then the women's treatment is worse than men's *ceteris paribus*. Of course this can be (and in fact is) an explanation of the phenomenon; however there can be other reasons why it exists and persists. In this article I would like to present a different (although partial) explanation: I argue that the gender pay gap may originate from gender-specific preferences. Indeed, some indications supporting this claim may be found in some part of the extant experimental literature, which shows the existence of some behavioural and attitudinal differences between men and women with respect to competition. Since wages depend on individual performances in competitive environments, these differences may help explaining the observed gender gap. However, while on the one hand some studies find that women shy away from competition (Niederle and Vesterlund, 2007); on the other hand, other scholars do not find such an evidence (Ivanova-Stenzel and Kübler, 2011). However, the way people (workers in particular) react to competition and their attitudes towards it are likely (at least partially) responsible for wage differentials. If in competitive environments wages include a prize for good performances, then workers who engage more in competitive environments may earn more than workers who prefer less competitive contracts. Therefore, should the women shy away from competition, this phenomenon would (partially) explain the wage gender gap, also in absence of gender discrimination. Women would just forgo higher salaries in order to obtain the preferred "contract".

This paper employs a double tournament setting to study 1) whether men and women differ in their preferences for competition, 2) whether people who reveal a preference for competing in a tournament actually perform better than those who prefer a non-competitive framework, and 3) whether people who choose to play a tournament but end in a non-competitive setting perform better than those who reveal a distaste for competition. In order to investigate these three points, I run an experiment in which the subjects must perform a boring task; the remuneration for the task is either piece-rate or based on the ranking in a tournament (as in Niederle and Vesterlund, 2007). People bid on which type of "contract" they desire to work under, by stating their preference in a sealed-envelope auction, and then they actually start to work (see Section 3 for further details).

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The choice between two contracts, one of which prizes productivity more than the other, depends also on the ability of the individual. The more one feels to be skilled, the more he should prefer the prizing scheme. I assume that ability is private information of the workers, and that a potential employer cannot observe ability of applicants. A possible way to screen them and to disentangle the more and the less productive could be offering them the choice between two contracts. The first pays a piece-rate wage, while the second prizes the performance, making the workers play a sort of tournament: at the end, the best contestants will get a salary, which is higher than that they would have obtained under the piece-rate scheme. Assuming risk neutrality, to maximise the final wage, high-ability workers should therefore choose the second contract, while the others should choose the first. The individual choice may therefore be assumed as a sort of signalling of the "quality" of the worker: the employer elicits the applicants to reveal their ability. Of course, productivity prizes are also likely to foster the workers' effort.

The results of the experiment reveal that women 1) do not perform significantly better in a competitive environment (whereas men do),[1] 2) are much less sensitive than men to the incentives of competition. Moreover, 3) the participants' preferences for a given payment scheme are a signal (to a potential employer) of their job performance (although it is not possible to assess if this is due to ability, to effort or to both). These results answer also the questions raised before in this section. In particular, we can observe that women tend to prefer non-competitive to competitive work environments, while the opposite holds for men. Similarly, only the men, who declared to prefer competitive payment schemes perform better than the men who did not, while the women liking competition and those disliking it show the same performance. Finally, the women who chose the tournament and ended in the non-competitive environment did not perform differently from the women who, disliking competition, obtained to work in non-competitive environments. For men, the opposite result holds: the men who like competition, but were assigned the non-competitive scheme, perform anyway better than the men who chose and obtained the non-competitive contract.

2. Related literature

Croson and Gneezy (2009) survey several empirical and experimental works to conclude that men and women have different preferences in several domains, one of which is competition. According to some scholars, women would prefer less competition than men do. Niederle and Vesterlund (2007) find two factors explaining why men tend to enter tournaments more often than women: firstly, men are more overconfident than women (see also Bengtsson, Persson and Willenhag, 2005) and, secondly, men are more likely to prefer a competitive work environment than women.[2] In line with these results, also Kleinjans (2009) and Fletschner, Anderson and Cullen (2010) find that women tend to "shy away" from competition. In particular, Fletschner et al. (2010) observe that women in Central Vietnam self-select in economic activities characterised by low returns to avoid competitive markets. In other words, this shows that women are willing to forgo higher wages to work under the preferred conditions. The experimental setting of Niederle and Vesterlund (2007) offers two payment schemes to the participants: these have to perform given (mathematical) tasks under either a non-competitive or a competitive (so-called "tournament") rule. In the former case, they receive a piece-rate payment for each task solved; in the latter, only the best performer of each group gets paid a given sum for each correct computation. The unit payment under the tournament rule is thus much higher than the unit payment under the piece-rate scheme; as a consequence, high-ability players have an incentive to choose the tournament. In a different experiment by Schwieren and Weichselbaumer (2010), women perform significantly worse than men in a competitive environment.

Nevertheless, other studies present different results. Gneezy, Niederle and Rustichini (2003), Gneezy and Rustichini (2004) and Price (2008) observe that, when people are operating in mixed-gender groups, competition increases the performance of male subjects,[3] while that of the females stays the same; on the other hand, women's performance does indeed improve when the competitors are all female. These findings do not appear to hold when the competition is between teams rather than individuals. Ivanova-Stenzel and Kübler (2011) find that, when the competition is between same-gender groups, men perform significantly better than females,[4] but, again, when mixed-gender teams compete against each other no gender effect is detectable.[5] Furthermore the authors observe that "the composition of the team has no significant effect on the performance of each gender for a given incentive scheme".[6] In matrilineal societies women do not shy away from competition and show behaviours in line with males' in patriarchal societies (Gneezy, Leonard and List, 2009; Gong and Yang, 2012). Moreover women tend to be loss-averse (Brooks and Zank, 2005). Vandegrift and Yavas (2009)[7] show that while women initially perform significantly worse than men, later there is little gender-related difference in performance under certain conditions and when the competition involves the repetition of a task (game).

In the experimental setting presented in this paper, where the applicants to a job express their preferences over two different contracts, self-confidence (i.e. the self-valuation of own abilities) plays a crucial role. In particular, Santos-Pinto (2012) proposes a theoretical model, whose conclusion is that women will earn less than men if the former are less self-confident than the latter (i.e. women are underconfident, whereas men are overconfident). Empirical evidence (Bengtsson et al., 2005; Niederle and Vesterlund, 2007) shows that this may occur. In

[1] It must be noted that in other contexts (such as in school) females usually perform better than males. However Lindo, Sanders and Oreopoulos (2010) find that academic probation at the end of the first year doubles the probability of dropping out for males, but not for women. This evidence is in accordance with that in this paper. Assuming my results, indeed I can propose the following interpretation. Let us assume that there are two types of students: of good (g) and of bad (b) quality. Now, when studying male students put an effort (E) which corresponds to their type; hence $E_{mg} > E_{mb}$. They do so, because they know that students of good type will find anyway jobs better remunerated than theirs. On the other hand, women do not respond to the monetary incentive in the job markets, but care for performing the best when assigned a task, independently of their type (even if they know their type). Hence, the difference $E_{fg} - E_{fb}$ should be lesser than the difference $E_{mg} - E_{mb}$, leading average higher marks for females than for males. Sabry (2010) finds that men's job satisfaction is positively affected by an increase in the salary, while women's is not. The author's results suggest that while men are more gratified than women by money, the latter are more gratified than the former by the attainment of a non monetary goal. Both the results of the economics of education literature and of my paper are in line with this.

[2] Nekby, Thoursie and Vahtrik (2008) show that (over)confidence pays off in terms of the results in competitive races; however, this result is not conclusive, as in some environments an excess of confidence can be detrimental for performance (Biais et al., 2005; Sjögren Lindquist and Säve-Söderbergh, 2009).

[3] See also Günther et al. (2010), who find the same results but highlight that this happens only when the task is culturally viewed as a "male task". When this is culturally neutral (i.e., it is not perceived as "male" or "female"), competition increases the performance of both genders. Apparently women do not dislike competition *per se*, but dislike to compete against men.

[4] However there could be some nurture effect that explains this result: Booth and Nolen (2012) find that women educated in all-female schools (where they are used to competing only against other females) are as competitive as men when examined in the framework of a field quasi-experiment, but men are more competitive than women educated in mixed-gender schools, where they are used to also dealing with people of the opposite sex.

[5] This means that, in this case, either competition is less important as a motivation, or the benefits from competing are offset by the composition of the team. In either case, this may explain why men tend to prefer individual competition to team-based competition (Dargnies, 2011).

[6] Ivanova-Stenzel and Kübler (2011, p. 17).

[7] See also Cotton, McIntyre and Price (2010).