



Gender differences in tournament and flat-wage schemes: An experimental study



David Masclet ^{a,b,*}, Emmanuel Peterle ^c, Sophie Larribeau ^a

^a Department of Economics, University of Rennes 1, France

^b CIRANO, Montreal, Canada

^c Chair of microeconomics, University of Göttingen, Germany

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ABSTRACT

We present a new experiment that explores gender differences in both performance and compensation choices. While most of the previous studies have focused on tournament vs. piece-rate schemes, the originality of our study consists in examining the gender gap in the context of a flat wage scheme. Our data indicate that females exert a significantly higher effort than men in fixed payment schemes. We find however no gender difference in performance under the tournament scheme, due to a combination of two effects. On the one hand, men more significantly increase their effort when switching from a flat wage to a tournament scheme. On the other hand, when switching from the flat wage to a tournament scheme, women have less margin to increase performance since their effort was already relatively high with a flat wage. We also find that females are more likely than males to choose a flat-wage scheme than a tournament. This gap however narrows dramatically when feedback on previous experience is provided.

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1. Introduction

Throughout the world, in a range of contexts involving businesses and governments, relatively few women hold top positions. Using data from a large panel of U.S. firms, [Bertrand and Hallock \(2001\)](#) reported that women held only 2.5% of the highest-paid executive posts. According to the Corporate Gender Gap Report (2010), published by the World Economic Forum, women occupied 14% of the seats on American Boards of Directors ([Zahidi & Ibarra, 2010](#)). Traditional explanations for the labor market gender gap focus on either differences in abilities (see, for instance, [Gneezy, Niederle, & Rustichini, 2003](#)) or discrimination in the workplace (see [Altonji & Blank, 1999](#) for an overview).

Recent developments in experimental economics have explored whether gender differences in individual or social preferences might also explain some of this gender gap (see [Croson & Gneezy, 2009](#) for an overview). Special attention has been

* Corresponding author at: Department of Economics, University of Rennes 1, France.

E-mail addresses: david.mascllet@univ-rennes1.fr (D. Masclet), epeterl@uni-goettingen.de (E. Peterle), sophie.larribeau@univ-rennes1.fr (S. Larribeau).

devoted to the role played by gender differences in attitudes toward competition through games in which participants are asked to choose between a tournament and a piece-rate scheme (Datta Gupta, Poulsen, & Villeval, 2013; Gneezy & Rustichini, 2004; Gneezy et al., 2003; Niederle & Vesterlund, 2007; Vandegrift & Brown, 2005). Most of these studies report that women shy away from competition while men are more eager to choose the tournament scheme.¹ Other studies have investigated whether males and females perform differently in competitive environments. The evidence regarding gender differences in performance within competitive environments however is less clear-cut. Though some studies observe that males tend to outperform females under competitive schemes (e.g. Gneezy & Rustichini, 2004; Gneezy et al., 2003; Shurchkov, 2012), others conclude no significant gender difference (Günther, Arslan Ekinici, Schwieren, & Strobel, 2009; Niederle & Vesterlund, 2007). A possible reason to explain these opposite findings is that the nature of the task may matter, males being more motivated to outperform when the tasks are “stereotypical-male tasks” (Günther et al., 2009).

In this paper, we attempt to contribute to the existing literature by experimentally investigating gender differences in both performance and remuneration choice between a flat-wage scheme and a tournament. More specifically, our contribution to the literature is threefold.

A first contribution of our study is to investigate gender differences in performance under a fixed-payment setting. While most of the existing literature has focused on gender gap in tournaments or piece rates, less is known regarding gender differences under flat wages. To the best of our knowledge, no previous study has investigated gender differences in performance in the context of an experiment with a fixed-payment scheme. This relatively minor interest in flat wage is surprising since such schemes are prevalent across a number of firms and institutions (e.g. Bartling & von Siemens, 2010; Franceschelli, Galiani, & Gulmez, 2010).²

Second, we revisit previous studies by investigating gender differences in performance under a tournament scheme. Indeed, as noted above, previous results concerning the existence of a gender gap in performance under a tournament scheme are mixed. It is thus important to replicate previous findings and in particular to test whether observed differences are robust to the nature of the task. This is done here by investigating whether there exists a gender gap in performance under a competitive environment in the context of a new original task that consists in decoding sets of numbers into letters from a grid of letters (Charness, Masclet, & Villeval, 2014).³

A third contribution of our paper is to explore gender differences in flat-wage entry with a tournament as an alternative. This sharply contrasts with the existing literature which has almost exclusively focused on piece-rate vs. tournament schemes. One notable exception is Dohmen and Falk (2011), who also investigated flat-wage entry with a tournament scheme as an alternative. Our paper differs however from theirs in several ways. First, while Dohmen and Falk (2011) concentrated on the issue of productivity sorting, here we abstract from this issue by imposing a remuneration scheme in some of our treatments. This allows us to examine gender differences in greater detail not only in terms of remuneration choice but also in terms of performance. Second, our design allows us to test whether feedback on performance affects gender gap with respect to flat-wage entry. This is done by asking players to choose between the two remuneration schemes, both before and after gaining experience with them.

Our experiment consists of three treatments. In the first treatment, called *exogenous tournament*, each participant is matched with a counterpart to form a pair and then asked to perform a decoding task in a tournament setting where the winner receives a monetary prize. The second treatment (*exogenous flat wage*) is similar to the first treatment, except for the fact that participants in each pair are paid the same fixed wage, irrespective of their performance. To study gender differences in selecting one's preferred compensation scheme, we also conduct a third treatment (*choice*), in which participants are asked to choose between a flat wage and a tournament, with the knowledge that their preferred scheme will be the one implemented. The comparison between these various treatments allows us to investigate the gender difference existing in both performance and choice of remuneration scheme.

To anticipate our findings, we observe that: (i) women exert significantly more effort than men under a flat-wage scheme; (ii) although men raise their level of effort when switching from a flat wage to a tournament to a far greater extent, we find no gender difference in performance under the tournament scheme; (iii) females are less likely to enter into competition; and (iv) the gender gap is significantly reduced with performance feedback.

The remainder of our paper is organized as follows. Section 2 describes the experimental design and procedures. Section 3 then discusses the behavioral hypotheses proposed for evaluation. Results from the different treatments are reported in Section 4. Finally Section 5 discusses our main findings and Section 6 concludes the paper.

¹ Going one step further, some studies have investigated the determinants of gender differences in tournament entry, by focusing on the roles played by: risk aversion and self-confidence (e.g. Datta Gupta et al., 2013; Niederle & Vesterlund, 2007), other-regarding preferences (e.g. Balafoutas, Kerschbamer, & Sutter, 2012; Bartling, Fehr, Maréchal, & Schunk, 2009; Teyssier, 2008), personality traits (Müller & Schwieren, 2012), or pure distaste for a competitive environment (Niederle & Vesterlund, 2007). Another branch of the literature has sought to separate the respective roles of nature and nurture in order to explain these gender differences in attitude toward competition. This issue has led some economists to extend experiments in the field with younger participants (e.g. Dreber, Von Essen, & Ranehill, 2014; see also Niederle & Vesterlund, 2010 for a relevant discussion).

² Several factors may explain the persistence of flat-wage schemes within firms, in particular in the public sector; these include: the role of egalitarian concerns (Bartling & von Siemens, 2010; Ding, Ge, & Warner, 2001), job security and intrinsic motivation for public service that may compensate for the quite small and relatively flat extrinsic incentives the sector offers (Georgellis, Iossa, & Tabvuma, 2011).

³ To some extent, the decoding task may appear more neutral than other tasks used in previous studies, in particular multiplying one-digit numbers by two-digit numbers. We acknowledge however that determining whether a particular task is more or less neutral is difficult, to some extent somewhat arbitrary and is still open to debate.

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