GENDER AT WORK: INCENTIVES AND SIGNALLING

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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.

Keywords: gender, incentives, work, experiment.

JEL Classification codes: C91, J16, J41

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1. Introduction

The gender pay gap is a widespread and well known phenomenon. 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. Indeed some studies find that women are more risk averse than men (Arch, 1993; Powell and Ansic, 1997; Fehr-Duda et al., 2006 and Eckel and Grossman, 2008), while others indicate that women are willing to assume as much risk as men when the payoff is high (Holt and Laury, 2002), confirming similar results by other authors (Master and Meier, 1988; Eckel and Grossman, 2002; Harbaugh et al., 2002; Atkinson et al., 2003; Moore and Eckel, 2003), and, since in general risk is remunerated, this might explain (part of) the gender pay gap.

Overall, these results imply that in a market-oriented, competitive and "patriarchal"[1] society, women's attitudes towards competition may be different from those of men, and this, in the end, can help to explain the gender pay gap. Moreover Gneezy et al. (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[2], 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 involves teams rather than individuals. Ivanova-Stenzel and Kübler (2008) find that, when the competition is between same-

[1] I.e. non matriarchal (Gneezy et al., 2009).

[2] See also Günther et al. (2008), 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.

gender groups, men perform significantly better than females[3], but when mixed-gender teams compete against each other no gender effect is detectable[4] and "the composition of the team has no significant effect on the performance of each gender for a given incentive scheme"[5]. Moreover, competition entails the possibility of incurring losses which can be either relative or absolute or both, and women tend to be loss- averse (Brooks and Zank, 2005). 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 et al., 2005) and, secondly, males and females actually differ in their preferences for performing in a competition[6]. In line with these results, also Kleinjans (2009) and Fletschener et al. (forthcoming) find that women tend to "shy away" from competition. The experimental setting of Niederle and Vesterlund (2007) offers participants two payment schemes: they have to perform a given task (namely solving mazes) under either a non-competitive or a competitive (or so-called "tournament") rule. In the former case, they receive a piece-rate payment for each maze solved; in the latter, only the best performer of each group gets paid a given sum for each maze solved. 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.

[3] However there could be some nurture effect that explains this result: Booth and Nolen (2009) 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.

[4] 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, 2009).

[5] Ivanova-Stenzel and Kübler (2008), p. 17.

[6] Nekby et al., (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 and Sjögren Lindquist and Säve-Söderbergh, 2009).

Evidence from another study shows 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) (Vandergrift and Yavas, 2009)[7]. In a different experiment by Schwieren and Weichselbaumer (2010), women perform significantly worse than men in a competitive environment (and try to overcome the problem by cheating the experimenter).

The literature provides a number of explanations for why women and men tend to evaluate competition differently; in particular, the difference is not likely to be merely genetic[8]. Investigation of potential biological/environmental factors for the gender differences observed is not among the aims of this work.

[7] See also Cotton et al. (2010).

[8] Brown and Taylor (2000) and Croson and Gneezy (2009)[8] conclude that females are more sensitive than men to the context in which they operate. This may depend on several causes, for instance women are more vulnerable to stress (Li et al., 2006), have a lower valuation of earnings than men (Kanazawa, 2005; Walker, 2006), prefer to spend time in child caring (see for example Joy, 2006), prefer activities involving social values rather than competition (Sirard et al., 2006), have different expectations than men regarding working conditions (Sousa-Poza and Sousa-Poza, 2007), are differently sensitive than men to reference points (Rizzo and Zeckhauser, 2007 and Da Costa et al., 2008), have different preferences than men for the same jobs (Rosenbloom et al., 2008), have different beliefs than men about the strategic behaviour of others (Castillo and Cross, 2008 and Aguiar et al., 2009), are more sensitive than men to the stakes of the game (Antonovics et al., 2009)[8] and, at least at young ages, are more subject to hormonal cycles (Buser, 2009). In addition, different gender-specific traits of personality can help to explain differences in behaviour (Semykina and Linz, 2007). Some authors (Gjerberg, 2002; Atkinson et al., 2003) argue that the stereotypes of a specific culture can be partially responsible for gender-based differences in behaviour in some specific contexts. Finally, Gneezy et al. (2009) find that women from matrilineal societies are more competitive than men from the same societies, thus providing strong support for the context-specific hypothesis.

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 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 the next section for further details). The study presented here differs from Niederle and Vesterlund (2007) under some major aspects; firstly auctioning the contracts allows for evaluating how strong players' preferences are. Consequently it is possible to evaluate each player's degree of overcofidence (if any) more precisely than in the previous studies. Secondly the players can play only under the rules of one contract, hence their choice must be accurate, as they can not hedge as they can, to some extent, in Niederle and Vesterlund (2007)[9]. Thirdly, if people are rational, their bids for the preferred contract should mirror their subjective expected position in the ability rank, under the veil of ignorance. Moreover we can also observe the behaviour of those who would have liked to compete, but who ended up playing under the piece-rate contract (and vice versa). This was, to some extent, possible also in Niederle and Vesterlund (2007), but with some crucial differences: in Niederle and Vesterlund (2007) the players first play under a given rule, and only then are given the possibiliy of choosing a contract; in this paper the choice is made *ex ante* and can not be undone. Actually people who go on the job market for their first time are not familiar with their relative position in the ability ranking, hence the procedure used in this paper mirrors the real world better than Niederle and Vesterlund (2007) and allows for more realistic insights about the

[9] Notice that, when hedging is possible, players (and not only those who are overconfident) have more incentives to gamble than they have when hedging is not possible.

behaviour of those who enter the job market for the first time. The fact that some players did not obtain their preferred contract allows for testing whether the preference for a given payment scheme reveals some information about the potential performance of the subject. This can be verified by comparing the actual performance of those who obtained the contract of their choice to the performance of players who were assigned a contract they did not choose.

The results of the experiment reveal that women 1) do not perform significantly better in a competitive environment (whereas men do)[10], 2) are much less sensitive than men to the incentives of competition and 3) tend to work hard whether or not incentives are present; whereas 4) men are very sensitive to the type of payment scheme and 5) their preference for a given payment scheme is a signal (to a potential employer) of their job performance (although it is not possible to assess if this is due to ability, effort or both).

[10] It must be noted that in other contexts (such as in school) females usually perform better than males. However Lindo et al. (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's assume that there 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. Experimental design and procedure

The experiment involved a total of 146 undergraduate students (69 males and 77 females) who played a two-stage game. First about the task was explained to them: they would be asked to enter a list of fictitious names, identification numbers and exam results line-by-line into a computer database. The list to be copied was the same for all participants. Payment would be made for each line (name, id number and mark) correctly copied into the pre-formatted table; mistakes would be signalled by the PC and would have to be corrected before it would be possible to proceed. The participants were told that the task would last 45 minutes, after which the programme would automatically interrupt their work. Participants were given five minutes to practice before continuing with the experiment.

After the practice session, participants were presented with two possible remuneration schemes: tournament or piece-rate. Under the tournament scheme, payment would depend on performance ranking, according to the following guidelines: the player who copied the largest number of lines would receive €0.25 per line, whereas the last in the ranking would be paid €0.10 per line; each player between the first and the past position would receive a per-line payment depending on his position such that the distance between two per-line remunerations is constant[11]. Under piece-rate payment, participants would receive €0.175 for each line copied correctly in the 45 minutes. The structure of the payments is such that the average value per line in the tournament is equal to the payment per line in the piece-rate scheme. Let us refer to the tournament scheme as "contract A" and to the piece-rate scheme as "contract B". The "job market" offered 146 positions (one for each experimental subject), of which one half submitted to contract A and the other to contract B. The participants were invited to bid for their preferred contract (either A or B), knowing that winning either contract required falling in the highest quartile of the distribution of the bids,

[11] Consider for example 5 players under the tournament scheme. The most performing would get €0.25 per line, the second in the ranking €0.2125, the third €0.175, the fourth €0.1375 and the last €0.10.

whereas the other participants would be randomly assigned contract A or B, with a probability of 50 % and independently of their initially stated preference. The players expressed their bids as a percentage of their final payment, and were allowed to bid any amount between 0% and 100%. At the end of the experiment, the net payment for each participant was thus calculated as (1 – bid) * gross payment. As usual in auctions, only the winners had to pay their bids, whereas those who were randomly assigned a contract paid nothing. This mechanism allows evaluation of the intensity of the preference of each player for a given contract.

After the contracts were assigned and the participants informed of their sort, the task commenced. The assignment of contracts was a crucial element in this study's exploration of gender-based preference for and performance under competition. It allowed analysis of whether players of a given gender prefer to engage in competition more than the other and whether competition enhances performance. It also reveals how players with a stated preference for competition but who ended up with a piece-rate contract performed in comparison to those who desired and received a piece-rate contract. Likewise, it allowed comparison of all players assigned contract A, whether or not they had a stated preference for competition. These last points also provide some indication as to the signalling value of the bids made during the auction: if there is a correlation between ability and preference for competition, then this should show up in the results, with more capable individuals performing better - even in a non-competitive environment - than those who preferred to avoid competition.

Under the rules of the game, if people are rational and if they knew their true relative ability, only one third of the participants should bid (a positive amount) for contract A. If this is not the case, then either some players are actually overconfident, or some have a misperception of their true relative position, or both.

3. Results

The analysis of the data is based on both Mann-Whitney and Fisher-Pitman tests; accordingly with the hypotheses, first I present the results on overconfidence, and then those on gender effect and comparison between preferences (although some intersection is possible). The reason to show the results of both Mann-Whitney and Fisher-Pitman tests is that, while the first are largely used in the experimental literature, the second is more powerful when, as in this case, the two samples to be compared are normally distributed.

No player bade 0; hence none was indifferent between the two contracts. However a large proportion of the subjects offered less than 5% of their final payment. Although any attempt to fix a threshold between weak and strong preferences would be arbitrary (and to my knowledge the extant literature does not help to solve the problem), it appears reasonable to consider "weak" the preference of those who bade less than 5% of their final payoff to gain a given contract. Overall 29 people over 146 (i.e. 19.9%) bade more than 5% for contract A, while 26 (i.e. 17.8%) bade more than 5% to win contract B. Even lowering the threshold to 1%, the proportion of people who bade over this figure for winning contract A is not far from 1/2: indeed 54 people (36.9%) bade more than 1%. These results suggest (almost total) absence of overconfidence among the subjects of this experiment; rather they seem to indicate the presence of under-confidence.

Table I reports the results of the auction for the contracts. The average bid to win the piece-rate scheme is higher than that for the tournament, however the differences are never significant, neither for the pool of subjects, nor for the gender-homogeneous sub-samples. One might argue that, since women are more risk averse than men, then this affects the distribution of bids. However two facts do not support this hypothesis. The first is that 50% of males and 53.8% of females (the difference is not significant) bade a positive amount for the tournament. The second

is that the bids for this contract do not differ between males and females significantly. Now, assuming that females are more risk averse than males would reinforce the claims of the paper.

The first part of Table II shows the performance of the subjects, for a given assigned contract, independently of the preference revealed in the auction. While males perform significantly better under the tournament than the piece-rate scheme, this is not the case for the women. While also these worked more under contract A than B, the difference is small (one half of that of males) and not significant. For a given contract, both males and females appear to perform equally, although the former do better in the tournament and the latter in the piece-rate. The second part of the table presents the results for the players' performance according their revealed preference. It is noteworthy that males were very keen on signalling their type: those who bade for the tournament performed much better than those who bade for the piece-rate scheme. The same does not hold for women: here the difference between the performances is very tiny (about 1/3 of men's) and not significant. Also, the women who preferred B to A performed better than the men who did the same (although the difference is hardly significant).

Table III shows the results, combining the information about the preferred and the assigned contract. The figures show mainly that while the men who declared to be of "low-skill" type are really so, this is not true for women, who work hard under both. In addition the females who wanted A, but were assigned B perform as those who bade for and obtained B, while their performance is much worse than that of women who bade for and were assigned to the tournament. Although the difference is significant at 93% level only, this may suggest that the lack of the incentive for the women who wanted it decreases their performance. The last two lines of the table further confirm the previous results. It is still noteworthy that, although the differences are never significant, while males, who are assigned a contract different from that for which they bade, perform always worse than males who are assigned the preferred contract, the women who

bade for the piece-rate scheme, but are assigned to the tournament perform slightly better than those who bade for and were assigned to contract B. Apparently women (try to) work hard, no matter which payment scheme is assigned to them. To summarise I can therefore assess that monetary incentives push males to reveal their type, while these fail the goal with women.

The players randomly assigned to the contracts are those who expressed a weak preference for either contract. One might argue that this selection can bias the results presented in Table III; Table IV tries to answer this remark. The figures reported in Table IV are analogous to those in Table II, but here I divide the sample according to the strength of the preference expressed by the participants. In particular, as mentioned before, strong preferences are represented by bids higher than 5% of the final retribution, while those between 0% and 5% (included) are considered weak. The data are qualitatively the same in both sub-samples and confirm the previous findings: while, on average, the males with strong preferences for contract A performed better than those with weak preferences for the same contract, the ability of self-selecting is evident and significant in both the sub-groups. This reinforces the previous conclusion that males are able to self-select between the two payment schemes, and that the preference expressed through the bid is representative of their performance. This is not the case for women: not only the self-selection mechanism does not work, but the difference in performance[12] shrinks as preferences get stronger (from 6.91 to 2.30 recopied lines), while for males the opposite holds (from 11.45 to 12.16 recopied lines).

Eventually Figures 1 and 2 show the correlation between the performance and the bid for winning the tournament: positive figures for this variable indicate the bids for contract A, while those for contract B are represented as negative bids for A. It is noteworthy that, while for men

[12] Measured as the difference between the lines recopied under contract A and those recopied under contract be for either strong or weak preferences.

the correlation is positive, for women it is negative (although the slope, in absolute terms, is steeper for males than for females). Indeed, one might expect low-ability to prefer the piece-rate scheme and high-ability players to prefer the tournament; if such is the case, the correlation between the bid and the performance should be positive if the subject bids for contract A and otherwise negative (which is exactly what we observe for males). Of course the presence of some overconfidence can lead to weaker results than expected, but the observed reversal of the expected sign is a very strong result. This is especially true given that it holds for women, whom the literature tends to find less overconfident than men. The female subjects in this study display the opposite behaviour. This suggests that, whereas men are able to select the most profitable alternative for themselves, women are not (and they may even make choices that are not to their advantage).

Taken together, the results reinforce the previous conclusion that women are less sensitive to the incentive of competition than men: either their productivity remains unchanged in response to the incentive, or the incentive is not perceived as a stimulus to self-select according to their true abilities (corresponding to the likely scenario that they do not adjust their requests for compensation according to their true abilities), or both. However the most relevant results are those that can be seen in Table III. The data show that people who bid for contract A, but were actually assigned contract B, perform much better than players who bid for contract B and did obtain it. This result indicates a strong signalling effect: those who bid to compete are those who perform better overall. However, this result is much more robust for men than for women; the difference for women is only marginally significant and, as has already been seen, women under contract B work harder than men under contract B. Thus, we can conclude that males' preference for competition is also a signal of their actual productivity (due either to their ability, or to their effort, or both), whereas the preferences expressed by females are weaker indicators (if present) of their actual ability.

4. Conclusions

One conclusion that can be drawn from the present data is that men are both more sensitive to incentives and more willing to signal their ability than women are; moreover, women tend to accomplish the assigned task as well as they can, seemingly regardless of the incentive scheme. These results may help to explain the gender wage gap: on the one hand, women are not extremely sensitive to incentives, working hard always trying to maximise the payoff; of course this induces employers to incentivate (i.e. pay) them less, as the net marginal gain for the employer is much lower for a female than for a male worker[13]. On the other, women appear to be less likely to or less interested in signalling their potential performance by asking for (or responding to) incentives so that the employer can not use competitive contracts to select workers' types. Hence, they may tend to negotiate less with their employers than men. Finally, the results tend to confirm that women really do shy away from competition; the present data suggest that they do not perceive competition as a valuable incentive for working harder at their jobs. Of course this tendency is just one possible factor contributing to the wage gender gap, along with others such as discrimination, sexism, culture, preferences for child-caring and so forth.

A possible interpretation of the results is that women are more risk averse than men, and therefore they self-select between the two payment schemes more as a consequence of their risk

[13] Let p_m be the average productivity of men and p_f that of women; let a be the unit benefit for the employer, and let s be the amount of the incentive paid to the worker. Let p_i', i=m,f be the average productivity of category i after the introduction of the incentive. The profit for the employer be π before the introduction of the incentive and π' afterwards. We can write: $\pi_m = ap_m$ and $\pi_f = ap_f$ as well as $\pi'_m = ap'_m - s$ and $\pi'_f = ap'_f - s$. From these we can calculate the variations in the employer's profit in the case of each gender: $\Delta\pi_m = a(p'_m - p_m) - s$ and $\Delta\pi_f = a(p'_f - p_f) - s$, i.e. $\Delta\pi_m = a\Delta p_m - s$ and $\Delta\pi_f = a\Delta p_f - s$. Now, since the results of my experiment suggest that $\Delta p_m > 0$, whereas $\Delta p_f = 0$, it is clear that $\Delta\pi_m > \Delta\pi_f = 0$, which means that the employer has an incentive to stimulate men, but not women. A similar reasoning holds for the benefit gained by an employer who uses competition and ability-related wages as an incentive for job candidates to self-select according to ability.

preferences, rather than of their private information about their ability. The data used in this paper do not allow for ruling out this possibility, however if this is the reason why the self-selection between females is not elicited by monetary incentives (which are those mainly used in the labour market), it does not prevent the mechanism to fail in eliciting a signal from the female workers. And, in turn, this contributes to the existing gender pay gap. However a couple of results seem to suggest that differences in risk aversion (if any) play a minor role: on the one hand the proportion of females who bade for the tournament is not significantly different from that of males; on the other hand the average bid of women for contract A is larger than that of men[14] (although the difference is very small and not significant). Should there be some relevant difference in the risk preferences of women on average, this should emerge from the data presented in Table I.

The framework used here may mirror the selection procedure for young job candidates (including aptitude tests) or the working environment of fixed term workers, where both signalling and performance under a given scheme play a significant role[15]. However, the present data may help explain the gender gap in wages also insofar as an employer earns a lower marginal return of incentives over women than over men. Nonetheless, according to this paper and, other things being equal, a female worker is a cheap substitute for a male worker, and firms would do well to hire women rather than men. A recent paper by Gürtler and Kräkel (2010) suggests that the employer benefits from tournaments as these allow for extracting rents from the workers; however, this seems not to hold when the workers are female. In other words, as the empirical evidence presented in this paper suggests, the employer extracts the maximum possible rent from

[14] Here one might argue that this is the signal that women are more risk averse: i.e. they bid more to increase the probability of winning the preferred contract. This can be true, but the differences with respect to males are small and not significant. Hence, if risk aversion does play a role, this is not very relevant.

[15] However, as usual, the conclusions of an experiment are complex and difficult to generalize. It must also be said that 45 minutes of work in an experimental laboratory can not represent an entire career.

women even in the absence of competitive incentives. Once again, women's work appears to be a better buy than men's. Of course those presented here are experimental results, and they should be taken as such. Experiments are useful to isolate particular variables, for which a clean effect would be too difficult to estimate in a "really noising" setting (Levitt and List, 2007) or when a field experiment is not feasible (Levitt and List, 2009). Moreover: "While laboratory processes are simple in comparison to naturally occurring processes, they are real processes in the sense that real people participate for real and substantial profits and follow real rules in doing so. It is precisely because they are real that they are interesting."[16] In other words: it might be that the real world offers a somewhat different evidence, however, the experimental results help to interpret that evidence.

[16] Plott (1982), p. 1482.

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Table I. Bids over the two types of contracts. Standard errors in brackets.

	Average bid			
Bid for:	Whole sample	Males	Females	Significance[1]
the preferred contract (either A or B)	9.68	8.74	10.55	° (°)
	(15.08)	(12.31)	(17.23)	
contract A	7.82	7.58	8.06	° (°)
	(8.33)	(6.90)	(9.65)	
contract B	11.40	9.89	12.69	° (°)
	(19.23)	(16.03)	(21.72)	
Significance[2]	° (°)	° (°)	° (°)	
Sample size	146	69	77	

The figures represent the average percentage of the final remuneration that the subject is willing to pay to work under the preferred contract.

[1] The significance refers to the difference between the male and the female sub-samples. (figures in each row).

[2] This significance refers to the difference between the sub-samples working under the two different contracts (figures in each column).

Note: significance levels: *** (99%); ** (95%); * (90%) ° (less than 90%) The stars out of brackets are for the Mann-Whitney test, those in brackets for the Fisher_pitman test.

Table II. Perfomance given the assigned or the preferred contract. S.e. in brackets

	Average number of recopied lines			
	Whole sample	Males	Females	Significance[1]
Lines copied under				
assigned contract A	101.86	102.73	100.03	° (°)
	(24.30)	(27.05)	(21.71)	
assigned contract B	92.42	90.14	94.46	° (°)
	(19.18)	(20.67)	(17.78)	
Significance[2]	** (***)	* (**)	° (°)	
Lines copied under				
preferred contract A	99.49	102.75	99.57	° (°)
	(21.37)	(20.92)	(22.08)	
preferred contract B	92.06	90.47	95.24	* (°)
	(22.58)	(27.08)	(17.91)	
Significance[2]	*** (***)	*** (***)	° (°)	
Sample size	146	69	77	

The figures represent the average number of lines recopied. Mann-Whitney and Fisher-Pitman tests for differences between means.

Standard errors in brackets.

[1] The significance refers to the difference between the male and the female sub-samples. (figures in each row).

[2] This significance refers to the difference between the sub-samples working under the two different contracts (figures in each column).

Note: significance levels: *** (99%); ** (95%); * (90%) ° (less than 90%) The stars out of brackets are for the Mann-Whitney test, those in brackets for the Fisher_pitman test.

Table III. Perfomance given the preferred and the assigned contracts. Standard errors in brackets

		Average number of recopied lines			
Preferred contract	Assigned contract	Whole sample	Males	Females	Significance[1]
A	A	103.64	104.67	102.64	° (°)
		(23.31)	(23.25)	(23.77)	
A	B	95.94	97.00	94.75	° (°)
		(12.08)	(10.55)	(14.26)	
Significance[2]		° (*)	° (°)	° (°)	
Sample size		69	34	35	
B	A	91.42	82.87	97.64	* (**)
		(19.10)	(21.01)	(15.71)	
B	B	90.48	85.64	94.34	** (**)
		(19.90)	(20.51)	(18.79)	
Significance[2]		° (°)	° (°)	° (°)	
Sample size		77	35	42	
A	B	95.94	97.00	94.75	° (°)
		(12.08)	(10.55)	(14.26)	
B	A	91.42	82.87	97.64	** (**)
		(19.10)	(21.01)	(15.71)	
Significance[2]		° (°)	*** (**)	° (°)	
Sample size		38	19	19	

The figures represent the average number of lines recopied. Mann-Whitney and Fisher-Pitman tests for differences between means.

[1] The significance refers to the difference between the male and the female sub-samples.

[2] This significance refers to the difference between the sub-samples working under the two different contracts (figures in each column).

Note: significance levels: *** (99%); ** (95%); * (90%) ° (less than 90%) The stars out of brackets are for the Mann-Whitney test, those in brackets for the Fisher_pitman test.

Table IV. Perfomance given the assigned or the preferred contract. Subjects with weak or strong preferences. Standard errors in brackets

	Average number of recopied lines			
	Whole sample	Males	Females	Significance[1]
Weak preferences				
Lines copied under				
assigned contract A	96.18 (21.01)	91.93 (21.83)	99.32 (20.26)	° (°)
assigned contract B	91.33 (18.00)	89.95 (21.04)	92.41 (15.56)	° (°)
Significance[2]	° (°)	° (°)	° (*)	
Sample size	91	39	52	
Lines copied under				
preferred contract A	99.55 (20.00)	98.26 (16.91)	100.61 (22.55)	° (°)
preferred contract B	90.86 (20.91)	86.81 (26.19)	93.70 (16.13)	° (°)
Significance[2]	** (**)	*** (**)	° (°)	
Sample size	91	39	52	
Strong preferences				
Lines copied under				
assigned contract A	107.03 (25.41)	111.11 (27.42)	101.38 (22.12)	° (°)
assigned contract B	94.42 (21.43)	90.43 (20.85)	99.08 (22.05)	° (°)
Significance[2]	* (**)	** (***)	° (°)	
Sample size	55	30	25	
Lines copied under				
preferred contract A	105.00 (23.14)	107.76 (24.18)	101.38 (22.12)	° (°)
preferred contract B	97.15 (20.34)	95.60 (18.37)	99.08 (22.05)	° (°)
Significance[2]	° (*)	* (**)	° (°)	
Sample size	55	30	25	

The figures represent the average number of lines recopied. Mann-Whitney and Fisher-Pitman tests for differences between means.

[1] The significance refers to the difference between the male and the female sub-samples. (figures in each row).

[2] This significance refers to the difference between the sub-samples working under the two different contracts (figures in each column).

Note: significance levels: *** (99%); ** (95%); * (90%) ° (less than 90%) The stars out of brackets are for the Mann-Whitney test, those in brackets for the Fisher_pitman test.

Figure 1. Preferences for the contracts and performance (females)

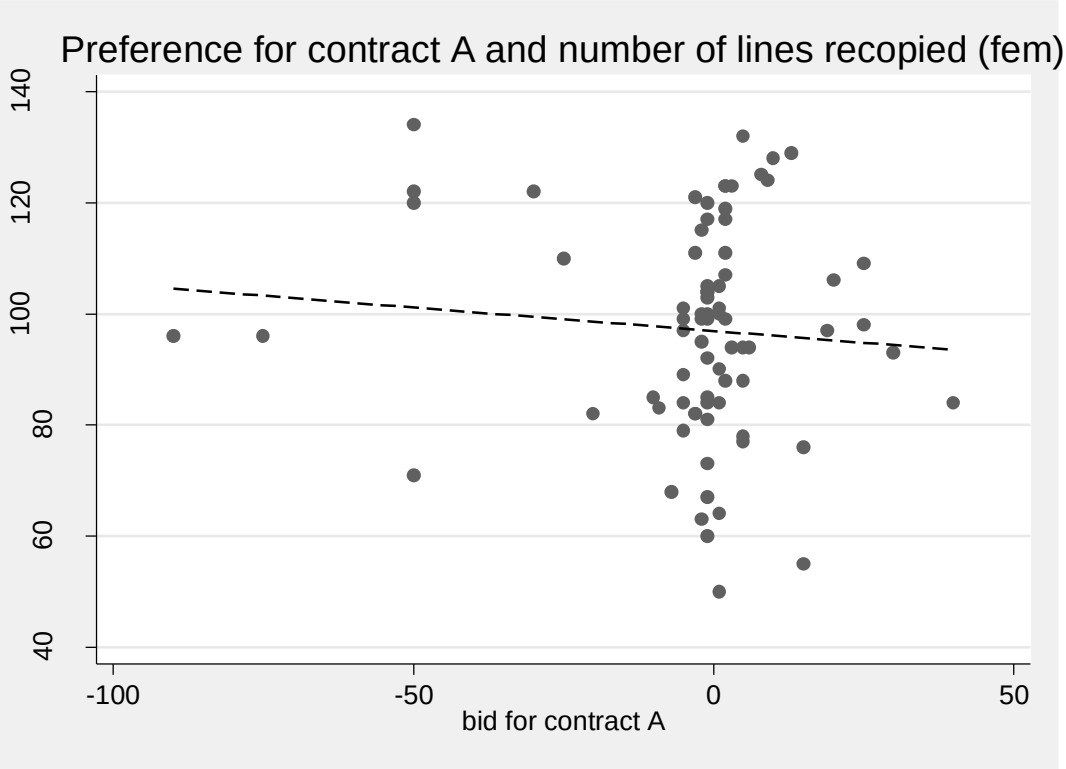

Figure 2. Preferences for the contracts and performance (males)