GENDER IN COMMITTEES

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Abstract: How does a group's gender composition influence its decisions? Economists have found women to be more generous and egalitarian than men, so one might expect groups with more women to be more generous/egalitarian. Group polarization, whereby discussions amplify preexisting attitudes (a phenomenon well-established in psychology), would enhance that effect. We report experimental evidence. Female-majority groups are more generous/egalitarian than male-majority groups, but female unisex groups are not the most generous/egalitarian. We discuss how these findings accord with our derived conjectures, and what can be learned regarding the influence of gender composition on committee decision-making more generally.

Keywords: gender, groups, generosity, group polarization

JEL codes: A13, C92, D63, D64, J16

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1. Introduction

In March 2002 the Norwegian Minister for Trade and Industry, Ansgar Gabrielsen, proposed forcing companies to have at least 40 percent women on their boards of directors, unless this had already taken place by 2005.[1] In November 2002, the Swedish Deputy Prime Minister Margareta Winberg demanded at least a 25 percent share for women board members by 2004.[2] There are indications that these threats are having an effect: a recent Swedish government inquiry set the current share of women board members in private companies at 13 percent, up from 5 percent in 1993;[3] in Swedish state-owned companies the share of women on boards has now risen to 40 percent;[4] in Norway the share of women on the boards of the 100 largest companies has surged to 20 percent.[5] Although politicians in most other countries have not taken as strong stands on women's influence on company decision-making, there has been plenty of debate and lobbying on the issue and the shares of women on boards may be on the rise there too.

The 10 000 dollar question is whether and how the presence of women, or the relative balance of women and men on a decision-making committee, matters for corporate conduct. We do not think the answer is known. In fact, it seems that little research has examined any aspect of how gender composition influences group performance.[6] Our paper is motivated against this background. We observe groups of three people dividing a sum of money between themselves and another (fourth)

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[1] See the archive service of the Norwegian government at http://odin.dep.no

[2] Svenska Dagbladet 2002/11/25.

[3] SOU 2003:16

[4] Dagens Nyheter 2003/05/12

[5] See http://www.managementwomen.no/november2002.php

[6] There are a number of studies on gender and entrepreneurial decisions, but they seem to focus on individual traits rather than group composition. Sonfield, Lussier, Corman & McKinney (2001) survey the results.

person. (This is a version of the *team-dictator game*, introduced by Cason & Mui, 1997.) The gender composition differs across groups, and we explore how this influences decision-making. Our chosen line of research is thus concerned with a simpler environment than boards of directors and may therefore dodge the 10 000 dollar question. However, we hope that the insights we gain may guide or inspire future research geared to tackling the big issue. In research as in quiz shows, one may have to answer low-stake questions before high-stake ones.

Results from two strands of research in experimental economics combine to suggest that the gender composition of groups may well influence decisions. First, recent research on individual economic decisions in dictator games (i.e., a game in which one person divides a sum of money between her- or himself and another person) suggests that men and women make different decisions. For example, Eckel & Grossman (1998) find that women are more generous,[7] and Andreoni & Vesterlund (2001) find that women are more "egalitarian" in the sense that they choose an equal division of the pie more often. Second, experiments comparing individual and group decisions (a literature belonging partly in social psychology), document interesting differences.[8]

Now if men and women make different decisions, and if groups and individuals make different decisions, there is every reason to believe that the gender composition of groups matters for their decisions. In particular, in light of the aforementioned results in experimental economics by Eckel & Grossman and Andreoni & Vesterlund, one might expect that the more women there are in a group

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[7] This result is not entirely uncontested, and may depend on a variety of design details. Cf Bolton & Katok (1995), Andreoni & Vesterlund, Fershtman & Gneeezy (2001) Ben-Ner, Kong & Putterman (2002), and Dufwenberg & Muren (2002).

[8] See Cason & Mui (1997), Bornstein & Yaniv (1998), Cox & Hayne (2002), Hennig-Schmidt (2002), Kocher & Sutter (2002), and the references therein.

the more generous and egalitarian its decisions will be. This conjecture can be supported further with reference to the phenomenon of *group polarization*, empirically well-established by psychologists. This is a tendency for group discussion to strengthen the initial inclinations of the group members, making groups of like-minded people more extreme than the group's average member. The group polarization phenomenon was first pointed out by Moscovici & Zavalloni (1969), and has subsequently been confirmed for a variety of personal inclinations. Myers (2002), a standard social psychology textbook, gives a nice overview (pp. 300-308).[9]

We test several hypotheses concerning how gender composition influences the generosity or egalitarianism of groups. The group polarization phenomenon, as applied to the received view that women are more generous and egalitarian, is tested alongside. If it turns out that group generosity or egalitarianism is not monotonous in the number of women, then this form of group polarization is rejected.

The study most closely related to ours is that by Cason & Mui, who study decision-making in a team dictator game with a group of two persons making a dictator decision. Their focus differs from ours in that their experiment is set up to (i) compare behavior in team dictator and standard dictator games, and (ii) to distinguish between two competing explanations for group polarization.[10] By contrast, our focus is on the role of gender composition,[11] and since we have groups of three (rather than two) making choices we can also say something about the difference between unisex

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[9] According to Myers, risk takers become riskier, bigots become despisers, givers become more philantropic, nerds become nerdier, jocks become jockier. Group polarization helps explain judgments of guilt in courts, sunk cost fallacies in investment, student development in schools, gang delinquency, terrorism, massacres, and how the internet may make opinions more extreme as "peacemakers and neo-Nazis, geeks and goths, conspiracy theorists and cancer survivors" interact on dedicated pages.

[10] The competing explanations are called *social comparison theory* and *persuasive argument theory*; cf Myers's discussion of normative and informational influence.

[11] Cason & Mui recorded data on the gender composition of their groups, and they have some results on this, although clearly the impact of gender composition is not the main focus of their paper.

groups and groups which are not unisex but still have a strict majority of persons of a given sex.

The next section contains all the material related to the experiment. Finally, we have a section with a concluding discussion.

2. The experiment

In this section we present (in three subsections) first the design of the experiment, then the hypotheses we propose to test, and finally the results.

The design

The experiment was carried out in two sessions (I and II), both held at Stockholm University during the fall of 2001. The subjects were students in the one-semester introductory course for prospective teachers. The introductory course consisted of a sequence of lectures introducing different fields of study, and the experimental session was made a part of the only lecture in this sequence that covered economics. The subjects had thus not had any economics before participating in the experiment.

At the beginning of the lecture, students were asked if they were interested in participating in an experiment. It was made clear that participation was voluntary. Each participant was given a slip of paper, and all were asked to write their first name on their slip. The slips were collected and one or two of them (depending on the session, see below) were drawn at random. The names written on these were copied onto a separate paper, which was put into an envelope and sealed.[12] The slips were

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[12] The subjects could not check at the time which name was copied onto the paper and sealed in the envelope. However, they could confirm afterwards that it was the name of a person in the class.

then replaced. This part of the experiment took place before the 15-minute break in the lecture.

During the break all slips were arranged into groups of three and each group was assigned a number. On a separate protocol that was not circulated, the group numbers associated with each of the four possible gender compositions were listed. When entering the lecture hall after the break, subjects were told their group number and the first names of the other subjects in their group. When subjects had identified their fellow group members they were asked to sit down together. The lecture halls used were large and the groups sat well apart from one another. The instruction sheets were distributed (see the Appendix for a translation of the complete instructions) and the groups were given 5-10 minutes to make their decisions.

The decision that each group had to make was how to split the sum of 1000 kronor[13] between the group and an anonymous person, or in other words how much to give to an anonymous recipient. It was made clear that the money allocated to the group would be divided equally between the members of the group. The instructions explained that one (two in Session II) group(s) would be randomly selected to receive their self-determined share in cash. The sum that they had decided to give to the anonymous person would then be given to the pre-selected recipient(s).

The groups made their decisions and submitted them by writing the sum that they allocated to the anonymous person, together with their group number, on the instruction sheet. Instruction sheets were collected, and payments were made after the end of class. The time taken for the session (except for payments) was approximately 30 minutes, 10 minutes before the break and 20 minutes after the break.

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[13] 1000 kronor was approximately 110 euros or US dollars at the time of the experiment.

Hypotheses

We would expect a gender difference in expressed group preferences to be rooted in individual differences and transformed or aggregated in some way by the group decision. The particular way in which individual preferences are translated into a group decision might have implications for how a "group gender effect" should be defined. Our first test concerns whether a group gender effect will emerge as a difference between groups where women are in the majority and groups where men are in the majority. If this is the case we should be able to reject the following hypothesis.

H_1: *Female-majority groups and male-majority groups make the same donations.*

By a similar line of reasoning, a group gender effect in the inclination to decide on the egalitarian donation of the pie would imply a difference between female-majority and male-majority groups. In this experiment, the total sum will be shared equally between the three individuals in the dictator group and the recipient if the donation is exactly 250 kronor. A group gender effect in egalitarianism exists if we can reject H_1* below.

H_1*: *Female-majority groups and male-majority groups give 250 kronor equally often.*

We next compare pairs of group types with different gender composition, to test if group generosity changes with the number of women in the group. There are three relevant group type differences to test for: all-female groups are compared with

groups with two women and one man, groups with two women and one man are compared with groups with two men and one woman, and groups with two men and one woman are compared with all-male groups. The appropriate hypothesis for all three tests is formulated generally as H_2 below, and it is applied to each of the three different relevant datasets.

H_2: *Groups make the same donations in pair-wise comparisons when the number of women is increased by one.*

The corresponding hypothesis for egalitarianism is:

H_2*: *Groups give 250 kronor equally often in pair-wise comparisons when the number of women is increased by one.*

Finally, we will test the ranking across all four groups in generosity and egalitarianism. To be precise, we will test whether group generosity increases or decreases in a monotonous way with the number of women in the group. We will test for a trend in group egalitarianism in the same way. If there is such a trend in generosity or egalitarianism we will be able to reject H_3 or H_3* below.

H_3: *There is no trend in generosity if the four group types are ordered by the number of women.*

H_3*: *There is no trend in egalitarianism if the four group types are ordered by the number of women.*

Results

Altogether 168 persons, comprising 56 groups, participated in the experiment. Session I had 63 participants in 21 groups; Session II had 105 participants in 35 groups. In Session I seven of the students elected not to participate in the experiment, while in Session II all the students present at the lecture participated in the experiment. There are four different possibilities for the gender-composition of a group of three people: all-female, two women and one man, one woman and two men, and all-male. We will use the following notation for these cases:

FFF = all-female
FFM = two women and one man
FMM = one woman and two men
MMM = three men

Table 1 shows the number of participating groups for each type of gender-composition in the two sessions.

Table 1: Number of participating groups, by session

	FFF	FFM	FMM	MMM
Session 1	11	1	9	0
Session 2	15	11	1	8
TOTAL	**26**	**12**	**10**	**8**

There were a lot more women than men in the subject group as a whole, and also in each session. Because of this, there are more than twice as many all-female groups as the number of any other kind of group. We have tested for a difference in the distributions of donations between Sessions I and II and found no significant

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session effect on donations (*P*-value 0.82 in a Kolmogorov-Smirnov test and *P*-value 0.40 in a Wilcoxon-Mann-Whitney test). We will thus only discuss results in terms of the whole dataset of 56 groups.

An overall view of the data is found in *Table 2*, which shows the distribution of donated amounts among all the 56 groups. It is remarkable that all the data is distributed over *exactly eight* different amounts. This occurred even though the groups had at least 1001 alternative amounts to donate, since any integer between and including 0 and 1000 was clearly allowed by the instructions (see the Appendix).[14]

Table 2: Number of donations at each of the donated sums for all 56 groups

	0 kr	1 kr	10 kr	100 kr	250 kr	300 kr	400 kr	1000 kr
Number of groups	3	6	1	10	30	1	1	3

The mean donation across all groups is 218 kronor and the median is 250 kronor. The latter is the egalitarian donation since it gives 250 kronor to each group member. *Table 3* shows means and medians when the data is partitioned into female-majority and male-majority groups.

*Table 3: Mean (and median) amounts donated for female-majority (**FFF** + **FFM***) versus male-majority (**FMM** + **MMM***) groups*

FFF+FFM	FMM+MMM
225 (250)	203 (100)

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[14] Note that the amounts 1 kronor, 10 kronor, 100 kronor, 250 kronor, 400 kronor and 1000 kronor share the characteristic that the remainder (999 kronor, 990 kronor, 900 kronor, 750 kronor, 600 kronor and 0 kronor) can obviously and easily be divided by three.

The same pattern exists in means and medians, namely that male-majority groups appear to donate less than female-majority groups. Next we check if this difference holds up to statistical testing. Since we do not have a definite opinion on whether it would be reasonable to exclude a difference in one of the two possible directions, the appropriate alternative hypothesis is that the donations differ in either direction, i.e. a two-sided alternative. We first test H_1. The hypothesis that the two samples of donations from female-majority and male-majority groups are from populations with the same distribution is rejected in a Wilcoxon-Mann-Whitney test (*P*-value 0.03).

Moving to egalitarianism and the hypothesis H_1*, we first note that 30 out of the 56 groups donated 250 kronor. *Table 4* shows the relative number of egalitarian donations for female-majority and male-majority groups.

*Table 4: Number of egalitarian donations relative to total number for female-majority (**FFF** + **FFM***) versus male-majority (**FMM** + **MMM***) groups*

FFF+FFM	FMM+MMM
25 / 38	5 / 18

The egalitarian donation of 250 kronor is particularly frequent in the female-majority groups. Testing for equality of proportions the difference is significant (*P*-value 0.008). H_1* is rejected.

We summarize the results on gender majority effects:

OBSERVATION 1: Female-majority groups are more generous and more egalitarian than male-majority groups.

Next we look at donations across all four types of groups, and hypothesis H_2. *Table 5* shows means and medians of donated amounts.

Table 5: Mean (and median) amount donated for each type of group

FFF	FFM	FMM	MMM
189 (250)	304 (250)	195 (100)	334 (100)

Our previous result that female majority groups are more generous, is in accordance with our conjecture that women are more generous. We would then expect different donations also in pair-wise comparisons when the number of women is increased by one: **FFF** vs. **FFM**, **FFM** vs. **FMM**, and **FMM** vs. **MMM**. Testing for statistical significance, the difference between the **FFF** and the **FFM** groups is significant (*P*-value 0.04) and so is the difference between the **FFM** and **FMM** groups (*P*-value 0.03), while the difference between the **FMM** and **MMM** groups is not (*P*-value 0.68).

However, we note that the difference between the **FFF** and **FFM** groups goes in the opposite direction from what our gender majority result would suggest about generosity and the number of women. It actually implies that the combination of two women and one man is the most generous gender composition!

Investigating egalitarianism and hypothesis H_2*, we find the relative numbers of egalitarian donations for the four types of gender-composition in *Table 6*.

Table 6: Number of egalitarian donations relative to total number per type of group

FFF	FFM	FMM	MMM
16 / 26	9 / 12	3 / 10	2 / 8

Only the **FFM** vs. **FMM** test delivers a significant result (*P*-value 0.03), while neither the **FFF** and **FFM** groups, nor the **FMM** and **MMM** groups, are significantly different (*P*-values are 0.42 and 0.81, respectively).

OBSERVATION 2:
(i) When the number of women in a group increases from one to two, groups become significantly *more* generous and egalitarian.
(ii) When the number of women in a group increases from two to three, groups become significantly *less* generous.

We will now consider the data explicitly from the point of view of the ranking of all four groups according to the number of women and consider hypothesis H_3. We will investigate whether or not generosity and egalitarianism increase in the number of women across all four groups. Thus we test for a trend for the ordering **FFF, FFM, FMM, MMM**, using a nonparametric test for trends across ordered groups based on the Wilcoxon-Mann-Whitney test.[15] There is no significant trend (*P*-value 0.19) for this ordering.[16]

Testing for trends in the frequency of egalitarian donations as stated in hypothesis H_3* yields a significant trend for the ordering **FFF, FFM, FMM, MMM** (*P*-value 0.03).[17] We summarize these results below.

OBSERVATION 3: The trend in donations across groups rejects the hypothesis that generosity increases with the number of women. The trend in egalitarianism does not reject the hypothesis.

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[15] The test is the nptrend test in Stata.

[16] If groups are ordered as: **FFM, FFF, FMM, MMM** or **FFM, FFF, MMM, FMM** we find significant trends (*P*-values 0.01 for both cases).

The finding that **FFM** groups are more generous than **FFF** groups, while at the same time female-majority groups are more generous than male-majority groups, suggests a non-monotonous relation between the number of women in a group and the generosity of that group. The finding that the most generous groups are those with two women and one man, rather than the groups with three women (or three men), implies that our results do not provide support for group polarization in the gender-and-generosity context.

3. Discussion

We find evidence of a gender effect in group decisions: female-majority groups act in a more other-regarding way than male majority groups by giving more to the individual recipient, and female-majority groups choose the egalitarian division of the pie more often than male-majority groups do. We also have a result that speaks against group polarization: it is the groups with two women and one man who are the most generous ones, instead of the all-female groups which is what group polarization would lead us to expect. This is interesting in itself but it is also puzzling.

One way of thinking about groups with two women and one man being particularly generous is that women may perceive themselves as different from men, and that the presence of a man triggers an exaggerated generosity among the women in the group. Although this argument may appear speculative, a somewhat related observation is made in Stockard, van de Kragt & Dodge (1988). They study a public goods game and find no gender differences in actual, individually determined and anonymous cooperation. However, their female subjects were much more likely to "justify their behaviour as being altruistic and principled". Stockard *et al* interpret this

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[17] The other two orderings are however more strongly significant (*P*-values are again 0.01 for both

to mean that women are more eager than men to appear altruistic. If we combine this finding with the idea that women might use male altruism as a neutral level for comparison, it could be taken as a possible explanation of our finding. Two women would then want to be more generous when the third person in the group is a man, than when the third person is a woman.

What, if anything, have we learned of relevance to the 10 000 dollar question, about the effect of gender composition on corporate conduct? The main insight is perhaps just a call to take the matter seriously. We have documented several statistically significant differences for a simple environment, offering a presumption that gender composition matters in more complicated environments too. However, several concerns, that may be influenced by gender composition and which may well be important in corporate boards, have not been addressed in our design:

- Other personality traits than generosity and egalitarianism may matter. For example, when men and women compete men have been found to exhibit more competitiveness than women (see Gneezy, Niederle & Rustichini, 2003; Gneezy & Rustichini, 2003).

- Groups have histories, which may matter to gender composition effects. For example, the effect of having *two* women on a corporate board may depend on whether or not there is a history of *one* woman on the board.

- We have mainly discussed how individual traits influence group decisions, but there may be effects running in the other direction. Board membership may, for example, over time influence personality traits of board members, and gender composition may matter in this connection.

FFM, **FFF**, **FMM**, **MMM** and **FFM**, **FFF**, **MMM**, **FMM** cases).

We hope this list of omissions will be helpful for future research on the importance of gender composition to corporate conduct, and on group decision-making more generally.

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Appendix: Instructions

Below is a translation of the Swedish instruction sheet used in the experiment in the session of September 27 [December 3], 2001.

AN EXPERIMENT

Introduction
You are hereby invited to take part in an experiment. Your task is to divide the sum of 1000 kronor between your group and a randomly selected person who is also taking the introductory course for prospective teachers and who is participating in today's lecture. The group's share of the money will be divided equally between the members of the group. Participation in the experiment is voluntary. You participate by filling in and handing in this form here and now.

All who take part in the experiment have a chance of winning money. At the lecture this afternoon we will select one group [two groups] randomly (identified only by a number) which will receive payment according to its decision. The person[s] affected by the group's decision will be selected randomly. The identity[ies] of this [these] person[s] will then be revealed. Each of the persons involved can receive their money (minus taxes) directly or by contacting us no later than October 15 [December 17], 2001 at 12 noon.

The task
Your job is to determine a division of 1000 kronor between the group and a randomly selected person who is also taking the introductory course for prospective teachers and who is participating in today's lecture. The division must add up to 1000 kronor for your answer to be valid. It is important that you in the group choose your division without discussing it with other groups. Make your decision by filling in a sum below:

DIVISION: _____ kronor to us

+_____ kronor to the randomly selected person

= _____ 1000 kronor

Your answer will be collected shortly.

Your group number:_____