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cross-country empirical evidence**

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Gender differences in competitive preferences: new cross-country empirical evidence

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Abstract. This paper provides new empirical evidence on gender differences in competitive preferences using a representative data set of more than 25000 individuals from 36 countries. The empirical results show that the gender differences in competitive preferences are statistically significant in almost all countries with women having, on average, a lower preference for competitive situations than men. Although relatively substantial in most countries, the magnitude of gender differences varies considerably between countries. Results of a regression analysis suggest that the gender differences persist even when controlling for a number of potentially relevant variables. Furthermore, gender differences among adult men and women are hardly affected by the stage of life cycle.

I. Introduction

Reviewing the experimental literature on gender differences in competitive preferences Croson and Gneezy (2009) conclude that this literature has documented fundamental differences between men and women suggesting that women are more reluctant than men to engage in competitive interactions. However, several studies indicate that the reported gender differences in competitive behavior are affected by age, context, and cultural factors (Gneezy *et al.* 2009; Ahmed 2011; Dreber *et al.* 2011; Cárdenas *et al.* 2012; Shurchkov 2012; Andersen *et al.* 2013). Hence, it remains unclear whether the finding that women are, on average, less competitively inclined than men holds for the general population of various countries.

In order to shed light on the gender differences in competitive preferences across countries, this paper makes use of a representative data set of more than 25000 individuals from 36 countries. A survey question that asks about the individual preference to enter competitive situations is used to investigate whether men and women differ with respect to the self-evaluations of their competitive preferences. The statistical significance of gender differences in competitive preferences as well as their substantive significance is examined.

This paper is organized as follows. In Section II the data source and measurement of variables are described. The empirical results are presented in Section III and Section IV concludes.

II. Data

The empirical analysis is based on the Flash Eurobarometer Survey on Entrepreneurship 2009 (No. 283) of the European Commission. The data set covers

36 countries and the national samples, which are representative of the population aged 15 years and above, consist of around 500 or 1000 observations.¹

This survey contains a question in which respondents are asked to assess their preference to enter competitive situations. Respondents were asked to state whether they strongly agree, agree, disagree or strongly disagree with the following statement: “*I like situations in which I compete with others,*” Respondents’ answers are used to compute a scale ranging from 1 (strongly disagree) to 4 (strongly agree). This is a very general measure of competitive preference which is not context-specific. Although the validity of self-reported preferences is an issue, such measures are frequently used in empirical research and have proven to predict actual behavior reasonably well.²

In the regression analysis whose results will be presented in the next section, a number of variables are taken into account that may influence the gender differences in competitive preferences. The dataset provides information about respondents’ age, education, and occupational status. Since previous research suggests that gender differences in competitive preferences may result from gender differences in risk aversion and overconfidence (Niederle and Vesterlund 2011), two additional variables are included in regressions. Self-reported risk preference (RISK) is measured by respondents’ assessment of the statement “*In general, I am willing to take risks*” and general self-efficacy (GSE) is measured by assessment of the statement “*Generally, when facing difficult tasks, I am certain that I will accomplish them*”, where responses are made on a 4-point scale. Although conceptually different, general self-efficacy may also reflect a respondent’s overconfidence. Geographical dummy variables for area (metropolitan, rural zone) as well as country

¹ More information about the method of the survey can be obtained from the Analytical Report of the Flash EB Entrepreneurship 2009: (http://ec.europa.eu/public_opinion/flash/fl_283_en.pdf).

² For instance, the behavioral relevance of self-reported risk preferences was tested by Dohmen et al. (2011) who found that the score of a general risk question is the best all-round predictor of actual risk-taking behavior.

dummy variables are included in regressions to account for unobserved area- and country-specific fixed effects, like cultural factors and institutional environment.

III. Results

Figure 1 illustrates the gender differences in competitive preferences. Around 12% of the female respondents score very low on competitive preference and 11% score very high. In contrast, 7% of the male respondents score very low and 19% score very high on competitive preference.

[Insert Figure 1 about here]

Table 1 reports the p-values of a non-parametric Wilcoxon rank-sum (Mann-Whitney) test, i.e. a test of the hypothesis that two independent samples are from populations with the same distribution. The null hypothesis of the Wilcoxon rank-sum test can be safely rejected for the total sample and almost all countries. However, the fact that gender differences are statistically significant does not necessarily imply that they are also of substantial importance.

[Insert Table 1 about here]

Table 1 therefore reports Cohen's d , a measure of difference in terms of effect size. As a rule of thumb, a Cohen's d of 0.2 is usually considered as small, 0.5 as medium, and 0.8 as large (Cohen, 1992). For the total sample, Cohen's d is 0.36 which clearly exceeds the value of 0.2. At the country level, Cohen's d ranges from 0.13 (Slovak Republic) to 0.63 (United States). In the vast majority of countries, gender differences are relatively substantial but there are also some countries where the gender differences are relatively small.

Finally, Table 1 reports the *dissimilarity index D* which measures the gender differences in competitive preference distributions.³ For the total sample, the dissimilarity index *D* is 0.17 which means that 17% of the women could not be paired with a man with exactly the same competitive preference score, or vice versa. However, the results point to considerable cross-country variation. For instance, the competitive preference distributions of men and women are relatively similar in Belgium (0.10) while differences are pronounced in the United States (0.26). Taken together, the empirical results suggest that the gender differences in competitive preferences are not only statistically significant but also relatively substantial for a number of countries.

Next, a regression analysis is conducted to account for potential confounding variables. This analysis focuses on gender differences in the probability of having a preference to enter competitive situations. In the total sample, only 47% of the women agree or strongly agree that they like situations in which they compete with others while 65% of the men agree or strongly agree with this statement. The measures of competitive preference, risk preference and general self-efficacy are included in regressions as binary dummy variables that take the value one if a respondent agrees or strongly agrees with the respective statement and are zero otherwise.

[Insert Table 2 about here]

Table 2 reports the marginal effects obtained from binary probit regressions. As can be seen from Column (1) of the table, the estimated marginal effect of the dummy variable FEMALE is negative and statistically significant. The probability of scoring high on the competitive preference scale (score>2) is 16.8 percentage points

³ If the distributions of competitive preferences of men and women are very similar to each other, the index will be near to zero, whereas it will be near to one if the distributions are very different from each other. However, the index is unlikely to be close to one, since responses are made on a 4-point scale. Hence, there is always an overlap of male and female distributions, unless all men score high (low) and all women score low (high).

lower for women than for men. This marginal effect is only slightly reduced when controlling for risk preference and general self-efficacy and it remains statistically significant. Finally, the results presented in Column (3) to Column (5), show that gender differences are substantial and statistically significant in separate regressions for three different age groups suggesting that gender differences in competitive preferences are not strongly affected by the stage of life.

[Insert Table 3 about here]

In order to check the robustness of these results, additional regressions are conducted where the measures of competitive preference, risk preference and general self-efficacy are included in regressions as four-point scales. The results of ordered probit regressions confirm the finding that the probability of scoring high on the competitive preference scale is lower for women than for men.

IV. Conclusions

This paper empirically investigated the gender differences in competitive preferences using data obtained from a survey conducted in 36 countries. The empirical results suggest that gender differences in competitive preferences are statistically significant in almost all countries and in the vast majority of countries women have, on average, a substantially lower self-reported preference to enter competitive situations than men. However, gender differences in competitive preferences vary considerably across countries. Moreover, the results of a regression analysis show that gender differences in competitive preferences do not vanish even when controlling for a number of variables that may affect gender differences. Finally, regressions based on subsamples of age groups suggest that gender differences among adult men and women are not strongly affected by age.

To sum up, the empirical results point to very robust gender differences in competitive preferences. This is in line with what much of the experimental literature has found, namely, that women are, on average, less prone to enter into competitive environments. However, while the use of survey data allowed for examining the gender differences in competitive preferences in 36 countries, the validity of self-reported preferences is certainly an issue. Therefore, more research examining the parallelism of self-reported competitive preferences and actual competitive behavior is needed. Why gender differences in competitive preferences vary considerably across countries is also an open question that deserves further investigation.

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Table 1: Gender differences in competitive preferences

Country	rank-sum test	Cohen's d	Dissimilarity index	Observations
USA	0.000	0.63	0.26	1002
Slovenia	0.000	0.58	0.30	491
Iceland	0.000	0.52	0.24	459
United Kingdom	0.000	0.50	0.21	978
Finland	0.000	0.46	0.22	496
Greece	0.000	0.46	0.19	982
Austria	0.000	0.46	0.22	489
Germany	0.000	0.43	0.20	992
Poland	0.000	0.42	0.20	974
Portugal	0.000	0.42	0.20	956
Norway	0.000	0.42	0.20	483
France	0.000	0.42	0.17	996
Turkey	0.000	0.42	0.23	499
Spain	0.000	0.40	0.19	992
Hungary	0.000	0.40	0.19	988
Italy	0.000	0.38	0.17	979
Czech Republic	0.000	0.36	0.16	984
Japan	0.000	0.35	0.14	996
Switzerland	0.000	0.33	0.15	498
China	0.000	0.33	0.12	998
Denmark	0.000	0.31	0.17	490
Croatia	0.001	0.30	0.16	473
Netherlands	0.000	0.30	0.15	980
Luxemburg	0.001	0.29	0.14	501
Ireland	0.001	0.30	0.15	491
Sweden	0.001	0.27	0.16	492
South Korea	0.000	0.27	0.12	979
Latvia	0.011	0.25	0.13	479
Lithuania	0.013	0.25	0.10	480
Cyprus	0.003	0.25	0.14	489
Romania	0.016	0.23	0.13	472
Malta	0.010	0.23	0.17	487
Bulgaria	0.018	0.19	0.13	481
Estonia	0.051	0.18	0.11	483
Belgium	0.012	0.16	0.10	954
Slovak Republic	0.127	0.13	0.09	507
Total Sample	0.000	0.36	0.17	25 470

Notes: P-values of a two-sample Wilcoxon rank-sum (Mann-Whitney) test, Cohen's d corrected for uneven groups and the dissimilarity index D (Duncan and Duncan, 1955) are reported.

Table 2: Gender differences in competitive preferences - results of binary probit regressions

	(1)	(2)	(3)	(4)	(5)
Variables	Total Sample	Total Sample	Age 15-34	Age 35-54	Age>54
FEMALE	-0.168*** (-24.5)	-0.156*** (-22.35)	-0.159*** (-11.12)	-0.155*** (-13.32)	-0.152*** (-13.90)
GSE (dummy variable)	–	0.105*** (12.84)	0.117*** (6.91)	0.091*** (6.79)	0.110*** (8.51)
RISK (dummy variable)	–	0.211*** (29.61)	0.160*** (9.74)	0.200*** (17.09)	0.239*** (22.32)
Individual Controls	YES	YES	YES	YES	YES
Geographical Controls	YES	YES	YES	YES	YES
Pseudo R ²	0.074	0.109	0.086	0.103	0.114
Observations	23728	23728	4939	8875	9914

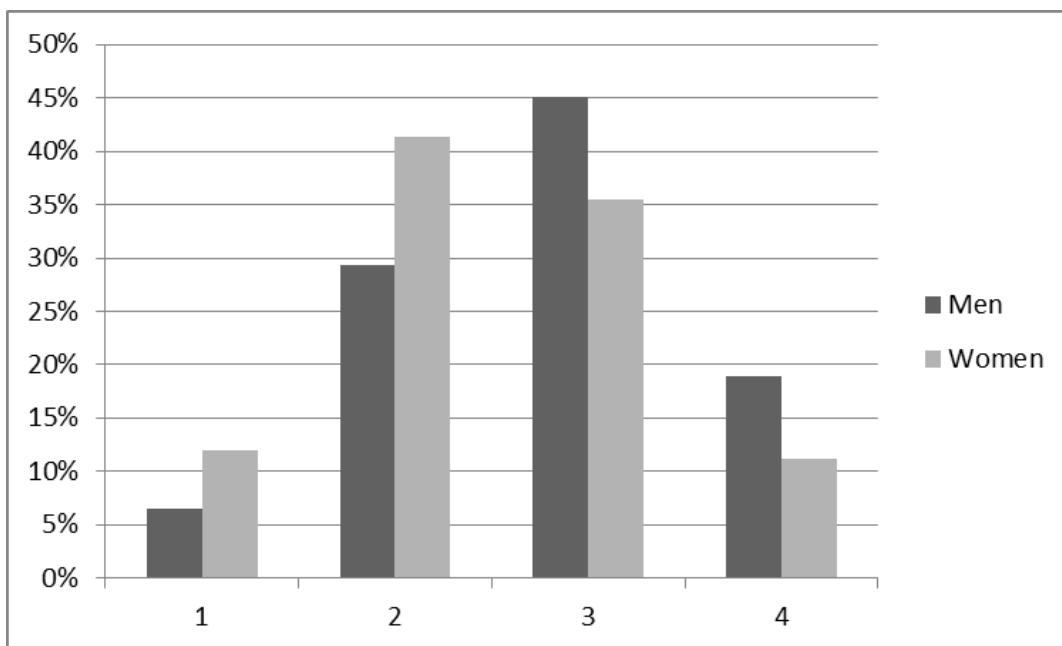
Notes: The dependent variable is a binary dummy variable that takes the value one if a respondent scores high on the competitive preference scale (score>2) and is zero otherwise. Marginal effects are reported. Numbers in parentheses are robust Z-values. *** denotes significance at the 1% level.

Table 3: Gender differences in competitive preferences - results of ordered probit regressions

	(1)	(2)	(3)	(4)	(5)
Variables	Total Sample	Total Sample	Age 15-34	Age 35-54	Age>54
FEMALE	-0.372*** (-25.2)	-0.335*** (-22.48)	-0.350*** (-10.71)	-0.351*** (-13.32)	-0.311*** (-13.52)
GSE	–	0.262*** (19.84)	0.268*** (8.95)	0.257*** (11.43)	0.264*** (13.53)
RISK	–	0.341*** (29.95)	0.298*** (11.38)	0.337*** (17.68)	0.358*** (21.17)
Individual Controls	YES	YES	YES	YES	YES
Geographical Controls	YES	YES	YES	YES	YES
Pseudo R ²	0.043	0.082	0.068	0.068	0.085
Observations	23728	23728	4939	8875	9914

Notes: The dependent variable is the four-point competitive preference scale. Estimated coefficients are reported. Numbers in parentheses are robust Z-values. *** denotes significance at the 1% level.

Figure 1: Gender differences in competitive preferences



Notes: Competitive preference is measured by a four-point scale. Total number of observations per category: 2487 (1), 9257(2), 10067(3), 3668(4).