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Gender Differences in Competitiveness

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Women are globally under-represented in top-tier jobs, and according to recent data, in 2013 only around 20 percent of board members in OECD countries were female (OECD, 2013). In addition, empirical studies using different research strategies and rich data consistently find that women earn less than men (e.g. Weichselbaumer and Winter-Ebmer, 2005). Differences in formal qualification levels between men and women have converged over the past decades (Goldin 2006) and cannot explain differences in labour market outcomes between men and women at present as well as in earlier decades.

Apart from classical wage discrimination theories (Becker, 1957), part of this gender gap in labour market outcomes could be explained by systematic gender differences in competitiveness. Attitudes towards competitiveness are relevant for educational decisions, during wage negotiations or for occupational choices. For example, women tend to choose different majors in tertiary education (Zafar, 2013) and choose different occupations than men (Goldin, 2014). Differences in competitiveness might determine a career path if promotions are linked to performance in competitive settings. Reuben, Sapienza, and Zingales (2015) ascertain that male graduates are more competitive than female graduates in the beginning of their career and they are more likely to select themselves into higher paid industries. Overall, they conclude that gender differences in competitiveness explain about 10 percent of the gender gap in earnings.

GENDER AND COMPETITIVENESS

Gneezy, Niederle, and Rustichini (2003) and Niederle and Vesterlund (2007), among others, provide evidence that women tend to shy away from competition. Differences in self-esteem (Figure 1) could be one potential cause for gender differences in the willingness to compete or performance under competition (e.g. Judge and Bono, 2011; Drago, 2011.)

Competitiveness requires the willingness to incur risk. Consequently, gender differences in risk preferences are closely related to competitiveness. Usually, top-level jobs, which typically command high wages, require risky decisions. Managers take risks when they make strategic decisions, for example, investment decisions of fund managers. (See Filippin (2016) for a thorough discussion of the empirical evidence on gender differences in risk attitudes.)

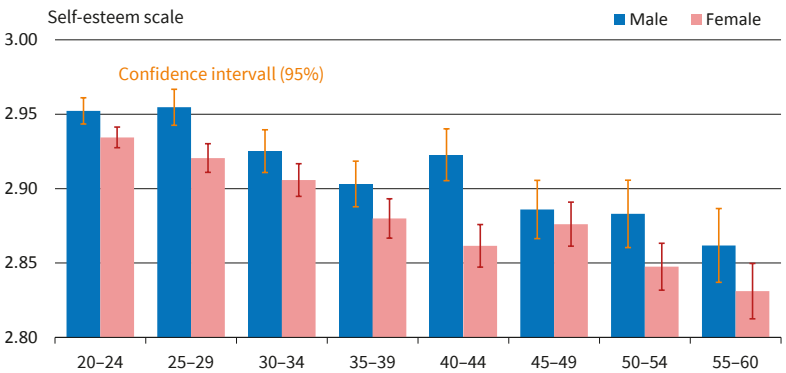
The empirical evidence on gender differences in competitive behaviour mainly originates from laboratory experiments. Overall, the evidence shows a clear gender difference in competitiveness, however, results appear to be sensitive to the experiments' design and underlying data. In a seminal study, Gneezy, Niederle and Rustichini (2003) study the behaviour of men and women in a laboratory experiment. The authors vary the degree of competitiveness throughout the experiment, and as the level of competitiveness increases, the performances of male participants increase. However, this is not the case for female participants. This gender gap is even greater in mixed-sex situations.

Niederle and Vesterlund (2007) find that women shy away from competition while men embrace it. They document substantial differences in the willingness to compete. When given the choice between a competitive and a non-competitive situation, 73 percent of male participants opt for the competitive option, but only 35 percent of female participants do so. Interestingly, these choices do not lead to different productivities. The authors argue that this is caused by men who systematically overestimate their performance. Palomino and Peyrache (2010) find that such a misperception of one's own productivity is only present in the early stages of a career.

Gender differences in attitudes towards competitiveness and risk-aversion can be found already among young children. Sutter and Glätzle-Rützler (2014), who analyse competitive behaviour of children in kindergarten, conclude that preferences regarding competitiveness are formed early in life and that the gender gap is persistent into adolescence. However, the willing-

Figure 1

Mean Reported Self-Esteem by Gender and Age-Group Using the Rosenberg-Self-Esteem Scale (1–4)



Source: Data retrieved from global online survey data at http://personality-testing.info/_rawdata/ (May 7, 2017). N=28,830.

ness to compete might be related to the family's financial status. Almås, Cappelen, Salvanes, Sørensen and Tungodden (2015) find that girls shy away from competition in a sample of well-endowed families and they do not find a gender gap in competitiveness for children from families with a lower socioeconomic background. Booth and Nolen (2012) find an effect of the gender composition of schools on competitiveness of school children. Girls from single-sex schools behave just as competitively as boys. In contrast, Samak (2013) finds no overall gender differences in the selection into a competitive scheme in an experiment involving school children.

Evidence from a large-scale global experimental study suggests that attitudes towards competiveness are also formed by cultural differences. Cardenas, Dreber, von Essen, and Ranehill (2012) conducted laboratory experiments with school children in Colombia and Sweden and found that boys and girls are equally competitive in Colombia, while Swedish boys tend to be more competitive than girls.

Hogarth, Karelaia and Trujillo (2012) provide evidence for a gender gap in exiting competitive situations. Using data from a TV game-show, they show that women tend to leave competitions at a faster rate than men, resulting in a substantial gap in winnings.

Recent evidence suggests that the gender gap in competitiveness may depend on incentives. Petrie and Segal (2015) find that a higher prize induces women to enter a competition as often as men. Furthermore, at the point where both genders enter at equal rates, they also perform equally well. The authors argue that if firms benefit from a higher share of women or from a balanced composition of their workforce, it might be in their interest to increase wages to the point where men and women are equally competitive.

It is not clear what causes gender differences in competitiveness, nature or nurture. Andersen, Ertac, Gneezy, List and Mayimiano (2013) present evidence for a strong role of culture and socialisation (nurture) for the formation of attitudes towards competitiveness among children. Their findings suggest that matrilineal societies do not create gender differences in competitiveness. They find gender gaps only in patriarchal societies. Their findings confirm earlier results by Gneezy, Leonard and List (2009) who, however, did not focus on children.

In contrast, Buser (2012) presents evidence in favour of nature as a driving force behind gender differences in competitiveness. In a laboratory experiment, women select themselves into a competitive scheme less often when they have high levels of the sex hormone progesterone, which varies with the menstrual cycle (and the intake of hormonal contraceptives). Wozniak, Harbaugh and Mayr (2014) provide similar results for the effect of the menstrual cycle on women's willingness to compete. They find that women in the high-hormone phase are more likely to compete than women in the low-hormone phase. This gender difference on competitiveness disappears as subjects are provided with performance feedback. The results are consistent with an evolutionary explanation where competitiveness (for a partner) is valuable during fertile phases of the menstrual cycle, i.e. phases when hormone levels are high.

PERFORMANCE AND COMPETITIVENESS

Samak (2013) finds a sizeable difference in performance between boys and girls under the competitive scheme, which disappeared when participants were able to self-select into competition. Gneezy and Rustichini (2004) document that boys – in contrast to girls – improve their performance when they perform in a competitive setting. Healy and Pate (2011) show that the gender gap in competitiveness is lower when individual persons form teams. Women are found to be more likely to select themselves into competitive settings as teams, irrespective of the gender of the other team members. Men prefer to compete on their own.

Competition in teams, however, also has an effect on the gender gap in performance. If teams are formed by men and women, the team's performance is worse than that of single-sex teams. For example, Ivanova-Stenze and Kübler (2011) show that in competitions between teams, women in mixed teams perform worse than in single-sex teams. Using data from a field experiment, Hoogendoorn, Oosterbeek and van Pragg (2013), in contrast, find that teams perform better when the gender mix is balanced than when there are more men than women. Similarly, Apesteguia, Azmat and Iriberri (2012) find that teams which consist of three women are outperformed by male or mixed teams.

Gender differences in competitiveness could determine differences in educational choices, which might determine later occupations. Buser, Niederle and Oosterbeek (2014) link the results from laboratory experiments with school children to their later choices of secondary education. Their findings suggest that gender differences in competitiveness, which were identified in the experiments, lead to different school choices. Boys, who were found to be more competitive than girls, choose more prestigious academic tracks which focus more on mathematics and science compared to girls.

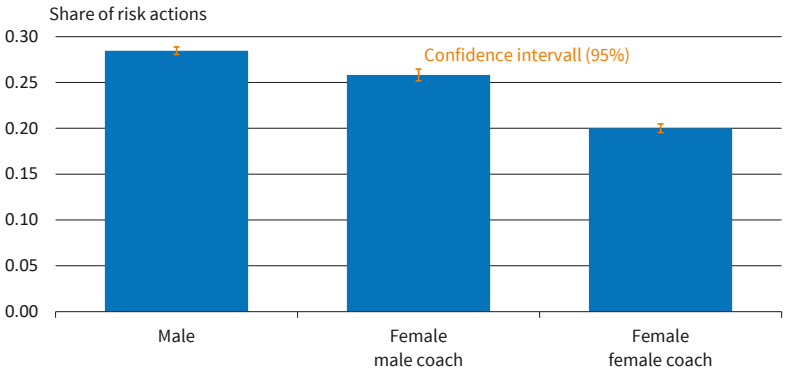
Niederle and Vesterlund (2010) attribute gender differences in math test scores to gender differences in competitiveness. On average, math intensive majors are more frequently chosen by male students. Consequently, the higher share of male classmates might lead to overall worse performances of women in math tests. This can be interpreted as a crucial argument in favor of single-sex classes in math-related subjects. For example, Fryer and Levitt (2009) find a substantial gender gap in math tests scores over the first 6 years of schooling in the United States. This gender gap is, to a certain degree, also confirmed by international data. However,

it is not present in countries with gender-segregated teaching systems. In gender-segregated education systems, girls perform better than girls in coeducational systems, while, on average, boys perform worse.

Morin (2015) evaluates a Canadian reform of the educational system which exogenously changed the number of high school graduates who competed for university places. More competition improved later performance at the university, especially for below-average male students. However, educational outcomes might be influenced by the teacher's gender. Muralidharan and Sheth (2016) show that Indian school girls performed better when they were taught by female teachers. Lim and Meer (2017) provide similar evidence from Korean middle schools.

Figure 2

Risky Strategies by Gender and Coach's Gender



Notes: Data are from NCAA basketball playoff tournaments, 2010–2014. N = 91,631 shooting attempts. Risky strategy is defined as a three-point attempt (as opposed to a two-point attempt). Penalty attempts are excluded.

Source: Böheim, Freudenthaler and Lackner (2017). © ifo Institute

COMPETITIVENESS IN FIRMS

Gender differences in competitiveness could cause women to be less demanding in wage negotiations than men. Leibbrandt and List (2014) show that men negotiate their wages more often than women when it is not explicitly mentioned that wages are negotiable. This gender gap disappears when job announcements explicitly state that wages are negotiable. In addition, they find that men are more likely than women to respond to job announcements when wages are left ambiguous. Card, Cardoso and Kline (2016) provide evidence that women seemingly sort themselves into firms with low wage premiums and they receive on average only 90 percent of the premiums that men receive. They conclude that this gender difference is due to self-sorting and weaker bargaining of female workers. The authors conclude that this gap in competitiveness could explain 20 percent of the gender wage gap in Portugal.

The gender gap in competitiveness might have strong implications for managerial decision making. For example, Huang and Kisgen (2013) find that male executives undertake fewer acquisitions and issue debt more frequently than female executives. Similarly, Faccio, Marchica and Mura (2016) show that female managers take less risk than their male managers, and that female-led firms stay in operation longer. In contrast, Atkinson, Baird, and Frye (2003) find no significant differences in decision making for male and female mutual fund managers.

Female leadership might also affect firm performance in a competitive environment. Amore and Garofalo (2016) analyse the relationship between executive gender and firm performance under competitive and non-competitive market conditions. Firms with a female executive turned out to perform significantly better financially in situations of low competition, but they underperform after a competitive shock. Potential negative consequences of female leadership on firm performance are in some aspects contested by Levi, Li, and Zhang (2014). According to their results, an increase in female leadership leads to fewer and lower bids in merger processes, which could increase shareholder value. As an indicator of risk-aversion, financial stability is greater when females are present in executive boards (Amore and Garofalo, 2016).

SPORTS DATA

The analysis of competitive behavior in observational data is difficult as there is no clear and intuitive measure of competitiveness. In addition, causal outcomes as well as characteristics of decision makers are often imperfectly observed. An alternative data source, which is receiving more and more attention among economists, is (professional) sport contests. Professional sports have strong incentive structures, clearly defined rules and typically provide detailed information about the background and abilities of contestants. Moreover, rewards are linked to clearly measurable performances. Sports data are analysed in a variety of applications, for example, to analyse performance under pressure, tournament dynamics, team performance, and related issues, such as discrimination by sex or race.

Wozniak (2012) analyses top-level professional tennis players and finds evidence for a systematic difference in the selection into tournaments. Men and women differ in their reaction to previous performances. Women tend to compete more when they did well in past tournaments, while male players reduce their level of competitiveness. Frick (2011a, b), who

analyses data from long-distance running contests, finds similar patterns. Using data from professional tennis as well, Jetter and Walker (2015) find a very small gender gap in performance.

Böheim and Lackner (2015) analyse data from top-level jumping competitions and find that men take significantly more risks than women. Male and female athletes benefit from risk-taking in terms of subsequent performance, but female athletes seem to choose a risky strategy only when the chances of success are high. This can be interpreted as evidence for a gender gap in competitiveness.

Similarly, Böheim, Freudenthaler and Lackner (2016) find a sizeable gender gap in risk-taking in top-level basketball games in the USA. They focus on crucial situations towards the end of games where a successful risky strategy could win a contest. In such situations, male players increase risk-taking, while female players reduce risk-taking. Böheim, Freudenthaler and Lackner (2017), analysing male and female basketball players in the US collegiate sports system (NCAA), find that the gender gap in risk-taking is due to female teams that are coached by female coaches. Female teams that are coached by male coaches are almost indistinguishable from male teams in terms of their risk-taking behavior. This can be interpreted as further evidence for a strong nurture component in the gender gap in competitiveness.

CONCLUSION

Economists provide evidence for a gender gap in competitiveness. This gender gap is evident for selection into competitive environments as well as the performance in competitive environments. Gender-specific attitudes to competitiveness and risk-taking could explain gender differences in labour market outcomes. They are also of central relevance for education policies such as single sex education, choice of college majors and performance gaps in tests.

Closing the gender gap in competitiveness could have a multitude of positive effects in many different areas. However, it is not clear if it is per se desirable to make women more competitive in order to close the gender gap in competitiveness. A recent study by Eckel and Füllbrunn (2015) demonstrates that experimental financial markets which are dominated by men produce significant price bubbles. This provides a strong argument against closing the gender gap in competitiveness by raising women's competitiveness to men's levels. Similarly, men are often overconfident and suffer from being overly competitive, which might affect overall performance negatively (Barber and Odean, 2001).

Most of the empirical evidence that supports the existence of a gender gap in competitiveness is from laboratory experiments. The evidence from field data is not as conclusive as the evidence from laboratory experiments because it is difficult to collect the necessary data for the identification of causal effects. One potential source for valuable data on a multitude of different competitive settings is sports. Novel data, especially from professional sports competitions, could help to provide an understanding, for example, whether nature or nurture is the main influence shaping gender differences in competitiveness.

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