

Gender Quotas and Perceptions of Ability by Gideon Moore

Despite making up half the country's population, women comprise only 40% of American managers (Bureau of Labor Statistics 2021) and 28% of S&P 500 board directors (Spencer Stuart 2020). To rectify this leadership disparity, institutions often pursue some form of pro-female pipeline; for example, California Senate Bill 826 requires each publicly-traded corporation located in California to include at least one woman as a director on its board.

A common critique of these “quota-style” representation policies is that the women who are brought in will be less skilled than their male counterparts. This fear is frequently unfounded. Besley et al. (2017) finds that when the Swedish Social Democratic Party required half its parliamentary representation be female, it saw no measurable impact on the competence of its women leaders. In a laboratory setting, Niederle, Segal, and Vesterlund (2012) finds that women are more willing to compete in tournaments guaranteeing half the winners are female; this increase in tournament entry generates many otherwise-lost high performing women, offsetting any inefficiencies created by displacing men from the podium.

Research Topic: While the efficiency costs of quotas may be low, I anticipate these policies may warp beliefs about the participants. If a quota appears to have more bite than it does, onlookers would underestimate successful women while overestimating their male peers. To assess the magnitude of this distortion, I propose a laboratory experiment in the tradition of Niederle and Vesterlund (2007).

Research Project: Participants will compete to finish as many arithmetic problems as possible in a limited timeframe, as in Niederle, Segal, and Vesterlund (2012). The top 10% of participants will be declared “winners” and receive a prize. However, I will enforce a gender quota on winners--if the victor pool does not have enough women, I drop the lowest-scoring successful man for the highest-scoring unsuccessful woman until the sample is even. I can vary the strength of the quota across trials to assess the elasticity of the effect.

After declaring the winners, I ask participants three questions about how they believe the quota impacted the results of the tournament: (1) *What was the minimum score a man would have needed to win?* (2) *What was the minimum score a woman would have needed to win?* (3) *Given you [won/lost], how many points [above/below] the threshold were you?* Because I run the tournament, I observe the true value for each question, and can compare the *actual* threshold to each participant's *perceived* threshold to check for bias. If participants underestimate the score needed for women to win, they are underestimating the abilities of “successful” women. Similarly, participants who overestimate the threshold needed for successful men overestimate the skills of men who lost.

Even if a participant grasps the population-level skill distribution, they may struggle to understand their own abilities. I use the third question to assess this self-perception; if successful women perceive others accurately but underestimate their own performance, it suggests the quota generates “impostor syndrome” among successful women. Meanwhile, if unsuccessful men mistakenly believe they would have won absent the quota, they will perceive the policy to be more costly than it truly was.

To minimize anchoring, I will ask the questions in a random order. Further, because I know the “true” values, I can incentivize answering correctly with monetary rewards to elicit true beliefs.

Given men who won and women who lost could not have been impacted by the quota, their beliefs provide a meaningful comparison with the “treated” competitors. To confirm this objectivity, I would run a pilot where spectators who never compete in the tournament provide their opinions on the first two questions to see whether their beliefs match these supposedly “untreated” subjects.

It is possible the quota policy would endogenously affect effort of the participants, and the direction of this effect is ambiguous. To address this, I would run two treatments: one where I inform participants of the quota before they compete, and a second where I inform them after the competition but before we elicit their beliefs. The difference in scores between these two treatments provides the size of the endogenous effort adjustment.

In addition to the arithmetic tournament, I will run a card-drawing "tournament," such that players are ranked only based on the value of a drawn card. This allows me to rule out multiple factors which could explain results in the primary treatment.

First, prospect theory suggests people may over-weight small events; if the probability of being affected by the quota is small, then exaggerating the probability may be due to simple probability weighting rather than the quota itself. So long as the expected size of the quota impact between the card-draw game and the mathematical tournament is the same, I can use this second tournament to factor out probability weighting. Second, it is possible bias regarding the impact of the quota stems from personal investment: people want to believe their abilities are high. Given the card treatment is "ability-less," this treatment allows me to difference out any other potential biases around updating beliefs to focus in on those stemming from ego.

Intellectual Merit: This project advances economists' understanding of how diversity-pursuing policies impact gender dynamics after the recruitment process completes.

While other papers (Heilman, Rivero, and Brett 1991; Heilman, McCullough, and Gilbert 1998) have examined cross-gender perceptions of ability when roles are determined by gender, I believe my proposal is the first to do so using revealed preferences in a way that distinguishes among the three errors discussed above—underestimating women, overestimating men, and misperception of the self.

Broader Impacts: In the long run, this line of investigation feeds neatly into a question of market design. It is straightforward to generate a policy which both increases representation among women and maintains accurate beliefs: simply release the full distribution of scores publicly and individual scores privately. However, this could be unpopular, as students brought in/out on the margin will be upset.

Therefore, we have a third desideratum: maintain an amount of ambiguity on the margin that people will not be sure whether they were affected by the quota. As it stands, most quotas satisfy the first and third, but most thus far given minimal thought to the second.

In addition to gender, there is a natural extension into policies around racial diversity. Of particular interest are the impacts of holistic admissions policies; while explicit "quotas" are illegal, if these policies are perceived as quotas they could lead to similar biases around ability.

One potential angle of interest from a market designer's perspective would be the distinction between quotas and subsidies. While any quota-based outcome could also be achieved via subsidy, it is possible one structure generates more bias than the other. This would be simple to investigate by running the experiment using a subsidy, then again using a quota enforcing the ex-post gender distribution generated during the subsidy round. Subsidies are a particularly interesting policy to investigate as much of the rhetoric around holistic admissions is phrased as a subsidy--e.g. one group needs X more SAT points than another to be comparable.

References: Besley, Timothy, Olle Folke, Torsten Persson, and Johanna Rickne. 2017. "Gender Quotas and the Crisis of the Mediocre Man: Theory and Evidence from Sweden." *American Economic Review* 107 (8): 2204–42. <https://doi.org/10.1257/aer.20160080>. • Bureau of Labor Statistics. 2021. "Labor Force Statistics from the Current Population Survey." • Heilman, Madeline E., Winston F. McCullough, and David Gilbert. 1998. "The Other Side of Affirmative Action: Reactions of Nonbeneficiaries to Sex-Based Preferential Selection." *Journal of Applied Psychology* 81 (4): 346. <https://doi.org/10.1037/0021-9010.81.4.346>. • Heilman, Madeline E., J. Carlos Rivero, and Joan F. Brett. 1991. "Skirting the Competence Issue: Effects of Sex-Based Preferential Selection on Task Choices of Women and Men." *Journal of Applied Psychology* 76 (1): 99. <https://doi.org/10.1037/0021-9010.76.1.99>. • Niederle, Muriel, Carmit Segal, and Lise Vesterlund. 2012. "How Costly Is Diversity? Affirmative Action in Light of Gender Differences in Competitiveness." *Management Science* 59 (1): 1–16. <https://doi.org/10.1287/mnsc.1120.1602>. • Niederle, Muriel, and Lise Vesterlund. 2007. "Do Women Shy Away From Competition? Do Men Compete Too Much?" *The Quarterly Journal of Economics* 122 (3): 1067–1101. <https://doi.org/10.1162/qjec.122.3.1067>. • Spencer Stuart. 2020. "2020 U.S. Spencer Stuart Board Index." Spencer Stuart.