

DISCUSSION PAPER SERIES

IZA DP No. 13768

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Exposure: Evidence from Professional
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ABSTRACT

The Gender Gap in Aversion to COVID-19 Exposure: Evidence from Professional Tennis*

We study the gender differences in aversion to COVID-19 exposure. We use a natural experiment of the 2020 US Open, which was organized in the country with the highest number of COVID-19 cases and deaths, and was the first major professional tennis tournament that was held after the season had been paused for six months. We analyze the gender gap in the propensity to voluntarily withdraw because of COVID-19 concerns among players who were eligible and fit to play. We find that female players were significantly more likely than male players to have withdrawn from the 2020 US Open. While players from countries characterized by relatively high levels of trust and patience and relatively low levels of risk-taking were more likely to have withdrawn than their counterparts from other countries, female players exhibited significantly higher levels of aversion to pandemic exposure than male players even after cross-country differences in preferences are accounted for. About 15% of the probability of withdrawing that is explained by our model can be attributed to gender.

JEL Classification: J16, I12, J44

Keywords: COVID-19, exposure to disease, gender, aversion, tennis

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1. Introduction and motivation

The COVID-19 pandemic has been spreading rapidly around the world. By September 17, 2020, nearly 30 million people had been infected with the virus, and 941,000 people had died from it (according to data from the Johns Hopkins University). In the first half of 2020, non-pharmaceutical interventions, such as school closures and restrictions on economic activity and mobility, were widely implemented. As the first pandemic wave has waned, the focus has shifted to helping people safely return to work by managing their exposure to contagion in the workplace and during work-related activities, such as commuting (ILO 2020).

Evidence has also emerged that the COVID-19 pandemic has affected men and women differently. Compared to men, women are less likely to become severely ill or die from COVID-19,¹ but are as likely to be infected; and in 35 high-income countries with available data, women constitute the majority (52%) of those infected (according to the Global Health 50/50 data). Gender differences in engaging in workplace interactions that are critical for the spread of infectious diseases transmitted by the respiratory or close-contact route, such as COVID-19 (Mossong et al. 2008), are among the social factors that contribute to this gender gap. Compared to male workers, female workers have higher occupational exposure to contagion, and are more likely to work in highly exposed occupations (Lewandowski 2020). At the same time, the COVID-19 crisis has affected the employment outcomes of women more than those of men. This is in part because the crisis hit the female-dominated sectors particularly hard, and, within these industries, women have been more likely than men to lose their jobs (Adams-Prassl et al. 2020). Moreover, higher shares of women than men have reported suffering from deteriorating mental health due to the pandemic, being concerned about contracting and spreading SARS-CoV-2, and perceiving the virus as prevalent and lethal (Oreffice and Quintana-Domeque 2020). Across European countries, a substantially higher share of women than men say they are concerned about the potential side effects of a vaccine (36% of women vs. 19% of men), and a lower share of women than men say they are willing to get vaccinated (70% of women vs. 78% of men, Neumann-Böhme et al., 2020). Overall, women appear to be more concerned with the pandemic, and to be more exposed to contagion at work than men. An important question that arises in this context is whether these potential gender differences in perceptions of COVID-19 risk affect the labor market participation of men and women.

In this paper, we contribute to the literature on the gender dimension of the COVID-19 pandemic by studying the gender gap in aversion to pandemic exposure. We use a natural experiment of the US Open tennis tournament held in New York City between August 31 and September 13, 2020, which was the first major tournament that was organized after the tennis season had been put on hiatus due to COVID-19 concerns. We analyze the factors associated with the voluntary withdrawals of players who were eligible to play. The Grand Slam tennis tournaments, like the US Open, constitute a useful setting for studying gender differences in decision-making and performance, as the conditions for participation, the structure of the tournaments, and the prize money amounts are identical for men and women. In 2020, the health and safety protocols at the US Open were also the same for both genders. Hence, the gender differences in the propensity to voluntarily withdraw from the US Open can be interpreted as having been driven by gender differences in aversion to pandemic exposure, especially given that the tournament took place in the country that had the highest numbers of COVID-19 cases and deaths.

¹ Sex-based immunological differences, or gender differences in the prevalence of comorbidities or behaviors that turn out to be risk factors for COVID-19, may contribute to gender differences in health outcomes (Wenham, Smith, and Morgan 2020).

We find that female players were significantly more likely to have voluntarily withdrawn from the tournament, which was organized in an epidemiologically risky setting. Higher ranked players and older players were also more likely to have withdrawn. Our findings are robust to controlling for cross-country differences in preferences. While players from countries characterized by higher levels of patience and trust and by lower levels of risk-taking were also significantly more likely to have withdrawn, the gender gap remains significant even after we control for these factors. It is also found to be particularly large among players ranked in the top 50, who are richer.

Gender differences in risk-taking and other psychological reactions have been cited as being among the main causes of gender gaps in employment outcomes, including the gender pay gap and the underrepresentation of women in top-tier jobs (Booth and Nolen 2012). Experimental studies have suggested that females are more averse to risk and tend to shy away from competitive settings (Croson and Gneezy 2009; Eckel and Grossman 2008). However, the estimated sizes of the gender differences in risk attitudes vary depending on the method used and the context in which decisions are made (Filippin 2016). For instance, the gender gap in risk-taking was found to be larger in abstract gambles than in day-to-day financial choices (Schubert et al. 1999), or in private contexts rather than in professional contexts (Drupp et al. 2020). The real-life studies of gender gaps in risk-taking tend to be focused on gender differences in investment choices in financial markets or pension funds (Eckel and Füllbrunn 2015). However, the differences in risk-taking behavior in real life may result not only from differences in risk preferences, but also, for instance, from differences in the availability of information. Hence, the determinants of gender differences in risk attitudes remain largely unknown. According to Falk and Hermlle (2018), gender differences in preferences are positively related to countries' levels of economic development and gender equality, which suggests that having more equal access to material and social resources favors the manifestation of gender-differentiated preferences. In particular, women were found to be more impatient, less risk-tolerant, and more prosocial than men (Falk et al. 2018). We contribute to this strand of literature by studying gender differences in reactions to a specific type of risk related to exposure to a pandemic.

Grasping the differences in risk-taking behavior is harder in real-life situations than in lab experiments because outside of the laboratory, the available options are usually not restricted to a well-defined set of choices. Professional sports create opportunities to tackle this challenge. Sports involve rules that aim to ensure that the players have symmetrical information, and to define a set of options that can often be ranked by their level of risk. Incentive structures and rewards are linked to performance, which can be precisely measured. In individual sports such as tennis, each player makes his/her own decisions, which are not predefined by a group strategy. Therefore, players have fewer opportunities to adopt strategies that deviate from the optimal level of effort, and their effort levels mainly depend on the structure of the prizes and on the heterogeneity in the players' abilities. Finally, psychological factors, such as risk preferences, play an important role. It has been shown that female tennis players are less resilient to pressure if they lag behind, especially if the stakes are high (De Paola and Scoppa 2017). There is also evidence that women players tend to pursue a more conservative strategy as points become more important (Paserman 2007), but are not more likely than men to choke under pressure (Cohen-Zada et al. 2017). It also appears that tournament structures matter: it has, for example, been shown that a larger prize spread between successive rounds encourages female players to increase their effort levels, but also that the outcomes are defined by ranking differentials (abilities), rather than by incentives to increase their effort levels (Lallemand, Plasman, and Rycx 2008). While we do not study the actual performance of players during the tournament, we use its identical treatment of men and women to assess gender differences in the willingness to participate in a professional activity perceived as risky and inconvenient due the COVID-19 pandemic.

2. Data and Methodology

The professional tennis season was paused on March 12, 2020, due to concerns about COVID-19. The female tour resumed on August 3, 2020, with tournaments in Palermo and Prague, followed by the Western & Southern Open and the US Open tournaments played at the same venue in New York City. The male tour resumed on September 22, 2020, with the Western & Southern Open tournament, followed by the US Open, which were played at the same venue, and parallel to the female tournaments. During the tournaments in NYC, a “bubble” was created and the same health and safety rules were applied to all male and female players: (i) each player’s entourage could include up to three people, and (ii) the players had to stay in one of the two pre-approved hotels. The players were not allowed to leave the bubble, or to have contact with any people outside of it.² Audiences were not allowed in the stadiums.

The Grand Slam tournaments such as the US Open have an identical structure for male and female competitions: 128 players are included in each draw, and the prize money is the same for men and women. In general, players ranked in the top 100 before a Grand Slam tournament are automatically eligible to play, while the remaining places are awarded to players who are successful in a qualifying tournament, and players who receive the so-called wildcards. In 2020, the qualifying tournament was not held, and entry lists were created based on rankings. However, we restricted our study to the top 100 male and female players, as these players could have expected long in advance that they would be eligible to play. To collect information about rankings, we scraped data from websites of Association of Tennis Professionals (www.atptour.com) and Women Tennis Association (www.wtatennis.com), and we merged it with the entry list to the US Open (www.usopen.org).

In 2020, 36 out of the top 100 male and female players did not participate in the US Open. Of these players, 25 (19 female and six male players) withdrew due to COVID-19 concerns (Table 1). Another 11 players withdrew for other reasons (Table 2): seven withdrew due to either injury or illness (four female and three male players), two withdrew due to parenting responsibilities (one female and one male player), and two were not able to play because of a diagnosed COVID-19 infection (both males).³ For each player, we specified the reason for his/her withdrawal using his/her social media channels and/or media interviews. The exact sources we used to determine the reason for each player’s decision are available upon request. Our final sample includes 189 players from 48 countries who were eligible and fit to play.

² Instead of staying at a pre-approved hotel, players were also allowed to rent a house and hire a security guard to ensure that they remained in the bubble. To our knowledge, only two players – Serena Williams and Novak Djokovic – decided to do so. The cost of such an arrangement was so high that even elite players, such as former world number 1 Andy Murray, announced that they would stay in the hotel bubble on financial grounds. Hence, it can be credibly assumed that staying in the bubble was the only option for nearly all players.

³ In 2019, 17 out of the top 100 male and female players withdrew from the US Open because of injuries or for personal reasons. In 2020, the number of injured players was lower than it was in 2019, which could be expected, as there was no competition between March and August. However, in 2020, the total number of players who withdrew was more than double the number in 2019.

Table 1. Players who withdrew from the 2020 US Open because of COVID-19

| Ranking | Name | Country | Age | Ranking points | Tournaments played in the last year | Gender |
|---------|--------------------------|---------|-----|----------------|-------------------------------------|--------|
| 1 | Ashleigh Barty | AUS | 24 | 8717 | 17 | Female |
| 2 | Rafael Nadal | ESP | 34 | 9850 | 18 | Male |
| 2 | Simona Halep | ROU | 29 | 6356 | 17 | Female |
| 5 | Elina Svitolina | UKR | 26 | 4580 | 24 | Female |
| 6 | Bianca Andreescu | CAN | 20 | 4555 | 10 | Female |
| 7 | Kiki Bertens | NED | 29 | 4335 | 25 | Female |
| 9 | Gael Monfils | FRA | 33 | 2860 | 22 | Male |
| 10 | Belinda Bencic | SUI | 23 | 4010 | 25 | Female |
| 15 | Stan Wawrinka | SUI | 35 | 2185 | 20 | Male |
| 30 | Qiang Wang | CHN | 28 | 1706 | 23 | Female |
| 32 | Anastasia Pavlyuchenkova | RUS | 29 | 1540 | 22 | Female |
| 33 | Barbora Strycova | CZE | 34 | 1530 | 21 | Female |
| 34 | Svetlana Kuznetsova | RUS | 35 | 1527 | 17 | Female |
| 36 | Saisai Zheng | CHN | 26 | 1510 | 24 | Female |
| 40 | Nick Kyrgios | AUS | 25 | 1170 | 18 | Male |
| 40 | Julia Goerges | GER | 32 | 1423 | 21 | Female |
| 43 | Jelena Ostapenko | LAT | 23 | 1360 | 24 | Female |
| 49 | Polona Hercog | SLO | 29 | 1205 | 23 | Female |
| 50 | Jo-Wilfried Tsonga | FRA | 35 | 1005 | 22 | Male |
| 55 | Fernando Verdasco | ESP | 36 | 945 | 25 | Male |
| 58 | Su-Wei Hsieh | TPE | 34 | 1035 | 23 | Female |
| 76 | Tamara Zidansek | SLO | 23 | 840 | 26 | Female |
| 80 | Lin Zhu | CHN | 26 | 830 | 30 | Female |
| 83 | Yafan Wang | CHN | 26 | 795 | 26 | Female |
| 90 | Andrea Petkovic | GER | 33 | 750 | 23 | Female |

Source: Own elaboration based on data web scraped from ATP, WTA, and US Open websites.

Table 2. Players who withdrew from the 2020 US Open for other reasons

| Ranking | Name | Country | Age | Ranking points | Tournaments played in the last year | Gender | Withdrawal reason |
|---------|-----------------------|---------|-----|----------------|-------------------------------------|--------|----------------------|
| 4 | Roger Federer | SUI | 39 | 6630 | 16 | Male | Injury |
| 12 | Fabio Fognini | ITA | 33 | 2400 | 24 | Male | Injury |
| 23 | Benoit Paire | FRA | 31 | 1738 | 32 | Male | Diagnosed with COVID |
| 34 | Kei Nishikori | JPN | 30 | 1345 | 13 | Male | Diagnosed with COVID |
| 47 | Fiona Ferro | FRA | 23 | 1267 | 26 | Female | Injury |
| 59 | Lucas Pouille | FRA | 26 | 880 | 22 | Male | Injury |
| 69 | Pierre-Hugues Herbert | FRA | 29 | 775 | 28 | Male | Parenting |
| 71 | Carla Suárez Navarro | ESP | 32 | 881 | 19 | Female | Illness |
| 87 | Anastasia Potapova | RUS | 19 | 759 | 27 | Female | Injury |
| 89 | Ana Bogdan | ROU | 28 | 755 | 26 | Female | Injury |
| 98 | Samantha Stosur | AUS | 36 | 667 | 22 | Female | Parenting |

Source: Own elaboration based on data web scraped from ATP, WTA, and US Open websites.

In order to analyze the differences between female and male players in the propensity to withdraw from performing in a pandemic environment, we estimate logistic (1) regressions:

$$\Pr(\text{withdraw from US Open}_{jc} = 1) = F(\beta_0 + \beta_1 X_j + \beta_2 \lambda_c + \varepsilon_{jc}) \quad (1)$$

where $F(Z) = \frac{e^Z}{1+e^Z}$, j stands for individual, and c for country; X_j is a vector of personal characteristics (sex, age (log), ranking (log)); and λ_c is a vector of country-level controls: the measures of patience, risk-taking, altruism, and trust based on the Global Preference Survey conducted in 76 countries (GPS, Falk et al., 2018),⁴ and 2018 GDP per capita (in purchasing power parity, log) taken from the World Bank's World Development Indicators database. All country-level variables, ages, and rankings are standardized in our sample.

We control for country-level preference measures to account for the observed differences in the general willingness to take risks, as well as in other preferences that may affect attitudes toward the pandemic and compliance with containment policies. Bargain and Aminjonov (2020) found that the decline in mobility around mid-March 2020 was significantly stronger in European regions with higher levels of trust, which suggests that trust affects compliance. Compliance with health regulations (and, therefore, willingness to contribute to the common good) may be also influenced by levels of social capital. In European countries, locations with higher levels of social capital initially had higher numbers of COVID-19 cases due to the greater intensity of social and economic relations in these places, but they also recorded a slower spread of the virus after containment policies had been introduced (Bartscher et al. 2020). We control for GDP per capita, as gender differences in preferences may be expressed more frequently in more developed than in less developed countries (Falk and Hermle, 2018).

We estimate two variants of model (1). First, we control for individual characteristics only. Second, we add country-level controls. We also re-estimate our model on a subsample of non-US players, for whom the perceived risk of participation may be higher because they have to undertake international travel and may be unfamiliar with the local health system; as well as for subsamples of players ranked in the top 50 and in places 51-100. We also estimate probit and linear probability models instead of a logit model.

Finally, in order to assess the relative role of gender and other factors in the probability of withdrawing from the 2020 US Open, we use the Shapley decomposition proposed by Shorrocks (2013).

⁴ The GPS data are not available for the following countries that include a total of 21 top 100 male or female players who decided against participating in the US Open: Belgium, Belarus, Latvia, Montenegro, Norway, Puerto Rico, Slovenia, Slovakia, Taipei, Tunisia, Uruguay.

3. Results

The share of women among the top 100 players who voluntarily withdrew from the 2020 US Open is noticeably higher (76%) than it is among the players who participated (46%, Table 3). Moreover, the players who withdrew are, on average, older and higher ranked than the players who participated. These players also come disproportionately from countries that exhibit higher levels of patience, lower levels of risk-taking, higher levels of altruism and trust, and lower levels of GDP per capita.

Table 3. Descriptive statistics

| | Female | Age | Ranking | Patience | Risk taking | Altruism | Trust | GDP per capita |
|-------------|--------|------|---------|----------|-------------|----------|-------|----------------|
| Participant | 46.3% | 26.9 | 53 | -0.02 | 0.03 | 0.00 | -0.04 | 0.01 |
| Withdrawn | 76.0% | 29.1 | 35 | 0.20 | -0.05 | 0.10 | 0.45 | -0.17 |

Note: All country-level variables- patience, risk taking, altruism, trust and GDP per capita are standardized in our sample.

Source: Own calculations based on data web scraped from US Open, ATP and WTA websites, GPS, and WDI data.

Our econometric results show that female players were significantly more likely (by 15.3 pp on average) to decide against participating in the US Open than men (column 1 of Table 4). Older players, and higher ranked players were also more likely to withdraw. The probable mechanism behind the effect associated with ranking is that higher ranked players are more affluent and earn higher incomes from endorsements, and thus may have been more willing to forego prize money from a tournament perceived as risky. The size of the effect associated with gender is found to be slightly smaller (12.5 pp) in a subsample of players for which the Global Preference Survey data are available (column 2 of Table 4). While controlling for country-level covariates reduces the size of the effects associated with gender, it remains highly significant and large (10.5 pp, column 3 of Table 4). Moreover, players from countries characterized by higher levels of patience and trust and by lower levels of risk-taking were significantly more likely to have decided against participating in the 2020 US Open (column 3 of Table 4).

Importantly, in a subsample of non-US players, the effect associated with gender is shown to be noticeably larger (15.6 pp), while the effects associated with other factors at both the individual and the country level are found to be similar to those estimated in the full sample (column 4 of Table 4). This suggests that the female players may have been particularly more concerned about exposure associated with travel than the male players. Finally, the female players were significantly more likely to have voluntarily withdrawn than the male players among the top 50 players, but among the players ranked 51-100 the effect is not significant (columns 6 and 7 of Table 4, respectively). The top 50 players (who constitute 1% of all players) earn more than 50% of all prize money, and the average earnings of top 50 players are about five times the average earnings of players ranked 51-100, both among women and men (ITF 2014).⁵ Hence, the gender gap in aversion to pandemic exposure is manifested to a larger extent among players with higher ranking and incomes. Our finding is consistent with Falk and Hermle (2018) who show that gender differences in preferences are more likely to be revealed when incomes are higher.

⁵ The differences in total earnings are even larger because top players earn the majority of their income from endorsements (Badenhausen 2020).

Our findings are robust to changes in the econometric methodology, as the probit and linear probability models (columns 7 and 8 of Table 4, respectively) deliver similar estimates as the logit model (column 3 of Table 4).

Table 4. The correlates of voluntary withdrawal from the 2020 US Open due to COVID-19 concerns (marginal effects)

| | Player controls (1) | Player controls (sample w/ GPS data) (2) | Player and country controls (3) | Player and country controls, no US players (4) | Player and country controls, players ranked in top 50 (5) | Player and country controls, players ranked 51-100 (6) | Player and country controls (probit) (7) | Player and country controls (OLS) (8) |
|---------------------------|------------------------|---|------------------------------------|---|--|---|---|--|
| Female | 0.153*** (0.051) | 0.125** (0.051) | 0.105** (0.048) | 0.156*** (0.045) | 0.154* (0.080) | 0.041 (0.028) | 0.095** (0.044) | 0.104** (0.046) |
| Age (log) | 0.068** (0.028) | 0.071** (0.029) | 0.067** (0.031) | 0.101*** (0.032) | 0.102* (0.052) | 0.045 (0.032) | 0.068*** (0.026) | 0.070** (0.027) |
| Ranking (log) | -0.064*** (0.018) | -0.067*** (0.018) | -0.067*** (0.016) | -0.081*** (0.016) | -0.071** (0.032) | 0.023 (0.096) | -0.069*** (0.017) | -0.099*** (0.031) |
| Patience | | | 0.093** (0.037) | 0.102*** (0.033) | 0.107* (0.063) | 0.069 (0.053) | 0.092*** (0.035) | 0.089** (0.035) |
| Risk-taking | | | -0.066** (0.031) | -0.051* (0.028) | -0.095* (0.057) | -0.046 (0.033) | -0.059** (0.029) | -0.042** (0.021) |
| Altruism | | | -0.005 (0.024) | 0.073** (0.035) | -0.009 (0.045) | 0.002 (0.013) | -0.008 (0.023) | 0.000 (0.023) |
| Trust | | | 0.042* (0.022) | 0.009 (0.028) | 0.048 (0.047) | 0.047** (0.020) | 0.044** (0.022) | 0.052* (0.027) |
| GDP per capita (PPP, log) | | | -0.062*** (0.023) | -0.036 (0.026) | -0.054 (0.055) | -0.041* (0.021) | -0.062*** (0.024) | -0.091** (0.042) |
| Adj. R2 / R2 | 0.175 | 0.207 | 0.299 | 0.400 | 0.230 | 0.475 | 0.306 | 0.226 |
| No. of obs. | 189 | 168 | 168 | 141 | 85 | 83 | 168 | 168 |

Note: All parameters are presented as average marginal effects. All models include constant (not presented). R2 shown in the case of linear probability model (8). Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Own estimation based on data web scraped from US Open, ATP and WTA websites, GPS, and WDI data.

In order to assess the relative roles of gender and other factors in the probability of withdrawing from the 2020 US Open, we use the Shapley decomposition. We find that gender is the second-most relevant factor, behind rank. In the total sample, 13% of the explained variance in the withdrawal probability can be attributed to gender (Table 5); about 41% can be attributed to rank and 17% to age, and about 21% can be attributed to cross-country differences in preferences, in particular in levels of trust and patience. In a subsample of non-US players only, the contribution of gender (18%) and the contribution of preferences (29%) are even higher. Finally, the contribution of gender

amounts to 19% among both the players ranked in top 50, but only to 9% among the players ranked 51-100. Age and ranking are the two factors with the largest contributions to differences in withdrawal probability among the players ranked in top 50. Among the players ranked 51-100, however, age and ranking play a minor role, and the differences in withdrawal probability can be rather attributed to cross-country differences in preferences.

Table 5. The Shapley decomposition of the probability of voluntary withdrawal from the 2020 US Open

| | Female | Age | Ranking | Patience | Risk taking | Altruism | Trust | GDP per capita | Total |
|--------------------------|--------|-------|---------|----------|-------------|----------|-------|----------------|--------|
| All players | | | | | | | | | |
| Shapley value | 0.029 | 0.039 | 0.092 | 0.015 | 0.006 | 0.002 | 0.024 | 0.020 | 0.226 |
| Share in total | 12.7% | 17.2% | 40.9% | 6.5% | 2.5% | 0.8% | 10.7% | 8.7% | 100.0% |
| Non-US players | | | | | | | | | |
| Shapley value | 0.054 | 0.052 | 0.100 | 0.038 | 0.003 | 0.019 | 0.026 | 0.010 | 0.303 |
| Share in total | 17.8% | 17.1% | 33.1% | 12.7% | 1.1% | 6.2% | 8.6% | 3.3% | 100.0% |
| Players ranked in top 50 | | | | | | | | | |
| Shapley value | 0.041 | 0.066 | 0.053 | 0.015 | 0.011 | 0.002 | 0.017 | 0.008 | 0.214 |
| Share in total | 19.4% | 30.8% | 24.7% | 6.9% | 5.3% | 1.0% | 8.2% | 3.8% | 100.0% |
| Players ranked 51-100 | | | | | | | | | |
| Shapley value | 0.018 | 0.023 | 0.001 | 0.017 | 0.007 | 0.010 | 0.065 | 0.049 | 0.191 |
| Share in total | 9.4% | 12.1% | 0.4% | 9.1% | 3.7% | 5.4% | 34.2% | 25.9% | 100.0% |

Note: Shapley decomposition based on a linear probability models shown in column 5 of Table 4.

Source: Own estimation based on data web scraped from US Open, ATP and WTA websites, GPS, and WDI data.

4. Discussion and conclusions

In this paper, we have studied the gender differences in aversion to COVID-19 exposure. To do so, we used a natural experiment of the professional tennis US Open tournament, which was the first major tournament organized after the tennis season had paused for six months due to the pandemic. It was held in the country with the highest numbers of COVID-19 cases and deaths, and 14% of eligible and fit players declined to participate. As the conditions and rules for participation, as well as the prize money amounts, were identical for men and women, we have argued that the differences found in the propensity to voluntarily withdraw reflect gender differences in aversion to pandemic exposure.

Our results show that female players were significantly more likely to have withdrawn from the 2020 US Open because of COVID-19 concerns. Players from countries characterized by higher levels of trust and patience and lower levels of risk-taking were more likely to have withdrawn. However, the female players exhibited significantly higher levels of aversion to pandemic exposure than male players, even if cross-country differences in preferences are accounted for. About 15% of the withdrawal probability explained by our model can be attributed to gender.

Professional tennis players are a relatively well-paid group of people who can afford to avoid participating in tournaments if doing so is perceived as risky, even though because of their young age they face a low risk of severe illness from COVID-19 (Williamson et al. 2020). In the general labor market, however, women are more exposed to contagion than men because of sectoral and occupational segmentation (Lewandowski, Lipowska, and Magda 2020), and can rarely shield themselves from this exposure (Adams-Prassl et al. 2020). Our findings suggest that because women have higher levels of aversion to exposure, working women who cannot avoid exposure may experience additional hardships, which may contribute to their reported worse mental health outcomes during the pandemic (Oreffice and Quintana-Domeque 2020). Our results also suggest that focusing on gender differences in labor market outcomes may underestimate the true gender impact of the COVID-19 pandemic in terms of wellbeing.

Our study has limitations, in particular related to sample size. However, the US Open is the only natural experiment in tennis that we can study. The participation of fit players in the tournaments in Europe, organized after the US Open, was likely affected by the fact that there was no COVID-19 outbreak at the US Open.⁶ Indeed, only four players – two Australian (one male, one female) and two Chinese (both female) players – did not participate due to COVID-19 concerns in Roland Garros, the next Grand Slam tournament taking place in Paris on September 27-October, 2020. To our knowledge, no other sport has held parallel competitions, especially competitions requiring two to three-week long stay, with identical rules and prize money amounts for men and women.

⁶ Only one player, Benoit Paire, tested positive in the US Open bubble. None of his contacts have tested positive (Fitzgerald 2020).

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