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ARTICLE

Factors Contributing to the Relatively Low Gender Gap in Entrepreneurship in Russia

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ABSTRACT
Entrepreneurship is notably characterized by gender disparities, adversely impacting aggregate income and productivity. Accordingly, this study investigates the determinants of gender gaps in entrepreneurship in Russia, where the entrepreneurship gender gap, which is defined as the difference in entrepreneurial participation rates between men and women, is approximately 2%. Since the 2000s, this gap has remained relatively stable and is notably smaller than in many developed and developing countries. As such, the article highlights Russia's relatively strong performance in fostering inclusive entrepreneurship using data from the Russian Longitudinal Monitoring Survey, encompassing 197,699 observations from 33,889 individuals (55% women) between 2000 and 2019. Based on panel data regression models and incorporating a comprehensive set of independent variables, including age, education, health status, marital status, number of children, religious participation, physical exercise, trust, migration background, ethnicity, and residence in Moscow and Saint Petersburg. The findings reveal that participation in physical exercise and religious events significantly predicts entrepreneurial activity by gender, offering insights for reducing gender disparities in entrepreneurship. In contrast, traditional variables such as education, marital status, and number of children exhibit negligible effects. These results remain robust across different measures of entrepreneurship and hold when differentiating between necessity-driven and opportunity-driven entrepreneurship. Therefore, the findings suggest that Russia's experience in narrowing gender gaps in entrepreneurship may serve as a model for other countries.

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Introduction

The gender gap in entrepreneurship has received increasing attention in academic research and policy discussions due to its significant implications for economic development and social equality (Guzman & Kacperczyk, 2019; Li & Tong, 2023; Panda, 2018). As women continue to be underrepresented in entrepreneurial activities compared to men, understanding the determinants of these gender gaps is crucial for addressing barriers and promoting gender equality in the entrepreneurial landscape (Ilie et al., 2021; Rietveld & Patel, 2022).

Interestingly, in Russia, this gap is relatively low compared to many developed and developing countries. The ratio of male to female entrepreneurs shows a difference of about 2%, which is lower than in Italy (15%), Greece (10%), and Ireland (10%), with the Russian gap being similar to that of Germany (Cuberes et al., 2019). Overall, the evidence suggests that ex-socialist countries exhibit low rates of gender gaps (Cuberes et al., 2019; Dorjnyambuu, 2023). This relatively low gender gap in Russia is likely attributable to its socialist history, sociocultural background, policy framework, and labor legislation (Teplova, 2007); however, these and other contributing factors remain underexplored. Furthermore, this low gender gap often goes unacknowledged in the literature, perpetuating a narrative that portrays Russia as a predominantly patriarchal and anti-entrepreneurial country (Kvanina et al., 2020; Voronkova, 2019).

In this context, the present research focuses on Russia, aiming to gain deeper insights into the relatively strong performance of Russians in fostering inclusive entrepreneurial activities. Accordingly, this study's primary research question is: What are the key determinants of the entrepreneurship gender gap in Russia? Addressing this question is expected to enhance understanding and support for Russian gender policies while offering valuable insights for policymakers in other countries.

The key determinants of gender gaps in entrepreneurship can be hypothesized to involve a combination of individual characteristics, sociocultural norms, access to resources, financial constraints, institutional environments, labor legislation, and policy frameworks (Cuberes et al., 2019; Kvanina et al., 2020; Salis & Flegl, 2021; Thébaud, 2011). These factors interact in complex ways to shape the entrepreneurial ecosystem and contribute to gender disparities. Moreover, this intricate interplay poses significant challenges for empirical analysis, complicating efforts to identify the most critical explanatory variables.

A significant advantage of the current research is the use of panel data and econometric techniques, which enable the identification of a series of previously overlooked variables and provide evidence of the limited relevance of traditional explanatory variables. Therefore, the contributions of this article are threefold. First,

it represents the first robust quantitative study on the determinants of gender gaps in entrepreneurship in Russia. Second, it identifies two new variables—participation in religious events and participation in physical exercise—that have significant effects in predicting female entrepreneurship, not only in terms of self-employment but also regarding opportunity-based entrepreneurship. Third, the current research found evidence indicating the limited relevance of traditional explanatory variables such as education, marriage, and children.

The remainder of the article is organized as follows. The next section provides a brief literature review that establishes the theoretical background for the empirical strategy. Data section describes the dataset from the Russian Longitudinal Monitoring Survey (RLMS) and introduces the methodology, which primarily consists of logistic and random effects models. Then, the main results are presented, with the following discussion of these findings, emphasizing policy implications, limitations, and potential directions for future research. Finally, the article concludes.

Literature Review

Entrepreneurship serves as a crucial driver of innovation and economic growth, with its determinants broadly classified into macro- and micro-level factors. Macro-level factors encompass political, legal, economic, and cultural dimensions, whereas micro-level factors include individual attributes such as age, risk propensity, competitiveness, and personality traits (Tovar-García, 2022; Xie, 2014). Among these, gender disparities are particularly pronounced, positioning gender as a pivotal determinant in entrepreneurial endeavors (Cuberes et al., 2019; OECD, 2017, pp. 110–115). Extant research highlights that women encounter unique barriers, including limited access to financial resources, professional networks, and entrepreneurial opportunities, which impede their entrepreneurial advancement (Cuberes et al., 2019; Kvanina et al., 2020; Voronkova, 2019).

These gender disparities in entrepreneurship have tangible economic consequences, contributing to reduced income levels and aggregate productivity. For instance, in OECD countries, gender gaps in entrepreneurship are estimated to result in an average income loss of 6% (Cuberes & Teignier, 2016). The persistence of these disparities underscores the importance of examining the multifaceted factors that influence entrepreneurial intentions and outcomes, providing a foundation for addressing gender inequities in this domain.

As such, the main determinants of gender gaps in entrepreneurship can also be studied using the aforementioned categorization. For illustrative purposes, note that, at the macro level, there is a significant correlation between the unemployment rate (as an indicator of overall macroeconomic conditions) and self-employment, which can also be treated as entrepreneurship (Thurik et al., 2008). In several developing countries, self-employment represents a major opportunity for women, given the lack of opportunities in the labor market (Minniti & Naudé, 2010). However, self-employment is often linked to necessity-based entrepreneurship, which implies a low probability of success in various respects. That said, recent evidence suggests that closing

the gender gap in entrepreneurship requires more than just economic growth; it is essential to improve scores on the Human Development Index (Salis & Flegl, 2021).

Additionally, at the macro level, several sociocultural factors have been emphasized in the literature. Overall, the gap tends to decrease in individualistic, pragmatic, and risk-averse countries (Salis & Flegl, 2021). The policy recommendation is to diminish the perception of entrepreneurship as a masculine activity, i.e., promote practices of gender egalitarianism (Oyono & Ondoa, 2023). The evidence suggests that more gender-equal countries also exhibit a lower gender gap in opportunity-based entrepreneurship (Rietveld & Patel, 2022).

At the micro level, the literature highlights gender differences in competitiveness and risk-taking as key explanatory variables, with women being less competitively inclined and less willing to take risks (Bönte & Piegeler, 2013). Women are less likely to perceive themselves as capable of being entrepreneurs and hold themselves to a stricter standard of competence compared to men, which accounts for a significant portion of the gender gap in entrepreneurship (Thébaud, 2010). Gender differences in entrepreneurial propensity mainly stem from subjective perceptions, such as self-confidence in one's own skills and fear of failure, with women having a higher entrepreneurial propensity than men after accounting for differences in skill perception (Abbasianchavari & Block, 2022).

Recently, the Big Five personality traits[1] have been emphasized in the entrepreneurship literature; however, there are currently a lack of studies focusing specifically on gender gaps in entrepreneurship. Nonetheless, there is evidence suggesting that agreeableness, conscientiousness, and openness particularly influence female entrepreneurial behavior (Rahman et al., 2023). The Big Five traits significantly differ by gender and are influenced by social context. Overall, women consistently score higher in agreeableness and neuroticism, with more mixed results for extraversion and openness, while men tend to exhibit higher levels of conscientiousness (Mishkevich & Shchebetenko, 2018; Taufik et al., 2019; Vianello et al., 2013).

Age is another individual characteristic that predicts entrepreneurship, with younger individuals being more likely to start their own businesses (Lévesque & Minniti, 2006). Entrepreneurial competencies tend to decrease as individuals age, and evidence suggests that particularly older women lag behind older men (Moore et al., 2021). However, in explaining these gaps, the literature places greater emphasis on other socio-demographic individual characteristics, such as education, marriage, and children. Although the social and economic contexts moderate their effects, these three variables traditionally account for an important share of the gender gap in entrepreneurship (Ajefu, 2019; Gaweł & Krstić, 2021; Pereira & Manzo, 2024).

Although higher education does not guarantee entrepreneurial activity, opportunity-driven entrepreneurship often demands skills that are typically developed or indicated by educational attainment. Conversely, in developing countries, self-

[1] The Big Five personality traits are a widely used framework that categorizes human personality into five broad dimensions. Openness reflects intellectual curiosity and creativity, conscientiousness pertains to organization and goal orientation, extraversion encompasses sociability and assertiveness, agreeableness involves empathy and cooperation, and neuroticism refers to emotional stability.

employment tends to be necessity-driven, arising as a response to limited job opportunities in the labor market, which are often linked to low educational levels. By contrast, in Europe, gender disparities in education are mirrored in gender gaps in entrepreneurship (Gaweł & Krstić, 2021), highlighting the importance of promoting women's education to foster female entrepreneurial participation.

Both men and women are more likely to engage in business ownership when they are married, have children, or receive financial support from their spouses (Marshall & Flaig, 2014; Tundui & Tundui, 2021). However, societal norms often place married women, particularly those with children, in traditional roles that can conflict with the demands of starting and managing a business. In contrast, men are more commonly perceived as primary financial providers, allowing them to prioritize entrepreneurial endeavors without facing equivalent domestic responsibilities (Guo & Werner, 2016).

Entrepreneurship is also considered a flexible option for women striving to balance family obligations with professional aspirations. Nonetheless, marriage and children can exert both positive and negative influences on female entrepreneurship, contingent upon various factors and the complex interplay between gender roles, family dynamics, and entrepreneurial activities. Notably, family support emerges as a crucial determinant of success in these endeavors (Tundui & Tundui, 2021).

The Russian Context

In the Russian context, the comparatively low entrepreneurship gender gap offers a unique case for analysis. Kvanina et al. (2020) highlight policies at federal and regional levels that promote women's business initiatives, addressing challenges such as limited access to financing, societal stereotypes, and insufficient networking opportunities. While these challenges are common globally, Russia's relatively strong performance in this area—supported by findings from this research—calls into question their relevance in all countries and indicates that other nations might derive insights from the Russian experience.

It is well known that ex-socialist countries were more egalitarian than many developed countries, and the Soviet past continues to influence the gender gaps in entrepreneurship (Teplova, 2007), partially explaining its relatively good performance. For example, March 8th is celebrated as a joyful day in Russia, whereas in many Western countries it is not always so. Therefore, the sociocultural background plays a significant role in the Russian context. However, recent evidence indicates that other factors could also play an important role.

Russia's persistently low fertility rate (around 1.2 in the 2000s) has prompted the introduction of various policies to increase birth rates, including maternity capital, parental leave, and housing and educational programs (Vakulenko et al., 2023). While these measures have failed to boost fertility, they have provided significant support to women. For example, parental leave policies in Russia allow mothers to spend up to three years with state-supported income while retaining job security (Bagirova & Blednova, 2022). Moreover, the scheduling of kindergartens and schools accommodates women's labor market participation (Bodrova & Yudina, 2018; Kolesnik

et al., 2021), and evidence suggests that male spouses may actively support women's entrepreneurial efforts (Tereshina, 2023). Consequently, a small number of children, combined with support from family, society, and the state, may diminish the significance of marriage and motherhood as factors contributing to the entrepreneurship gender gap in Russia.

Another factor to consider is the higher educational attainment of professionally employed women compared to their male counterparts. That is, women within the workforce are generally more educated. This discrepancy may suggest an underutilization of female entrepreneurial potential, hindering women from fully leveraging their qualifications and achieving optimal job alignment (Baskakova & Soboleva, 2017). By contrast, this observation could also imply that the educational gap already helped close the entrepreneurship gap.

Religion also exerts a significant influence on entrepreneurship (Audretsch et al., 2007; Tamzini & Salem, 2020). Recently, Tovar-García (2022) found that in Russia participation in religious events increases the probability of becoming an entrepreneur, serving as a means to obtain social capital and networking opportunities. This finding aligns with prior research signaling that religious communities provide critical support networks, offering financial resources, mentorship, and social capital (Deller et al., 2018; Lewis et al., 2013), which should be particularly beneficial for women and novice entrepreneurs. Furthermore, religious teachings support ethical values like honesty, hard work, and perseverance, and shape attitudes toward risk and innovation, which are advantageous for entrepreneurial success (Audretsch et al., 2007; Tamzini & Salem, 2020).

In Russia, religious affiliation is influenced by its Soviet heritage, with most citizens identifying as Orthodox Christians, alongside a significant minority identifying as Muslims. Currently, there is strong support and a solid relationship between the state and the Russian Orthodox Church (Stepanova, 2018). While religious participation, rather than belief alone, is associated with entrepreneurial activity (Tovar-García, 2022), it should be expected that religion contributes to gender gaps in entrepreneurship, as weaky suggested by recent literature, where it seems that male entrepreneurs disproportionately benefit from religious participation (Tovar-García, 2022).

In another area of literature, it has been noted that engaging in sports and physical exercise extends its influence beyond health and physical appearance, significantly impacting educational, labor market, and entrepreneurial outcomes (Lechner, 2009; Pfeifer & Cornelißen, 2010). Sports promote physical and mental well-being, enhance cognitive and non-cognitive skills, and foster social capital, all of which indirectly influence entrepreneurship (Moustakas & Reynard, 2023; Pervun et al., 2024). Specifically, four key mechanisms explain this relationship (Tovar-García, 2023). First, regular physical activity improves health, thus increasing risk tolerance and competitiveness, both crucial for entrepreneurship. Second, sports develop cognitive and non-cognitive skills, and as a result, support overall educational outcomes, which are essential for entrepreneurial success. Third, sports participation shapes personality traits like emotional stability, conscientiousness,

and extraversion, often linked to successful entrepreneurship. Finally, sports foster social networks and relationships, providing resources and opportunities beneficial for new ventures.

In the Russian context, there is evidence highlighting the positive association between sports participation and health, educational achievements, and income levels (Kaneva et al., 2024; Tovar-García, 2018, 2021a, 2021b). Specifically, engaging in athletic and combat sports increases students' academic performance (Tovar-García, 2017, 2018) and provides a wage premium of 6% to 10% for active individuals compared to their sedentary peers (Tovar-García, 2021b). These findings align with the Russian state program "Razvitie fizicheskoi kul'tury i sporta" [Development of Physical Culture and Sports], which aims to enhance mass participation and elite sports development (Aliev, 2022). Together, improved health, education, personality traits, and social capital resulting from sports participation create pathways that increase the likelihood of entrepreneurial pursuits, potentially contributing to a better understanding of gender disparities in entrepreneurship. Indeed, some findings suggest that women participating in sports may increase their competitive preferences; thus, a lack of risk aversion can be understood as competitiveness, which supports female entrepreneurship (Comeig et al., 2016).

Accordingly, the current research focuses on these recent findings in the pursuit of a better understanding of the low entrepreneurship gender gap in Russia.

Data

Data are sourced from the Russian Longitudinal Monitoring Survey—Higher School of Economics (n.d.). The RLMS is a nationally representative survey that collects information to monitor the effects of Russian reforms on the health and economic welfare of households and individuals. The survey is a publicly available source of data, and it has been described in detail elsewhere (Kozyreva et al., 2016). This research uses 20 waves over the years 2000–2019, including adults between 18 and 60 years old at the year of the corresponding survey year, consisting of 197,699 observations from 33,889 individuals (55% are women). The COVID-19 years and the years of the special military operation in Ukraine are omitted to avoid outliers. For all variables, non-responses were removed from the analysis.

Dependent Variables

Following Tovar-García (2022), two questions from the RLMS survey are used. First, the participants were asked, "Are you personally an owner or co-owner of the enterprise where you work?" Second, "In your opinion, are you doing entrepreneurial work at this job?" Positive answers were coded 1 and 0 otherwise, building the dummy variables Owner (full sample 4%, males 5%, females 3%) and Entrepreneur (full sample 5%, males 6%, females 4%). In addition, individuals with positive answers in both questions were coded 1, building the dummy Owner & Entrepreneur (full sample 2%, males 3%, females 1%). Then, these dummies are multiplied by the firm size, given the responses to the question "How many people

work in your enterprise? If you don't know exactly, estimate". This procedure gives continuous variables of entrepreneurship: Owner–Continuous (M = 46.1; SD = 1113), Entrepreneur–Continuous (M = 11.1; SD = 572), Owner & Entrepreneur–Continuous (M = 1.8; SD = 86). Assuming that the self-employed individuals work alone or with few employees, the continuous variables better control for the distinction between necessity-based and opportunity-based entrepreneurship. In addition, these variables are entered in logarithms to linearize and analyze percentage changes in the regression models.

Table 1 shows basic descriptive statistics. Note that, in all cases, the gender gap is statistically significant. In addition, these figures are similar to those reported by Cuberes et al. (2019), who estimated the entrepreneurship gender gap in Russia to be around 2%.

Table 1

Entrepreneurship by Gender

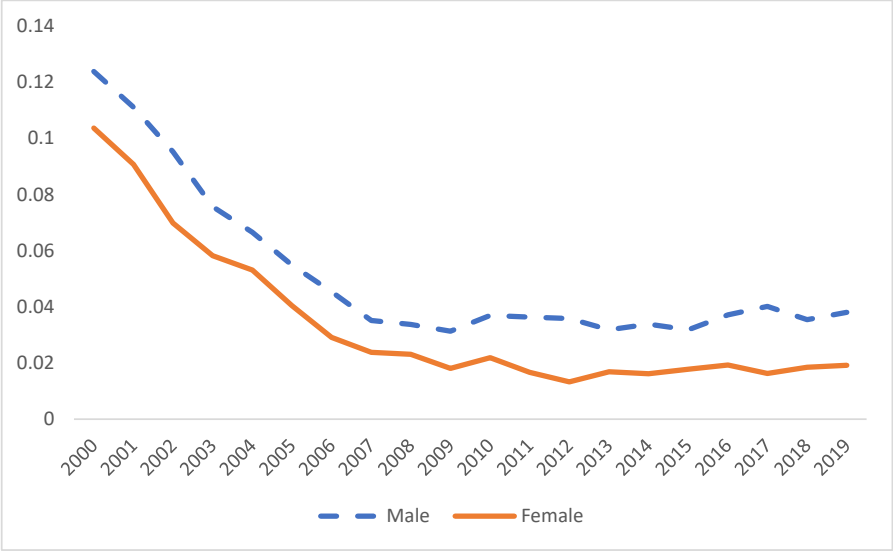
	Full sample					Male					Female				
	Obs.	*M*	*SD*	Min	Max	Obs.	*M*	*SD*	Min	Max	Obs.	*M*	*SD*	Min	Max
Male	197,699	0.45	0.50	0	1	89,286	1	0	1	1	108,413	0	0	0	0
Owner	127,442	0.04	0.19	0	1	58,700	0.05	0.21	0	1	68,742	0.03	0.17	0	1
Owner–Continuous	93,200	46.07	1112.94	0	120,000	40,081	55.38	1204.15	0	120,000	53,119	39.05	1038.78	0	100,000
Entrepreneur	126,732	0.05	0.21	0	1	58,375	0.06	0.23	0	1	68,357	0.04	0.19	0	1
Entrepreneur–Continuous	92,697	11.11	571.75	0	150,000	39,866	16.99	813.77	0	1,50000	52,831	6.67	271.69	0	50,000
Owner & Entrepreneur	126,357	0.02	0.14	0	1	58,161	0.03	0.16	0	1	68,196	0.01	0.11	0	1
Owner & Entrepreneur–Continuous	92,477	1.80	86.45	0	9.999	39,753	2.64	92.23	0	7,500	52,724	1.17	81.82	0	9,999

Note. The *t*-tests indicate statistically different means at the 1% level in all variables.

Figures 1–3 show the behavior of these gender gaps over the years 2000–2019. At the beginning of this century, around 10% of the Russians in the sample reported being owners, possibly as a result of the economic crisis of 1998. However, this percentage decreased over the 2010s, stabilizing at around 4% for males and 2% for females. In the case of Entrepreneur, its levels are more constant over time, between 3% and 7%, and the gap is slightly greater after 2012 (probably as a result of the global financial crisis that started in the USA in 2008 with effects in European countries in the first years of the 2010s). In the case of Owner & Entrepreneur, the levels of this gap are the lowest, with a slightly positive trend. Interestingly, the gender gap of these three proxy variables remained constant throughout the years under study.

Figure 1

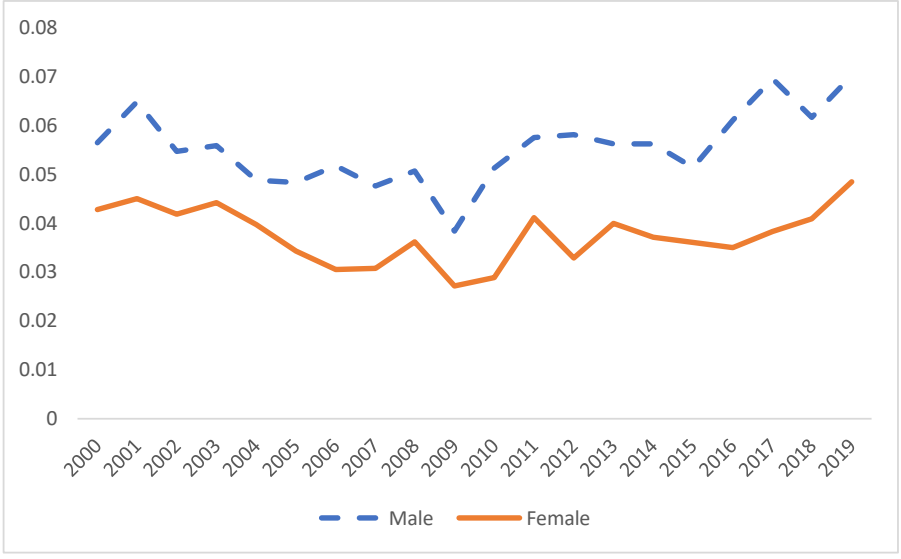
Gender Gaps by Variable Owner (2000–2019)



Note. Developed by the author based on The Russian Longitudinal Monitoring Survey—Higher School of Economics (n.d.).

Figure 2

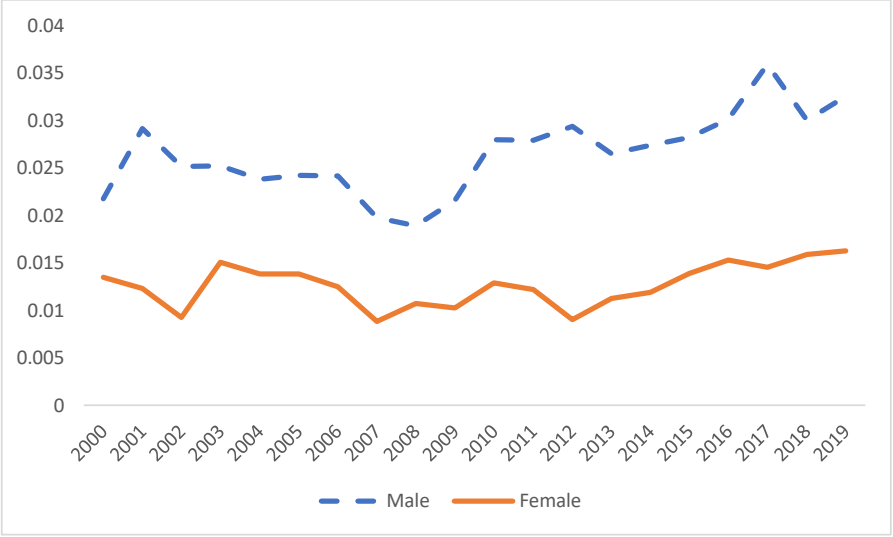
Gender Gaps by Variable Entrepreneur (2000–2019)



Note. Developed by the author based on The Russian Longitudinal Monitoring Survey—Higher School of Economics (n.d.).

Figure 3

Gender Gaps by Variable Owner & Entrepreneur (2000–2019)



Note. Developed by the author based on The Russian Longitudinal Monitoring Survey—Higher School of Economics (n.d.).

Independent Variables

Following the literature (Cuberes et al., 2019; Tovar-García, 2022), the variables used to examine the association between gender and entrepreneurship are age, education, health status, marital status, number of children, trust, migration background, and ethnicity. Notably, the current research includes participation in physical exercise and religious events. Table 2 presents definitions of these variables and Table 3 shows descriptive statistics by gender. Baskakova and Soboleva (2017) noted that women show higher levels of education. Excluding Trust and Religious participation × Non-religion, the *t*-tests indicate statistically different means at the 1% level in the rest of the independent variables.

Table 2

Independent Variables

Variable	Definition
Age	The age of respondents ranged from 18 to 60 years old. Age^2 (squared) is also included to account for biological decline
Education	Ordinal variable. 1. 0–6 grades of comprehensive school (0.5% of respondents); 2. Unfinished secondary education [7–8 grades of school] (3.1%); 3. Unfinished secondary education [7–8 grades of school] plus something else (8.7%); 4. Secondary school with diploma (36.5%); 5. Vocational secondary education with diploma (26.5%), and 6. Higher education with diploma and more (24.8%)
Health	Ordinal variable. 1. Very bad (0.5%); 2. Bad (6.1%); 3. Average, not good, but not bad (52.3%); 4. Good (40%); 5. Very good (2.1%)

Table 2 Continued

Variable	Definition
Married	Dummy variable coded 1 if married, and 0 otherwise
Children	Number of children under the age of 18
Trust	Dummy variable coded 1 if "most people can be trusted", and 0 otherwise
Migrant	Dummy variable coded 1 if "born in another place", and 0 otherwise
Ethnicity	Dummy variable coded 1 if "Russian ethnicity", and 0 otherwise
Big cities	Dummy variable coded 1 if "Moscow or Saint Petersburg", and 0 otherwise
Physical exercise	Dummy variable coded 1 if "participate in physical exercise", and 0 otherwise
Religious participation	Ordinal variable of visiting divine services, meetings or other religious events. 1. Never visit (24.9%); 2. Less often than once a year (16.6%); 3. Once a year (15.6%); 4. Several times a year (35.2%); 5. Once a month (3.8%); 6. Two or three times a month (2.4%), and 7. Once a week or more often (1.5%). Then, the variable is entered as an interaction term with the religious affiliation: Orthodox Christianity (81% of survey's respondents), Islam (7%), and Non-religion (9.6%).

Note. Source: The Russian Longitudinal Monitoring Survey—Higher School of Economics (n.d.).

Table 3

Descriptive Statistics of the Predictors of Entrepreneurship by Gender

	Full sample					Male					Female				
	Obs.	*M*	*SD*	Min	Max	Obs.	*M*	*SD*	Min	Max	Obs.	*M*	*SD*	Min	Max
Age	197,699	38.23	12.05	18	60	89,286	37.67	11.86	18	60	108,413	38.69	12.18	18	60
Education	197,467	4.60	1.07	1	6	89,154	4.42	1.09	1	6	108,313	4.74	1.04	1	6
Health	196,659	3.36	0.65	1	5	88,767	3.44	0.66	1	5	107,892	3.30	0.64	1	5
Married	197,699	0.69	0.46	0	1	89,286	0.73	0.45	0	1	108,413	0.66	0.48	0	1
Children	123,668	0.85	0.89	0	9	51,144	0.92	0.90	0	9	72,524	0.80	0.88	0	9
Trust	99,025	0.15	0.36	0	1	44,713	0.15	0.36	0	1	54,312	0.15	0.36	0	1
Migrant	196,938	0.45	0.50	0	1	88,922	0.43	0.50	0	1	108,016	0.47	0.50	0	1
Ethnicity	195,427	0.86	0.35	0	1	88,063	0.85	0.36	0	1	107,364	0.87	0.34	0	1
Big cities	197,699	0.18	0.38	0	1	89,286	0.17	0.38	0	1	108,413	0.18	0.39	0	1
Religious participation × Non-religion	30,425	0.01	0.16	0	4	11,659	0.01	0.14	0	4	18,766	0.01	0.16	0	4
Religious participation × Islam	30,425	0.16	0.68	0	7	11,659	0.24	0.86	0	7	18,766	0.12	0.54	0	7
Religious participation × Orthodox Christianity	30,425	2.67	1.62	0	7	11,659	2.25	1.55	0	7	18,766	2.92	1.62	0	7
Physical exercise	185,793	0.25	0.43	0	1	83,848	0.27	0.44	0	1	101,945	0.24	0.42	0	1

Note. The *t*-tests indicate statistically different means at the 1% level in all variables, excluding Trust and Religious participation × Non-religion.

Method

The data set has several important characteristics. First, the dependent variables can be either binary or continuous. While continuous variables provide more information, binary variables offer different insights, which can be more useful for discriminant analysis and for discussing the likelihood of belonging to the entrepreneurial group. Additionally, both continuous and binary variables are valuable for robustness checks. Second, the data are longitudinal, and it is well-known that panel data are more informative. They exhibit greater variability, lower collinearity, more degrees of freedom, and increased efficiency. Moreover, panel data control for the impact of time-invariant determinants.

As stated before, various macro/environmental and micro/individual factors may influence gender gaps in entrepreneurship and the likelihood of becoming an entrepreneur. Many of these variables, such as family background, wealth, and culture, either remain stable over time or change slowly. For their part, political, legal, social, and macroeconomic conditions are largely similar for all respondents, allowing the model to control for their effects using year dummies (assuming these conditions are constant across individuals). However, it is well known that Moscow and Saint Petersburg exhibit different economic dynamics compared to the rest of the country; therefore, the regression models include a dummy variable for these cities.

Using Stata 17 software, logistic regressions are applied in the case of binary dependent variables. In the case of continuous dependent variables, random effects models are estimated (as recommended by the Hausman test), allowing the inclusion of time-invariant variables, such as migration status and ethnicity. It is important to recognize that these estimates do not indicate causal relationships. The regressors are widely used in the literature, but some of them may be endogenous. Therefore, this analysis is correlational, given the lack of instrumental variables or another method for better control of endogeneity concerns. However, the empirical strategy is useful to emphasize significant differences in the factors influencing the gender gap (with relevant policy implications).

Results

Table 4 presents the major results of the logistic regressions. The specifications follow the entrepreneur categorization mentioned above, and the same specification is estimated for each gender (regression results for the full sample are not reported in tables). It is important to note that the inclusion of variables related to participation in religious events decreases the sample size, as such data are only available for the years 2016–2019. For their part, the specifications that include participation in physical exercise cover the years 2011–2019, as the Trust variable included in the specification is only available for that period (regression results excluding Trust yield similar findings, not reported here).

The variables Trust, Migrant, Ethnicity, and Big Cities show only a few significant coefficients. Particularly, there is evidence suggesting that ethnically Russian males are less likely to become entrepreneurs, likely because labor regulations favor their

participation in the labor market, reducing the necessity for self-employment compared to other male citizens of different ethnic backgrounds.

By contrast, and as expected, age and health are significant predictors of becoming an entrepreneur (Lévesque & Minniti, 2006; Tovar-García, 2022; Xie, 2014). Moreover, these variables exhibit slightly larger coefficients and greater statistical significance across more specifications in the male sample compared to the female sample for age, and the reverse is true in the case of health.

Importantly, the coefficients for education are positive and statistically significant for males, indicating that higher education levels increase the likelihood of becoming an entrepreneur. For females, education is positive and statistically significant in only a few specifications. Moreover, for males, having children under the age of 18 and being married are insignificant predictors of entrepreneurial activity. In contrast, for females, only marriage positively predicts their likelihood of becoming entrepreneurs in a limited number of specifications.

Interestingly, religious participation, when interacting with Orthodox Christianity, and participation in physical exercise, show several positive and statistically significant coefficients in both male and female subsamples, thus serving as predictors of becoming an owner, entrepreneur, or both.

Table 4

Logit Regression Results: Male and Female Subsamples

	Owner				Entrepreneur				Owner & Entrepreneur			
	F	M	F	M	F	M	F	M	F	M	F	M
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Age	0.19	0.29*	0.40***	0.49***	0.11	0.37***	0.16***	0.36***	0.13	0.42**	0.52***	0.47***
Age^2	−0.002	−0.003	−0.004***	−0.01***	−0.001	−0.004***	−0.002***	−0.004***	−0.001	−0.004**	−0.01***	−0.01***
Education	0.22	0.58***	0.25***	0.60***	-0.01	0.48***	0.05	0.48***	−0.03	0.71***	0.28**	0.82***
Health	0.31	0.33	0.33**	0.29**	0.37**	0.32*	0.27***	0.18**	0.32	0.47**	0.44**	0.12
Married	0.68	0.25	0.55***	0.38	0.58**	0.59	−0.03	0.43	0.46	0.35	0.47	0.50
Children	0.19	0.10	0.18	0.08	0.05	−0.02	−0.04	0.10	0.17	0.08	0.20	0.17
Trust	0.53	−0.28	0.10	−0.22	−0.13	−0.51	−0.06	0.05	0.67	−0.64	−0.03	−0.26
Migrant	0.14	−0.10	−0.20	−0.09	0.26	0.16	0.05	−0.19	0.06	0.01	−0.21	−0.04
Ethnicity	0.16	−0.85*	−0.09	−0.60***	0.26	−0.93**	0.07	−0.69***	−0.20	−0.79	−0.34	−0.87***
Big cities	−0.50	−0.10	−0.58**	0.06	−0.37	−0.29	−0.22	0.25	−0.94	−0.33	−0.37	0.08
Religious participation × Non-religion	−1.67	−0.11			0.44	0.82			−1.95	0.26		
Religious participation × Islam	0.31	0.42**			0.25	0.17			0.28	0.29		

Table 4 Continued

	Owner				Entrepreneur				Owner & Entrepreneur			
	F	M	F	M	F	M	F	M	F	M	F	M
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Religious participation × Orthodox Christianity	0.21*	0.24***			0.06	0.28***			0.19	0.20**		
Physical exercise	0.57*	0.76***	0.32**	0.27*	0.49**	0.66***	0.20*	0.34***	0.64*	0.74***	0.23	0.22
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	9877	5794	27608	20894	9823	5775	20774	20774	9823	5762	20774	20724
N x T	3906×4	2595×4	7577×9	6187×9	3894×4	2586×4	6176×9	6176×9	3894×4	2585×4	6176×9	6169×9

Note. Reporting logit coefficients (β) (odds ratio = exp(β)). F = Female; M = Male. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 5 presents the main results of the random-effects models (fixed-effects regressions yield similar results, but these are not reported). Overall, the findings are consistent with those obtained from the logistic regressions.

Education does not appear to play a significant role in explaining female entrepreneurship. The regression results indicate that most coefficients are not statistically significant, with only a few exceptions observed in the female logistic regressions. However, the analysis provides stronger evidence supporting the relevance of marriage for entrepreneurship among women. Married women seem more likely to be opportunity-based entrepreneurs, as some regressions show statistically significant coefficients. These indicate that married women hire between 1% and 5% more employees compared to women of other civil status, as calculated using the formula {100 × [exp(0.01 or 0.05) – 1]}. Meanwhile, having children under the age of 18 remains an insignificant predictor.

Importantly, the regression analysis identifies several positive and statistically significant coefficients for participation in Orthodox religious events and physical exercise, relevant to both men and women.

Table 5

Random Effects Regression Results: Male and Female Subsamples

	Owner				Entrepreneur				Owner & Entrepreneur			
	F	M	F	M	F	M	F	M	F	M	F	M
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Age	0.003	0.01	0.01***	0.03***	0.02**	0.03**	0.01***	0.03***	0.01	0.02**	0.01***	0.02***
Age^2	–0.00001	–0.0001	–0.0001*	–0.0003***	–0.0002**	–0.0003**	–0.0002***	–0.0003***	–0.0001	–0.0002*	–0.0001***	–0.0002***

Table 5 Continued

	Owner				Entrepreneur				Owner & Entrepreneur			
	F	M	F	M	F	M	F	M	F	M	F	M
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Education	0.01	0.03***	0.01	0.04***	–0.003	0.02	0.01	0.05***	–0.004	0.03***	0.005	0.03***
Health	0.01	0.03**	0.01*	0.03***	0.03***	0.02	0.02**	0.02*	0.005	0.03***	0.01**	0.01*
Married	0.02	0.004	0.03***	0.03	0.05**	0.07	0.003	0.04	0.01	0.02	0.01*	0.01
Children	0.003	0.01	0.003	0.001	–0.02*	–0.01	–0.01	0.01	0.003	0.01	0.001	0.01
Trust	0.01	0.003	0.01	0.003	–0.01	–0.04	–0.002	0.03*	0.02***	–0.02	–0.0003	0.01
Migrant	0.01	–0.01	–0.01	–0.01	0.03	0.04	0.01	0.005	0.01	0.01	0.001	–0.0001
Ethnicity	0.02	–0.03	0.003	–0.02	0.05	–0.15***	0.02	–0.05*	0.01	–0.03	0.004	–0.03
Big cities	–0.01	–0.01	–0.03**	0.01	–0.02	–0.04	0.002	0.03	–0.02	–0.02	–0.002	0.01
Religious participation × Non-religion	–0.02	–0.02			0.02	0.04			–0.01	–0.02		
Religious participation × Islam	0.004	0.04***			0.01	–0.001			0.002	0.01		
Religious participation × Orthodox Christianity	0.01***	0.01**			0.003	0.03***			0.004**	0.01*		
Physical exercise	0.0005	0.05***	0.01*	0.01	0.03**	0.09***	0.01	0.05***	–0.001	0.04***	0.01	0.01
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R squared	0.003	0.02	.01	0.01	0.02	0.02	0.003	0.02	0.002	0.02	0.002	0.02
Observations	7892	4139	21362	14093	7851	4127	21245	14028	7843	4120	21219	14000
N x T	3355×4	2042×4	6498×9	4934×9	3345×4	2036×4	6489×9	4926×9	3342×4	2033×4	6484×9	4919×9

Note. F = Female; M = Male. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Discussion

The findings are highly interesting in the case of five variables: education, marriage, children, participation in religious events, and physical exercise.

Unlike in developed countries, particularly in Europe, where education is still a significant predictor of female entrepreneurship, and an important variable for reducing gender gaps (Gaweł & Krstić, 2021), education appears to be less relevant in Russia. The level of education weakly predicts female entrepreneurship, which could suggest a lack of alignment between these variables (Baskakova & Soboleva,

2017). Nevertheless, and contrary to typical recommendations in other countries (Gaweł & Krstić, 2021), this finding suggests that policies aimed at increasing female education to close the gender gap may be irrelevant in the Russian context, where the educational gap already favors women. Therefore, future research focusing on the role of education is needed to gain a deeper understanding of this phenomenon.

Importantly, prior research has indicated that marriage and children can both positively and negatively impact women's entrepreneurship, depending on the context, particularly when comparing developed and developing countries, and less or more individualistic societies (Dutta, 2023; Li & Tong, 2023; Marshall & Flaig, 2014). Overall, it is often argued that entrepreneurship, particularly self-employment, provides women with more flexibility and a better balance between work and domestic life (Ajefu, 2019; Li & Tong, 2023; Marshall & Flaig, 2014). However, in the case of Russia, civil status and motherhood do not appear to be significant variables, likely because the culture and legislation support women's entry into the labor market, particularly when they have children (Bagirova & Blednova, 2022; Bodrova & Yudina, 2018; Teplova, 2007). For example, public kindergartens and schools, which offer services that align with parents' work schedules, allow both parents to participate in the labor market while caring for their children, in a context of low fertility rates (Bodrova & Yudina, 2018; Kolesnik et al., 2021). Therefore, flexibility in the workplace is provided by the state or a cultural position, and women do not necessarily require self-employment (entrepreneurship) to achieve work-life balance.

Furthermore, while marriage is not a significant predictor of female entrepreneurship, once a woman becomes an entrepreneur, there is some evidence suggesting that her motivations are not solely driven by a lack of job opportunities or unemployment, as seen in several developing countries (Panda, 2018). In contrast, in Russia, married women can act as job creators, functioning as opportunity-based entrepreneurs. However, the evidence is still limited, and further research is needed to better understand the role and significance of married female entrepreneurs.

The significance of religious participation in entrepreneurship has already been highlighted in Russia (Tovar-García, 2022). For males, involvement in Orthodox religious events (visiting divine services, meetings, or other religious events) appears to support entrepreneurial activities, and similar evidence is also found for females. Specifically, the social capital and networking opportunities that women gain through religious participation enable them to become opportunity-based entrepreneurs, which allows them to hire more employees compared to women who do not engage in these events. This finding is particularly noteworthy, as it contrasts with evidence from developing countries, where women are much less likely to engage in opportunity-based entrepreneurship (Oyono & Ondoa, 2023).

Nevertheless, other patterns have been observed in other labor market outcomes in Russia. Unlike their male counterparts, female believers do not experience a wage penalty, though young female believers face a wage penalty of approximately 5% (Tovar-García, 2020). Therefore, further research is needed to gain a deeper understanding of the role religious participation plays in gender disparities.

Currently, no prior studies are known that discuss the relevance of physical exercise in explaining gender gaps in entrepreneurship. Nevertheless, the findings align with previous research highlighting the positive effects of participation in sports on the educational outcomes of women (Pfeifer & Cornelißen, 2010; Tovar-García, 2017, 2018). Moreover, these findings support arguments regarding the importance of sports and physical exercise in developing personality traits useful for entrepreneurship, such as a competitive mindset (Comeig et al., 2016; Comeig & Lurbe, 2018; Tovar-García, 2023) and aspects of the Big Five personality traits (Steca et al., 2018; Steinbrink et al., 2019; Tok, 2011).

As such, the current study underscores the significance of sports and physical exercise as predictors of female entrepreneurship. It also suggests that providing women with access to sports facilities may help reduce the gender gap. In addition to influencing personality traits, sports participation may offer social capital and networking opportunities that are advantageous for the development of female-owned businesses—an area that warrants further investigation. Consequently, the policy recommendation is to promote and facilitate women's participation in sports and physical exercise.

Other variables, such as trust and migration background, which were found to be irrelevant in this study, also warrant further exploration. Trust, commonly used as a proxy for social capital in many studies, has been shown to have both direct and indirect relevance for entrepreneurship (Baker et al., 2023; De Anda et al., 2023). Similarly, migration background is a known predictor of entrepreneurship in several developed countries, where self-employment is a typical career path for many migrants (Blackledge & Trehan, 2018; Brzozowski & Lasek, 2019). In the current study, trust is measured using a broad, general question, and migration includes internal migrants. These measurement issues are likely impacting the explanatory power of these variables, and thus the results should be interpreted with caution.

One advantage of the current research is the use of panel data; however, these data are self-reported. While the method is accurate for correlational analysis, it does not allow for claims of causality. This represents a key limitation of the research, and future studies should implement better controls to address potential endogeneity concerns.

Conclusion

The entrepreneurship gender gap in Russia is estimated to be approximately 2% from 2000 to 2019, a relatively low figure compared to many other developed countries (Cuberes et al., 2019). Notably, traditional explanatory variables of female entrepreneurship and the gender gap, such as education (Pereira & Manzo, 2024), marriage, and motherhood (Marshall & Flaig, 2014; Tundui & Tundui, 2021), are far less relevant in the Russian context.

As a result, traditional policy recommendations for addressing the gender gap in Russia may be unnecessary. Future research should instead focus on the effectiveness of past and current policies in Russia that support female education and the inclusion

of married women—both with and without children—in the labor market. The limited relevance of these variables is likely not only due to socio-cultural factors but also reflects outdated policies that continue to be influenced by Soviet-era traditions (Bagirova & Blednova, 2022; Bodrova & Yudina, 2018; Kolesnik et al., 2021; Teplova, 2007; Vakulenko et al., 2023). Additionally, future research should examine policy reports related to education, marriage, and children in Russia, as the limited relevance of these factors could offer valuable insights for developing new or alternative policy strategies aimed at fostering a more egalitarian labor market.

Moreover, the current research reveals that participation in religious events and physical exercise are significant predictors of female entrepreneurship, not only for self-employed women but also for opportunity-based entrepreneurs—those who create jobs. Therefore, the role of religion and sports in reducing gender gaps, not only in entrepreneurship but also in other areas, should be studied further in different national contexts.

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