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Is financial anxiety gendered? A cross-sectional analysis during the COVID-19 pandemic

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ABSTRACT

Using data from 96,169 individuals across 114 countries, we find that women experience higher financial anxiety than men, especially in less-developed countries and civil-law nations, emphasizing the need for targeted policies to reduce gendered financial inequality.

1. Introduction

The COVID-19 pandemic triggered unprecedented economic and psychological stress, with financial anxiety emerging as a pervasive concern for individuals and households. Financial anxiety, defined as worry or distress stemming from uncertainties in financial stability and security, has been exacerbated by the COVID-19 pandemic-induced disruptions such as job losses, declining household incomes, and heightened economic uncertainty (see Serafini et al., 2020; Simonse et al., 2022). Although the general effects of the pandemic on financial anxiety have been well documented in the literature, little attention has been paid to the role of gender in shaping these unprecedented experiences, despite growing evidence that gender differences exist in financial behaviors, risk tolerance, and stress responses under economic distress.[1]

The extant literature also highlights that women disproportionately bear the economic brunt of crises due to structural inequities, such as wage gaps, over-representation in informal or precarious jobs, and caregiving responsibilities (Kristal and Yaish, 2020; Alon et al., 2020). These gendered inequities may translate into heightened vulnerability to financial anxiety for women, particularly during economic downturns. Simultaneously, societal expectations and cultural norms about gender roles often impose distinct emotional and financial burdens on men and women, potentially amplifying gender disparities in financial stress responses (Elson, 2010). However, empirical evidence examining how gender influences financial anxiety during the pandemic remains sparse, with most studies focusing on aggregate trends or neglecting intersectional dimensions, such as gender, socioeconomic status, and cultural contexts. This study fills a critical research gap by investigating whether and how financial anxiety differs between men and women, particularly during a global crisis like the COVID-19 pandemic.

Drawing on survey data from 96,169 individuals across 114 countries collected during the pandemic, this paper explores gendered financial anxiety in a setting characterized by unprecedented economic instability and health uncertainty. Our empirical findings provide evidence suggesting that women are 20% to 24% more likely than men to experience financial anxiety, even after controlling for socioeconomic, demographic, and institutional factors. Notably, this anxiety is heightened around specific concerns, such as old age, healthcare costs, routine expenses, and education, reflecting the broader vulnerabilities faced by women in financial and caregiving roles (see Nathan, 2023). Additionally, we uncover critical contextual factors that amplify gendered financial anxiety. Specifically, we find that financial anxiety among women is more pronounced in less developed markets and countries with civil law-based legal systems. These findings align with research showing that less-developed economies often lack robust social safety nets, leaving women more vulnerable to financial shocks (Munoz

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[1] See, Arcand et al. (2023), Bannier and Neubert (2016), Ricciardi (2008) and Robichaud et al. (2003).

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Boudet et al., 2018; Seguino, 2000). Similarly, civil law systems that are highly codified and less likely to have flexible regulatory frameworks may exacerbate these gendered disparities by limiting adaptive economic policies during crises (Beck et al., 2003; La Porta et al., 2008).

By addressing this research gap, our study contributes to the nuanced understanding of financial anxiety and extends the literature on gendered economic outcomes. This highlights the intersection of gender, institutional development, and socioeconomic factors in shaping financial well-being. These insights that we have documented underscore the urgent need for gender-responsive policy interventions to mitigate the resultant COVID-19-induced financial anxiety, particularly in developing and emerging economies where women disproportionately shoulder economic vulnerabilities. To foster equitable financial resilience in the post-pandemic era, there is an apparent need for policies that strengthen social protection, promote financial inclusion, and address structural inequality.

The following sections present the data, methodology, findings, and conclusions.

2. Data and methodology

2.1. Data

Our primary individual-level dataset is drawn from the 2021 Global Findex Database.[2] Country-level data is drawn from the World Bank, World Governance Indicators, IMF, ILO, and the Heritage Foundation's Economic Freedom Index. Religious information is drawn from Dow et al. (2016), while country legal classifications are based on Djankov et al. (2008) and La Porta et al. (2008). Cultural variables are drawn from Hofstede (1981). COVID-19 data, including deaths and stringency indices, is drawn from Mathieu et al. (2020).[3] The final sample, after excluding individuals and countries with missing data on key variables, includes 96,169 adults from 114 countries, with detailed variable definitions and sample distribution presented in the Online Appendix — Tables A.1 and A.2, respectively.

2.2. Methodology

To empirically explore the association between financial anxiety and gender, we estimate the following probit model:

$$y_{ij} = \alpha_0 + \alpha_1 GENDER_j + \boldsymbol{\beta} \boldsymbol{X}_{ij} + \eta_j + \epsilon_{ij} \quad (1)$$

where i and j index for individual and country, respectively. The dependent variable y measures financial anxiety and is proxied by two variables. *WORRY1* is a dummy variable that equals one if an individual indicates that they are somewhat or very financially worried due to old age, medical costs, regular bills, and educational costs, and zero otherwise. *WORRY2* is a dummy variable that equals one if an individual indicates that they are very financially worried due to old age, medical costs, regular bills, and educational costs, and zero otherwise. To explore the heterogeneity in financial anxiety, we also use four categorical variables with values 0, 1, and 2, indicating if an individual is not worried, somewhat worried, or very worried due to old age (*WORRY3*), medical costs (*WORRY4*), regular bills (*WORRY5*), and educational costs (*WORRY6*).[4] α_0 is a constant. α_1, $\boldsymbol{\beta}$ and $\boldsymbol{\theta}$ are the coefficients to be estimated. GENDER is a dummy variable that equals one if an individual is a female and zero otherwise. $\boldsymbol{X}$ represents a vector of individual-specific control variables.[5] Finally, η_j and ξ denote country-fixed effects and the error term, respectively. All variables used are defined in the Online Appendix — Table A.1.

3. Results and discussions

3.1. The effects of gender on financial anxiety

Table 1 presents the results estimating Eq. (1). Columns (1) and (2) report the univariate regression results for dependent variables *WORRY1* and *WORRY2*, respectively, where the coefficient of the gender dummy (GENDER) is consistently positive and significant. Columns (3) and (4) incorporate several control variables to mitigate the omitted variable bias. In all cases, the results remain robust, with the coefficient of the gender dummy variable continuing to be positive and significant.[6] These findings suggest that, on average, women experience higher levels of financial anxiety than men across countries during the COVID-19 pandemic.

Subsequently, we re-estimate Eq. (1) using decomposed measures of financial anxiety categorized into concerns about old age (*WORRY3*), medical costs (*WORRY4*), regular bills (*WORRY5*), and educational costs (*WORRY6*). As shown in Columns (5) to (8) of Table 1, the coefficient of the gender dummy variable remains consistently positive and significant. Notably, the association between gender and financial anxiety is strongest for anxiety related to medical costs (*WORRY4*), followed by concerns about old age (*WORRY3*), regular bills (*WORRY5*), and educational costs (*WORRY6*). This finding suggests that the gendered nature of financial anxiety that we have documented thus far is robust across different variable operationalizations, with concerns relating to medical costs emerging as the most pronounced source of anxiety for women across countries during the COVID-19 pandemic.

Fig. 1, plotting the coefficients of the gender variable for subsamples estimating Eq. (1), consistently shows positive and statistically significant coefficients, reinforcing the presence of gendered financial anxiety. Notably, we exclude countries with a disproportionately large number of observations,[7] the results remain robust, suggesting that sample-size imbalances do not drive the observed effects. Continental analysis reveals an intriguing pattern: gendered financial anxiety is notably lower in Africa in contrast to studies that report more pronounced gender gaps across several dimensions within the African context (see Asiedu et al., 2013; Aterido et al., 2013; Hansen and Rand, 2014). In contrast, individuals in South America and Oceania experience heightened gendered financial anxiety, aligning with evidence suggesting that hardships arising from COVID-19 are particularly acute for women (see De Paz Nieves and G., 2021).

Further disaggregation shows that the coefficients for the gender dummy variable are more pronounced in emerging markets (EME) than in developed economies (DME), aligning with the literature that highlights financial vulnerability, especially among women in developing regions (Cihak and M., 2018; Klapper and Lusardi, 2020; Machokoto et al., 2023). Similarly, the coefficients for the gender dummy variable are higher in civil-law countries than in common-law jurisdictions,

[2] This cross-country, micro-level dataset is distinctive in that it is typically presented in an aggregated format at the country level. See: https://www.worldbank.org/en/publication/globalfindex/Data.

[3] See: https://ourworldindata.org/coronavirus.

[4] To strengthen the robustness of our results, we incorporate alternative measures of financial anxiety, including the total score (*WORRY7*) and mean score (*WORRY8*) based on the decomposed measures of financial anxiety: *WORRY3*, *WORRY4*, *WORRY5*, and *WORRY6*.

[5] The selection of control variables in our empirical models is informed by the literature (see Ahamed and Limbu, 2024; Allgood and Walstad, 2016; de Bruijn and Antonides, 2020; Hamid et al., 2023; Hasler et al., 2021; Lusardi et al., 2021; Magwegwe et al., 2022; Owen and Wu, 2007; Ryu and Fan, 2023) and the need to isolate the effects of gender from other confounding factors (see Machokoto et al., 2023; Machokoto and Bempong Nyantakyi, 2023).

[6] These differences in financial anxiety conditional on gender align with the differences and correlations in the Online Appendix — Table A.3 and A.4, respectively. The differences in financial anxiety also align with the cross-country plots in the Online Appendix – Figure A.1.

[7] These countries include India (ExIND), Russia (ExRUS), Indonesia (ExIDN), and the Philippines (ExPHL).

Table 1
The effects of gender on financial anxiety.

Estimation techniques	PROBIT				OPROBIT			
Dependent variables	WORRY1	WORRY2	WORRY1	WORRY2	WORRY3	WORRY4	WORRY5	WORRY6
Independent Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GENDER	0.2141***	0.2061***	0.2403***	0.1963***	0.1792***	0.1939***	0.1671***	0.1456***
	(0.0106)	(0.0090)	(0.0110)	(0.0094)	(0.0078)	(0.0080)	(0.0080)	(0.0083)
LOGAGE			−0.1004***	0.1444***	0.2668***	0.1529***	0.1130***	−0.1846***
			(0.0150)	(0.0124)	(0.0105)	(0.0108)	(0.0106)	(0.0110)
EMPLOYED			0.2604***	0.1789***	0.2280***	0.1547***	0.1636***	0.1926***
			(0.0122)	(0.0106)	(0.0089)	(0.0091)	(0.0091)	(0.0095)
LOW-INCOME			0.3131***	0.3799***	0.2983***	0.3035***	0.3783***	0.3881***
			(0.0122)	(0.0101)	(0.0084)	(0.0087)	(0.0085)	(0.0088)
MOBILEOWN			0.1894***	0.1026***	0.1114***	0.1078***	0.1147***	0.1271***
			(0.0224)	(0.0180)	(0.0158)	(0.0162)	(0.0155)	(0.0156)
ACCOUNT-FIN			0.0568***	−0.0297**	0.0126	−0.0066	0.0120	0.0046
			(0.0173)	(0.0130)	(0.0113)	(0.0117)	(0.0110)	(0.0112)
ACCOUNT-MOB			0.0245	−0.0088	−0.0148	−0.0133	−0.0304**	−0.0574***
			(0.0207)	(0.0151)	(0.0128)	(0.0131)	(0.0126)	(0.0127)
EDUCATION			−0.1482***	−0.2423***	−0.1452***	−0.1959***	−0.2578***	−0.1606***
			(0.0129)	(0.0119)	(0.0096)	(0.0099)	(0.0102)	(0.0109)
SAVE-RETIRE			−0.2169***	−0.3797***	−0.2343***	−0.2736***	−0.3557***	−0.2789***
			(0.0125)	(0.0111)	(0.0091)	(0.0094)	(0.0096)	(0.0101)
INTERNET			−0.0586***	−0.1517***	−0.1286***	−0.1115***	−0.1455***	−0.0973***
			(0.0181)	(0.0140)	(0.0122)	(0.0125)	(0.0119)	(0.0121)
Country fixed effects	✔	✔	✔	✔	✔	✔	✔	✔
N	96,169	96,169	96,169	96,169	96,169	96,169	96,169	96,169
Pseudo-R^2	0.166	0.194	0.188	0.228	0.111	0.154	0.154	0.179

***, **, * indicate significance at the one, five, and ten percent levels, respectively, based on robust standard errors.

Table 2
Robustness tests.

	Alternative variables		Controls	WLS	PSM1	PSM2	ENTROPY	Controls	WLS	PSM1	PSM2	ENTROPY
Dependent variables	WORRY7	WORRY8	WORRY1	WORRY1	WORRY1	WORRY1	WORRY1	WORRY2	WORRY2	WORRY2	WORRY2	WORRY2
Independent variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
GENDER	0.4079***	0.1020***	0.2498***	0.2407***	0.2344***	0.2394***	0.2129***	0.2005***	0.1977***	0.1922***	0.1953***	0.1697***
	(0.0150)	(0.0037)	(0.0137)	(0.0111)	(0.0111)	(0.0110)	(0.0114)	(0.0126)	(0.0094)	(0.0095)	(0.0094)	(0.0098)
INFLATION			−0.1878**					−0.2474***				
			(0.0936)					(0.0701)				
GDPGROWTH			1.5492***					2.8039***				
			(0.2773)					(0.2526)				
LOGGDP			4.5454***					2.4087***				
			(0.7820)					(0.6897)				
FDI			−0.2424***					0.2741***				
			(0.0860)					(0.0765)				
LOGDEATHS			0.0016					−0.0050*				
			(0.0031)					(0.0030)				
STRINGENCY			1.1051***					1.0304***				
			(0.0553)					(0.0481)				
LOGLIFEEXP			−1.2870***					−3.5427***				
			(0.1997)					(0.1763)				
RELIGION-IMP			1.0997***					0.9036***				
			(0.0590)					(0.0517)				
RELIGION-DIV			0.4104***					0.0788**				
			(0.0430)					(0.0394)				
LANGUAGE-DIV			−0.1773***					−0.1823***				
			(0.0328)					(0.0318)				
CULTURE			−0.0840***					−0.0506***				
			(0.0080)					(0.0072)				
Civil			0.4120***					0.3063***				
			(0.0240)					(0.0212)				
DME			0.1655***					−0.0257				
			(0.0313)					(0.0281)				
Individual level controls	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
Country fixed effects	✔	✔	×	✔	✔	✔	✔	×	✔	✔	✔	✔
N	96,169	96,169	50,262	96,169	93,742	94,972	96,169	50,262	96,169	93,742	94,972	96,169
Pseudo-R^2			0.149	0.184	0.188	0.188	0.185	0.201	0.228	0.229	0.229	0.227
R^2	0.369	0.369										
Adj.R^2	0.368	0.368										

***, **, * indicate significance at the one, five, and ten percent levels, respectively, based on robust standard errors.

which may be related to regulatory environments and their effects on financial inclusion and protection for women (see Beck et al., 2003; La Porta et al., 1999). This variation suggests that socioeconomic and institutional factors significantly shape gendered financial anxiety, especially in environments beleaguered by institutional voids. This underscores the need for policies to mitigate gendered disparities across diverse regulatory and economic contexts.

3.2. Robustness

In this section, we conduct a battery of robustness tests to address the potential concerns regarding our empirical findings, as summarized in Table 2. Columns (1) and (2) use the total score for financial worry (*WORRY7*) and the mean score for financial worry (*WORRY8*) as alternative proxies for financial anxiety, allowing us to assess the sensitivity of our results to different measures. In Columns (3) and (8), we include

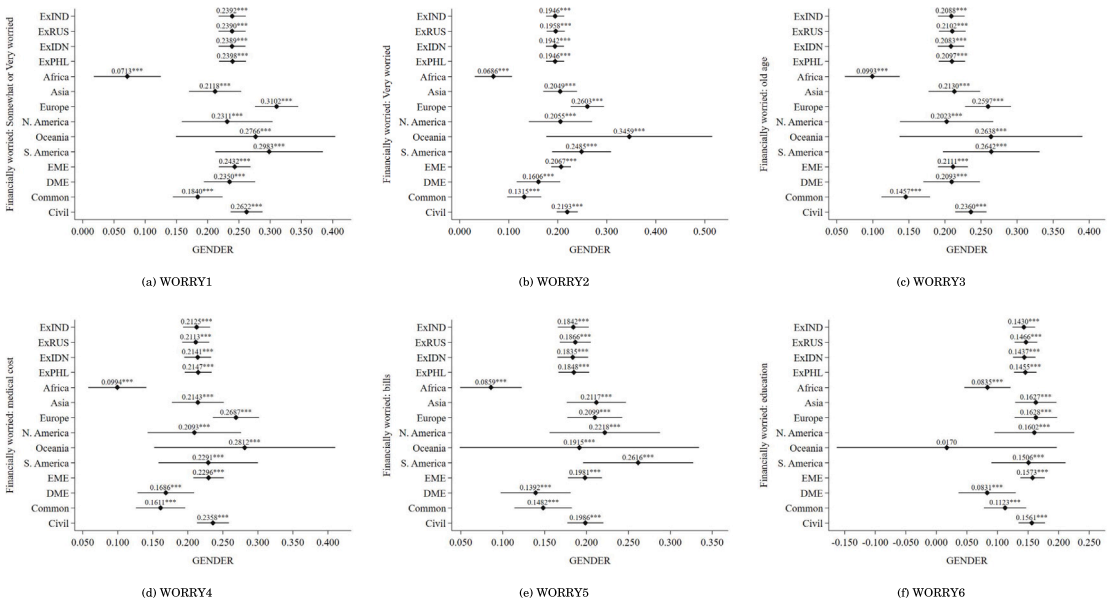


Fig. 1. Sub-sample analysis of gender-based differences in financial anxiety. The figure plots the estimates of the coefficients of the gender dummy (*GENDER*) from Eq. (1) for various subsamples. The first four subsamples exclude countries with disproportionately more observations: India (ExIND), Russia (ExRUS), Indonesia (ExIDN), and the Philippines (ExPHL). EME and DME represent subsamples of developing/emerging and developed countries. Common and Civil represent subsamples of countries with legal systems rooted in common and civil law, respectively.

additional country-level control variables to mitigate omitted variable bias.[8] Columns (4) and (9) use weighted least squares (WLS) to adjust for the skewed distribution of observations across countries.[9]

In Columns (5)–(7) and (10)—(12) in Table 2, we apply propensity score matching (PSM) and entropy balancing (ENTROPY) to reduce selection bias and endogeneity.[10] Encouragingly, the gender dummy remains positive and significant across all models in Table 2, affirming the robustness of our primary findings against common concerns associated with archival survey-based studies.

In the Online Appendix — Figure A.2, we conduct a falsification test by randomly assigning individuals to the treated (female) and control (male) groups. We create a placebo gender dummy variable, setting it to one if an individual is assigned to the female group and zero otherwise. After estimating Eq. (1), we record the coefficients and corresponding p-values of the placebo gender dummy variable, repeating this process 2,000 times. The distribution of these coefficients and p-values, as shown in the Online Appendix — Figure A.2, shows that the coefficients of the placebo gender dummy variable are significantly lower than the actual ones, and the p-values are predominantly greater than 10%, suggesting they are not significant at conventional levels. These findings suggest that the associations observed thus far between gender and financial anxiety are highly unlikely to result from random chance, affirming the robustness of our findings.

4. Conclusion

In this study, using survey data from 96,169 individuals across 114 countries collected during the pandemic, we find evidence of significant gender disparities in financial anxiety. Specifically, we find that women consistently report higher levels of financial anxiety during the COVID-19 pandemic and that this gendered financial anxiety is particularly pronounced regarding concerns about medical expenses, retirement, bills, and educational costs. This gendered financial anxiety is more pronounced in developing markets and civil-law countries, highlighting the roles of institutional and socioeconomic factors. Regional variations further suggest that this gendered financial anxiety is higher in South America and Oceania. Our findings, which are robust to a host of concerns, call for more targeted policies to address gender-specific financial anxiety, particularly in environments characterized by institutional voids. They also highlight the need for further research on the role of institutional frameworks in enhancing women's financial security.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary material related to this article can be found online at https://doi.org/10.1016/j.econlet.2025.112237.

Data availability

The authors do not have permission to share data.

[8] The Oster (2019), presented in the Online Appendix — Table A.6, suggests that our findings are unlikely to be driven by omitted variables, as the threshold value (δ) necessary for the gender coefficient to equal zero is considerably large, ranging from 5.325 to 18.270.

[9] The weight applied is the inverse of the total number of observations within each country.

[10] PSM matches observations with similar characteristics between treated (females) and control (males) groups to approximate randomization, while entropy balancing reweights data to align covariate distributions closely, enhancing causal interpretation in observational contexts. Indeed, the Online Appendix — Table A.5 demonstrates that after applying entropy balancing, the covariates between the treated (females) and control (males) groups are well-matched or balanced in terms of the mean, variance, and skewness.

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