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The experience effect after COVID-19: Evidence from Italian retail investors

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Abstract

This thesis investigates whether the COVID-19 pandemic has had a lasting effect on the financial risk preferences of Italian retail investors. The study explores whether personal or emotional exposure to the pandemic has led to persistent changes in self-assessed risk tolerance and investment behavior following the concept of experience-based learning. While previous studies, such as Niculaescu et al. (2023), documented short-term effects in the U.S. context, this research focuses on long-term behavioral outcomes in Italy, one of the countries most severely affected during the early phases of the pandemic.

To address this question, an original online survey was conducted and distributed to Italian individuals, trying to collect data from individuals with at least basic knowledge or experience in personal investing. The survey collected data on socio-demographic characteristics, emotional exposure to COVID-19, investment goals, and self-perceived risk attitudes. Several proxies for risk preferences were analyzed through both regression models and non-parametric tests, using constructed composite indicators for perceived risk tolerance and COVID-19 exposure.

The results of the analysis indicate no significant association between pandemic exposure and current risk preferences or investment goals. The findings were robust across different model specifications and confirmed by a Chi-squared test. These outcomes suggest that while COVID-19 may have triggered short-term caution, its behavioral impact may not be as persistent as suggested by prior literature on economic shocks.

This research contributes to the literature by providing new evidence from the Italian context and by incorporating psychological mechanisms and emotional indicators into the analysis of risk preferences.

Table of Contents

List of Tables

1. Introduction

The COVID-19 pandemic has challenged many assumptions about how individuals make financial decisions in uncertain and emotionally intense environments. In particular, the question of whether risk preferences are stable or shaped by personal experience has become especially relevant, both from a theoretical and practical perspective. Understanding how retail investors react to extreme shocks is not only important for behavioral finance research, but also for financial advisors and policymakers aiming to support long-term resilience in individual financial planning. This issue is particularly relevant in Italy, where the pandemic had severe economic and psychological consequences for households.

It's already clear from previous research that the pandemic had a strong impact on how people made financial choices; for instance, prior research, such as Niculaescu et al. (2023), has demonstrated that direct or indirect exposure to the virus significantly affected investors' attitudes toward risk in the short term. However, the long-term persistence of this experience effect remains an open empirical question.

The work by Malmendier and Nagel (2011), which showed that big economic shocks can leave long-term marks on financial behavior, represents the foundation of this study. The main idea here is to see if, even now, people who had stronger experiences with COVID-19, whether emotionally or personally, still show lower risk tolerance.

The idea that emotionally charged events, such as the pandemic, can shape decision-making over time is also supported by research on affect-driven choices and dynamic risk preferences (e.g., Kuhnen & Knutson, 2011; Guiso et al., 2018; Loewenstein et al., 2001).

To test this persistence, a cross-sectional online survey was designed to capture both current risk preferences and retrospective indicators of COVID-19 exposure, both objective (e.g., infection, loss of loved ones) and subjective (e.g., perceived stress or anxiety). This structure is built on the idea of comparing data taken from investors with different degrees of emotional or personal involvement, and to assess whether the experience effect is still present now.

The purpose of this thesis is to assess whether the COVID-19 experience continues to influence individual financial risk preferences among Italian retail investors.
The thesis proceeds as follows: Chapter 2 presents a review of the relevant literature. Chapter 3 describes the survey structure and methodology. Chapter 4 reports the empirical results on static risk preferences, while Chapter 5 explores changes in investment goals and behavior before and after the pandemic. Finally, Chapter 6 concludes by summarizing key findings and discussing their implications.

2. Literature review

Traditional economic and financial theory views risk preference as a stable individual trait. Expected Utility Theory (von Neumann & Morgenstern, 1944) assumes that individuals evaluate uncertain outcomes using fixed utility functions to maximize expected utility, and it has long been used as the foundational framework for modeling decision-making under risk, with the underlying assumption that attitude toward risk remains constant across time and situations. However, empirical findings, such as the Allais Paradox (Allais, 1953) and the Ellsberg Paradox (Ellsberg, 1961), reveal deviations from these predictions, suggesting that actual human behavior often diverges from the rational model, especially under uncertainty and personal experience. These findings lay the foundation for viewing risk preference as a dynamic construct, influenced by life events and external shocks. Behavioral finance emerged in response to the growing realization that human behavior systematically deviates from the predictions of classical models.
This challenges the assumption that risk preferences are fixed and leads to the question of how they may evolve in response to specific circumstances, especially personal experiences and emotionally intense events.

While Expected Utility Theory assumes risk preferences to stay stable over time, empirical evidence suggests otherwise. Emotions, personal experiences, and the broader environment seem to have a strong impact on how individuals approach risk. Loewenstein et al (2001) proposed the "risk-as-feelings" hypothesis, showing that immediate emotional reactions, like fear or excitement, can influence risky decisions beyond rational calculations. Empirical research has confirmed that risk aversion tends to increase following large-scale crises; Guise et al. (2013) showed this phenomenon after the 2008 financial crisis in Italy, where people's risk aversion increased noticeably. Malmendier and Nagel (2011) found that people who personally lived through periods of poor market returns tend to invest less in stocks for many years afterward, so individual experience of loss may have a stronger and more persistent impact on future behavior than general economic conditions. The study of Andersen et al. (2019) highlighted that first-hand experiences of financial loss have a significant impact on the propensity of individuals to reduce risk-taking; instead, second-hand, or local exposure, has much weaker effects. These results suggest that personal experience imprints psychological scars that alter financial decision-making, challenging the notion that risk preferences are purely structural or economically determined. Together, these insights provide the theoretical foundation for investigating whether an event like the COVID-19 pandemic may have altered retail investors' risk preferences not only temporarily but in a persistent way.
Building on this idea, several studies have investigated whether the COVID-19 pandemic, as a large-scale and emotionally charged event, had a measurable impact on how individuals perceive and manage financial risk.

The COVID-19 pandemic represented an unprecedented global shock, generating widespread uncertainty not only economically, but also emotionally and psychologically. Several studies have explored whether such a disruptive event has changed the way individuals deal with risk. For instance, Niculaescu et al. (2023) found that U.S. retail investors who personally experienced illness or job loss due to the pandemic tended to shift their portfolios toward safer investments. A similar result, but investigating Chinese households, is highlighted by Yue et al. (2020), where the subjects of the study reduced their investment in stocks and showed lower confidence in their financial future if exposed to COVID-19 risks.
Overall, these studies support the idea that the COVID-19 pandemic may have acted as a formative experience capable of reshaping individual risk preferences. However, the research available on whether these behavioral changes are

temporary or persistent is few, especially outside the U.S. or Asian contexts. This gap is the reason behind the present thesis, which aims to explore how retail investors in Europe, and particularly in Italy, were affected, and whether the experience of the pandemic still plays a role in their risk behavior today.

Not all studies support the idea that the COVID-19 pandemic has influenced individual attitudes toward risk. For instance, Zhang and Palma (2022) conducted a longitudinal study across four data collection waves during the pandemic in the U.S.; the results show some fluctuation in risk-taking behavior, but they were small and mostly associated with self-reported measures rather than incentivized tasks, meaning that risk preferences remained largely stable over time. Similarly, Drichoutis and Nayga (2022) reported no significant changes in either risk or time preferences when examining a Greek sample before and during the pandemic, even among individuals directly affected by COVID-19. Further research is needed since contrasting evidence exists between those who report persistent changes and those who observe overall stability; especially in underexplored contexts, such as Italy, to determine whether personal experience with the pandemic has had a lasting effect on risk attitudes.

To understand why investors' behavior changed during and after the COVID-19 pandemic, looking at the financial models is not enough; and is necessary to look at psychological theories that help explain what was happening at a deeper level.

One relevant framework exposed by Arndt et al. (2004) is Terror Management Theory, which suggests that when people face the idea of their own mortality, such as during COVID-19, they tend to seek security and stability; in financial terms, this could mean becoming more risk-averse, especially among those who were directly or emotionally impacted by the pandemic.

Bordalo et al. (2012) give another helpful perspective, the Salience Theory, which proposes that people tend to overweight the most striking or emotionally charged aspects of a decision. During a crisis like COVID-19, in people's minds, the possibility of financial loss becomes much more salient, overshadowing potential gains, which likely pushed many to avoid risky investments.

As explained by Puri & Robinson (2007), there is, in general, an Optimism Bias; this means that individuals expect things to turn out well and might underestimate risks, but this positive outlook tends to disappear during severe crises, making people more cautious and focused on avoiding losses.

Taken together, these psychological mechanisms suggest that investors' behavior during COVID-19 wasn't just about rational risk assessment, but also emotions played a big role, perceived danger, and shifts in overall optimism. All this could explain why some of these changes might persist even now.

While these theoretical perspectives provide useful insights into why some investors might have changed their behavior during the pandemic, several studies have investigated how the COVID-19 pandemic affected retail investors' behavior, in particular their risk preferences, but most of the existing literature focuses mainly on the U.S. and Asia context and is temporally limited, focusing on the early stage of the pandemic, examining short-term behavioral responses. For instance, Niculaescu et al. (2023) studied U.S. investors in the early phase of the pandemic, while Yue et al. (2020) focused on Chinese households. Some studies have been conducted in Europe, but a limited understanding of whether such behavioral shift is persistent over time and how it evolves across different European countries represents a relevant

gap literature, especially in Italy, where the pandemic had both severe health and economic impacts. The European market structure and regulatory environment differ from that of the U.S; consequently of this also affects financial culture and the way retail investors access and use investment products. Studies like Malmendier and Nagel (2011) and Andersen et al. (2019), demonstrate that traumatic experience can shape financial behavior for years, highlighting the experience-based learning and the long-lasting psychological imprint of financial shocks, in contrast to other studies that suggest that the psychological effects of traumatic events are not a long-lasting effect. This thesis seeks to examine whether the COVID-19 experience continues to influence the risk choices of retail investors in Italy over three years following the onset of the pandemic. The research will employ a survey-based methodology to examine the experience effect on risk perception and portfolio decisions. To the best of the author's knowledge, no similar study has yet been conducted focusing on the Italian retail investor context in the post-pandemic period.
This sets the stage for the present study, which seeks to build on the existing literature and contribute new evidence on whether and how COVID-related experiences continue to influence financial risk-taking among Italian retail investors.

The research reviewed so far shows that risk preferences are not fixed traits, but instead change over time depending on how people feel, what they experience, and the environment they live in. Behavioral finance has been key in helping us understand this, introducing theories like Prospect Theory, the risk-as-feelings hypothesis, and the idea that personal experience can leave a long-term mark on financial behavior.
Studies focused on the COVID-19 crisis confirm that retail investors changed their approach to risk during the pandemic, especially those who were directly or emotionally affected. However, most of this research looks at what happened in the short term or is based on data from the U.S. and Asia. Within Europe, the available evidence is still limited, and in Italy, where the pandemic had a strong social and economic impact, there is a clear lack of data on how investors behaved — and whether those changes have lasted over time.
This thesis aims to fill that gap by focusing on Italian retail investors and exploring whether their experience with COVID-19 still influences their current attitudes toward financial risk. The next section will describe the methodology used, based on a survey designed to capture how personal experience relates to today’s investment behavior, more than three years after the beginning of the pandemic.

3. Methodology and Survey Design

3.1. Survey design and structure

The empirical analysis in this thesis is based on a cross-sectional online survey designed to capture individual risk preferences and COVID-related experiences. The survey was created using the Qualtrics platform and was administered to Italian adults older than 18. Participation was voluntary, anonymous, and open to both experienced investors and financially less active individuals.
The questionnaire consists of five main sections, in addition to an introduction containing the consent form and a closing thank-you message. Section 1 collects demographic and socioeconomic data. Section 2 includes questions on financial literacy and previous investment experience. Based on the answers, participants are routed either toward the full questionnaire or to a shortened version. Section 3 that is presented to all respondents measures personal and emotional

exposure to COVID-19. Section 4 is presented to participants with basic financial knowledge, focusing on risk preferences and perceived changes in risk tolerance after the pandemic. Finally, Section 5 explores changes in financial behavior, such as saving and investing, before and after the pandemic.

To ensure data quality, attention-check questions were embedded in different sections of the survey. In addition, logic-based routing was implemented to avoid showing irrelevant questions to respondents who reported having no investment experience and no financial knowledge. This allowed for a more personalized and efficient experience, while also improving the reliability of the collected data. Each section of the questionnaire contributes to measuring one or more of the key constructs of the study: Section 3 measures COVID-related exposure, Section 4 captures current risk preferences, and Section 5 investigates perceived changes in financial behavior.

3.2. Operationalization of key variables

The survey is designed to capture three main elements: how people feel about risk today, what kind of experience they had with COVID-19, and whether they think their financial behavior has changed since the pandemic. In this research design, COVID-19-related experience represents the independent variable, while both current risk preferences and financial behavior serve as the dependent variables. Each element is measured through a specific set of questions.

Risk preferences are measured both with self-evaluation questions (e.g., asking respondents how they perceive their own willingness to take risks) and indirect questions used as behavioral proxies, such as hypothetical investment scenarios and asset allocation questions. These are based on established items in the behavioral finance literature, including self-assessment scales developed by Dohmen et al. (2011) and hypothetical risk scenarios similar to those used by Barsky et al. (1997).

The experience with COVID-19 is measured through objective questions to capture the exposure to personal infection, illness, or loss within the family, and subjective questions such as perceived stress and health-related anxiety or financial uncertainty.

A retrospective comparison is used to assess whether individuals perceive a shift in their attitudes or behaviors due to the pandemic. Direct questions are used to measure the perceived changes in risk tolerance and investment style, elements that help to capture the perceived persistence of the experience effect and to connect it with current financial attitudes and behaviors.

The approach closely follows the methodology adopted in the reference paper by Niculaescu et al. (2023). The authors do not have pre-COVID data, but instead use a cross-sectional survey conducted after the outbreak to assess whether individuals personally affected by COVID-19 still display systematically different financial risk preferences. Their interpretation is that, if such differences persist, they may reflect a long-lasting shift in behavior caused by the experience of the pandemic. To ensure measurement consistency and comparability with that study, this work has replicated the same risk preference proxies (e.g., self-assessed Likert scale, binary investment choice, and hypothetical portfolio allocation) and collected demographic and exposure-related variables in a similar format. Although this approach does not allow for estimating short-term changes, it enables testing whether past exposure to COVID-19 is associated with current differences in risk preferences. This, in turn, serves as indirect evidence of potential long-term effects.

3.3. Data cleaning and Sample segmentation

The total number of responses collected was 115, done through a data cleaning process to remove irrelevant data, incomplete responses, and those that did not pass the attention check; the total number of valid responses was 78. A second level of filter divides the participant into two groups based on their level of financial experience. This filter is a critical feature of the survey branching logic, in fact those who answered "No" to the question "Do you have at least a basic understanding of investment concepts and financial risk?" were directed to a short version of the survey, consisting primarily of demographic and general perception questions where the final number of valid responses in this subsample was **29.** Those, on the other hand, who answered "Yes" were assigned to the full version, which included financial literacy questions, pre- and post-COVID risk tolerance, changes in investment behavior, and attention checks; and the final number of valid answers for this group was 49.

3.4. Socio-demographic Characteristics

The final sample consists of 78 respondents with a heterogeneous socio-demographic profile. The gender distribution is relatively balanced, with 55.1% female and 44.9% male participants. The age of respondents ranges from 18 to 72 years, ensuring multiple generational perspectives, with an average age of 38. Looking at the education, most participants report holding either a high school diploma or equivalent (38.4%) or a Bachelor's degree (25.6%), while 16.7% have a Master's degree or higher, only a smaller portion reports less than high school education (15.4%), and 3.9% selected 'other'. Also, looking at the employees' status, the sample includes a mix of different conditions, but looking at the income distribution, a large share of respondents falls into the lower income brackets, with 41.1% reporting an annual income below €15,000, and Higher income categories are less represented with only a few respondents declaring more than €50,000 per year. Overall, the sample demonstrates a high degree of heterogeneity in terms of age, gender, educational background, employment status, and income, which strengthens the empirical validity of the subsequent analyses on investment behavior and risk preferences.

Results are summarized in Table 1.

Table 1: Socio-demographic Characteristics.

Descriptive analysis

Variable	N	Mean	%	Min	Max
Total	78				
Sex	78				
Male	35		44,9%		
Female	43		55,1%		
Age	78	38		18	72
Education	78				
Bachelor's degree	20		25,6%		
High school diploma or equivalent	30		38,4%		
Master's degree or higher	13		16,7%		
Less than high school	12		15,4%		
Other	3		3,9%		
Occupation	78				
Employed full-time	26		33,3%		
Employed part-time	6		7,7%		
Self-employed	5		6,4%		
Student	22		28,2%		
Unemployed	8		10,3%		
Retired	3		3,8%		
Other	8		10,3%		
Income	78				
Less than €15.000	32		41,1%		
€15.000–€29.999	19		24,3%		
€30.000–€49.999	10		12,8%		
€50.000–€74.999	1		1,3%		
€100.000 or more	1		1,3%		
I prefer not to answer	15		19,2%		

4. Empirical Analysis

4.1. Overview of Analytical Approach

A subsample of 49 respondents is the focus of the empirical study, filtered from the full sample because they had either previous investment experience or at least a basic understanding of investment concepts. These participants completed the full version of the survey, which included questions specifically designed to capture their financial behavior, risk preferences, and perceived changes after the COVID-19 pandemic.

To examine individual risk preferences, the survey incorporates a *subjective measure of risk tolerance, which is captured through a Likert-scale self-assessment, and behavioral proxies such as a hypothetical investment choice between a safe and a risky option, an asset allocation task, and a question about the respondent's reaction to a potential financial loss. Participants were asked to rate the importance of diversification and whether they perceived a change in their risk tolerance since the onset of the pandemic.*

The empirical strategy of the analysis is based on a series of regression models to test the relationship between COVID-19 exposure and risk preferences changes captured in different dimensions, both in their static and perceived change components. A set of socio-demographic covariates, including age, gender, education, employment status, and income level, was also used as control variables. The final section compares pre- and post-pandemic investment goals and behaviors, based on self-reported changes. This approach aims to provide a nuanced understanding of how the COVID-19 pandemic may have affected the risk preferences and financial behavior of retail investors.

4.2.1. Self-assessed Risk Tolerance

The first proxy for individual risk preferences is a self-assessment question in which respondents rated their general willingness to take financial risks on a five-point Likert scale, ranging from "Not at all prone to risk" to "Very prone to risk." A total of 49 responses were collected, including three individuals who answered "I don't know." These were excluded from the numerical analyses but reported separately in the descriptive statistics. Results are shown in Table 2.

Table 2: Summary of Self-assessed Risk Tolerance

Risk tolerance					
Variable	**N**	**Mean**	**%**	**Likert value**	**Std**
Total	49				
Risk tolerance	49	2.28			0,98
Not at all prone to risk	10		20,4%	1	
Slightly prone to risk	19		38,8%	2	
Moderately prone to risk	12		24,5%	3	
Fairly prone to risk	4		8,2%	4	
Very prone to risk	1		2,0%	5	
I don't know	3		6,10%		

The distribution of responses indicates a predominantly risk-averse profile since the largest share of participants described themselves as “Slightly prone to risk” (38.8%). Only a minority reported being risk taking. Converting the responses into a Likert-scale, the mean risk tolerance score was 2.28, with a standard deviation of 0.98, suggesting a relatively concentrated distribution around moderate aversion.

To check if there is a relation between personal exposure to COVID-19 and self-perceived risk tolerance, an ordinal logistic regression was estimated. The dependent variable of the model is the Likert-scale of the risk tolerance, and the key predictor is the COVID-19 experience. The results show no statistically significant relation for different exposure categories. Results are shown in Table 3.

Table 3: Ordinal logistic regression results for self-assessed risk tolerance and COVID-19 exposure.

Ordinal Logistic Regression: Risk tolerance ~ COVID-19 exposure			
Variable	**Coefficient**	**Std. Error**	**t value**
COVID-19 exposure			
Yes, but asymptomatic	-1.51	0.88	-1.71
Yes, with mild symptoms	0.88	0.68	1.29
Yes, with severe symptoms (hospitalization or pneumonia)	-0.39	1.63	-0.24

To increase interpretability and statistical power, a second model was estimated using recoded variables. Risk tolerance responses were grouped into three categories (Low, Medium, High), and COVID-19 experience was simplified into a binary indicator. The results of this model also showed no statistically significant relationship.

Table 4: Ordinal logistic regression results using grouped risk tolerance levels and binary COVID-19 exposure.

Ordinal Logistic Regression: Grouped Risk tolerance ~ COVID-19 exposure (binary)

Variable	Coefficient	Std. Error	t value
COVID-19 exposure			
Yes	0.539	0.725	0.717

Taken together, these findings suggest that individual exposure to COVID-19 is not significantly associated with self-assessed risk tolerance, at least not several years after the pandemic outbreak. This outcome is consistent with the hypothesis that the short-term emotional impact of the pandemic may not persist as a long-lasting determinant of subjective risk preferences.

To further support the regression results, a Pearson's Chi-squared test was conducted to examine the association between grouped self-assessed risk tolerance and binary COVID-19 exposure. The contingency table compared three levels of risk tolerance (low, medium, high) across exposed and non-exposed respondents. The test did not detect any statistically significant relationship between the two variables (X^2 = 0.603, df = 2, p = 0.7395). This outcome is consistent with the findings from the ordinal logistic regressions and suggests that personal exposure to COVID-19 does not significantly influence current self-perceived financial risk tolerance.

Table 5: Pearson's Chi-squared test for the association between grouped risk tolerance and COVID-19 exposure.

Pearson's Chi-squared test

data: df_mod$risk_grouped and df_mod$covid_exposed

X^2 = 0.60345 df = 2 p-value = 0.7395

4.2.2. Investment Choice Proxy

The second proxy used to capture individual risk preferences is based on an investment choice in a controlled and stylized scenario; in particular, participants had to choose between a safe investment offering a guaranteed 2% annual return and a risky one with a 50% chance of gaining 10% and 50% of losing 5%. Out of 49 respondents, 73.5% chose the safe investment, while 26.5% opted for the risky alternative. These results reinforce the trend of risk aversion already observed in the self-assessment measure, with a majority of participants displaying conservative investment preferences.

To test whether personal COVID-19 experience predicts the likelihood of choosing the risky option, a binary logistic regression was estimated with the binary variable related to investment choice as the dependent variable and COVID self-assessment as the key predictor. The results show no statistically significant associations.

To verify the robustness of the results, a second model was estimated, including a set of control variables: age, gender, and prior investment experience. In this specification, none of the predictors, including the COVID exposure categories, show statistically significant effects.

Table 6:Logistic regression results for the binary investment choice, with and without control variables.

Dependent variable: Investment choice binary		
Variable	**(1)**	**(2)**
intercept	-0.8109	-1.33
	(0.601)	(1.42)
yes, but asymptomatic	-0.4418	-0.68
	(1.00)	(1.05)
yes, with mild symptoms	-0.1335	-0.19
	(0.748)	(0.88)
yes, with severe symptoms	-15.75	-15.98
	(1696.73)	(1691.68)
age		0
		(0.03)
gender Male		0.31
		(0.79)
Has Invested		0.64
		(0.92)
Observation	49	49
Null deviance	56.69	56.69
Residual Deviance	55.23	54.11
AIC	63.23	68.11

Taken together, these findings suggest that the choice in the investment task is not statistically influenced by the subjective COVID-19 experience. While prior literature has documented short-term shifts in financial risk-taking following emotionally salient events, the results here imply that such effects may fade over time or be moderated by individual resilience and experience.

4.2.3.Portfolio allocation

A third proxy for risk preferences was based on participants' actual allocation of capital to risky financial assets. Respondents were asked to indicate the percentage of their total capital invested in such instruments, choosing from five predefined ranges. However, no participant selected the fourth category ("Between 51% and 75%"), and this level was excluded from the analysis.

The final distribution reveals a strong degree of risk aversion among respondents: 65.3% reported a zero allocation to risky assets, and an additional 24.5% reported investing up to 25%. Only 10.2% of participants allocated more than 25% of their portfolio to risky instruments.

An ordinal logistic regression was used to check if personal experience with COVID-19 was associated with a higher allocation to risky assets. The dependent variable was the ordered allocation category, while the key independent variable was self-reported COVID-19 exposure. The baseline model showed no statistically significant relationship between COVID-19 experience and portfolio allocation levels. Additionally, a second model that includes a set of control variables shows a non-significant relation between COVID-19 and higher allocation to risky assets. However, age was negatively associated with risk allocation ($p < 0.05$), suggesting that older participants tended to invest less in risky assets. Having previous investment experience was positively and significantly associated with higher allocation levels ($p < 0.01$). These results indicate that while the COVID-19 experience itself did not significantly influence portfolio decisions, individual characteristics such as age and experience played a more substantial role in shaping risk-taking behavior. Results are shown in Table 7.

Table 7: Ordinal logistic regression results for portfolio allocation across risky assets, with and without control variables.

	Dependent variable: Portfolio allocation	
Variable	**(1)**	**(2)**
yes, but asymptomatic	-0.92	-2.26
	(1.25)	(1.44)
yes, with mild symptoms	-0.95	-0.14
	(0.76)	(1.01)
yes, with severe symptoms	3.46	2.45
	(1.54)	(1.68)
age		-0.09
		(0.04)*
gender Male		0.37
		(0.92)
Has Invested		3.74
		(1.33)**
Observation	46	46
Residual Deviance	81.55	61.95
AIC	93.55	79.95

Signif. Codes: 0.001 '***' 0.01 '**' 0.05 '*'

4.3. Composite risk aversion index

To explore whether COVID-19 exposure correlates with overall individual risk attitudes, a composite risk aversion index was constructed by averaging three standardized measures: self-assessed risk tolerance, binary risk-taking in a hypothetical investment scenario, and actual portfolio allocation. Each component was rescaled to a 0–1 interval, where higher values indicate more risk-seeking behavior.

Table 2 reports the results of two OLS regressions where the composite index is regressed on COVID-19 personal exposure. In the baseline model (column 1), none of the coefficients for COVID-19 exposure types are statistically significant. The coefficient for respondents with mild symptoms is positive (0.077), while those for asymptomatic and severe cases are negative and close to zero, suggesting no clear pattern. The second column, instead, includes control variables, but even after controlling for these variables, there is no statistical significance for the COVID-19-related coefficients.

Table 8: OLS Regression: Composite Risk Aversion Index ~ COVID-19 Exposure

Dependent variable: Composite Risk Aversion Index		
Variable	**(1)**	**(2)**
yes, but asymptomatic	-0.097	-0.116
	(0.100)	(0.103)
yes, with mild symptoms	0.077	0.044
	(0.081)	(0.089)
yes, with severe symptoms	0.076	0.029
	(0.171	(0.179)
age		-0.0039
		(0.0028)
gender Male		0.037
		(0.077)
Has Invested		0.093
		(0.091)
Observation	46	46
R-squared	0.092	0.168
Adj. R-squared	0.027	0.040
Residual Std. Error	0.222 (df=42)	0.220 (df=39)
F-statistic	1.423 (df=3;42)	1.309 (df=6;39)

In conclusion, these findings indicate that personal COVID-19 experience does not systematically predict broader risk attitudes when measured across multiple domains. The low explanatory power of the models (R^2 = 0.09 and 0.17, respectively) further supports the notion that individual risk preferences are shaped by multiple factors beyond health shocks.

4.4. Alternative COVID-19 Exposure Measure: A Composite Index Approach

As an additional robustness check, a composite index was constructed to capture the intensity of COVID-19 exposure, aggregating three distinct yet potentially complementary dimensions: (i) direct experience with the virus, (ii) indirect exposure through family and friends, and (iii) self-reported psychological stress caused by the pandemic. This approach was inspired by Niculaescu et al. (2023), who argue that a multifaceted exposure score may better capture the salience of the pandemic in individuals' lives than binary or categorical indicators alone.

The composite index was computed by first rescaling each component to a 0–1 scale and then averaging them, conditional on non-missing values for all three dimensions. The variables included were the COVID-19 self-

exposure (severity of personal infection), COVID-19 family/friends exposure (ranging from no exposure to having lost a close one), and Pandemic-related stress (ranging from no impact to strong psychological impact).

Table 9 reports the results of an OLS regression where the dependent variable is the Composite Risk Aversion Index and the key regressor is the COVID Exposure Index, along with the usual controls.

The estimated coefficient on the exposure index is positive (0.303), suggesting that higher emotional and physical exposure to COVID-19 is associated with more risk-seeking behavior, although the result is not statistically significant. This is directionally consistent with the findings of Niculaescu et al. (2023), who argue that emotionally salient pandemic experiences may shift investors' reference points or risk perceptions.

These findings lend partial support to the hypothesis that the psychological salience of the pandemic, not merely its factual occurrence, may be associated with changes in investment attitudes. However, further research with larger samples is needed to confirm this interpretation.

Table 9: OLS Regression: Composite Risk Aversion Index ~ Composite COVID Exposure Index

Dependent variable: Composite Risk Aversion Index	
Variable	**(1)**
COVID Exposure Index	0.303
	(0.238)
age	-0.005
	(0.003)*
gender Male	0.042
	(0.081)
Has Invested	0.110
	(0.088)
Observation	43
R-squared	0.139
Adj. R-squared	0.049
Residual Std. Error	0.227 (df=38)
F-statistic	1.532 (df=4;38)

* $p < 0.1$

4.5. Self-Perceived Change in Risk Preferences and COVID Exposure

To further explore the relationship between COVID-19 exposure and investment behavior, we test whether subjective exposure to the pandemic is associated with a self-perceived change in risk preferences. Specifically, we regress a binary variable (change_risk_binary) that equals 1 if respondents reported having become either more or less risk-tolerant after the pandemic, and 0 if they reported no change. The main

explanatory variable is the previously constructed covid_exposure_index, a standardized composite index that captures three dimensions of subjective exposure: personal health impact, family-related health consequences, and emotional stress.

The regression includes controls for age, gender, and investment experience. Results from the logistic model are reported in Table 10. The coefficient associated with covid_exposure_index is negative but not statistically significant, indicating that higher levels of subjective exposure do not significantly affect the likelihood of perceiving a shift in one's risk attitude. Age is also not significantly associated with perceived change, although it shows a negative trend.

This analysis complements the findings from the previous section, which assessed how COVID exposure related to actual differences in risk preference proxies. Here, instead, the focus is on self-attributed change in preferences, adding a more psychological and retrospective dimension to the analysis. The lack of statistical significance suggests that subjective exposure does not translate into stronger awareness of behavioral change**,** or that such change may not be consciously recognized by respondents**.**

Table 10: Logistic Regression: Covid Exposure and Self-Perceived Change in Risk Preferences

Dependent variable: Self-Perceived Change in Risk Preferences	
Variable	**(1)**
COVID Exposure Index	-0.60
	(2.02)
age	-0.01
	(0.02)
gender Male	0.23
	(0.70)
Has Invested	0.35
	(0.76)
Observation	46
Residual Deviance	60.78
AIC	70.78

5. Change in Risk and Saving Behavior in the Aftermath of COVID-19

5.1. Change in investment goals

As part of the survey, participants were asked to indicate their main investment or saving goals both before and after the COVID-19 pandemic. Multiple answers were allowed for each time period. Table 11 summarizes how the frequency of each selected goal changed: it reports how many individuals selected each goal only before the pandemic (Only Pre), only after (Only Post), in both periods (Both), or never selected it. The final

two columns show the total number of participants who selected each goal and the net change in selection (Post – Pre).

Changes are present in all categories, but the most notable increase was observed in the category Unexpected expenses or emergencies, suggesting that precautionary savings gained importance following the COVID-19 experience. The reported increases in: Buying a home or real estate investment, Debt or loan repayment, and Home maintenance or renovations may suggest an increased attention to long-term financial security and structural needs. On the other side, we can observe a decrease in Important purchases and Travel that may suggest a shift away from discretionary spending in favor of more prudent or necessity-driven objectives.

Table 11: Change in Investment Goals Before and After the COVID-19 Pandemic

	Change in savings choice					
Objective	**Only pre**	**Only post**	**Both**	**Never**	**Total selected**	**Net change**
Important purchases	17	8	10	14	25	-9
Travel, leisure, and vacations	15	8	10	16	23	-7
Buying a home or real estate investment	9	13	19	8	22	4
Unexpected expenses or emergencies	6	17	22	4	23	11
Home maintenance or renovations	12	13	10	14	25	1
Debt or loan repayment	9	12	13	15	21	3
No specific objective	11	10	9	19	21	-1

These findings are consistent with previous literature showing that major economic shocks can alter financial priorities and increase the demand for liquidity and precautionary savings (Guiso et al., 2013; Fagereng et al., 2021). In particular, the observed shift toward emergency saving and debt repayment aligns with the notion that personal financial insecurity leads individuals to prioritize financial resilience over consumption or aspirational goals.

5.1.1. Change in Investment Goals – Inexperienced Investors

To complement the previous analysis, the same descriptive breakdown was conducted on the subgroup of 29 participants who reported having no prior investment experience or financial knowledge. Table 12 shows how their investment goals changed before and after the pandemic.

Just like in the more experienced sample, the most prominent increase was observed in Unexpected expenses or emergencies. This highlights that the pandemic acted as a common stressor, leading even the most financially inexperienced individuals to shift toward more cautious savings behavior.

Interestingly, Important purchases and Home maintenance or renovations declined, while Travel, leisure, and vacations remained unchanged. This reinforces the idea that inexperienced participants, like their more experienced counterparts, responded to the crisis by deprioritizing consumption-oriented goals and shifting toward emergency ones.

Table 12: Change in Investment Goals Before and After the COVID-19 Pandemic (Non-Investors)

	Change in savings choice					
Objective	**Only pre**	**Only post**	**Both**	**Never**	**Total selected**	**Net change**
Important purchases	12	6	2	9	20	-6
Travel, leisure, and vacations	10	10	2	7	22	0
Buying a home or real estate investment	9	10	6	4	25	1
Unexpected expenses or emergencies	2	15	5	7	22	13
Home maintenance or renovations	11	10	1	7	22	-1
Debt or loan repayment	6	8	2	13	16	2
No specific objective	3	7	2	17	12	4

5.2. Change in risk and savings behavior

To control for behavioral change after COVID-19, a series of questions asks for a report of participants' investment in risky assets and the proportion of wealth allocated to investments, both before and after the pandemic. The reported values were converted into ordinal numeric scales, and individual-level changes were computed.

Descriptive statistics show that 59% of respondents reported no change in risk tolerance, while 24% reported a decrease and 16% an increase. Regarding investment behavior, 65% reported no change in allocation, while 14% reduced and 20% increased their investment share. These distributions suggest that while most investors maintained their attitudes and behaviors, a relevant minority reported adjustments.

To examine whether these changes are associated with personal exposure to COVID-19, a series of ordinal logistic regressions was estimated. The dependent variables are the change in self-reported risk tolerance and the change in investment allocation. The base model shows that having experienced mild COVID-19 symptoms was significantly associated with an increase in both risk tolerance and investment level. These results suggest that a segment of investors may have responded to mild illness with increased risk-taking or optimism.

After accounting for control variables, the effect on risk tolerance remained, while the effect on investment became non-significant. Notably, age was negatively associated with investment change, indicating that younger individuals were more likely to increase their investment share after the pandemic.

Taken together, the results reveal a generally stable pattern of behavior, with some evidence of increased risk-taking and investment among younger or mildly affected individuals. These findings suggest that the behavioral response to COVID-19 is heterogeneous and may reflect both personal experience and life-cycle dynamics.

Table 13: Distribution of Risk and Investment Behavior Changes Before and After COVID-19

Change level	Risk Tolerance	Investment Allocation
-3	2	0
-2	2	1
-1	8	6
0	29	32
1	6	8
2	2	0
3	0	2
Total	49	49

Table 14: Ordinal Logistic Regression – Predictors of Change in Risk Tolerance and Investment Allocation

Variable	(1) Δ Risk	(2) Δ Risk	(2) Δ Invest	(2) Δ Invest
yes, but asymptomatic	0.37	0.74	0.79	0.39
	(0.83)	(0.86)**	(0.93)	(0.98)
yes, with mild symptoms	1.53	2.10	1.68	0.81
	(0.72)**	(0.86)**	(0.77)**	(0.86)
yes, with severe symptoms	-1.60	-0.79	0.56	-0.59
	(1.72)	(1.97)	(4.81)	(4.97)
age		0.03		-0.08
		(0.02)		(0.03)**
gender Male		0.54		-0.45
		(0.67)		(0.79)
Has Invested		-1.1		1.46
		(0.80)		(0.88)†
Observation	49	49	49	49
Residual Deviance	115.54	113.46	96.57	86.66
AIC	131.54	135.46	110.57	106.66

Coefficients from ordinal logistic regressions. Standard errors in parentheses.
Significance: † p < 0.1, p < 0.05*, p < 0.01**

5.3. Summary of empirical findings

This chapter examined how the COVID-19 pandemic may have influenced investors' behavior and perceptions. While most participants reported only small or no changes in their willingness to take risks, a subset indicated feeling more cautious after the pandemic. Looking at investment goals, there appears to be a shift away from high-risk objectives such as speculation or large purchases, and toward safer, security-driven goals like saving and debt repayment. However, when tested statistically, self-reported changes in risk attitudes did not strongly correlate with actual investment choices or portfolio adjustments. These findings suggest that although some investors believe their preferences have changed, this may not always be reflected in their financial behavior.

6. Conclusion

This work set out to examine whether the experience effect triggered by the COVID-19 pandemic still influences the financial risk preferences of Italian retail investors. While the psychological and financial impact of the pandemic was undoubtedly profound in its early stages, the empirical evidence gathered in this study suggests that such effects may not have endured measurably over the long term.

Multiple associations were examined using several proxies, including self-assessed risk tolerance, investment choices, and portfolio allocation. All relationships tested between COVID-19 exposure, emotional or personal, and current risk preferences were not statistically significant. Also, taking into account perceived changes in investment goals or savings behavior does not show an association with direct pandemic experience.

To further validate these findings, non-parametric tests such as Pearson's Chi-squared test were performed, confirming the absence of a significant association between exposure and reported risk attitudes. This robustness strengthens the case that the behavioral impact of the pandemic may have faded over time. Additionally, the study contributes methodologically by introducing composite indicators for both perceived risk tolerance and emotional exposure, allowing a more refined examination of how such experiences shape financial behavior.

These findings add to the already existing literature in behavioral finance on the persistence of experience-based learning. While previous studies—such as Malmendier and Nagel (2011)—have shown that major economic shocks can leave long-term imprints on financial preferences, the present study suggests that the legacy of emotionally intense events like COVID-19 may be more fragile or context-dependent. Similarly, while Niculaescu et al. (2023) observed strong short-term effects among U.S. investors, this study indicates that such effects may not generalize over time or across countries, particularly in the Italian context.

Several limitations must be acknowledged. The sample is relatively small and not representative of the broader population, which restricts generalizability. Furthermore, the reliance on self-reported and retrospective data

introduces possible bias. A longitudinal design or incentivized experiments might offer stronger evidence regarding the durability of experience effects.

Future research could build on this work by incorporating larger and more diverse samples, exploring emotional and economic exposure in greater depth, and testing how individual adaptation evolves over time. Future studies could focus on the emotional impact of rare crises like COVID-19 on risk preference and test whether it disappears entirely or simply evolves over time.

In conclusion, while the COVID-19 pandemic may have initially shaped investment motivations and short-term risk perceptions, its long-term impact on retail investors' financial preferences remains uncertain. Overall, the findings suggest that the influence of personal experience, while significant in theory, may not persist as strongly or universally as often believed.

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