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Research article

Fund performance—flow relationship for microfinance mutual funds

Carmen-Pilar Martí-Ballester[1,*] and Buket Erden[2]

[1] Business Department, Universitat Autònoma de Barcelona, Bellaterra, Spain
[2] Banking and Finance Department, Çanakkale Onsekiz Mart University, Çanakkale, Turkey

* **Correspondence:** Email: carmenpilar.marti@uab.cat.

Abstract: Mutual funds could contribute to sustainable development by investing in microfinance institutions that provide microloans to microfirms with difficulties accessing financial services, such as loans, savings, and insurance from traditional banks. To increase their assets and support microfinance institutions, fund managers need to understand the factors that investors use to make their investment decisions. For microfinance investors, fund financial attributes could signal that microfinance institutions provide support to microentrepreneurs that improve their corporate financial performance. This would satisfy the social preferences of fund investors. Therefore, our research question is: Are investors considering past financial performance to select one specific microfinance mutual fund? To answer this question, we analysed the behaviour of microfinance mutual fund investors regarding past financial performance in different states of the economy. To this end, we collected information on 65 microfinance mutual funds domiciled in Austria, Japan, Liechtenstein, and Luxembourg. These mutual funds invested in global or emerging global markets from 2015 to 2021. For this sample, we implemented Petersen's method, which clusters standard errors by fund and year. These results indicated that microfinance mutual fund investors consider high annual raw returns, fund age, and ethical certifications when making investment decisions and withdrawing money from them during crises such as the COVID-19 pandemic. Conversely, microfinance fund investors do not react to past risk-adjusted returns, total risk, fund size, fund expenses, or fund flows.

Keywords: investors' behaviour; microfinance mutual funds; financial performance; ethical; COVID-19

JEL Codes: G21, G23, G40, I25

Abbreviations: MFIs: microfinance institutions; SRI: socially responsible

1. Introduction

Microfinance has emerged as an innovative tool that promotes financial inclusion, a crucial step in eradicating poverty and reducing inequalities within and among countries. Thus, these financial instruments contribute to achieving the sustainable economy that the United Nations promotes (United Nations, 2015; Ribeiro et al., 2022; Abrar et al., 2023; Hassan et al., 2021). Microfinance institutions (MFIs) provide basic financial services, such as loans, savings, insurance, and transfer funds to low-income entrepreneurs excluded from the traditional banking system. They also provide non-financial services, such as training in management and operational processes, as well as social services, including education and healthcare (Daher and Le Saout, 2013; Mia, 2022). By providing these services to low-income people or small enterprises, MFIs charge borrowers interest rates and fees that are often higher than those in the overall market, covering the inherently high transaction costs (Mia, 2022). Despite this, their actions in stimulating entrepreneurship and job creation have led local economies, particularly in developing countries, to advance toward sustainable economic growth, contributing to the growth of MFIs worldwide (Parvin and Shaw, 2014). For instance, Muhammad Yunus founded the Grameen Bank in Bangladesh in 1970, and the number of MFIs subsequently increased to 7,000 organisations offering services to 160 million people worldwide by 2012 (Wahid, 1994; Mermod, 2013).

Most MFIs were originally non-governmental organisation-managed institutions that received financial resources from donors, philanthropists, and foundations. However, their funds are insufficient to support the rapid growth of microfinance institutions needed to finance low-income individuals and microenterprises excluded from the traditional banking system. To increase their funds, most microfinance institutions depend on debt- and equity-based financings, such as loans from banks/financial institutions and investors' equity investment, pursuing a double bottom-line approach focused on achieving social goals and profits (Hermes and Hudon, 2018; Le Saout and Daher, 2016; Mia, 2022; Ozdemir et al., 2023). Their access to debt capital improves with their maturity and financial performance (Dorfleitner et al., 2017b).

Financial institutions, such as microfinance mutual funds, accumulate large amounts of money that can be loaned or invested in the equities of microfinance institutions while holding a diversified portfolio of MFIs that considers their investors' preferences (Janda and Svárovská, 2010). To select the right microfinance investment opportunity that satisfies investors' needs, managers must understand the financial and non-financial attributes that investors use to assess a specific microfinance mutual fund. Microfinance mutual funds could select to invest in equities and/or bonds of microfinance institutions with better financial performance because they are less likely to fail socially, as suggested by Dorfleïtner et al. (2017a, 2017b).

Researchers have examined the effect of past financial performance on conventional and socially responsible fund flows, finding that conventional investors react to past financial performance while

socially responsible investors are less sensitive to past fund returns (Sirri and Tufano, 1998; Bollen, 2007; Renneboog et al., 2011). However, microfinance mutual fund investors may be more sensitive to past financial performance than socially responsible or conventional investors, as they may perceive the financial performance of mutual funds as a signal indicating that low-income people are benefiting from their business activities, which would meet the social and financial objectives of microfinance fund investors. Despite the importance of this issue, it has not been examined.

Moreover, researchers have analysed investors' motivations to invest in profit-oriented microfinance institutions (Simo et al., 2023) or development funds organised as cooperatives or non-profit entities (Meyer et al., 2019, Bachmann et al., 2024). Specifically, Simo et al. (2023) found that debt and equity funders do not consider social performance when investing in MFIs. This could be because microfinance fund investors make investment decisions considering the financial performance of microfinance funds as a driver of social improvement (Hahn, 2012). This emphasises the importance of understanding the relationship between microfinance mutual fund flows and financial performance that we propose. Evidence on conventional and socially responsible mutual funds suggests that past financial performance is one of the most important sources of information for investors (Benson and Humphrey, 2008). Unsophisticated financial performance measures, such as raw fund returns, are used by investors who do not consider portfolio risk information when making investment decisions (Sirri and Tufano, 1998). However, sophisticated financial performance measures, such as risk-adjusted returns from single, multifactor, and multi-index models are adopted by investors who consider portfolio risk exposures when investing in MFIs (El Ghoul and Karoui, 2017). Thus, unsophisticated investors react to past financial performance by investing in microfinance funds with the best past returns, while sophisticated investors invest in funds with the best past risk-adjusted returns, hoping that this financial performance will persist over time (Sirri and Tufano, 1998; El Ghoul and Karoui, 2017). For sophisticated investors, the high risk-adjusted returns achieved by microfinance mutual funds indicate that these funds are investing in microfinance institutions that support low-income enterprises, enabling them to maintain higher financial profits over time compared to their peers. This ensures low-income owners an orderly livelihood and dignified existence, reducing poverty and positively affecting society.

While financial inclusion activities are not available to traditional banks, microfinance institutions have access to global financial markets and are similarly exposed to macroeconomic shocks (Tchuigoua et al., 2020; Wagner, 2012). This is supported by Wagner and Winkler (2013), who examined the impact of the global financial crisis following the collapse of the Lehman Brothers on microfinance credit growth. Their findings suggested that credit growth decreased during the 2007–2009 crisis period. Consequently, microfinance institutions limited their lending, which deteriorated their corporate financial performance. Similar effects may have occurred in the microfinance industry during the COVID-19 pandemic. During this crisis period, the employment and earnings of low-income people decreased due to restrictions on economic and social activities (Sangwan et al., 2021). This reduced the loan repayment capacity of clients and deteriorated the financial performance of microfinance institutions (Zheng and Zhang, 2021). Similarly, the financial performance of microfinance funds, measured as raw and risk-adjusted returns, also declined during the COVID-19 crisis period, which could have affected investments in

microfinance funds (Martí-Ballester, 2024). Microfinance fund investors expecting high returns may seek mutual funds focused on other sectors that showed higher expected returns during the COVID-19 crisis. Understanding how financial attributes influence the investment decisions of microfinance fund investors can enable governments to promote economic measures that support microfinance institutions, low-income entrepreneurs, and employees in different states of the economy. However, this issue has not been addressed. We are the first to examine the behaviour of microfinance mutual fund investors regarding past fund financial performance in different states of the economy.

This study makes several contributions to mutual fund literature. While other researchers analyse investor behaviour toward microfinance development funds (non-profit-oriented) using survey data (Meyer et al., 2019; Bachmann et al., 2024), we are the first to examine the determinants of fund flows for microfinance mutual funds (profit-oriented). Fund flow data enable us to study the actual decisions to invest in microfinance mutual funds, unlike survey data, which could be distorted by social desirability bias. One factor influencing the behaviour of microfinance mutual fund investors could be fund returns. Martí-Ballester (2024), Janda and Svárovská (2010), and Janda et al. (2014) examined the financial performance of mutual funds. Thus, we extend the literature on the relationship between financial performance and fund flows. Several authors have examined this relationship for conventional and socially responsible mutual funds whose investors have short-term investment horizons (El Ghoul and Karoui, 2017; Ferreira et al., 2012). However, mutual fund investors' impact investments have a long-term horizon. This could cause microfinance fund investors' behaviour towards short-term financial attributes to differ from that of conventional and socially responsible fund investors, as Martí-Ballester (2020) points out.

The remainder of this paper is organised as follows: In Section 2, we present the literature review and our hypotheses on mutual fund investor behaviour. In Section 3, we describe the research method, sample, variables, and methodology adopted. In Section 4, we report and discuss the empirical results. In Section 5, we describe the robustness checks. Finally, in Section 6, we summarises the conclusions, limitations, and practical implications of this study.

2. Literature review and hypothesis development

Mutual funds can transform the real economy and society by investing in firms, such as microfinance institutions, whose business activities generate financial returns and promote societal improvements, according to the theory of change (Jackson, 2013). Specifically, microfinance institutions offer small loans, short credit periods, and assistance services to low-income individuals willing to engage in business, favouring their financial inclusion and self-esteem. Low-income entrepreneurs develop and exploit sales markets to obtain financial profits that (1) ensure an orderly livelihood, dignified existence, and social and personal freedom, and (2) are used to repay loans to microfinance institutions (Hahn, 2012). Under this notion of an inclusive business model, microfinance institutions are categorised according to their profit distribution status into profit-oriented and non-profit MFIs (Simo et al., 2023).

Non-profit MFIs first adopt a responsive strategy focused on the social aims of business activities and then try to achieve profits by attracting subsidies and funds from donors who are sensitive to MFIs'

social performance (Simo et al., 2023; Porter and Kramer, 2006). Conversely, profit-oriented MFIs implement a strategy to fund low-income entrepreneurs capable of generating profits, assuming that these profits contribute to achieving improvements in long-term societal goals and economic benefits for local communities (Porter and Kramer, 2006). Low-income entrepreneurs with profits have the financial freedom to acquire products and services that enable them to fulfil their basic needs and improve their living standards. This enhances social acceptance and self-esteem (Hahn, 2012). Thus, the financial impetus provided by profit-oriented microfinance institutions generates financial improvements initially and provides social benefits to low-income people later. This solid financial performance in terms of portfolio quality enables microfinance institutions to exhibit better access to debt capital from microfinance mutual funds, likely because they are less prone to social failure (Dorfleitner et al., 2017a, 2017b). The portfolio quality is used by microfinance mutual funds to attract private investors who consider financial performance when making their investment decisions, hoping that high financial performance drives social improvements while increasing their wealth, as shown in Figure 1 (Eurosif, 2021; Daugaard, 2020). In this case, past financial performance can signal business and social viability to investors (Eddleston et al., 2016). This is supported by previous empirical evidence, such as Simo et al. (2023), who have stated that profit-oriented MFIs are not sensitive to social ratings.

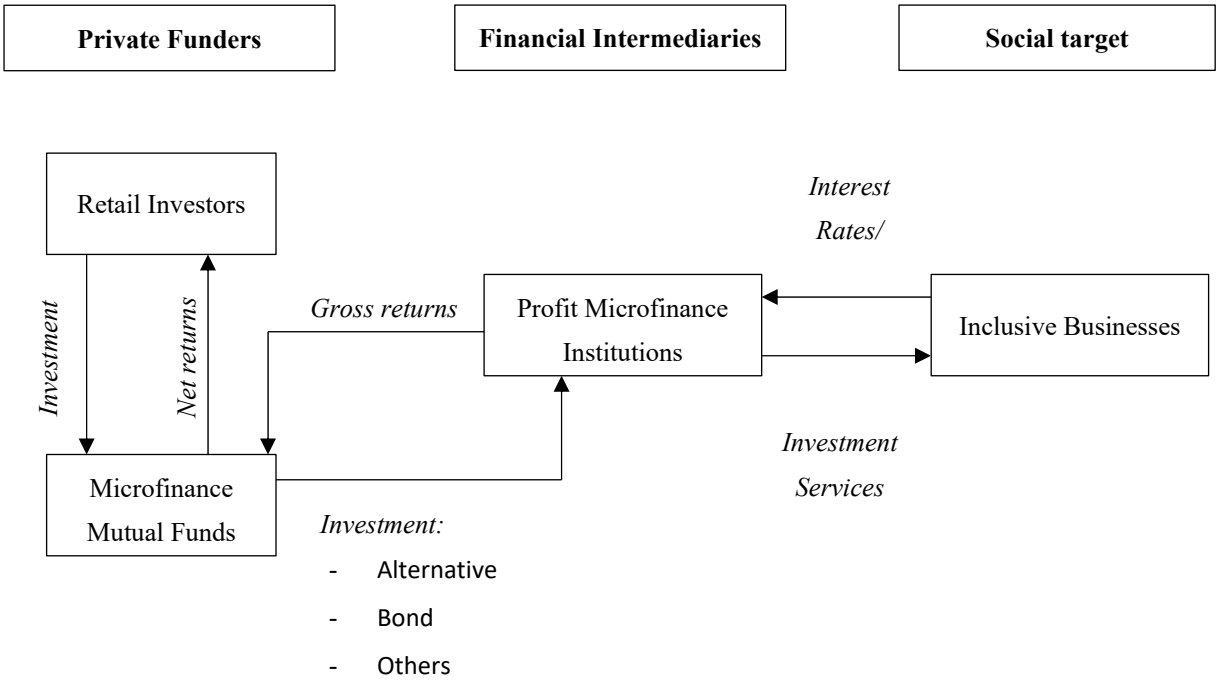

Figure 1. Impact investing of profit-oriented microfinance institutions.

Investors in microfinance mutual funds, as rational investors, may make investment decisions based on financial attributes to maximise fund portfolio returns while minimising portfolio risks following the modern portfolio theory (Markowitz, 1952); they also aim to minimise social risk, that is, the probability of not generating positive societal impact, following the theory of change (Jackson, 2013; Jain et al., 2008). The modern portfolio theory is supported by Del Guercio and Reuter (2014),

Rao and Tauni (2016), Ciccone et al. (2022), and Jiang and Yüksel (2019), who have stated that fund investors tend to chase past financial performance when making investment decisions. Thus, fund investors consider past financial performance in their decision-making process to identify fund managers with superior abilities, assuming that the high financial performance will persist over time (Berk and Green, 2004; Ben-David et al., 2022). While microfinance fund investors expect high financial performance to achieve their long-term social goals based on the theory of change (Jackson, 2013), the return expectations of other impact investors depend on the strategic goals that mutual funds focused on a specific economic sector, such as sustainable agriculture, renewable energy, ecosystem conservation, or healthcare, wish to achieve (Global Impact Investing Network-GIIN, 2023; Eurosif, 2021; Daugaard, 2020). This affects the relationship between fund flow and financial performance.

According to Reboredo and Otero (2022) and Ceccarelli et al. (2024), fund investors supporting the low-carbon practices adopted by portfolio firms seek high past positive financial performance. However, the impact of climate transition risk on fund flows depends on investors' expectations of financial performance (Reboredo and Otero, 2021). Conversely, renewable energy investors do not derive utility from financial attributes in the short-term (Martí-Ballester, 2020). In contrast to environmental practices, Pérez-Gladish et al. (2012) state that investors value social health practices when making investment decisions in one specific mutual fund.

Ceccarelli et al. (2024) and Martí-Ballester (2020) have provided empirical evidence that suggest that the fund flow–financial performance relationship depends on investments in a specific sector or projects, through which mutual funds have an environmental impact in the real world. In the context of the microfinance mutual fund industry, investors may derive utility from a conditional multi-attribute function that includes societal goals when investment is warranted based on financial performance attributes. Therefore, we present the following hypothesis:

H1: Microfinance fund investors make investment decisions by considering past financial performance.

Some studies suggest that this fund flow–financial performance relationship is asymmetric; that is, the sensitivity of flows to financial performance is higher for funds with past high returns than for funds with past low returns. Fund investors invest large amounts of money in funds with high past financial performance while withdrawing small amounts of money from funds with low past financial performance (Sirri and Tufano, 1998; Alves and Mendes, 2011; Noor et al., 2020). This behaviour could be due to investors with funds in poor financial performance (1) expecting managers to change their investment policies (Lynch and Musto, 2003); (2) not wanting to assume load costs to move their money from the worst-performing funds to the best-performing funds (Sirri and Tufano, 1998); or (3) supporting their past financial decisions (Goetzmann and Peles, 1997).

The asymmetric relationship between fund flows and financial performance can vary depending on investors' preferences regarding the investment time horizon and/or non-financial attributes related to personal values and societal concerns (Pérez-Gladish et al., 2012; El Ghoul and Karoui, 2017). Specifically, Bollen (2007) has shown that socially responsible fund investors are more (less) sensitive to high (low) fund financial performance than conventional fund investors in the US market, deriving their utility from a conditional multi-attribute function. This suggests that fund investors prioritise socially responsible attributes when making investment decisions, primarily using financial merits,

similar to what is expected of microfinance fund investors. Similar to socially responsible funds, impact investment capital is directed by investors with long-term horizons.

These investors may be more sensitive to variations in long-term microfinance fund financial performance than to variations in short-term financial performance. This is because long-term performance indicates long-term financial stability that helps reduce impact risk and achieve the long-term goal of poverty alleviation (Hahn, 2012). However, most microfinance mutual funds were only recently created, given that their mean age is approximately 7.48 years, as shown in Table 1. For this reason, it is likely that long-term-oriented investors consider high short-term financial performance when investing in microfinance mutual funds and evaluate the gains or losses of investment in the long term. Therefore, they do not withdraw money from microfinance funds with low short-term financial performance. Thus, we hypothesise the following:

H2: Microfinance fund investors react to high, but not low, past short-term financial performance.

Table 1. Descriptive statistics during 2015–2021.

Panel A: Continous variables					
Variables	**Observation**	**Mean**	**Std. Dev.**	**Min**	**Max**
$Return_{t-1}$	318	0.022	0.064	−0.189	0.188
$Risk_{t-1}$	318	0.059	0.033	0.001	0.153
$Alpha_{t-1}$	318	0.013	0.081	−0.202	0.223
PM_{t-1}	318	0.327	0.233	0.007	0.965
TNA_{t-1}*	318	45.200	62.800	0.012	365.000
AGE_{t-1}	318	7.478	3.623	1.440	22.270
TER_{t-1}	318	0.021	0.006	0.007	0.035
$FLOW_{t-1}$	318	0.156	0.733	−0.907	8.082
$FLOW_t$	318	0.215	0.910	−0.907	8.799
Panel B: Categorical Variables					
Variables		**Code**		**Number of funds**	
Ethical		Yes		59	
		No		6	
Type of assets		Bond		45	
		Alternative		8	
		Others		12	
Geographical scope		Global		25	
		Global emerging		40	

*Expressed in million euros.

The financial performance of microfinance mutual funds could be affected by the COVID-19 pandemic, which may have a significant impact on "impact fund" investors who derive their utility from a conditional multi-attribute function. In this sense, microfinance mutual funds reduced their money inflows from microfinance institutions during the 2007–2009 global financial crisis because the quality of their loan portfolio was deteriorating, negatively impacting their financial performance (Tchuiguoa et al., 2020; Wagner, 2012). However, the nature of the collapse of the Lehman Brothers differed from that of the

COVID-19 pandemic. The Coronavirus disease (COVID-19) caused by the SARS-CoV-2 virus was declared a Public Health Emergency of International Concern on 30 January 2020 by the World Health Organisation. The rapid spread of the virus and its high mortality rates have led governments to adopt unprecedented measures, such as lockdowns, quarantines, social distancing, travel controls, and unemployment subsidies, aimed at mitigating the disease transmission rate (Aziz et al., 2024; Zheng and Zhang, 2021). These measures severely affected the microfinance industry compared to other financial institutions. While traditional bank officers were able to coordinate, support, and monitor their tasks from home using advanced technological equipment and Internet communications with their clients, microfinance loan officers faced difficulties in conducting their tasks from home because most microfinance borrowers had technological and literacy limitations (Czura et al., 2022).

The lockdown restrictions also limited almost all business activities developed by microfinance participants, most of whom are self-employed or employed in microenterprises (Sangwan et al., 2021). While stores and factories belonging to the informal sector, such as eateries, tourism, saloons, and rickshaw pulling, had to close, microenterprises providing essential services and products remained open during the COVID-19 period (Malik et al., 2020). However, the latter have suffered disruptions in their supply chains due to mobility limitations, leading small- and medium-sized enterprises to reduce the production of goods and services. Consequently, low-income workers became unemployed. Furthermore, quarantine and self-isolation have decreased the demand for products and services, resulting in a decline in sales for microenterprises (Brickell et al., 2020). Microbusiness owners and low-income employees, who depend on their sales and labour wages, respectively, to repay loans, have reduced their repayment capacity during the COVID-19 crisis period (Czura et al., 2022).

The inability of microbusiness owners and low-income employees to pay back loans on time undermines the financial performance of microfinance institutions, threatening the collapse of profit-driven microfinance institutions due to their lack of liquidity to fund their ongoing operations and repay investors, such as mutual funds (Daher and Le Saout, 2015; Zheng and Zhang, 2021; Malik et al., 2020). This could erode the confidence of mutual fund investors in the microfinance industry as a driver of societal improvements, leading to significant withdrawals. During the COVID-19 pandemic crisis, investors may have been interested in investing in safe-haven assets, such as gold or other precious metals and minerals, or securities from other sectors less affected by the pandemic, such as agriculture (Sangwan et al., 2021; Lei et al., 2023). In this case, fund investors could have transferred their money from microfinance mutual funds to agribusiness mutual funds. Both mutual funds supported the achievement of interconnected sustainable development goals. While microfinance mutual fund investors sought a financial solution to reduce poverty (SDG 1), agribusiness mutual fund investors aimed to promote a stable food supply to end hunger (SDG2). Thus, we present the following hypothesis:

H3: Microfinance mutual fund investors have withdrawn money during the COVID-19 pandemic crisis.

3. Research method

3.1. Sample

We examine a sample of microfinance mutual funds investing in global and emerging global markets for the period 2015–2021. We focus on this period because sustainable development goals (SDGs) such as no poverty (SDG1), zero hunger (SDG2), peace, justice, and strong institutions (SDG16), and partnerships for the goals (SDG17) linked to MFIs and mutual funds investing in them were promoted by the United Nations in 2015. Our primary data sources are Thomson Reuters' EIKON and Datastream databases. The EIKON fund screener allows us to target funds whose names contain the word 'microfinance' and identify 123 microfinance mutual funds. For each mutual fund, we collect information on investment objectives, ethical labels, asset type, inception date, geographical scope, Lipper Global Classification, and country in which the mutual fund is domiciled from the EIKON database. This classifies mutual funds as "ethical" when the fund documentation provided by management companies shows that mutual fund managers have integrated socially responsible investment strategies into their investment selection (Hacıömeroğlu et al., 2022). The investment objective of microfinance mutual funds in our sample focuses on selecting stocks of microfinance institutions and/or financing investees with private loans to support microentrepreneurs and microenterprises in global or emerging markets. In addition to financing microfinance institutions, these funds may contribute to the development needs of the local financial system, infrastructure, educational system, sustainable and green energy projects, and sustainable real estate projects. Microfinance mutual funds can invest in various securities, including bonds and equities. EIKON database classifies microfinance mutual funds based on the type of assets in which they invest, categorising them as Bond, Alternative, and Others. Comparing this classification with the fund investment objective, we observe that funds mainly investing their assets in private loans are categorised as Bond; those mostly investing in a mix of equities, senior debt, subordinated debt, convertible debt, and other types of mezzanine financing are categorised as Others; funds investing its assets in fixed-rate or variable-rate investment instruments or traditional and non-traditional investments are categorised as Alternative. Thus, the Others and Alternative categories include a mix of securities that are ambiguously defined. This could affect sensitivity to market risk, according to Dorfleitner et al. (2014). All funds in our sample invest in global or emerging global markets as summarised in Table 1.

Furthermore, we obtain data on the monthly total return index (net fees) in dollars, yearly total net assets in dollars, and the yearly total expense ratio at the end of each year from the Datastream database. To ensure data quality, we omit observations of mutual funds with missing data for any year. Thus, our final sample comprises 65 mutual funds, of which 57 are domiciled in Luxembourg, 5 in Liechtenstein, 2 in Austria, and 1 in Japan, spanning 2015 to 2021. This period includes the COVID-19 pandemic.

Financial information relative to market benchmarks, that is, the monthly total return index in dollars for Standard and Poor's (S&P) Emerging Market Capitalisation, S&P Global Small Capitalisations, ICE BofA Emerging Markets Corporate Plus, and ICE BofA Global Corporate from

2015 to 2021, is collected from the Datastream database, while one-month Treasury bill returns are obtained from Kenneth French's website.

3.2. Variables

3.2.1. Dependent variable

Researchers such as El Ghoul and Karoui (2017) represent fund flows as the annual total assets change net of dividends and capital gains or losses for fund i at the end of year t as follows (Model 1):

$$FLOW_{i,t} = \frac{TNA_{i,t} - TNA_{i,t-1}(1+r_{i,t})}{TNA_{i,t-1}} \quad (1)$$

where $TNA_{i,t}$ and $TNA_{i,t-1}$ denote the total net assets expressed in dollars for fund i at the end of years t and t-1, respectively, and $r_{i,t}$ is the annual raw return (net operating expenses) for fund i at time t. Funds with positive flow variable values receive money inflows, whereas those with negative values receive money outflows. These variables are listed in Table 2.

Table 2. Glossary of variables.

Variable	Description
$Flow_{i,t}$	Rate of change in assets of fund i at time t beyond asset appreciation
$Return_{i,t-1}$	Annual return of fund i at time t-1
$HReturn_{i,t-1}$	Annual raw return of fund i, which is equal to or above the median value of cross-sectional annual returns of microfinance funds at time t-1 and zero otherwise
$LReturn_{i,t-1}$	Annual raw return of fund i, which is below the median value of cross-sectional annual returns of microfinance funds at time t-1 and zero otherwise
$Risk_{i,t-1}$	Standard deviation of returns over 12-month windows for fund i at time t-1.
$Alpha_{i,t-1}$	Annual risk-adjusted return of fund i at time t-1 using a multi-index model
$HAlpha_{i,t-1}$	Annual risk-adjusted return of fund i, which is equal to or above the median value of cross-sectional annual risk-adjusted returns of microfinance funds at time t-1 and zero otherwise
$LAlpha_{i,t-1}$	Annual risk-adjusted return of fund i, which is below the median value of cross-sectional annual risk-adjusted returns of microfinance funds at time t-1 and zero otherwise
$PM_{i,t-1}$	R-square obtained from a multi-index model (Model 3)
$LTNA_{i,t-1}$	Napierian logarithm of the total assets under management of fund i at time t-1 in dollars
$TER_{i,t-1}$	Total expense ratio of fund i at time t-1
$LAGE_{i,t-1}$	Napierian logarithm of the number of years since the inception of fund i at time t-1
$Ethical_i$	Dummy variable taking value of 1 if fund i is an ethical fund at time t
$Covid19_{i,t}$	Dummy variable controlling for the COVID-19 pandemic
$Flow_{i,t-1}$	Rate of change in assets of fund i at time t-1 beyond asset appreciation
$Year_i$	Dummy variable controlling for time fixed effects.

3.2.2. Independent variables

Sirri and Tufano (1998) note that investors use raw returns to select conventional mutual funds. However, socially responsible investors, who are typically well-educated with higher incomes, may

have different investment profiles and constraints than their conventional counterparts (Riedl and Smeets, 2017). For this reason, El Ghoul and Karoui (2017) examine the SRI fund flow-financial performance relationship by employing risk-adjusted returns instead of raw returns. Given that the fund flow-financial performance relationship has not been examined in the microfinance mutual fund industry literature, we use several financial performance measures, such as raw returns and risk-adjusted returns, as independent variables. The raw return (net of fund operating expenses) for fund i at time t, represented as the $Return_{i,t}$ variable, is given similarly to Janda et al. (2014), as follows (Model 2):

$$r_{i,t} = ln\left(RI_{i,t}/RI_{i,t-1}\right) \quad (2)$$

where $RI_{i,t}$ and $RI_{i,t-1}$ represent the total return index (net fees) expressed in dollars for fund i at the end of years t and t-1, respectively.

The risk-adjusted return for fund i at time t is estimated using a multi-index model like that in Martí-Ballester (2024). Like Elton et al. (1993) and Gruber (1996), this model adjusts according to asset types in which microfinance mutual funds may invest. As mentioned by Janda et al. (2014), microfinance mutual funds can invest in debt instruments and/or stocks of microfinance institutions in global or emerging global markets. Given that microfinance institutions are smaller than traditional financial institutions and fund small enterprises and low-income people (Mermod, 2013; Mia, 2022), we propose the S&P Emerging Small Capitalisation Index and the ICE BofA Emerging Markets Corporate Plus Index as market benchmarks for microfinance funds focused on global emerging markets, while the S&P Global Small Capitalisation index and the ICE BofA Global Corporate index are used as market benchmarks for microfinance funds specialising in global markets, as follows (Model 3):

$$R_{i,t} = \alpha_{0i} + \beta_{1i} S\&PE_t + \beta_{2i} CB_t + \varepsilon_{i,t} \quad (3)$$

where $R_{i,t}$ represents the excess returns of fund i in month t over the yield of the risk-free asset in month t, using a window of 12 months; $\alpha_{0,i}$ denotes the average annualised multi-index adjusted return on fund i, using a window of 12 months; $S\&PE_t$ is the excess returns of the S&P emerging small capitalisation index over the yield of the risk-free asset in month t, using a window of 12 months for microfinance funds investing in global emerging markets; the excess returns of the S&P Global Small Capitalisation index over the yield of the risk-free asset in month t, using a window of 12 months for microfinance funds investing in global markets; CB_t denotes the excess return of the ICE BofA Emerging Markets Corporate Plus index over the yield of the risk-free asset in month t, using a window of 12 months for microfinance funds investing in global emerging markets; or the excess returns of the ICE BofA Global Corporate index over the yield of the risk-free asset in month t, using a window of 12 months for microfinance funds investing in global markets. β_{1f}, and β_{2f} represent the average loadings, and $\varepsilon_{f,t}$ denotes the error term. We implement Newey and West's (1987) method to estimate the standard errors of the regression coefficients.

We also consider financial performance rankings as an independent variable. In this case, we divide microfinance mutual funds into two groups: High financial performance (above median) and low-financial performance (below median). Thus, $HReturn_{i,t}$ represents the annual raw return of fund I, which

is equal to or above the median value of the cross-sectional annual returns of microfinance funds at time t and zero otherwise; $LReturn_{i,t}$ represents the annual raw return of fund i, which is below the median value of the cross-sectional annual returns of microfinance funds at time t and zero otherwise; $HAlpha_{i,t}$ represents the annual risk-adjusted return of fund i, which is equal to or above the median value of the cross-sectional annual risk-adjusted returns of microfinance funds at time t and zero otherwise; and $LAlpha_{i,t}$ represents the annual risk-adjusted return of fund i, which is below the median value of the cross-sectional annual risk-adjusted returns of microfinance funds at time t and zero otherwise.

3.2.3. Control variables

Here, we adopt the control variables commonly used in the literature on fund investors' behaviour, such as risk, passive management, size, expense ratio, ethical certification, and financial crisis periods (Sirri and Tufano, 1998; Renneboog et al., 2011; Alda et al., 2020). Thus, $Risk_{i,t-1}$ variable denotes the total risk of a fund i at time t-1 measured as the annualised standard deviation of the fund's monthly returns; PMi,t-1 is the r-squared of the fund i at time t-1 obtained from Model 3; $LTNA_{i,t-1}$ is a proxy of fund size and is measured as the Napierian logarithm of total net assets that fund i accumulates at the end of year t-1; $TER_{i,t-1}$ variable denotes the ratio of operating expenses changed to fund i at time t-1 by its total net assets accumulated at time t-1; $LAGE_{i,t-1}$ is measured as the Napierian logarithm of the age of fund i at the end of year t-1 since its inception; the $Ethical_{i,t}$ variable is a dummy variable that takes value of one if the fund i is certified as ethical, and zero otherwise; and the $Covid19_{i,t-1}$ variable is a dummy variable that takes value of one if the data of fund i belongs to 2020 or 2021 (considering that the World Health Organisation declared a Public Health Emergency of International Concern on 30 January 2020), and zero otherwise. $Year_{i,t}$ is a dummy variable that takes the value of one if the data of fund i belongs to 2016, 2017, 2018, 2019, 2020, or 2021, and zero otherwise. Table 1 presents the descriptive statistics of these variables, and Table 3 reports the correlation coefficients between the independent and control variables. Given that their values were below 0.80, multicollinearity was not a problem in the proposed models.

Table 3. Correlation matrix.

Variables	1	2	3	4	5	6	7	8	9	10
1. $Return_{t-1}$	1									
2.$Risk_{t-1}$	−0.331	1								
3.$Alpha_{t-1}$	0.779	−0.253	1							
4.PM_{t-1}	−0.203	0.268	−0.434	1						
5.$LTAN_{t-1}$	0.109	−0.160	0.097	−0.090	1					
6.$LAGE_{t-1}$	0.078	0.041	−0.002	0.096	0.103	1				
7.TER_{t-1}	−0.091	0.094	−0.096	0.020	−0.439	0.278	1			
8.$FLOW_{t-1}$	0.054	−0.085	0.032	−0.072	0.145	−0.241	−0.074	1		
9.$Ethical_{t-1}$	0.033	0.184	0.049	0.066	−0.140	−0.124	−0.010	0.108	1	
10.$Covid19_{t-1}$	0.274	−0.060	−0.001	0.326	0.070	0.231	−0.168	−0.101	0.055	1

3.3. Methodology

We implement two models (Models 4 and 5) to examine the fund performance–flow relationship for microfinance mutual funds, like Martí-Ballester (2020), as follows:

$$Flow_{i,t} = \alpha_0 + \beta_1 Return_{i,t-1} + \beta_2 Risk_{i,t-1} + \beta_3 LTNA_{i,t-1} + \beta_4 TER_{i,t-1} + \beta_5 LAGE_{i,t-1} + \beta_6 Ethical_i + \beta_7 Flow_{i,t-1} + \beta_8 Covid19_{i,t} + \beta_9 Year_{i,t} + \varepsilon_{i,t} \quad (4)$$

$$Flow_{i,t} = \alpha_0 + \beta_1 Alpha_{i,t-1} + \beta_2 PM_{i,t-1} + \beta_3 LTNA_{i,t-1} + \beta_4 TER_{i,t-1} + \beta_5 LAGE_{i,t-1} + \beta_6 Ethical_i + \beta_7 Flow_{i,t-1} + \beta_8 Covid19_{i,t} + \beta_9 Year_{i,t} + \varepsilon_{i,t} \quad (5)$$

where $Flow_{i,t}$ denotes the annual growth rate of total assets beyond dividends and capital gains or losses for fund i at time t; $Return_{i,t-1}$ denotes the yearly raw return (net operating expenses) for fund i at time t-1 in Model 4; $Risk_{i,t-1}$ represents the annualised monthly raw return standard deviation of fund i at time t-1 in Model 4; $Alpha_{i,t-1}$ represents the yearly risk-adjusted return from Model 3 of fund i at time t-1 in Model 5; $PM_{i,t-1}$ represents the proportion of return variation to benchmarks of multi-index Model 3 for fund i at time t-1; $LTNA_{i,t-1}$ represents the Napierian logarithm of total net assets accumulated by fund i at time t-1; $TER_{i,t-1}$ denotes the total expenses ratio charged to fund i at time t-1; $LAGE_{i,t-1}$ represents the Napierian logarithm of number of years since inception of fund i at time t-1; $Ethical_i$ represents a dummy variable that takes value of one if fund i has an ethical certification; $Flow_{i,t-1}$ represents the persistence of fund flows and is measured as the annual growth rate of total assets beyond dividends and capital gains or losses for fund i at time t-1; $Covid19_t$ is a dummy variable that controls for post-covid period; $Year_t$ is a set of year dummy variables that control for time fixed effects; and $\varepsilon_{i,t}$ represents the error term. The estimation method focuses on Petersen's (2009) clustering of standard errors by fund and year, like Renneboog et al. (2011). This method enables us to overcome the problems of autocorrelation and heteroskedasticity, as demonstrated in Tables 4 and 5 (Hoechle, 2007). We used lagged independent and control variables to mitigate endogeneity problems in our models (Bollen, 2007; Muñoz et al., 2014; Fecht and Wedow, 2014).

Given that researchers have found an asymmetric relationship between fund flows and financial performance for socially responsible mutual funds (Bollen, 2007; Lapanan, 2018), we examine investors' reactions to these two levels of financial performance as follows:

$$Flow_{i,t} = \alpha_0 + \beta_1 HReturn_{i,t-1} + \beta_2 LReturn_{i,t-1} + \beta_3 Risk_{i,t-1} + \beta_4 LTNA_{i,t-1} + \beta_5 TER_{i,t-1} + \beta_6 LAGE_{i,t-1} + \beta_7 Ethical_i + \beta_8 Flow_{i,t-1} + \beta_9 Covid19_{i,t} + \beta_{10} Year_{i,t} + \varepsilon_{i,t} \quad (6)$$

$$Flow_{i,t} = \alpha_0 + \beta_1 HAlpha_{i,t-1} + \beta_2 LAlpha_{i,t-1} + \beta_3 PM_{i,t-1} + \beta_4 LTNA_{i,t-1} + \beta_5 TER_{i,t-1} + \beta_6 LAGE_{i,t-1} + \beta_7 Ethical_i + \beta_8 Flow_{i,t-1} + \beta_9 Covid19_{i,t} + \beta_{10} Year_{i,t} + \varepsilon_{i,t} \quad (7)$$

where $HReturn_{i,t-1}$ represents the annual raw return of fund i, equal to or above the median value of the cross-sectional annual returns of microfinance funds at time t-1 and zero otherwise in Model 6; $LReturn_{i,t-1}$ represents the annual raw return of fund i, below the median value of the cross-sectional annual returns of microfinance funds at time t-1 and zero otherwise in Model 6; $HAlpha_{i,t-1}$ represents the annual risk-adjusted return of fund i, equal to or above the median value of the cross-sectional annual risk-adjusted returns of microfinance funds at time t-1 and zero otherwise in Model 7; and

$LAlpha_{i,t-1}$ represents the annual risk-adjusted returns of microfinance funds at time t-1 and zero otherwise in Model 7. Other variables were measured as previously described. The estimation method focuses on Petersen (2009), who clusters standard errors by fund and year. This method enables us to overcome the problems of autocorrelation and heteroskedasticity, as demonstrated in Tables 4 and 5 (Hoechle, 2007). We use lagged independent and control variables to mitigate endogeneity problems in our models (Bollen, 2007; Muñoz et al., 2014; Fecht and Wedow, 2014).

4. Empirical results and discussion

In this study, we examine the factors microfinance fund investors use to make investment decisions by estimating models 4–7. These models include different independent and control variables that allow us to analyse investors' reactions to several financial performance measures (raw and risk-adjusted returns) and economic situations. The results of these models are presented in Tables 4 and 5, respectively. For all these models, we show the estimated coefficients and indicate their statistical significance and standard errors in brackets for each variable.

Model 4a in Table 4 presents the results regarding the relationship between fund flows and past raw returns. The coefficient of the one-year lagged annual return (Return) is positive but insignificant ($\beta_1 = 0.776$; p-value > 0.10). Hence, microfinance fund investors do not consider short-term financial performance in their investment decisions, which is consistent with the findings of Benson and Humphrey (2008), El Ghoul and Karoui (2021), and Martí-Ballester (2020). This finding does not support hypothesis H1. Complementing this finding, Model 6a in Table 4 presents the results of the relationship between fund flows and past raw return rankings. The coefficient of high one-year lagged annual raw returns (HReturn) is significantly positive at the 1% level ($\beta_2 = 0.916$; p-value<0.01), and the coefficient of low one-year lagged annual raw returns (LReturn) is also positive but insignificant at the 10% level ($\beta_3 = 0.395$; p-value > 0.10), indicating that some microfinance fund investors make investment decisions about microfinance funds considering high fund returns, which supports hypothesis H2. Furthermore, our results show that microfinance fund investors are more sensitive to highly lagged annual returns than low past financial performance, similar to Bollen (2007). This suggests that microfinance fund investors have a conditional multi-attribute utility function and can consider investment outcomes for long-term profit maximisation.

Moreover, we find that the coefficient of ethical certification (Ethical) is positive and significant at the 1% level ($\beta_8 = 0.246$; p-value<0.01) in Model 4a and ($\beta_8 = 0.244$; p-value<0.01) in Model 6a, suggesting that microfinance fund investors gain additional utility from the non-financial attributes of their investments like the findings of other researchers looking at socially responsible mutual fund investors' behaviour (El Ghoul and Karoui, 2017; Renneboog et al., 2011; Bollen, 2007; Lapanan, 2018) or green investors' behaviour (Chung et al., 2012). For the age control variable, we find that the coefficient of fund age (LAGE) is negative and significant at the 5% level ($\beta_7 = -0.213$; p-value<0.05) in Model 4a and ($\beta_7 = -0.214$; p-value<0.05) in Model 6a, suggesting that younger funds receive more money inflows than their older peers, which is consistent with the findings of Benson and Humphrey (2008), and Chevalier and Ellison (1997). Thus, younger mutual funds can promote advertising campaigns to attract potential investors and compete with older funds with strong reputations in the market.

The coefficients of other control variables, such as risk (Risk), size (LTNA), and expenses (TER), are not significant, suggesting that microfinance fund investors do not focus on these factors to make investment decisions, as has been observed by Benson and Humphrey (2008) and Xiao et al. (2019). There is no evidence that the one-year lagged flow variable affects microfinance fund flows. This lack of flow persistence suggests that investors can use microfinance mutual funds to complement their primary investments, satisfying their "impact investing" criteria, similar to those of other thematic mutual fund investors (Martí-Ballester, 2020).

Models 4b and 6b in Table 4 also include a control variable for COVID-19. The coefficients of the COVID-19 crisis (Covid19) are negative and significant at the 1% level ($\beta_{10} = -0.179$; $p < 0.01$) in Model 4b and ($\beta_{10} = -0.175$; $p < 0.01$) in Model 6b, suggesting that investors withdrew money from microfinance mutual funds during the COVID-19 pandemic period. Microfinance fund investors may perceive these financial products as unsafe, likely due to the decline in the financial efficiency of MFIs during the COVID-19 pandemic (Constantinou and Ashta, 2011; Czura et al., 2022). This supports H3, which is consistent with Zheng and Zhang (2021), who stated that most microenterprises closed or reduced their production of goods and services while workers were laid off during the COVID-19 period. This reduces repayment capacity. The inability of microfinance institution clients to make mortgage payments on time negatively affects microfinance institutions' incomes while increasing the likelihood of non-performing loans. Consequently, microfinance institutions must provide loan moratoriums and flexibility for repayments, which generates liquidity concerns and uncertainty for funders. Fund investors lose confidence in microfinance institutions and thus withdraw their money.

We also examine whether microfinance fund investors use sophisticated financial performance measures to make investment decisions. Table 5 presents the estimation results for Model 5a, which analyses the relationship between fund flows and past risk-adjusted returns. The coefficient of the one-year lagged risk-adjusted return (Alpha) is positive but insignificant ($\beta_1 = 0.458$; p-value > 0.10). This result was maintained in Model 7a, which examined the relationship between fund flows and past raw return rankings. The results presented in Table 5 show that the coefficient of the top one-year lagged risk-adjusted returns (HAlpha) is positive but insignificant at the 10% level ($\beta_2 = 0.095$; p-value > 0.10), and the coefficient of the bottom one-year lagged risk-adjusted return (LAlpha) is positive but insignificant at the 10% level ($\beta_3 = 1.060$; p-value > 0.10), indicating that investors do not consider sophisticated financial performance measures in their microfinance mutual fund choices, which contradicts hypothesis H1. However, these results are consistent with those in Table 4, where there are negative but insignificant effects of one-year lagged total fund risk (risk) on fund flows, confirming that investors are not sensitive to fund risk. This can incentivise mutual fund managers to increase the risk of their fund portfolios (Chevalier and Ellison, 1997). Regarding the control variables, we found evidence that ethical certification (ethical) and fund age (LAGE) affect microfinance fund flows. Furthermore, the coefficient of passive management (PM) is positive but insignificant, a finding consistent with those of El Ghoul and Karoui (2017) and Martí-Ballester (2020).

Table 4. Flow-fund return relationship.

FLOW	Coefficients Model 4a		Coefficients Model 6a		Coefficients Model 4b		Coefficients Model 6b		Coefficients Model 8	
$Return_{t-1}$	0.776				0.776				0.248	
	(0.483)				(0.483)				(0.917)	
$HReturn_{t-1}$			0.916	***			0.916	***		
			(0.294)				(0.294)			
$LReturn_{t-1}$			0.395				0.395			
			(0.897)				(0.897)			
$Risk_{t-1}$	−0.034		−0.175		−0.034		−0.175		−0.865	
	(1.153)		(1.127)		(1.153)		(1.127)		(1.304)	
$LTNA_{t-1}$	0.008		0.008		0.008		0.008		0.039	
	(0.014)		(0.013)		(0.014)		(0.013)		(0.032)	
TER_{t-1}	−1.373		−1.525		−1.373		−1.525		1.818	
	(7.768)		(7.708)		(7.768)		(7.708)		(9.729)	
$LAGE_{t-1}$	−0.213	**	−0.214	**	−0.213	**	−0.214	**	−0.319	***
	(0.102)		(0.101)		(0.102)		(0.101)		(0.098)	
$Ethical_{t-1}$	0.246	***	0.244	***	0.246	***	0.244	***	0.216	*
	(0.082)		(0.082)		(0.082)		(0.082)		(0.128)	
$Flow_{t-1}$	0.011		0.010		0.011		0.010		0.024	
	(0.037)		(0.038)		(0.037)		(0.038)		(0.047)	
Covid19	–––		–––		−0.179	***	−0.175	***	−0.292	***
					(0.053)		(0.054)		(0.112)	
Constant	0.164		0.175		0.343		0.350		0.042	
	(0.264)		(0.244)		(0.282)		(0.265)		(0.636)	
Fixed effects	Year		Year		Year		Year		Year	
R^2	0.082		0.083		0.082		0.083			
Observations	318		318		318		318		253	
Funds	65		65		65		65		58	
Wald test (heteroskedasticity)	2.4e+06***		3.0e+06***		2.4e+06***		3.0e+06***			
Wooldridge test (autocorrelation)	8.149***		8.293***		8.149***		8.293***			
Arellano-Bond test AR(1)									−3.26	***
Arellano-Bond test AR(2)									0.34	
Sargan test									111.22	

Note: Standard errors clustered at the fund and year levels are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Examining the effect of economic crisis periods on microfinance fund flows, Models 5b and 7b in Table 5 include a control variable for COVID-19. The coefficients of the COVID-19 crisis (Covid19) are significantly negative at the 5% level ($\beta_{10} = -0.176$; $p < 0.05$) in Model 5b and ($\beta_{10} = -0.192$; $p < 0.05$) in Model 7b, suggesting that the COVID-19 pandemic affected microfinance mutual fund flows.

The regressions in Tables 4 and 5 exhibit a low R-squared value, consistent with Sirri and Tufano (1998) and Renneboog et al. (2011). This could be because the models proposed use aggregate information about mutual funds without incorporating the individual characteristics of investors.

Table 5. Flow-fund risk-adjusted return relationship.

FLOW	**Coefficients Model 5a**		**Coefficients Model 7a**		**Coefficients Model 5b**		**Coefficients Model 7b**		**Coefficients Model 9**	
$Alpha_{t-1}$	0.458				0.458				−0.156	
	(0.358)				(0.358)				(0.692)	
$HAlpha_{t-1}$			0.095				0.095			
			(0.890)				(0.890)			
$LAlpha_{t-1}$			1.060				1.060			
			(0.811)				(0.811)			
PM_{t-1}	0.307		0.346		0.307		0.346		−0.018	
	(0.408)		(0.437)		(0.408)		(0.437)		(0.220)	
$LTNA_{t-1}$	0.012		0.013		0.012		0.013		0.009	
	(0.014)		(0.014)		(0.014)		(0.014)		(0.032)	
TER_{t-1}	−1.126		−1.285		−1.126		−1.285		3.668	
	(8.135)		(8.362)		(8.135)		(8.362)		(10.622)	
$LAGE_{t-1}$	−0.217	**	−0.210	**	−0.217	**	-0.210	**	−0.332	***
	(0.101)		(0.095)		(0.101)		(0.095)		(0.100)	
$Ethical_{t-1}$	0.232	***	0.241	***	0.232	***	0.241	***	0.398	**
	(0.078)		(0.083)		(0.078)		(0.083)		(0.190)	
$Flow_{t-1}$	0.010		0.011		0.010		0.011		0.006	
	(0.036)		(0.036)		(0.036)		(0.036)		(0.046)	
Covid19					−0.176	**	−0.192	**	−0.274	**
					(0.076)		(0.074)		(0.109)	
Constant	−0.022		−0.052		0.154		0.140		0.312	
	(0.447)		(0.452)		(0.430)		(0.440)		(0.665)	
Fixed effects	Year		Year		Year		Year		Year	
R^2	0.085		0.087		0.085		0.087			
Observations	318		318		318		318		253	
Funds	65		65		65		65		58	
Wald test (heteroskedasticity)	7.1e+05***		4.6e+07***		7.1e+05***		4.6e+07***			
Wooldridge test (autocorrelation)	8.277***		8.874***		8.277***		8.874***			
Arellano-Bond test AR(1)									−2.35	**
Arellano-Bond test AR(2)									0.37	
Sargan test									104.29	

Note: Standard errors clustered at the fund and year levels are reported in parentheses. ***, ** and * indicate significance at the 1%, 5% and 10% levels, respectively.

Table 6. Robustness checks on the fund flow-return relationship.

FLOW	**Coefficients**	
$Return_{t-1}$	0.7751	
	0.8945	
$Return\_3Year_{t-1}$	−1.3866	
	1.8094	
$Risk_{t-1}$	−0.7794	
	1.5815	
$LTNA_{t-1}$	0.0060	
	0.0144	
TER_{t-1}	−5.3092	
	7.5576	
$LAGE_{t-1}$	−0.2352	
	0.1630	
$Ethical_{t-1}$	0.2590	**
	0.1185	
$Alternative_i$	0.0942	
	0.1136	
$Other_i$	0.0388	
	0.1458	
GEM_i	0.0195	
	0.0969	
$Flow_{t-1}$	0.0504	
	0.0486	
Constant	0.3720	
	0.3995	
Fixed effects	Year	
R^2	0.089	
Observations	318	
Funds	65	

Note: Standard errors clustered at the fund and year levels are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

For robustness, we incorporate in our model [4] the average yearly raw return over a three-year period as an independent variable, as well as several dummy variables measuring the type of assets in which mutual funds invest, such as Alternative, Bond, and Others, and the geographical market in which mutual funds invest such as global and global emerging markets. The results summarised in Table 6 show that microfinance mutual fund investors do not consider the medium-term returns, type of assets, or geographical markets in which mutual funds invest when making their investment decisions. Furthermore, the issue of endogeneity is also addressed. This problem could be due to unobserved mutual funds heterogeneity, dynamic endogeneity, and/or simultaneity. The simultaneity between fund flow and financial performance should not be a problem in our case, as the current annual return is not available to investors. Thus, investors can use past financial performance, but not current

annual returns, to make their investment decisions. Dynamic endogeneity is caused by introducing the lagged dependent variable as an independent variable in our models. To check whether endogeneity generates problems in our findings, we also estimate the system Generalised Method of Moments (GMM) proposed by Arellano and Bover (1995) and Blundell and Bond (1998). This approach enables us to control for possible sources of endogeneity in models 8 and 9, namely, unobserved heterogeneity, simultaneity, and dynamic endogeneity (Ullah et al., 2018). The results indicate that investors do not consider financial attributes when making their investment decisions in specific microfinance mutual funds. However, they do take the ethical labels and age of the fund into account. These findings validate that the core conclusions of this study are stable and effective.

5. Robustness checks

In the previous section, we found that the COVID-19 pandemic has affected microfinance mutual funds. Thus, the relationship between financial performance and fund flow differs in different states of the economy. In this section, we analyse the factors that microfinance fund investors use to make investment decisions by estimating Models 4 to 7 for the COVID-19 period and pre-COVID-19 period. Therefore, we split the data into two subsamples.

Table 7 reports the results of these models for a non-crisis period. For all models, we show the estimated coefficients and indicate their statistical significance and standard errors in brackets for each variable. As observed, the coefficient of the one-year lagged annual return (Return) in model 4 is significantly positive ($\beta_1 = 1.428$; p-value < 0.01). This suggests that microfinance fund investors make investment decisions based on short-term financial performance during non-crisis periods, deriving their utility from a conditional multi-attribute function that includes financial return and a variety of societal and personal values, thereby supporting hypothesis H1. Complementing this finding, Model 6 in Table 7 presents the results for the relationship between fund flows and past raw return rankings. The coefficient of the high one-year lagged annual raw returns (HReturn) is significantly positive at the 1% level ($\beta_2 = 1.633$; p-value<0.01), and the coefficient of the low one-year lagged annual raw return (LReturn) is also positive but insignificant at the 10% level ($\beta_3 = 1.068$; p-value > 0.10), supporting hypothesis H2 during non-crisis periods.

Congruent with the finding that microfinance fund investors gain additional utility from the non-financial attributes of their investments, we find that the ethical certification (Ethical) coefficient is significantly positive at the 5% level in models [4–7], confirming that microfinance mutual fund investors look for "impact investing" to generate a positive social and environmental impact on the real economy while looking for financial returns during the non-crisis period. The coefficients of the other variables are not significant, suggesting that microfinance fund investors do not focus on these factors when making investment decisions during non-crisis periods.

Table 7. Financial performance-fund flow relationship: Pre-COVID-19 period.

FLOW	Coefficients Model 4		Coefficients Model 6		Coefficients Model 5		Coefficients Model 7	
$Return_{t-1}$	1.428	***						
	(0.527)							
$HReturn_{t-1}$			1.633	***				
			(0.433)					
$LReturn_{t-1}$			1.068					
			(0.949)					
$Risk_{t-1}$	0.633		0.466					
	(1.272)		(1.195)					
$Alpha_{t-1}$					0.675			
					(0.761)			
$HAlpha_{t-1}$							0.041	
							(1.434)	
$LAlpha_{t-1}$							1.847	
							(1.399)	
PM_{t-1}					0.617		0.777	
					(0.690)		(0.794)	
$LTNA_{t-1}$	0.004		0.004		0.004		0.004	
	(0.024)		(0.023)		(0.024)		(0.028)	
TER_{t-1}	−3.681		−4.118		−2.589		−2.157	
	(11.873)		(12.227)		(10.934)		(11.091)	
$LAGE_{t-1}$	−0.222		−0.224		−0.225		−0.214	
	(0.178)		(0.176)		(0.166)		(0.161)	
$Ethical_{t-1}$	0.290	**	0.286	**	0.279	**	0.307	**
	(0.117)		(0.116)		(0.119)		(0.124)	
$Flow_{t-1}$	0.010		0.009		0.009		0.014	
	(0.046)		(0.046)		(0.046)		(0.050)	
Constant	0.379		0.388		0.190		0.109	
	(0.319)		(0.308)		(0.437)		(0.433)	
Fixed effects	Year		Year		Year		Year	
R^2	0.066		0.067		0.073		0.079	
Observations	318		318		318		318	
Funds	65		65		65		65	
Wald test (heteroskedasticity)	2.3e+05***		1.9e+05***		2.1e+05***		1.2e+05***	
Wooldridge test (autocorrelation)	10.325***		10.215***		11.464***		11.784***	

Note: Standard errors clustered at the fund and year levels are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

These findings differ from those achieved in models [4–7] in the COVID-19 crisis period, as reported in Table 8. As observed, only the coefficient of fund age (LAGE) is significant but negative at the 5% level in Model [4] and at the 1% level in models [5–7], suggesting that investors withdrew money from older microfinance mutual funds during the COVID-19 crisis period. Older microfinance mutual funds, whose investment time horizon is long-term, invest in established microfinance institutions that maintain regular communication with clients over an extended period, thereby building

strong relationships with them. To maintain this relationship, older microfinance institutions can restructure their existing loan contracts by providing interest rate subsidies or extending the loan moratorium. These measures can adversely affect the liquidity and solvency of microfinance institutions, raising concerns among funders (Sangwan et al., 2021). Fund investors would lose confidence in microfinance institutions, withdrawing their money from old microfinance mutual funds.

Table 8. Financial performance-fund flow relationship: COVID-19 period.

FLOW	**Coefficients Model 4**		**Coefficients Model 6**		**Coefficients Model 5**		**Coefficients Model 7**	
$Return_{t-1}$	−0.258							
	(0.970)							
$HReturn_{t-1}$			−0.448					
			(0.992)					
$LReturn_{t-1}$			−3.148					
			(2.202)					
$Risk_{t-1}$	−0.634		−0.886					
	(1.764)		(1.557)					
$Alpha_{t-1}$					0.536			
					(0.542)			
$HAlpha_{t-1}$							0.778	
							(0.489)	
$LAlpha_{t-1}$							0.088	
							(0.645)	
PM_{t-1}					−0.050		−0.039	
					(0.319)		(0.340)	
$LTNA_{t-1}$	0.012		0.012		0.011		0.012	
	(0.000)		(0.000)		(0.018)		(0.018)	
TER_{t-1}	1.354		1.986		1.915		2.303	
	(10.425)		(7.960)		(12.329)		(11.954)	
$LAGE_{t-1}$	−0.183	**	−0.193	***	−0.184	***	−0.189	***
	(0.071)		(0.072)		(0.064)		(0.065)	
$Ethical_{t-1}$	0.124		0.159		0.102		0.103	
	(0.144)		(0.115)		(0.080)		(0.072)	
$Flow_{t-1}$	0.032		0.041		0.034		0.037	
	(0.089)		(0.086)		(0.099)		(0.096)	
Constant	0.201		0.235		0.168		0.141	
	(0.335)		(0.178)		(1.006)		(1.012)	
Fixed effects	Year		Year		Year		Year	
R^2	0.114		0.124		0.115		0.116	
Observations	318		318		318		318	
Funds	65		65		65		65	
Wald test (heteroskedasticity)	0.000		0.000		0.000		0.000	
Wooldridge test (autocorrelation)	12.287***		11.519***		12.186***		12.236***	

Note: Standard errors clustered at the fund and year levels are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

On the other hand, recently created microfinance mutual funds can invest in younger microfinance institutions more than in their older counterparts. Moreover, recently created microfinance institutions can close off their non-viable financial operations, temporarily suspend financial operations, or exert coercive measures to ensure better repayments because they lack a strong relationship with their clients. This would enable them to have better liquidity than their older counterparts (Sangwan et al., 2021). This finding supports the view that microfinance mutual fund investors derive utility from a conditional multi-attribute function that considers liquidity a primary attribute during a crisis. The coefficients of the other variables are not significant, indicating that microfinance fund investors did not prioritise these factors when making investment decisions during the COVID-19 crisis.

6. Conclusions

Microfinance is considered an innovative tool for combating poverty and reducing inequalities within and among countries, contributing to the sustainable economic growth promoted by the United Nations (2015). Supporting this, microfinance mutual funds could promote financial inclusion by providing financial resources to MFIs that offer basic financial services, such as loans, savings, and insurance, and by transferring funds to low-income entrepreneurships excluded from the traditional banking system (Daher and Le Saout, 2013). However, investment decisions in specific microfinance institutions depend on investor preferences. To better understand these investor preferences, we analyse the determinants of fund flows for 65 microfinance mutual funds investing in global and emerging global markets during 2015–2021. Petersen's method (Petersen, 2009) of clustering by fund and year was applied to mutual funds.

Our findings suggest that microfinance fund investors do not react to past short- and medium-term financial performance over the whole period, contradicting hypothesis H1 and findings from other studies, such as those by Ben-David et al. (2022) and Ceccarelli et al. (2024). Investors with long-term investment horizons can decide to invest in a specific microfinance mutual fund by observing its long-term financial performance, which signals financial stability and addresses long-term social goals, than focusing on short-term financial performance. Congruently, our findings indicate that microfinance fund investors are sensitive to high one-year lagged annual raw returns but do not react to low short-term past raw returns, suggesting that investors consider high short-term past raw returns in their fund choices, as hypothesised in H2. Furthermore, microfinance fund investors make their investment decisions by considering ethical criteria and the age of the fund; however, they do not consider financial risk and expenses in their investment decisions, which suggests limited financial sophistication, as is often assumed in the literature on the mutual fund industry.

Our findings also indicate that microfinance mutual funds increased their money outflows during the COVID-19 pandemic, which supports hypothesis H3. During this crisis, investors considered only the age of the microfinance mutual fund when making investment decisions. Old microfinance mutual funds may be exposed to a higher risk of liquidity and solvency than their recently created counterparts, leading funders to withdraw money. This withdrawal of money from microfinance mutual funds could deplete external financial resources for MFIs, leading to liquidity constraints that affect the availability of credit and increase the vulnerability of low-income entrepreneurs during times of crisis. This finding

confirms that microfinance fund investors derive their utility from a conditional multi-attribute function that considers long-term societal goals when investment is warranted on its financial performance attribute. Therefore, microfinance mutual funds have not played an important role in supporting vulnerable people during the COVID-19 pandemic.

6.1. Practical implications

Our findings have practical implications for managers, investors, policymakers, microfinance institutions, and low-income entrepreneurs. Microfinance fund managers with low past raw returns can increase their portfolio risk to improve raw returns and attract potential investors interested in supporting low-income entrepreneurship and achieving financial profits. This can enable managers to increase their assets under management, on which they usually charge their management fees. Furthermore, managers can incorporate ethical criteria into their investment strategies to meet investors' preferences. Managers should also keep fund investors informed about past long-term financial performance, the credit risk associated with their investments, and the ethical screening implemented in portfolio management to contribute to achieving the SDGs, such as clean energy, women's empowerment, and water management.

Investors should pay attention to the financial attributes of the mutual funds in which they invest. To this end, policymakers should (1) promote learning activities to enhance investors' financial knowledge and companies' financial management risk reports, (2) promote the transparency of ethical business practices adopted by low-income entrepreneurs, MFIs, and mutual funds investing in them, especially those related to the achievement of development goals, and (3) financially support MFIs to reduce the added cost of loan repayment with arrears in times of crisis.

MFIs should (1) use tools based on credit ratings to assess the risk of loan default, (2) facilitate the payment of debt to low-income entrepreneurs in times of crisis, and (3) offer non-financial services to low-income entrepreneurs, such as training for the implementation of socially responsible practices in business strategies to generate financial and social value.

Low-income entrepreneurs should implement socially responsible business practices in their strategies. This can favour that mutual funds, whose investors are concerned about ethical issues, invest in them.

6.2. Limitations of this study

This study has several limitations. First, we do not consider investors' reactions to microfinance mutual funds by the type of ethical screen adopted or the type of services provided by MFIs in which the mutual funds invest. Thus, in the future, researchers should extend this study by examining the impact of SDG-related investment strategies implemented by mutual funds on financial performance. Moreover, future research can entail the examination of the microfinance fund investors' behaviours towards SDG-related investment strategies implemented by mutual funds and MFIs in which they invest, as well as the moderating effect of these investment strategies on the relationship between microfinance fund flow and financial performance. Second, we do not examine investors' reactions to long-term financial

performance measures because most microfinance mutual funds are recently created. Furthermore, researchers should examine the relationship between fund flows and long-term financial performance. Given that liquidity could be a decisive factor for microfinance fund investors, researchers should examine how microfinance institutions can mitigate their liquidity risk during economic crises.

Author contributions

Mrs. Carmen-Pilar Martí-Ballester contributes to the research method and data analysis, empirical results and discussion, robustness checks, conclusions, conceptualization and supervision. Mrs. Buket Erden contributes to the introduction, and literature review and hypothesis development.

Use of AI tools declaration

The authors declare they haven't used Artificial Intelligence tools to create this article.

Conflict of interest

All authors declare no conflicts of interest in this study.

References

Abrar A, Hasan I, Kabir R (2023) What makes the difference? Microfinance versus commercial banks. *Borsa Istanbul Rev* 23: 759–778. https://doi.org/10.1016/j.bir.2023.03.007

Alda M, Muñoz F, Vargas M (2020) Socially responsible mutual fund exit decisions. *Bus Ethics* 29: 82–97. https://doi.org/10.1111/beer.12253

Alves C, Mendes V (2011) Does performance explain mutual fund flows in small markets? The case of Portugal. *Port Econ J* 10: 129–147. https://doi.org/10.1007/s10258-010-0060-x

Arellano M, Bover O (1995) Another look at the instrumental variable estimation of error-components models. *J Econometrics* 68: 29–51. https://doi.org/10.1016/0304-4076(94)01642-D

Aziz A, Iqbal J, Murtza MH, et al. (2024) Effect of COVID-19 pandemic on women entrepreneurial sustainability: the role of Islamic microfinance institutions. *J Econom Adm Sci* 40: 819–836. https://doi.org/10.1108/JEAS-08-2021-0166

Bachmann K, Meyer J, Krauss A (2024) Investment Motives and Performance Expectations of Impact Investors. *J Behav Exp Finance* 42: 100911. https://doi.org/10.1016/j.jbef.2024.100911

Ben-David I, Li J, Rossi A, et al. (2022) What do mutual fund investors really care about? *Rev Financ Stud* 35: 1723–1774. https://doi.org/10.1093/rfs/hhab081

Benson KL, Humphrey JE (2008) Socially responsible investment funds: Investor reaction to current and past returns. *J Bank Financ* 32: 1850–1859. https://doi.org/10.1016/j.jbankfin.2007.12.013

Berk JB, Green RC (2004) Mutual fund flows and performance in rational markets. *J Polit Econ* 112: 1269–1295. https://doi.org/10.1086/424739

Blundell R, Bond S (1998) GMM estimation with persistent panel data: an application to production functions: The Institute for Fiscal Studies Working Paper Series No. W99/4.

Bollen NP (2007) Mutual fund attributes and investor behavior. *J Financ Quant Anal* 42: 683–708. https://doi.org/10.1016/j.jbankfin.2016.10.009

Brickell K, Picchioni F, Natarajan N, et al. (2020) Compounding crises of social reproduction: Microfinance, over-indebtedness and the COVID-19 pandemic. *World Dev* 136: 105087. https://doi.org/10.1016/j.worlddev.2020.105087

Ceccarelli M, Ramelli S, Wagner AF (2024) Low carbon mutual funds. *Rev Financ* 28: 45–74. https://doi.org/10.1093/rof/rfad015

Chevalier J, Ellison G (1997) Risk taking by mutual funds as a response to incentives. *J Polit Econ* 105: 1167–1200. https://doi.org/10.1086/516389

Chung H, Lee HH, Tsai PC (2012) Are green fund investors really socially responsible? *Rev Pac Basin Financ* 15: 1250023. https://doi.org/10.1142/S0219091512500233

Ciccone J, Marchiori L, Morhs R (2022) The flowperformance relationship of global investment funds. *J Int Money Finance* 127: 102690. https://doi.org/10.1016/j.jimonfin.2022.102690

Constantinou D, Ashta A (2011) Financial crisis: Lessons from microfinance. *Strateg Chang* 20: 187–203. https://doi.org/10.1002/jsc.895

Czura K, Englmaier F, Ho H, et al. (2022) Microfinance loan officers before and during Covid-19: Evidence from India. *World Dev* 152: 105812. https://doi.org/10.1016/j.worlddev.2022.105812

Daugaard D (2020) Emerging new themes in environmental, social and governance investing: a systematic literature review. *Account Finance* 60: 1501–1530. https://doi.org/10.1111/acfi.12479

Daher L, Le Saout E (2013) Microfinance and financial performance. *Strateg Chang* 22: 31–45. https://doi.org/10.1002/jsc.1920

Daher L, Le Saout E (2015) The determinants of the financial performance of microfinance institutions: impact of the global financial crisis. *Strateg Chang* 24: 131–148. https://10.1002/jsc.2002

Del Guercio D, Reuter J (2014) Mutual fund performance and the incentive to generate alpha. *J Financ* 69: 1673–1704. https://doi.org/10.1111/jofi.12048

Dorfleitner G, Leidl M, Priberny C (2014) Explaining failures of microfinance institutions. Social Science Research Network: SSRN.

Dorfleitner G, Priberny C, Röhe M (2017a) Why do microfinance institutions fail socially? A global empirical examination. *Finance Res Lett* 22: 81–89. https://doi.org/10.1016/j.frl.2016.12.027

Dorfleitner G, Röhe M, Renier N (2017b) The access of microfinance institutions to debt capital: An empirical investigation of microfinance investment vehicles. *Q Rev Econ Fin* 65: 1–15. https://doi.org/10.1016/j.qref.2016.06.005

Eddleston KA, Ladge JJ, Mitteness C, et al. (2016) Do you see what I see? Signaling effects of gender and firm characteristics on financing entrepreneurial ventures. *Entrep Theory Pract* 40: 489–514. https://doi.org/10.1111/etap.12117

El Ghoul S, Karoui A (2021). What is its name (green)? Effects of greening fund names on fund flows, turnover, and performance. *Finance Res Lett* 39: 101620. https://doi.org/10.1016/j.frl.2020.101620

El Ghoul S, Karoui A (2017) Does corporate social responsibility affect mutual fund performance and flows?. *J Bank Financ* 77: 53–63. https://doi.org/10.1016/j.jbankfin.2016.10.009

Elton EJ, Gruber MJ, Das S, et al. (1993) Efficiency with costly information: A reinterpretation of evidence from managed portfolios. Rev Financ Stud 6: 1-22. https://doi.org/10.1093/rfs/6.1.1

Eurosif (2021) Eurosif Report 2021: Fostering Investor Impact Placing it at the Heart of Sustainable Finance. Available from: https://www.eurosif.org/wpcontent/uploads/2021/11/2021-Eurosif-Report-Fostering-investor-impact.pdf.

Fecht F, Wedow M (2014) The dark and the bright side of liquidity risks: Evidence from open-end real estate funds in Germany. *J Financ Intermediation* 23: 376–399. https://doi.org/10.1016/j.jfi.2014.02.002

Ferreira MA, Keswani A, Miguel AF, et al. (2012) The flow-performance relationship around the world. *J Bank Financ* 36: 1759–1780. https://doi.org/10.1016/j.jbankfin.2012.01.019

Global Impact Investing Network-GIIN (2023) Holistic portfolio construction with an impact lens: a vital approach for institutional asset owners in a changing world. Available from: https://thegiin.org/publication/research/holistic-portfolio-construction-with-an-impact-lens-a-vital-approach-for-institutional-asset-owners-in-a-changing-world/.

Goetzmann WN, Peles N (1997) Cognitive dissonance and mutual fund investors. *J Financ Res* 20: 145–158. https://doi.org/10.1111/j.1475-6803.1997.tb00241.x

Gruber MJ (1996) Another puzzle: The growth in actively managed mutual funds. *J Financ* 51: 783-810. https://doi.org/10.1111/j.1540-6261.1996.tb02707.x

Hacıömeroğlu HA, Danışoğlu S, Güner ZN, et al. (2022) The Agency Cost of Investing in Ethical Funds: A Style Analysis Approach. *Borsa Istanbul Rev* 22: S169–S179. https://doi.org/10.1016/j.bir.2022.11.007

Hahn R (2012) Inclusive business, human rights and the dignity of the poor: a glance beyond economic impacts of adapted business models. *Bus Ethics: Eur Rev* 21: 47–63. https://doi.org/10.1111/j.1467-8608.2011.01640.x

Hassan MK, Alshater MM, Hasan R, et al. (2021) Islamic microfinance: A bibliometric review. *Glob Fin J* 49: 100651. https://doi.org/10.1016/j.gfj.2021.100651

Hermes N, Hudon M (2019) Determinants of the performance of microfinance institutions: A systematic review, *Contemporary Topics in Finance: A Collection of Literature Surveys*, 297–330. https://doi.org/10.1002/9781119565178.ch10

Hoechle D (2007) Robust standard errors for panel regressions with cross-sectional dependence. *Stata J* 7: 281–312. https://doi.org/10.1177/1536867X0700700301

Jackson ET (2013) Interrogating the theory of change: evaluating impact investing where it matters most. *J Sustain Finance Invest* 3: 95–110. https://doi.org/10.1080/20430795.2013.776257

Jain BA, Jayaraman N, Kini O (2008) The path-to-profitability of Internet IPO firms. *J Bus Ventur* 23: 165–194. https://doi.org/10.1016/j.jbusvent.2007.02.004

Janda K, Rausser G, Svárovská B (2014) Can investment in microfinance funds improve risk-return characteristics of a portfolio? *Technol Econ Dev Econ* 20: 673–695. https://doi.org/10.3846/20294913.2014.869514

Janda K, Svárovská B (2010) Investing into microfinance. *J Bus Econ Manag* 11: 483–510. https://doi.org/10.3846/jbem.2010.24

Jiang GJ, Yüksel HZ (2019) Sentimental mutual fund flows. *Financ Rev* 54: 709–738. https://doi.org/10.1111/fire.12201

Lapanan N (2018) The investment behavior of socially responsible individual investors. *Q Rev Econ Fin* 70: 214–226. https://doi.org/10.1016/j.qref.2018.05.014

Le Saout E, Daher L (2016) Microfinance Performance in Financial Markets: The Case of Microfinance Investment Vehicles, In: *Accountability and Social Responsibility: International Perspectives (Developments in Corporate Governance and Responsibility*, Bingley: Emerald Group Publishing Limited, Bingley, 101–123. https://doi.org/10.1108/S2043-052320160000009005

Lei H, Xue M, Liu H, et al. (2023) Precious metal as a safe haven for global ESG stocks: Portfolio implications for socially responsible investing. *Resour Policy* 80: 103170. https://doi.org/10.1016/j.resourpol.2022.103170

Lynch AW, Musto DK (2003) How investors interpret past fund returns. *J Financ* 58: 2033–2058. https://doi.org/10.1111/1540-6261.00596

Malik K, Meki M, Morduch J, et al. (2020) COVID-19 and the Future of Microfinance: Evidence and Insights from Pakistan. *Oxf Rev Econ Policy* 36: S138–S168. https://doi.org/10.1093/oxrep/graa014

Markowitz H (1952) Portfolio selection. *J Financ* 7: 77–91. https://doi.org/10.1111/j.1540-6261.1952.tb01525.x

Martí-Ballester CP (2020) Examining the behavior of renewable-energy fund investors. *Bus Strategy Environ* 29: 2624–2634. https://doi.org/10.1002/bse.2525

Martí-Ballester CP (2024). Analysing the financial performance of microfinance mutual funds, In: Duarte, F., Gama, A.P.M., Augusto, M., Emanuel-Correia, R. *Microfinance: intervention in challenging contexts,* 1 Eds., Singapore: Springer Nature Singapore, 13–35. https://doi.org/10.1007/978-981-97-5388-8_2

Mermod AY (2013) Microfinance, In: Idowu, S.O., Capaldi, N., Zu, L., Gupta, A.D. (eds), *Encyclopedia of Corporate Social Responsibility*, Berlin: Springer, 1674–1682. https://doi.org/10.1007/978-3-642-28036-8_85

Meyer J, Krauss A, Bachmann K (2019) Drivers of investor motivations for impact investments: The case of microfinance. Available at SSRN 3395275.

Mia MA (2022) Social Purpose, Commercialisation, and Innovations in Microfinance. Singapore: *Springer Nature Singapore*. https://doi.org/10.1007/978-981-19-0217-8

Muñoz F, Vargas M, Vicente R (2014) Fund flow bias in market timing skill. Evidence of the clientele effect. *Int Rev Econ Fin* 33: 257–269. https://doi.org/10.1016/j.iref.2014.05.006

Newey WK, West KD (1987) Hypothesis testing with efficient method of moments estimation. *Int Econ Rev* 28: 777-787. https://doi.org/10.2307/2526578

Noor A (2020) The flow-performance relationship: evidence from Pakistani mutual funds. *J Account Financ Emerg Econ* 6: 145–154. https://doi.org/10.26710/jafee.v6i1.1050

Ozdemir M, Savasan F, Ulev S (2023) Leveraging financial inclusion through Islamic microfinance: A new model proposal for participation banks in Turkiye. *Borsa Istanbul Rev* 23: 709–722. https://doi.org/10.1016/j.bir.2023.01.011

Parvin GA, Shaw R (2014) Microfinance: Role of NGOs in DRR, In: Shaw, R., Izumi, T. *Civil Society Organization and Disaster Risk Reduction. Disaster Risk Reduction*. Tokyo: Springer, 177–201 https://doi.org/10.1007/978-4-431-54877-5_10

Pérez-Gladish B, Benson K, Faff R (2012) Profiling socially responsible investors: Australian evidence. *Aust J Manag* 37: 189–209. https://doi.org/10.1177/0312896211429158

Petersen MA (2009) Estimating standard errors in finance panel data sets: Comparing approaches. *Rev Financ Stud* 22: 435–480. https://doi.org/10.1093/rfs/hhn053

Porter ME, Kramer MR (2006) The link between competitive advantage and corporate social responsibility. *Hav Bus Rev* 84: 78–92.

Rao ZUR, Tauni MZ (2016) Asymmetric Flow-performance Relationship: Case of Chinese Equity Funds. *Int J Econ Financ Issues* 6: 492–496

Reboredo JC, Otero LA (2021) Are investors aware of climate-related transition risks? Evidence from mutual fund flows. *Ecol Econ* 189: 107148. https://doi.org/10.1016/j.ecolecon.2021.107148

Reboredo JC, Otero González LA (2022) Low carbon transition risk in mutual fund portfolios: Managerial involvement and performance effects. *Bus Strategy Environ* 31: 950–968. https://doi.org/10.1002/bse.2928

Renneboog L, Ter Horst J, Zhang C (2011) Is ethical money financially smart? Non-financial attributes and money flows of socially responsible investment funds. *J Financ Intermediation* 20: 562–588. https://doi.org/10.1016/j.jfi.2010.12.003

Ribeiro JPC, Duarte F, Gama APM (2022) Does microfinance foster the development of its clients? A bibliometric analysis and systematic literature review. *Financ Innov* 8: 1–35. https://doi.org/10.1186/s40854-022-00340-x

Riedl A, Smeets P (2017) Why do investors hold socially responsible mutual funds?. *J Financ* 72: 2505-2550. https://doi.org/10.1111/jofi.12547

Sangwan S, Nayak NC, Sangwan V, et al. (2021) Covid-19 pandemic: Challenges and ways forward for the Indian microfinance institutions. *J Public Aff* 21: e2667. https://doi.org/10.1002/pa.2667

Simo C, Tchuigoua HT, Nzongang J (2023) Does corporate social responsibility pay? Evidence from social ratings in microfinance institutions. *Technol Forecast Soc Change* 187: 122180. https://doi.org/10.1016/j.techfore.2022.122180

Sirri ER, Tufano P (1998) Costly search and mutual fund flows. *J Financ* 53: 1589–1622. https://doi.org/10.1111/0022-1082.00066

Tchuigoua HT, Soumaré I, Hessou HT (2020) Lending and business cycle: Evidence from microfinance institutions. *J Bus Res* 119: 1–12. https://doi.org/10.1016/j.jbusres.2020.07.022

Ullah S, Akhtar P, Zaefarian G (2018) Dealing with endogeneity bias: The generalized method of moments (GMM) for panel data. *Ind Mark Manag* 71: 69–78. https://doi.org/10.1016/j.indmarman.2017.11.010

United Nations (2015) Transforming our world: The 2030 agenda for sustainable development. Resolution adopted by the general assembly on 25 September 2015. Available from: https://sustainabledevelopment.un.org/post2015/transformingourworld.

Wagner C (2012) From Boom to Bust: How different has microfinance been from traditional banking? *Dev Policy Rev* 30: 187–210. https://doi.org/10.1111/j.1467-7679.2012.00571.x

Wagner C, Winkler A (2013) The vulnerability of microfinance to financial turmoil–evidence from the global financial crisis. *World Dev* 51: 71–90. https://doi.org/10.1016/j.worlddev.2013.05.008

Wahid AN (1994) The Grameen Bank and Poverty alleviation in Bangladesh: Theory, Evidence and Limitations Theory, Evidence and Limitations. *Am J Econ Sociol* 53: 1–15. https://doi.org/10.1111/j.1536-7150.1994.tb02666.x

Xiao Y, Qiao H, Xie T (2019) Open-end funds for sustainable economic growth in China: the relationship between load fees, performance, and flows. *Sustainability* 11: 6514. https://doi.org/10.3390/su11226514

Zheng C, Zhang J (2021) The impact of COVID-19 on the efficiency of microfinance institutions. *Int Rev Econ & Fin* 71: 407–423. https://doi.org/10.1016/j.iref.2020.09.016

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