Climate Risk Awareness and Fund Trading of Individual Investors

Public awareness of climate change has increased significantly during the past decade. Dechezleprêtre et al. (2022) surveyed more than 40,000 respondents in 20 countries that account for 72% of global CO_2 emissions and found that "at least 75% of respondents in each country agree that 'climate change is an important problem' and that their country 'should take measures to fight it.'"[6]

Increased awareness of climate-related risks could affect investment decisions toward green assets via two possible ways: (i) the adjusted expectation for future cash flows on green vs. brown assets (i.e., financial motives), (ii) the change in investor preferences for sustainability (i.e., nonfinancial motives) (Pastor, Stambaugh, and Taylor 2020). As governments worldwide introduce various policies to mitigate climate change, institutional investors are incorporating climate-related risks into their investment decisions for both financial and nonfinancial motives (Pastor, Stambaugh, and Taylor 2020; Krueger, Sautner, and Starks 2020; Alok, Kumar, and Wermers 2020; Bolton and Kacperczyk 2021). However, evidence of whether individual investors consider climate-related risks in their investment decisions remains thin. This study contributes to current knowledge by providing evidence on how climate risk awareness affects individual investment decisions. Utilizing account-level data of individuals in the People's Republic of China (PRC), this study investigates whether climate risk awareness affects individual investors' trading and investment decisions toward environmental, social, and governance (ESG) assets.

The literature suggests that governments' environmental commitments are likely to raise investors' climate risk awareness. For instance, Bolton and Kacperczyk (2021) use the Paris Agreement as a shock to investors' awareness about carbon risk and show that the carbon premium increased following the signing of the agreement. To clearly identify the role of increased climate risk awareness, the study uses the PRC's announcement of dual carbon targets (DCT) to proxy an exogenous shock to investors' climate risk awareness. In September 2020, at the 75th United Nations General Assembly, the PRC proposed its DCT, setting the goals of reaching a CO_2 emissions peak by 2030 and carbon neutrality by 2060. It is thus expected that the PRC's DCT announcement would have boosted Chinese investors' awareness of climate-related risks. Focusing on individual investors' trading of ESG mutual funds, it is anticipated that individual investors would have increased their portfolio exposure to ESG mutual funds after the announcement of DCT due to increased climate risk awareness.

The study uses a sample of 200,000 randomly selected individual investors from the online mutual fund investment platform on Alipay, which is currently the largest third-party mobile and online payment platform in the PRC. The platform is operated by the fintech giant, Ant Group. The sample consists of monthly mutual fund trading data for individual investors from October 2019 to September 2021. The sample period spans from 1 year before to 1 year after September 2020, when the PRC first announced its DCT.

For each individual investor i in month t, the net purchase of a mutual fund j in investor i's portfolio is calculated as the difference between the total purchase and the redemption of fund j scaled by the sum of the two. The key dependent variable, $NetPurchase_{i,j,t}$, thus conveys information on investor i's trading of j at time t. A higher value for this variable indicates investor i's increased investment and interest in mutual fund j in month t. Since the PRC's announcement of DCT is used as a shock to investors' climate risk awareness, September 2020, when the targets were first proposed, is set as the even month. A dummy variable, $Post_t$, is given a value of 1 for sample

[6] This summary was prepared based on findings in the working paper written by Zhenyu Gao, Yan Luo, Shu Tian, and Hao Yang, previously circulated under the name "Climate Risk Awareness and Investment Decisions: Individual-Level Evidence from the People's Republic of China."

months after the even month and 0 otherwise. A mutual fund *j* in month *t* is labeled as an ESG fund if it is included among the ESG Theme Funds of WIND, a leading financial data service provider in the PRC. A dummy variable, $ESG_{j,t}$, is given a value of 1 if a mutual fund *j* is an ESG fund at time *t* and 0 otherwise.

To examine whether individual investors' trading of ESG funds was influenced by increased climate risk awareness after the PRC's DCT announcement in September 2020, the study performs investor-fund-month level regressions. Investor *i*'s net purchase of fund *j* in month *t* is regressed on an interaction term, $Post_t * ESG_{j,t}$, where $Post_t$ is equal to 1 after the even month and $ESG_{j,t}$ is an indicator of ESG funds. To account for possible factors that would affect individual investment decisions, individual-, fund-, and time-fixed effects are controlled for in the analysis. To account for investment decisions that could be driven by fund performance, the mutual fund's performance during the prior 3 months and subsequent 3 months are also controlled for. The results are reported in **Table 3**.

As shown, the results indicate a significant increase in individual investors' net purchase of ESG mutual funds compared to non-ESG mutual funds after the PRC's announcement of DCT. The results are robust when various fixed effects have been included and fund returns over the previous 3 months and subsequent 3 months have been controlled for, suggesting that the results are not purely driven by the features of individuals, fund performance or time, nor by changes in information that are related to fund performances around the event. Such findings are consistent with current knowledge on institutional investors. This study indicates that governments' climate commitments and policies can drive resource allocation, not only via incentives and regulation but also by shaping investors' risk appetite and investment behavior. Policies that effectively guide investment decisions can help cost-efficiently mobilize capital toward ESG investments.

Table 3: Individual Investors' ESG Fund Trading after the PRC's DCT Announcement

Variable	(1) $NetPurchase_{i,j,t}$	(2) $NetPurchase_{i,j,t}$	(3) $NetPurchase_{i,j,t}$	(4) $NetPurchase_{i,j,t}$
$Post_t * ESG_{j,t}$	0.0539*** (23.176)	0.0639*** (27.436)	0.0465*** (19.957)	0.059*** (25.23)
$Fund\ Return_{j,t-1}$		0.0047*** (65.765)		0.0046*** (60.212)
$Fund\ Return_{j,t-2}$		0.0001 (1.5451)		0.0002*** (2.8135)
$Fund\ Return_{j,t-3}$		0.0036*** (40.815)		0.0035*** (38.45)
$Fund\ Return_{j,t+1}$			−0.0022*** (−28.902)	−0.0004*** (−5.0451)
$Fund\ Return_{j,t+2}$			0.0003*** (3.7087)	0.0003*** (4.0626)
$Fund\ Return_{j,t+3}$			−0.0027*** (−34.376)	−0.0021*** (−26.79)
Investor fixed effects	YES	YES	YES	YES
Fund fixed effects	YES	YES	YES	YES
Month fixed effects	YES	YES	YES	YES
Adj. R_2	0.1188	0.1203	0.1193	0.1205
No. of Obs.	3371729	3371729	3371729	3371729

DCT = dual carbon targets; ESG = environmental, social, and governance; PRC = People's Republic of China.

Note: Robust t-statistics are reported in parentheses. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

Source: Authors' estimates.

References

Alok, Shashwat, Nitin Kumar, and Russ Wermers. 2020. "Do Fund Managers Misestimate Climatic disaster Risk?" *Review of Financial Studies* 33 (3): 1146–83.

Bolton, Patrick, and Marcin Kacperczyk. 2021. "Do Investors Care about Carbon Risk?" *Journal of Financial Economics* 142 (2): 517–49.

Dechezleprêtre, Antoine, Caterina Gennaioli, Ralf Martin, Mirabelle Muûls, and Thomas Stoerk. 2022. "Searching for Carbon Leaks in Multinational Companies." *Journal of Environmental Economics and Management* 112 (2022): 102601.

Krueger, Philipp, Zacharias Sautner, and Laura T. Starks. 2020. "The Importance of Climate Risks for Institutional Investors." *The Review of Financial Studies* 33 (3): 1067–111.

Pastor, Lubos, Robert Stambaugh, and Lucian Taylor. 2020. "Sustainable Investing in Equilibrium." *Journal of Financial Economics* 142 (2020): 550–71.