Good old lockdown:
Household investment behavior during the covid-19 crisis

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Abstract

This paper studies the investment behavior of 15,191 retail investors of the leading robo-advisor in France during the COVID-19 pandemic. During this period, the French government enacted unprecedented and comprehensive fiscal plans and recovery measures which supported households and firms by preserving jobs and providing liquidity. The analyses report evidence from a rich dataset on households' investment behavior throughout the period, notably distinguishing between unscheduled deposits which reflect short-term reactions to these events versus scheduled monthly deposits which provide an insight into how investors adjusted their plans for the future. While the first Covid-19 lockdown was a shock that led to changes in investor behavior, the second and third lockdowns generally did not produce major shifts in savings behavior. When the stock market crash of 2020 and a covid-19 lockdown coincided, there was a moderating effect as investors were not doubly panicked. These results add nuance to the way retail investors react to crises, particularly the stock market crash and the Covid-19 lockdowns experienced in 2020-2021.

Keywords: Keywords: Household investment behavior, COVID-19 pandemic, Stock market crash.

JEL: D91 G40 G41 G50 G01 G11

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1. Introduction

The COVID-19 pandemic brought about a unique set of economic challenges and characteristics that significantly impacted global economies. To cite only the major economic challenges, the COVID-19 pandemic led to unprecedented global economic disruption, sharp economic contraction, and massive government interventions and stimulus packages. Indeed, many countries experienced rapid economic contractions, with sharp declines in GDP. Sectors like tourism, retail and entertainment were particularly hard-hit due to reduced consumer spending because of lockdowns and travel restrictions. To limit the social impact, governments implemented substantial fiscal stimulus measures to support businesses and individuals affected by the pandemic. This included direct payments, grants, loans, tax relief, and increased healthcare spending to stabilize the economy and to mitigate the financial impact on households and businesses.

Over the pandemic, historic levels of government transfers boosted household income while household saving were forced by lockdown and social distancing. This led the personal saving rate to increase sharply. Aladangady et al. (2022) report that U.S. households accumulated about $2.3 trillion in savings in 2020 and through the summer of 2021, which is "above and beyond what they would have saved if income and spending components had grown at recent, pre-pandemic trends." Guerrieri et al. (2022) find that the COVID-19 recession caused market income changes in the United States that were regressive in that large losses were more frequent than during the Great Recession and more concentrated at the bottom of the distribution. They document that progressive taxes and transfers, especially from expanded unemployment insurance benefits and stimulus checks, dramatically offset these declines. In Europe, Math (2021) reports that measures to support training, employment and activity reduction accounted for over a quarter of the total measures taken in 2020 in the Eurozone. They were essential in keeping many businesses alive, as well as maintaining employment relationships and workers' incomes.

Previous research has shown that during the pandemic, wealthier households saved while poorer households spent their savings. Allen and Rebillard (2021) report an increase in saving and wealth occurred at the top of the wealth distribution in the US during the COVID-19 pandemic. However, little is known about how households have dealt with their savings or wealth during the pandemic. Our dataset allows us to exploit clients' short-term liquidity shortages and surpluses as well as their long-term savings intentions.

There are three prevalent explanations of household behaviors with respect to the management of their investments which may be used to analyse household behavior in turbulent times. They may be referred to

as market timing, dollar-cost averaging, and considerations related to liquidity constraints.

The market timing perspective refers to the strategy of buying and selling financial instruments based on predictions about future market movements. Investors who engage in market timing aim to make decisions that anticipate the optimal moments to enter or exit the market in order to capitalize on anticipated price fluctuations. This approach often involves trying to predict short-term trends and can be challenging, as it requires accurate forecasts of market movements, which are inherently unpredictable. Successful market timing is difficult to achieve consistently, and many financial experts advocate for a long-term, diversified investment strategy instead.

The dollar cost averaging strategy refers to an investment strategy where an individual consistently invests a fixed amount of money at regular intervals, regardless of the asset's price and the asset's price anticipation. This approach aims to reduce the impact of market volatility on overall investment performance. When prices are high, the fixed investment amount buys fewer units of the asset, and when prices are low, it buys more units. Over time, the average cost per unit tends to decrease, providing a more stable and disciplined approach to long-term investing. During periods of crash, this strategy leads to doing nothing.

Liquidity constraint refers to the restrictions that households face when it comes to accessing cash or liquid assets. When households are constrained in terms of liquidity, they may encounter difficulties in meeting short-term financial obligations or taking advantage of investment opportunities. Liquidity constraints can also affect the ability to diversify investments or reallocate assets efficiently. During periods of crash, this strategy leads to selling.

2. Data

2.1. The robo-advisor

The paper relies on a comprehensive dataset of the leading robo-advisor operating in France. Figure 1 illustrates the exponential expansion of the robo-advisor's clientele throughout the period. As each client is required to initiate at least one transaction (the initial subscription) and often engages in multiple transactions, the trade volume and trade value of transactions correlate with the size of the clientele.

The unique dataset used for this paper includes 36,337 clients from September, 2015 to March, 2022. It includes information about contracts, information about users, their answers to the questionnaire, algorithm's risk profile recommendations and, finally, the risk profile chosen by users.

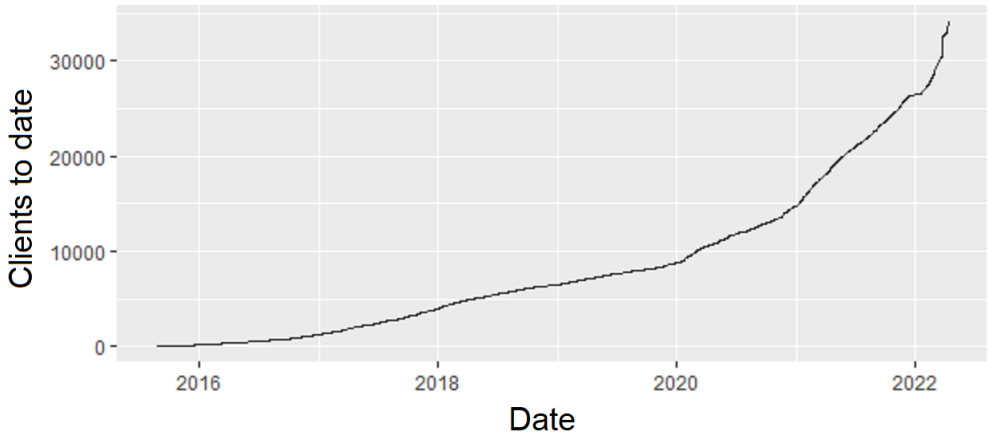

Figure 1: Robo-advisor clients by date

It is important to note that to open an account with the robo-advisor, clients have to visit the company's website and fill out a questionnaire. The questionnaire, administered in French, collects a rich information set about clients with the aim of determining their risk profile.

Following the completion of the questionnaire, the robo-advisor computes a weighted score based on users' answers and generates an investment profile recommendation that is a risk profile ranging from 1 to 10.

The final portfolio is composed of three types of investment vehicles: money market funds, bond exchange traded funds (hereafter ETFs) and stock ETFs. Each risk profile has a different proportion of the three types ranging from the least risky to the riskiest. The lower the risk, the higher the proportion of Euro Funds. As the risk increases, the proportion of Bond ETFs increases initially and then decreases and the proportion of Stock ETFs increases. As a result, profile 1 is the least risky portfolio composed exclusively of money market assets which is the less risky asset class. From profile 1 to 6 the proportion of bond ETFs increases, then decreases from profile 7 to 10. The higher the profile, the larger the share of stock ETFs in the portfolio, which is more exposed to market risk than money market assets and bonds.

With the robo-advisor, a client indirectly invests in financial markets by handing over their capital to a portfolio manager. From the client's perspective, only three types of transactions are possible: depositing, withdrawing, and changing one's risk profile, which is to re-balance one's portfolio to be more stock- or bond-heavy. The robo-advisor does not permit more sophisticated financial transactions such as short selling, put or call options, etc. This paper focuses on deposits and withdrawals, which can be described in

terms of trade volume and trade value.[3] Trade volume refers to the number of transactions, whereas trade value refers to the amount of money moved by the transactions. Trade volume *per se* can only be studied in aggregate, because individuals trade but rarely, so on the individual level trade volume is the propensity to make a trade. Transaction behavior is thus operationalized as trade volumes and trade values for deposits and withdrawals. We can also consider a propensity to make at least one transaction for trade volumes equal to or greater than one.

The data includes every account transaction made by the robo-advisor between its creation in August 20th, 2015 and October 31st, 2021, at which point a change occurred in the method by which these transactions were recorded. However, the vast majority of these transactions are made by the robo-advisor itself, such as rebalancing the clients' portfolios, awarding dividends, or applying the service's fees. Since this paper is primarily concerned with client behavior, only those transactions which were initiated by clients are studied.

The nomenclature used in this paper is the following. First, we document deposits and withdrawals. Because clients can open any number of accounts and some have multiple accounts, in this paper, account creations and closures are classified as deposits and withdrawals, respectively. Deposits are the sum of 'scheduled monthly deposits' (*versements programmés*) and 'unscheduled deposits' (*versements*). During the period considered, withdrawals were not able to be scheduled, so all withdrawals are unscheduled withdrawals. Scheduled monthly deposits draw money directly from the client's linked bank account every month, automatically, on a predetermined date. The client decides the amount and the date of the scheduled monthly deposit when it is first set up, but may change these details or cancel it entirely at any time. No other deposit rates besides monthly, such as weekly or bimonthly, were available during the period of data collection. Unscheduled deposits are done on the initiative of the client and therefore tend to be much more sporadic. Basic statistics for trade volumes and trade values for deposits and withdrawals during the period of interest are included in Table 1.

Table 1 reports several key features. First, the volumes and values of all transaction types steadily rose as the robo-advisor continued to attract new clients regardless of the uncertainty of the data collection period. This is a minor result in itself, since some traditional financial services, which primarily do business in person especially prior to the pandemic, struggled to grow or even maintain a positive balance

[3] Benoit et al. (2023) documents changes in risk profiles during this period.

Table 1: Trade Volumes and Trade Values for Deposits and Withdrawals

Month	Unscheduled Deposits					Scheduled Monthly Deposits					Withdrawals				
	Volume	Value	Avg. Value	% of Volume	% of Value	Volume	Value	Avg. Value	% of Volume	% of Value	Volume	Value	Avg. Value	% of Volume	% of Value*
2018-01	1366	5641945	4130	0.40	0.94	1974	355672	180	0.58	0.06	50	-198477	-3970	0.01	-0.03
2018-02	1027	3872459	3771	0.32	0.91	2092	379722	182	0.66	0.09	48	-341481	-7114	0.02	-0.08
2018-03	974	4473637	4593	0.29	0.92	2298	408793	178	0.69	0.08	64	-388652	-6073	0.02	-0.08
2018-04	822	3509311	4269	0.24	0.89	2481	437829	176	0.74	0.11	56	-226141	-4038	0.02	-0.06
2018-05	1051	3975094	3782	0.28	0.90	2643	453301	172	0.70	0.10	62	-620796	-10013	0.02	-0.14
2018-06	1018	2866940	2816	0.26	0.86	2770	469571	170	0.72	0.14	79	-402002	-5089	0.02	-0.12
2018-07	904	3274670	3622	0.23	0.87	2926	494804	169	0.75	0.13	63	-308185	-4892	0.02	-0.08
2018-08	1021	3655678	3580	0.25	0.88	3063	513836	168	0.74	0.12	64	-501720	-7839	0.02	-0.12
2018-09	926	2922204	3156	0.22	0.84	3180	536622	169	0.76	0.16	86	-527317	-6132	0.02	-0.15
2018-10	1163	4082118	3510	0.26	0.88	3291	556372	169	0.73	0.12	83	-600952	-7240	0.02	-0.13
2018-11	835	3081209	3690	0.19	0.85	3399	565097	166	0.79	0.15	89	-879993	-9888	0.02	-0.24
2018-12	859	2673996	3113	0.20	0.82	3436	573296	167	0.79	0.18	73	-1212132	-16605	0.02	-0.37
2019-01	1149	4066163	3539	0.24	0.88	3456	569145	165	0.73	0.12	119	-500247	-4204	0.03	-0.11
2019-02	1134	4011222	3537	0.24	0.88	3489	571304	164	0.74	0.12	86	-509645	-5926	0.02	-0.11
2019-03	1139	4768473	4187	0.23	0.89	3634	611333	168	0.74	0.11	116	-747595	-6445	0.02	-0.14
2019-04	1213	4627178	3815	0.24	0.87	3835	666831	174	0.75	0.13	96	-663047	-6907	0.02	-0.13
2019-05	1288	5699619	4425	0.24	0.89	3961	702494	177	0.74	0.11	129	-866109	-6714	0.02	-0.14
2019-06	1075	4355247	4051	0.20	0.86	4094	724961	177	0.78	0.14	91	-628737	-6909	0.02	-0.12
2019-07	1299	4757043	3662	0.23	0.87	4218	735614	174	0.75	0.13	111	-993369	-8949	0.02	-0.18
2019-08	1270	4851076	3820	0.22	0.87	4317	748757	173	0.76	0.13	88	-722222	-8207	0.02	-0.13
2019-09	1199	4230801	3529	0.21	0.84	4399	780061	177	0.77	0.16	101	-1315314	-13023	0.02	-0.26
2019-10	1381	5342347	3868	0.23	0.87	4484	794284	177	0.75	0.13	114	-827107	-7255	0.02	-0.13
2019-11	1531	6058519	3957	0.25	0.88	4624	822711	178	0.74	0.12	78	-856065	-10975	0.01	-0.12
2019-12	1799	6469124	3596	0.29	0.89	4383	778892	178	0.70	0.11	50	-1309755	-26195	0.01	-0.18
2020-01	2388	9260204	3878	0.36	0.93	4251	746585	176	0.63	0.07	62	-357196	-5761	0.01	-0.04
2020-02	2529	9947573	3933	0.36	0.92	4498	826702	184	0.63	0.08	74	-917308	-12396	0.01	-0.09
2020-03	3785	10186583	2691	0.44	0.92	4721	879242	186	0.55	0.08	141	-2509565	-17798	0.02	-0.23
2020-04	2963	7275784	2456	0.37	0.89	4927	909866	185	0.62	0.11	66	-701321	-10626	0.01	-0.09
2020-05	2734	5756532	2106	0.34	0.86	5283	975980	185	0.65	0.14	55	-250860	-4561	0.01	-0.04
2020-06	2976	7937297	2667	0.35	0.89	5580	1029326	184	0.65	0.11	67	-505975	-7552	0.01	-0.06
2020-07	2615	6037541	2309	0.30	0.85	5951	1104571	186	0.69	0.15	86	-725472	-8436	0.01	-0.10
2020-08	2618	7252475	2770	0.29	0.86	6334	1171459	185	0.70	0.14	71	-458508	-6458	0.01	-0.05
2020-09	2758	9084791	3294	0.29	0.88	6557	1220850	186	0.70	0.12	88	-651686	-7406	0.01	-0.06
2020-10	2707	6690786	2472	0.28	0.84	6732	1241508	184	0.71	0.16	70	-790976	-11300	0.01	-0.10
2020-11	3568	12703538	3560	0.33	0.91	7080	1314567	186	0.66	0.09	66	-797794	-12088	0.01	-0.06
2020-12	5472	23137920	4228	0.42	0.94	7378	1406032	191	0.57	0.06	72	-694881	-9651	0.01	-0.03
2021-01	5263	17434070	3313	0.40	0.92	7898	1562607	198	0.60	0.08	88	-863635	-9814	0.01	-0.05
2021-02	5443	22330376	4103	0.39	0.93	8410	1684248	200	0.60	0.07	73	-443534	-6076	0.01	-0.02
2021-03	5645	20941761	3710	0.38	0.92	9108	1829402	201	0.61	0.08	94	-1282549	-13644	0.01	-0.06
2021-04	5854	20696026	3535	0.37	0.91	9817	1984127	202	0.62	0.09	94	-784097	-8341	0.01	-0.03
2021-05	5411	17253817	3189	0.34	0.89	10417	2115145	203	0.65	0.11	96	-891962	-9291	0.01	-0.05
2021-06	5295	16723078	3158	0.32	0.88	11107	2273968	205	0.67	0.12	95	-771148	-8117	0.01	-0.04
2021-07	5708	19104500	3347	0.33	0.89	11666	2368703	203	0.67	0.11	73	-969266	-13278	0.00	-0.05
2021-08	6296	24829188	3944	0.34	0.91	12255	2481249	202	0.66	0.09	73	-1228523	-16829	0.00	-0.04
2021-09	6132	20443400	3334	0.32	0.89	12733	2603220	204	0.67	0.11	95	-1482007	-15600	0.01	-0.06
2021-10	5848	19899847	3403	0.30	0.88	13249	2666579	201	0.69	0.12	101	-2061827	-20414	0.01	-0.09

sheet throughout the lockdowns and generally reduced physical presences. Second, while one would expect purchases and sales to roughly cancel each other out in the overall financial market as prices maintain an equilibrium, withdrawals from this robo-advisor account for 3% or less of all transactions each month in terms of trade volume and only 26% of the value of deposits at their height. In other words, few clients withdrew their capital from the robo-advisor during the data collection period. Third, unscheduled deposits on average account for 89% of the trade value of the deposits each month, but on average account for only 30% of the trade volume of all trades. This means that unscheduled deposits are far rarer than monthly scheduled deposits, but, when done, they tend to move much larger amounts of money. Fourth, the coefficients of variations indicate that withdrawals (CV = 0.49) and unscheduled deposits (CV = 0.16) are far more variable than scheduled monthly deposits (CV = 0.07). While withdrawals' and unscheduled deposits' average values fluctuated by thousands of euros each month, scheduled monthly deposits' average values tended to be much lower throughout the entire period.

2.2. Empirical measures

Questionnaire variables. The first part of the questionnaire focuses on clients' objectives and circumstances. It commences by inquiring about potential clients' investment goals, presenting a range of distinct options for consideration: increase savings, prepare a major purchase, bequeath an inheritance, plan their retirement, save in the event of hard times, prepare a real estate investment, or open an account for their child. The following questions request clients to state how much money they would like to deposit into their investment account, the amount they would like to transfer each month, their birth date, fiscal residence, how many children they have, their annual household income, if they own their primary residence, how much they pay for their mortgage/rent if they have one, the value of their property assets, their wealth, how much they can save each month, and the length of their investment horizon. The second part of the questionnaire deals with clients' risk/loss aversion, financial knowledge, and liquidity needs. To summarize, the questionnaire contains information about clients' age, sex, residency, family, income, wealth, employment, financial literacy, risk tolerance, liquidity needs, and about their investment's goal, amount, horizon, and monthly contribution. These variables will be the majority of the control variables in the analysis. The phrasing of the questions is reported in the Appendix 5.

Propensity to make a trade and average trade value. There are two basic dependent variables to study: trade volume and trade value. Trade volume is the number of trades that clients made in a given period.

However, trade volume is an aggregate measure, so on a micro-level we study propensity to make a trade. Propensities are studied with average marginal effects. Trade value is the total amount of money that was traded across these transactions, in euros. Again, since this is an aggregate measure, on a micro-level we study average trade value.[4] Trades are classified as either deposits or withdrawals. Deposits are further subclassified as scheduled monthly deposits and unscheduled deposits. Withdrawals were infrequent during the period of data collection, even when collated at the monthly level, and so they are not treated in the analysis. The trade volume and trade value of unscheduled deposits, monthly deposits, and withdrawals is enumerated at the monthly level in Table 1.

Stock index returns and volatility. The returns and volatility of the S&P 500 (ticker GSPC) are also added as controls.[5] This data is sourced from Yahoo Finance historical stock returns. Prices at stock market opening are used. Volatility is calculated as the annualized intra-day volatility using the high and low of the index[6]. For unscheduled deposits, which occur at a daily frequency, the S&P 500 (GSPC) variables are left as described. For scheduled monthly deposits, which occur at monthly intervals, the average of the S&P 500 (GSPC) variables for the month is used.

Historical events. In France, the first covid lockdown lasted from March 17th, 2020 to May 10th, 2020 and affected the whole country at the same time. The second lockdown lasted from October 30th, 2020 to November 27th, 2020 and also affected the whole country. The third lockdown started on different dates in different French departments, but eventually affected the whole country, with the national lockdown lasting from April 3rd, 2021 to May 2nd, 2021.[7] The stock market crash of 2020 lasted from February 20th, 2020

[4]The maximum trade value allowed by the robo-advisor in a single transaction is 1,000,000€, but the mean value is around 2,000€and the median only 250€. Ten unscheduled deposits from group 1 and eight unscheduled deposits from group 2 were above 100,000€; these outliers were capped at 100,000€.

[5]While the robo-advisor is based in France, its portfolios are internationally diversified. Around 64% of its investments are US-based ETFs compared to only 19% Europe-based ETFs, of which France is only one country. For this reason, we choose to use the S&P 500 as the market index for reference. Using the same dataset, Benoit et al. (2023) found that the CAC 40 and MSCI World indices can also be used with no loss of generalization, since they happen to be highly correlated.

[6]The calculation follows this formula:

$$GSPC_{Volatility} = \sqrt{252} * \frac{P_{High} - P_{Low}}{P_{Low}}$$

[7]The third lockdown started on March 20th for the following departments: 02, 06, 27, 59, 60, 62, 75, 76, 77, 78, 80, 91, 92, 93, 94, 95; and on March 27th for the following departments: 10, 58, 69. [Source: https://www.vie-publique.fr/en-bref/279084-covid-19-mesures-de-restrictions-dans-19-departements]

to April 7th, 2020. There were not two crashes during the data collection period, but some other period of relative stock market volatility would be useful for comparison. The closest equivalent to a crash was a stock market correction in 2018, which lasted from October 30th, 2018 to January 16th, 2019.[8]

A dummy variable is constructed for each of the five historical events (the stock market correction of 2018, the stock market crash of 2020, and the three Covid-19 lockdowns) which is equal to 1 if an unscheduled deposit occurs during the historical event and 0 otherwise. Similarly to the adjustment made for monthly returns and volatilities, the average of these is taken for scheduled monthly deposits, with the number of days in a month included in the crisis period divided by the total number of days in that month.

3. Empirical strategy

3.1. The analyses of events

The period of 2018-2021 in France saw three covid lockdowns, two stock market corrections, and one moment in which a stock market correction and a covid lockdown coincided, separated by short times of relative calm. In other words, it was a 2x2 natural experiment for comparing how investors behaved during these stock market corrections and covid lockdowns. It is therefore possible to study investor behavior in a 2x2 matrix: during a stock market correction, during a covid lockdown, during both, and during neither (the baseline situation). When regressing the transaction data, we implement a dummy variable for each of these five events – the stock market correction of 2018, the stock market crash of 2020, the first Covid-19 lockdown, the second Covid-19 lockdown, and the third Covid-19 lockdown – which is equal to 1 only if the transaction occurs during that event. During the lead-in to the third lockdown in which only some departments were affected, the dummy variable for the third lockdown is equal to 1 only for those transactions done by clients whose primary residence was located in one of the departments affected by the third lockdown. The interaction of the crash of 2020 and the first lockdown is studied by crossing these two dummy variables.

[8] A stock market correction begins with a decline in the market cap of more than 10% but less than 20%, and ends when the market cap recovers 10% from its lowest point. In 2018, the S&P 500 peaked at 2936.76 on September 21st, 2018 and dropped below the 10% threshold on October 30th, 2018. The lowest point was 2363.12 on December 26th, 2018, a decline of 19.5% from the previous high. The correction ended on January 16th, 2019 when the S&P 500 rose above the 10% threshold to 2614.75.

3.2. Behavioral measures of exposure to events

Trade volume and trade value tend to grow month after month, if only due to the continuous entrance of new clients and their new capital. Therefore, dependent variables are averaged by the number of clients or the number of transactions within a given period. The analyses control for the size of the clientele by measuring trade volume and trade value on a per-client basis and observing whether the average volume and value shift over the period. However, this would still be insufficient to study clients' behavior, since new clients would be integrated into the analysis as soon as they arrived. Integrating these new clients would make it impossible to study whether changes in the key metrics are due to shifts in the average behavior of existing clients and not due to the behavior of the new arrivals. For those two reasons, stable subsets of clients are studied. The use of these different groups allows to carefully control for the impact of exposure to the various sanitary and economic shocks that characterize the period.

As a consequence, the clients were divided into three groups, depending on the date of their first contract opening and our main variable of interest which is the types and numbers of financial, economic, and sanitary disruptions they experienced. The three groups are composed as follows: Group 1 includes the 6,857 clients who signed up between August 2015 (the month in which the robo-advisor began operations) and June 30th, 2018. Group 2 includes the 3,043 clients who signed up between July 1st, 2018 and June 30th, 2019. Group 3 includes the 5,291 clients who signed between July 1st, 2019 and June 30th, 2020. Since the group only becomes stable on the last day of the period, and otherwise suffers from the problems of ever-growing numbers of clients, analyses that require group stability can only begin once a group reaches its cut-off date. Group 1 is interesting in that their behavior from prior to the stock market correction of 2018 can be documented and compared to their behavior during the stock market crash of 2020. Furthermore, this is the group for which the longest period of data is available, so group 1 has the most data per client. Group 2 can be thought of as a robustness test for group 1 for all time periods except for the stock market correction of 2018, and group 3 as a robustness test for groups 1 and 2. Groups are cut off a few months prior to their first crisis to observe how they behave in normal or pre-crisis circumstances.

Table 2 report the characteristics of clients of the robot-advisor by group used for the analyses. There are substantial similarities among the groups. Between 72% and 80% are men. The average age at subscription is between 33 and 35. About two-thirds of them earn between 25,000€and 100,000€per year. On average, they have substantial property (230,000€) and financial assets (180,000€), and between 57% and 60% of them are homeowners. The average account is opened with around 5,000-8,000€for a period of 10-12

years at risk profile 7 (see Boulu-Reshef et al. (2022) for more information on risk profiles). Liquidity needs, risk preferences, and financial literacy are similar across the three groups. However, there are also some differences among the groups to note. While men are a sizeable majority in all three groups, women become more common over time. Also, groups 2 and 3 have similar levels of wealth to each other, but around 60,000€less capital than group 1. Nevertheless, groups 2 and 3 deposit larger amounts of money in their investment accounts with the robo-advisor and have progressively longer investment horizons. While it is interesting to observe the gradual shift in the clientele of the robo-advisor over time, these differences are small and not economically significant.

Table 2: Descriptive statistics of clients' characteristics by group

	Group 1		Group 2		Group 3	
	Mean	SD	Mean	SD	Mean	SD
N	6857		3043		5291	
Sex	0.80	0.40	0.77	0.42	0.72	0.45
Age	38.63	14.17	36.49	15.02	35.27	15.44
Age at subscription	34.09	14.09	33.41	15.05	33.24	15.42
Number of children	0.83	1.02	0.78	1.00	0.80	1.00
Annual income less than 25k	0.07	0.26	0.09	0.28	0.09	0.28
Annual income 25k to 50k	0.28	0.45	0.31	0.46	0.31	0.46
Annual income 50k to 100k	0.40	0.49	0.38	0.49	0.40	0.49
Annual income 100k to 150k	0.16	0.37	0.14	0.35	0.14	0.35
Annual income more than 150k	0.09	0.28	0.07	0.26	0.06	0.24
Home owner	0.60	0.49	0.57	0.49	0.57	0.49
Property assets	256735	381528	226812	356762	228189	363892
Financial wealth	197795	434552	166177	355252	160075	426375
Initial deposit	4852	11791	8117	24996	8103	22008
Horizon	10.1	5.91	11.14	6.34	11.91	6.46
Liquidity Q1 Two years	1.31	0.46	1.29	0.45	1.32	0.47
Liquidity Q2 Half of deposit	1.00	0.98	0.97	0.97	0.91	0.97
Risk Q1 Five year gamble	2.14	0.77	2.38	0.74	2.41	0.73
Risk Q2 Ten year gamble	2.06	0.81	1.95	0.78	2.00	0.78
Risk Q3 Buy when market dips	2.13	1.34	2.17	1.30	2.14	1.33
Risk Q4 Experienced losses	2.14	1.17	1.99	1.11	1.94	1.11
Knowledge Q1 Correct	0.97	0.18	0.97	0.18	0.98	0.15
Knowledge Q2 Correct	0.76	0.43	0.75	0.43	0.78	0.41
Knowledge Q3 Correct	0.71	0.46	0.72	0.45	0.74	0.44
RP Recommended	7.08	1.89	6.79	2.07	7.03	2.01
RP Selected	6.99	2.15	6.73	2.41	7.04	2.42

3.3. Distinguishing between scheduled and unscheduled deposits

Unscheduled deposits need to be distinguished from scheduled monthly deposits for two reasons: periodicity and disproportionality. Transactions are studied at the shortest periodicity for which data is available, which is daily for unscheduled deposits and monthly for scheduled monthly deposits. However, unscheduled deposits are the majority of trade value but minority of trade volume for deposits, while scheduled monthly deposits are the majority of trade volume but minority of trade value. The different periodicities and the disproportionality between the two types of deposits make it both difficult and less useful to predict trends for all deposits. For example, a change in all deposits' trade value for the month would be explicable almost entirely by a change in unscheduled deposits' trade value. Therefore, unscheduled deposits and scheduled monthly deposits are studied independently.

4. Results

Result 1 *The number of transactions increases during the first lockdown..*

For each of the following tables, the results for groups 1, 2, and 3 are reported side-by-side. The groups are non-overlapping, and subjects are independent. The four measures used here, scheduled monthly deposits' propensity and average value and unscheduled deposits' propensity and average value, are four distinct investment behaviors. It is not anticipated that coefficients necessarily have similar powers and directions across these four different concepts. For example, a stock market downturn may induce investors to "buy low" with an unscheduled deposit in the moment with money that would have otherwise been used on future scheduled monthly deposits. Group 1 is the richest data, with the largest group of clients and the longest period of study. Yet since the four measures are not directly comparable to each other and relationships among variables may be unintuitive, groups 2 and 3 serve as a robustness test for all variables except for those historical periods which they did not experience. If a relationship between the dependent variable and a factor is stable across all groups for which there is data, then we consider it to be a robust result. To illustrate with an example, Figure 2 shows that for both groups 1 and 2 there was a spike in unscheduled deposits around March 2020; however, this cannot be verified for group 3 since they were not clients during this historical period. Phenomenon like this will be studied with all else being equal in the following regressions.

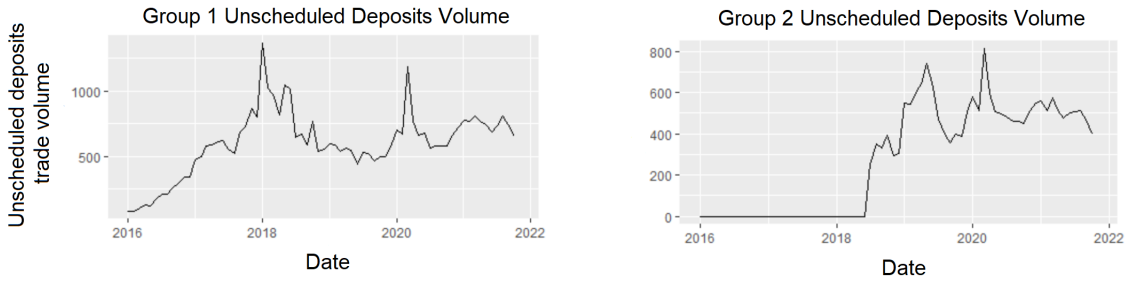

Figure 2: Month-to-month unscheduled deposits trade volume

4.1. Measures of commitment: Scheduled monthly deposits

Table 3 reports the determinants of the propensity to make a scheduled monthly deposit using a logistic regression and displaying the average marginal effects. The dependent variable is equal to 1 if the client made at least one scheduled monthly deposit during the month, and 0 otherwise.

The findings indicate that there are two primary determinants exerting the most substantial positive influence on the propensity to make a monthly scheduled deposit. The first one is income, particularly higher income brackets. Income stands out as the primary determinant exerting the most substantial positive influence on the propensity to make a monthly scheduled deposit. But, interestingly, not wealth. During the stock market correction of 2018, clients were more likely to make a scheduled monthly deposit. However, the first Covid-19 lockdown and the stock market crash of 2020 negatively impacted the propensity to make a monthly scheduled deposit. The cross between the first Covid-19 lockdown and the stock market crash of 2020 has a moderating effect, such that these two crises did not double the panic.

The results further show that the determinants which have a negative significant impact in magnitude on the propensity to make a monthly scheduled deposit are the stated need for liquidity and the stock market crash of 2020, which followed the Covid-19 lockdown.

While many other variables have statistically significant effects, their magnitudes are comparatively negligible when juxtaposed with these pivotal determinants.

Table 3: **Logistic regression - Clients' propensity to make a scheduled monthly deposit (Average Marginal Effects, analyzed at the monthly level)**

***, **, * indicate that the coefficient is statistically significant at the 1%, 5% and 10% confidence level, respectively.

	Group 1 (N = 6857)			Group 2 (N = 3043)			Group 3 (N = 5291)		
	AME	St.Err.	Sig.	AME	St.Err.	Sig.	AME	St.Err.	Sig.
Intercept	0.1644	0.0493	***	0.4521	0.0897	***	-0.0115	0.1251	
GSPC (per 100 points)	-0.0202	0.0008	***	-0.0105	0.0015	***	0.0185	0.0022	***
GSPC volatility	-0.8114	0.0681	***	-0.6625	0.1247	***	0.2280	0.1739	
Sex (male)	0.0929	0.0106	***	0.0082	0.0173		-0.0408	0.0163	**
Age	-0.0126	0.0003	***	-0.0127	0.0006	***	-0.0175	0.0005	***
Number of children	0.0542	0.0046	***	0.0914	0.0081	***	0.0399	0.0083	***
Annual income 25k to 50k	0.6139	0.0204	***	0.5877	0.0295	***	0.3795	0.0282	***
Annual income 50k to 100k	0.9598	0.0201	***	0.7531	0.0297	***	0.4323	0.0284	***
Annual income 100k to 150k	1.1786	0.0219	***	0.8426	0.0342	***	0.6427	0.0333	***
Annual income more than 150k	1.2743	0.0250	***	1.0997	0.0412	***	0.6640	0.0414	***
Home owner	0.1114	0.0100	***	0.1425	0.0173	***	0.0484	0.0174	***
Property assets (per 10,000 EUR)	-0.0009	0.0001	***	-0.0014	0.0003	***	-0.0033	0.0003	***
Financial wealth (per 10,000 EUR)	-0.0027	0.0001	***	-0.0033	0.0003	***	-0.0005	0.0002	**
Horizon	0.0282	0.0007	***	0.0274	0.0012	***	0.0353	0.0012	***
Liquidity Q1 Two years	-0.0911	0.0051	***	-0.0343	0.0091	***	-0.0121	0.0090	
Liquidity Q2 Half of deposit	-0.2913	0.0108	***	-0.1407	0.0193	***	-0.3416	0.0189	***
Risk Q1 Five year gamble	0.0006	0.0058		0.1004	0.0129	***	0.1250	0.0128	***
Risk Q2 Ten year gamble	-0.0576	0.0055	***	-0.2614	0.0128	***	-0.3434	0.0126	***
Risk Q3 Buy when market dips	0.0185	0.0032	***	0.0409	0.0057	***	0.0179	0.0056	***
Risk Q4 Experienced losses	-0.0923	0.0040	***	-0.0348	0.0072	***	-0.0196	0.0071	***
Knowledge Q1 Correct	0.0604	0.0235	**	-0.4852	0.0415	***	-0.1463	0.0477	***
Knowledge Q2 Correct	-0.0628	0.0103	***	0.0424	0.0178	**	0.0012	0.0182	
Knowledge Q3 Correct	-0.0377	0.0093	***	0.1435	0.0165	***	0.0359	0.0165	**
First Covid-19 lockdown	-0.4896	0.0384	***	-0.3228	0.0568	***			
Second Covid-19 lockdown	-0.1196	0.0302	***	-0.0618	0.0431		0.0345	0.0337	
Third Covid-19 lockdown	-0.0049	0.0307		-0.0129	0.0439		0.0181	0.0337	
Stock market correction of 2018	0.2495	0.0216	***						
Stock market crash of 2020	-0.4699	0.0842	***	-0.1658	0.1214				
First lockdown * Crash of 2020	2.0039	0.2061	***	1.3125	0.3067	***			

The average trade values of scheduled monthly deposits is reported in Table 4. As with propensity to schedule a monthly deposit, income has a positive influence on the average value of this deposit, with higher incomes making increasingly large contributions. Wealth has a very marginal impact. During the stock market correction of 2018, clients were not only more likely to make a monthly scheduled deposit, but they also increased the average value of these deposits. The first covid-19 lockdown and the stock market crash of 2020 decrease the average value of deposits, although again a moderating effect is observed when these periods are crossed. Additionally, men make larger scheduled monthly deposits, while homeowners and people with greater liquidity constraints make smaller scheduled monthly deposits. The remaining variables' powers are low.

Table 4: **Linear regression - Average monthly trade value of scheduled deposits (Analyzed at the monthly level**

***, **, * indicate that the coefficient is statistically significant at the 1%, 5% and 10% confidence level, respectively.

	Group 1 (N = 6857)			Group 2 (N = 3043)			Group 3 (N = 5291)		
	Est.	St.Err.	Sig.	Est.	St.Err.	Sig.	Est.	St.Err.	Sig.
Intercept	37.9869	4.8036	***	-9.9842	11.0693		-36.37925145	17.5213	**
GSPC (per 100 points)	0.4910	0.0806	***	1.1480	0.1858	***	2.2653	0.3029	***
GSPC volatility	-15.2509	6.7924	**	-15.3660	15.4664		17.0609	24.3623	
Sex (male)	13.8509	1.0467	***	12.1284	2.1464	***	15.0775	2.2812	***
Age	0.2259	0.0325	***	0.8233	0.0670	***	0.7086	0.0725	***
Number of children	-5.2103	0.4593	***	-8.2309	1.0205	***	-2.0242	1.1608	*
Annual income 25k to 50k	18.2200	1.7340	***	29.4166	3.4195	***	34.8955	3.9020	***
Annual income 50k to 100k	47.7263	1.7216	***	57.3493	3.4616	***	63.5384	3.9271	***
Annual income 100k to 150k	81.7014	1.9367	***	93.5311	4.0564	***	96.7516	4.6158	***
Annual income more than 150k	131.2390	2.2783	***	210.8457	4.9339	***	185.0079	5.7398	***
Home owner	-15.4055	0.9953	***	-12.5814	2.1445	***	-51.3827	2.4185	***
Property assets (per 10,000 EUR)	0.1854	0.0143	***	-0.0669	0.0318	**	-0.0257	0.0364	
Financial wealth (per 10,000 EUR)	0.0913	0.0108	***	0.6384	0.0278	***	0.3441	0.0264	***
Horizon	1.0787	0.0738	***	0.6489	0.1475	***	1.1677	0.1635	***
Liquidity Q1 Two years	-6.7510	0.5147	***	-4.6913	1.1270	***	-5.7005	1.2623	***
Liquidity Q2 Half of deposit	-23.4845	1.0716	***	-15.4379	2.3963	***	-30.0731	2.6404	***
Risk Q1 Five year gamble	-5.5673	0.5798	***	7.4527	1.6054	***	8.2431	1.7874	***
Risk Q2 Ten year gamble	0.4516	0.5511		-6.5437	1.5887	***	-12.6590	1.7601	***
Risk Q3 Buy when market dips	-0.8239	0.3134	***	0.7723	0.7058		1.5536	0.7875	**
Risk Q4 Experienced losses	-4.8442	0.3904	***	-6.3906	0.8895	***	1.8687	0.9924	*
Knowledge Q1 Correct	5.7226	2.3295	**	-26.9615	5.1810	***	-3.6619	6.6758	
Knowledge Q2 Correct	-3.6972	1.0333	***	6.5779	2.1971	***	2.8538	2.5567	
Knowledge Q3 Correct	2.2241	0.9313	**	21.8851	2.0341	***	5.7121	2.3181	**
First Covid-19 lockdown	-13.2725	3.7324	***	-8.8540	7.0076				
Second Covid-19 lockdown	-4.7877	2.9393		-4.8519	5.3232		-0.7392	4.7213	
Third Covid-19 lockdown	0.0598	3.0078		1.9240	5.4326		0.4676	4.7310	
Stock market correction of 2018	9.0983	2.1947	***						
Stock market crash of 2020	-25.4546	8.1937	***	-6.6569	15.0147				
First lockdown * Crash of 2020	78.3588	20.0980	***	53.0509	37.9701				

4.2. Measures of one-time investments: Unscheduled deposits

Moving on, the propensity to make an unscheduled deposit is studied in Table 5. Once again, high levels of income come in as particularly predictive of making at least one unscheduled deposit on any given day, while wealth has little effect. Competing for second place are financial literacy, the stock market crash of 2020, the first Covid-19 lockdown, and men. Individuals with more children are also significantly less likely to make an unscheduled deposit.

It is interesting to compare and contrast the results for the propensity to make an unscheduled deposit with those of the propensity to make a scheduled monthly deposit. Some variables consistently increase the propensity, such as income, while others have a push-and-pull effect, such as the first Covid-19 lockdown and the stock market crash of 2020. In other words, some variables simply increase the likelihood to invest in any manner (income) while other variables change one's investment strategy, at least in the short term (crises).

Table 5: **Logistic regression - Clients' propensity to make an unscheduled deposit (Average Marginal Effects, analyzed at the daily level)**

***, **, * indicate that the coefficient is statistically significant at the 1%, 5% and 10% confidence level, respectively.

	Group 1 (N = 6857)			Group 2 (N = 3043)			Group 3 (N = 5291)		
	AME	St.Err.	Sig.	AME	St.Err.	Sig.	AME	St.Err.	Sig.
Intercept	-8.2374	0.0825	***	-7.1142	0.1168	***	-6.1024	0.1225	***
GSPC (per 100 points)	0.0161	0.0012	***	0.0069	0.0018	***	-0.0067	0.0020	***
GSPC volatility	0.4181	0.0488	***	0.1923	0.0652	***	0.2122	0.0827	**
Sex (male)	0.4020	0.0192	***	0.2147	0.0236	***	0.2071	0.0197	***
Age	0.0025	0.0005	***	0.0106	0.0007	***	0.0079	0.0006	***
Number of children	-0.2528	0.0077	***	-0.1618	0.0106	***	-0.1491	0.0097	***
Annual income 25k to 50k	0.2900	0.0343	***	0.2326	0.0377	***	0.4540	0.0340	***
Annual income 50k to 100k	0.7676	0.0332	***	0.4702	0.0376	***	0.4659	0.0342	***
Annual income 100k to 150k	0.9442	0.0353	***	0.6715	0.0422	***	0.7498	0.0383	***
Annual income more than 150k	0.7461	0.0404	***	0.7199	0.0499	***	0.4850	0.0495	***
Home owner	0.0378	0.0154	**	0.0669	0.0214	***	-0.2803	0.0192	***
Property assets (per 10,000 EUR)	-0.0026	0.0002	***	-0.0063	0.0004	***	-0.0020	0.0003	***
Financial wealth (per 10,000 EUR)	0.0013	0.0001	***	-0.0002	0.0003		-0.0003	0.0002	
Horizon	0.0209	0.0010	***	0.0072	0.0014	***	-0.0061	0.0013	***
Liquidity Q1 Two years	-0.0456	0.0080	***	-0.0964	0.0112	***	-0.0632	0.0102	***
Liquidity Q2 Half of deposit	0.0405	0.0162	**	-0.0630	0.0226	***	0.0860	0.0202	***
Risk Q1 Five year gamble	0.0627	0.0092	***	0.0529	0.0177	***	0.1280	0.0155	***
Risk Q2 Ten year gamble	0.1325	0.0088	***	0.3308	0.0161	***	0.1666	0.0142	***
Risk Q3 Buy when market dips	-0.0136	0.0047	***	-0.0717	0.0065	***	-0.0582	0.0059	***
Risk Q4 Experienced losses	-0.0865	0.0060	***	-0.0776	0.0086	***	-0.0446	0.0077	***
Knowledge Q1 Correct	-0.0319	0.0454		0.2491	0.0678	***	0.0539	0.0635	
Knowledge Q2 Correct	0.5403	0.0199	***	0.3881	0.0255	***	0.3260	0.0232	***
Knowledge Q3 Correct	0.5197	0.0169	***	0.1638	0.0214	***	0.2961	0.0201	***
First Covid-19 lockdown	0.2227	0.0380	***	0.2640	0.0443	***			
Second Covid-19 lockdown	-0.0081	0.0416		0.0288	0.0480		-0.0168	0.0337	
Third Covid-19 lockdown	0.0610	0.0419		-0.0254	0.0520		0.0877	0.0343	**
Stock market correction of 2018	0.0551	0.0290	*						
Stock market crash of 2020	0.3952	0.0439	***	0.4285	0.0538	***			
First lockdown * Crash of 2020	-0.2965	0.0642	***	-0.3096	0.0743	***			

Finally, Table 6 examines the average trade values of unscheduled deposits. Once again, income is the most economically powerful factor in the amount an investor chooses to deposit during any given trade. Wealth is again a factor, but not to the same extent as income. Men and the financially literate also tend to make larger deposits. As far as the historical periods are concerned, only the stock market crash of 2020 had a consistent effect, increasing the average value of unscheduled deposits, and by a fair amount compared to the other factors in the regression. Once again, this is the opposite impact observed for scheduled monthly deposits, showing that investors are using scheduled monthly deposits and unscheduled deposits differently.

Table 6: **Linear regression - Average trade value of unscheduled deposits (analyzed at the daily level)**

***, **, * indicate that the coefficient is statistically significant at the 1%, 5% and 10% confidence level, respectively.

	Group 1 (N = 6857)			Group 2 (N = 3043)			Group 3 (N = 5291)		
	Est.	St.Err.	Sig.	Est.	St.Err.	Sig.	Est.	St.Err.	Sig.
Intercept	-5.0880	2.1949	**	-6.4278	4.5252		-12.3830	6.8648	*
GSPC (per 100 points)	0.1367	0.0368	***	-0.0076	0.0772		-0.0089	0.1221	
GSPC volatility	-0.5303	1.5953		-1.9700	3.0837		2.9810	5.0579	
Sex (male)	2.8671	0.4885	***	-0.9908	0.9262		4.1506	1.0807	***
Age	0.0808	0.0152	***	0.2456	0.0289	***	0.4402	0.0343	***
Number of children	-1.7075	0.2144	***	-1.4576	0.4404	***	-0.8758	0.5499	
Annual income 25k to 50k	2.1677	0.8093	***	1.8918	1.4756		5.0678	1.8486	***
Annual income 50k to 100k	4.6741	0.8035	***	4.6645	1.4937	***	7.9170	1.8604	***
Annual income 100k to 150k	8.8517	0.9039	***	7.4427	1.7504	***	18.6720	2.1867	***
Annual income more than 150k	9.4910	1.0633	***	5.5374	2.1291	***	24.4470	2.7192	***
Home owner	-0.7024	0.4645		-3.0105	0.9254	***	-4.1881	1.1458	***
Property assets (per 10,000 EUR)	0.0755	0.0067	***	0.0870	0.0137	***	0.0896	0.0172	***
Financial wealth (per 10,000 EUR)	0.1083	0.0050	***	0.1954	0.0120	***	0.1313	0.0125	***
Horizon	-0.0314	0.0345		-0.2151	0.0637	***	-0.3179	0.0775	***
Liquidity Q1 Two years	-0.8471	0.2402	***	-0.6169	0.4863		-0.5885	0.5980	
Liquidity Q2 Half of deposit	-3.2443	0.5001	***	-1.9545	1.0341	*	1.7974	1.2509	
Risk Q1 Five year gamble	0.3482	0.2706		1.1830	0.6928	*	-0.4899	0.8468	
Risk Q2 Ten year gamble	0.1373	0.2572		0.7964	0.6855		0.4932	0.8338	
Risk Q3 Buy when market dips	0.2558	0.1463	*	0.5664	0.3046	*	-0.4574	0.3731	
Risk Q4 Experienced losses	-0.6971	0.1822	***	0.1165	0.3839		-0.5350	0.4701	
Knowledge Q1 Correct	-0.5943	1.0872		-0.8693	2.2357		0.3436	3.1626	
Knowledge Q2 Correct	1.4459	0.4823	***	4.1981	0.9481	***	1.9985	1.2112	*
Knowledge Q3 Correct	1.4938	0.4347	***	2.4332	0.8778	***	3.9152	1.0982	***
First Covid-19 lockdown	-0.4626	1.2181		0.2826	2.0911				
Second Covid-19 lockdown	-0.6230	1.2446		-1.7449	2.0841		-2.8513	2.0269	
Third Covid-19 lockdown	3.3583	1.3350	**	1.2556	2.2287		3.2755	2.1008	
Stock market correction of 2018	-0.4827	0.8516							
Stock market crash of 2020	6.7621	1.5674	***	7.4995	2.7253	***			
First lockdown * Crash of 2020	-3.0344	2.2912		-6.7085	3.8313	*			

5. Conclusion

These results add nuance to the way retail investors react to crises, particularly the stock market crash and the Covid-19 lockdowns experienced in 2020-2021. While the first Covid-19 lockdown was a shock that led to changes in investor behavior, the second and third lockdowns generally did not produce major shifts in savings behavior. When the stock market crash of 2020 and a covid-19 lockdown coincided, there was a moderating effect: investors were not doubly panicked.

However, the way in which investors responded to these historical events differs in the short- and long-runs. In the short-run, investors used particularly large unscheduled deposits to invest during the stock market crash of 2020, providing some evidence of market timing behavior. Furthermore, they made more deposits during the first covid-19 lockdown, though these deposits were not particularly large, perhaps because their consumption was constrained but their incomes in general were supported by the generous French subsidies during this period. Whereas in the long-run, investors adjusted their expectations of future savings downwards in response to these crises by decreasing their scheduled monthly deposits. This paper makes an important contribution to the study of this period by distinguishing how investors both reacted in the moment and adjusted their long-term plans in response to these major events.

Various demographic and financial variables also contribute to the ways in which investors privilege unscheduled deposits or scheduled monthly deposits. Notably, income has a sizeable and consistent impact on the likelihood and amount that clients will invest both in scheduled and unscheduled deposits, while wealth has a much smaller power. Finally, trends observed in group 1 were generally robust to groups 2 and 3 despite smaller sample sizes and smaller cohorts.

Overall, this paper contributes to a deeper understanding of how investors behaved during these crises and adds nuance to the way in which this period is studied, distinguishing between their immediate reactions and the longer-term plans they make.

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Appendices

Questionnaire

[Note: The wording of the questions and the available responses to the introductory questionnaire change slightly over time. This is a translation from French to English of the introductory questionnaire at the end of the period of data collection.]

1. What is your investment project?

☐ Grow my savings.

☐ Save in the event of hard times.

☐ Prepare a major purchase.

☐ Plan my retirement.

☐ Bequeath an inheritance.

☐ Open an account for my child.

☐ Optimize my business's treasury.

[Note: If the option "Open an account for my child" is selected, the following text box appears: "This project allows you to open an account in your child's name. The savings will belong to your child, and they will have full access to the account when they come of age. In the following section, the questions about the savings plan concern your child. The questions concerning knowledge of the financial markets, risk appetite and the need for liquidity concern the legal representatives. [Name of the company]'s service is not accessible to emancipated minors or minors under judicial supervision." There are slight variations in the questionnaire depending on the answer to this first question.]

2. How much money would you like to invest with [Name of the company]?
(Answer entered in euros.)

3. How much would you like to invest each month?
(Answer entered in euros.)

4. In how much time would you like to benefit from this investment?

(Answer entered in years.)

5. What is your birthday?

(Answer entered in day/month/year format.)

6. Are you a French tax resident? If you pay income taxes in France, DOM included, you are a French tax resident.

☐ Yes.

☐ No.

7. For what type of investment are you searching?

☐ Responsible. [Note: A subsequent text box clarifies this is an ESG option.]

☐ Classic.

8. How many children do you have?

☐ None.

☐ One child.

☐ Two children.

☐ Three or more.

[Note: If "None" is selected, an error message displays and the questionnaire cannot be continued. The error message reads, "The children's account is available only for your own children. Do not hesitate to contact our team for more information."]

9. What is the annual pre-tax revenue of your household? Think of the entirety of your revenue: salaries, pensions...

☐ Less than €25,000.

☐ From €25,000 to €50,000.

☐ From €50,000 to €100,000.

☐ From €100,000 to €150,000.

☐ More than €150,000.

10. Are you the owner of your main residence?

☐ Yes. [Note: This response leads to Question #11a.]

☐ No. [Note: This response leads to Question #11b.]

11a. How much do you pay each month for your mortgage? (Answer entered in euros.)

11b. What is the amount of your monthly rent? (Answer entered in euros.)

12. What is the value of your property assets?

☐ No property assets.

☐ Less than €100,000.

☐ Between €100,000 and €200,000.

☐ Between €200,000 and €300,000.

☐ Between €300,000 and €500,000.

☐ More than €500,000.

13. What is the estimated value of your financial assets? Sum your financial assets: checking account, savings account, PEL, assurances-vie, PEA, investment account, PEE, in short everything, except your real estate assets. An estimate suffices. (Answer entered in euros.)

14. How much money do you manage to set aside at the end of the month?

☐ Less than €250.

☐ Between €250 and €500.

☐ Between €500 and €1,000.

☐ Between €1,000 and €2,500.

☐ More than €2,500.

15. Could you need all the savings held with [Name of the company] within the next two years?

☐ Certainly not.

☐ Likely not.

☐ Likely.

☐ Very likely.

16. Could you need half of your investment before [the number of years indicated in Question #4] years?

☐ Certainly not.

☐ Likely not.

☐ Likely.

☐ Very likely.

17. Have you ever invested money in an assurance-vie contract, a securities account, or stock savings plan (PEA)? This question allows us to learn more about your previous investment experiences.

☐ Yes.

☐ No.

18. “A high gain prospect implies a high risk of capital loss.” Does the above statement seem true to you?

☐ True.

☐ False.

☐ I do not know.

19. “An ETF is a fund for which the capital is guaranteed.” Does the above statement seem true to you?

☐ True.

☐ False.

☐ I do not know.

20. “By delegating the management of my portfolio to a management company, I renounce making any investment decisions myself on it.” Does the above statement seem true to you?

☐ True.

☐ False.

☐ I do not know.

21. Have you already endured losses on your financial investments?

☐ No, I have not endured a loss on my financial investments.

☐ Yes, of 10% maximum.

☐ Yes, of 20% maximum.

☐ Yes, of more than 20%.

22. What profit/loss ratio are you willing to accept by investing €10,000 over 5 years? There is no right or wrong answer. We ask this question to find out where you stand.

☐ Potential gain of €5,000 / Potential loss of €2,000.

☐ Potential gain of €2,000 / Potential loss of €1,000.

☐ Potential gain of €1,000 / Potential loss of €400.

☐ Potential gain of €500 / Potential loss of €0.

23. What profit/loss ratio are you willing to accept by investing over 10 years? Here again, we are looking to understand your attitude towards risk.

☐ With an expected final gain of 20%, but with a risk of loss of 5%.

☐ With an expected final gain of 30%, but with a risk of loss of 10%.

☐ With an expected final gain of 50%, but with a risk of loss of 15%.

☐ With an expected final gain of 70%, but with a risk of loss above 15%.

24. If your investment loses 10% of its value in 3 months, what do you do? One last step, your behavior during a crisis allows us to define your profile.

☐ I reinvest to benefit from this opportunity.

☐ I wait without panicking.

☐ I sell a portion to limit my potential losses.

☐ I sell everything.

☐ I do not know.

[Note: A recommendation is calculated based on the responses to these first 24 questions, and the client must create an account to proceed. After creating an account, the client accepts or modifies the suggestion, with most clients accepting the suggestion. Thereafter, additional questions are asked about the demographic characteristics of the client.]

25. Sex

☐ Male.

☐ Female.

26. Birthday

(Answer entered in day/month/year format.)

27. Last name

(Answer entered in a free response box.)

28. First name

(Answer entered in a free response box.)

29. Birth country

(Answer chosen from a list of countries.)

30. Birth city

(Answer chosen from a list of cities.)

31. Marital status

☐ Single.

☐ Divorced.

☐ Married.

☐ Separated.

☐ Other civil union.

☐ Widowed.

☐ PACS [Note: a form of civil union unique to France].

32. Legal capacity

☐ Adult not under guardianship [*Majeur capable*].

☐ Adult under guardianship [*Majeur sous tutelle*].

☐ Adult under limited guardianship [*Majeur sous curatelle*].

33. American nationality / residency: Are you an American resident or do you possess the American nationality?

☐ No.

☐ Yes.

34. Nationality

(Answer chosen from a list of countries.)

35. How did you hear about [name of the company]?

☐ Newspaper article.

☐ Newspaper advertisement.

☐ Billboard advertisement.

☐ Internet advertisement.

☐ Website specialized in investment.

☐ An acquaintance.

☐ Internet search engine.

☐ A podcaster, YouTuber, or influencer.

☐ Television.

36. Address

(Answer entered in a free response box.)

37. Email

(Answer entered in a free response box.)

38. Mobile phone number

(Answer entered in a free response box.)

39. You are:

☐ Employed.

☐ Unemployed.

☐ Student.

☐ Retired.

☐ Otherwise inactive.

40. Socio-professional category

(Answer chosen from a list of 18 professions.)

41. Industry

(Answer chosen from a list of 28 industries.)

42. Are you a manager or an employee of a publicly traded company [*société cotée*]?

☐ No.

☐ Yes.

43. Do you hold or have you held a politically exposed position [*fonction politiquement exposée*]? For example: minister, ambassador, member of parliament, administrator of a public business...

☐ No.

☐ Yes.

44. Is there anyone in your entourage who holds or held within the past year a politically exposed position?

☐ No.

☐ Yes.

45. In case of death, you wish the beneficiaries of the contract to be:

☐ Your spouse or the person with whom you have a Civil Solidarity Pact (PACS) in force at the date of death, failing which your children born or in utero, living or represented in equal shares, failing which your heirs in proportion to their hereditary shares, including universal legatees.

☐ One or several other beneficiaries to be detailed.