Stockholding during the COVID-19 Crisis:
An International Comparison

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Abstract

We examine the evolution of risky financial asset ownership during the pandemic in six countries (Belgium, Germany, Spain, France, Italy, and the Netherlands), using newly available data from the Consumer Expectations Survey conducted by the European Central Bank. We first observe that there has been a considerable percentage of risky financial asset investors that have entered the market during the pandemic and have remained invested well into its second year. We also find that there are significant transitions into and out of risky financial asset investment during this period. Finally, we find, through both standard regressions and a randomized control trial using hypothetical wealth gains, that being financially concerned due to the pandemic is strongly negatively associated with both risky financial asset ownership and shares of financial wealth invested in risky assets.

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1. Introduction

During the pandemic, household investment in risky assets did not evolve as many observers predicted. Specifically, instead of reducing exposure to the stock market, many households increased this exposure or even entered the stock market for the first time. Reasons for this increased investment in the stock market include the larger than normal saving induced by the limitations imposed on spending by lockdowns, more time available at home due to lockdowns and furlough schemes, and large drops in various stock markets that presented households with investment opportunities.

We aim to study household investment in risky assets during the pandemic using data from the Consumer Expectations Survey (CES), an ongoing panel administered by the ECB that interviews, since April 2020, about 10,000 households in the six largest euro area economies (Germany, France, Italy, Spain, the Netherlands, and Belgium) on a monthly frequency. The survey is representative of the underlying populations and collects via the Internet high-frequency and fully harmonized information on demographics, income, consumption, financial assets and liabilities, as well as several expectation variables. In this paper we use data from four waves of the CES; specifically, data on household portfolios collected in August 2020, and February, June, and November 2021.

In addition, using data from the June 2021 wave, we use survey evidence on the way that households would spend five windfall lotteries of different sizes (from 5,000 to 50,000 euro), how much of the lottery prizes they would consume, save, or use to repay debt, and how much of the amount saved they would invest in five asset categories (bank accounts, bonds, stocks, mutual funds, retirement accounts). The lottery amounts were randomized, which allows Christelis et al. (2022) to estimate the causal effect of wealth shocks (represented by the lotteries) on risky financial asset investment in the lottery amounts. In

this paper we use the same experiment to see how these causal effects differ by the amount of financial concern due to COVID-19.

We find that there has been a considerable fraction of risky financial asset investors that have entered the market during the pandemic, and that there are also significant transitions into and out of risky financial asset investment during this period. We also find that being financially concerned due to the pandemic is strongly negatively associated with both risky financial asset ownership and shares of financial wealth invested in risky assets.

The paper is organized as follows. Section 2 reviews contributions for the analysis of portfolio rebalancing that are relevant to analyze the dynamics of stockholding during the Covid-19 crisis. Section 3 describes the ECB survey (the CES), while Section 4 discusses descriptive statistics related to stockholding. Sections 5 and 6 report, respectively, econometric estimates of the participation decisions to invest in stocks and other risky assets, and of the associated asset shares invested. Section 7 further discusses the results of the experiment, while Section 8 summarizes our findings.

2. Portfolio choice during Covid-19

The pandemic crisis, with all its attendant negative economic consequences, but also with its very variable severity over time, represents a very good opportunity to study how households adjust their risky financial investments in response to both aggregate- and individual-level shocks. These adjustments are likely to be mediated by households' financial circumstances and other characteristics. Importantly, when studying this issue, one needs to keep in mind the by now well-established fact in the literature that households who invest in risky financial assets are on average richer, more educated, and more financially literate than the rest of the population. This points to the existence of

considerable pecuniary and non-pecuniary costs of risky financial investment, which is thus undertaken by a minority of households in most countries.

Arrondel et al (2016) provide comparative evidence on European stockholders using the first wave of the Eurosystem Household Finance and Consumption Survey (HFCS), a large micro-level data set on households' balance sheets in fifteen euro-area countries. While almost all households hold safe financial assets, only about 20% of households holds risky assets (stocks, bonds, and mutual funds). The ownership rates of these assets categories generally increase with wealth and income, confirming previous findings of Guiso et al (2002, 2003) and Christelis et al (2013), using household survey data from Europe and the US. As discussed below, these positive associations are also confirmed in our data.

The evidence on household portfolio rebalancing in response to real and financial shocks is mixed, highlighting considerable heterogeneity. In summarizing the empirical literature, Guiso and Sodini (2013) conclude that households follow contrarian strategies on average both at individual stock level and when they rebalance the share of financial wealth invested in risky assets. Bilias et al (2014) note that the literature using microeconomic data on stock trading behavior by retail investors suggests that discount brokerage accounts exhibit excessive trading, while retail investors rebalance less frequently, and are often passive (like retirement accounts). Calvet et al (2009) study the dynamics of individual portfolios using a data set containing the disaggregated wealth of all households in Sweden and find that wealthy and educated investors with better diversified portfolios tend to rebalance more actively. They also find that households are more likely to sell directly held stocks and even exit from the stock market if those stocks have performed well. Bilias et al (2014) document considerable portfolio inertia of retail

4

investors using data from the US (PSID and SCF), particularly for those with low education or limited resources.

The 2008 financial crisis provided another opportunity to study the reaction of retail investors to large shocks. For example, Bucher-Koenen, T. and M. Ziegelmeyer (2014) argue that during a stock market downturn, households with low financial literacy are more prone to sell assets that have lost in value, and their losses are likely to be permanent, as these households do not participate in markets' resurgence

Finally, there is by now considerable empirical evidence also about the effect of the Covid-19 crisis on stockholding, at both at the aggregate and the household level. Altig et al. (2020) examine several measures of economic uncertainty before and during the COVID-19, including implied stock market volatility, newspaper-based policy uncertainty, Twitter chatter about economic uncertainty, subjective uncertainty about business growth, forecaster disagreement about future GDP growth, and a model-based measure of macro uncertainty. All these measures show huge uncertainty jumps in reaction to the pandemic, but with differences in timing. Specifically, stock market volatility rose rapidly from late February, peaked in mid-March, and decreased by late March as stock prices partly recovered, while other measures of uncertainty peaked later and recovered more slowly. Baker et al (2020) suggest that government restrictions on commercial activity and voluntary social distancing are the main reasons the US stock market reacted so much more forcefully to COVID-19 than to previous pandemics.

When looking at households' portfolio adjustments during the pandemic, Hanspal et al. (2021), using a survey of US households carried out in April 2020, find that about 50 percent of stockholders at the onset of the crisis made active adjustments to their stock investments since the beginning of the March 2020 stock market crash, with about equal

shares of respondents increasing and decreasing the stock share in their overall financial wealth. Thus, there was considerable heterogeneity in US households' rebalancing of their portfolios in response to the decrease in the value of their stocks due to the pandemic-induced market crash. Menkhoff and Schröder (2022), using a German survey carried out between April and June 2020, find little evidence of portfolio rebalancing in April 2020, while in May investors started buying heavily, in parallel with the market recovery. Young, educated, high income, and risk tolerant investors were net buyers throughout and therefore benefited more from the stock market recovery. In contrast, older individuals, and individuals affected by adverse liquidity shocks from Covid-19 were net sellers.

3. The Consumer Expectations Survey

We contribute to the analysis of stockholding during the Covid-19 crisis using the ECB's Consumer Expectations Survey (CES) - a new online high frequency panel survey of euro area consumer expectations and behavior. Building on recent international experiences and advances in survey methodology and design, as reflected, for example, in the Federal Reserve Bank of New York's Survey of Consumer Expectations (Armantier et al., 2016), the CES was launched in pilot phase in January 2020. The CES has several important and innovative features that help facilitate rich analysis of economic shocks and their transmission via the household sector. Below we provide a summary of these main features – see Georgarakos and Kenny (2020) for a more detailed description of the CES, and ECB (2020) for a first evaluation of the survey.

The CES currently covers the six largest euro area economies (Belgium, Germany, Italy, France, Spain, and the Netherlands) and has achieved its target sample

size of approximately 10,000 households since April 2020. In this paper we use four waves of this survey, namely those conducted in November 2020, and in February, June, and November 2021. The sample is comprised of anonymized individual-level responses from approximately 2,000 survey participants from each of the four largest euro area countries (Germany, Italy, France, Spain) and 1,000 in each of the two smaller countries (Belgium, the Netherlands). Three out of four participants in the four largest euro area countries are recruited via random dialing while the remaining are drawn from existing samples. The survey provides sample weights that we use to make statistics representative of the population.

The large sample size helps ensure the survey's overall representativeness of population structures at both the euro area and component country levels. Respondents are invited to answer online questionnaires every month and must leave the panel between 12 and 18 months after joining. Each respondent completes a background questionnaire upon entry into the panel. This provides a range of important background information that hardly changes on a monthly frequency (e.g., family situation, household annual income, accumulated wealth).

More time-sensitive information is collected in a series of monthly, quarterly, and ad hoc topical questionnaires. For example, expectations and uncertainty measures for both individual future outcomes (e.g., household income growth, access to credit) and macroeconomic concepts (e.g., inflation, growth, and unemployment) as well as concerns about the effect of the COVID-19 shock on own finances and health are asked every month. Detailed questions about household consumption expenditures are asked every quarter, while questions on consumption adjustments to different income shock scenarios are asked in ad hoc topical modules.

Last, the CES is an incentivized survey with respondents receiving a gratuity with a relatively modest monetary value in recognition for their participation. These incentives signal the important value of the data supplied by respondents and strengthen the CES's overall quality by promoting high overall survey response rates, strong panel retention and minimal skipping by participants of individual questions.

The survey's online nature is particularly important in allowing the questionnaires' respond to evolving economic developments, with special sections added to the basic format of the questionnaire. For example, in June 2021 the CES asked respondents to report how they would allocate a lottery, distinguishing between spending, saving into bank accounts, investing in financial assets, and repaying debt. There were five different lottery amounts (5, 10, 20, 30 and 50 thousand euro), which were randomized in the sample. In a follow up question, respondents were asked how they would allocate the financial investment in current accounts and saving accounts, stocks and shares, mutual funds, and retirement and pension products (including whole life insurance). Respondents were also given specific instructions about the meaning of the various financial asset categories. We discuss the results of this experiment in Section 7 below.[1]

Another example of a special CES module is that in November 2021 respondents were asked about when they first invested in stocks and mutual funds, an information that we can use to study whether the Covid-19 crisis was associated with different decisions of first-time entrant. Although the CES started in April 2020, and no direct comparison is possible with pre-pandemic years, these retrospective data allow us to

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[1] For a complete description and analysis of the experiment, see Christelis et al. (2022).

explore whether there were significant differences in patterns of first-time entry before and after the start of the crisis.

4. Stockholding and socioeconomic variables

Table 1 reports descriptive statistics of our CES sample. The prevalence of ownership of stocks held directly is 25%, while that of stocks and mutual funds combined is 34%. Notice that focusing on stocks only provides a lower bound on total stockholding, because some investors hold stocks also through mutual funds. On the other hand, since the questionnaire does not distinguish between different types of mutual funds, the combined investment in stocks and mutual funds represent an upper bound on total stockholding. For this reason, in the paper we report results for both definitions (which we term as narrow and broad definitions of stockholding).

4.1. The profile of European stockholders

The profile of European investors by socioeconomic characteristics is important for both policy makers and financial practitioners. Therefore, it is useful to compare participation and asset shares between groups that differ in terms of specific demographic characteristics. We focus on four such characteristics: investor's education, income, financial wealth, and age. In this Section we summarize these patterns in each country using country-level figures and averaging the data for the entire available time span of the ECB survey. We next report similar figures over time, which are useful to look at portfolio rebalancing and entry/ exit rates during the pandemic.

In interpreting the figures, one should keep in mind that the demographic variables are correlated. For instance, the level of educational attainment of the household, as proxied

by the education of the household head responsible for managing finances, is correlated not only with the income, the wealth, and the employment prospects of the household, but also with its ability to process stock market signals and other information on how to trade in the stock market. Thus, education can affect both the appropriateness of household response to stock market signals and the ability of households to withstand pressure on their finances imposed by stock market downturns. The descriptive analysis is also useful to understand broad data patterns in the new ECB survey, and to compare them with what has been observed in other surveys (such as the ECB Household Finance and Consumption Survey and the US Survey of Consumer Finances).

A very robust finding in recent household portfolio research is that education correlates positively with stock market participation, even controlling for other factors such as income and employment status. The effects of this positive correlation are highly visible in our data on European stockholders. In Figure 1 we distinguish between three educational categories of the household head, namely less than high school, completed secondary education, and having college degree. Figure 1 shows that for each of the six countries of our sample, the extent of household participation in direct and total stockholding increases considerably as we move from relatively low education to college degrees. For instance, in Germany 34% of college graduates are stockholders (about 50 percent including mutual funds), while only 15% (27 percent when including mutual funds) of those with less than high school degree participates in the stock market. In France, the corresponding figures are 27 and 13 percent, respectively (32 and 16 when including mutual funds). The most dramatic difference among education groups is observed in the Netherlands, where 9% (13 when including mutual funds) of those without high school degree are stockholders while among college graduates participation is 30% (43% when including mutual funds).

The propensity of European households to invest in stocks is likely to be influenced not only by education, as a proxy for earnings prospects and financial sophistication, but also by the financial resources (income and financial wealth) available to them. We next examine how stock market participation is related to these two characteristics of the household.

Figure 2 shows how direct stock market participation differs across households at different points in the income distribution. Households are grouped according to the decile in the income distribution to which they belong, and participation rates among households in each decile are plotted. The clear picture that emerges is that higher-income households are more likely to be holding stocks directly. In all countries, participation rates increase significantly faster as we move from the eighth or ninth decile to the top one, compared to how much they vary across lower income deciles.

Comparing across countries, we find that the income-participation gradients are quite similar. Participation rates of the rich – in the top income deciles – are also similar, as they range around 60% in each of the countries of our sample. Furthermore, the income-participation profile is similar for total stockholding in each of the countries considered. Some country differences in overall participation rates seem to arise from differences in the lowest income deciles. For instance, in Italy and Spain direct stockholding is only about 10% in the lowest income decile, as opposed to Germany and Belgium, where it is considerably higher.

Figure 3 plots participation rates against total financial wealth deciles. A clear pattern across all countries is that participation in stockholding, direct or total, is strongly related to financial wealth, with large differences in participation between households in the lowest wealth deciles and those at the top of the wealth distribution. The data show that

11

participation rates in the latter case are about 70% percent or higher in virtually all countries we consider. Furthermore, the wealth-participation profiles are steeper, for each of the countries considered, than the income-participation profiles. The low participation rates of the poor (say, below median wealth) have been generally interpreted as evidence of transaction costs. On the other hand, transaction costs are unlikely to explain why a considerable number of relatively wealthy households (say, above the nineth wealth decile), do not invest in stocks or mutual funds.

The final demographic characteristic we consider in Figure 4 is the age of the household head. When we split the sample in each country according to age-groups, we find that stock market participation follows a hump-shaped pattern in Germany and France. In Italy and Belgium participation is relatively flat until retirement, and more prevalent among older households, while in Spain they tend to decline after retirement. Finally, in the Netherlands participation is rather flat across age groups. Inclusion of mutual funds does not appear to change these patterns. The relation between age and participation has been linked to investors' horizon (younger households have a longer horizon), information costs (the young are less likely to have received information regarding how to invest in stocks), and resources (the young have more limited resources and for them entry costs play a more important role). In interpreting the age-profiles of Figure 4 one should also keep in mind that with it is very difficult to distinguish a pure age profile from cohort effects. That is, it might well be that older German or French households in Figure 4 invest less in stocks because they belong to a different generation, and not because of a genuine age effect.

Importantly, our panel data allow the tracking the evolution of stockownership during the Covid-19 crisis (between August 2020 to November 2021). Figure 5 suggests that there is little change over the four waves of the survey in the prevalence of

stockholding, either direct or including mutual funds. In Figure 6, we break down stockholding during the four survey waves by country. We note that for Belgium, Germany, Spain, and the Netherlands there is no apparent trend, while for France we note a drop of about 5% in stocks and 8% in stocks and mutual funds combined. On the other hand, in Italy we observe an increase in stockholding for both the narrow and broad definitions of about 5%.

In November 2021 respondents were also asked about when they first invested in stocks and mutual funds. This question allows us to determine the households who first invested during the pandemic (denoted as those who first invested in 2020 and 2021). The prevalence of first-time investment in risky financial assets during the pandemic is shown in Figure 7, and we note that first-time investors during the pandemic represent 25% of all investors in November 2021 in the Netherlands, 20% and Belgium and Spain, and about 15% in Germany, France, and Italy. These percentages are considerable and point to a new group of risky asset investors during the pandemic whose stock market participation has persisted for several months. The corresponding total population shares of first-time investors during the pandemic are 8%, 7%, 6%, 5%, 5%, 3% for Belgium, the Netherlands, Germany, Spain, Italy, and France, respectively. Figure 8 shows that first time ownership is positively related to income, financial wealth, and education, and negatively related to age. As we shall see, these bivariate correlations are supported also by multivariate regression analysis.

It is also interesting to examine how prevalent transitions into and out of risky financial asset investment are during the pandemic, given the dramatic changes in the latter's severity during the period we examine. We thus calculate entry rates from one wave to the next, for stocks and stocks and mutual funds combined. These rates can be calculated

in two ways: (i) for both entry and exit rates, as a percentage of the total sample in the lagged wave; (ii) for exit rates, as a percentage of investors in the lagged wave, and for entry rates, as a percentage of non-investors in the lagged wave.

Figure 9 shows the proportions of households entering and exiting from the stock market, with both defined as a share of the total population in the lagged wave.[2] We observe that entry into stocks increases slightly to just above 8% from February to June 2021, but then drops below 7% in November 2021. On the other hand, entry into stocks and mutual funds combined rises smoothly from just below to just above 7% from the first to the third wave. As regards exit from stocks, it remains about constant at 6.5% throughout our period of observation, while exit from stocks and mutual funds combined rises from about 7% in June February and June 2021 to just above 8% in November 2021.

Figures 10 and 11 present a breakdown by country of entry and exit rates, both defined as a share of the population. The country with the largest variability over time is Belgium, in which entry rates increased substantially from February to June 2021, only to drop in November 2021 back to February 2021 levels. On the other hand, exit rates in Belgium dropped from February to June 2021, but increased considerably in November 2021. France also exhibited some time variability, with exit rates dropping by about 3-4% between February and June 2021, while staying roughly constant thereafter. On the other hand, in Germany entry rates decreased while exit rates increased from February to June 2021, while in Spain similar developments took place between June and November 2021. Finally, Italy and the Netherlands show little variation over time, and both their entry and exit rates are at lower levels compared to the other four countries.

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[2] Results using the alternative calculations of entry and exit rates are available upon request from the authors.

We next examine the relation of the conditional asset shares with the same socioeconomic characteristics as in the case of ownership, that is, education, income, financial wealth, and age. As we shall, see predicting conditional asset shares is more difficult than participation. Figure 12 plots the conditional asset shares for three education groups (less than high school, high school, college), revealing relatively small differences across education groups, although it appears that households with lower education tend to invest more in stocks than other groups, conditional on participation. For instance, in France the conditional share of directly held stocks is 40% percent for the less well educated, and about 33% for the other two education groups. In Italy the share is 41% for the two lowest education groups, and 38% for investors with a college degree. These patterns should be contrasted with the large differences in stock market participation highlighted in Figure 1.

Figures 13 and 14 plot conditional asset shares for each decile of the income and wealth distributions. The relation of the shares with income are generally flat (Figure 13), or slightly declining (as in France and Belgium). Figure 14 shows that the risky asset share declines for the first two deciles of the wealth distribution, and then flattens out. One possibility to explain this pattern is that indivisibilities in stocks (i.e., the fact that one cannot buy very small amounts of stocks) may induce low-wealth investors to hold a larger proportion of their wealth in stocks. According to standard portfolio models, risk aversion determines the relation between risky asset shares and wealth. In particular, if preferences exhibit constant relative risk aversion, the relation should be linear, while it should be increasing with decreasing relative risk aversion (decreasing when risk aversion is increasing). Leaving the first two deciles of the financial asset distribution aside, one notices in Figure 14 that there is no clear relationship between financial assets and the

conditional asset share. However, it would be premature to pronounce judgment in favor of constant relative risk aversion, as financial wealth is itself an endogenous variable.

Figure 15 plots conditional asset shares for various age groups. Except for Belgium, where the relation is slightly increasing, it is hard to discern any relationship between asset shares and age. These findings are at odds not only with standard economic theory, but also with the practical advice often given to stockholders by financial advisors. Both theory and financial advisors suggest that conditional portfolio shares invested in stocks should be falling as the household ages. Still, one should keep in mind that Figure 8 does not distinguish between effects due to aging and effects arising from the fact that households of different ages in a cross section belong to different population cohorts. All in all, the picture that emerges suggests that households that do hold stocks do not engage in substantial rebalancing of their portfolios as they age.

We can also examine the evolution of the conditional asset share over time, as we did with ownership. Figures 16 and 17 plot in the total sample and by country the asset share held in stocks and in stocks and mutual funds combined, scaled by total financial wealth, and conditional on owning stocks or stocks and mutual funds combined. Figure 16 shows that the conditional asset shares are rather constant in the first year of the pandemic (August 2020 to June 2021) and decline in the last part of the sample. Figure 17 indicates that the pattern is similar in all countries, but the decline of the conditional shares between August and November 2021 is more pronounced in France. The conditional median share in total financial assets of stocks held directly is 22% for the whole sample, while for stocks and mutual funds combined is 36%, which implies that when households in our sample decide to invest in risky financial assets, these investments form a substantial part of their portfolio.

To summarize the descriptive evidence on ownership and conditional risky asset shares, the ECB survey confirms findings from other surveys. In all countries examined stock market participation is strongly correlated with resources (income and financial wealth). At the bottom of the wealth distribution very few households invest in stocks, either directly or through mutual funds. We take this as evidence that entry costs, minimum investment requirements, and informational costs limit severely stock market participation. We also observe a strong correlation between education and stockholding, and that among the richest segment of the population (even in the top decile of the wealth distribution) many households do not invest in stocks, a fact that might be related to information costs and to reasons that are not related to resources. Conditional asset shares are rather similar across countries and characteristics. The most visible pattern is a rise in the conditional asset shares at low levels of financial wealth, and a rather flat profile at higher wealth levels.

Finally, we describe the main variables that we will use to analyze portfolio dynamics during the Covid-19 crisis. These include demographic variables, economic resources, preferences (a proxy for risk aversion), and concern about the Covid-19 crisis.

The two questions on concern about finances and about the respondent's and his/her family members health are both asked on a scale from 0 to 10. The mean level of financial concern is 5.78, while that of health concern is 6.30. Furthermore, there is wide heterogeneity in this concern, with 29% of the sample being very concerned (score above or equal to 8), while many show little concern (15% assigns a score below 3). The overall levels of concern are thus considerable, and the heterogeneity of individual concerns helps identifying their effect on households' economic decisions.[3]

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[3] Christelis et al. (2021) examine the effect of these concerns on household spending, while here we focus on their effects on portfolio allocations.

The average age of the sample respondents is 49.7 years, while 48% are male. With respect to education, 15% have only primary education, 32% secondary education, while 53% at least some tertiary education. The average household size is 2.56 members, while median household income is 30,000 euros. When respondents are asked whether they have enough resources to make an unexpected payment equal to one month of income, 72% respond that they indeed have this liquidity.

Respondents are also asked a question on their required compensation for taking an income gamble, and 30% report that they would require little or no compensation, thus denoting having a relatively high tolerance for risk. They are also asked three standard questions on financial literacy (devised by Lusardi and Mitchell, 2011) and about 52% manage to answer correctly two or three of them.

Importantly, given that the CES aims to have a sample representative of the overall population of the six countries, calibrated sample weights are calculated that make the weighted number of respondents equal to 30% of the total for Germany, 22% for Italy and France, 17% for Spain, 6% for the Netherlands, and 4% for Belgium.

5. Regressions for stock market participation

We first analyze the associations of household demographic and economic characteristics with ownership of stocks and mutual funds. We then turn to the analysis of first-time ownership during the crisis. Finally, we examine the associations of household characteristics with the decision to enter and exit the market for risky financial assets.

5.1. Ownership of stocks and mutual funds

The relations between direct ownership of stocks and mutual funds and demographic and economic characteristics are shown in Table 2, using both OLS and linear fixed effect probability models. OLS results indicate that financial concerns due to COVID-19 have a strong negative association with direct stock ownership. Specifically, when the level of concern rises from zero (presumably the pre-pandemic level) to its median value of six, the probability of ownership drops by about 4.8 percentage points. On the other hand, health concerns are not associated with direct stock ownership. In line with existing literature (see Guiso and Sodini (2013) for a survey), we observe strong positive associations of direct stock ownership with being male, education, income, having liquidity, and being financially literate, while we find no association with risk preferences. Living in Belgium, Spain, Italy, and Germany has a stronger positive association with direct stock ownership compared to living in France (the base country), while living in the Netherlands has a weaker association.

When looking at results from a linear fixed effect mode, the negative association of pandemic-induced financial concerns with direct stock ownership is halved compared to its OLS estimate, but the coefficient is statistically different from zero, as is also the case with the estimated effect of having liquidity. The remaining control variables are time-invariant and thus cannot be included in the fixed effects model.

The results for the combined ownership of stocks and mutual funds are shown in Table 3. Results are very similar to the results for direct stock ownership, with the negative association of pandemic-induced financial concerns being even stronger in this case.

All the above results are robust to the inclusion of the empirical specifications of additional control variables such as the households' investment horizon, as well as its

expectations about its own income in one year and the inflation rate. Results using the augmented empirical specifications are available from the authors upon request.

5.2. First-time ownership of stocks and mutual funds during the pandemic

We now turn to the analysis of first-time ownership of risky assets (stocks directly held and mutual funds) during the pandemic. The information on the time of first-time ownership was provided in the November 2021 wave, and thus we use that wave for our analysis. We can examine first-time risky asset ownership during the pandemic in two ways: (i) using only the subsample of owners in November 201; (ii) using the whole sample.

We first examine results conditional on ownership, while noting that using an estimation sample defined by an endogenous decision such as ownership can induce biases in our estimates. Results conditional on ownership (namely marginal effects from a probit regression) are shown in the first three columns of Table 4, and we note that pandemic-induced financial concerns have a weakly significant positive association with first-time ownership during the pandemic. Moreover, factors that are typically positively associated with risky asset ownership, namely education, being a male, income, liquidity, financial literacy, and the propensity to take risks, have instead a negative association with risky asset ownership in this context.

These results indicate that relative newcomers to risky asset ownership during the pandemic have, on average, characteristics that are less conducive to stock ownership (e.g., lower education, income, tolerance for financial risk and financial literacy, as well as higher financial concern due to COVID-19) than investors that have been in the market for a longer time. Therefore, we can conclude that the special conditions obtaining during the pandemic

20

(higher savings, more free time due to lockdowns and furloughs, stock market drops in the first phase of the pandemic) have made risky financial assets attractive to households that would have been less likely to invest in these assets under normal circumstances.

On the other hand, when we look at associations of first-time risky asset ownership during the pandemic using the whole sample (hence, observations of non-owners as well as those of first-time owners pre-pandemic take the value of zero in the binary outcome variable), we note that associations with characteristics such as education, income, risk preferences, financial literacy and financial and health concerns due to COVID-19 are now statistically insignificant. Only having liquidity and being a male have a strong and statistically significant positive association with risky asset ownership in the whole sample. These results, combined with the results conditional on ownership, suggest that the characteristics of first-time risky financial asset owners during the pandemic are generally closer to those of non-owners in the population, except for gender and having liquidity.

5.3. Entry into and exit from stocks and mutual funds

It is also interesting to examine the associations of household characteristics with the decision to enter and exit the market for risky financial assets. Before proceeding, we should note that results for entry are estimated using the sample of non-owners in the lagged wave, while results on exit using the sample of owners in the lagged wave. Hence, in both cases, estimation is conducted on selected samples, thus potentially leading to biases in our results.

Results on entry and exit in direct stock ownership are shown in Table 5. We note that the pandemic-induced financial concern reduces the probability of transition from non-ownership to ownership of directly held stocks by about 1.2% when the level of concern

goes from zero to six (its median value). Moreover, we observe that also education, income, liquidity, and risk tolerance have positive associations with entry in the stock market. Living in Spain, Italy and the Netherlands reduces the probability of entry compared to France (the base country), while entry is also positively associated with the passage of time, perhaps because the initial shock of the pandemic is weakened with time.

Results for exit (shown in the last three columns of Table 5) suggest that, as expected, being more financially concerned due to COVID-19 is associated a higher probability of divesting from directly held stocks. As expected, education, income, liquidity, and financial literacy are all negatively associated with the probability of divesting from directly held stocks. Moreover, living in France increases the probability of exiting investment into directly held stocks compared to all countries.

Results on the entry into and exit from stocks and mutual funds combined are shown in Table 6. We observe that in the case of entry, the pandemic-induced financial concern is not associated with entry but is strongly positively associated with exit (a change in the concern from zero to six increases the probability of exit by 5.4%). As expected, being a male, being more financially literate and having liquidity are all positively associated with entry and negatively with exit. Living in Germany has a stronger association with entry compared to living in France, while living in Spain and the Netherlands have a weaker one. On the other hand, living in all countries has a lower association with exit than living in France.

As was the case with the results in Section 5.1, the results in Sections 5.2 and 5.3 are robust to the inclusion of the empirical specifications of additional control variables such as the households' investment horizon, as well as its expectations about its own income in one year and the inflation rate.

22

6. Regressions for asset shares

In Table 7 we show marginal effects of characteristics on the share of total financial assets invested in directly held stocks. These marginal effects are derived from random effects Tobit regressions, which are used because shares are truncated from below by zero and from above by one. Moreover, we use random effects specifications because fixed effect Tobit regressions suffer from the incidental parameter bias, as Tobit models are nonlinear.

Marginal effects for both conditional and unconditional shares (shown in the first three and last three columns of Table 7, respectively), are very similar. Financial concerns due to the pandemic have a negative effect on both shares (equal to -0.6% and -1.2%, respectively, when concern goes from zero to its median value of six), while health concerns are not associated with either share. On the other hand, being male, education, income, liquidity, and financial literacy are all positively associated with both shares. Living in Belgium and Germany has a stronger association with both shares compared to living in France, while living in the Netherlands has a weaker one.

Corresponding results for the share invested in stocks and mutual funds combined are shown in Table 8. The negative association of pandemic-induced financial concerns with both investment shares is a bit stronger than in the case of directly held stocks, while positive associations of education, income, liquidity, and financial literacy with both shares can be again observed. Finally, living in Belgium, Germany, Spain, and Italy is associated with larger shares invested than living in France.

Once more, the above results on asset shares are robust to the inclusion of the empirical specifications of additional control variables such as the households' investment horizon, as well as its expectations about its own income in one year and the inflation rate.

7. Experimental results by the level of pandemic-induced financial concern

In this section we discuss some of the results of the randomized control trial that examines the effect of windfall gains on risky asset ownership, as described in Section 3 above. Specifically, in Table 9 we report the results of our experiment with five different hypothetical scenarios of lottery gains (discussed more fully in Christelis et al, 2022), which were randomly assigned in our sample. Because of this random assignment, average reported participation represents causal estimates of the effects of the five different wealth shocks on these outcomes. The reason is that whatever other factors affect participation and shares invested (e.g., education, risk aversion, income etc.) are uncorrelated with the randomly assigned hypothetical wealth gains, and thus the causal effect of the latter can be estimated via simple differences in mean outcomes.

As can be seen from Table 9, larger wealth shocks induce positive and progressively stronger responses in participation for both directly owned stocks and stocks and mutual funds combined. These responses range from about 31% to 41% in the former case, and from about 31% to 46% for the latter case. These experimental results clearly show that wealth effects have a strong positive causal impact on risky asset investment, net of any other factors that may affect the latter.

As a further test of the effect of the pandemic on portfolio decisions, we examine the effect of pandemic-induced financial concern on risky assets investment using the

experimental setup described in Section 3. To achieve this, we break down the effects of the hypothetical lottery gains by levels of this concern, namely by separately examining results for levels of concern less or equal to the sample median and for levels above the median.

Results are shown in Table 10. The experiment shows that the positive effects of the randomly assigned wealth gains are considerably higher when the level of financial concern is lower. The difference for directly held stocks is 2% over all levels of wealth gains, while for stocks and mutual funds combined it is equal to 4.5%.

We also note that, in the case of stocks and mutual funds combined, the increase in participation that results from higher hypothetical wealth gains is higher when the concern is weaker (about 16% total increase with lower concern compared to the lowest gain of 5,000 euros, while about 13.7% total increase with high concern). This result suggests that being financially concerned due to COVID-19 not only lowers the propensity to invest in risky financial assets, but also dampens the positive effect on this investment, even when the wealth shock is substantial.

8. Summary

In this paper we examine the evolution of risky asset ownership during the pandemic in six countries (Belgium, Germany, Spain, France, Italy and the Netherlands), using newly available data from the CES high-frequency survey conducted by the ECB. We first observe that there has been a considerable number of risky financial asset investors that have entered the market during the pandemic and have remained in the market well into the second year of the pandemic. These new entrants have on average, demographic and economic characteristics that are less conducive to investment in risky financial assets

compared to investors who have been longer in the market. We also find that there are significant transitions into and out of stocks and mutual funds during the pandemic. Finally, we find, through both standard regressions and a randomized control trial using hypothetical wealth gains, that being financially concerned due to the pandemic is strongly negatively associated with both risky financial asset ownership and shares of financial wealth invested in risky assets.

These results imply that the decision to invest in stocks depends on resources, as found in many previous empirical studies, as well as households' financial concerns due to Covid-19, which can be interpreted as an indicator of concern over both the level and the variability of future resources. Our results also imply that targeted government interventions that aim to help households financially negatively affected by the pandemic, liquidity constrained households, and households with lower incomes will also lead to increased investment in risky financial assets.

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Figure 1. Stock market and mutual fund participation, by education
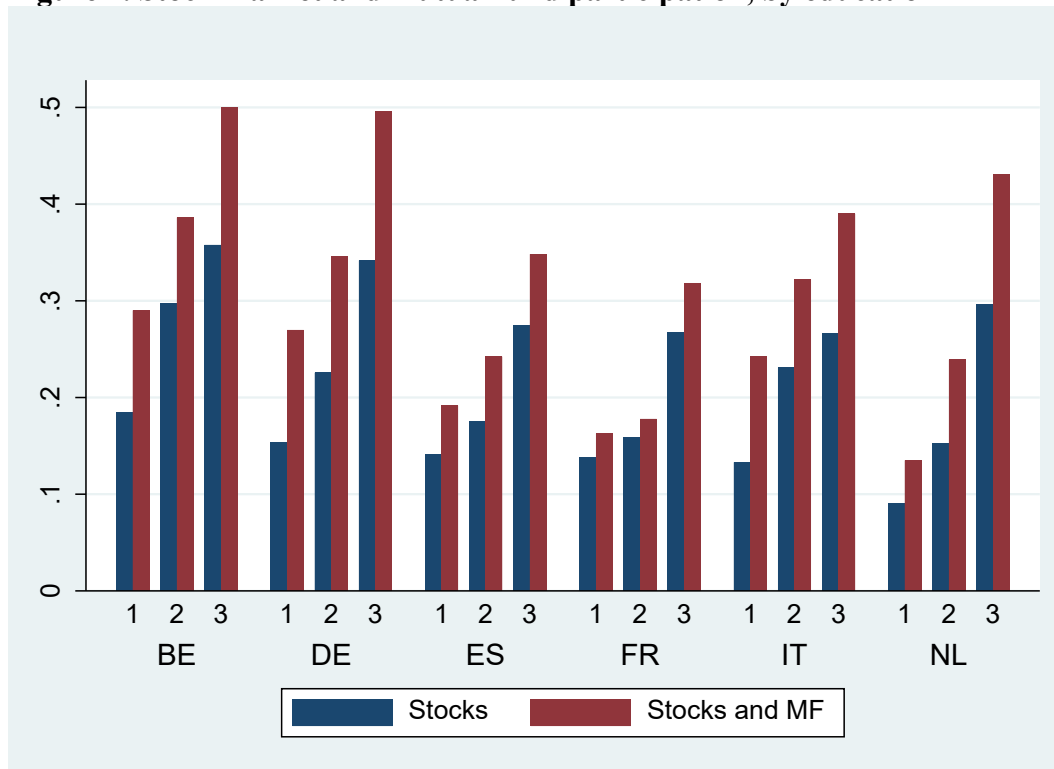
Figure 2. Stock market and mutual fund participation, by income deciles
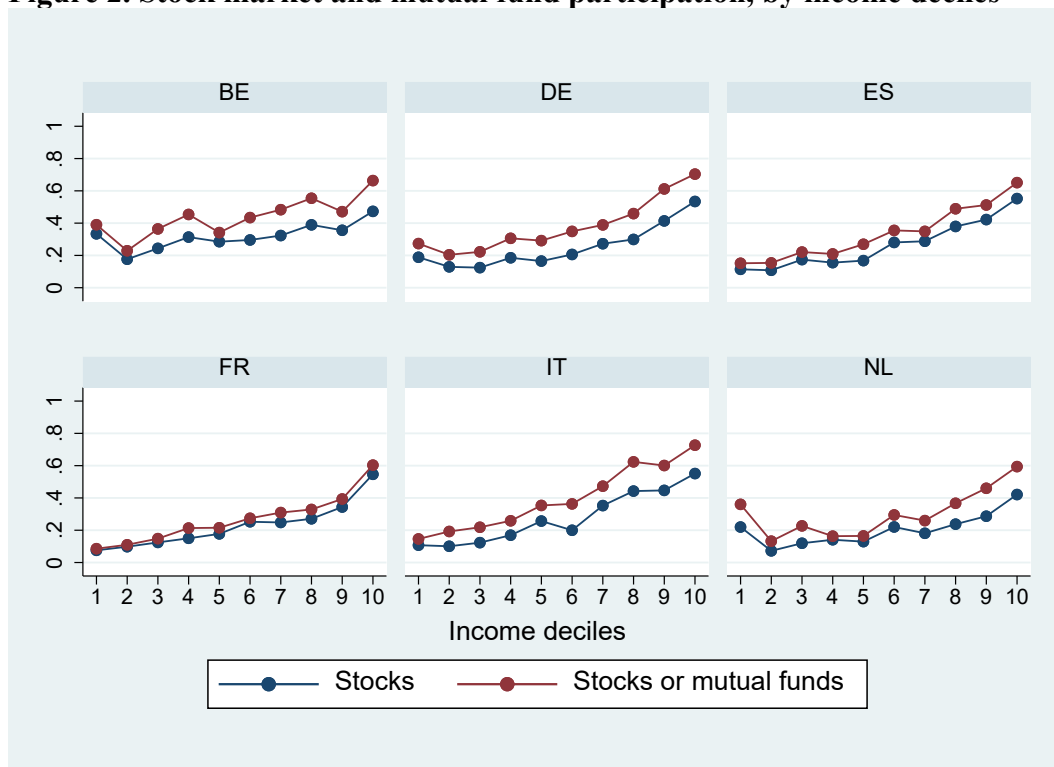
Figure 3. Stock market and mutual fund participation, by financial assets deciles
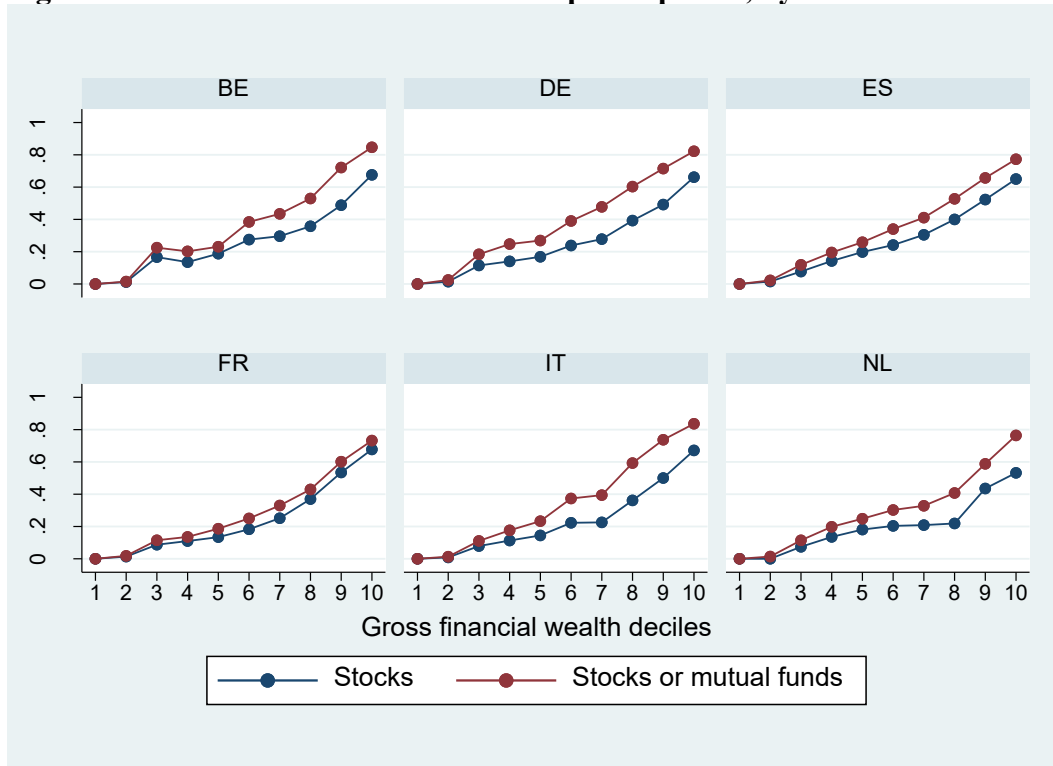
Figure 4. Stock market and mutual fund participation, by age
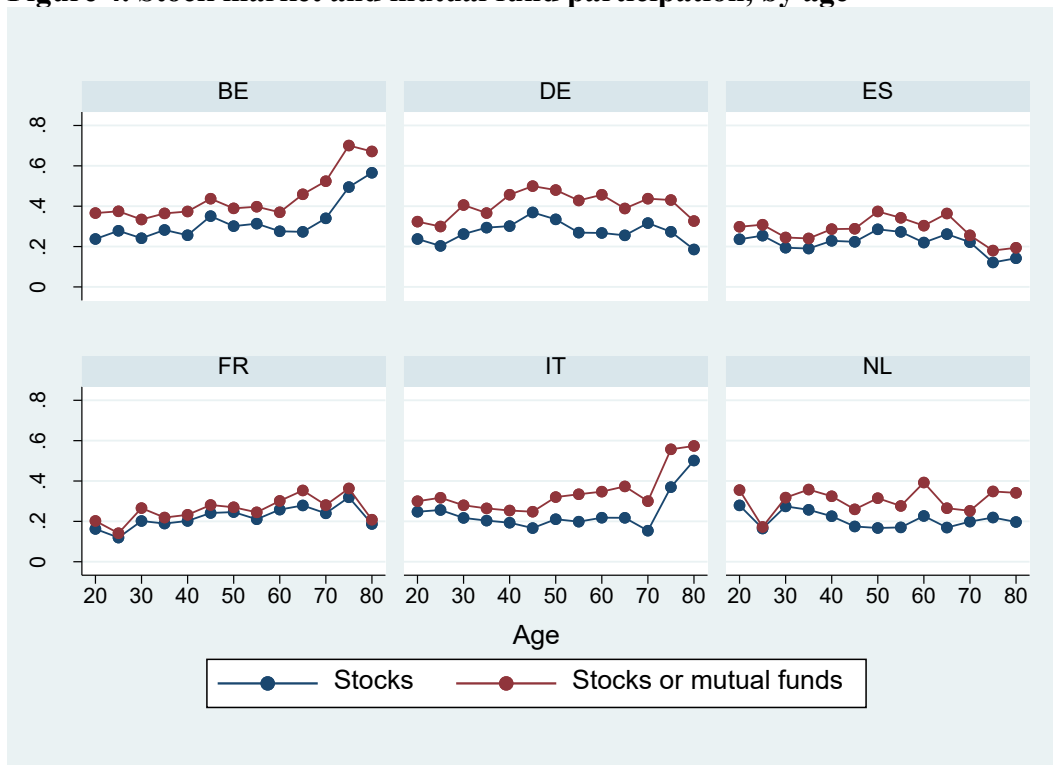
Figure 5. Participation over time
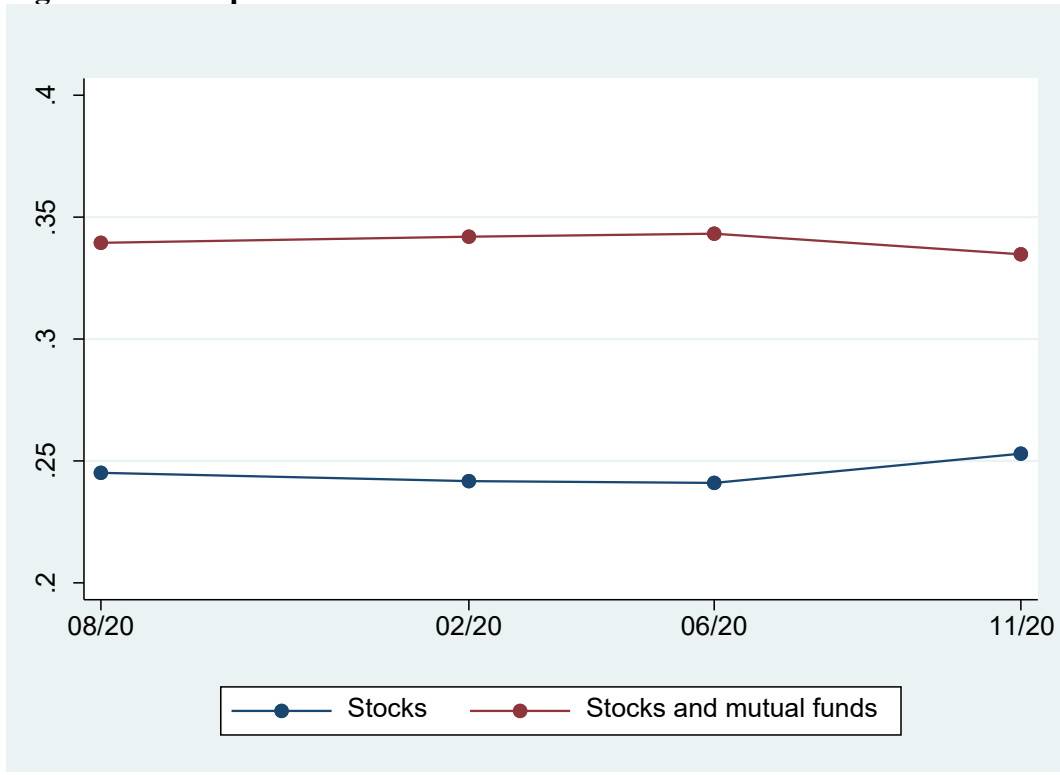
Figure 6. Participation over time, by country
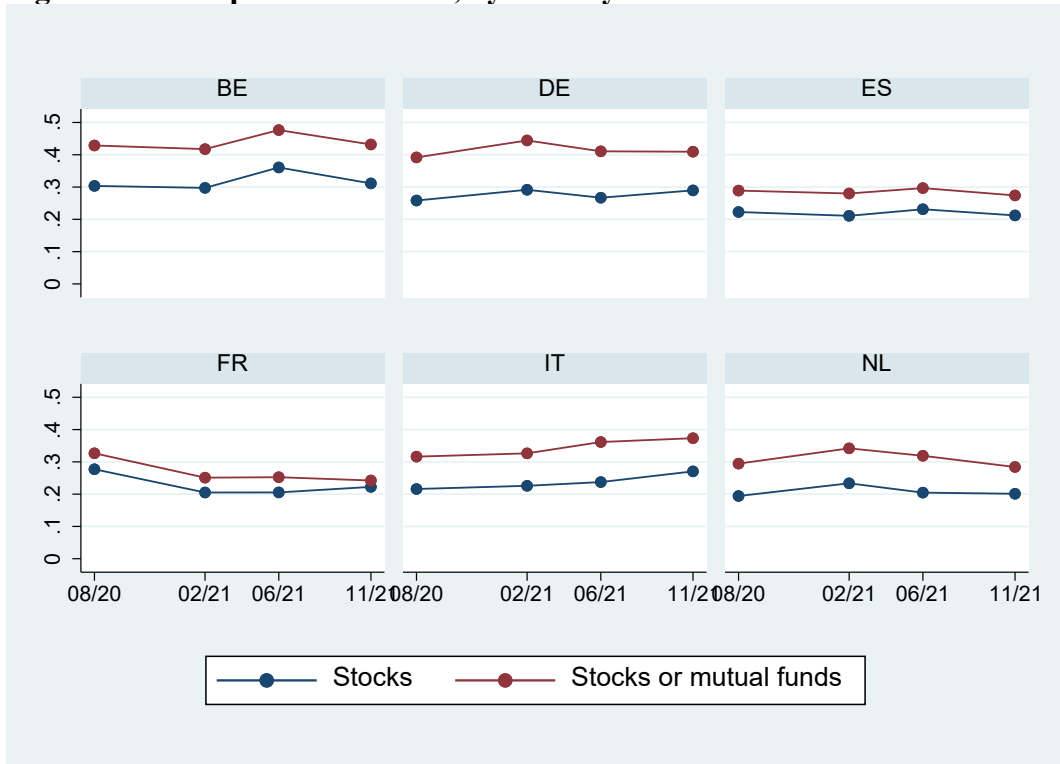
Figure 7. First time ownership during Covid-19
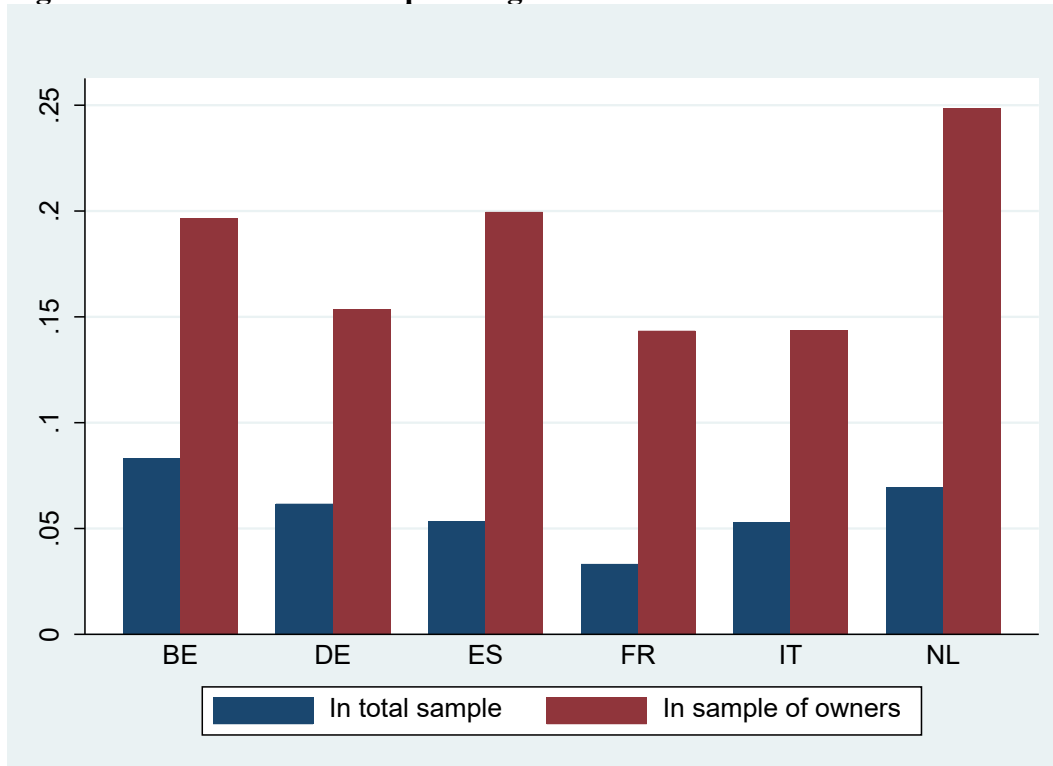
Figure 8. First time ownership from stocks and mutual funds during Covid-19, by socioeconomic variables
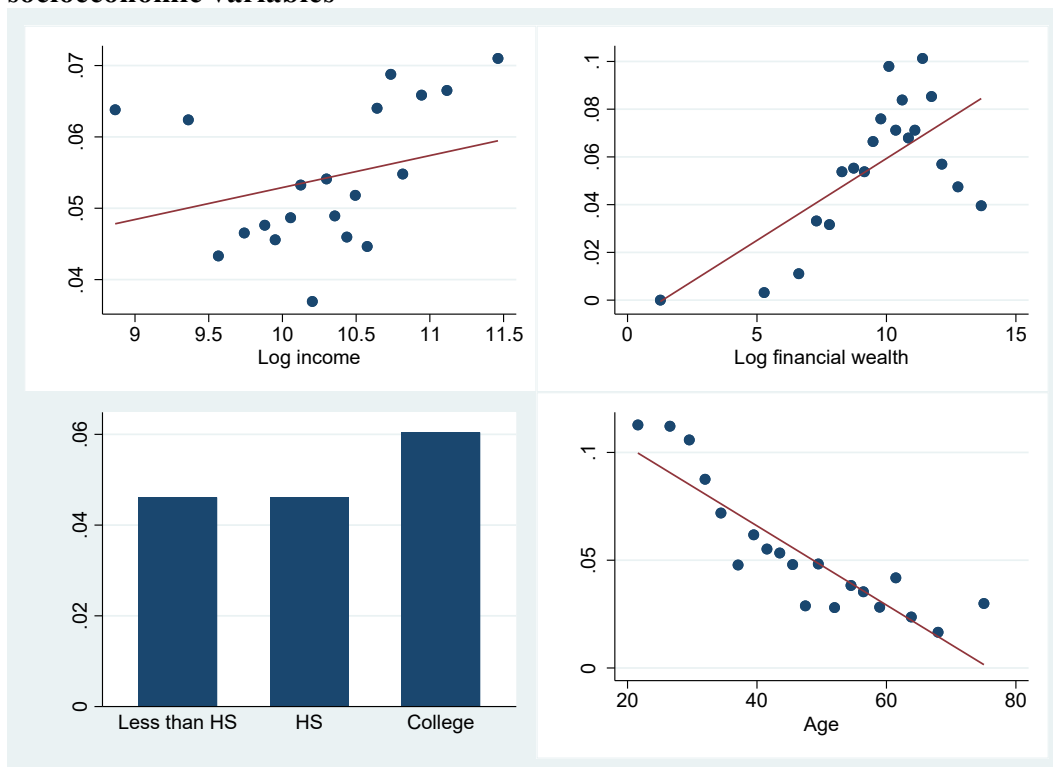
Figure 9. Entry and exit from stocks and mutual funds during Covid-19
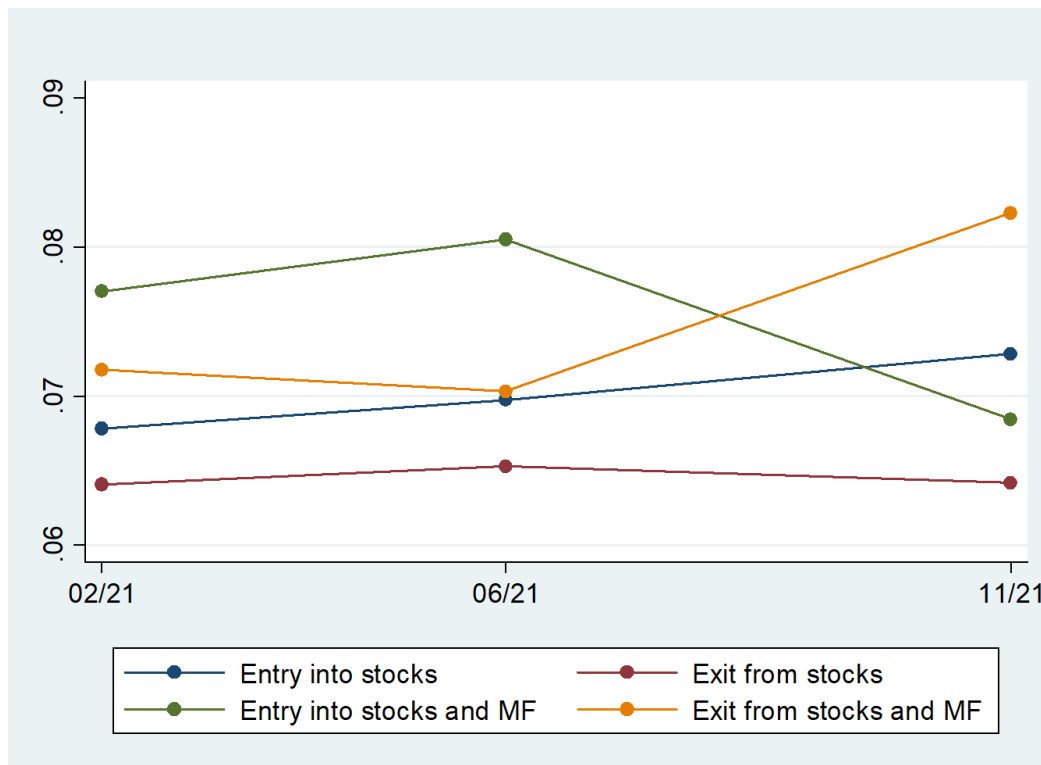
Note: Entry and exit rates are defined with respect to the total population.

Figure 10. Entry and exit from stocks during Covid-19, by country

Graphs by Country
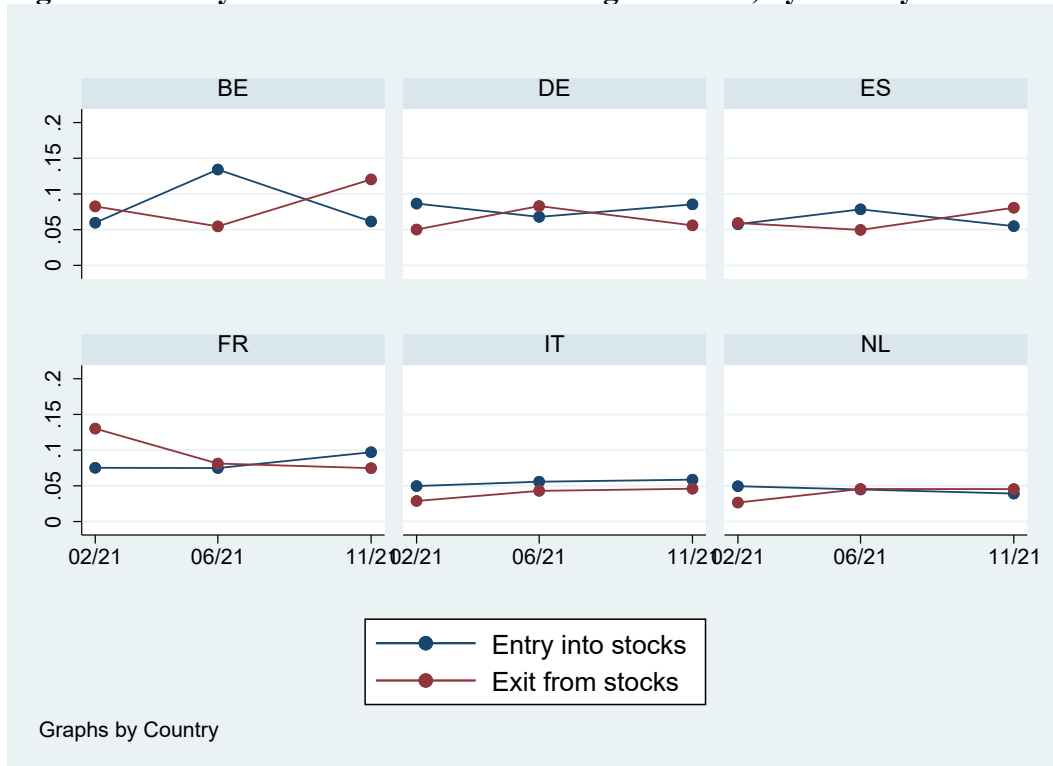
Figure 11. Entry and exit from stocks and mutual funds during Covid-19, by country

Graphs by Country
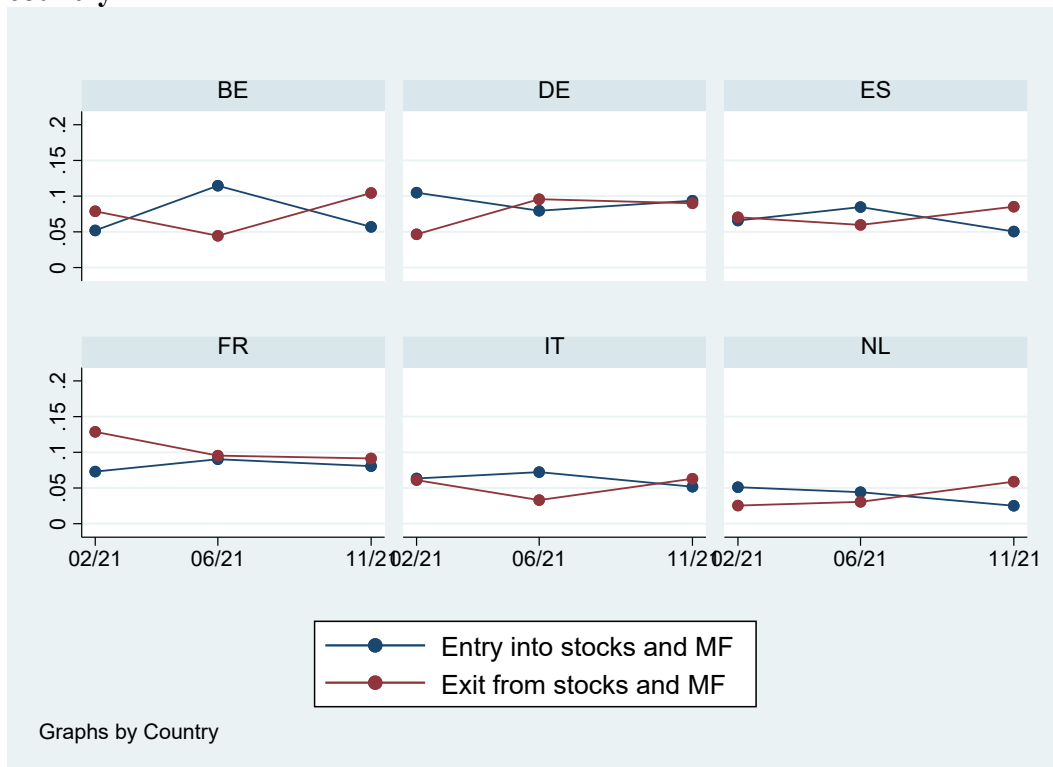
Figure 12. Conditional asset share of stocks and mutual funds, by education
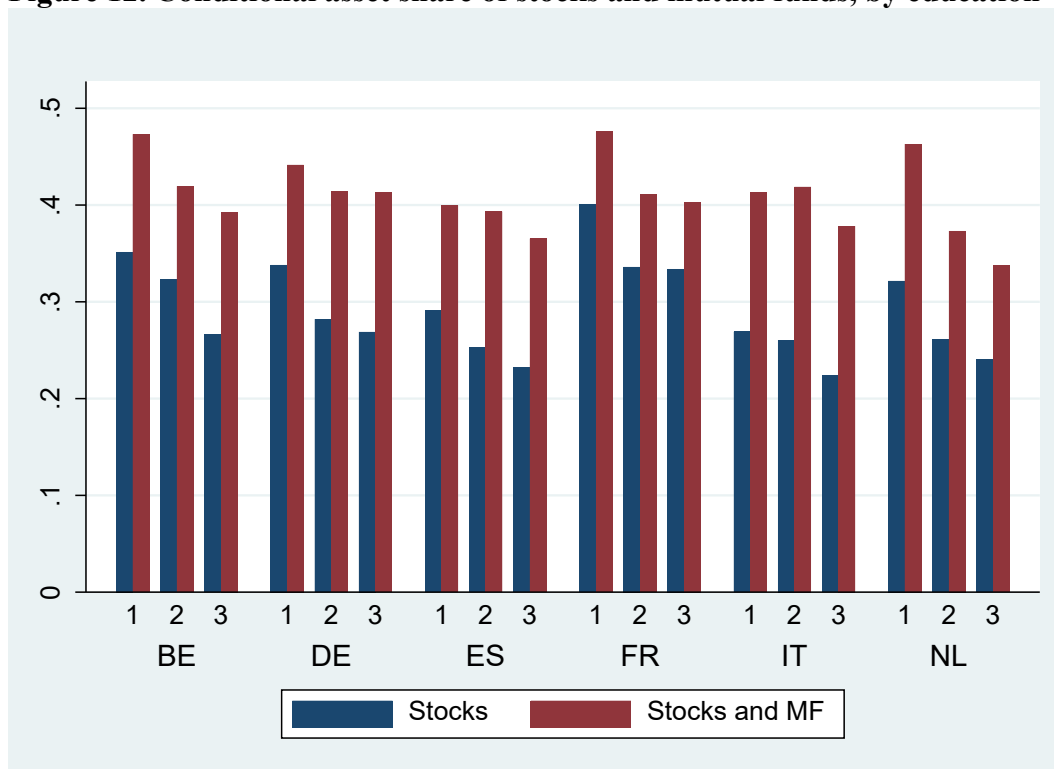
Figure 13. Conditional asset share of stocks and mutual funds, by income deciles
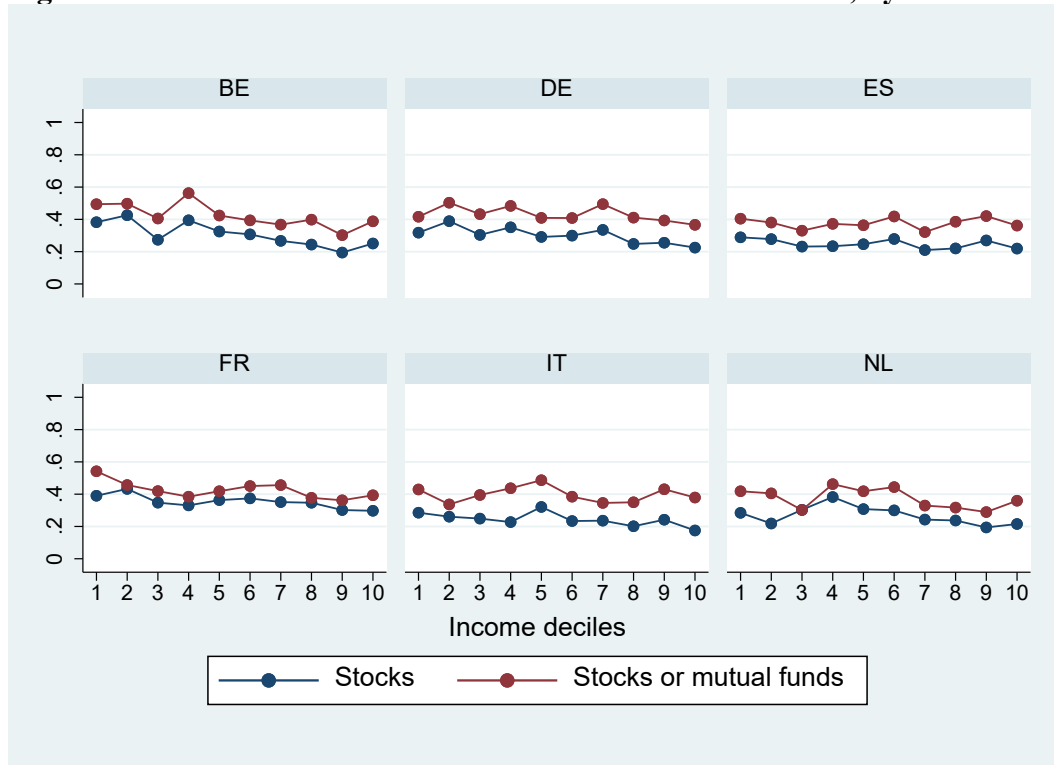
Figure 14. Conditional asset share of stocks and mutual funds, by financial wealth deciles
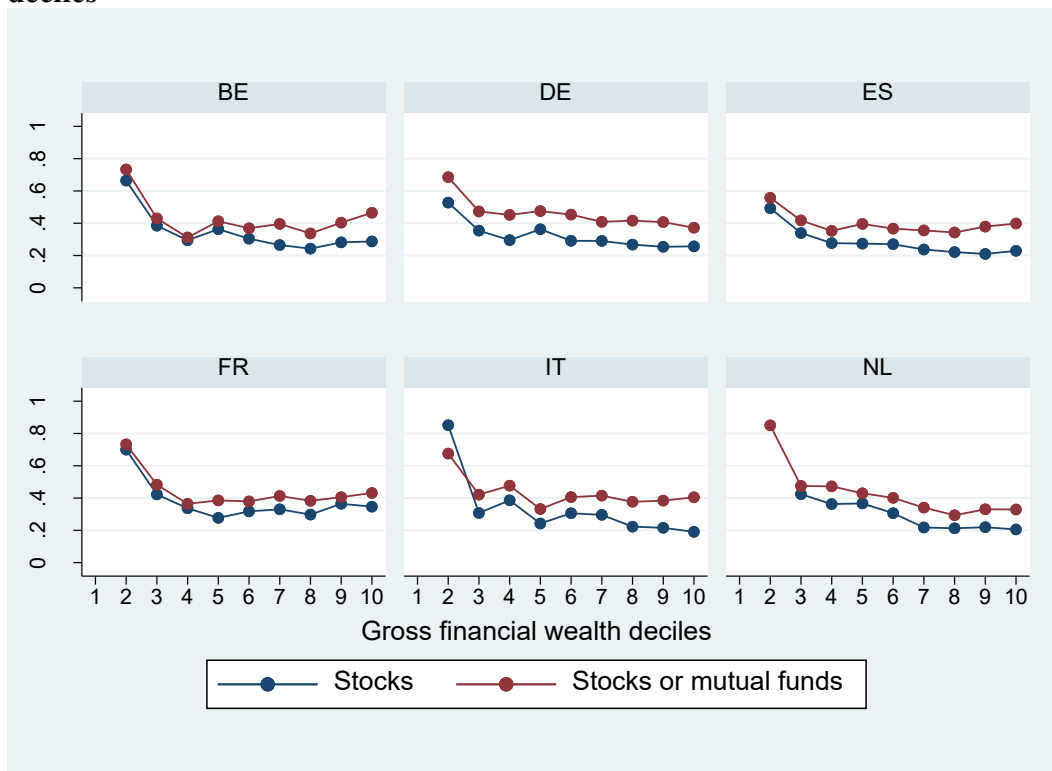
Figure 15. Conditional asset share of stocks and mutual funds, by age
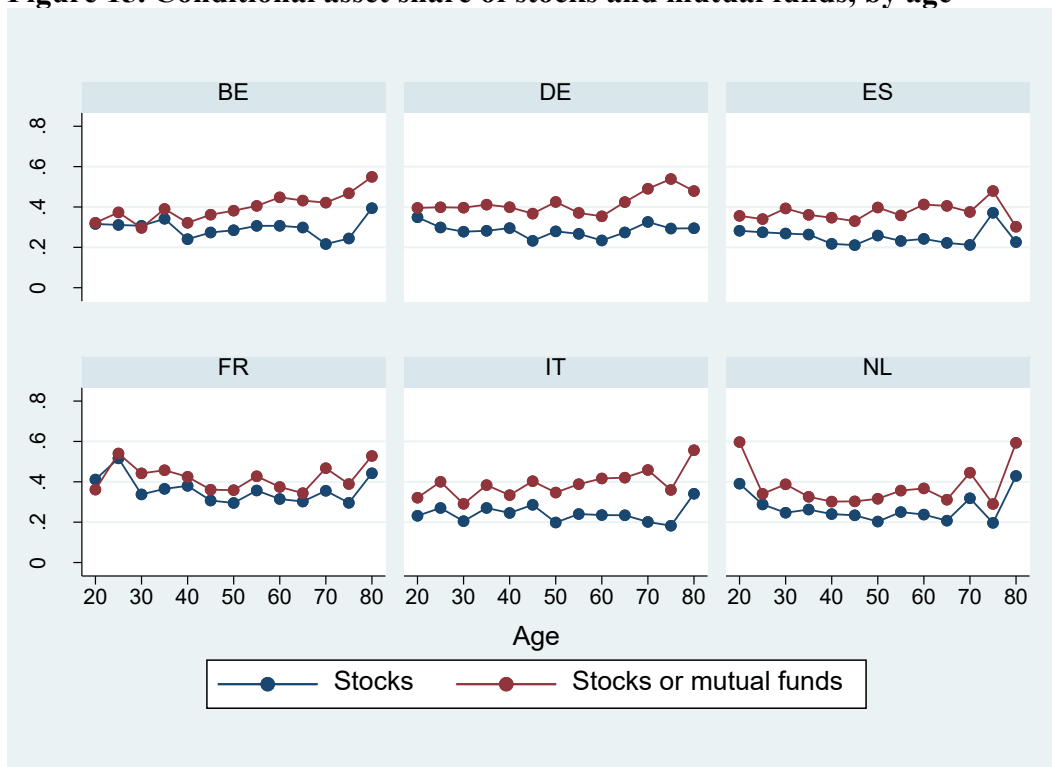
Figure 16. Conditional asset share, over time
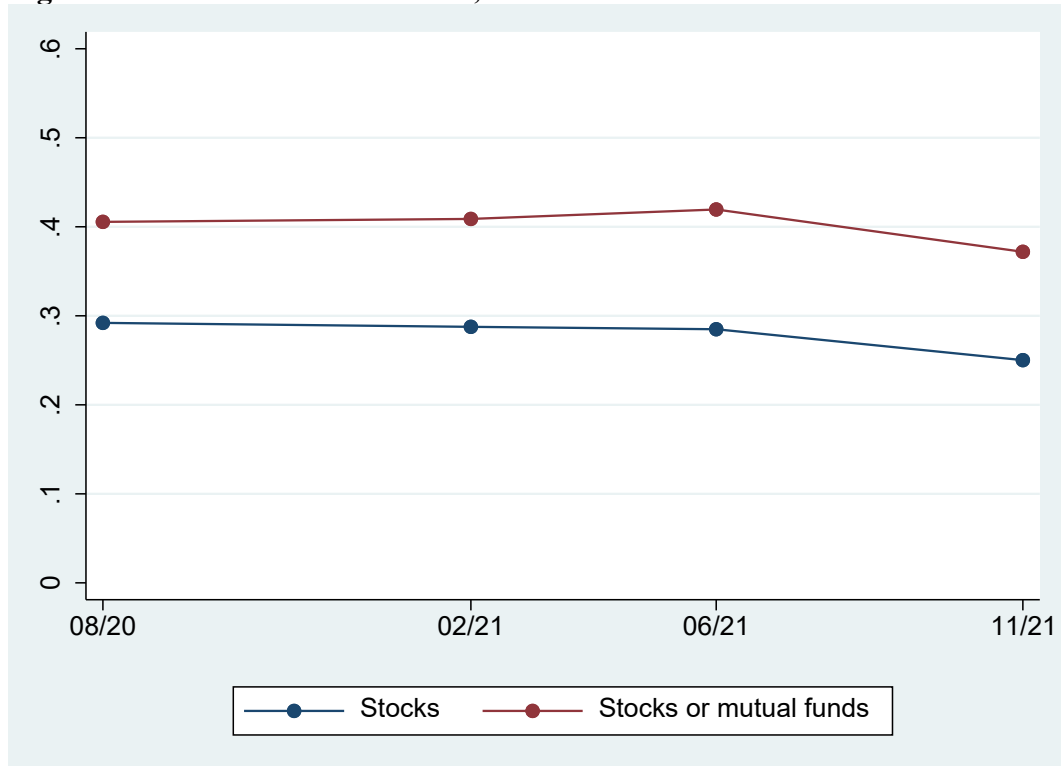
Figure 17. Conditional asset share, by country over time
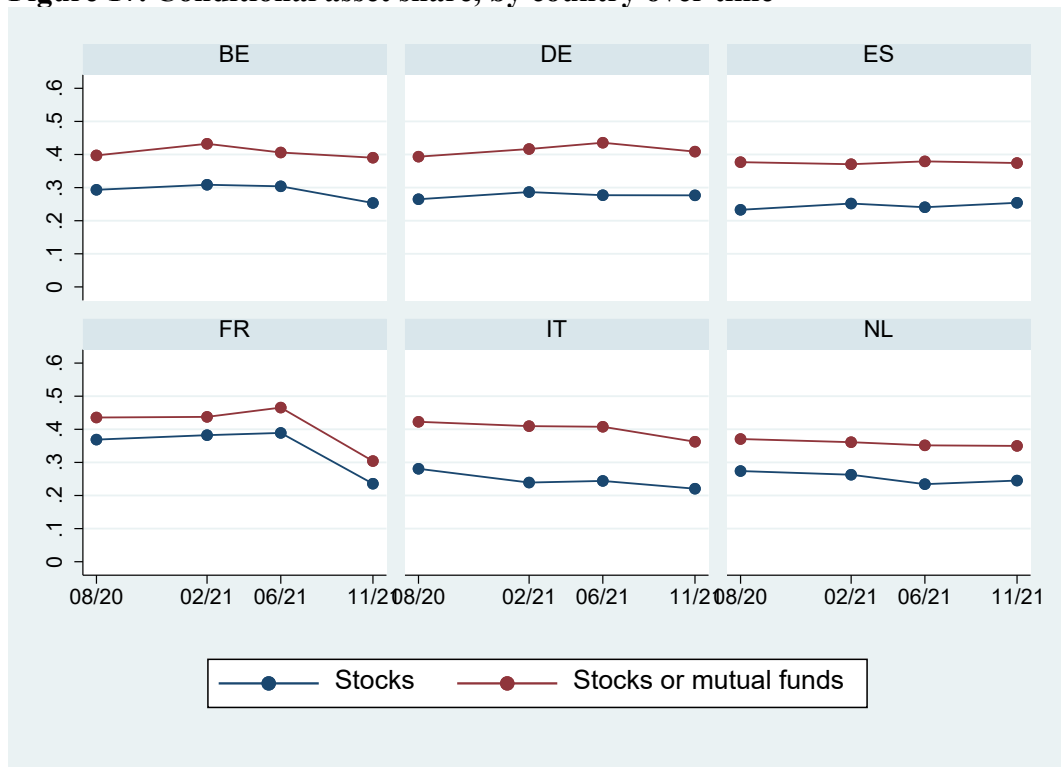
Table 1. Descriptive statistics

Variable	Statistic	N
Owns stocks	0.25	42,626
Owns stocks or mutual funds	0.34	42,158
Share of stocks (conditional median)	0.22	5,507
Share of mutual funds (conditional median)	0.36	12,294
Concern due to Covid-19 about financial situation	5.78	44,079
Concern due to Covid-19 about health	6.30	44,114
Age	49.7	44,633
Male respondent	0.48	44,610
Primary education	0.15	44,633
Secondary education	0.32	44,633
Tertiary education	0.53	44,633
Household size	2.56	44,633
Annual household income (median)	30,000.0	44,633
Has liquidity	0.72	44,633
High tolerance for financial risk	0.30	43,864
High financial literacy	0.52	44,121
Belgium	0.04	44,633
Germany	0.30	44,633
Spain	0.17	44,633
France	0.22	44,633
Italy	0.22	44,633
Netherlands	0.06	44,633
August 2020 wave	0.25	44,633
February 2021 wave	0.25	44,633
June 2021 wave	0.25	44,633
November 2021 wave	0.25	44,633

Note: Means are shown for all variables, unless otherwise noted. Statistics use sample weights. The sample consists of the CES waves from August 2020, and February, June, and November 2021.

Table 2. Ownership of directly held stocks

Variable	OLS			Fixed effects		
	Coeff.	Std. Error	p-value	Coeff.	Std. Error	p-value
Financial concern due to COVID-19	-0.008	0.001	0.000	-0.004	0.001	0.000
Health concern due to COVID-19	-0.001	0.001	0.473	-0.001	0.001	0.580
Age	0.000	0.000	0.195	-..-	-..-	-..-
Male	0.071	0.004	0.000	-..-	-..-	-..-
Secondary education	0.017	0.007	0.012	-..-	-..-	-..-
Tertiary education	0.065	0.006	0.000	-..-	-..-	-..-
Household size	0.007	0.002	0.000	-..-	-..-	-..-
Log of household income	0.099	0.004	0.000	-..-	-..-	-..-
Has liquidity	0.110	0.005	0.000	0.056	0.007	0.000
High tolerance for financial risk	0.004	0.005	0.362	-..-	-..-	-..-
High financial literacy	0.082	0.004	0.000	-..-	-..-	-..-
Belgium	0.068	0.008	0.000	-..-	-..-	-..-
Germany	0.042	0.006	0.000	-..-	-..-	-..-
Spain	0.045	0.007	0.000	-..-	-..-	-..-
Italy	0.028	0.006	0.000	-..-	-..-	-..-
Netherlands	-0.045	0.008	0.000	-..-	-..-	-..-
February 2021 wave	0.001	0.006	0.859	-0.002	0.004	0.581
June 2021 wave	0.004	0.006	0.553	0.008	0.005	0.080
November 2021 wave	0.019	0.006	0.001	0.014	0.005	0.003
Constant	-0.969	0.037	0.000	0.225	0.010	0.000
Number of observations	40,858			42,050		

Note. The table reports marginal effects from probit regressions. The sample consists of the CES waves from August 2020, and February, June, and November 2021.

Table 3. Ownership of stocks held directly and mutual funds

Variable	OLS			Fixed effects		
	Coeff.	Std. Error	p-value	Coeff.	Std. Error	p-value
Financial concern due to COVID-19	-0.009	0.001	0.000	-0.006	0.001	0.000
Health concern due to COVID-19	0.000	0.001	0.889	0.001	0.001	0.310
Age	0.001	0.000	0.000	-..-	-..-	-..-
Male	0.076	0.004	0.000	-..-	-..-	-..-
Secondary education	0.015	0.007	0.039	-..-	-..-	-..-
Tertiary education	0.084	0.007	0.000	-..-	-..-	-..-
Household size	0.006	0.002	0.002	-..-	-..-	-..-
Log of household income	0.118	0.004	0.000	-..-	-..-	-..-
Has liquidity	0.157	0.005	0.000	0.063	0.007	0.000
High tolerance for financial risk	-0.002	0.005	0.706	-..-	-..-	-..-
High financial literacy	0.124	0.005	0.000	-..-	-..-	-..-
Belgium	0.129	0.009	0.000	-..-	-..-	-..-
Germany	0.128	0.007	0.000	-..-	-..-	-..-
Spain	0.083	0.007	0.000	-..-	-..-	-..-
Italy	0.100	0.007	0.000	-..-	-..-	-..-
Netherlands	0.004	0.009	0.643	-..-	-..-	-..-
February 2021 wave	0.003	0.007	0.627	-0.004	0.005	0.346
June 2021 wave	0.013	0.006	0.051	0.013	0.005	0.007
November 2021 wave	0.010	0.006	0.105	0.002	0.005	0.737
Constant	-1.221	0.040	0.000	0.312	0.011	0.000
Number of observations	40,411			41,586		

Note. The table reports marginal effects from probit regressions. The sample consists of the CES waves from August 2020, and February, June, and November 2021.

**Table 4. First-time ownership of stocks held directly
and mutual funds during the pandemic**

Variable	Conditional on ownership			Unconditional		
	Coeff.	Std. Error	p-value	Coeff.	Std. Error	p-value
Financial concern due to COVID-19	0.004	0.002	0.098	0.000	0.001	0.733
Health concern due to COVID-19	0.001	0.002	0.712	0.000	0.001	0.808
Age	-0.006	0.000	0.000	-0.002	0.000	0.000
Male	-0.006	0.011	0.577	0.016	0.004	0.000
Secondary education	-0.042	0.023	0.065	-0.010	0.007	0.152
Tertiary education	-0.034	0.022	0.110	0.004	0.007	0.591
Household size	0.001	0.005	0.893	0.002	0.002	0.219
Log of household income	-0.041	0.009	0.000	0.000	0.004	0.900
Has liquidity	-0.013	0.016	0.431	0.033	0.004	0.000
High tolerance for financial risk	-0.024	0.011	0.035	-0.006	0.004	0.146
High financial literacy	-0.067	0.013	0.000	-0.002	0.004	0.638
Belgium	0.032	0.024	0.186	0.040	0.009	0.000
Germany	-0.017	0.018	0.347	0.024	0.006	0.000
Spain	-0.011	0.019	0.551	0.014	0.005	0.010
Italy	-0.014	0.018	0.431	0.023	0.006	0.000
Netherlands	0.069	0.029	0.020	0.027	0.009	0.003
Number of observations	4,367			13,314		

Note: Data drawn from the November 2021 wave. The table reports marginal effects from probit regressions. The sample consists of the CES waves from August 2020, and February, June, and November 2021.

Table 5. Entry into and exit from ownership of stocks held directly

Variable	Entry			Exit		
	Coeff.	Std. Error	p-value	Coeff.	Std. Error	p-value
Financial concern due to COVID-19	-0.002	0.001	0.032	0.008	0.003	0.003
Health concern due to COVID-19	0.001	0.001	0.443	0.004	0.003	0.105
Age	-0.001	0.000	0.000	-0.002	0.000	0.000
Male	0.021	0.005	0.000	-0.075	0.012	0.000
Secondary education	0.002	0.007	0.816	-0.080	0.026	0.002
Tertiary education	0.023	0.007	0.001	-0.080	0.024	0.001
Household size	0.005	0.002	0.007	-0.002	0.005	0.713
Log of household income	0.041	0.004	0.000	-0.028	0.010	0.005
Has liquidity	0.042	0.005	0.000	-0.207	0.021	0.000
High tolerance for financial risk	0.018	0.005	0.001	0.014	0.013	0.296
High financial literacy	0.004	0.005	0.346	-0.113	0.015	0.000
Belgium	0.006	0.010	0.532	-0.161	0.023	0.000
Germany	-0.002	0.008	0.746	-0.166	0.020	0.000
Spain	-0.023	0.007	0.002	-0.205	0.020	0.000
Italy	-0.020	0.007	0.006	-0.181	0.021	0.000
Netherlands	-0.061	0.008	0.000	-0.192	0.026	0.000
February 2021 wave	0.011	0.006	0.045	-0.003	0.014	0.860
June 2021 wave	0.015	0.006	0.007	0.025	0.014	0.078
Number of observations	17,016			5,391		

Note: The Table reports marginal effects from probit regressions. For the results on entry into ownership the estimation sample consists of non-owners in the previous wave, while for the results on exit from ownership the estimation sample consists of owners in the previous wave. The sample consists of the CES waves from August February, June, and November 2021.

Table 6. Entry into and exit from ownership of stocks held directly and mutual funds

Variable	Entry			Exit		
	Coeff.	Std. Error	p-value	Coeff.	Std. Error	p-value
Financial concern due to COVID-19	-0.001	0.001	0.393	0.009	0.002	0.000
Health concern due to COVID-19	0.002	0.001	0.052	0.004	0.002	0.075
Age	-0.001	0.000	0.007	-0.001	0.000	0.000
Male	0.024	0.005	0.000	-0.050	0.009	0.000
Secondary education	-0.004	0.008	0.663	-0.055	0.020	0.005
Tertiary education	0.014	0.008	0.101	-0.074	0.018	0.000
Household size	0.008	0.002	0.000	0.006	0.004	0.107
Log of household income	0.052	0.005	0.000	-0.032	0.008	0.000
Has liquidity	0.054	0.006	0.000	-0.179	0.017	0.000
High tolerance for financial risk	0.024	0.006	0.000	0.039	0.010	0.000
High financial literacy	0.016	0.005	0.004	-0.115	0.011	0.000
Belgium	0.008	0.011	0.499	-0.207	0.019	0.000
Germany	0.037	0.009	0.000	-0.200	0.017	0.000
Spain	-0.024	0.008	0.003	-0.231	0.017	0.000
Italy	-0.009	0.008	0.302	-0.223	0.017	0.000
Netherlands	-0.067	0.009	0.000	-0.230	0.021	0.000
February 2021 wave	0.019	0.007	0.003	-0.024	0.011	0.030
June 2021 wave	0.005	0.006	0.401	0.034	0.011	0.003
Number of observations	14,501			7,450		

Note: Marginal effects from probit regressions are shown. For the results on entry into ownership the estimation sample consists of non-owners in the previous wave, while for the results on exit from ownership the estimation sample consists of owners in the previous wave. The sample consists of the CES waves from August February, June, and November 2021.

Table 7. Share of stocks held directly in total financial assets

Variable	Conditional			Unconditional		
	Coeff.	Std. Error	p-value	Coeff.	Std. Error	p-value
Financial concern due to COVID-19	-0.001	0.000	0.000	-0.002	0.000	0.000
Health concern due to COVID-19	0.000	0.000	0.826	0.000	0.000	0.826
Age	0.000	0.000	0.000	0.000	0.000	0.000
Male	0.022	0.002	0.000	0.024	0.002	0.000
Secondary education	0.006	0.003	0.059	0.006	0.003	0.056
Tertiary education	0.020	0.003	0.000	0.022	0.003	0.000
Household size	0.002	0.001	0.016	0.002	0.001	0.016
Log of household income	0.026	0.002	0.000	0.029	0.002	0.000
Has liquidity	0.032	0.002	0.000	0.033	0.002	0.000
High tolerance for financial risk	0.003	0.002	0.140	0.003	0.002	0.142
High financial literacy	0.019	0.002	0.000	0.021	0.002	0.000
Belgium	0.015	0.004	0.000	0.018	0.004	0.000
Germany	0.006	0.003	0.029	0.007	0.003	0.029
Spain	0.002	0.003	0.499	0.002	0.003	0.499
Italy	-0.002	0.003	0.576	-0.002	0.003	0.576
Netherlands	-0.019	0.004	0.000	-0.020	0.003	0.000
February 2021 wave	-0.001	0.002	0.551	-0.001	0.002	0.551
June 2021 wave	0.005	0.002	0.003	0.005	0.002	0.003
November 2021 wave	0.005	0.002	0.002	0.005	0.002	0.002
Number of observations	35,895			35,895		

Note: Marginal effects from random effects tobit regressions are shown. The sample consists of the CES waves from August 2020, and February, June, and November 2021.

Table 8. Share of stocks held directly and mutual funds in total financial assets

Variable	Conditional			Unconditional		
	Coeff.	Std. error	p-value	Coeff.	Std. error	p-value
Financial concern due to COVID-19	-0.002	0.000	0.000	-0.003	0.000	0.000
Health concern due to COVID-19	0.000	0.000	0.793	0.000	0.000	0.793
Age	0.000	0.000	0.029	0.000	0.000	0.029
Male	0.024	0.002	0.000	0.037	0.003	0.000
Secondary education	0.006	0.003	0.071	0.008	0.005	0.068
Tertiary education	0.025	0.003	0.000	0.039	0.004	0.000
Household size	0.002	0.001	0.030	0.003	0.001	0.030
Log of household income	0.032	0.002	0.000	0.050	0.003	0.000
Has liquidity	0.040	0.002	0.000	0.058	0.002	0.000
High tolerance for financial risk	0.003	0.002	0.188	0.004	0.003	0.190
High financial literacy	0.031	0.002	0.000	0.048	0.003	0.000
Belgium	0.032	0.004	0.000	0.049	0.006	0.000
Germany	0.034	0.003	0.000	0.053	0.005	0.000
Spain	0.018	0.003	0.000	0.027	0.004	0.000
Italy	0.024	0.003	0.000	0.036	0.004	0.000
Netherlands	-0.004	0.004	0.273	-0.006	0.005	0.270
February 2021 wave	-0.001	0.002	0.663	-0.001	0.002	0.663
June 2021 wave	0.007	0.002	0.000	0.011	0.002	0.000
November 2021 wave	0.001	0.002	0.471	0.002	0.002	0.470
Number of observations	35,895			35,895		

Note: Marginal effects from random effects tobit regressions are shown. The sample consists of the CES waves from August 2020, and February, June, and November 2021.

**Table 9. Descriptive statistics of
the lottery prize experiment**

Gift amount (euros)	Stocks	Stocks and mutual funds
5,000	0.212	0.310
10,000	0.227	0.336
20,000	0.262	0.411
30,000	0.274	0.412
50,000	0.313	0.462

Note. Data drawn from the June 2021 wave. Results refer to participation rates.

**Table 10. Experimental results by levels
of financial concern due to COVID-19**

Gift amount (euros)	Stocks	Stocks and mutual funds
Panel A. Financial concern due to COVID-19 less or equal to the median		
5,000	0.220	0.329
10,000	0.208	0.330
20,000	0.294	0.459
30,000	0.286	0.424
50,000	0.317	0.488
Panel B. Financial concern due to COVID-19 above the median		
5,000	0.203	0.290
10,000	0.247	0.338
20,000	0.222	0.353
30,000	0.264	0.401
50,000	0.309	0.427

Note. Data drawn from the June 2021 wave. Results refer to participation rates.