Gambling with Dividends[a]

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Abstract

In this paper, we document that retail investors have a tendency to gamble with dividends and we show that this behavior has asset pricing implications. First, using two independent brokerage datasets, we find that investors use disproportionate fractions of dividends to buy lottery stocks and options. Second, using stock market data, we show that marketwide dividends are associated with excess price pressure in lottery stocks. Third, using two experiments, we replicate the tendency to gamble with dividends in the lab and investigate mental accounting as the mechanism behind this tendency.

Keywords: dividend reinvestment, gambling preferences, lottery stocks, options, mental accounting

JEL classification: D14, G11, G12, G40, G41, G50, G51, G53

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Imagine it is the spring of 2009 and the news is full of the potential bankruptcy of Arcandor (the parent company of Germany's largest department store chain, Karstadt). While the Arcandor stock has dropped 80% over the past year and bankruptcy seems likely, the stock also had one-day returns as large as 22% and the German government might step in for a bailout. In this scenario, would you take the gamble and buy Arcandor stock? Now, imagine the same scenario but you just received a EUR 500 dividend. Would the receipt of the dividend make it more likely that you buy Arcandor stock?

In this paper, we analyze a) brokerage data, b) stock market data, and c) experimental data to a) document that investors have a tendency to gamble with dividends, b) test the asset pricing implications of this tendency, and c) replicate the tendency in the lab as well as investigate the mechanism behind it. The motivation for our hypothesis that investors gamble with dividends stems from the mental accounting of dividends, according to which dividends and principal are placed in two separate mental accounts (Shefrin and Statman 1984; Hartzmark and Solomon 2019). Previous studies use such mental accounting to explain excess spending out of dividends (Baker, Nagel, and Wurgler 2007; Di Maggio, Kermani, and Majlesi 2020; Bräuer, Hackethal, and Hanspal 2022). We argue that, even if dividends are not spent but instead reinvested, mental accounting drives hedonic decision making. In particular, it tempts investors to gamble their dividends in the financial markets and buy lottery stocks (defined by their idiosyncratic volatility, skewness, price, and maximum one-day return, see Kumar 2009; Bali, Cakici, and Whitelaw 2011) and options (Boyer and Vorkink 2014; Dorn, Dorn, and Sengmueller 2015).

In the first part, we document that investors reinvest dividends into lottery stocks and options using two independent brokerage samples: A sample from one of Germany's largest banks from 2007 through 2011 and the widely used sample from Barber and Odean (2000) of a large US discount broker from 1991 through 1996.

In both datasets, we identify dividend-induced purchases as purchases that occur shortly after a dividend payment (e.g., up to 30 days thereafter) and that have a similar amount (e.g., between 0% and 200% of the dividend payment). Each dataset has its advantages for the identification of dividend-induced purchases: On the one hand, in Germany, dividends are generally paid once a year, often in May, leading to a concentration of large dividend payments that makes purchases in May prime candidates for dividend-induced purchases. On the other hand, the US brokerage sample contains daily trading data (whereas the German sample contains monthly data), which allow a precise mapping of dividend payments to subsequent purchases.

For the German broker, we find that 17% of dividend-induced stock purchases are in lottery stocks, which are 9pp more than lottery stocks make up of dividend-unrelated purchases by the same investors, controlling for order size. Returning to our lottery stock from the introduction, in the spring of 2009, 9% of dividend reinvestments were in Arcandor alone, making it the single largest reinvestment target during the dividend season of 2009. Moreover, examining purchases across all asset classes, we find that 24% of dividend-induced purchases are in options, which are 4pp more than options make up of similar-sized, dividend-unrelated purchases by the same investors.

For the US broker, our results are similar: 19% of dividend-induced stock purchases are in lottery stocks and 28% of dividend-induced purchases are in options, indicating a significant overrepresentation relative to similar-sized, dividend-unrelated purchases.

Yet, as dividends are usually a choice variable, these results do not show that investors gamble more *because* they receive dividends. To test this, we repeat our analysis with special dividends and newly initiated ordinary dividends as plausible candidates for exogenous dividend income shocks (Baker, Nagel, and Wurgler 2007; Kaustia and Rantapuska 2012; Müller-Dethard, Reinhardt, and Weber 2025). For such dividends, we find similarly large reinvestment rates in lottery stocks (30% of stock purchases) and options (28% of purchases across asset classes). Thus, our results indicate that dividend payments initiate a shift from portfolio holdings of cash to holdings of lottery-like securities.

Building on these results, we examine the characteristics of investors who gamble their dividends. We find that the average investor who invests dividends in lottery stocks is 52 years old, has a portfolio value of 110,000 euros, and a dividend yield of 2% p.a. 36% of the investor's stock holdings are in DAX stocks (the 30 largest German stocks) and only 7% in lottery stocks. Therefore, our findings suggest that dividend gambling is largely attributable to investors who generally invest in blue-chip stocks but who use the dividends paid by those stocks as fun money to gamble in the financial markets (consistent with the mental accounting framework by Shefrin and Statman 1984).

In the second part, we use stock market data to test asset pricing implications. Hartzmark and Solomon (2025) find that stock market returns increase based on the amount of dividends paid by the market, consistent with price pressure from dividend reinvestments. Our findings from the brokerage sample indicate that reinvestments are made disproportionately in lottery stocks, implying a particularly pronounced price pressure in lottery stocks. To test this implication, we study the German stock market from 2000 through 2025 (and replicate our results in the US). Germany provides an ideal setting for our tests because German companies usually pay dividends once a year, during spring (especially in May), leading to a concentration of marketwide dividend payments in time.

Our stock market analysis yields six major results: First, we exploit the German dividend season for a straightforward test of price pressure in lottery stocks. We separate the stock market into a value-weighted portfolio of lottery stocks and a portfolio of all remaining stocks (the non-lottery portfolio). Then we compare the performance of the portfolios in May (when the market pays out 1% of its capitalization in dividends, on average), with the performance in all other months. Consistent with price pressure from dividend reinvestments, we find that the return of the lottery portfolio is 7pp higher in May than in all other months (while the average return of the non-lottery portfolio is the same in May as in all other months). Picking up our introductory example, in the spring of 2009, the mean return of Arcandor is 6pp higher on days with above-median marketwide dividend payments relative to days with below-median payments.

Second, we show that the outperformance of the lottery portfolio in May can be translated into simple, cheap, and ex-ante implementable investment strategies. For example, a strategy of holding the lottery portfolio during May and holding the non-lottery portfolio during all other months more than doubles the performance of a buy-and-hold investment in the market at virtually no transaction costs. We find that the returns of the lottery portfolio in May are a) not explained by factor models and b) have a higher skewness, c) lower loss frequency, and d) higher outperformance frequency compared with the non-lottery portfolio, a rare combination of characteristics that investors generally find attractive (Holzmeister et al. 2020; Ungeheuer and Weber 2023).

Third, we follow Hartzmark and Solomon (2025) and estimate price pressure by regressing portfolio returns on the marketwide dividend yield of the past n days. This methodology has the benefits of being more precise regarding the timing of price pressure and being applicable in markets without a dividend season. Thus, we apply the methodology in Germany as well as the US. In both markets, we find that the excess price pressure in the lottery portfolio builds up gradually and reaches its peak around 20 days after the dividend payment at a value of 6pp (5pp) per 1% of its capitalization that the German (US) market pays out in dividends, consistent with our prior results.

Fourth, we test if there is a reversal of the price pressure in the lottery portfolio. By analyzing price developments up to 3 months after the dividend payment, we find no evidence of a reversal. Importantly, the absence of a reversal does not mean that the lottery portfolio continues to outperform the non-lottery portfolio indefinitely. Over time, the price pressure is offset by the substantial average underperformance of the lottery portfolio of -1.7pp per month. Using a back-of-the-envelope calculation, this means that the value of the lottery portfolio is driven up by 7pp in May and then gradually declines until it reaches its pre-price-pressure value again in September, after 4 months (7/1.7).

Fifth, we address the fact that price pressure is the product of excess demand and the price multiplier (i.e., the dollar increase in portfolio value per dollar invested). As lottery stocks are, on average, more illiquid than non-lottery stocks, we make sure that the price pressure differences are not explained by price multiplier differences, alone. To do so, we compare price pressure in the lottery portfolio with price pressure in illiquidity-matched non-lottery portfolios (for which we expect a similar multiplier). We find that the price pressure in the lottery portfolio is still 5pp higher per 1% of marketwide dividends, which indicates that the excess price pressure in the lottery portfolio is indeed driven by excess demand from dividend gambling and not just the by-product of a higher price multiplier.

Sixth, we directly test price pressure from dividend reinvestments in the brokerage sample. To do so, we form a portfolio of stocks that were purchased with dividends and a portfolio of stocks that were purchased in the same month without dividends. Consistent with our prior results, we find that the 20-day price pressure difference between the two portfolios is 6pp for each 1% of marketwide dividends.

Is it plausible that the dividend-gambling behavior of retail investors drives the prices of lottery stocks to such a large extent? To address this question, we perform a back-of-the-envelope calculation of the price multiplier that would be necessary to generate our results. We estimate a multiplier of 8, consistent with prior evidence on multipliers of factor portfolios (Ben-David et al. 2022; Li 2022). The intuition is that marketwide dividends are extremely large relative to the lottery portfolio, such that relatively few reinvestments suffice to drive up the prices substantially.

Moreover, our results are consistent with Hartzmark and Solomon (2025), who find that price pressure a) is stronger in smaller stocks and non-dividend paying stocks (leaving room for the price pressure in lottery stocks we find), b) has been increasing since the 2000s (matching our sample period), and c) reaches its maximum 20 days after the dividend payment (which we also find for price pressure in lottery stocks). Additionally, our results are consistent with Greenwood, Laarits, and Wurgler (2023), who document price pressure in stocks with low prices and high volatility up to 15 days after the payment of stimulus checks in the US and who find no reversal up to 60 days after the payment.

In the third part, we design two experiments: the first to replicate dividend-gambling behavior in the lab and the second to better understand the mechanism behind such behavior. In the first experiment, participants allocate their endowment between cash and Stock A that has a return of 8% with 60% probability or -6% with 40% probability. After several periods, participants are assigned to one of four treatments (two-by-two between-subjects design): Participants are either paid a dividend by Stock A (which decreases their holdings of A) or not paid a dividend. Moreover, participants are offered a new Stock B which has payoffs that are either lottery-like (+90% with 10% probability or -10% with 90% probability) or non-lottery-like (+5% or -5% with equal probability). Because the dividend corresponds to a partial sale of Stock A and participants can still trade A, participants can home-make or undo the dividend and, rationally, the dividend should not make a difference for participants' allocation between Stocks A, B, and cash.

Yet, consistent with our prior results, we find that the dividend does make a difference. 62% of participants who are paid a dividend and are offered the lottery Stock B invest in B which is 15pp more than the 47% of participants who invest in lottery Stock B without a dividend. For participants who are offered the non-lottery Stock B, the dividend payment only makes a difference of 2pp (29% - 27%). Thus, the dividend-induced propensity to gamble (which is indicated by the difference in differences) is 13pp (15pp - 2pp).

In the second experiment, we examine the mechanism behind dividend-gambling behavior. Specifically, we investigate whether dividend gambling is based on a misunderstanding of dividends as free income (Hartzmark and Solomon 2019) or whether dividend gambling persists for investors who understand the relationship between dividends and stock prices, in line with the mental accounting in Shefrin and Statman (1984). To test this, we re-use the design of the first experiment but adapt it along the following dimensions: First, every participant receives a dividend and is offered the lottery-like Stock B. Second, the treatment consists of two between-subject conditions, according to which half of the participants is subjected to an educational intervention about dividends (as in Hackethal et al. 2026) and the other half is not. Although we find that the education substantially reduces the misunderstanding of dividends, we find no reduction (rather an increase) in the propensity to gamble with dividends. Therefore, our results indicate that the mental accounting which drives dividend gambling even persists if investors understand that dividends are no free income, in line with Shefrin and Statman (1984).

Our paper contributes to multiple strands of literature. First, we contribute to research on how investors use their dividends and why they do so. Previous studies often document that investors spend a large fraction of their dividends (Baker, Nagel, and Wurgler 2007; Di Maggio, Kermani, and Majlesi 2020; Bräuer, Hackethal, and Hanspal 2022). Recently, a) Müller-Dethard, Reinhardt, and Weber (2025) and b) Hackethal et al. (2026) find that investors spend less and reinvest more of their dividends if a) the investors' brokerage account has a cash balance that is separate from their checking account and b) if the investors are educated about dividends. As these studies concentrate on showing that dividends are reinvested in securities portfolios but leave open into which securities, we fill a research gap by analyzing the characteristics of the reinvestment targets. Our findings that reinvestment targets are often lottery-like, even for investors who are educated about dividends, are in line with a pervasive mental accounting of dividends (Shefrin and Statman 1984; Shefrin and Thaler 1988; Hartzmark and Solomon 2019).

Second, this paper adds to research on gambling preferences in financial markets (e.g., Dorn and Sengmueller 2009; Grinblatt and Keloharju 2009; Kumar 2009; Bali, Cakici, and Whitelaw 2011; Kumar, Page, and Spalt 2011; Doran, Jiang, and Peterson 2012; Dorn, Dorn, and Sengmueller 2015; Gao and Lin 2015; Agarwal, Jiang, and Wen 2022; Kormanyos, Hanspal, and Hackethal 2025; Baker et al. 2026). We find that dividends induce typically non-gambling investors to buy lottery-like securities.

Third, our research integrates two separate strains of asset pricing literature. The first strain documents an average underperformance of lottery stocks that varies based on exogenous drivers of lottery demand, such as income shocks (e.g., Barberis and Huang 2008; Conrad, Kapadia, and Xing 2014; Eraker and Ready 2015; Kumar, Page, and Spalt 2016; Bali et al. 2017; An et al. 2020; Byun, Goh, and Kim 2020; Liu et al. 2020; Chen, Kumar, and Zhang 2021; Bali and Wen 2023; Greenwood, Laarits, and Wurgler 2023; Jiang, Zhou, and Zhu 2024). The second strain documents dividend-reinvestment-induced price pressure in the dividend-paying stock (Ogden 1994; Berkman and Koch 2017; Li, Yang, and Zhang 2026), co-held stocks in institutional portfolios (Kvamvold and Lindset 2018; Schmickler and Tremacoldi-Rossi 2023; Chen 2024), and the stock market as a whole (Hartzmark and Solomon 2025), which are all mechanically linked to the dividend payment. In this paper, we use gambling preferences to link dividend payments with reinvestment targets and identify dividend payments as an exogenous driver of lottery demand that leads to a temporary, predictable outperformance of lottery stocks.

1 Brokerage data

In this section, we analyze two brokerage samples to document that investors have a tendency to use their dividends for purchasing lottery-like securities. First, we present the brokerage data and our methodology to analyze the characteristics of the securities that investors purchase with their dividends. Second, we report the results.

1.1 Brokerage data: Data and methodology

The German brokerage dataset was initially introduced by Dorn and Weber (2017) and analyzed by Müller-Dethard, Reinhardt, and Weber (2025), who find that 80% of dividends are reinvested in securities over the course of one year. The dataset covers a randomly selected sample of self-directed brokerage clients from one of Germany's three largest online banks from January 2007 through October 2011. We use monthly portfolio holdings data to infer the purchases of individual securities by an investor in a given month. To calculate dividends paid out to an investor in a given month, we match holdings with dividend information from Datastream and CRSP and adjust for taxes as in Müller-Dethard, Reinhardt, and Weber (2025). Return data are also from Datastream and CRSP. Data for European factor returns are from Ken French's website.

To analyze instances, in which investors consciously use dividends to finance a purchase, we identify "dividend-induced purchases" using the following algorithm: First, we sum up all dividends paid out to an investor in a given month. German companies generally distribute dividends once a year, mostly in May (see Figure A1 of the Internet Appendix). Thus, over a short time frame, investors receive numerous individual dividend payments, which may be too small to reinvest individually considering transaction costs; however, when aggregated, these dividends can constitute a substantial sum that may justify active reinvestment. Second, we focus on purchases that occur in the same month as the dividend payments. The closer in time a purchase is to the receipt of dividends, the more likely it is that the investor consciously uses the dividends to finance the purchase. Third, we limit the sample to purchases that are at most twice as large as the dividend (allowing investors to add some non-dividend cash but not more than the dividend itself). Fourth, to make sure that our results are not driven by automatic reinvestments, we focus on purchases of securities that are not already part of the investor's portfolio at the beginning of the month and exclude mutual funds for which the bank offers an automatic dividend reinvestment plan. Fifth, if there are multiple purchases in a given investor-month, we identify the dividend-induced purchase as that purchase which is is closest in value to the dividends. E.g., if an investor receives EUR 1,000 in dividends and buys EUR 200 of Stock A, EUR 900 of Stock B, and EUR 1,700 of Stock C, we identify the purchase of B as dividend-induced.[1]

After having identified dividend-induced purchases, we analyze the characteristics of the purchased securities, in particular their lottery characteristics. Following Kumar (2009), a stock is considered lottery-like if its idiosyncratic volatility and skewness are above the median and its price is below the median.[2] To support the robustness of our results, we also use an alternative definition of lottery-likeness following Bali, Cakici, and

[1]Certainly, this approach could still misidentify some dividend-unrelated purchases as dividend-induced. Yet, such a misidentification would work against finding differences between the characteristics of the purchases that we identify as dividend-induced and the characteristics of the dividend-unrelated purchases that we use as a benchmark. This is because we would expect that, on average, the characteristics of the dividend-unrelated purchases misidentified as dividend-induced are not different from those of the dividend-unrelated purchases used as a benchmark.

[2]The idiosyncratic volatility of a stock is calculated as the standard deviation of the residuals from regressing the stock's daily returns over the previous six months on the daily returns of the Carhart (1997) four factors. The idiosyncratic skewness of a stock is calculated as the skewness of the residuals from regressing the stock's daily returns over the previous six months on the daily returns of the equity risk premium and the equity risk premium squared. The price is the beginning-of-month price. We require that a stock's returns are non-missing and non-zero on at least 75% of trading days in the previous six months. The median breakpoint for a characteristic in a given month is the equally-weighted median of the characteristic in that month among all stocks that are ever held in our brokerage data.

Whitelaw (2011), according to which we classify a stock as lottery-like if its maximum one-day return in the previous month is above the 80th percentile.[3]

Given the characteristics of the dividend-induced purchases, we compare them with a benchmark to assess whether investors have a higher propensity to gamble a given amount of money when it comes from dividends rather than from non-dividend funds. To do so, we match each dividend-induced purchase with a purchase by the same investor that has a similar order size and occurs in a month with similar market conditions (in terms of the German volatility index, VDAX) but without dividend payments to the investor.[4]

Following our algorithm, we identify 1,564 dividend-induced purchases. Of these, 700 are of stocks for which we have all information on lottery characteristics for the dividend-

[3]We require that a stock's returns are non-missing and non-zero on at least 75% of trading days in the previous month. The 80th percentile in a given month is the equally-weighted 80th percentile of maximum one-day returns in that month among all stocks that are ever held in our brokerage data. We follow Liu et al. (2020) and choose the 80th percentile as the breakpoint (instead of the 90th percentile as in Bali, Cakici, and Whitelaw 2011) to provide better comparability with the lottery stock universe based on Kumar (2009) and the lottery stock universe in Bali, Cakici, and Whitelaw (2011). First, based on the lottery stock definition by Kumar (2009), 25% of stocks in our stock universe are considered lottery-like (in equally-weighted terms). If we used the 90th percentile as the breakpoint for the lottery stock definition by Bali, Cakici, and Whitelaw (2011), we would only classify 10% and thus fewer than half of the stocks as lottery-like. Second, the average maximum one-day return among stocks above the 80th percentile in our stock universe is 26% which is similar (even a bit larger) than the average maximum one-day return of 24% among stocks above the 90th percentile in the CRSP universe analyzed by Bali, Cakici, and Whitelaw (2011). In Table A4 of the Internet Appendix, we report results using alternative lottery stock definitions. According to each definition, the likelihood of purchasing a lottery stock doubles if the purchase is financed with dividends (compared with a purchase of similar order size made by the same investor under similar market conditions without dividends).

[4]The matching procedure is as follows: For each dividend-induced purchase of an investor, a match is searched among the investor's purchases that occur in months, i) in which the investor does not receive dividends, but ii) in which the VDAX is no more than 5 points away from the VDAX in the month of the dividend-induced purchase. Among those purchases, iii) the purchase that is closest in order size to the dividend-induced purchase is selected as the match. If ii) no purchase exists in months with a 5 point maximum VDAX difference, the maximum allowed VDAX difference is enlarged by 5 points until a purchase is found. If i) the investor does not make any purchase in months without dividend payments, the dividend-induced purchase does not have a match and is excluded from the analysis.

As an alternative to the matching approach, we also run regressions, in which the observations are the dividend-induced purchases as well as all purchases by the same investors that occur in months without dividend payments. In these regressions, the dependent variables are the lottery characteristics and the independent variables are the size of the order, the volatility index in the purchasing month, and a dummy that is one (zero) for dividend-induced purchases (dividend-unrelated purchases). The results are reported in Table A1 and are similar to the results based on the matching approach in Table 2.

induced purchase and the matched purchase.[5] While these reinvestment episodes only account for a small fraction of all dividend reinvestments in our sample, they have the advantage of representing a high-precision matching of purchases to dividends. In the Internet Appendix, we subject our methodology to several sensitivity analyses, which relax the criteria for identifying dividend-induced purchases and increase the sample size up to 7,646 reinvestment episodes. In Figure A2, we study purchases in the first 3 months following the dividend payment (instead of only the same month). In Table A2, we include purchases up to 10 times the size of the dividend payment (instead of up to 2 times). In Table A3, we identify the smallest purchase as dividend-induced (instead of the purchase that is closest in value to the dividend payment). The results for all sensitivity analyses are similar to our baseline results, showing that the patterns that we identify in narrowly defined dividend reinvestment episodes can also be found in more broadly defined reinvestment episodes.

Table 1 presents summary statistics for the investors and their dividend-induced purchases. The median age is 55 years and 66.6% of investors are male. The median portfolio size is EUR 70,200, the median dividend yield 1.9%, and the median number of buy orders per year is 11.1. According to the EU MiFID guidelines, only 0.3% of investors score low in terms of financial literacy based on self-reported financial knowledge and experience. In the dividend-induced purchase episodes, the mean size of the dividends as well as the purchases is EUR 1,400. In sum, our sample mostly consists of financially

[5] Stocks may have missing lottery characteristics because they are traded infrequently, have a short return history (e.g., in case of IPOs), or because they are not represented/identified in Datastream/CRSP. In Table A6, we compare the degree of missing lottery characteristics between dividend-induced stock purchases and matched stock purchases and find that the rate of missing characteristics is higher among the dividend-induced purchases. As the reasons for lottery characteristics being missing (e.g., illiquidity) are statistically associated with stocks being lottery-like (Kumar 2009), the missing characteristics likely bias our analysis against finding a larger share of lottery stocks among dividend-induced purchases.

Table 1: Brokerage data: Summary statistics

	Min	P25	Median	Mean	P75	Max
Panel A: Demographics						
Age (in years)	15.0	43.0	55.0	54.9	67.0	95.0
Sex: Male	0.0	0.0	100.0	66.6	100.0	100.0
Sex: Female	0.0	0.0	0.0	11.1	0.0	100.0
Sex: Shared account	0.0	0.0	0.0	22.4	0.0	100.0
Married	0.0	0.0	100.0	61.5	100.0	100.0
Retired	0.0	0.0	0.0	19.1	0.0	100.0
Panel B: Portfolio characteristics						
Portfolio size (in 1k EUR)	0.4	29.7	70.2	182.9	175.8	7,577.4
Dividend yield p.a.	0.0	1.2	1.9	2.2	2.6	37.0
Num buy orders p.a.	0.4	5.2	11.1	17.5	21.9	142.3
Financially inexperienced	0.0	0.0	0.0	0.3	0.0	100.0
Panel C: Dividend-induced purchases						
Size invested div (in 1k EUR)	0.0	0.2	0.5	1.4	1.4	114.6
Size div-induced prch (in 1k EUR)	0.0	0.2	0.6	1.4	1.5	80.9

Purchases that investors finance with dividends are identified. Panels A and B present summary statistics for investors with such purchases. Panel C presents summary statistics for the purchases. All data are in percent except where noted otherwise. N = 1,564.

literate, middle-aged investors that have sizeable portfolios, trade actively, and reinvest economically significant amounts of dividends.

1.2 Brokerage data: Results

First, we analyze the characteristics of dividend-induced purchases. Second, we analyze the characteristics of investors who use their dividends to purchase lottery-like securities. Third, we replicate our results using a US discount brokerage sample.

1.2.1 Characteristics of dividend-induced purchases

Table 2 presents the characteristics of the dividend-induced purchases (column one), benchmarked against the matched, dividend-unrelated purchases (column two). Panel A analyzes the characteristics of dividend-induced stock purchases. Based on their idiosyncratic volatility, skewness, and price, 17.3% of purchased stocks are lottery-like.

Table 2: Brokerage data: Characteristics of dividend-induced purchases

	Dividend-induced purchases	Matched purchases	Difference
Panel A: Stock characteristics			
$\text{Lottery}_{IVolaISkewPrc}$	17.3	8.7	8.6***
			(2.3)
Lottery_{MaxRet}	16.7	9.6	7.1**
			(2.9)
Idiosyncratic volatility	3.4	2.4	1.0**
			(0.4)
Total volatility	3.9	2.9	1.0**
			(0.4)
Idiosyncratic skewness	31.8	19.4	12.4*
			(6.6)
Total skewness	31.3	13.1	18.2**
			(8.8)
Price (in EUR)	21.9	29.2	-7.2
			(4.6)
Max one-day return	9.1	6.3	2.8**
			(1.3)
DAX member	25.1	34.9	-9.7**
			(4.2)
MCap (in bn. EUR)	13.6	19.1	-5.5**
			(2.4)
Panel B: Asset classes			
Stock	68.9	69.5	-0.6
			(1.5)
Fund	3.0	3.7	-0.7
			(0.7)
Bond	2.1	3.3	-1.2**
			(0.5)
Certificate	1.9	3.6	-1.7**
			(0.7)
Option	24.0	19.9	4.1***
			(1.1)

Purchases that investors finance with dividends are identified (column 1) and matched with similar-sized, market-condition-matched purchases by the same investors that are not financed with dividends (column 2). Column 1 (2) reports mean characteristics for the dividend-induced purchases (matched purchases). Column 3 reports differences in means between dividend-induced purchases and matched purchases. All data are in percent except where noted otherwise. Standard errors are clustered by investor and year-month and are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. In Panel A (B), the number of dividend-induced purchases and matched purchases is 700 (1,564), each.

This is significantly more than the fraction that lottery stocks make up of the matched, dividend-unrelated stock purchases (8.7%). Also based on maximum one-day returns, lottery stocks are overrepresented among dividend-induced purchases (16.7%) compared with the matched purchases (9.6%). Rows three through eight present the values for the individual characteristics that underlie the lottery stock classifications. For each individual characteristic, the results indicate that the dividend-induced purchases are more lottery-like than the matched purchases, i.e., in terms of higher idiosyncratic and total volatility and skewness, lower price, and higher maximum one-day return. The final two rows in Panel A examine stock characteristics that are not directly part of the lottery stock classifications but that help to get a more complete picture of the purchased stocks. First, only 25.1% of dividend-induced stock purchases are of DAX members, i.e., the 30 largest German stocks at the time, which is significantly less than the 34.9% that DAX members make up of the matched stock purchases. Second, the average market capitalization of the stocks purchased with dividends is only EUR 13.6 billion and thus significantly lower than the average market capitalization of EUR 19.1 billion of the stocks not purchased with dividends.[6]

In Panel B, we look at all dividend-induced purchases (not conditioning on purchases of stocks with data on lottery characteristics) and analyze the asset classes of the purchased securities. First, the results show that stocks make up the vast majority of dividend-induced purchases (68.9%), with no significant difference to the matched purchases (69.5%). Purchases of funds only account for a small fraction of dividend-induced purchases (3.0%), again with no significant difference to the matched purchases (3.7%). Second, we find that bonds and certificates (mostly index-tracking certificates) are each significantly underrepresented among dividend-induced purchases compared with

[6] A concern might be that dividends were used to buy lottery stocks instead of non-lottery stocks because non-lottery stocks have prices that exceed the dividend amount, s.t. investors could not purchase a whole share with their dividends. In Figure A5, we analyze what fraction of the non-lottery stock universe could have been bought with the dividends that were used to buy lottery stocks. We find that 92% of dividends invested in lottery stocks could have been used to buy at least one share of more than 90% of stocks from the non-lottery universe. Even the smallest dividend in our sample could have been used to buy 28% of stocks in the non-lottery universe. Moreover, in Table A5, we analyze purchases that were made with dividends of 100 euros or more and find only minimal changes in the results.

the matched purchases (2.1% vs. 3.3% for bonds and 1.9% vs. 3.6% for certificates). Conversely, we find that options are significantly overrepresented among dividend-induced purchases (24.0%) relative to the matched purchases (19.9%). With options generally being more lottery-like than bonds and index-tracking certificates (Boyer and Vorkink 2014; Dorn, Dorn, and Sengmueller 2015), the results support that a propensity to gamble with dividends also exists on the asset class level.

What remains to be tested is whether the results only apply to investors who consciously seek dividend income because they plan to gamble the dividends (similar to the results in Bräuer, Hackethal, and Hanspal 2022, where investors seek dividend income because they plan to spend the dividends) or whether the results also apply to investors for whom the dividend payment comes as an unplanned, plausibly exogenous income shock. As candidates for such a shock, we examine a) ordinary dividends that are newly initiated by the dividend-paying company (following Müller-Dethard, Reinhardt, and Weber 2025) and b) special dividends (following Baker, Nagel, and Wurgler 2007; Kaustia and Rantapuska 2012). In Figure A3 of the Internet Appendix we analyze the purchases that are financed with such dividends.[7] The results are similar to our main results. For newly initiated dividends (special dividends), 25% (30%) of investments are in options and 70% (67%) in stocks, of which 28% (31%) are in lottery stocks. Together with the evidence from our experiment in Section 3, these findings suggest that the receipt of dividends is causal for the lottery-like purchases by investors.

[7]To analyze the securities purchased with newly initiated dividends (special dividends), we use the same methodology as in Section 1.1, but limit the sample to investor-months, in which newly initiated dividends (special dividends) make up at least 50% of the total amount of dividends.

Table 3: Brokerage data: Characteristics of dividend gamblers

Dividend invested in...	...Lottery$_{IVolaISkewPrc}$			...Lottery$_{MaxRet}$			...Option		
	Yes	No	Diff	Yes	No	Diff	Yes	No	Diff
Panel A: Demographics									
Age (in years)	52.4	56.9	-4.5***	54.3	56.5	-2.2	50.5	56.2	-5.7***
Sex: Male	68.6	63.9	4.7	66.7	64.3	2.3	70.2	65.4	4.8
Sex: Female	14.0	11.6	2.5	16.2	11.1	5.1	6.9	12.4	-5.5**
Sex: Shared account	17.4	24.5	-7.2*	17.1	24.5	-7.4*	22.9	22.2	0.7
Married	57.0	65.5	-8.4	52.1	66.4	-14.2***	59.3	62.2	-2.9
Retired	14.0	20.9	-6.8*	22.2	19.2	3.0	11.4	21.5	-10.0***
Panel B: Portfolio characteristics									
Portfolio size (in 100k EUR)	1.1	1.8	-0.7***	1.0	1.8	-0.8***	1.1	1.7	-0.6**
Dividend yield p.a.	2.3	2.6	-0.3	2.0	2.6	-0.6***	1.9	2.3	-0.4**
Num buy orders p.a.	17.5	14.2	3.3	14.8	14.7	0.0	24.3	15.3	8.9***
Financially inexperienced	0.8	0.2	0.7	0.9	0.2	0.7	0.3	0.3	0.0
Panel C: Beginning-of-month holdings									
Stocks	86.6	85.7	0.9	86.6	85.8	0.8	75.3	84.3	-9.0***
...in Lottery$_{IdiVola,IdiSkew,Prc}$	6.6	3.0	3.7**	6.7	3.0	3.6***	7.0	4.4	2.6**
...in Lottery$_{MaxRet}$	7.6	3.8	3.8**	6.3	4.0	2.3**	7.6	5.7	2.0**
...in DAX	35.5	42.3	-6.8***	34.1	42.5	-8.5**	26.1	37.2	-11.0***
Funds	8.0	7.5	0.5	7.8	7.6	0.2	9.3	8.6	0.6
Bond	3.0	4.0	-1.0	3.4	4.0	-0.6	3.0	4.0	-1.0
Certificates	1.8	1.8	0.0	1.9	1.8	0.1	4.9	2.3	2.6***
Options	0.6	0.9	-0.4	0.4	0.9	-0.5	7.5	0.8	6.7***
N	121	579	700	117	583	700	376	1,188	1,564

This table compares mean characteristics between investors who purchase lottery stocks/options with their dividends and investors who purchase other securities with their dividends. Portfolio size is winsorized at the 99% level. All data are in percent except where noted otherwise. Standard errors are clustered by investor and year-month for portfolio size and holdings. Standard errors are clustered by investor for all other variables. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

1.2.2 Characteristics of investors who gamble their dividends

In Table 3, we analyze the characteristics of investors who reinvest their dividends in lottery stocks/options and compare them with the characteristics of investors who reinvest their dividends in other securities. On the one hand, we find patterns that are consistent with prior research on the characteristics of investors who gamble in financial markets (e.g., Kumar 2009; Dorn, Dorn, and Sengmueller 2015; Kormanyos, Hanspal, and Hackethal 2025). Specifically, investors who use their dividends to buy lottery stocks and options are younger, more often male, more often unmarried, have smaller portfolios, have a lower dividend yield, and trade more actively.

On the other hand, we find that the patterns are not large enough to suggest that investors who gamble their dividends are well characterized as notorious gamblers outside of their dividend reinvestments. The average age is 52 years, the average portfolio value 110,000 euros, and the average dividend yield is 2%. Fewer than 1% of dividend-gamblers are financially inexperienced. 26% to 36% of stock holdings are in DAX stocks and only 6% to 7% in lottery stocks. And while investors who buy options with their dividends generally trade more options, they also hold more funds and index-tracking certificates than investors who do not buy options with their dividends. In sum, our results indicate that the average dividend gambler is an investor who generally holds blue-chip stocks but who uses the dividends paid by those stocks as fun money to gamble in the financial markets (consistent with the mental accounting framework by Shefrin and Statman 1984).

In Figure A4 of the Internet Appendix, we investigate transitions between the dividend-induced purchases and the matched, dividend-unrelated purchases. We find two interesting patterns, consistent with the dividends-as-fun-money interpretation: First, investors who buy funds, bonds, or certificates without dividends, on average, make a net transition to buying stocks or options when they receive dividends. Second, investors who buy stocks without dividends, make a net transition to buying options when they receive dividends. Thus, not only do investors who usually invest prudently (e.g., fund investors) transition to more lottery-like investments (stocks and options) when they receive dividends. But also investors who already invest a little more lottery-like (by buying individual stocks) tend to step up their gambling when they receive dividends (by buying options).

1.2.3 Dividend-induced purchases in the US brokerage sample

In this section, we replicate our results in the widely used sample from Barber and Odean (2000) of a large US discount broker from 1991 through 1996. We identify dividend payments by combining holdings and trading data with dividend information from CRSP. We use the same methodology to identify and analyze dividend-induced purchases as in the German brokerage sample, except for the following modifications, which utilize the fact that the US sample contains daily trading data.

First, we only consider purchases that are preceded by a dividend payment in the last 30 days without another purchase in between (e.g., if an investor is paid dividends on June 14 and makes purchases on June 20 and June 21, only the purchase on June 20 is considered). Second, we sum up all dividends that are paid in the last 30 days before such purchases but after the last previous purchase (e.g., if the investor from above is also paid dividends on June 10 and does not make a purchase between June 10 and June 14, the dividends from June 10 are added to the dividends from June 14 to be considered for the purchase on June 20). Third, we exclude purchases that are more than twice the sum of these dividends. Fourth, if there are multiple purchases on the same day, we classify that purchase as dividend-induced that is closest in value to the sum of dividends.

Following this algorithm, we identify 1,943 dividend-induced purchases. As for the German sample, we compare these against dividend-unrelated, size-and-market-condition-matched purchases by the same investors. Table 4 presents the results. Panel A analyzes the characteristics of dividend-induced stock purchases. Based on their idiosyncratic volatility, skewness, and price (maximum one-day returns), 19.2% (19.4%) of dividend-induced stock purchases are lottery-like. Thereby, according to both definitions, lottery stocks are significantly overrepresented relative to the matched purchases (12.0% and

Table 4: Brokerage data: Characteristics of dividend-induced purchases at a US broker

	Dividend-induced purchases	Matched purchases	Difference
Panel A: Stock characteristics			
$\text{Lottery}_{IVolaISkewPrc}$	19.2	12.0	7.2***
			(2.1)
Lottery_{MaxRet}	19.4	14.6	4.9**
			(2.2)
Idiosyncratic volatility	2.8	2.4	0.4***
			(0.1)
Total volatility	3.0	2.7	0.4***
			(0.1)
Idiosyncratic skewness	23.7	10.6	13.1
			(8.6)
Total skewness	24.1	8.1	16.0*
			(8.4)
Price (in USD)	28.0	32.2	-4.3***
			(1.3)
Max one-day return	6.7	6.0	0.8**
			(0.3)
MCap (in bn. USD)	7.9	8.9	-0.9
			(0.9)
Panel B: Asset classes			
Stock	55.8	59.4	-3.6***
			(1.1)
Fund	13.9	12.5	1.4
			(0.9)
Bond	0.1	0.1	0.0
			(0.1)
Option	28.3	26.8	1.5***
			(0.6)
Other	1.9	1.2	0.7*
			(0.4)

Purchases that investors finance with dividends are identified (column 1) and matched with similar-sized, VIX-matched purchases by the same investors that are not financed with dividends (column 2). Column 1 (2) reports mean characteristics for the dividend-induced purchases (matched purchases). Column 3 reports differences in means between dividend-induced purchases and matched purchases. All data are in percent except where noted otherwise. Standard errors are clustered by household and date and are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. In Panel A (B), the number of dividend-induced purchases and matched purchases is 474 (1,943), each.

14.6%). Rows three through eight also show that each individual characteristic (such as volatility), is more lottery-like among dividend-induced purchases compared with the matched purchases. In Panel B, we analyze dividend-induced purchases across asset classes. The results indicate that options are slightly but statistically significantly overrepresented among dividend-induced purchases relative to the matched purchases (28.3% vs. 26.8%). Overall, the results are in line with those for the German sample and show that dividend gambling can be observed in different time periods and countries.

In the Internet Appendix, we subject our methodology to several robustness tests, which increase the sample size up to 16,657 dividend-induced purchases due to less restrictive identification criteria. In Table A7 (Table A8), we drop the minimum share of non-zero returns that we require to estimate lottery characteristics from 75% to 25% (0%). In Table A9, we consider purchases up to 10 times (instead of 2 times) the amount of dividends as dividend-induced. In Table A10, we consider purchases up to 90 days (instead of 30 days) following dividends as dividend-induced. Each robustness test corroborates an economically and statistically significant overrepresentation of lottery-like securities among dividend-induced purchases.

2 Asset pricing

In the previous section, we find that retail investors invest a disproportionate share of their dividends in lottery stocks. In this section, we test an implication of this finding. Specifically, we analyze whether the concentration of investments in lottery stocks leads to a particularly pronounced price pressure in lottery stocks based on marketwide dividend payments. First, we present the data for our analyses. Second, we report the results.

2.1 Asset pricing: Data

We use German stock market data from Datastream and process the data using the script provided by Landis and Skouras (2021). Details about the data processing are in Section B.1 of the Internet Appendix. German data have two main advantages for our purposes. First, the data match our German brokerage sample, which mostly consists of German securities. Second, German companies usually pay dividends once a year, in spring (especially in May), producing a short time period, during which large amounts of dividends flood the market: an ideal setting for price pressure to develop. As an out-of-sample test, we also replicate our results for the US using CRSP data in Section 2.2.4.

We separate the German stock market into two portfolios, a lottery portfolio and a non-lottery portfolio (consisting of all stocks that do not qualify as lottery stocks, not to be confused with the "anti-lottery" non-lottery stocks in Kumar 2009). For our baseline results, we follow Liu et al. (2020) and Jiang, Zhou, and Zhu (2024) and combine the lottery stock definitions by Kumar (2009) and Bali, Cakici, and Whitelaw (2011), s.t. the lottery portfolio consists of stocks with above-median idiosyncratic volatility and skewness, below-median price and a prior-month maximum one-day return above the 80th percentile.[8] The portfolios are value-weighted and re-sorted monthly. For our baseline results, we exclude stocks on their ex-dividend day and on their dividend-payment day to make sure that portfolio returns are not driven by stocks' ex- or payment-day returns. In Figure B10, we repeat our main analyses including such stocks and find that the results are virtually unchanged. We use data from January 2000 until April 2025, s.t., the first portfolios are formed in July 2000 (given the six-month estimation period for the lottery characteristics). We start in 2000 to ensure that we have at least 25 stocks in the lottery portfolio at all times (see Figure B1 for the number of stocks per portfolio over time).

[8]In Figure B11 of the Internet Appendix we also report results based on the uncombined lottery stock definitions for Germany and the US. Based on each definition, we estimate return differences between the lottery and the non-lottery portfolio until 20 days after the market pays out 1% of its value in dividends (like in Section 2.2.3 for the combined lottery stock definition). In Germany, the combined definition, the volatility-skewness-price definition, and the max-return definition lead to maximum price pressure differences of 6.45pp, 4.11pp, and 1.19pp (p-values: 0.01, 0.06, and 0.56). In the US, the respective values are 5.22pp, 4.80pp, and 4.24pp (p-values: 0.00002, 0.000003, and 0.00002). Thus, in both countries, the results are stronger, the more characteristics are used to classify lottery stocks, consistent with the benefits of composite measures, which are especially pronounced for non-US stock markets, like Germany, that have a smaller cross section and a shorter time series to average out misclassifications.

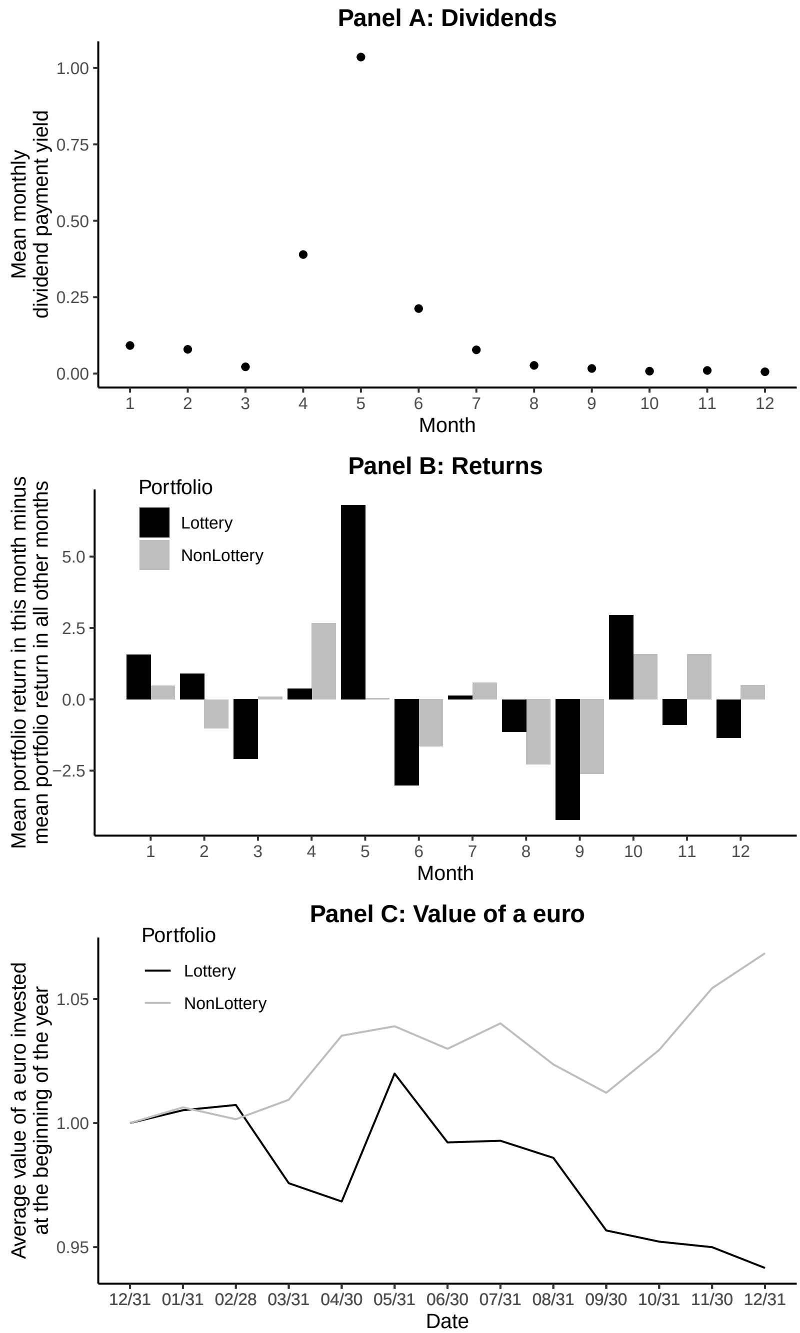
2.2 Asset pricing: Results

First, we study the performance of lottery stocks during the German dividend season. Second, we evaluate investment strategies that exploit the temporary outperformance of lottery stocks. Third, we quantify the price pressure in lottery stocks based on marketwide dividend payments. Fourth, we replicate our results for the US. Fifth, we test if the price pressure in lottery stocks can be explained by illiquidity, alone. Sixth, we perform a direct test of price pressure from dividend reinvestments using stocks that were purchased with dividends in our brokerage sample. Seventh, we perform a back-of-the-envelope calculation of the price multiplier that is necessary to produce the observed price pressure.

2.2.1 Lottery stock performance during the German dividend season

The perhaps simplest and most natural way to study portfolio price pressure from dividend reinvestments is to analyze the portfolios' performance during the German dividend season. Figure 1 presents dividend yields for each month, alongside the performance of the lottery portfolio and the non-lottery portfolio. Panel A plots the marketwide dividend yield and shows a substantial peak in May, when on average more than 1% of the German stock market's value is paid out in dividends. Panel B plots each portfolio's return in a given month in excess of the return in all other months (to account for the average underperformance of lottery stocks). Clearly standing out is the 6.80% excess return of the lottery portfolio in May, which is 6.76pp larger than the 0.04% excess return of the non-lottery portfolio in May. Notably, there is no single large negative return in any individual month (e.g., in June) that would reverse the lottery portfolio gains from May. Panel C plots the average development of one euro invested in each portfolio at the beginning of the year and held until the end of the year. On the one hand, the plot highlights the striking return of the lottery portfolio in May. On the other hand, the plot

Figure 1: Asset pricing: Dividends and portfolio returns by month



Panel A shows the mean monthly dividend yield of the German stock market (in pp). Panel B shows the mean return that each portfolio earns in a given month in excess of the portfolio's mean return in all other months (in pp). Panel C shows how a euro invested in each portfolio at the beginning of the year develops over the course of the year, averaged over all full years in the sample (2001-2024).

Table 5: Asset pricing: Portfolio returns by month

	m=1	m=2	m=3	m=4	m=5	m=6	m=7	m=8	m=9	m=10	m=11	m=12
Int	-1.80***	-1.87***	-1.53***	-1.53***	-2.26***	-1.60***	-1.67***	-1.81***	-1.57***	-1.83***	-1.50***	-1.55***
	(0.53)	(0.55)	(0.54)	(0.53)	(0.50)	(0.53)	(0.55)	(0.55)	(0.55)	(0.54)	(0.53)	(0.55)
Month=m	1.09	1.93	-2.18	-2.29	6.76**	-1.35	-0.45	1.16	-1.60	1.37	-2.48	-1.84
	(2.19)	(1.28)	(1.51)	(2.10)	(2.66)	(2.12)	(1.21)	(1.52)	(1.37)	(1.80)	(1.97)	(1.37)
Adj R^2	-0.002	0.000	0.001	0.002	0.040	-0.002	-0.003	-0.002	-0.001	-0.002	0.003	0.000

All stocks in the German stock market are separated into a lottery portfolio and a non-lottery portfolio which are used to form a long-short portfolio (long lottery, short non-lottery). The table shows the output of 12 regressions of monthly returns of the long-short portfolio on a dummy that is 1 if the current month is m and 0 if it is any of the other 11 months. Returns are in percent. Newey-West standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. N = 297.

shows how this return does not translate into a permanent outperformance. Although there is no clear-cut reversal in any particular month, the lottery portfolio continuously underperforms, on average, leading to a slow decay of the gains from May.

In Table 5, we test for each month, whether the return difference between the lottery portfolio and the non-lottery portfolio is different from the difference in all other moths. First, the negative intercepts indicate the average underperformance of the lottery portfolio of -1.71% per month (averaged over all months), in line with previous studies (e.g., Kumar 2009). Second, we find that May is the only month in which the performance difference between the lottery and non-lottery portfolio is systematically different from all other months with a difference of 6.76pp (p-value: 0.01).[9]

2.2.2 Investment strategies

Building on the prior results, we evaluate a simple, ex-ante implementable investment strategy that switches from investing in the non-lottery portfolio (which usually outperforms the lottery portfolio) to investing in the lottery portfolio during May. We implement the strategy as zero-net investment portfolios in two versions: In the first implementation, the strategy switches between being long lottery, short non-lottery in May and being

[9] A potential concern is that the results could be confounded by annual general meetings, which generally take place shortly before dividend payments in Germany and are thus also clustered in May. We argue that this circumstance would actually predict *lower* returns for the lottery portfolio in May as Liu et al. (2020) find that lottery stocks generally underperform when new fundamental information is revealed (e.g., earnings are announced).

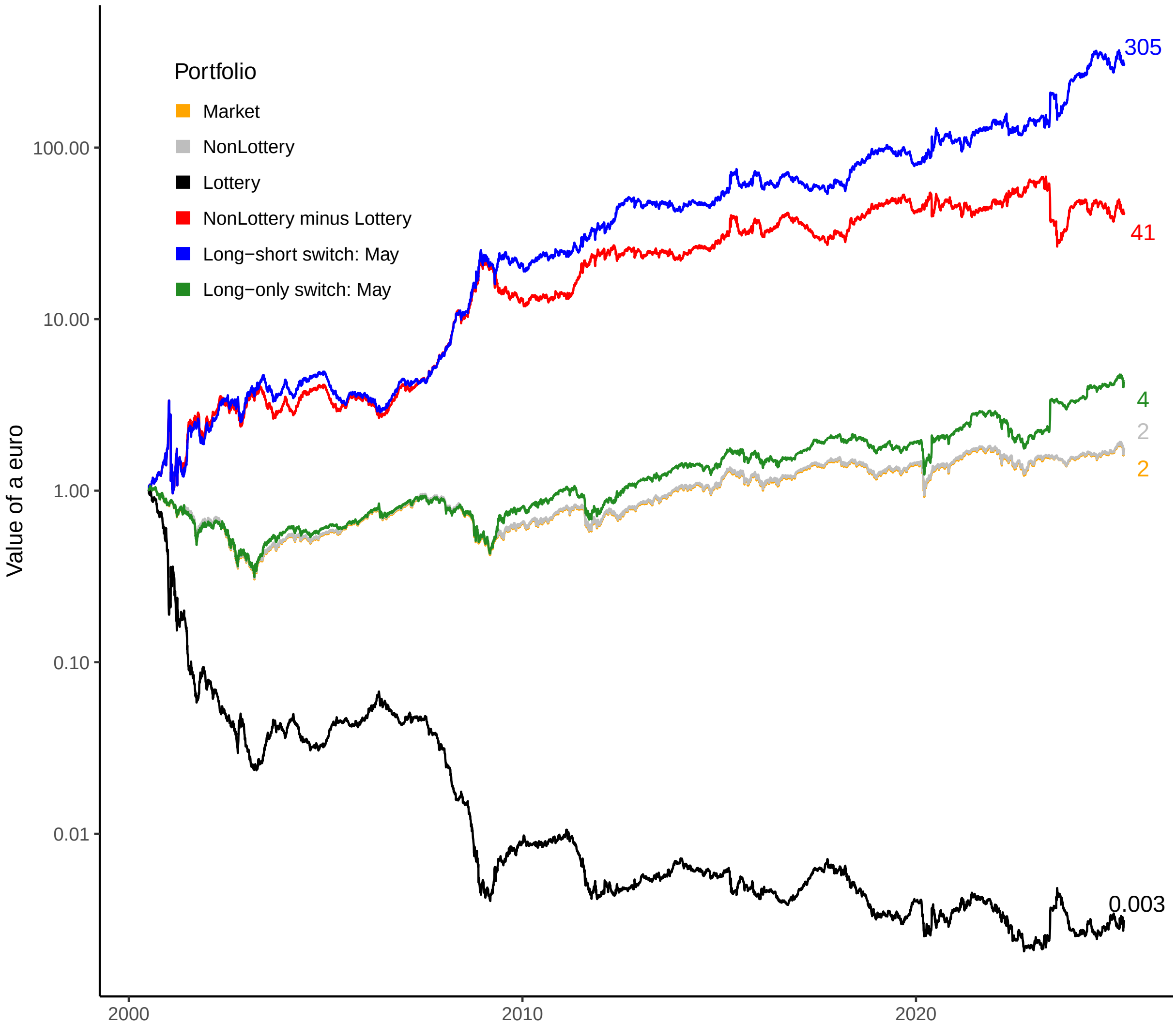
long non-lottery, short lottery in all other months. In the second implementation, the strategy is always short the risk-free rate and only the long leg switches between the lottery portfolio in May and the non-lottery portfolio in all other months. While the first implementation uses the return differences between lottery and non-lottery stocks maximally, the second implementation minimizes transaction costs.

Figure 2 plots how a euro invested in each strategy develops from 2000 through 2025. The first set of lines indicates the development of the base portfolios. As a benchmark, the orange line shows that an investment in the German market minus the risk-free rate grows from 1 euro to 1.73 euros (2.2% geometric average return p.a.) during the sample period. Because of the large overlap, especially given value-weighting, a static investment in the non-lottery portfolio minus the risk-free rate (gray line) performs almost the same as the market and grows to 1.75 euros (2.3% return p.a.). By contrast, a static investment in the lottery portfolio minus the risk-free rate (black line), loses almost all of its value and leaves just 0.3 cents of the initially invested euro (-20.7% return p.a.). In consequence, a strategy that is always long the non-lottery portfolio and short the lottery portfolio (red line) performs very well, growing 1 euro to 41.22 euros (16.0% return p.a.).

The second set of lines indicates the May-based switching strategies. The long-short switching strategy grows 1 euro into 305 euros, which corresponds to a strikingly large geometric average return of 25.7% p.a. (blue line). Of course the performance is mostly based on the 11 months per year when the lottery portfolio is shorted, which likely incurs substantial transaction costs.[10] Thus, the green line indicates the development of the strategy that is always short the risk-free rate and only switches the long position from the non-lottery portfolio to the lottery portfolio in May. The long-only switching strategy

[10]Still, in comparison with the static non-lottery minus lottery strategy, the long-short switching strategy is likely cheaper to implement because the switched positions (long lottery, short non-lottery) presumably have lower transaction costs. This means the outperformance of the switching strategy over the static non-lottery minus lottery strategy is likely *larger* after transaction costs.

Figure 2: Asset pricing: Investment strategies over time



All stocks in the German stock market are separated into a lottery portfolio and a non-lottery portfolio. The portfolios are value-weighted and re-sorted monthly. Each line corresponds to a zero-net investment strategy involving these portfolios: "Market" ("NonLottery"; "Lottery") is long the market (non-lottery portfolio; lottery portfolio) and short the risk-free rate. "NonLottery minus Lottery" is long the non-lottery portfolio and short the lottery portfolio. "Long-short switch: May" is long lottery, short non-lottery in May and long non-lottery, short lottery in all other months. "Long-only switch: May" is always short the risk-free rate and is long lottery in May and long non-lottery in all other months.

grows 1 euro into 4.33 euros (6.0% geometric average return p.a.), more than doubling the performance of a passive investment in the German market. This performance is achieved with only negligible transaction costs incurred to buy (sell) the lottery (non-lottery) portfolio at the end of April and sell (buy) again at the end of May.[11]

Note that the outperformance of the switching strategies (blue and green lines) vs. the static strategies (red and gray lines) becomes larger over time (i.e., the lines diverge more strongly), indicating that the dividend-reinvestment-based price pressure in lottery stocks increases over time. On the one hand, this finding is in line with the increase in marketwide price pressure that Hartzmark and Solomon (2025) document. On the other hand, the finding is consistent with the proliferation of online- and neo-brokers that a) pay out dividends to the brokerage cash balance, favoring reinvestments (Müller-Dethard, Reinhardt, and Weber 2025), and that b) promote gambling-like trading behavior (Barber and Odean 2002; Kalda et al. 2021; Freibauer, Grawert, and Rieger 2024).

In Table B1 of the Internet Appendix, we perform additional performance analyses for the May-based switching strategies. First, we regress the strategies' returns on the Carhart (1997) four factors. Second, we additionally control for the return of the static non-lottery minus lottery (NML) strategy (similar to Hartzmark and Solomon 2025, who regress the returns of their market timing strategies on the returns of the equity risk premium). Third, we test the ability of the switching strategies to time NML returns by regressing the strategy returns on a) NML and NML^2 (following Treynor and Mazuy 1966) and b) NML and $max(NML, 0)$ (following Henriksson and Merton 1981).[12] We find that the outperformance of lottery stocks in May cannot be explained by the included

[11] In Figure B5 of the Internet Appendix, we perform a placebo test, in which we repeat the long-only switching strategy with each other month (e.g., long lottery in January and long non-lottery in all other months). We find that the May-based switching strategy is far superior to all placebo strategies and that it is the only strategy that beats a market investment.

[12] In these regressions, not the intercept but positive coefficients for a) NML^2 and b) $max(NML, 0)$ indicate timing ability as they measure convexity in strategy returns relative to NML. Our results show that the switching strategies have positive and significant timing coefficients, in line with the v-shaped relationship when plotting NML returns on the x-axis and strategy returns on the y-axis in Figure B6 of the Internet Appendix.

factors (and rather increases, controlling for them) and that the May-based switching strategies succeed in timing their investments in the lottery vs. non-lottery portfolios.

Moreover, in Figure B7, Figure B8, and Figure B9 of the Internet Appendix, we find that the distributions of monthly and daily lottery portfolio returns during May exhibit a rare combination of characteristics that investors generally find attractive (Holzmeister et al. 2020; Ungeheuer and Weber 2023): The distributions are positively skewed while simultaneously exhibiting a lower loss frequency and a higher outperformance frequency compared with the distributions of non-lottery portfolio returns. For example, the lottery portfolio outperforms the non-lottery portfolio 14 out of 24 times in May (58%) with a maximum outperformance of 50pp (minimum -12pp). In all other months, the positive skewness of lottery portfolio returns comes at the expense of more frequent losses and a frequent underperformance of the non-lottery portfolio.

2.2.3 Price pressure in lottery stocks based on marketwide dividends

Next, we use the methodology from Hartzmark and Solomon (2025) to compute a measure of price pressure that expresses by how many percentage points the value of a portfolio increases per 1% of capitalization that the market pays out in dividends. This measure has the advantages of being more precise regarding the timing of price pressure and being applicable in markets that have no dividend season (like the US).

Hartzmark and Solomon (2025) regress daily returns of the US stock market on the aggregate amount of dividends paid out by the US stock market on that day scaled by the market capitalization of the US stock market on the prior day. First, we modify this methodology by changing the dependent variable from the market return to the returns of the lottery portfolio, the non-lottery portfolio, and the difference between the two, s.t., we can measure portfolio price pressure and differences in portfolio price pressure.

Second, to study the n-day cumulative price pressure from delayed reinvestments until $n-1$ days after the dividend payment, we regress day t portfolio returns on marketwide dividend payments averaged over the last n days from day $t-n+1$ until day t and scaled by the market capitalization on day $t-1$. This allows us to estimate by how many percentage points the value of each portfolio increases over n days when the market pays out 1% of its value in dividends.[13]

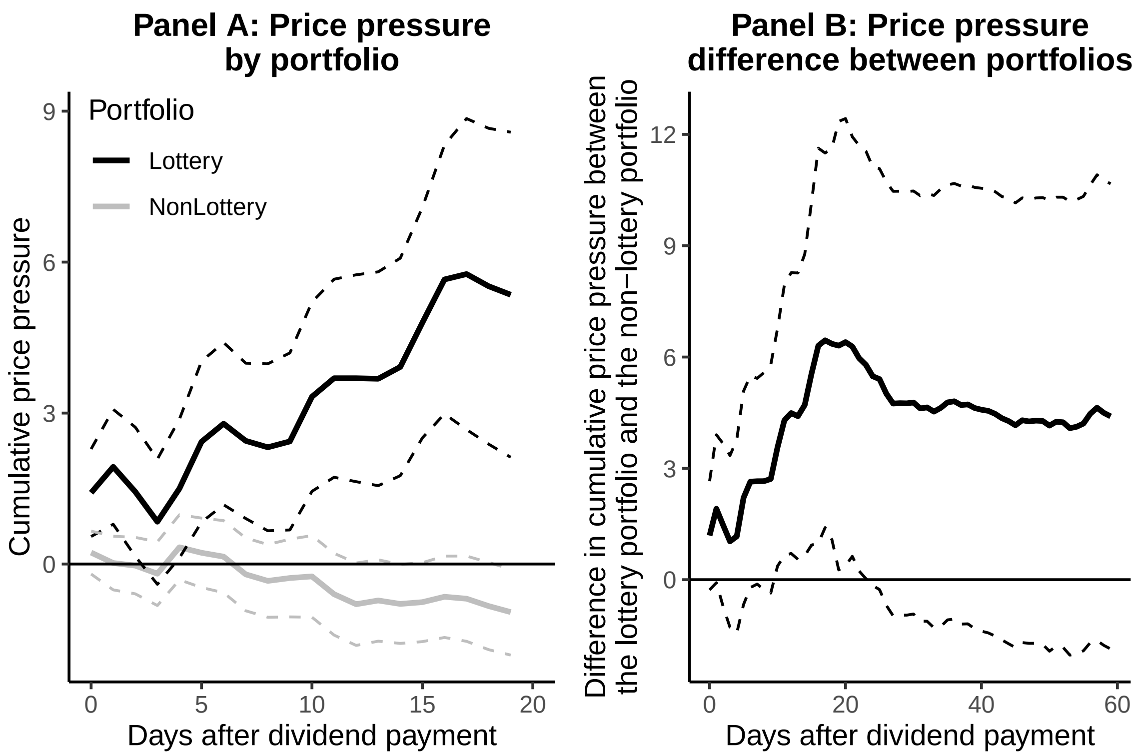
Figure 3 presents the results. Panel A shows the cumulative price pressure for the lottery portfolio and the non-lottery portfolio until 20 days after the dividend payment. We find that the cumulative price pressure in the lottery portfolio grows steadily in the month after the dividend payment, reaching its peak 17 days after the payment at a value of 5.76pp. This value indicates that for each 1% of dividends that the market pays, the lottery portfolio earns a return of 5.76pp until 17 days after the payment, on average. By contrast, the price pressure in the non-lottery portfolio remains close to zero and has a point estimate of -0.68pp 17 days after payment.[14]

Panel B plots the difference in the cumulative price pressure between the two portfolios until 60 days after the dividend payment. Given that lottery stocks experience strong price pressure and non-lottery stocks experience price pressure close to zero, the first 20 days closely resemble Panel A with the peak price pressure difference reached after 17

[13] A simple example helps illustrate this estimation: Assume the true effect is that 1% of dividends produces cumulative portfolio returns of 1.5pp over the course of 2 days. Dividends are 0, 0, 1, 0, 0 and returns are 0, 0, 0.75, 0.75, 0. The right-hand-side variable in our regressions is the average dividend payment yield over 2 days which is 0, 0, 0.5, 0.5, 0. Regressing returns on the 2-day average payment yield gives a coefficient estimate of 1.5 (i.e., it recovers the true effect).

[14] Because the non-lottery portfolio is very close to the market portfolio, this means the marketwide price pressure from Hartzmark and Solomon (2025) does not replicate for the German market. For international markets, the authors report a price pressure of 0.20pp per 1% of dividends on the first 2 days after payment (i.e., 0.40pp price pressure cumulatively), whereas we find a cumulative price pressure of 0.02pp. However, with a standard error of 0.53pp, our results do not significantly reject the 0.4pp estimate from Hartzmark and Solomon (2025), either. We also repeat the price pressure test for the DAX (the most prominent German stock market index) and likewise find no significant dividend-payment-related price pressure.

Figure 3: Asset pricing: Price pressure in lottery stocks after dividend payments



Daily portfolio returns are regressed on average dividends paid by the German stock market over the last n days, scaled by the prior day's capitalization of the German stock market. The portfolios in Panel A are the lottery portfolio and the non-lottery portfolio, s.t., the coefficients indicate by how many percentage points the value of each portfolio increases over n days for each 1% that the market pays out in dividends. The portfolio in Panel B is the lottery portfolio minus the non-lottery portfolio, s.t., the regression coefficients indicate by how many percentage points more the portfolio value increases for the lottery portfolio vs. the non-lottery portfolio. Panel A (B) shows standard error bars (95% confidence intervals) using Newey-West standard errors.

days at a return difference of 6.45pp per 1% of dividends (p-value: 0.01). This closely matches the results from Table 5, in which we find a return difference of 6.76pp between the lottery and non-lottery portfolio in May, when the market pays out 1% in dividends.

From 20 to 60 days after payment, the price pressure difference between the two portfolios first declines slightly and then stabilizes around 4.5pp per 1% of dividends. The duration of the price pressure and its permanence are in line with Hartzmark and Solomon (2025), who find that marketwide price pressure also peaks around 20 days after the dividend payment and who also find no evidence of a complete reversal afterwards.

Importantly, as already discussed in Section 2.2.1, our finding of permanent price pressure in the lottery portfolio does not mean that the lottery portfolio continues to outperform the non-lottery portfolio indefinitely. Over longer horizons, the stable price pressure wedge between the lottery portfolio and the non-lottery portfolio is offset by the lottery portfolio's average return disadvantage of -1.7pp per month that continuously eats away at the performance of the lottery portfolio and that is represented through a negative intercept in the regressions that underlie the plot.

2.2.4 Replication in the US

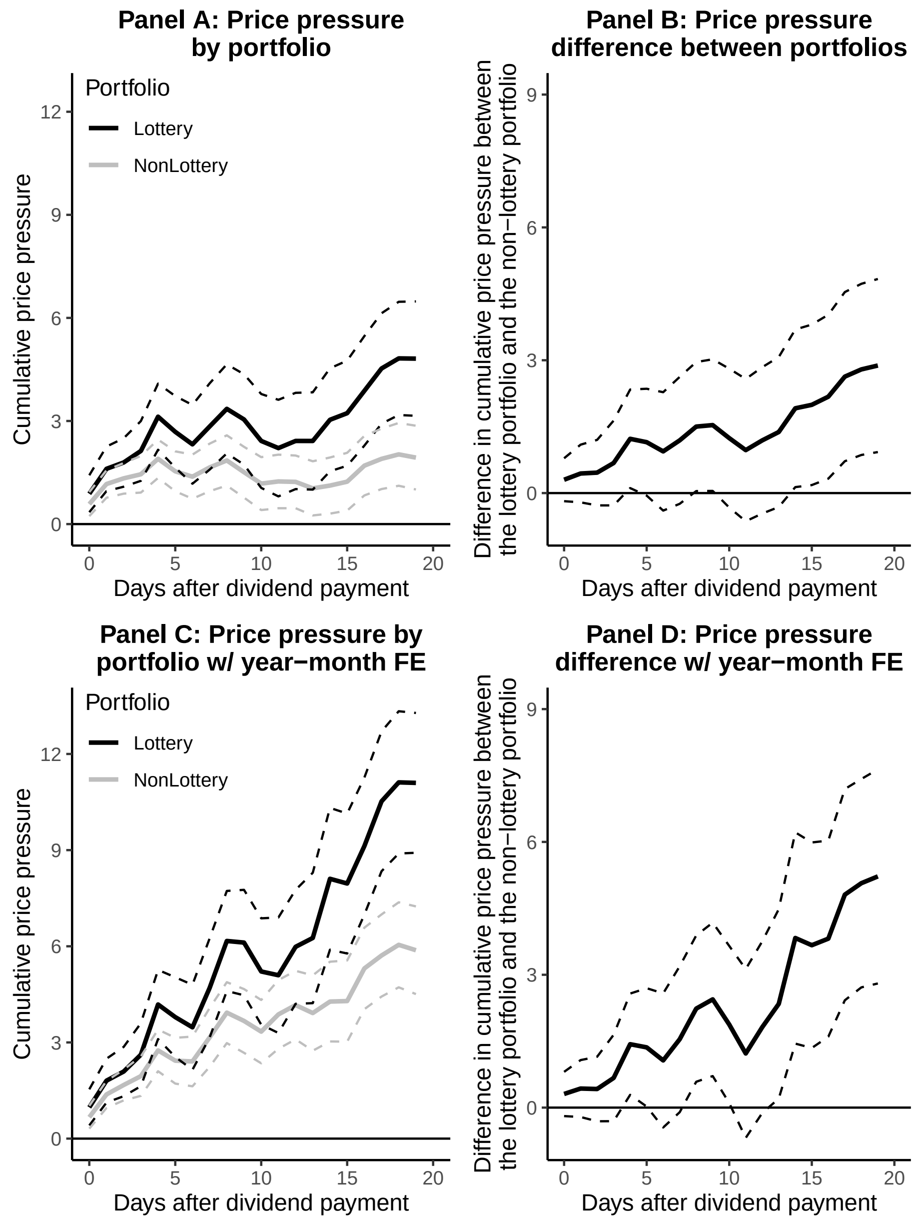
In this section, we replicate the increased price pressure in the lottery stock portfolio for the US stock market. We use CRSP data from 1927-2024, process the data as in Hartzmark and Solomon (2025), and separate the market into a value-weighted lottery portfolio and a value-weighted non-lottery portfolio, as we do for the German market.[15] Then, we regress portfolio returns on average dividends paid by the US stock market in the past $n \in [0, 19]$ days, scaled by the capitalization of the market on the prior day.[16] The results are presented in Figure 4.

First, in Panel A, we replicate the marketwide price pressure from Hartzmark and Solomon (2025). The authors report price pressure of 0.56, 0.60, 0.24, 0.15, and 0.54 on the first 5 days after payment, corresponding to a cumulative price pressure of 0.56, 1.16, 1.40, 1.55, and 2.09 for the market. As the non-lottery portfolio is very close to the

[15] As for the German data, we require that returns are non-missing and non-zero on at least 75% of trading days in the past 6 months and the past 1 month to estimate the stock's lottery characteristics. In Figure B12 of the Internet Appendix, we change this requirement to 25% or 0% and show that our results are robust to this choice.

[16] For the US, we do not extend our results until 60 days after payment because of the quarterly payment frequency. As Figure B4 of the Internet Appendix shows, the quarterly payment frequency means that 60-day average dividend payments have very little variation within a year. Thus, variation in the 60-day dividend yield mostly reflects variation in the denominator (market capitalization).

Figure 4: Asset pricing: Price pressure in lottery stocks in the US



Daily portfolio returns are regressed on average dividends paid by the US stock market over the last n days, scaled by the prior day's capitalization of the US stock market. The portfolios in Panels A and C are the lottery portfolio and the non-lottery portfolio, s.t., the coefficients indicate by how many percentage points the value of each portfolio increases over n days for each 1% that the market pays out in dividends. The portfolio in Panels B and D is the lottery portfolio minus the non-lottery portfolio, s.t., the regression coefficients indicate by how many percentage points more the portfolio value increases for the lottery portfolio vs. the non-lottery portfolio. Panels A and B include no year-month fixed effects, Panels C and D include year-month fixed effects. Panels A and C (B and D) show standard error bars (95% confidence intervals) using Newey-West standard errors.

market, our cumulative price pressure estimates of 0.58, 1.17, 1.33, 1.45, and 1.90 for the non-lottery portfolio are very close to the results of Hartzmark and Solomon (2025).[17]

Second, in Panel A, we replicate our finding of increased price pressure in the lottery portfolio. Until 20 days after payment, the lottery portfolio increases by 4.82pp for each 1% of dividends, while the non-lottery portfolio increases by 1.93pp. Panel B shows that the difference of 2.88pp is significant with a p-value of 0.004 and that the difference is the result of a steadily increasing price pressure wedge between the two portfolios.

Third, in Panels C and D, we follow Hartzmark and Solomon (2025) and include year-month fixed effects to make sure that our results are not driven by time trends or seasonalities that correlate with dividends.[18] Consistent with Hartzmark and Solomon (2025), including year-month fixed effects leads to higher price pressure estimates for both portfolios. 20 days after payment, the results indicate that the value of the lottery (non-lottery) portfolio increases by 11.10pp (5.88pp) per 1% of dividends. This leads to a price pressure difference of 5.22pp (p-value: 0.00002) between the two portfolios.

In Figure B13 of the Internet Appendix, we repeat the price pressure tests only including data from 2000 onward (when our German sample starts). Consistent with our previous results, we find a price pressure difference between the lottery and non-lottery portfolio of 8.80pp per 1% of dividends 20 days after payment, albeit with large standard errors, resulting in a p-value of 0.41. The large standard errors are in line with Hartz-

[17]The small differences can be explained by a) the non-lottery portfolio not being exactly the same as the market, b) our sample extending until 2024 while that of Hartzmark and Solomon (2025) ends in 2018, and c) a regression including the averaged dividend lags not being exactly the same as a regression including the individual dividend lags.

[18]In our analyses of the German market, we do not include year-month fixed effects because of the clustering of dividend payments in May. In light of this clustering, the year-month fixed effects would essentially absorb all of the variation in dividend payments that we want to study (see Figure B4 of the Internet Appendix). As an alternative, we can just include year fixed effects to account for potential correlations among time trends. When we do so, the results change very little (e.g., the maximum price pressure difference between the lottery and non-lottery portfolio is 6.33pp per 1% of dividends with a p-value of 0.02), which makes sense because there is no substantial time trend in annual dividends over the sample period from 2000 until 2025 (see Figure B3 of the Internet Appendix).

mark and Solomon (2025), who estimate marketwide price pressure by decade and find a substantial increase in standard errors starting 2000. We believe that the increase in standard errors is driven by the strong decrease in dividend yields, which means that return differences per dividend are estimated with much less variation in dividends.[19] The decreasing variation in US dividend yields is illustrated in Figure B4 of the Internet Appendix. The figure also shows that this is not a problem for the German market due to the large variation in dividends between the dividend season and the rest of the year.[20]

2.2.5 Price pressure in illiquidity-matched non-lottery stocks

Price pressure is the product of excess demand and the price multiplier (i.e., by how many dollars the market value of the portfolio increases per additional dollar invested). Hartzmark and Solomon (2025) find that price pressure is generally stronger in smaller stocks, consistent with small stocks' higher illiquidity and higher price multipliers. As lottery stocks are, on average, smaller and more illiquid than non-lottery stocks, we make sure that the stronger price pressure in lottery stocks cannot be explained by a higher

[19]To verify that the decrease in dividend yields can explain the increase in the standard errors of price pressure estimates, we run a simulation in Figure B14 of the Internet Appendix. In the simulation, we use actual data on dividend payments by the US stock market and simulate return data with a random component and a price pressure component. The simulation successfully replicates a) the increase in standard errors comparing our post-2000 US analysis in Figure B13 with our full-sample US analysis in Figure 4 and b) the increase in standard errors that Hartzmark and Solomon (2025) report for their decade-wise estimation of 2-day marketwide price pressure. Regarding the latter, we find that, e.g., the standard errors from 2000-2010 are 4 times larger than those from 1950-1960.

[20]Although there is no simple analogue to the May-based investment strategies in Germany from Section 2.2.2, we also experimented with investment strategies for the US (e.g., going long lottery, short non-lottery on the 20 days that have the highest 20-day dividend yield each year and long non-lottery, short lottery on all other days). We find that such strategies can similarly produce significant alphas in the US but that the success is mostly concentrated in the early sample, when dividend yields were particularly high. Note that the performance concentration early in the sample is not inconsistent with an increased price pressure late in the sample. While price pressure is a measure of return per dividend, a large return not only requires a large return per dividend but also large dividends. Thus, even if the return per 1% of dividend yield is twice as large since 2000, the dividend yield since 2000 is only one half to one third that of prior years (see Figure B3 of the Internet Appendix).

price multiplier alone, but instead also reflects the higher excess demand that we observe from the tendency to gamble with dividends.

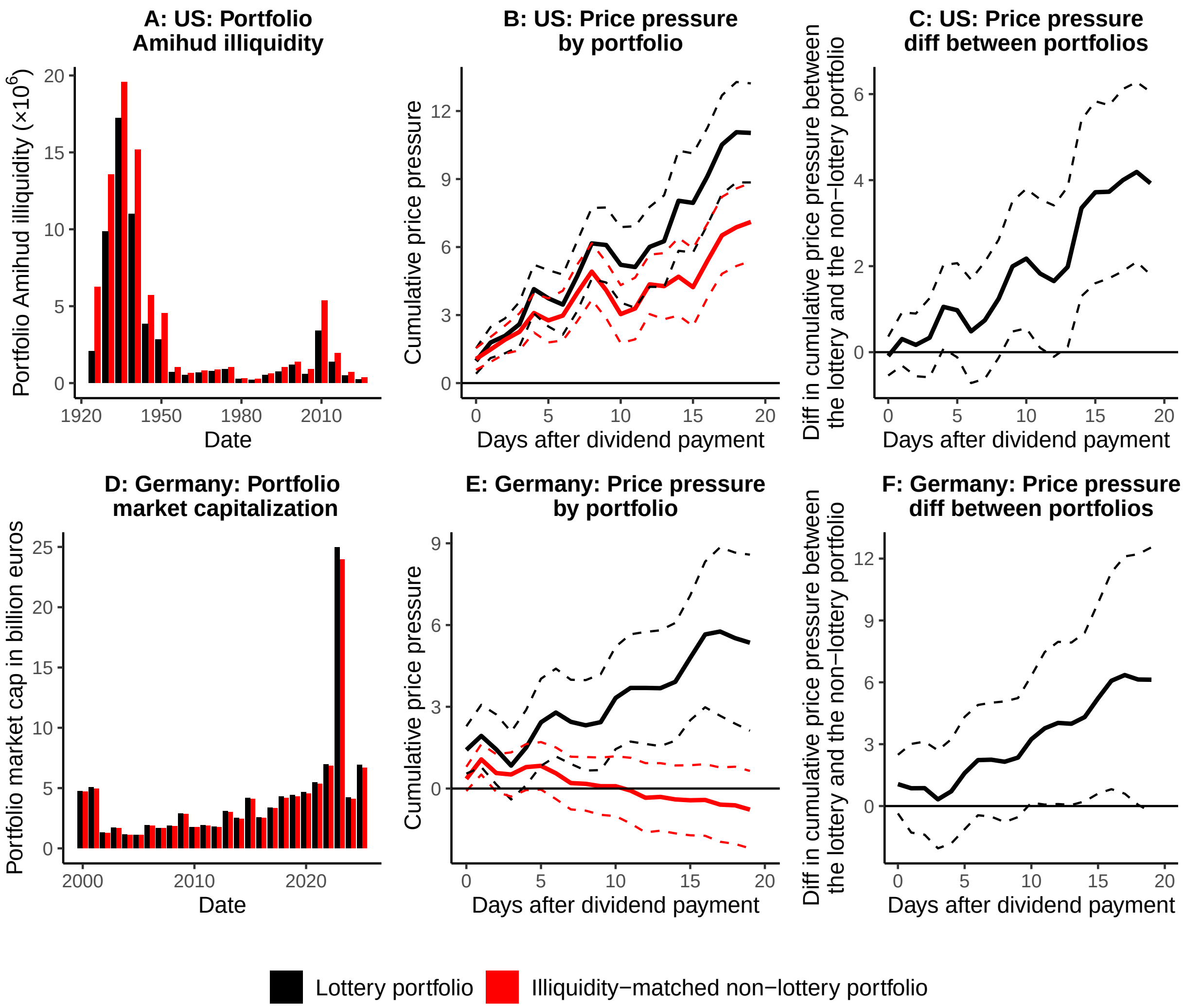
To do so, we compare price pressure in the lottery portfolio with price pressure in an illiquidity-matched non-lottery portfolio (for which we would expect the same price multiplier). For the US, we measure illiquidity with stocks' Amihud (2002) illiquidity measure, averaged over the prior month. For Germany, we proxy for illiquidity using stocks' prior-day market capitalization (due to limitations in trading volume data coverage in Datastream). The matching procedure is straightforward: First, each lottery stock on each day is matched with the least illiquid non-lottery stock that is more illiquid than the lottery stock (with illiquidity measured using high Amihud (2002) illiquidity/low market capitalization in the US/Germany).[21] Second, the lottery stocks and the illiquidity-matched non-lottery stocks are used to form value-weighted portfolios. Third, we test for a difference in dividend-payment related price pressure between the two portfolios.

If price multipliers were the only explanation for our previous results, the null hypothesis is that we find no difference in price pressure between the two portfolios, as the excess demand from marketwide dividend reinvestments should be spread evenly between the two portfolios. Instead, if there is additional dividend-gambling-based excess demand for lottery stocks, the alternative hypothesis is that the price pressure is stronger for the lottery portfolio than the illiquidity-matched non-lottery portfolio.

The results are presented in Figure 5. Panels A and D plot the illiquidity measures of the different portfolios over time. The plots shows that the matching works well as the Amihud (2002) illiquidity in Panel A (market capitalization in Panel D) of the matched non-lottery portfolio is close to that of the lottery portfolio but always a bit larger

[21]For the Amihud (2002) matching, we follow Klos, Koehl, and Rottke (2023) and only match stocks with a difference in market capitalization of less than 10%. If no such match exists, we gradually increase the allowed deviation by 10pp (i.e., to 20%, 30% etc.) until a match is found. This procedure makes sure that the value-weighted Amihud (2002) illiquidity measures of the portfolios match.

Figure 5: Asset pricing: Price pressure in illiquidity-matched non-lottery stocks



The first (second) row presents results for the US (German) market, measuring illiquidity with a higher Amihud (2002) illiquidity measure (lower market capitalization). In both markets, each lottery stock on each day is matched with the least illiquid non-lottery stock that is more illiquid than the lottery stock. On each day, the lottery stocks and the illiquidity-matched non-lottery stocks are used to form value-weighted portfolios. Panels A and D plot the portfolios' illiquidity measures over time. For Panels B and C (E and F), daily portfolio returns are regressed on average dividends paid by the US (German) stock market over the last n days, scaled by the prior day's capitalization of the US (German) stock market. The portfolios in Panels B and E are the lottery portfolio and the non-lottery portfolio, s.t., the coefficients indicate by how many percentage points the value of each portfolio increases over n days for each 1% that the market pays out in dividends. The portfolio in Panels C and F is the lottery portfolio minus the non-lottery portfolio, s.t., the coefficients indicate by how many percentage points more the portfolio value increases for the lottery portfolio vs. the non-lottery portfolio. Panels B and C include year-month fixed effects. Panels B and E (C and F) show standard error bars (95% confidence intervals) using Newey-West standard errors.

(smaller).[22] Next, we repeat our price pressure tests from Figure 3 with the illiquidity-matched non-lottery portfolio replacing the all-encompassing non-lottery portfolio. On the one hand, Panels B and E show that the price pressure is stronger in the illiquidity-matched non-lottery portfolios than in the all-encompassing non-lottery portfolios from Figure 3 and Figure 4. This is consistent with the stronger price pressure in small stocks reported by Hartzmark and Solomon (2025) and with the notion that more illiquid stocks have higher price multipliers and therefore experience stronger price pressure.

On the other hand, Panels C and F show that the price pressure is still substantially larger in the lottery portfolios than in the illiquidity-matched non-lottery portfolios. In consequence, the price pressure difference between the portfolios grows steadily over the first month after the dividend payment and reaches a maximum of 4.19pp per 1% of dividends in the US in Panel C with a p-value of 0.00009 (6.35pp in Germany in Panel F

[22] In Panel D, the large portfolio capitalizations of the German lottery portfolio in 2023 are driven by Uniper, one of the largest European energy companies. In December 2022, amid the European gas crisis, the German government bailed out Uniper by purchasing 99.12% of Uniper's stock, leaving just 0.88% as free float (see https://www.uniper.energy/investors/share/shareholder-structure, as of 2026-05-07). This circumstance entails two considerations for our analysis.

First, Uniper is a prime example for dividend-reinvestment-induced price pressure in lottery stocks. On the one hand, the uncertain business situation and the increased return volatility, driven by the low free float, make Uniper a prominent lottery stock in 2023. On the other hand, the low free float makes Uniper particularly susceptible to price pressure. Thus, based on the findings in this paper, there is a strong case to expect a large return for Uniper in May, 2023. Indeed, we find a return of 60% for Uniper in May, 2023! Consistent with price pressure, this performance is significantly driven by a streak of increasingly large one-day returns from May 25 through June 1 (2%, 3%, 9%, 15%, 15%, and 28%). Directly afterwards, from June 2 through 5, the price pressure is partially reversed with large negative one-day returns of -21% and -20% (though it takes until December for Uniper to entirely drop back to its pre-May price levels, in line with our previous findings). We search the internet for fundamental news that could explain this episode of extreme returns, but find none. Instead, the only explanation we discover is based on volatility due to Uniper's low free float, consistent with price pressure (https://www.tagesschau.de/wirtschaft/finanzen/marktberichte/marktbericht-dax-dow-jones-boerse-114.html, as of 2026-05-07). Moreover, we find that other German energy companies, that do not qualify as lottery stocks in 2023, have a very different performance during Uniper's price pressure episode. E.g., E.ON has a return of -1% in May 2023, and one-day returns between -1% and 1% from May 25 through June 5.

Second, although the Uniper observations are accurate, we make sure that our results also hold up when we exclude Uniper in light of its low free float, paired with its large portfolio weight in 2023. We find that our price pressure estimates decrease a bit when we exclude Uniper but that they all remain economically large and highly statistically significant (e.g., the mean return difference between the lottery and the non-lottery portfolio increases by 5pp during May with a p-value of 0.008).

with a p-value of 0.03). Therefore, the results indicate that the stronger price pressure in lottery stocks cannot be explained by a higher price multiplier alone but is instead also driven by the excess demand from investors who gamble their dividends.

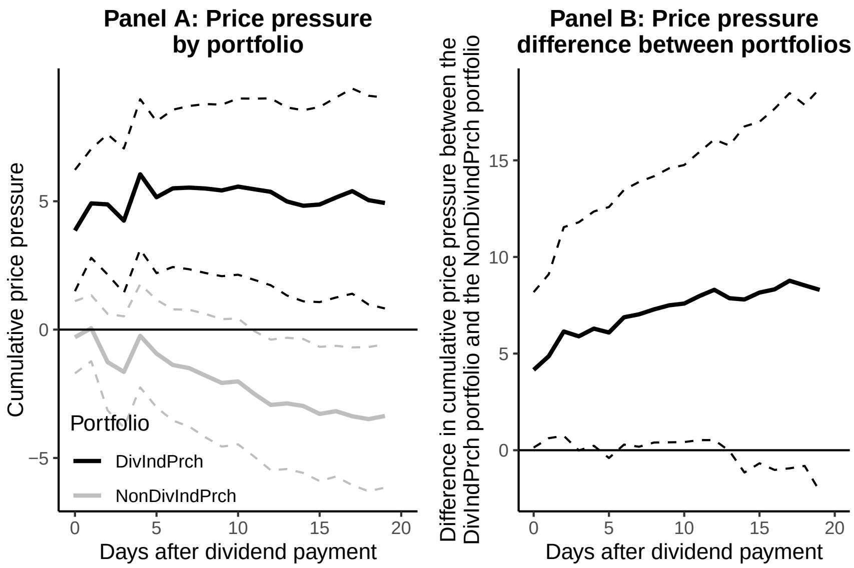
2.2.6 Price pressure in stocks purchased with dividends at the broker

As a direct test of price pressure from dividend reinvestments, we analyze price pressure in stocks that are purchased with dividends in the German brokerage sample. In all months with dividend-induced purchases in the sample, we form a market-value-weighted portfolio of stocks that are purchased with dividends and a portfolio of stocks that are only purchased by investors who do not receive dividends in the respective month. As before, we analyze the difference in dividend-payment-based price pressure between the two portfolios.[23] Figure 6 reports the results. We find a price pressure difference of 4.86pp per 1% of dividends 1 day after payment (p-value: 0.02) that grows to 8.77pp after 17 days (p-value: 0.08). Although naturally noisier (due to the shorter sample period and the smaller number of stocks per portfolio), the estimates are in line with our prior results.

Are the investors from our brokerage sample able to exploit the temporary outperformance by making their investments before the price pressure occurs or is it their trading that drives up the prices? To answer this question, we analyze the performance of dividend-induced purchases and distinguish between purchases of lottery stocks and purchases of non-lottery stocks. Figure 7 presents excess returns over the market from month 1 through month 24 after the purchase. First, we find that the excess returns of the non-lottery purchases are close to zero at all points in time, in line with the lack of price pressure in non-lottery stocks. Second, dividend-induced purchases of lottery stocks already underperform the market by -9pp 1 month after the purchase, on average. This

[23] By using stocks that are purchased in the same month without dividends as a benchmark, we account for factors such as the market performance or a tendency to purchase recent winners.

Figure 6: Asset pricing: Price pressure in stocks purchased with dividends at the broker

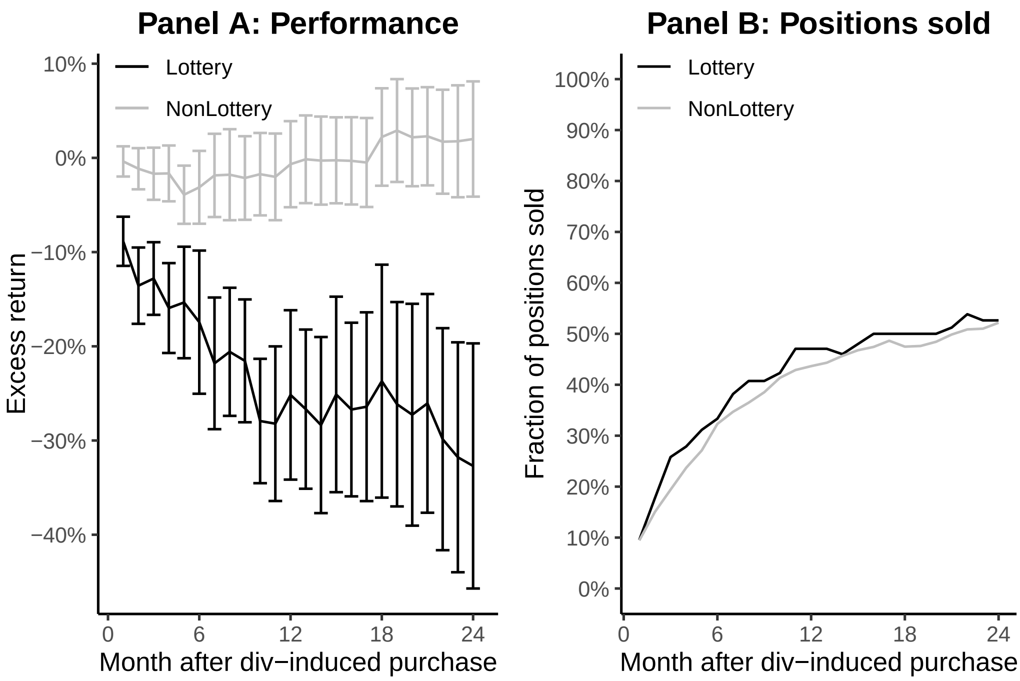


In all months with dividend-induced purchases in the German brokerage sample, we form a portfolio of stocks purchased with dividends ("DivIndPrch") and a portfolio of stocks only purchased by investors who do not receive dividends in the respective month ("NonDivIndPrch"). Daily portfolio returns are regressed on average dividends paid by the German stock market over the last n days, scaled by the prior day's capitalization of the German stock market. The portfolios in Panel A are the DivIndPrch portfolio and the NonDivIndPrch portfolio, s.t., the coefficients indicate by how many percentage points the value of each portfolio increases over n days for each 1% that the market pays out in dividends. The portfolio in Panel B is the DivIndPrch portfolio minus the NonDivIndPrch portfolio, s.t., the regression coefficients indicate by how many percentage points more the portfolio value increases for the DivIndPrch portfolio vs. the NonDivIndPrch portfolio. Panel A (B) shows standard error bars (95% confidence intervals) using Newey-West standard errors.

suggests that retail investors do not buy lottery stocks before the price pressure occurs but that retail investors drive up the prices of lottery stocks with their dividend-driven demand for gambling. Third, the underperformance of dividend-induced purchases of lottery stocks worsens over the long run, dropping to an excess return of -33pp 24 months after the purchase (including the performance of positions sold by then). As we find that only 10% (53%) of positions are sold within 1 month (24 months) after the purchase, the results suggest that retail investors hold onto the lottery stocks for so long that the positions gradually bleed out from the average underperformance of lottery stocks.[24]

[24]Notably, there is a spike in the performance of lottery stocks 12 months after the purchase, in line with the annual repetition of the dividend-reinvestment-based price pressure.

Figure 7: Asset pricing: Performance of dividend-induced purchases



For stocks purchased with dividends, Panel A shows the average market-adjusted excess return after the purchase, separately for lottery stocks (which are stocks with idiosyncratic skewness and volatility above the median, price below the median, and maximum one-day return above the 80th percentile) and non-lottery stocks (which are all remaining stocks). If a position is sold prior to month m, the performance in month m is the performance until the sale. Panel B plots the fraction of positions sold until month m. The bars in Panel A indicate standard errors, clustered by investor, stock, and year-month.

2.2.7 Price multiplier

Is it plausible that dividend-gambling-based excess demand drives up the prices of lottery stocks to such a large extent? In the following, we perform a back-of-the-envelope calculation, which suggests that it is plausible. The intuition is that marketwide dividends are so large and lottery stocks so small that even a fraction of dividend recipients investing their dividends in lottery stocks suffices to drive up prices substantially.

To assess the plausibility of our results, we estimate the price multiplier that our results imply and compare it with multipliers from prior studies. The price multiplier that we estimate indicates by how many euros the market capitalization of the lottery portfolio increases for each euro of dividends that is invested in the lottery portfolio. To estimate the multiplier, we perform a back-of-the-envelope calculation with information from the German brokerage data, the German stock market data, and the German Bundesbank.

First, we estimate how many euros of dividends are invested in the lottery portfolio in May. Therefore, we need A) the amount of dividends paid out in May, B) the fraction of dividends paid out to investors that behave like the investors in our brokerage sample, C) the ratio of dividends received to dividends paid out (considering withholding taxes and dividends from securities other than German stocks), and D) the fraction of dividends that the investors in our brokerage sample invest in the lottery portfolio.

A) the sum of dividend payments by the German stock market in May is 16.9 billion euros on average for the years 2007-2011 (the time period of the brokerage sample).

B) we assume that only retail investors invest their dividends in the lottery portfolio.[25] Data by the German Bundesbank suggest that from 2007-2011 approximately 15% of dividends paid out by German stocks are received by retail investors, directly (i.e., not through fund holdings or other intermediaries).[26]

C) as dividends are subject to withholding taxes in Germany, a fraction of dividends paid out is not received by investors. Considering tax-free allowances and a differing tax regime before and after 2009 (see Müller-Dethard, Reinhardt, and Weber 2025, for details), we estimate that 16.1% of dividends in our brokerage sample are withheld. Moreover, investors not only receive dividends from German stocks, but also from foreign

[25] This is a conservative assumption given that Chen, Hwang, and Peng (2025) show that also institutional investors have a demand for stocks with lottery-like payoffs.

[26] See https://www.bundesbank.de/resource/blob/666592/617bc1f54bb0181bc4857044b382e913/mL/2014-09-equity-market-data.pdf, as of 2026-05-07. 12% of German stocks are owned by German retail investors, directly. 55% are owned by foreign investors. We assume that 5% of those 55% are direct stock holdings, meaning that 3% (=5%*55%) of German stocks are directly held by foreign retail investors. Thus, we end up with 15% (=12%+3%) of German stocks being held by retail investors, directly. This is a conservative assumption relative to, e.g., the 34% share of dividends received by retail investors directly in Hartzmark and Solomon (2025).

stocks (especially from other European countries, such as France, that often pay dividends in May) and mutual funds. We use the brokerage data to calculate how many euros of dividends investors receive from securities other than German stocks for each euro of dividends they receive from German stocks in May.[27] We find that this ratio is 14.6%.

D) we need to estimate which fraction of dividends received by retail investors is invested in the lottery portfolio. Thus, we use the German brokerage data to calculate the fraction of retail investors that buy at least one lottery stock in months, in which they receive a dividend from their stock portfolio.[28] The result is a fraction of 0.432%.[29]

Taking A, B, C, and D together, we estimate that 10.5 million euros (=16.9 billion euros*0.15*(1-0.161)*(1+0.146)*0.00432) of dividends are invested in the lottery portfolio in May, on average for the years 2007-2011.

Second, we determine by how many euros the market capitalization of the lottery portfolio increases in May. During the 2007-2011 period, the average euro return of the lottery portfolio in May is 88.0 million euros. Combined with the 10.5 million euros of dividends invested in the lottery portfolio, the resulting price multiplier is 8.4 (=88.0/10.5). This value indicates that the market capitalization of the lottery portfolio increases by 8.4 euros for each euro of dividends that is invested in the portfolio. This is consistent with

[27] Thereby, we exclude dividends from mutual funds, for which the bank offers an automatic dividend reinvestment plan.

[28] To make sure that the result reflects the amount of euros invested, we weight observations by the amount of dividends in the respective investor-month. To make sure that the lottery stocks, in which the dividends are invested in the brokerage data, are the same as the lottery stocks, for which we observe price pressure in the stock market data, we only consider lottery stocks that are in the lottery portfolio that we analyze for our asset pricing results in Section 2.2.1 (in particular, this excludes non-German lottery stocks and uses the stricter lottery stock definition that combines idiosyncratic volatility, skewness, and price with maximum one-day returns).

[29] This fraction is much lower than the fraction that lottery stocks make up of dividend-induced stock purchases in Section 1.2.1 for multiple reasons: First, the former fraction also considers investor-months without any purchase, whereas the latter fraction is calculated conditional on investors making a stock purchase that has a similar amount as the dividend payment in that month. Second, the former fraction is based on a lottery stock portfolio that is much narrower as it excludes non-German lottery stocks and uses the stricter lottery stock definition that combines idiosyncratic volatility, skewness, and price with maximum one-day returns (see the previous footnote).

previous research on price multipliers of factor portfolios, e.g., Ben-David et al. (2022) and Li (2022), who estimate multipliers between 5 and 6 for value and size portfolios.

3 Experiments

In this section, we conduct two experiments to replicate dividend-gambling behavior in the lab and to investigate the mechanism behind such behavior. First, we present the setup and results for the experiments. Second, we position our findings within the previous literature on mental accounting and risk-taking behavior.

3.1 Experiment 1: Replication

In this section, we present the setup and results of our first experiment, in which we replicate dividend-gambling behavior in the lab.

3.1.1 Setup

In 2024, we recruit 529 participants from Prolific, a large, UK-based crowdsourcing platform. We require that participants are invested in the stock market and we exclude participants who take less than four minutes to complete the experiment. After application of these filters, 400 participants remain.[30]

To test the causal effect between dividend payments and gambling behavior, we design a setting with the following features: a) dividends are exogenously assigned to participants, b) the investment task is simple, transparent, and incentivized to ensure truthful reporting of investments, and c) beliefs about return distributions of assets are controlled.

[30] Table C1 of the Internet Appendix presents summary statistics. In both of our experiments, the filtering rates are similar across treatments and in line with prior experiments that recruit participants from crowdsourcing platforms (e.g., Hartzmark, Hirshman, and Imas 2021).

Participants receive an endowment of 1,000 CU (currency units), which can be invested over 12 rounds of returns. The value after the 12 rounds determines the final payoff from the experiment (1000 CU correspond to 1 GBP). Initially, 500 CU are invested in Stock A (which investors know to increase by 8% with 60% probability or decrease by 6% with 40% probability in each round) and 500 CU are in risk-free, interest-free cash. Participants can trade (i.e., reallocate their endowment between stocks and cash) at three points in the experiment: at the beginning of rounds 1, 5, and 9. In between these rounds, participants are shown the returns of their stock investments but cannot trade.

There are four treatments (two-by-two design) characterized by whether a dividend is paid after round 8 (dividend vs. no dividend) and the payout profile of a new Stock B (lottery vs. non-lottery) which is tradeable at the beginning of round 9. First, the dividend treatment consists of a payout that is between 10% and 20% (randomly determined) of the value of the Stock A holdings at the end of round 8. The dividend works like a real dividend (neglecting frictions such as taxes): The cash position increases by the amount of the dividend and the value of Stock A decreases by the amount of the dividend. E.g., if a participant holds 1,100 CU of Stock A and is assigned a 20% dividend, the participants' cash (Stock A) holdings increase (decrease) by 220 CU. In the no dividend treatment, nothing happens. Second, in the lottery treatment, the new Stock B (introduced after the dividend), has a zero expected return, high variance and positive skewness. It increases by 90% with 10% probability or decreases by 10% with 90% probability in each of the rounds 9 through 12. In the non-lottery treatment, Stock B also has a zero expected return but has a low variance and symmetric payouts (increasing or decreasing by 5% with 50% probability each). Before they can trade, participants are informed about the payout profiles of the different assets and, if a dividend is paid, they are informed that Stock A has paid out a dividend of x CU, which is transferred to their cash balance.

To measure the propensity with which participants gamble their dividends (GwD), we compare the fractions of participants buying Stock B in the four treatments ($BuyB_{i,j}$) and calculate the difference in differences:

$$GwD = (BuyB_{Div,Lottery} - BuyB_{NoDiv,Lottery}) - (BuyB_{Div,NonLot} - BuyB_{NoDiv,NonLot}) \quad (1)$$

The first difference separates dividend-induced purchases of the lottery stock from purchases of the lottery stock that occur regardless of the dividend. The second difference accounts for experimenter demand effects and novelty effects, i.e., the possibility that the dividend drives participants to buy any new stock, regardless of lottery characteristics.

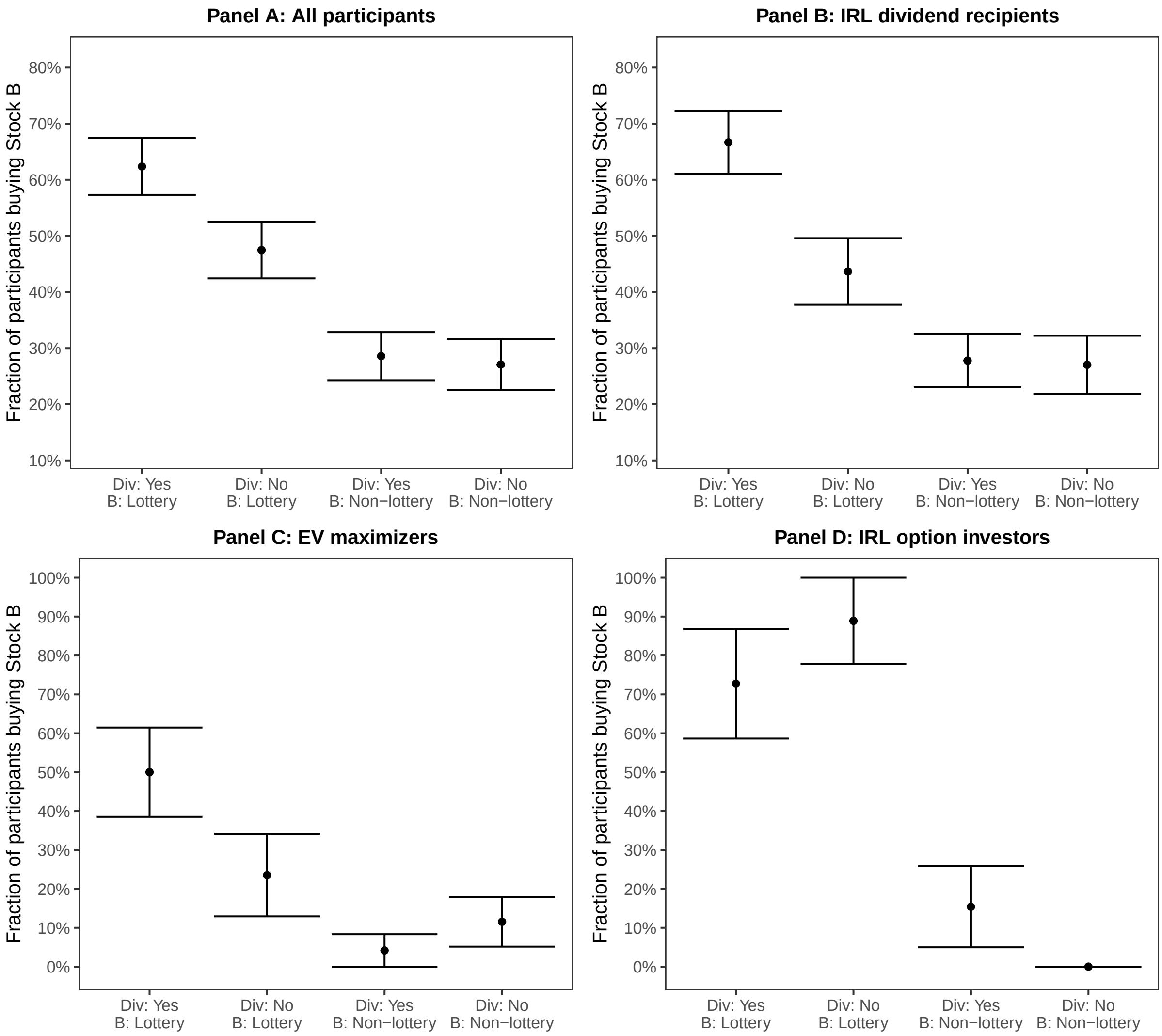
Note that the dividend-treatment dimension does not affect the portfolio choice set. Participants who receive a dividend can reinvest it in Stock A and participants who do not receive a dividend can home-make their dividend with a partial sale of Stock A. Thus, any non-zero difference in Equation 1 can only be explained by a mechanism in which dividends are accounted for in a non-trivial way.

3.1.2 Results

Figure 8 plots the fraction of participants buying Stock B, separated by treatment.[31] Panel A reports the results for all participants and Panels B through D report the results for relevant subsamples of participants. Panel A shows that 62% of participants buy Stock B if B is lottery-like and if participants receive a dividend. This is 15pp more than the 47% of participants that buy lottery Stock B without a dividend. The right-hand side of Panel A shows that the dividend-induced buys of B are not explained by dividend-

[31] In the Internet Appendix, Figure C1 plots equivalent fractions for Stock A. Figure C3 plots joint choices for A and B. Figure C4 plots portfolio developments over all trading rounds. In Section C.1, we discuss results for analyzing amounts invested, which reflect the binary buy/non-buy decisions in conjunction with the trading mechanism in our experiment, which we explain in detail in Section C.2.

Figure 8: Experiment 1: Dividend gambling in the lab



In the dividend (non-dividend) treatments, participants (do not) receive a dividend from Stock A after eight rounds of investing in Stock A vs. cash. Afterwards, participants can reallocate their portfolio once more between cash, Stock A, and a newly offered Stock B that either has lottery-like payoffs or non-lottery-like payoffs depending on the treatment. The figure plots the fraction of participants buying B in each treatment. Panel A includes all 400 participants, Panel B the 307 participants who receive dividends in real life (IRL), Panel C the 87 participants who fully invest in Stock A and hold zero cash prior to the introduction of Stock B, and Panel D the 39 participants who invest in options IRL. The bars indicate standard errors.

induced demand or novelty effects as there is only a small difference of 2pp (29% - 27%) in the buys of B between dividend recipients and non-recipients if B is non-lottery-like. The difference in differences (DiD) in Panel A is 13pp (15pp - 2pp) which indicates a dividend-induced propensity to gamble that is similar in magnitude to the effect in our brokerage sample (p-value for testing if the DiD is positive: 8%).

In Panel B, we focus on the subsample of participants who receive dividends in real life (IRL), which are 307 participants or 77% of our total sample. Because these participants are the ones that have already handled real-life dividends, they comprise an important subsample for the external validity of our experiment. The results for real-life dividend recipients are even stronger than our baseline results: 67% (44%) of participants buy Stock B if B is lottery-like and they are (are not) paid a dividend in the experiment. Together with the 28% (27%) of participants buying non-lottery B with (without) a dividend, this yields a DiD of 22pp (p-value: 2%).

In Panel C, we test if the tendency to gamble with dividends is also present among EV maximizers (EV maximizers = participants that fully invest their endowment in Stock A at the beginning of round 1). Given that it is still the EV-maximizing strategy to invest everything in A (EV of 2.4) and nothing in B (EV of 0.0), one might expect fewer EV maximizers to buy B. Indeed, the results show that much fewer EV maximizers buy B overall, only 12% for the no-dividend-non-lottery treatment, 4% for the dividend-non-lottery treatment, and 24% for the non-dividend-lottery treatment. Yet in the dividend-lottery treatment, the fraction of EV maximizers buying B increases by 34pp (p-value: 2%) on top of the isolated dividend and lottery effects, s.t. we obtain a fraction of 50% of dividend recipients buying lottery Stock B against their prior strategy of EV maximization.

In Panel D, we focus on participants that invest in options IRL (with data from Prolific on participants' investments in different asset classes). Among option investors, we find a strong tendency to gamble, irrespective of the dividend. If B is lottery-like, 73% (89%) of participants buy B in the dividend (no-dividend) treatment. If B is non-lottery-like, 15%

(0%) of participants buy B in the dividend (no-dividend) treatment. This matches the results from our brokerage sample, in which investors that trade options regularly also use their dividends to buy options. Moreover, this result supports the external validity of our experiment as it suggests that the gambling behavior we observe in the experiment is reflected in gambling behavior in real-life financial markets.

3.2 Experiment 2: Mechanism

In this section, we present the setup and results of our second experiment, in which we use an educational intervention to examine the mechanism for dividend-gambling behavior.

3.2.1 Setup

In 2025, we recruit 776 participants from Prolific. As in the first experiment, we require that participants are invested in the stock market and we exclude participants who take less than four minutes to complete the experiment (five minutes for the participants in the education treatment). After application of these filters, 600 participants remain.

The setup for our second experiment is the same as for our first experiment in Section 3.1.1, except for the following modifications: First, all participants receive a dividend from Stock A (which is, as before, between 10% and 20% of the value of the Stock A holdings at the end of round 8). Second, the asset that is introduced to all participants in round 9 is lottery Stock B (i.e., there is no non-lottery Stock B). Third, the treatment is that half of the participants are subjected to an educational intervention about dividends, while the other half is not. This treatment is designed to test the hypothesis that dividend-gambling behavior is driven by the free dividends fallacy (i.e., the failure to understand that dividend payouts reduce the stock price). Specifically, we test if fewer participants buy lottery Stock B in the intervention treatment (after learning that dividends come out of the stock price) compared with the no-intervention treatment.

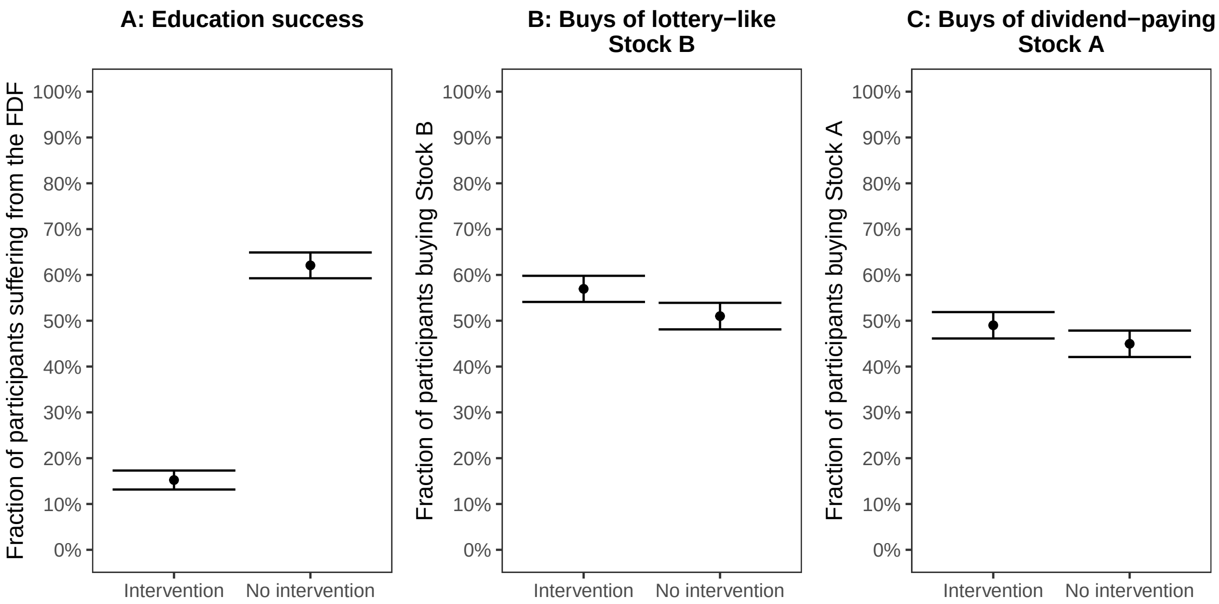
The intervention is taken from Hackethal et al. (2026) (with minor modifications presented in Figure C9 of the Internet Appendix). It first asks two questions about dividends to identify participants who suffer from the free dividends fallacy before the intervention. The intervention then educates participants about the relationship between dividends and stock prices, in particular, that dividend payouts (in general as in the experiment) reduce the stock price. The intervention is placed at the beginning of the experiment and later reinforced when the dividend payout occurs, where it is highlighted to participants in the education treatment that the dividend has reduced their holdings of Stock A (see Figure C10 of the Internet Appendix). The success of the intervention is verified at the end of the experiment, where participants in both treatments are asked what usually happens to stock prices on the ex-dividend day.[32]

3.2.2 Results

Figure 9 presents the results. Panel A shows that the educational intervention works in strongly reducing the free dividends fallacy. At the end of the experiment, only 15% of participants in the intervention treatment do not know that dividends reduce stock prices, compared with 62% of participants in the no-intervention treatment. Panel B analyzes the effect of the intervention on the buys of lottery Stock B. We find that the buys of lottery Stock B are not decreased but rather increased in the intervention treatment compared with the no-intervention treatment (57% vs. 51%). Panel C shows that the intervention similarly increases the buys of the dividend-paying Stock A (49% vs. 45%).

[32] In particular, we asked whether the stock price on the ex-dividend day is usually higher, unchanged, or lower compared with the previous day's price. Participants could also answer with "no general statement possible" or "I do not know". Participants who did not answer with "lower" are classified as suffering from the free dividends fallacy.

Figure 9: Experiment 2: Educational intervention and dividend gambling



In the intervention (no-intervention) treatment, participants are (are not) subjected to an intervention at the beginning of the experiment, which informs participants that dividend payouts reduce stock prices. Panel A shows the fraction of participants who, at the end of the experiment, suffer from the free dividends fallacy (FDF) and do not know that dividend payouts reduce stock prices. During the experiment, participants trade Stock A, which pays a dividend. Afterwards, the lottery-like Stock B is introduced and participants can choose to buy/not buy Stock B and/or to buy/hold/sell Stock A. Panels B and C present those choices. N = 600. The bars indicate standard errors.

Taken together, our results indicate that the educational intervention leads to an overall rise in reinvestments, in line with the results of Hackethal et al. (2026), but does not lead to a reduction in dividend-gambling behavior.[33] Thus, the separate, hedonic mental accounting of dividends that drives dividend-gambling behavior seems to persist even for participants who understand the relationship between dividends and stock prices.

[33] In Figure C7 of the Internet Appendix, we find that the increases in reinvestments are concentrated among participants who suffer from the free dividends fallacy before the intervention and that the intervention does not change the reinvestments of participants who do not suffer from the fallacy before the intervention. This speaks against the higher reinvestments being caused by first-order experimenter demand effects (which would be driven by the intervention regardless of participants' prior knowledge).

3.3 Experiments: Positioning our results in the literature

How does a tendency to gamble with dividends align with existing frameworks of mental accounting and prior experimental studies? We argue that our findings provide further evidence for a pervasive separation between dividends and capital gains on two separate mental accounts (Shefrin and Statman 1984), with dividends being used more hedonically, either for consumption (as in Baker, Nagel, and Wurgler 2007; Di Maggio, Kermani, and Majlesi 2020; Bräuer, Hackethal, and Hanspal 2022) or for thrilling investments as in our study. Regarding the reason for such a mental accounting, we find that the propensity to gamble with dividends persists even after investors are educated about the fact that dividends come at the expense of capital gains. Our findings do not challenge the findings by Hartzmark and Solomon (2019) that the free dividends fallacy is a *sufficient* condition for the mental accounting of dividends (i.e., investors who think that dividends and capital gains are not interchangeable also treat the two differently). Instead, our findings indicate that the free dividends fallacy may not be a *necessary* condition for the mental accounting of dividends (i.e., even investors who understand the interchangeability of dividends and capital gains treat the two differently).

Notably, we argue that the mental accounting of dividends differs from adjacent behavioral patterns. First, we argue that the tendency to gamble with dividends neither follows from the house money effect (Thaler and Johnson 1990), nor from a tendency to gamble with windfall gains (Arkes et al. 1994). Jelschen and Schmidt (2023) distinguish between the two phenomena by characterizing house money as the "positive difference between the current stake and the initial stake that has been acquired by previously taking risk" (Jelschen and Schmidt 2023, p. 216) and windfall gains as unexpected risk-free gains. On the one hand, we argue that dividends are not well characterized as house money because dividends are not perceived as part of the "current stake" due to the mental separation between dividends and capital gains, for which Hartzmark and Solomon (2019) provide ample evidence. On the other hand, we argue that dividends are also not well characterized as windfall gains because dividends are not received unexpectedly, as the results by Bräuer, Hackethal, and Hanspal (2022) show. The authors ask investors whether they perceive dividends as an expected bonus, salary, windfall gains, or an irrelevant payment. The responses indicate that only 14% view them as windfall gains (12% as salary, 24% as an irrelevant payment), while 49% view them as an expected bonus, consistent with investors being informed about the dividends ahead of the payment.

Second, Imas (2016) introduces the realization effect, which describes the tendency of individuals to decrease their risk-taking when handling realized losses compared with paper losses. Merkle, Müller-Dethard, and Weber (2021) find that the realization effect not only holds for the domain of losses but also for the domain of gains, i.e., risk-taking also decreases after a gain is realized. How does the realization effect map into the mental accounting of dividends? We argue that the coexistence of the realization effect and the tendency to gamble with dividends is further evidence for a mental separation of dividends and capital gains. Because otherwise, if individuals tracked dividends and capital gains jointly on a single mental account, they would perceive dividends as partial liquidations of their stock holdings and therefore as realized gains or losses, for which the realization effect would predict lower risk-taking, which is the opposite of what we observe.

4 Conclusion

In this paper, we use data from two independent brokerage samples to document that investors have a tendency to gamble with dividends by investing them in lottery stocks and options. Using stock market data, we show that this behavior has asset pricing implications as reinvestments of marketwide dividend payments temporarily drive up the prices of lottery stocks. With two carefully-designed experiments, we replicate the tendency to gamble with dividends in the lab and investigate the mechanism behind it. We find that dividend-gambling behavior is consistent with a mental accounting of dividends that persists regardless of whether investors believe that dividends are free income or whether they are educated that dividends come at the expense of capital gains.

Our results are relevant for individual investors, financial institutions, and policymakers. First, as marketwide dividend payments on any given day are predictable with near certainty, our results manifest in a profitable trading strategy that is based on temporarily holding lottery stocks when the market pays out large amounts of dividends. Exploiting the German dividend season, holding the lottery stock portfolio during May historically generated an average excess return of 7% in a single month. Second, while Hackethal et al. (2026) show that educational interventions can help investors reinvest their dividends instead of spending them, our results indicate that even educated investors might still place dividends in a separate mental account that is used for more lottery-like investments, which, on average, strongly underperform. Thus, in addition to educational interventions, the choice architecture of investors' brokerage accounts might be a promising lever to help investors avoid this costly sort of mental accounting. For example, in a recent development, brokers now increasingly offer automatic dividend reinvestment plans which are often enabled by default and which can either be in the dividend-paying security, investors' portfolios as a whole, or an interest-bearing savings account.[34]

[34] E.g., accounts at M1 Finance (https://m1.com/invest/dividend-investing/, as of 2026-05-07).

References

Agarwal, Vikas, Lei Jiang, and Quan Wen, 2022, Why do mutual funds hold lottery stocks?, *Journal of Financial and Quantitative Analysis* 57, 825–856.

Amihud, Yakov, 2002, Illiquidity and stock returns: Cross-section and time-series effects, *Journal of Financial Markets* 5, 31–56.

An, Li, Huijun Wang, Jian Wang, and Jianfeng Yu, 2020, Lottery-related anomalies: The role of reference-dependent preferences, *Management Science* 66, 473–501.

Arkes, Hal R., Cynthia A. Joyner, Mark V. Pezzo, Jane Gradwohl Nash, Karen Siegel-Jacobs, and Eric Stone, 1994, The psychology of windfall gains, *Organizational Behavior and Human Decision Processes* 59, 331–347.

Baker, Malcolm, Stefan Nagel, and Jeffrey Wurgler, 2007, The effect of dividends on consumption, *Brookings Papers on Economic Activity* 38, 231–291.

Baker, Scott R., Justin Balthrop, Mark J. Johnson, Jason D. Kotter, and Kevin Pisciotta, 2026, Gambling away stability: Sports betting's impact on vulnerable households, *Journal of Financial Economics* (forthcoming).

Bali, Turan G., Stephen J. Brown, Scott Murray, and Yi Tang, 2017, A lottery-demand-based explanation of the beta anomaly, *Journal of Financial and Quantitative Analysis* 52, 2369–2397.

Bali, Turan G., Nusret Cakici, and Robert F. Whitelaw, 2011, Maxing out: Stocks as lotteries and the cross-section of expected returns, *Journal of Financial Economics* 99, 427–446.

Bali, Turan G., and Quan Wen, 2023, Lottery demand, lottery factor, and anomalies, *Review of Financial Economics* 41, 392–407.

Barber, Brad M., and Terrance Odean, 2000, Trading is hazardous to your wealth: The common stock investment performance of individual investors, *Journal of Finance* 55, 773–806.

Barber, Brad M., and Terrance Odean, 2002, Online investors: Do the slow die first?, *Review of Financial Studies* 15, 455–488.

Barberis, Nicholas, and Ming Huang, 2008, Stocks as lotteries: The implications of probability weighting for security prices, *American Economic Review* 98, 2066–2100.

Ben-David, Itzhak, Jiacui Li, Andrea Rossi, and Yang Song, 2022, Ratings-driven demand and systematic price fluctuations, *Review of Financial Studies* 35, 2790–2838.

Berkman, Henk, and Paul D. Koch, 2017, DRIPs and the dividend pay date effect, *Journal of Financial and Quantitative Analysis* 52, 1765–1795.

Boyer, Brian H., and Keith Vorkink, 2014, Stock options as lotteries, *Journal of Finance* 69, 1485–1527.

Bräuer, Konstantin, Andreas Hackethal, and Tobin Hanspal, 2022, Consuming dividends, *Review of Financial Studies* 35, 4802–4857.

Byun, Suk-Joon, Jihoon Goh, and Da-Hea Kim, 2020, The role of psychological barriers in lottery-related anomalies, *Journal of Banking & Finance* 114, 105786.

Carhart, Mark M., 1997, On persistence in mutual fund performance, *Journal of Finance* 52, 57–82.

Chen, Hailiang, Byoung-Hyoun Hwang, and Zhuozhen Peng, 2025, Why do investors like short-leg securities? Evidence from a textual analysis of buy recommendations, *Review of Financial Studies* 38, 3729–3767.

Chen, Huaizhi, 2024, Cash induced demand, *Journal of Financial and Quantitative Analysis* 59, 195–220.

Chen, Yao, Alok Kumar, and Chendi Zhang, 2021, Searching for gambles: Gambling sentiment and stock market outcomes, *Journal of Financial and Quantitative Analysis* 56, 2010–2038.

Conrad, Jennifer, Nishad Kapadia, and Yuhang Xing, 2014, Death and jackpot: Why do individual investors hold overpriced stocks?, *Journal of Financial Economics* 113, 455–475.

Di Maggio, Marco, Amir Kermani, and Kaveh Majlesi, 2020, Stock market returns and consumption, *Journal of Finance* 75, 3175–3219.

Doran, James S., Danling Jiang, and David R. Peterson, 2012, Gambling preference and the new year effect of assets with lottery features, *Review of Finance* 16, 685–731.

Dorn, Anne Jones, Daniel Dorn, and Paul Sengmueller, 2015, Trading as gambling, *Management Science* 61, 2376–2393.

Dorn, Daniel, and Paul Sengmueller, 2009, Trading as entertainment?, *Management Science* 55, 591–603.

Dorn, Daniel, and Martin Weber, 2017, Losing trust in money doctors, Working paper, Drexel University.

Eraker, Bjørn, and Mark Ready, 2015, Do investors overpay for stocks with lottery-like payoffs? An examination of the returns of otc stocks, *Journal of Financial Economics* 115, 486–504.

Freibauer, Jonas, Silja Grawert, and Marc O. Rieger, 2024, The effects of trading apps on investment behavior over time, *European Journal of Finance*, 1–25.

Gao, Xiaohui, and Tse-Chun Lin, 2015, Do individual investors treat trading as a fun and exciting gambling activity? Evidence from repeated natural experiments, *Review of Financial Studies* 28, 2128–2166.

Greenwood, Robin, Toomas Laarits, and Jeffrey Wurgler, 2023, Stock market stimulus, *Review of Financial Studies* 36, 4082–4112.

Grinblatt, Mark, and Matti Keloharju, 2009, Sensation seeking, overconfidence, and trading activity, *Journal of Finance* 64, 549–578.

Hackethal, Andreas, Tobin Hanspal, Samuel M. Hartzmark, and Konstantin Bräuer, 2026, Educating investors about dividends, *Review of Financial Studies* (forthcoming).

Hartzmark, Samuel M., Samuel D. Hirshman, and Alex Imas, 2021, Ownership, learning, and beliefs, *Quarterly Journal of Economics* 136, 1665–1717.

Hartzmark, Samuel M., and David H. Solomon, 2019, The dividend disconnect, *Journal of Finance* 74, 2153–2199.

Hartzmark, Samuel M., and David H. Solomon, 2025, Market-wide predictable price pressure, *American Economic Review* 115, 3171–3213.

Henriksson, Roy D., and Robert C. Merton, 1981, On market timing and investment performance. II. Statistical procedures for evaluating forecasting skills, *Journal of Business*, 513–533.

Holzmeister, Felix, Jürgen Huber, Michael Kirchler, Florian Lindner, Utz Weitzel, and Stefan Zeisberger, 2020, What drives risk perception? A global survey with financial professionals and laypeople, *Management Science* 66, 3977–4002.

Imas, Alex, 2016, The realization effect: Risk-taking after realized versus paper losses, *American Economic Review* 106, 2086–2109.

Jelschen, Hauke, and Ulrich Schmidt, 2023, Windfall gains and house money: The effects of endowment history and prior outcomes on risky decision–making, *Journal of Risk and Uncertainty* 66, 215–232.

Jiang, Lei, Guofu Zhou, and Yifeng Zhu, 2024, Which proxy: Capturing lottery feature through aggregation, *Financial Management*.

Kalda, Ankit, Benjamin Loos, Alessandro Previtero, and Andreas Hackethal, 2021, Smart (phone) investing? A within investor-time analysis of new technologies and trading behavior, Working paper, Indiana University.

Kaustia, Markku, and Elias Rantapuska, 2012, Rational and behavioral motives to trade: Evidence from reinvestment of dividends and tender offer proceeds, *Journal of Banking & Finance* 36, 2366–2378.

Klos, Alexander, Alexandra Koehl, and Simon Rottke, 2023, Streaks in daily returns, Working paper, Kiel University.

Kormanyos, Emily, Tobin Hanspal, and Andreas Hackethal, 2025, Do gamblers invest in lottery stocks?, SAFE Working paper, Goethe University Frankfurt.

Kumar, Alok, 2009, Who gambles in the stock market?, *Journal of Finance* 64, 1889–1933.

Kumar, Alok, Jeremy K. Page, and Oliver G. Spalt, 2011, Religious beliefs, gambling attitudes, and financial market outcomes, *Journal of Financial Economics* 102, 671–708.

Kumar, Alok, Jeremy K. Page, and Oliver G. Spalt, 2016, Gambling and comovement, *Journal of Financial and Quantitative Analysis* 51, 85–111.

Kvamvold, Joakim, and Snorre Lindset, 2018, Do dividend flows affect stock returns?, *Journal of Financial Research* 41, 149–174.

Landis, Conrad, and Spyros Skouras, 2021, Guidelines for asset pricing research using international equity data from thomson reuters datastream, *Journal of Banking & Finance* 130, 106128.

Li, Jiacui, 2022, What drives the size and value factors?, *Review of Asset Pricing Studies* 12, 845–885.

Li, Siyang, Siyuan Yang, and Xiaoyan Zhang, 2026, Pennies from heaven, barriers to reinvestment: Nominal price and predictable price pressure, Working paper, Tsinghua University.

Liu, Bibo, Huijun Wang, Jianfeng Yu, and Shen Zhao, 2020, Time-varying demand for lottery: Speculation ahead of earnings announcements, *Journal of Financial Economics* 138, 789–817.

Merkle, Christoph, Jan Müller-Dethard, and Martin Weber, 2021, Closing a mental account: The realization effect for gains and losses, *Experimental Economics* 24, 303–329.

Müller-Dethard, Jan, Niklas Reinhardt, and Martin Weber, 2025, Reinvesting or consuming dividends: Account structure matters, *Review of Finance* 29, 1467–1495.

Ogden, Joseph P., 1994, A dividend payment effect in stock returns, *Financial Review* 29, 345–369.

Schmickler, Simon N. M., and Pedro Tremacoldi-Rossi, 2023, Spillover effects of payouts on asset prices and real investment, Working paper, Columbia University.

Shefrin, Hersh M., and Meir Statman, 1984, Explaining investor preference for cash dividends, *Journal of Financial Economics* 13, 253–282.

Shefrin, Hersh M., and Richard H. Thaler, 1988, The behavioral life-cycle hypothesis, *Economic Inquiry* 26, 609–643.

Thaler, Richard H., and Eric J. Johnson, 1990, Gambling with the house money and trying to break even: The effects of prior outcomes on risky choice, *Management Science* 36, 643–660.

Treynor, Jack, and Kay Mazuy, 1966, Can mutual funds outguess the market?, *Harvard Business Review* 44, 131–136.

Ungeheuer, Michael, and Martin Weber, 2023, The frequency of outperformance and investment decisions, Working paper, Aalto University.

Internet Appendix

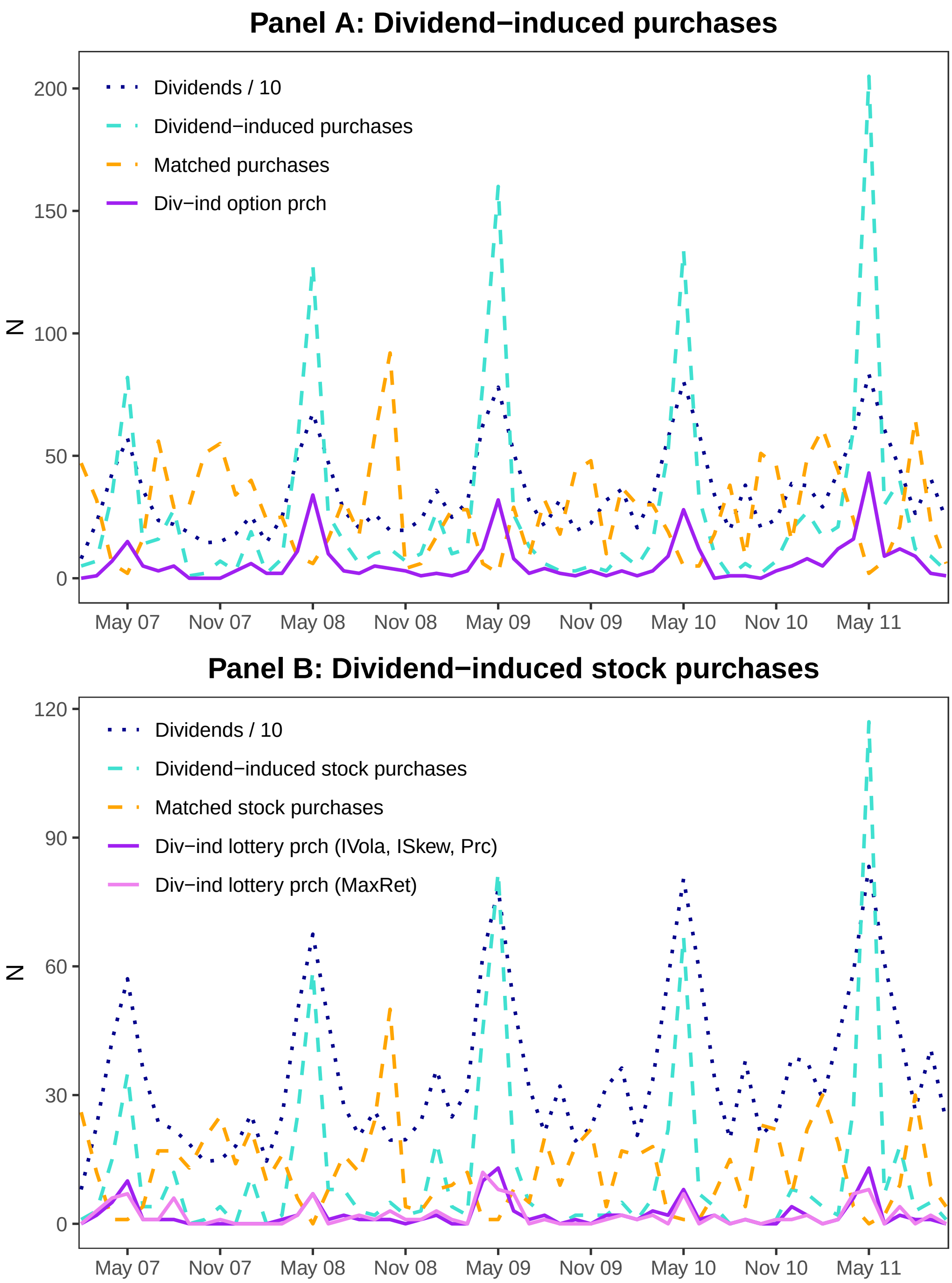
Section A: Brokerage data

Section B: Asset pricing

Section C: Experiments

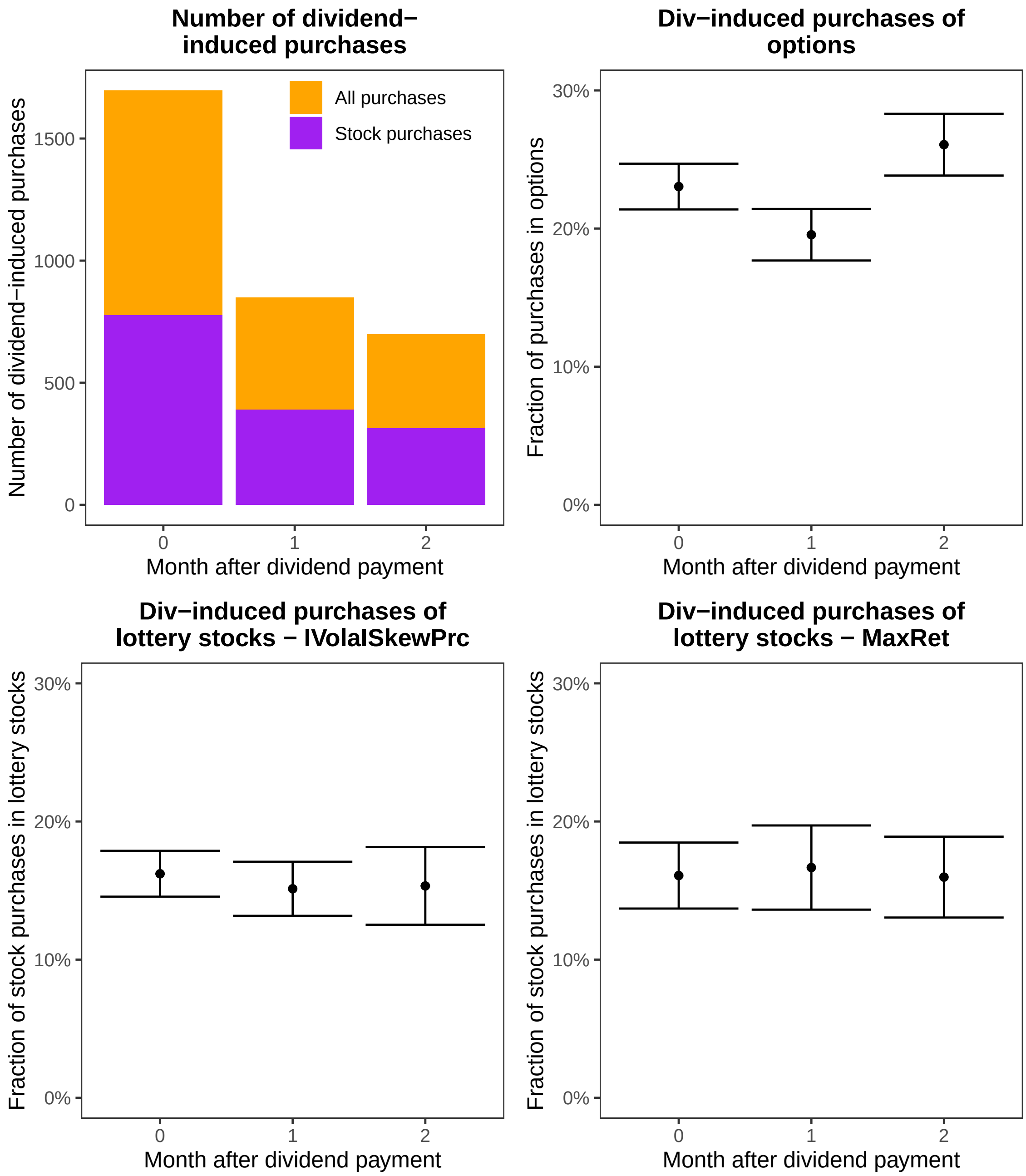
A Brokerage data

Figure A1: Brokerage data: Dividend-induced purchases over time



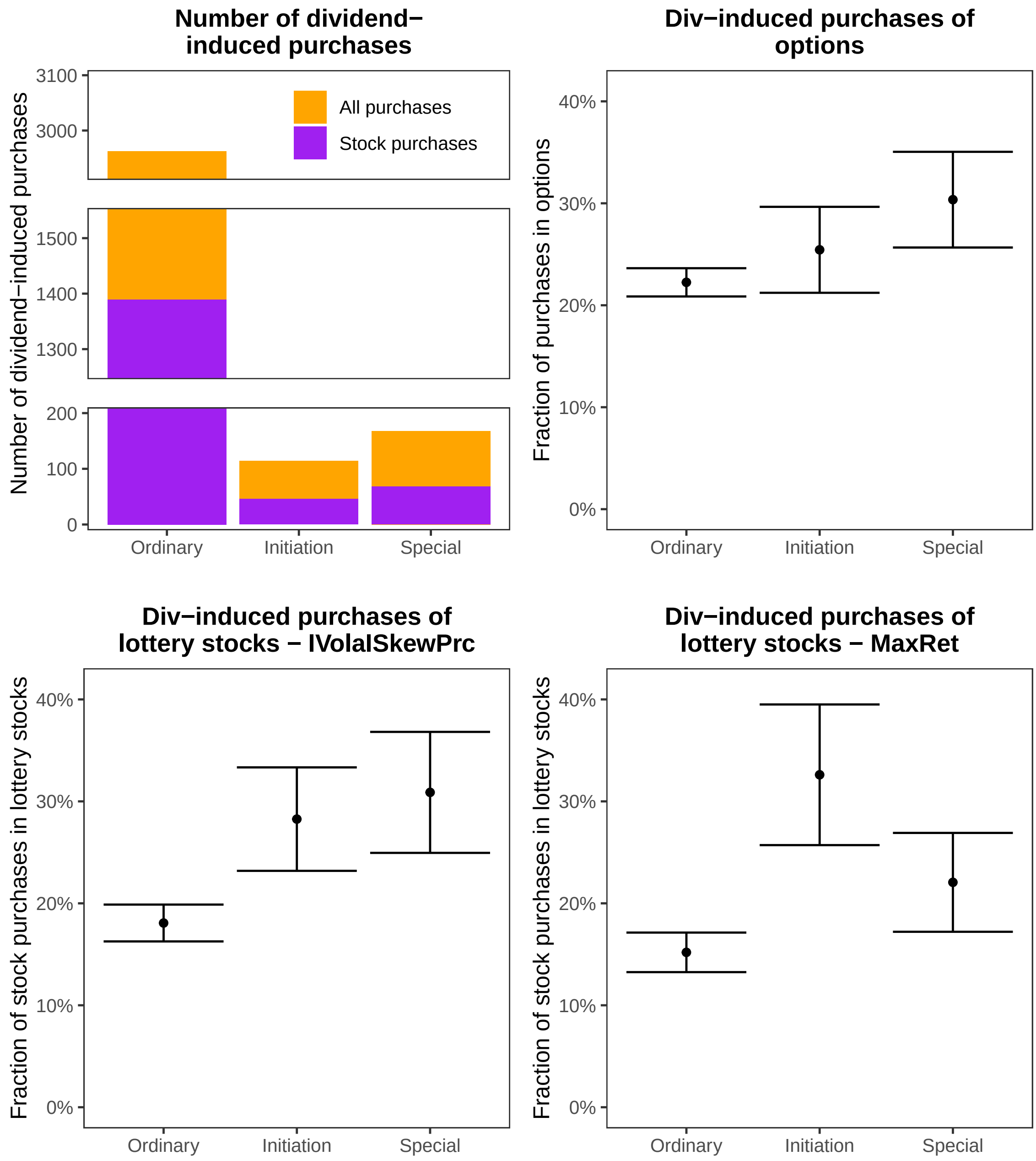
This figure shows the numbers of dividends (divided by 10 for scale), dividend-induced purchases, and dividend-induced gambles over time. In Panel A, dividend-induced purchases of all asset classes are shown and dividend-induced gambles are identified as purchases of options. In Panel B, only dividend-induced purchases of stocks are shown and dividend-induced gambles are identified as purchases of lottery stocks (either defined by their idiosyncratic volatility, skewness, and price or by their maximum one-day return).

Figure A2: Brokerage data: Characteristics of lagged dividend-induced purchases



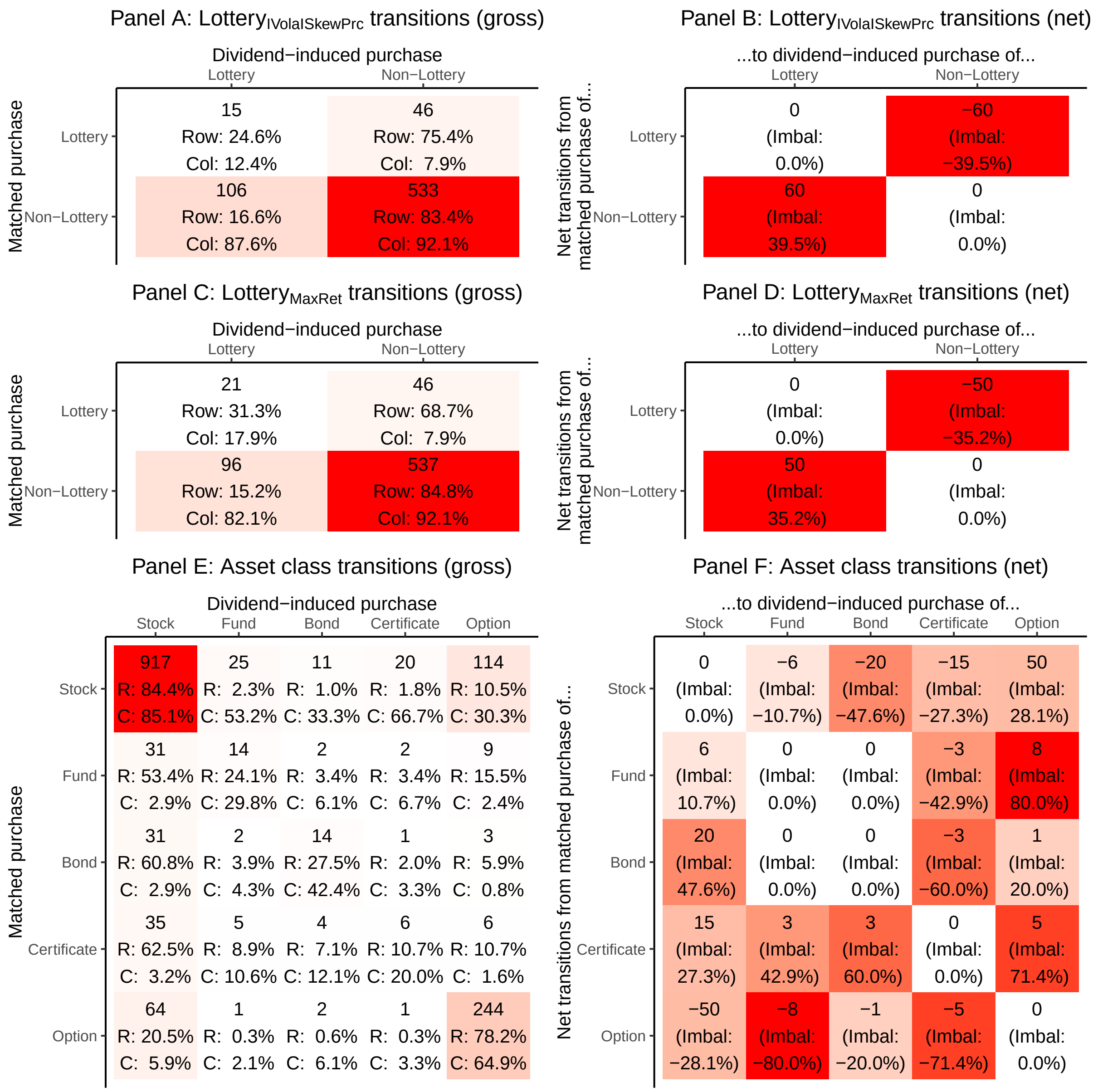
If an investor is paid dividends in a given month t, we identify a dividend-induced purchase as a purchase in months t, $t+1$, or $t+2$ that is at most twice as large as the dividends. If there are multiple candidates, we identify that purchase as dividend-induced that is closest in time and value to the dividends. The top left panel shows the number of dividend-induced purchases (of all asset classes/of stocks with lottery characteristic data only) that we identify in the month of the dividend payment as well as one month/two months after the payment. The top right panel shows the fraction of dividend-induced purchases that are purchases of options. The bottom two panels show the fraction of dividend-induced stock purchases that are purchases of lottery stocks (either defined by their idiosyncratic volatility, skewness, and price or by their maximum one-day return). The bars indicate standard errors, clustered by investor and year-month.

Figure A3: Brokerage data: Characteristics of purchases using payments from newly initiated ordinary dividends and special dividends



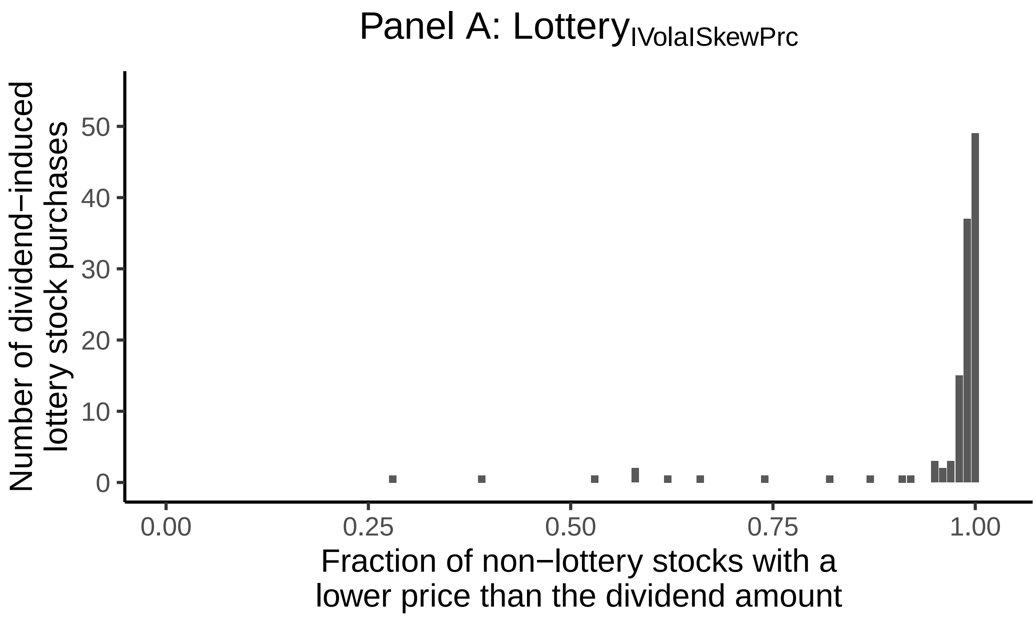
If an investor is paid dividends in a given month t, we identify a dividend-induced purchase as a purchase in months t, $t+1$, or $t+2$ that is at most twice as large as the dividends. If there are multiple candidates, we identify that purchase as dividend-induced that is closest in time and value to the dividends. The results are separated based on whether more than 50% of the dividends are ordinary dividends (not newly initiated), newly initiated ordinary dividends, or special dividends. The top left panel shows the number of dividend-induced purchases (of all asset classes/of stocks with lottery characteristic data only). The top right panel shows the fraction of dividend-induced purchases that are purchases of options. The bottom two panels show the fraction of dividend-induced stock purchases that are purchases of lottery stocks (either defined by their idiosyncratic volatility, skewness, and price or by their maximum one-day return). The bars indicate standard errors, clustered by investor and year-month.

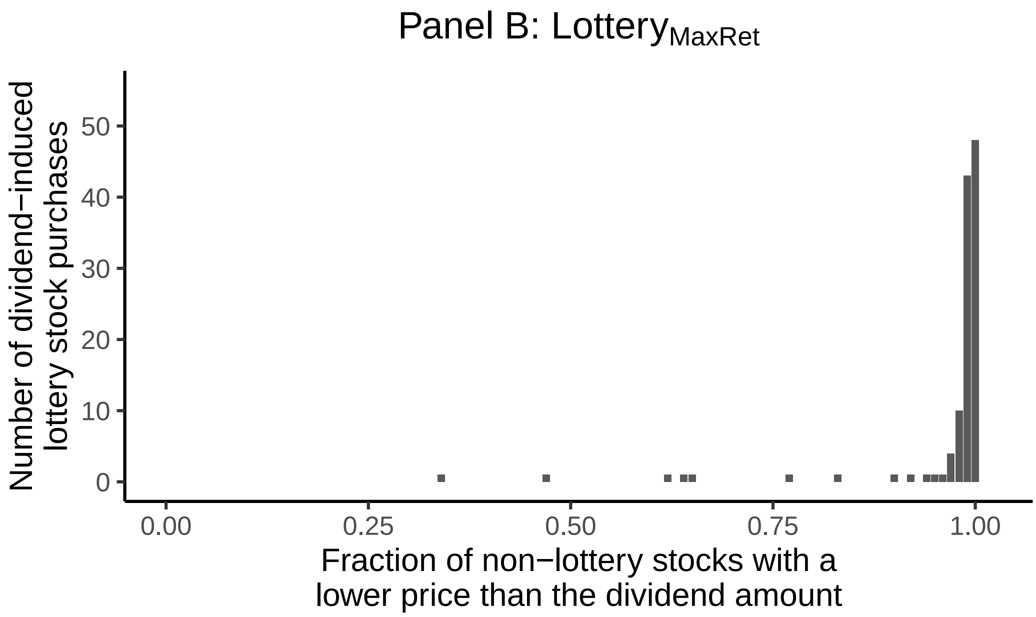
Figure A4: Brokerage data: Transitions between dividend-induced and matched purchases



Panels A, C, and E show the frequency of dividend-induced purchases that belong to category x when their matched, dividend-unrelated purchases belong to category y. The row percentages indicate the fraction that a combination makes up of the matched purchases (e.g., 2.3% of investors with matched purchases of stocks make a dividend-induced purchase of funds). The column percentages indicate the fraction that a combination makes up of the dividend-induced purchases (e.g., 2.9% of investors with dividend-induced purchases of stocks make a matched purchase of funds). Panels B, D, and F show the number of matched purchases of category y with dividend-induced purchases of category x minus the number of matched purchases of category x with dividend-induced purchases of category y. E.g., 25 investors have matched purchases of stocks and dividend-induced purchases of funds while 31 investors have matched purchases of funds and dividend-induced purchases of stocks, giving a net transition of -6 from matched purchases of stocks to dividend-induced purchases of funds. The transition imbalance in parentheses is the net transition from x to y divided by the total number of transitions from x to y and y to x (e.g., -10.7% = -6/(25+31)).

Figure A5: Brokerage data: Non-lottery stocks with prices below the dividend amount





For dividends that were invested in lottery stocks, this figure shows what fraction of non-lottery stocks could have been bought with the dividend instead (because the price of 1 share of the non-lottery stock is smaller than the dividend amount). E.g., the leftmost observation in Panel A indicates that there is 1 dividend that was invested in a lottery stock but that could have bought at least 1 share of 28% of the stocks in the universe of non-lottery stocks. The rightmost observation indicates that there are 49 dividends that were invested in lottery stocks but that could have bought at least 1 share of more than 99% of the stocks in the universe of non-lottery stocks. Panel A (B) defines lottery stocks based on idiosyncratic volatility, skewness, and price (maximum one-day returns).

Table A1: Brokerage data: Characteristics of dividend-induced purchases: Regressions

	Means	Regressions			
	Dividend-induced purchases	Intercept	DivIndPrch	OrderSize	VDAX
Panel A: Stock characteristics					
$\text{Lottery}_{IVolaISkewPrc}$	17.3	7.0***	10.1***	-0.5**	-0.2
		(0.9)	(1.9)	(0.2)	(0.8)
Lottery_{MaxRet}	16.7	9.0***	8.1***	-0.5***	2.3**
		(0.8)	(2.6)	(0.2)	(1.1)
Idiosyncratic volatility	3.4	2.4***	1.2***	0.0***	0.8***
		(0.1)	(0.2)	(0.0)	(0.2)
Total volatility	3.9	3.0***	1.2***	0.0***	1.1***
		(0.1)	(0.3)	(0.0)	(0.2)
Idiosyncratic skewness	31.8	17.5***	13.5**	-0.2	-3.5
		(3.6)	(6.2)	(0.5)	(4.1)
Total skewness	31.3	13.8***	19.5***	-1.4***	10.6***
		(4.0)	(5.8)	(0.3)	(3.5)
Price (in EUR)	21.9	34.9***	-13.7***	1.1***	-4.7***
		(1.8)	(4.1)	(0.2)	(1.4)
Max one-day return	9.1	6.6***	3.3***	-0.1***	3.6***
		(0.2)	(0.9)	(0.0)	(0.5)
DAX member	25.1	38.8***	-12.4***	1.0***	3.8*
		(2.1)	(3.9)	(0.3)	(1.9)
MCap (in bn. EUR)	13.6	21.3***	-8.2***	0.8***	-2.9***
		(0.9)	(1.7)	(0.2)	(0.7)
Panel B: Asset classes					
Stock	68.9	73.2***	-3.8**	0.1	2.0**
		(1.2)	(1.7)	(0.4)	(0.8)
Fund	3.0	5.4***	-2.3***	0.1	0.4
		(0.5)	(0.6)	(0.1)	(0.5)
Bond	2.1	3.6***	-1.4***	0.4	0.0
		(0.4)	(0.5)	(0.2)	(0.2)
Certificate	1.9	4.5***	-2.6***	0.1	-0.4*
		(0.5)	(0.6)	(0.2)	(0.2)
Option	24.0	13.3***	10.1***	-0.8***	-1.9**
		(1.1)	(1.3)	(0.3)	(0.8)

Purchases that investors finance with dividends are identified ("dividend-induced purchases"). Column 1 presents mean characteristics for the dividend-induced purchases. Columns 2 through 5 present coefficients from regressions, in which the observations are the dividend-induced purchases and all other purchases by the same investors ("dividend-unrelated purchases"). The dependent variables are indicated by the row, the independent variables by the column. Column 2 is for the regression intercept. Column 3 is for a dummy that is one for dividend-induced purchases and zero for dividend-unrelated purchases. Column 4 is for the order size of the purchase (demeaned and in 10k EUR). Column 5 is for the VDAX (German volatility index) at the start of the month of the purchase (demeaned and in 10 points). In the regressions, observations are weighted such that the sum of the weights for the dividend-unrelated purchases of a given investor is equal to the sum of the weights for the dividend-induced purchases of that investor. All dependent variables are in percent except where noted otherwise. Standard errors are clustered by investor and year-month and are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. In Panel A, the number of dividend-induced purchases (dividend-unrelated purchases) is 700 (6,948). In Panel B, these numbers are 1,564 (25,494).

Table A2: Brokerage data: Characteristics of dividend-induced purchases: Robustness: Include purchases up to 10 times the size of dividends

	Dividend-induced purchases	Matched purchases	Difference
Panel A: Stock characteristics			
$\text{Lottery}_{IVolaISkewPrc}$	11.0	7.5	3.5***
			(1.0)
Lottery_{MaxRet}	12.3	8.1	4.2***
			(1.3)
Idiosyncratic volatility	2.7	2.3	0.5**
			(0.2)
Total volatility	3.3	2.8	0.5*
			(0.3)
Idiosyncratic skewness	29.7	22.6	7.1*
			(4.0)
Total skewness	24.3	13.7	10.6**
			(5.3)
Price (in EUR)	27.9	35.8	-7.9***
			(2.7)
Max one-day return	6.9	5.9	1.0
			(0.6)
DAX member	30.9	35.4	-4.5*
			(2.7)
MCap (in bn. EUR)	18.0	21.3	-3.3***
			(1.3)
Panel B: Asset classes			
Stock	75.1	74.2	0.9
			(1.1)
Fund	3.7	4.5	-0.9*
			(0.5)
Bond	3.1	3.5	-0.5
			(0.4)
Certificate	3.7	4.7	-1.0*
			(0.5)
Option	14.5	13.0	1.4*
			(0.9)

Purchases that investors finance with dividends are identified (column 1) and matched with similar-sized, market-condition-matched purchases by the same investors that are not financed with dividends (column 2). Column 1 (2) reports mean characteristics for the dividend-induced purchases (matched purchases). Column 3 reports differences in means between dividend-induced purchases and matched purchases. For this table, purchases up to 10 times (instead of 2 times, as in the baseline results) the size of dividends are considered dividend-induced. All data are in percent except where noted otherwise. Standard errors are clustered by investor and year-month and are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. In Panel A (B), the number of dividend-induced purchases and matched purchases is 4,194 (7,646), each.

Table A3: Brokerage data: Characteristics of dividend-induced purchases: Robustness: Identify the smallest purchase in an investor-month as dividend-induced

	Dividend-induced purchases	Matched purchases	Difference
Panel A: Stock characteristics			
$\text{Lottery}_{IVolaISkewPrc}$	18.5	9.5	8.9***
			(2.3)
Lottery_{MaxRet}	16.7	10.0	6.7**
			(2.7)
Idiosyncratic volatility	3.4	2.4	1.0***
			(0.4)
Total volatility	4.0	2.9	1.1**
			(0.4)
Idiosyncratic skewness	32.8	21.4	11.4*
			(6.6)
Total skewness	30.6	15.1	15.5*
			(8.1)
Price (in EUR)	21.8	29.5	-7.7
			(4.8)
Max one-day return	8.6	6.2	2.5**
			(1.0)
DAX member	25.6	35.5	-9.8**
			(4.2)
MCap (in bn. EUR)	12.1	19.8	-7.7***
			(1.9)
Panel B: Asset classes			
Stock	68.4	68.7	-0.3
			(1.5)
Fund	3.1	3.8	-0.7
			(0.7)
Bond	2.2	3.3	-1.0*
			(0.6)
Certificate	1.8	3.5	-1.7***
			(0.6)
Option	24.5	20.8	3.7***
			(1.0)

Purchases that investors finance with dividends are identified (column 1) and matched with similar-sized, market-condition-matched purchases by the same investors that are not financed with dividends (column 2). Column 1 (2) reports mean characteristics for the dividend-induced purchases (matched purchases). Column 3 reports differences in means between dividend-induced purchases and matched purchases. For this table, if there are multiple purchases in a given investor-month, the smallest is considered dividend-induced (instead of the one that is closest in value to the dividends, as in the baseline results). All data are in percent except where noted otherwise. Standard errors are clustered by investor and year-month and are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. In Panel A (B), the number of dividend-induced purchases and matched purchases is 671 (1,564), each.

Table A4: Brokerage data: Characteristics of dividend-induced purchases: Robustness: Alternative lottery stock definitions

	Dividend-induced purchases	Matched purchases	Difference
$\text{Lottery}_{IVolaISkewPrc}$	17.3	8.7	8.6***
			(2.3)
$\text{Lottery}_{MaxRet80}$	16.7	9.6	7.1**
			(2.9)
$\text{Lottery}_{MaxRet90}$	7.3	3.4	3.9**
			(1.8)
$\text{Lottery}_{IVolaISkewPrcMaxRet80}$	9.0	4.4	4.6**
			(1.8)
$\text{Lottery}_{IVolaISkewPrcMaxRet90}$	4.9	2.3	2.6**
			(1.2)
Idiosyncratic vola	3.4	2.4	1.0**
			(0.4)
Total volatility	3.9	2.9	1.0**
			(0.4)
Idiosyncratic skew	31.8	19.4	12.4*
			(6.6)
Total skewness	31.3	13.1	18.2**
			(8.8)
Price (in EUR)	21.9	29.2	-7.2
			(4.6)
Max one-day return	9.1	6.3	2.8**
			(1.3)
DAX member	25.1	34.9	-9.7**
			(4.2)
MCap (in bn. EUR)	13.6	19.1	-5.5**
			(2.4)

This table presents the characteristics of dividend-induced stock purchases using alternative lottery stock definitions. E.g., $\text{Lottery}_{IVolaISkewPrcMaxRet80}$ is one for stocks with above median idiosyncratic skewness and volatility, below median price, and a maximum one-day return above the 80th percentile (zero otherwise). Purchases that investors finance with dividends are identified (column 1) and matched with similar-sized, market-condition-matched purchases by the same investors that are not financed with dividends (column 2). Column 1 (2) reports mean characteristics for the dividend-induced purchases (matched purchases). Column 3 reports differences in means between dividend-induced purchases and matched purchases. All data are in percent except where noted otherwise. Standard errors are clustered by investor and year-month and are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. The number of dividend-induced purchases and matched purchases is 700, each.

Table A5: Brokerage data: Characteristics of dividend-induced purchases: Robustness: Minimum dividends of 100 euros

	Dividend-induced purchases	Matched purchases	Difference
Panel A: Stock characteristics			
$\text{Lottery}_{IVolaISkewPrc}$	15.6	8.0	7.6***
			(2.1)
Lottery_{MaxRet}	15.6	8.7	7.0**
			(2.7)
Idiosyncratic volatility	3.2	2.3	0.9**
			(0.3)
Total volatility	3.8	2.8	0.9**
			(0.4)
Idiosyncratic skewness	30.7	18.7	12.0*
			(6.3)
Total skewness	29.6	11.4	18.2**
			(8.7)
Price (in EUR)	23.2	29.7	-6.5
			(4.9)
Max one-day return	8.8	6.0	2.8**
			(1.2)
DAX member	25.8	35.5	-9.7**
			(4.2)
MCap (in bn. EUR)	13.8	18.3	-4.5*
			(2.4)
Panel B: Asset classes			
Stock	71.4	71.1	0.3
			(1.4)
Fund	2.9	3.7	-0.8
			(0.7)
Bond	2.3	3.6	-1.3**
			(0.6)
Certificate	2.2	4.0	-1.8**
			(0.8)
Option	21.1	17.6	3.5***
			(0.9)

Purchases that investors finance with dividends are identified (column 1) and matched with similar-sized, market-condition-matched purchases by the same investors that are not financed with dividends (column 2). Column 1 (2) reports mean characteristics for the dividend-induced purchases (matched purchases). Column 3 reports differences in means between dividend-induced purchases and matched purchases. For this table, dividend-induced purchases are only identified, if the sum of dividend payments in the respective investor-month is above 100 euros. All data are in percent except where noted otherwise. Standard errors are clustered by investor and year-month and are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. In Panel A (B), the number of dividend-induced purchases and matched purchases is 647 (1,330), each.

Table A6: Brokerage data: Missing lottery characteristics

	Dividend-induced purchases	Matched purchases	Difference
MissingLotteryCharacteristics	33.4	26.4	7.0**
			(3.3)

Purchases that investors finance with dividends are identified (column 1) and matched with similar-sized, market-condition-matched stock purchases by the same investors that are not financed with dividends (column 2). Column 1 (2) reports the fraction of dividend-induced stock purchases (matched stock purchases) with missing lottery characteristics. Column 3 reports the difference in fractions between dividend-induced purchases and matched purchases. Data are in percent. Standard errors are clustered by investor and year-month and are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. The number of dividend-induced stock purchases and matched stock purchases is 1,068, each.

Table A7: Brokerage data: Characteristics of dividend-induced purchases at a US broker: Robustness: Minimum share of non-zero returns: 25%

	Dividend-induced purchases	Matched purchases	Difference
Panel A: Stock characteristics			
$\text{Lottery}_{IVolaISkewPrc}$	22.5	16.4	6.1***
			(1.8)
Lottery_{MaxRet}	20.6	17.5	3.1*
			(1.9)
Idiosyncratic volatility	3.8	3.2	0.6***
			(0.1)
Total volatility	4.0	3.4	0.6***
			(0.1)
Idiosyncratic skewness	34.4	24.9	9.5
			(5.8)
Total skewness	34.4	23.6	10.8*
			(5.7)
Price (in USD)	19.4	23.5	-4.1***
			(0.9)
Max one-day return	9.4	7.8	1.6***
			(0.6)
MCap (in bn. USD)	4.8	5.7	-0.9
			(0.5)
Panel B: Asset classes			
Stock	55.8	59.4	-3.6***
			(1.1)
Fund	13.9	12.5	1.4
			(0.9)
Bond	0.1	0.1	0.0
			(0.1)
Option	28.3	26.8	1.5***
			(0.6)
Other	1.9	1.2	0.7*
			(0.4)

Purchases that investors finance with dividends are identified (column 1) and matched with similar-sized, VIX-matched purchases by the same investors that are not financed with dividends (column 2). Column 1 (2) reports mean characteristics for the dividend-induced purchases (matched purchases). Column 3 reports differences in means between dividend-induced purchases and matched purchases. Lottery characteristics are only calculated for stocks with at least 25% non-zero returns in the past 6 months and the past 1 month. All data are in percent except where noted otherwise. Standard errors are clustered by household and date and are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. In Panel A (B), the number of dividend-induced purchases and matched purchases is 839 (1,943), each.

Table A8: Brokerage data: Characteristics of dividend-induced purchases at a US broker: Robustness: Minimum share of non-zero returns: 0%

	Dividend-induced purchases	Matched purchases	Difference
Panel A: Stock characteristics			
Lottery$_{IVolaISkewPrc}$	22.0	15.8	6.2***
			(1.8)
Lottery$_{MaxRet}$	20.7	17.4	3.3*
			(1.8)
Idiosyncratic volatility	3.8	3.2	0.6***
			(0.1)
Total volatility	4.0	3.5	0.6***
			(0.1)
Idiosyncratic skewness	32.9	26.0	6.9
			(5.8)
Total skewness	32.9	24.6	8.3
			(5.7)
Price (in USD)	19.2	23.4	-4.2***
			(0.9)
Max one-day return	9.4	7.8	1.6***
			(0.6)
MCap (in bn. USD)	4.8	5.7	-0.9*
			(0.5)
Panel B: Asset classes			
Stock	55.8	59.4	-3.6***
			(1.1)
Fund	13.9	12.5	1.4
			(0.9)
Bond	0.1	0.1	0.0
			(0.1)
Option	28.3	26.8	1.5***
			(0.6)
Other	1.9	1.2	0.7*
			(0.4)

Purchases that investors finance with dividends are identified (column 1) and matched with similar-sized, VIX-matched purchases by the same investors that are not financed with dividends (column 2). Column 1 (2) reports mean characteristics for the dividend-induced purchases (matched purchases). Column 3 reports differences in means between dividend-induced purchases and matched purchases. There is no requirement for a minimum share of non-zero returns to calculate lottery characteristics, apart from the characteristics being computable. All data are in percent except where noted otherwise. Standard errors are clustered by household and date and are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. In Panel A (B), the number of dividend-induced purchases and matched purchases is 850 (1,943), each.

Table A9: Brokerage data: Characteristics of dividend-induced purchases at a US broker: Robustness: Purchases up to 10 times the size of dividends in the past 30 days

	Dividend-induced purchases	Matched purchases	Difference
Panel A: Stock characteristics			
$\text{Lottery}_{IVolaISkewPrc}$	14.8	11.9	2.9***
			(0.6)
Lottery_{MaxRet}	15.5	12.5	3.0***
			(0.6)
Idiosyncratic volatility	2.6	2.4	0.2***
			(0.0)
Total volatility	2.8	2.6	0.2***
			(0.0)
Idiosyncratic skewness	10.5	10.3	0.2
			(2.0)
Total skewness	10.7	10.9	-0.2
			(1.9)
Price (in USD)	30.4	35.4	-5.0*
			(2.6)
Max one-day return	6.1	5.7	0.4***
			(0.1)
MCap (in bn. USD)	8.4	9.6	-1.2***
			(0.3)
Panel B: Asset classes			
Stock	71.1	71.3	-0.2
			(0.4)
Fund	13.7	13.7	0.0
			(0.4)
Bond	0.0	0.1	-0.1**
			(0.0)
Option	12.9	12.5	0.4***
			(0.1)
Other	2.3	2.4	-0.1
			(0.2)

Purchases that investors finance with dividends are identified (column 1) and matched with similar-sized, VIX-matched purchases by the same investors that are not financed with dividends (column 2). Column 1 (2) reports mean characteristics for the dividend-induced purchases (matched purchases). Column 3 reports differences in means between dividend-induced purchases and matched purchases. Only purchases that are no larger than 10 times the amount of dividends in the last 30 days are identified as dividend-induced. All data are in percent except where noted otherwise. Standard errors are clustered by household and date and are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. In Panel A (B), the number of dividend-induced purchases and matched purchases is 6,155 (16,657), each.

Table A10: Brokerage data: Characteristics of dividend-induced purchases at a US broker: Robustness: Purchases up to 2 times the size of dividends in the past 90 days

	Dividend-induced purchases	Matched purchases	Difference
Panel A: Stock characteristics			
$\text{Lottery}_{IVolaISkewPrc}$	16.9	11.0	5.9***
			(1.4)
Lottery_{MaxRet}	17.3	12.6	4.7***
			(1.2)
Idiosyncratic volatility	2.7	2.4	0.3***
			(0.1)
Total volatility	2.9	2.6	0.3***
			(0.1)
Idiosyncratic skewness	13.0	6.9	6.1
			(5.5)
Total skewness	14.2	6.2	8.1
			(5.5)
Price (in USD)	29.0	33.7	-4.7***
			(1.0)
Max one-day return	6.6	5.7	0.9***
			(0.2)
MCap (in bn. USD)	8.8	10.4	-1.5**
			(0.7)
Panel B: Asset classes			
Stock	63.6	65.3	-1.7**
			(0.8)
Fund	14.8	14.3	0.5
			(0.7)
Bond	0.0	0.1	-0.1
			(0.1)
Option	19.4	18.6	0.8**
			(0.4)
Other	2.1	1.6	0.5
			(0.3)

Purchases that investors finance with dividends are identified (column 1) and matched with similar-sized, VIX-matched purchases by the same investors that are not financed with dividends (column 2). Column 1 (2) reports mean characteristics for the dividend-induced purchases (matched purchases). Column 3 reports differences in means between dividend-induced purchases and matched purchases. Only purchases that are no larger than 2 times the amount of dividends in the last 90 days are identified as dividend-induced. All data are in percent except where noted otherwise. Standard errors are clustered by household and date and are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. In Panel A (B), the number of dividend-induced purchases and matched purchases is 1,143 (4,114), each.

B Asset pricing

B.1 Data processing

In this section, we provide a detailed description of our data processing for the German stock market data. In general, we retrieve the data from Datastream as outlined by Landis and Skouras (2021) and run the authors' Matlab script to process the data. We make some modifications to get the script to run and to improve the data quality even further.

First, we make the following modifications for downloading the data from Datastream:

1. In Appendix A.5 Step 4, Landis and Skouras (2021) tell users to use the following folder structure: "UserDirectory/data/raw/equities/001". In Figure A.15, there is no "equities" folder, i.e., the folder structure is: "UserDirectory/data/raw/001". We use the structure including the "equities" folder, i.e., "UserDirectory/data/raw/equities/001".

2. In Appendix A.2 Step 8, Landis and Skouras (2021) write: "If all is visible in the DFO Navigator then click it. (The visibility of 'All' depends on the number of stocks in an exchange.) Otherwise, tick the box next to 'Use' (as marked in Figure 10) and then click 'Next' and iterate this until all stocks in all pages have been ticked. After all iterations, click 'Use' (see Figure 10, illustrating this example for South Korea)." For our case, "All" is available if you select exactly one exchange (e.g., XETRA) and "All" is not available if you select multiple exchanges at the same time (e.g., Frankfurt, Hamburg, Stuttgart, . . .). Knowing this saves users a lot of time because they can select one exchange at a time and click "All" instead of having to click through several hundreds of pages when selecting multiple exchanges simultaneously.

3. In Appendix A.3 Step 10, Landis and Skouras (2021) tell users to save a list with a maximum of 2,000 stocks because the requests get too big otherwise. From our experience, 2,000 is too big already and we use a limit of 1,000 instead.

4. In Appendix A.5 Step 5 of Landis and Skouras (2021), data for multiple lists are supposed to be downloaded with one processing of the request table. What does not work is to download data for list "#001" and list "#002" at the same time if the data are saved in two files with the same name, e.g., "001/up.xlsx" and "002/up.xlsx". The problem here is that Excel does not open two files with the same name at the same time. To solve this, we changed the names to "up1.xlsx" and "up2.xlsx" for the processing and then changed them back to "up.xlsx" afterwards.

5. Before we could process the request table in Appendix A.5 of Landis and Skouras (2021), we had to create the target files (e.g., "up1.xlsx") manually. To do so, we created an empty file with one sheet ("Sheet1"), duplicated this file and gave the duplicates the required file names (af1.xlsx, ..., up9.xlsx).

6. The static request in Appendix Figure A.15 of Landis and Skouras (2021) needs "TRAD" as an additional variable between "TRAC" and "TYPE". Without "TRAD", the Matlab script will throw an error.

Second, we make the following modifications to run the Matlab script from Landis and Skouras (2021):

1. The system language needs to be set to English (for processing dates).

2. If a file only has missing values (e.g., because Datastream had no data for the respective variable for all the stocks), the file does not contain a column with dates. This will cause the Matlab script to throw an error. To solve this problem, we copy-and-pasted the date column from another file into the affected file.

3. We believe, the home currency filter in the Matlab script chooses the entry for "PCUR" in the first row of "static.xlsx" as the home currency and throws out all observations where "PCUR" is different. This is problematic for two reasons: First, if the first row is an entry with a wrong "PCUR", e.g., "U$" although the market is Germany, the filter

will remove all euro observations. Second, the filter removes all observations for which "PCUR" is "DM" (i.e., German mark) for Germany which should not happen because that is Germany's true currency for observations before the euro was introduced. We use the following workaround: A) we make sure the first entry is "E" (for euro). B) in "PCUR" in the "static.xlsx" files, we replace all "DM" entries with "E". Note: The currency filter only cares about "PCUR" in "static.xlsx". The currencies in the time series files (e.g. "up.xlsx") are no grounds for filtering (i.e., if there is a "U$" entry for price data in a file for the German market, that does not result in the affected stock being excluded).

4. Values in the time series files that are not in home currencies (e.g., "U$") are converted to the home currency (i.e., euros in our case). This works for all currencies except pre-euro currencies (e.g., "DM" = German mark) and British pound. For German mark and British pound, we use the following workarounds:

   (a) For German mark, we A) search and replace "DM" with "XX" in the time series files and B) change "DM" to "XX" in "tds_currencySymbols.csv".

   (b) For British pound, we A) search and replace "£" with "GBP" in the time series files. B) in " tds_currencySymbols.csv", we add a new row [BRPOUND, British Pound, GBP]. C) in "exhange_rates.xlsx" in "Sheet1", we add a new column [DPL#(BRPOUND(ER),6), DPL#(BRPOUND(ER),6), £, 1, 1, 1, . . .].

5. The script only processes variables that are part of the instructions of Landis and Skouras (2021). If the user wants to process other variables, the user has to do this on his own. In our case, we process "UDD" (the unadjusted amount of dividends per share paid out on a given date) following the instructions in Landis and Skouras (2021) and merge the "UDD"-data with the rest of the data.

Third, we add the following steps to process the data that are returned by the Matlab script:

1. By analyzing year-on-year growth in dividends for each individual stock, we find that data before a certain date are in German mark and data after a certain data are in euros, regardless of what the Datastream currency entry says. In general, we find that dividend data until 1999-12-31 are in German mark and dividend data thereafter in euros. We manually check for exceptions and find that, e.g., SAP already has euro data in 1999, while Thyssenkrupp still has German mark data in 2000. Thus, we use an individual German mark-to-euro transition date for each stock to convert dividend data from German mark to euros.

2. We set the 1997 dividend data for Heidelberger Druckmaschinen to missing because they appear to be payments that were made to shareholders prior to the IPO of the company in December of 1997 (see https://www.heidelberg.com/global/media/global_media/investor_relations/annual_general_meeting_1/2004_2/hv2004_geschaeftsbericht_2001_2002.pdf, as of 2026-05-07).

3. There are some dates that are excluded by the Matlab script although we believe that they are regular trading days based on many non-zero returns on these days and the days being weekdays and no holidays. We add data for these dates back into the dataset. The specific dates are: 1989-12-27, 1990-01-02, 2011-12-27, 2013-01-02, 2014-01-02, 2015-01-02, 2015-12-28, 2016-01-04, 2016-12-27, 2018-01-02, 2019-01-02, 2020-01-02, 2020-12-28, 2021-01-04, 2022-12-27, 2024-01-02, 2025-01-02.

4. There are some dates that are not excluded by the Matlab script although we believe that they are no trading days based on many zero returns on these days. We exclude days on which more than 95% of returns are within 0.5% of zero which is true for 226 dates in the entire dataset and 112 dates in our sample form 2000 until 2025. We allow some deviation from zero due to exchange rate fluctuations that produce small non-zero returns without trading. The fraction of returns that are *exactly* zero on the days that we exclude from our sample is between 71% and 98%. The day with the

lowest fraction of exactly-zero returns that we exclude is 2025-04-18, which is Good Friday, a public holiday in Germany that should be excluded as it is no trading day.

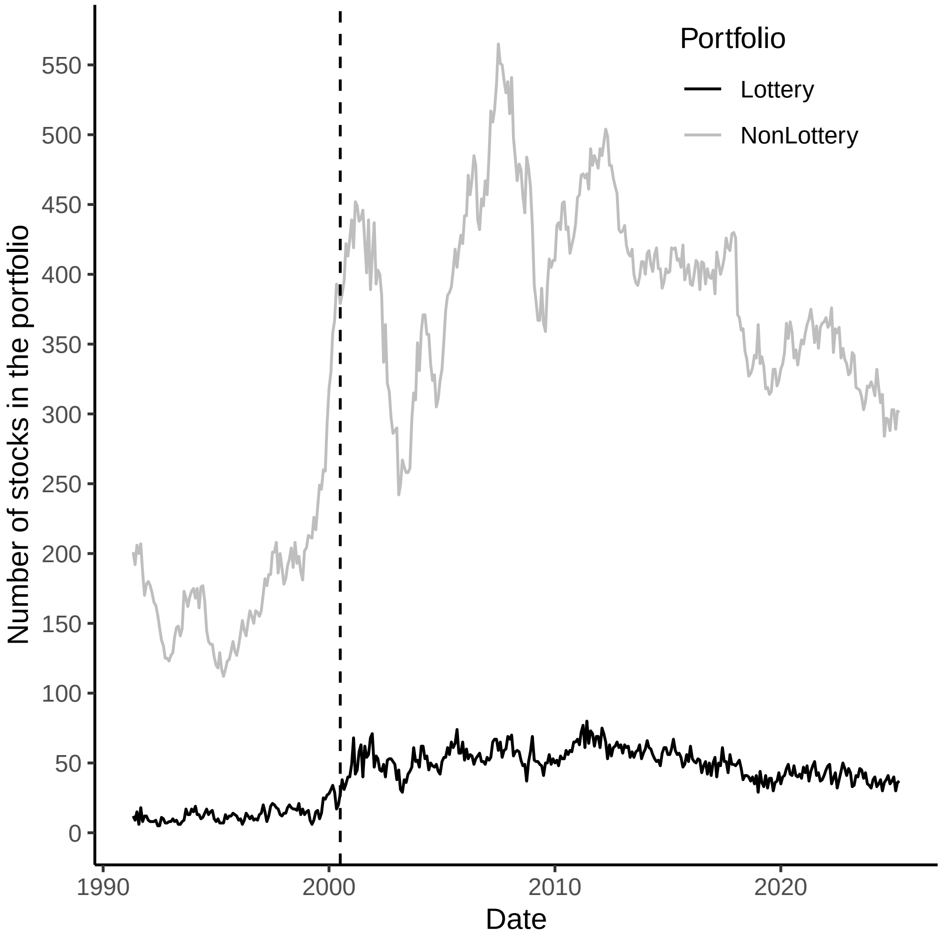
5. We exclude 377 securities that we identify as securities other than ordinary shares based on their "ENAME" containing: "GENUSSCHEIN", "REGISTER", "ADR", "BOND", "ETF" (and "TRAC" $\neq$ "ORD"), "INDEX", "STOXX", "ISHARES", "XTRACKER", "X-TRACKER", "NAV" (and "TRAC" $\neq$ "ORD"), "%", "STEIGENBERGER HOTELGESELLSCHAFT DEAD - DELIST.01/01/86". We additionally exclude 5 securities that we identify as securities other than ordinary shares based on their "TYPE" being "ADR" or "ET".

6. We generally handle duplicate listings as Landis and Skouras (2021) do. Most notably we also switch from using listings on FRA to using listings on XET starting 2000. Yet, there are some dual listings that have much fewer valid observations for their XET listing than for their FRA listing after 2000 which would unnecessarily shrink the sample. Thus, we do not make the switch from FRA to XET if a stock has more than 50 additional observations on FRA vs. XET. This affects 634 dual-listed stocks, most of which are small, with only one DAX stock being affected (Sartorius).

References

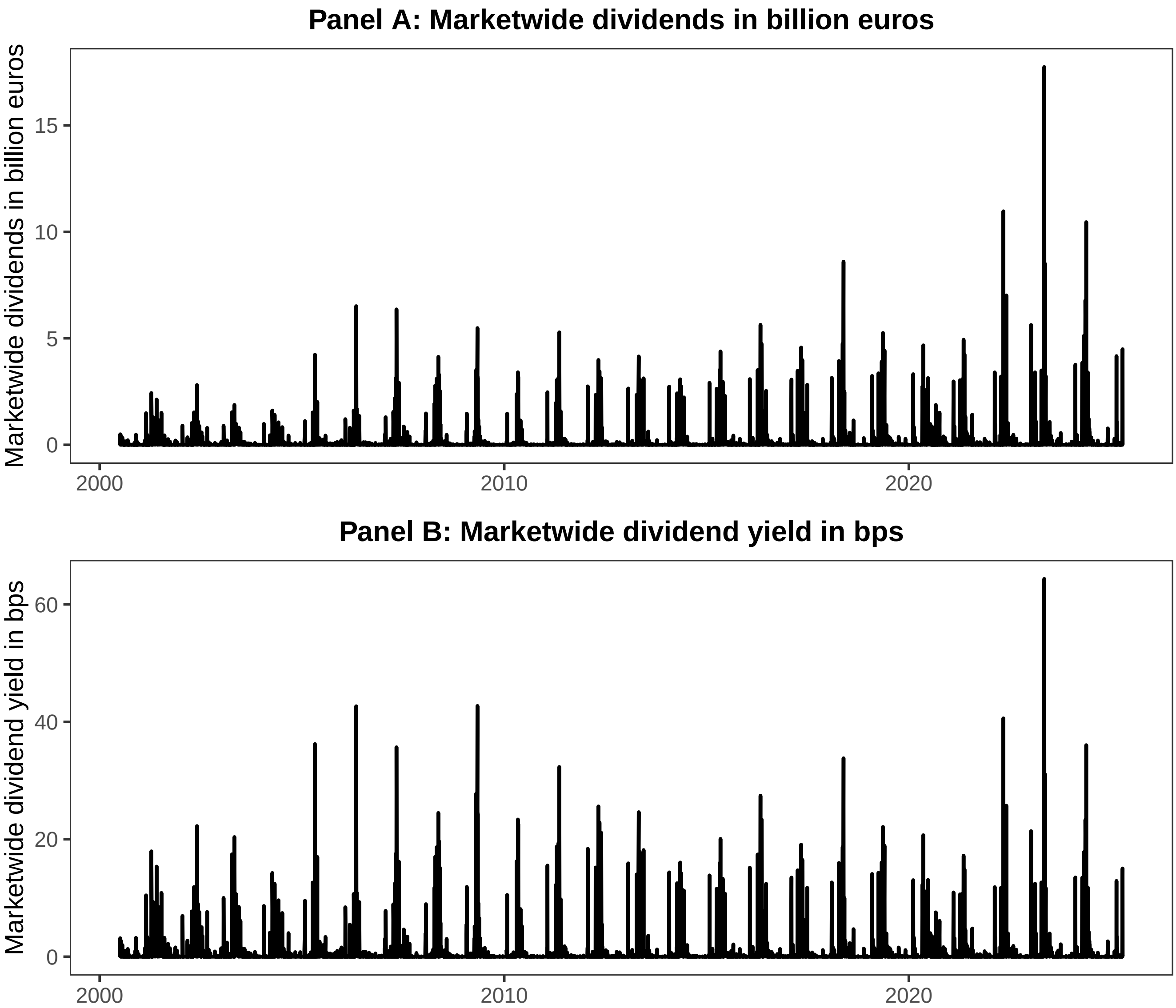
Landis, Conrad, and Spyros Skouras, 2021, Guidelines for asset pricing research using international equity data from thomson reuters datastream, *Journal of Banking & Finance* 130, 106128.

Figure B1: Asset pricing: Number of stocks per portfolio over time



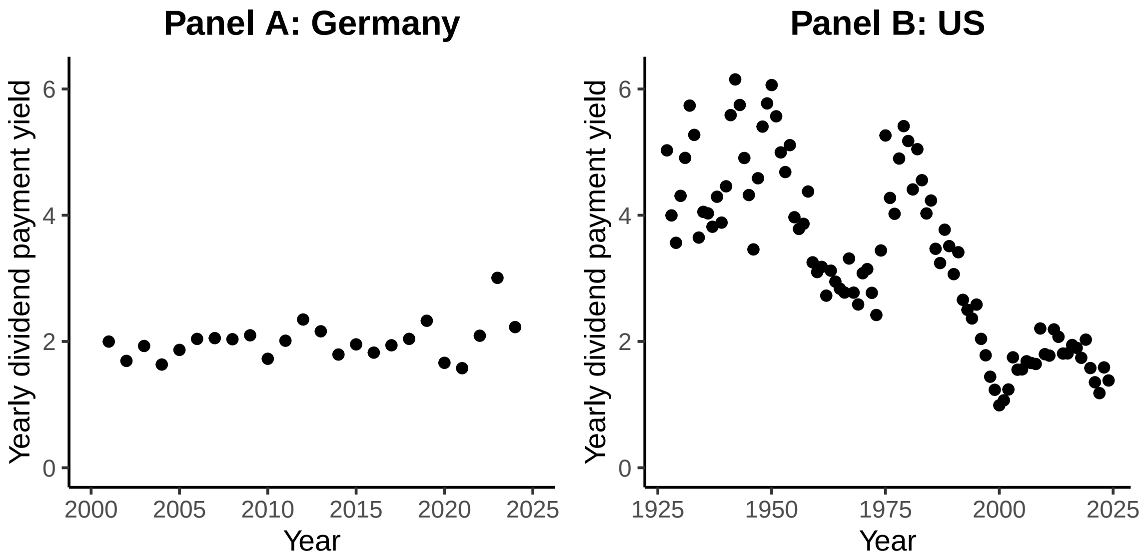
All stocks in the German stock market are separated into a non-lottery portfolio and a lottery portfolio. This figure plots the number of stocks in each portfolio over time. The dashed line marks the beginning of our sample in July 2000 (which is six months after January 2000, with six months being the time period that we need to evaluate the lottery characteristics of a stock).

Figure B2: Asset pricing: Dividends over time



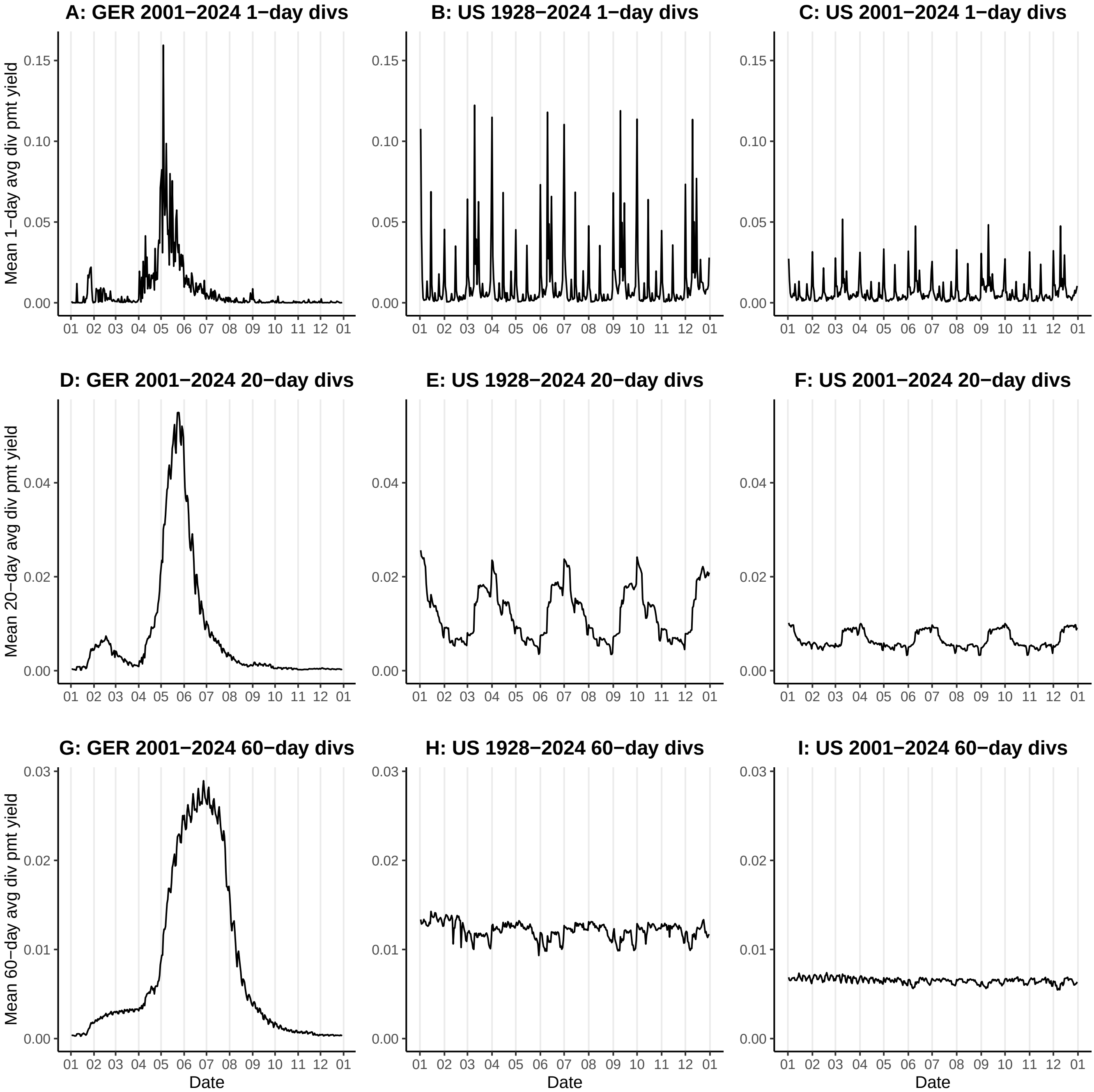
This figure plots daily dividend payments of the German stock market over time. Panel A shows payments in billion euros. Panel B shows payments scaled by the market capitalization of the German stock market on the prior day.

Figure B3: Asset pricing: Dividends by year



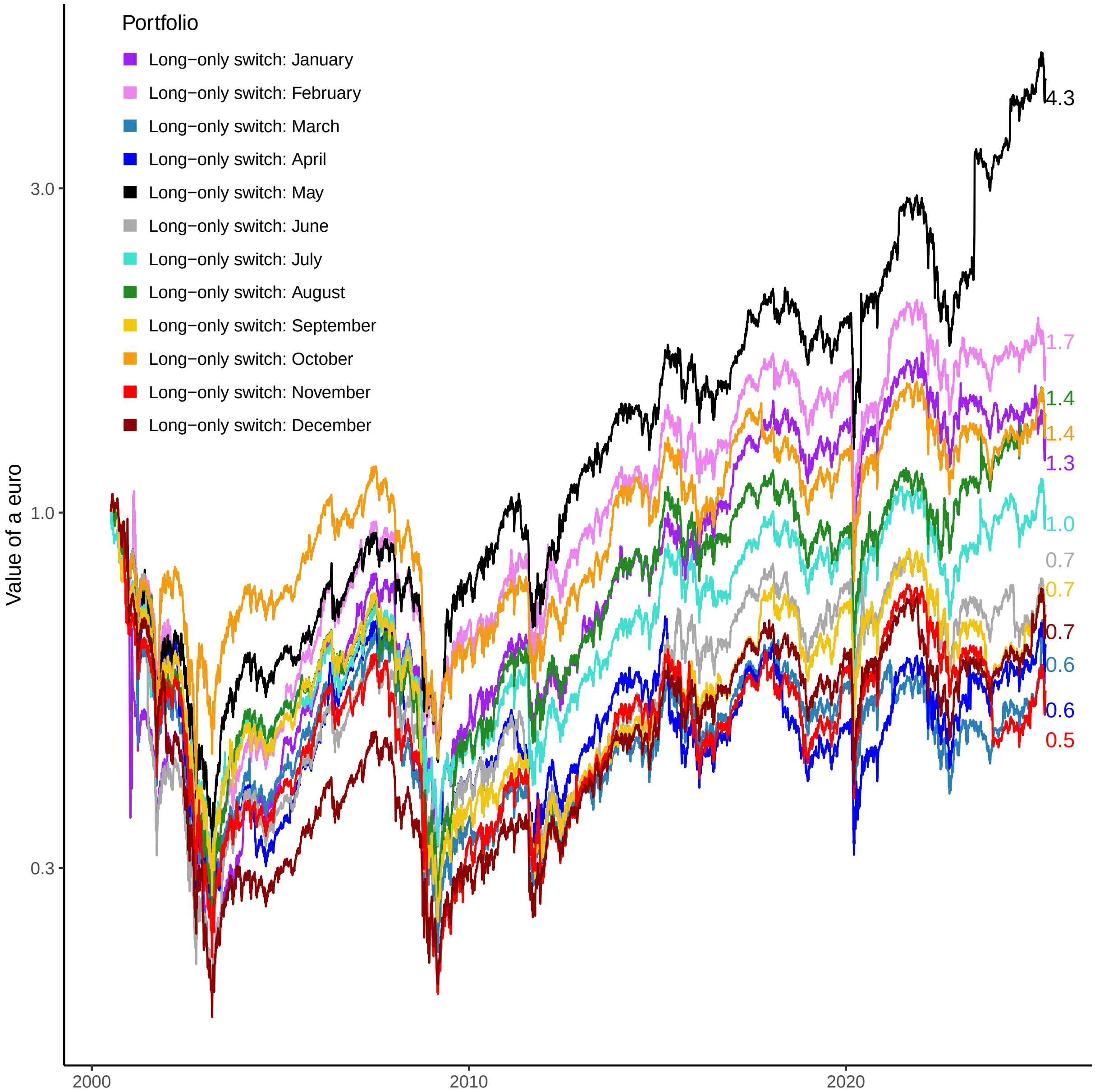
In Panel A (B), all dividend payments made by German (US) stocks in a given year are cumulated and divided by the market capitalization of the German (US) stock market at the beginning of the year.

Figure B4: Asset pricing: Dividends by date



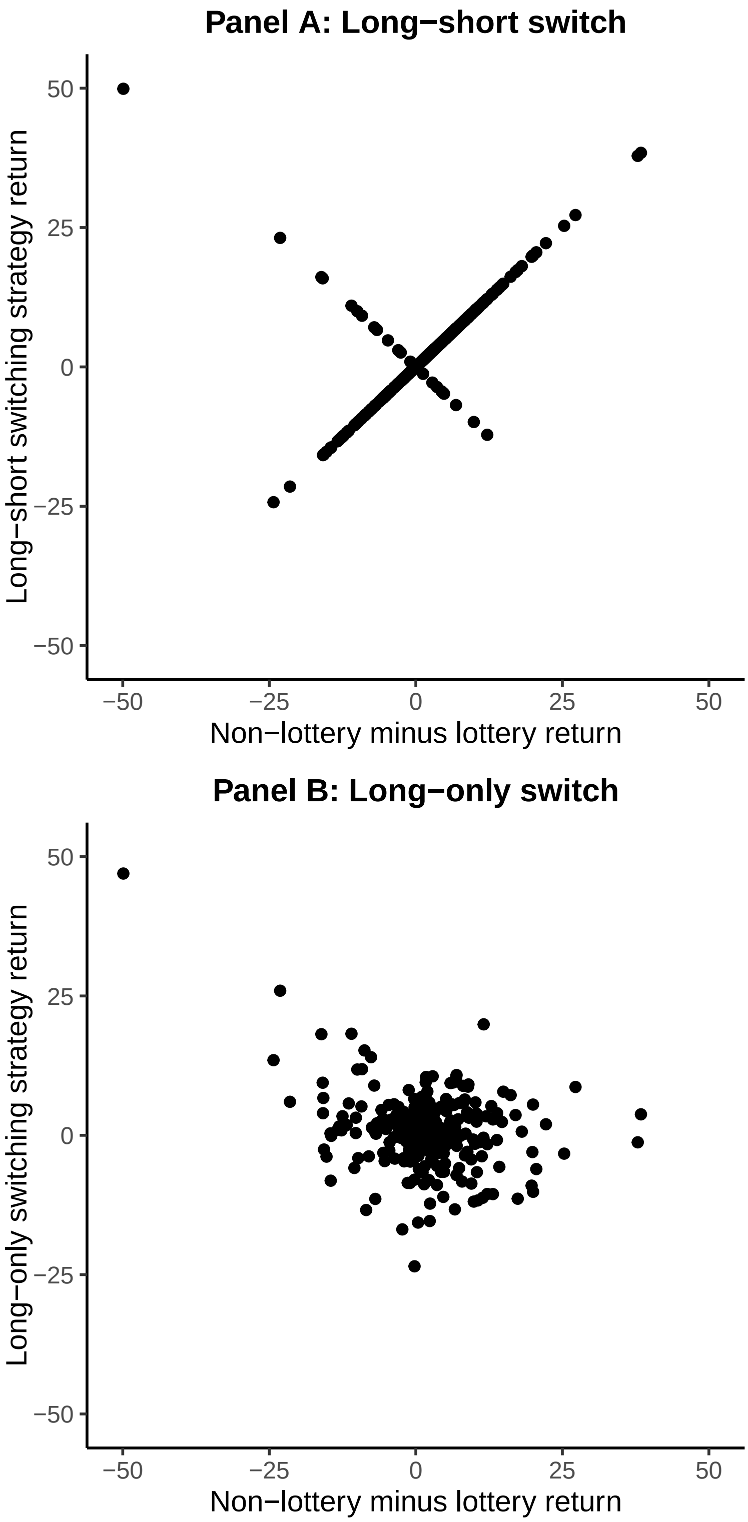
For each date in the indicated country and time period, dividend payments over the past $n \in \{1, 20, 60\}$ days are averaged and divided by the market capitalization on the prior day. The figure plots the value of this n-day average dividend payment yield on the respective date, averaged over all years in the indicated time period.

Figure B5: Asset pricing: Investment strategies over time: Placebos



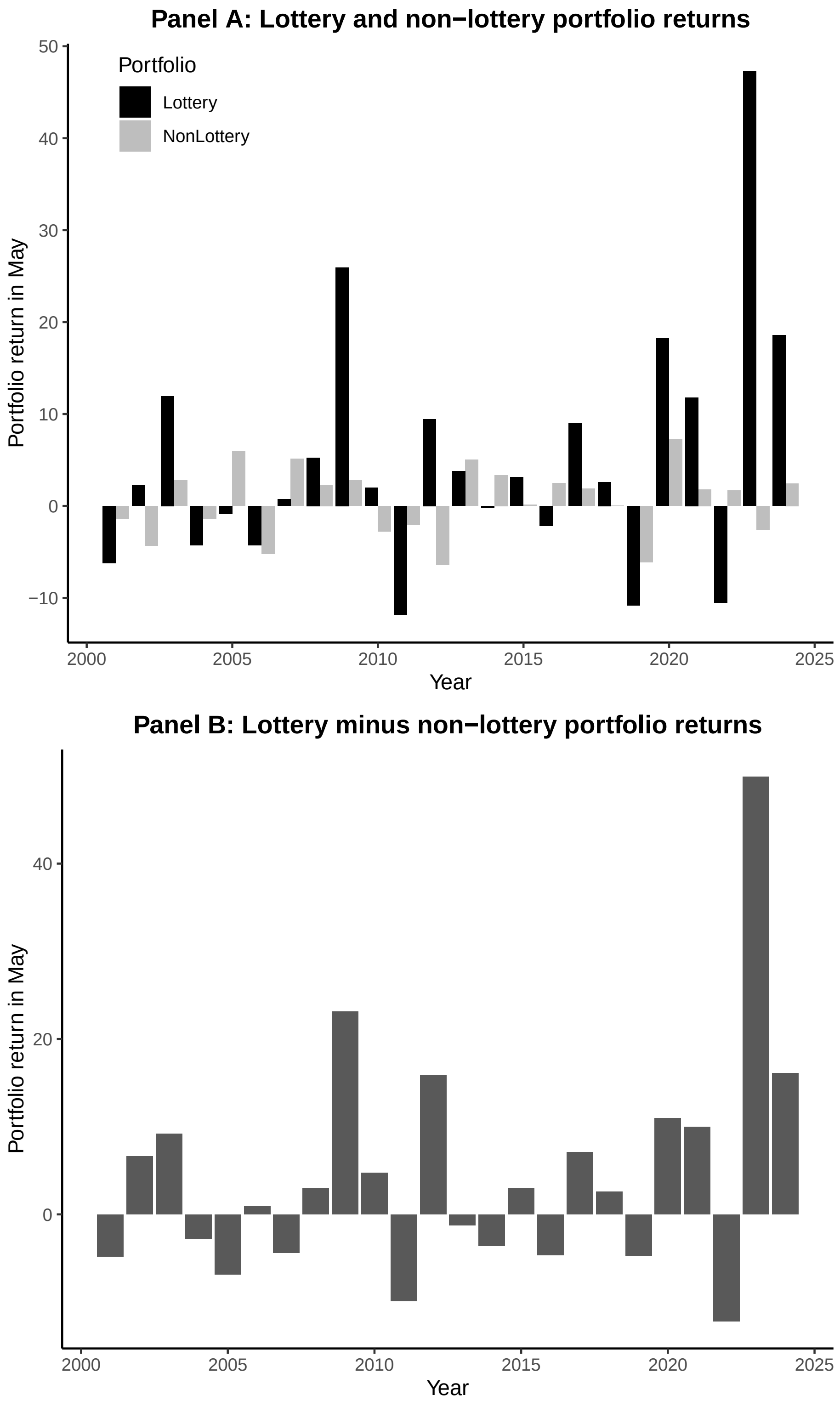
All stocks in the German stock market are separated into a lottery portfolio and a non-lottery portfolio. The portfolios are value-weighted and re-sorted monthly. Each line corresponds to a zero-net investment strategy involving these portfolios. The short position is always the risk-free rate. The long position is the lottery portfolio in the indicated month and the non-lottery portfolio in all other months.

Figure B6: Asset pricing: Timing ability of the May-based switching strategies



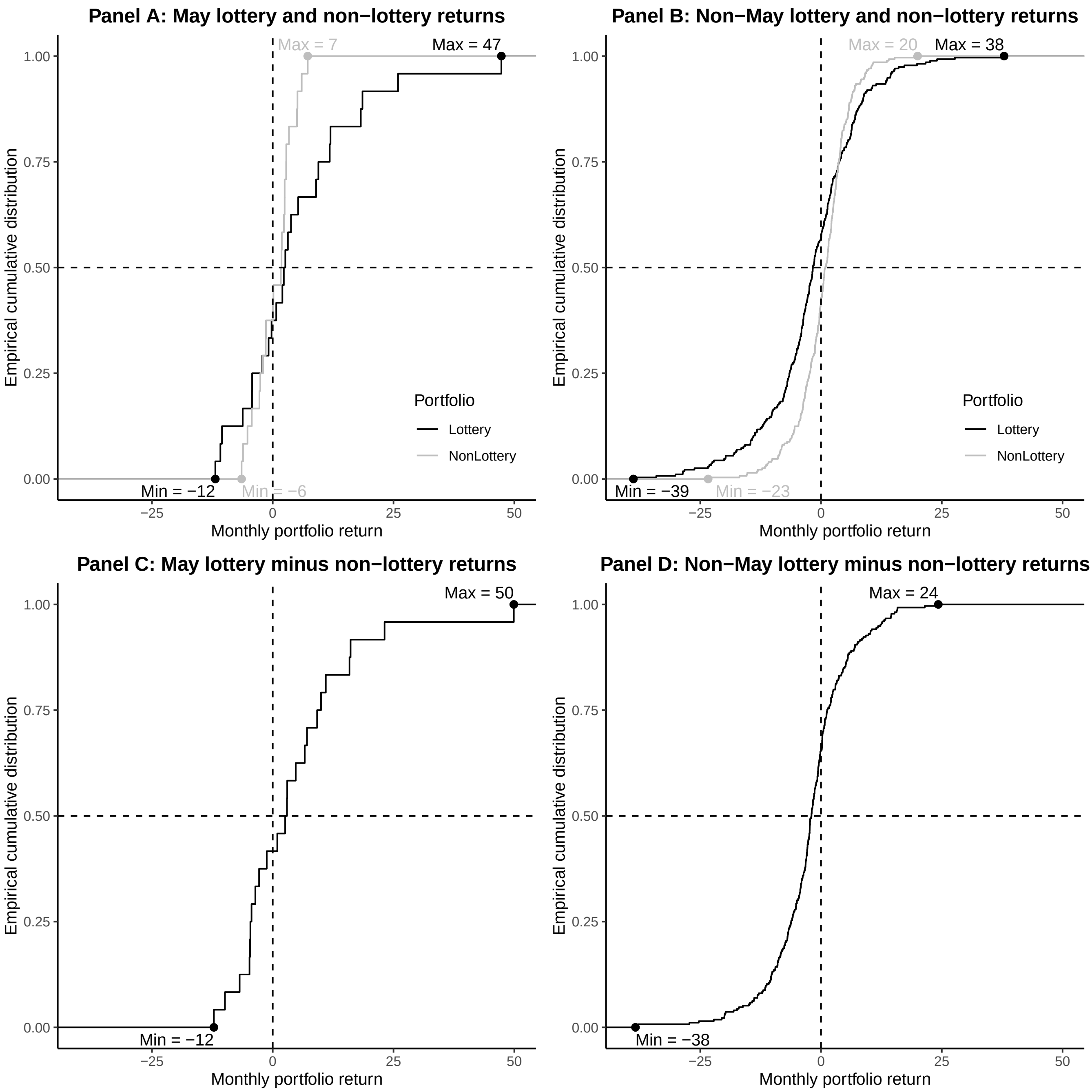
This figure plots non-lottery minus lottery returns against returns of the strategy that is long lottery, short non-lottery (the risk-free rate) in May and long non-lottery, short lottery (the risk-free rate) in all other months in Panel A (B). Returns are in percent.

Figure B7: Asset pricing: Lottery portfolio returns in May of each year



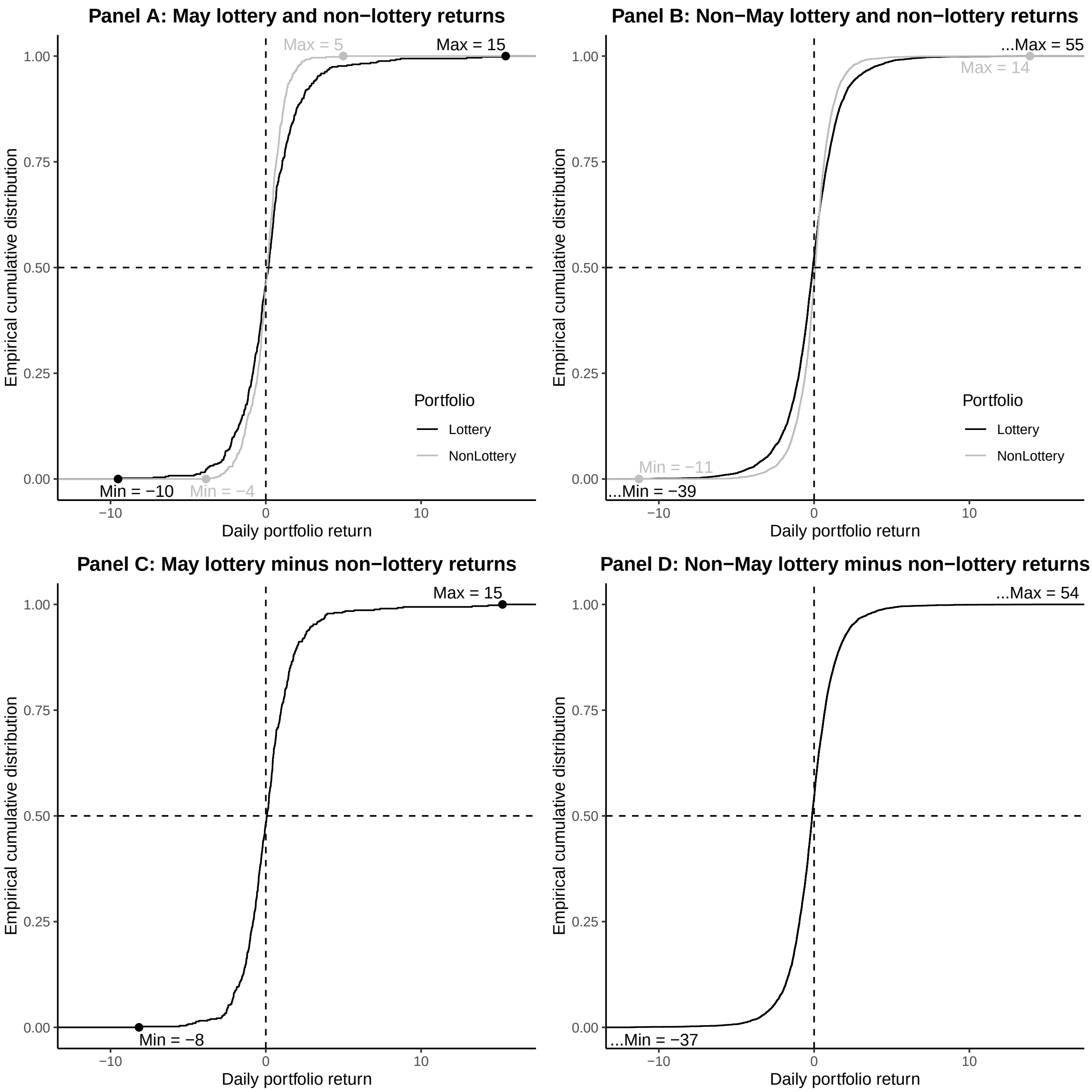
This figure shows portfolio returns in May of each year for the lottery and non-lottery portfolio in Panel A and for a strategy that goes long the lottery portfolio and short the non-lottery portfolio in Panel B. Returns are in percent.

Figure B8: Asset pricing: Monthly lottery portfolio returns in May: CDFs



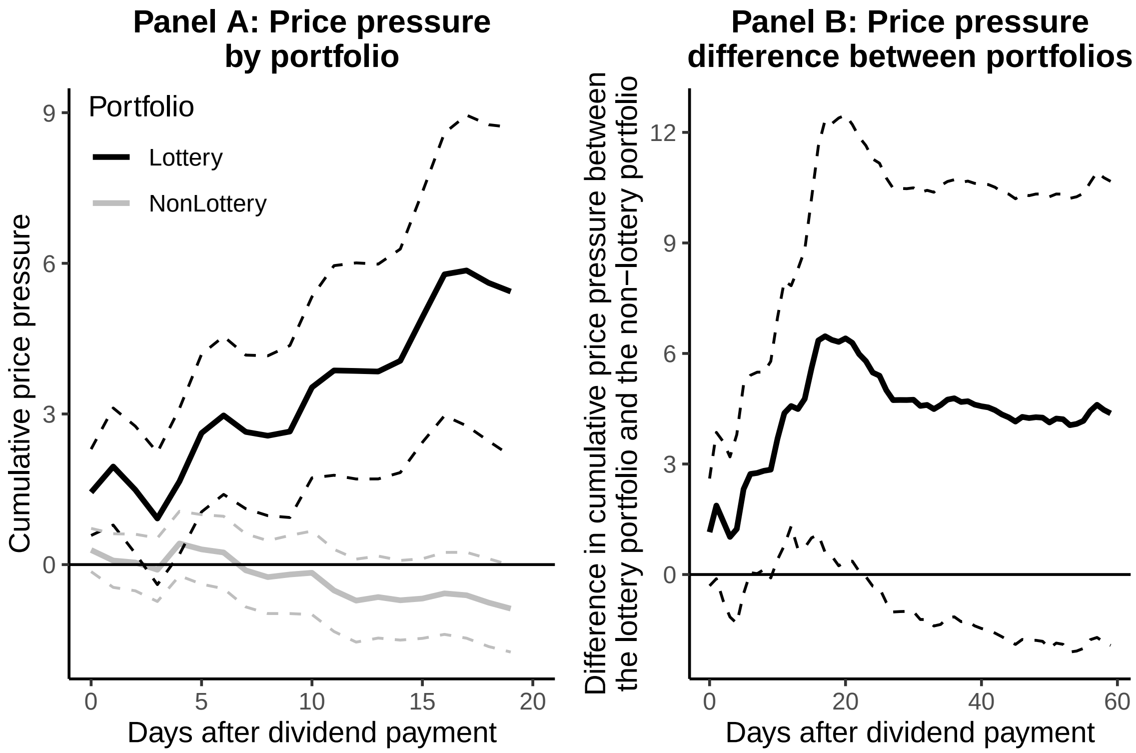
This figure shows cumulative distribution functions for monthly portfolio returns in May (Panels A and C) vs. all other months (Panels B and D). In Panels A and B, the returns are for the lottery and non-lottery portfolio. In Panels C and D, the returns are for a strategy that goes long the lottery portfolio and short the non-lottery portfolio. Returns are in percent.

Figure B9: Asset pricing: Daily lottery portfolio returns in May: CDFs



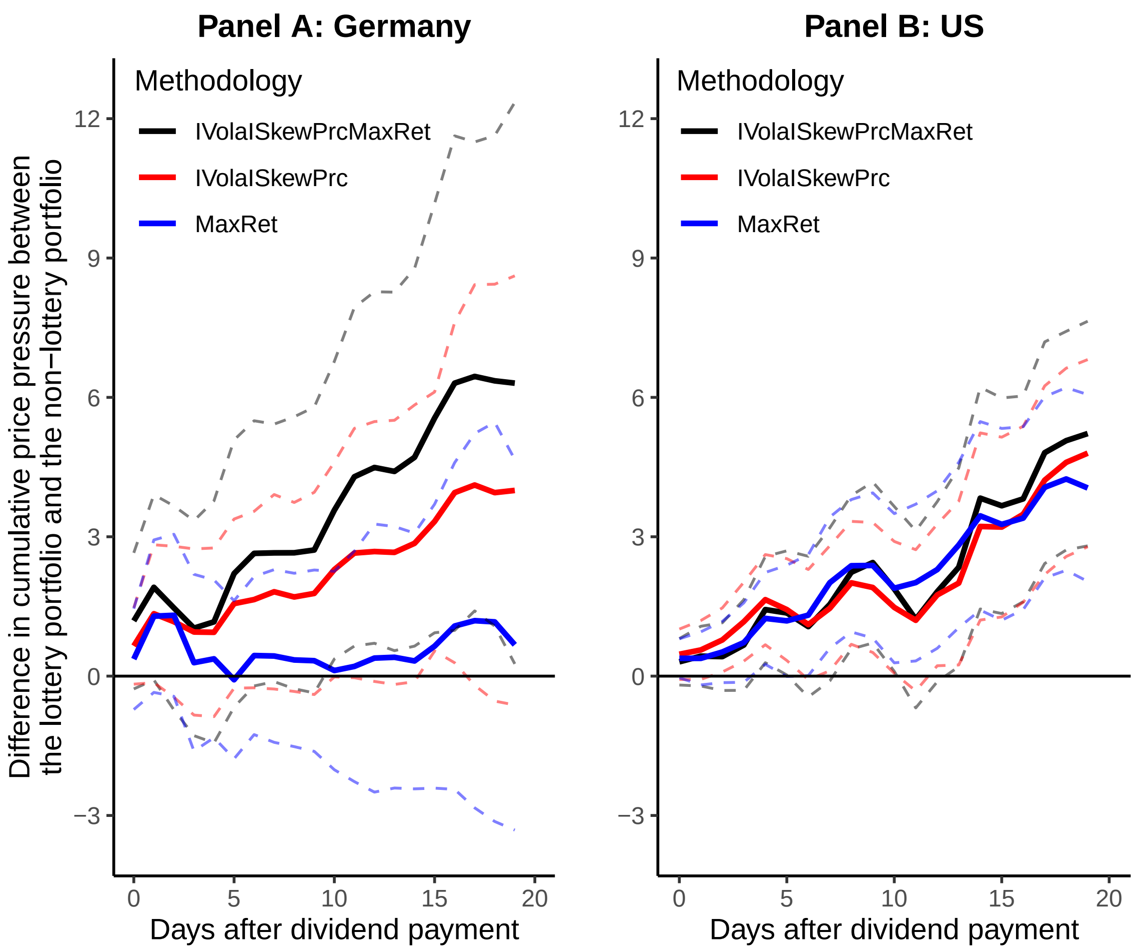
This figure shows cumulative distribution functions for daily portfolio returns in May (Panels A and C) vs. all other months (Panels B and D). In Panels A and B, the returns are for the lottery and non-lottery portfolio. In Panels C and D, the returns are for a strategy that goes long the lottery portfolio and short the non-lottery portfolio. Returns are in percent.

Figure B10: Asset pricing: Price pressure:
Robustness: Including stocks on their ex- and payment dates



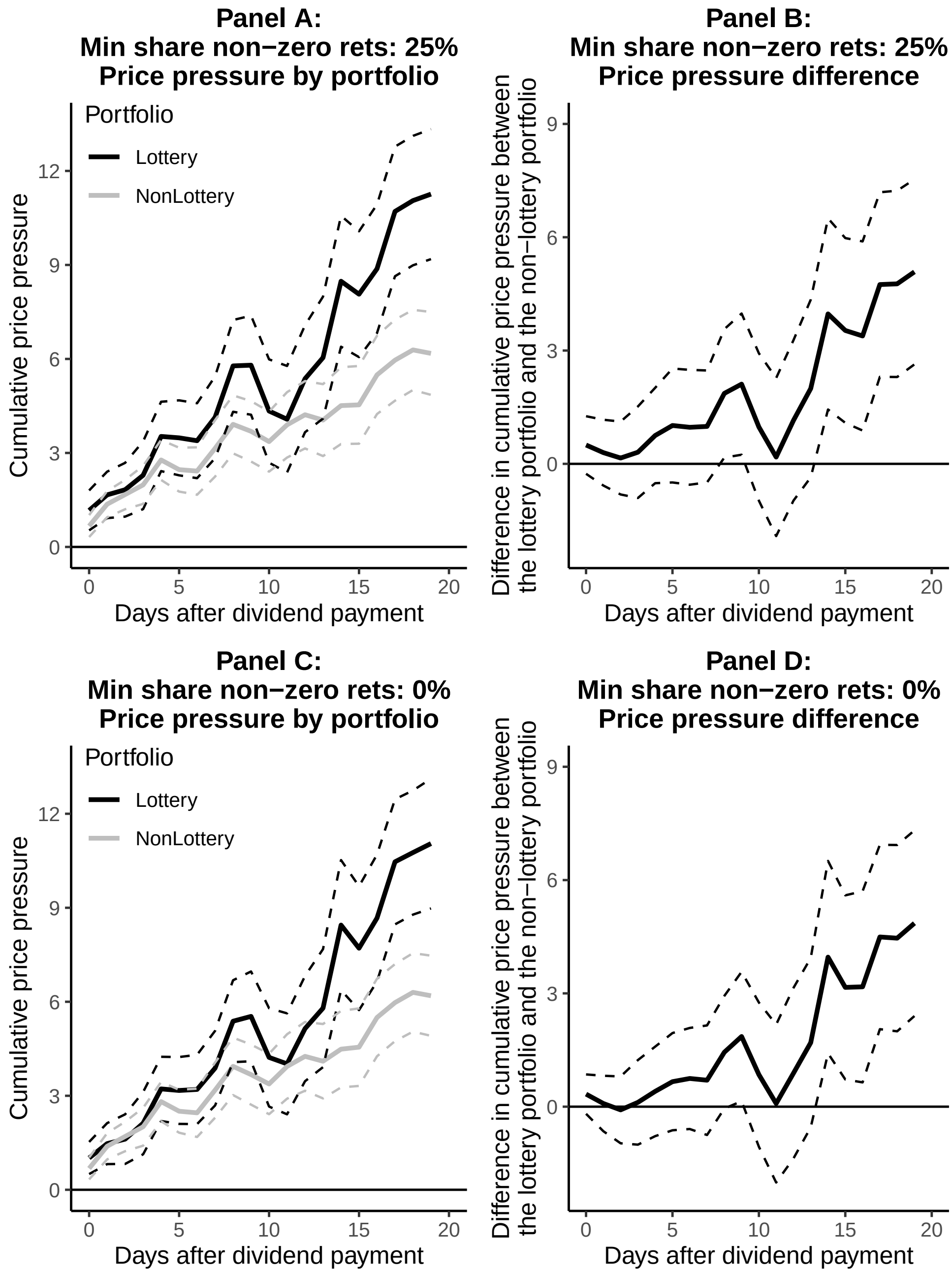
Daily portfolio returns are regressed on average dividends paid by the German stock market over the last n days, scaled by the prior day's capitalization of the German stock market. The portfolios in Panel A are the lottery portfolio and the non-lottery portfolio, s.t., the coefficients indicate by how many percentage points the value of each portfolio increases over n days for each 1% that the market pays out in dividends. The portfolio in Panel B is the lottery portfolio minus the non-lottery portfolio, s.t., the regression coefficients indicate by how many percentage points more the portfolio value increases for the lottery portfolio vs. the non-lottery portfolio. For this figure, stocks are not excluded from the portfolios on the stocks' ex-dividend date or on their dividend-payment date. Panel A (B) shows standard error bars (95% confidence intervals) using Newey-West standard errors.

Figure B11: Asset pricing: Price pressure:
Robustness: Alternative lottery stock definitions



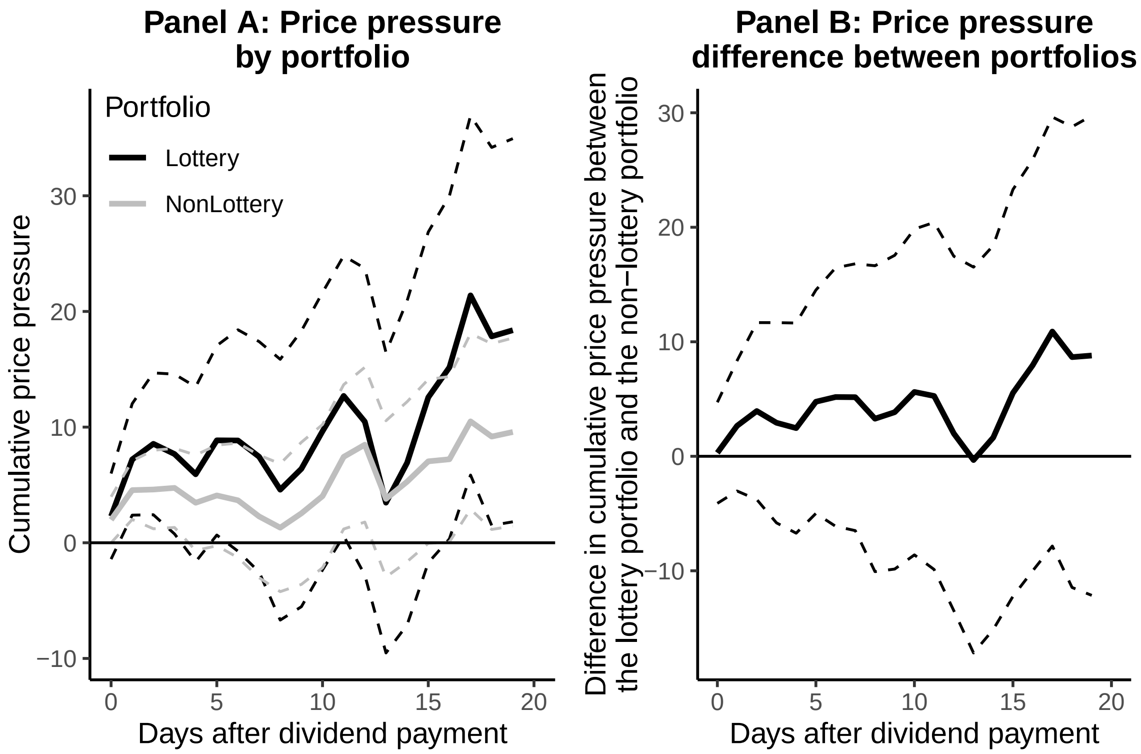
In Panel A (B), German (US) portfolio returns are regressed on average dividends paid by the German (US) stock market over the last n days, scaled by the prior day's capitalization of the German (US) stock market. The portfolios are the lottery portfolio minus the non-lottery portfolio, according to the indicated definition, s.t., the regression coefficients indicate by how many percentage points more the portfolio value increases for the respective lottery portfolio vs. the non-lottery portfolio. "IVolaISkewPrcMaxRet" identifies lottery stocks as stocks with above median idiosyncratic volatility and skewness, below median price, and a maximum one-day return above the 80th percentile in the respective country. "IVolaISkewPrc" identifies lottery stocks as stocks with above median idiosyncratic volatility and skewness and below median price. "MaxRet" identifies lottery stocks as stocks with a maximum one-day return above the 80th percentile. Panel A includes no year-month fixed effects, Panel B includes year-month fixed effects. The figure shows 95% confidence intervals using Newey-West standard errors.

Figure B12: Asset pricing: Price pressure in the US:
Robustness: Alternative minimum shares of non-zero returns



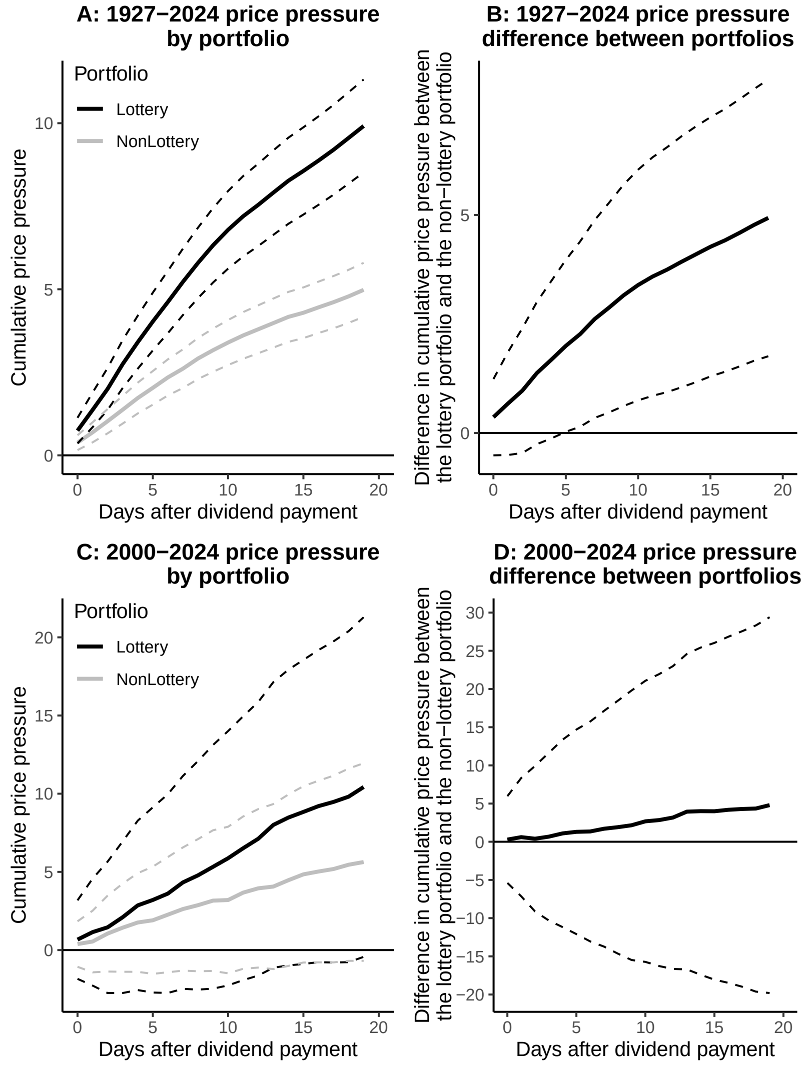
Daily portfolio returns are regressed on average dividends paid by the US stock market over the last n days, scaled by the prior day's capitalization of the US stock market. The portfolios in Panels A and C are the lottery portfolio and the non-lottery portfolio, s.t., the coefficients indicate by how many percentage points the value of each portfolio increases over n days for each 1% that the market pays out in dividends. The portfolio in Panels B and D is the lottery portfolio minus the non-lottery portfolio, s.t., the regression coefficients indicate by how many percentage points more the portfolio value increases for the lottery portfolio vs. the non-lottery portfolio. In Panels A and B, lottery characteristics are only calculated for stocks with at least 25% non-zero returns in the past 6 months and the past 1 month. In Panels C and D, there is no requirement for a minimum share of non-zero returns to calculate lottery characteristics. All regressions include year-month fixed effects. Panels A and C (B and D) show standard error bars (95% confidence intervals) using Newey-West standard errors.

Figure B13: Asset pricing: Price pressure in the US from 2000-2024



Daily portfolio returns are regressed on average dividends paid by the US stock market over the last n days, scaled by the prior day's capitalization of the US stock market. The portfolios in Panel A are the lottery portfolio and the non-lottery portfolio, s.t., the coefficients indicate by how many percentage points the value of each portfolio increases over n days for each 1% that the market pays out in dividends. The portfolio in Panel B is the lottery portfolio minus the non-lottery portfolio, s.t., the regression coefficients indicate by how many percentage points more the portfolio value increases for the lottery portfolio vs. the non-lottery portfolio. The sample is limited to data between July 2000 and December 2024. Panel A (B) shows standard error bars (95% confidence intervals) using Newey-West standard errors.

Figure B14: Asset pricing: Price pressure in simulated US data



This figure plots price pressure estimates for simulated data. In the simulation, the dividend data are the actual dividends paid by the US stock market on each day. Returns for the lottery and non-lottery portfolio are simulated by drawing returns from a normal distribution that has the mean and standard deviation of the actual portfolios in the US stock market. The randomly generated returns are overlaid with a dividend-payment-based price pressure, according to which the returns of the lottery (non-lottery portfolio) increase by 10pp (5pp) over 20 days per 1% of dividends that the market pays out in dividends. To estimate price pressure, daily portfolio returns are regressed on average dividends paid by the US stock market over the last n days, scaled by the prior day's capitalization of the US stock market. The portfolios in Panels A and C are the lottery portfolio and the non-lottery portfolio, s.t., the coefficients indicate by how many percentage points the value of each portfolio increases over n days for each 1% that the market pays out in dividends. The portfolio in Panels B and D is the lottery portfolio minus the non-lottery portfolio, s.t., the regression coefficients indicate by how many percentage points more the portfolio value increases for the lottery portfolio vs. the non-lottery portfolio. Panels A and B (C and D) use data between May 1927 and December 2024 (July 2000 and December 2024). We repeat the simulation with new draws for the random component of the returns in 100 simulation rounds. The figure plots the average coefficient estimates over those 100 rounds and in Panels A and C (B and D) the average standard errors (95% confidence intervals) over those 100 rounds using Newey-West standard errors.

Table B1: Asset pricing: Investment strategies

	Mean	α	β_{RMRF}	β_{SMB}	β_{HML}	β_{WML}	β_{NML}	β_{NML^2}	$\beta_{max(NML,0)}$	R^2
Panel A: Base portfolios										
Lottery	-1.36	-1.17*	0.76***	0.73**	-0.40	-0.51***				0.25
		(0.64)	(0.13)	(0.33)	(0.24)	(0.19)				
NonLottery	0.35	0.26	0.78***	-0.29***	-0.20**	-0.19***				0.71
		(0.18)	(0.05)	(0.10)	(0.08)	(0.06)				
NML	1.71	1.43**	0.02	-1.03***	0.20	0.32*				0.05
		(0.57)	(0.12)	(0.29)	(0.21)	(0.17)				
Panel B: May strategies: Alphas										
Long-short switch	2.44	2.27***	0.04	-0.72**	-0.03	0.26				0.02
		(0.55)	(0.13)	(0.30)	(0.23)	(0.17)				
Long-only switch	0.71	0.68**	0.79***	-0.14	-0.31***	-0.22***				0.49
		(0.30)	(0.08)	(0.13)	(0.09)	(0.07)				
Long-short switch	2.44	1.42**	0.02	-0.10	-0.15	0.07	0.60***			0.37
		(0.67)	(0.10)	(0.18)	(0.12)	(0.09)	(0.20)			
Long-only switch	0.71	0.96**	0.80***	-0.34***	-0.27***	-0.16**	-0.20*			0.55
		(0.39)	(0.07)	(0.13)	(0.09)	(0.08)	(0.10)			
Panel C: May strategies: Timing ability										
Long-short switch	2.44	-0.28					0.59***	0.02***		0.65
		(0.39)					(0.09)	(0.01)		
Long-only switch	0.71	0.21					-0.22***	0.01***		0.21
		(0.36)					(0.05)	(0.00)		
Long-short switch	2.44	-1.92**					0.01		1.09**	0.54
		(0.93)					(0.35)		(0.43)	
Long-only switch	0.71	-0.87*					-0.56***		0.64***	0.18
		(0.53)					(0.15)		(0.19)	

All stocks in the German stock market are separated into a lottery portfolio and a non-lottery portfolio. The portfolios are value-weighted and re-sorted monthly. One row corresponds to one regression in which the monthly returns of zero-net investment strategies involving these portfolios are regressed on the Carhart (1997) four factors, the NML return (= non-lottery minus lottery return), NML squared, and the maximum of NML and 0. The zero-net investment strategies are as follows: NonLottery (Lottery) is long the non-lottery (lottery) portfolio and short the risk-free rate. NML is long the non-lottery portfolio and short the lottery portfolio. "Long-short switch" is long lottery, short non-lottery in May and long non-lottery, short lottery in all other months. "Long-only switch" is long lottery, short the risk-free rate in May and long non-lottery, short the risk-free rate in all other months. Returns are in percent. Newey-West standard errors are reported in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. N = 297.

C Experiments

C.1 Experiment 1: Cash flows of dividends in the alternative experimental assets

In the main text, we have looked at the binary decision to buy or not to buy Stock B. Figure C2 presents cash flows between rounds 8 and 9 for the first experiment. The top left panel shows the amount of dividends paid. In the dividend-lottery (dividend-non-lottery) treatment, the average dividend is 125 CU (132 CU). In the two non-dividend treatments, dividends are zero by construction. The top right panel shows the amounts invested in Stock B. The results closely resemble those for the binary buy/do-not-buy decision with a large difference in investments between the dividend-lottery treatment (145 CU) and the remaining treatments (78 CU, 58 CU, and 42 CU), giving a DiD of 51 CU (p-value for testing if the DiD is positive: 0.06). The bottom left panel shows the net amounts invested in Stock A. In the two lottery treatments, average net investments are similar and slightly negative at -27 CU and -17 CU. In the two non-lottery treatments, the amounts invested in A are strongly influenced by the dividend payment: In the dividend (non-dividend) treatment, average investments in A are 95 CU (5 CU). The result is a large negative DiD of -100 CU (p-value for a two-sided test: 0.02), meaning that much fewer dividends are reinvested back in the dividend payer, Stock A, if a lottery-like Stock B is offered. The bottom right panel shows the net increase in cash, which is larger in the two dividend treatments than in the two non-dividend treatments (8 CU vs. -61 CU for the lottery treatments and -22 CU vs. -47 CU for the non-lottery treatments) with a DiD of 44 CU (p-value for a two-sided test: 0.24).

Based on these numbers, we can calculate the average rates of dividends invested in Stock B, A, or remaining as cash. We can do so by taking the difference in average investments between the respective dividend and non-dividend treatment and dividing the difference by the average dividend in the dividend treatment (e.g., for B investments in the lottery treatment [145 CU - 78 CU] / 125 CU = 54%). Proceeding like this for Stock B, A, and cash in the lottery and the non-lottery treatment gives the following results: In the lottery (non-lottery) treatment, 54% (12%) of dividends are invested in B, -9% (69%) are reinvested in A, and 55% (19%) remain as cash. Overall, the propensity to gamble with dividends replaces reinvestments in the dividend-paying stock.

C.2 Experiment 1: Trading mechanism

To better understand the amounts invested, it is helpful to know how the trading mechanism in our experiments work. The trading mechanism closely resembles those at actual brokers and consists of a two-step process. First, participants choose whether to buy, hold, or sell Stock A/B. Second, given the choice to buy A and B, for example, participants are directed to a trading screen which resembles trading screens from real-life brokers. The screen shows the cash balance and the current positions in A/B. Below that, participants enter the amount of A/B they would like to buy (or sell). Figure C8 presents the screens displayed to participants.

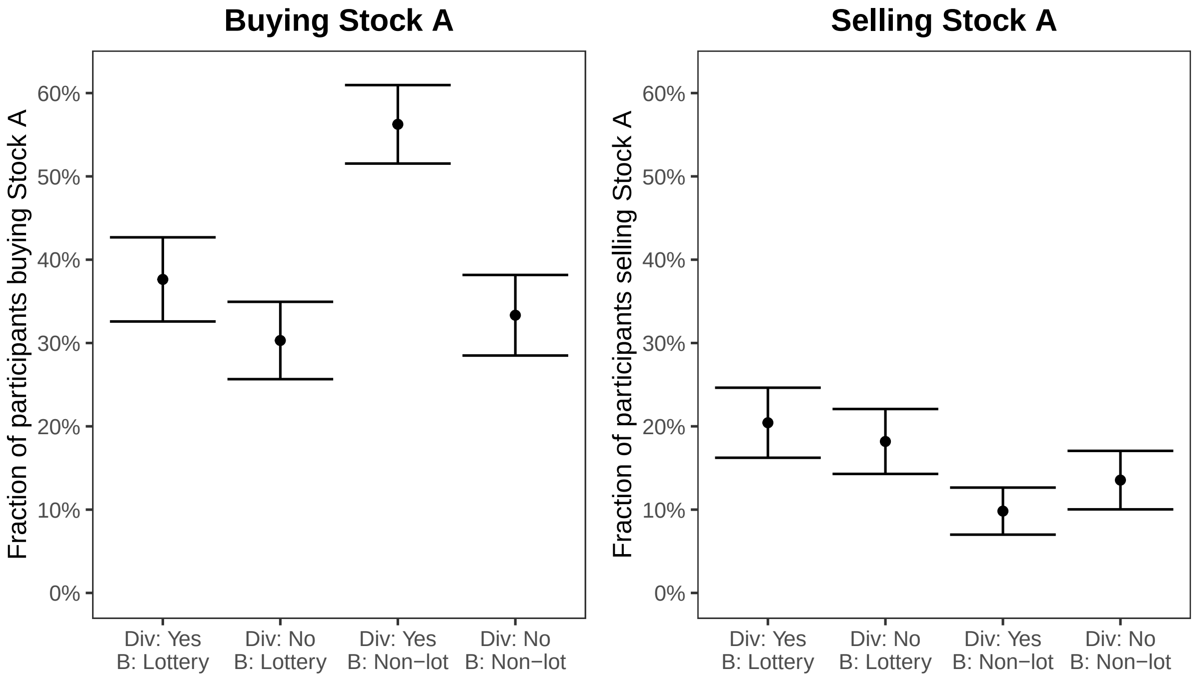
Müller-Dethard, Reinhardt, and Weber (2025) analyze how dividends are reinvested at a broker where investors face a similar choice architecture. The study provides evidence that reinvestments are rarely made through buy orders that have the exact same amount as the dividends. Instead, dividends are initially parked as brokerage cash which is then used to top up trade sizes. Similarly, we argue that participants in our experiment base the investment amounts on their cash balance. Although this still means that investments increase with dividends on average (as dividends raise the cash balance), we do not expect that participants set their investments exactly equal to the dividend amount. One important reason (in real life as well as in our experiment) is that the cash amount is displayed to participants during the trading process while the dividend amount is not.

As a test for this mechanism, we compare each participants' investment amounts with their cash/dividends in the first experiment. To differentiate whether investments follow cash or dividends, we focus on participants who receive dividends and for whom cash and dividends are not equal (which is true if the participant has non-zero cash prior to the dividend payment). Figure C5 presents the results, which support our mechanism. The upper (lower) panel shows that the investments of 18 (8) out of the 108 participants are exactly equal to the cash balance (dividend amount). When investments do not exactly equal cash or dividends, the amounts are usually multiples of 50 CU or 100 CU, often the closest multiples below the cash balance. In Figure C6, we repeat this analysis but also include participants with zero dividends and participants where cash and dividends are equal. In line with our mechanism, the investments for many of the additionally included participants are exactly equal to the cash balance (although not testably different from dividends).

References

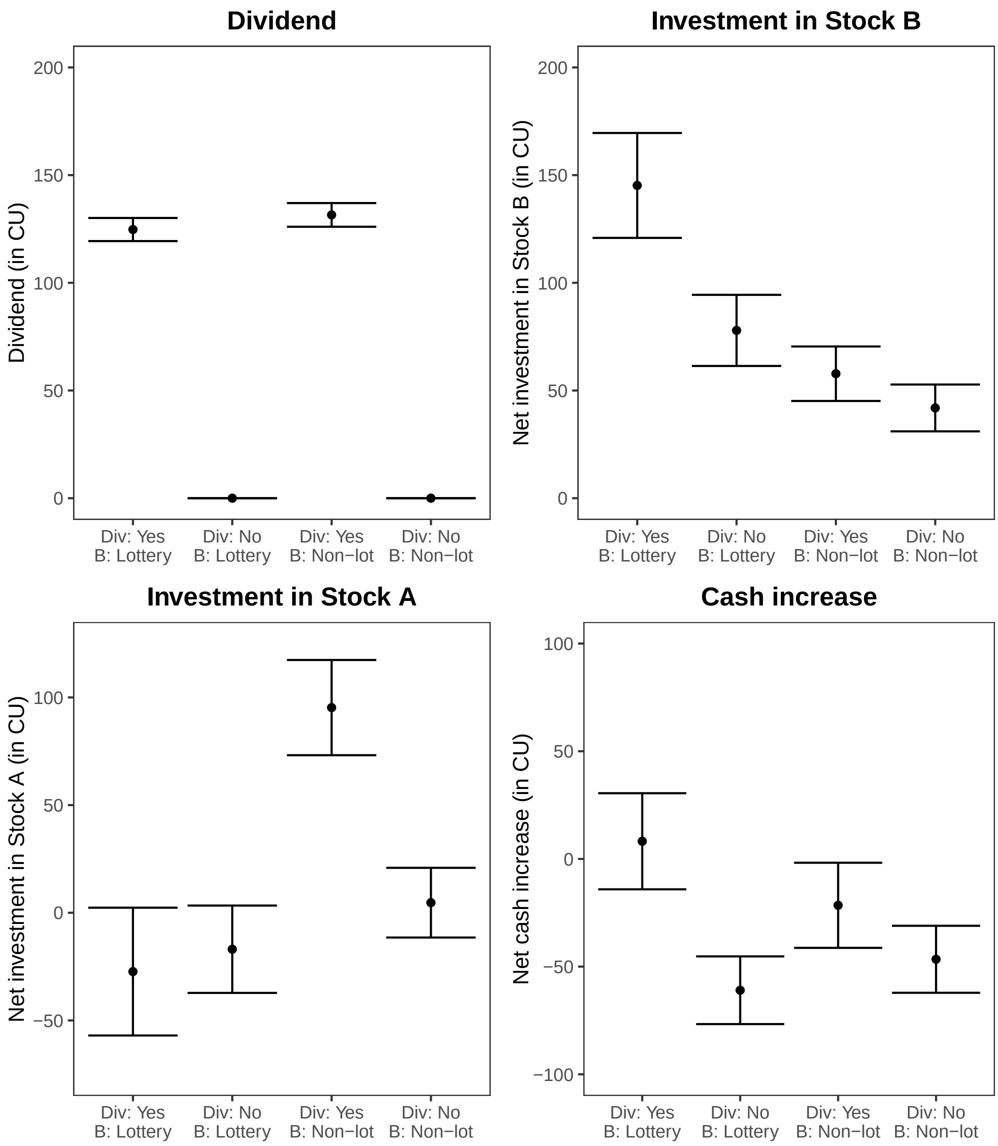
Müller-Dethard, Jan, Niklas Reinhardt, and Martin Weber, 2025, Reinvesting or consuming dividends: Account structure matters, *Review of Finance* 29, 1467–1495.

Figure C1: Experiment 1: Buys and sales of Stock A



This figure shows the fraction of participants in the first experiment that buy/sell Stock A at the beginning of round 9, separated by treatment. After round 8, a dividend was paid (conditional on the treatment) and Stock B was introduced to the participants (with Stock B having lottery-like payoffs or non-lottery-like payoffs conditional on the treatment). N = 400. The bars indicate standard errors.

Figure C2: Experiment 1: Cash flows

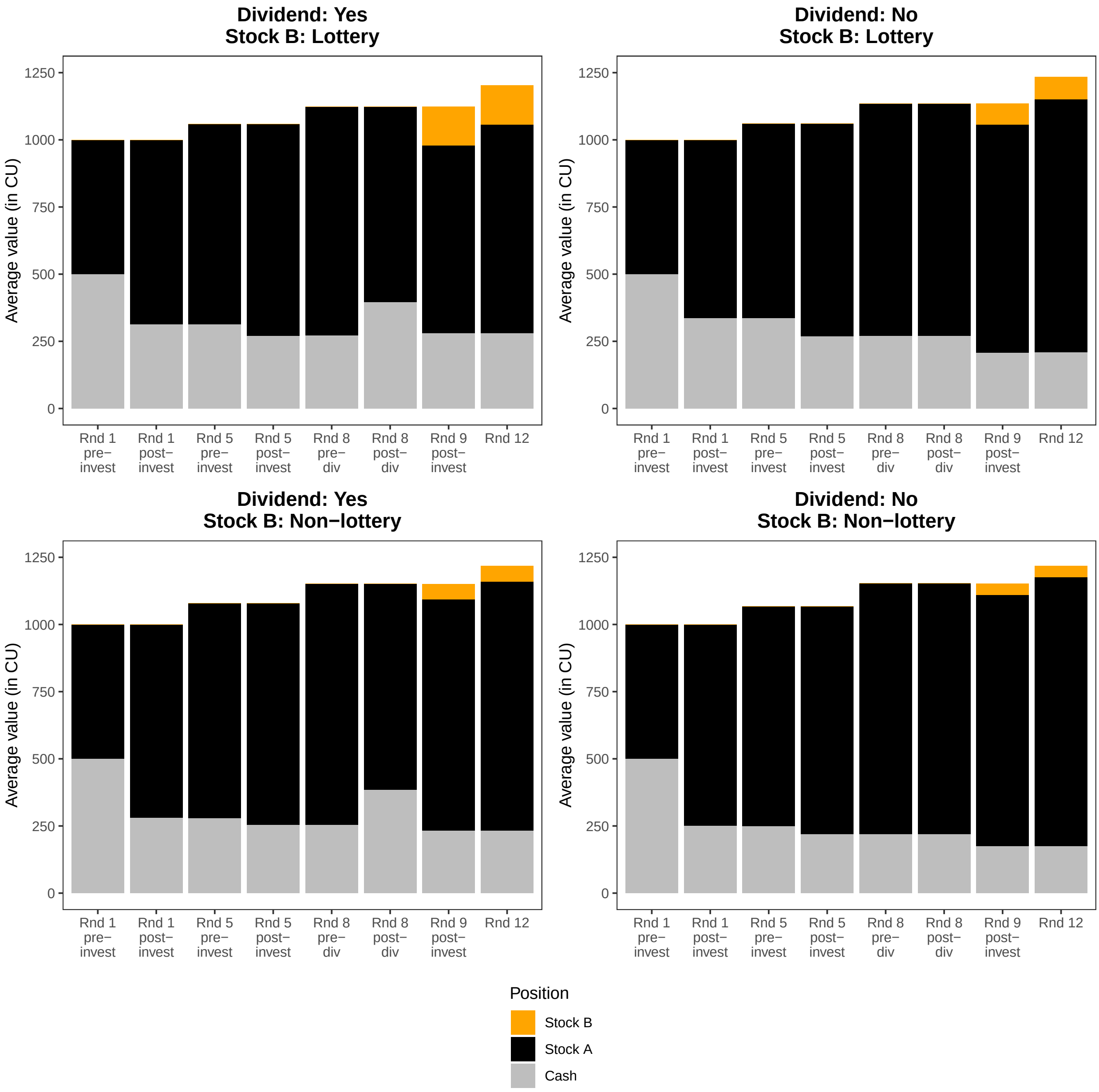


In the dividend (non-dividend) treatments, participants (do not) receive a dividend from Stock A after eight rounds of investing in Stock A vs. cash. Afterwards, participants can reallocate their portfolio once more between cash, Stock A, and a newly offered Stock B that either has lottery-like payoffs or non-lottery-like payoffs depending on the treatment. The figure plots the cash inflows from dividends by treatment and the net cash flows into Stock B, Stock A, and cash by treatment. N = 400.

Figure C3: Experiment 1: Trading decisions

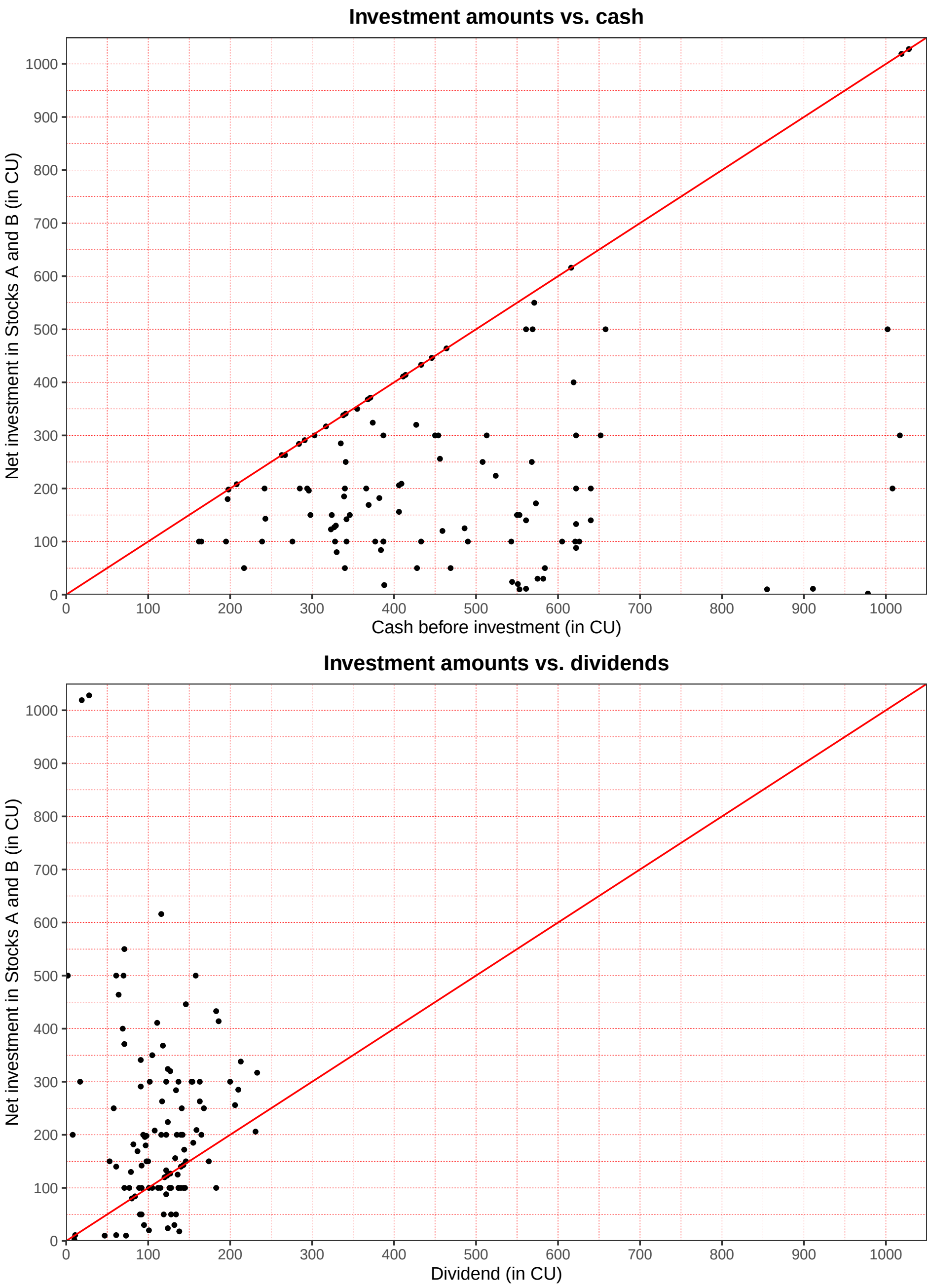
This figure shows the fraction of participants in the first experiment that buy/hold/sell Stock A and buy/do not buy Stock B at the beginning of round 9, separated by treatment. After round 8, a dividend was paid (conditional on the treatment) and Stock B was introduced to the participants (with Stock B having lottery-like payoffs or non-lottery-like payoffs conditional on the treatment). N = 400.

Figure C4: Experiment 1: Portfolio developments



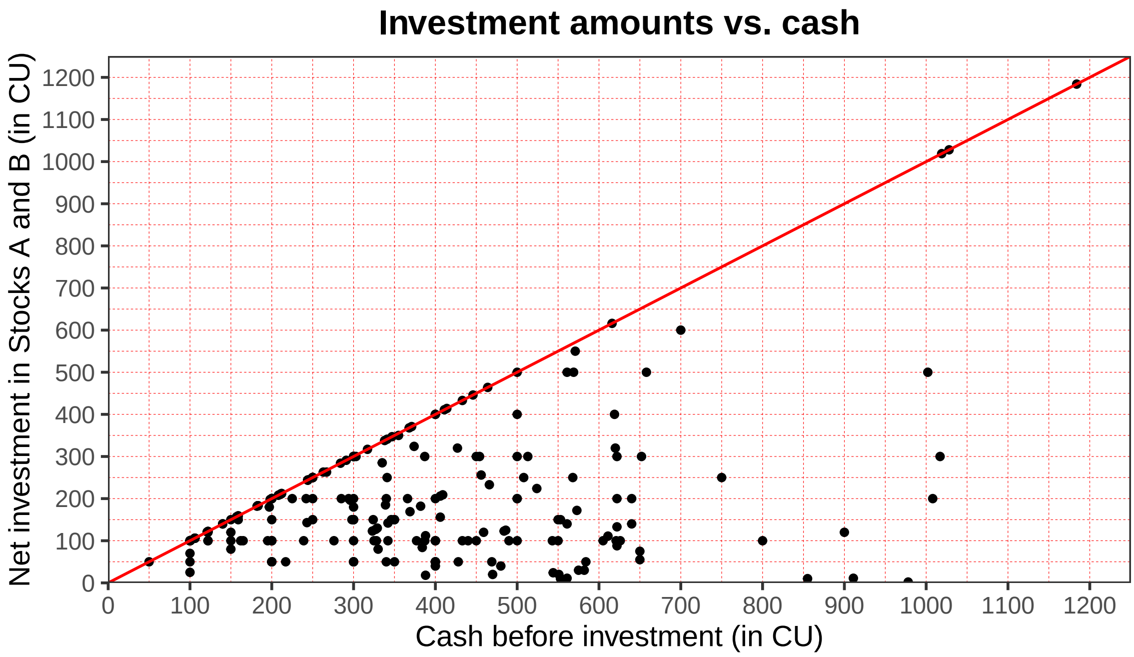
This figure shows the development of the average portfolio over the rounds of the first experiment, separated by treatment. The experiment had 12 rounds of returns. Participants could trade at the beginning of rounds 1, 5, and 9. In between rounds 1, 5, 9, and 12, participants could observe returns but could not trade. "Pre-invest" ("post-invest") shows portfolios before (after) participants trade in the respective round. Conditional on the treatment, Stock A pays a dividend at the end of round 8 which is transferred to the cash balance. "Pre-div" ("post-div") shows portfolios before (after) the dividend payment. Stock B is first introduced to participants at the beginning of round 9. N = 400.

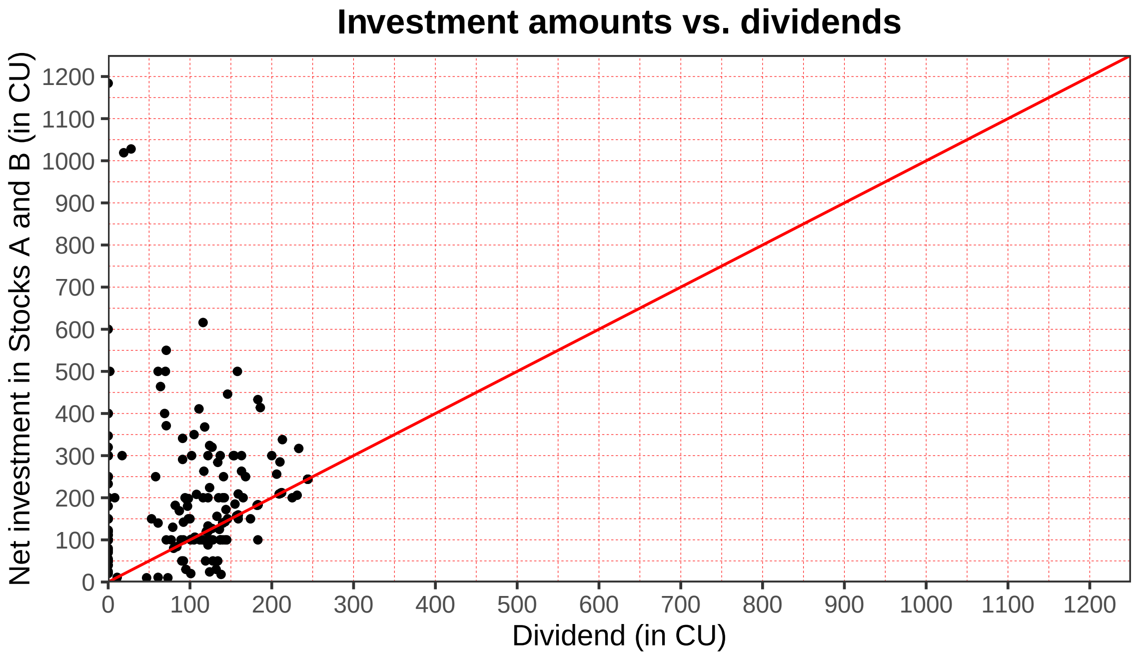
Figure C5: Experiment 1: Investment amounts vs. cash/dividends



Participants receive a dividend payment between 10% and 20% of their stock holdings. After the dividend payment, participants can reallocate their portfolio between cash and stocks. The figure plots the amounts invested in stocks and compares those amounts with participants' cash balances (before the investment but after the dividend) in the top part and with dividend amounts in the bottom part. One point corresponds to one participant. N = 108 as only participants are included who make positive net investments, who receive a dividend, and for whom the cash balance (including the dividend) is not equal to the dividend.

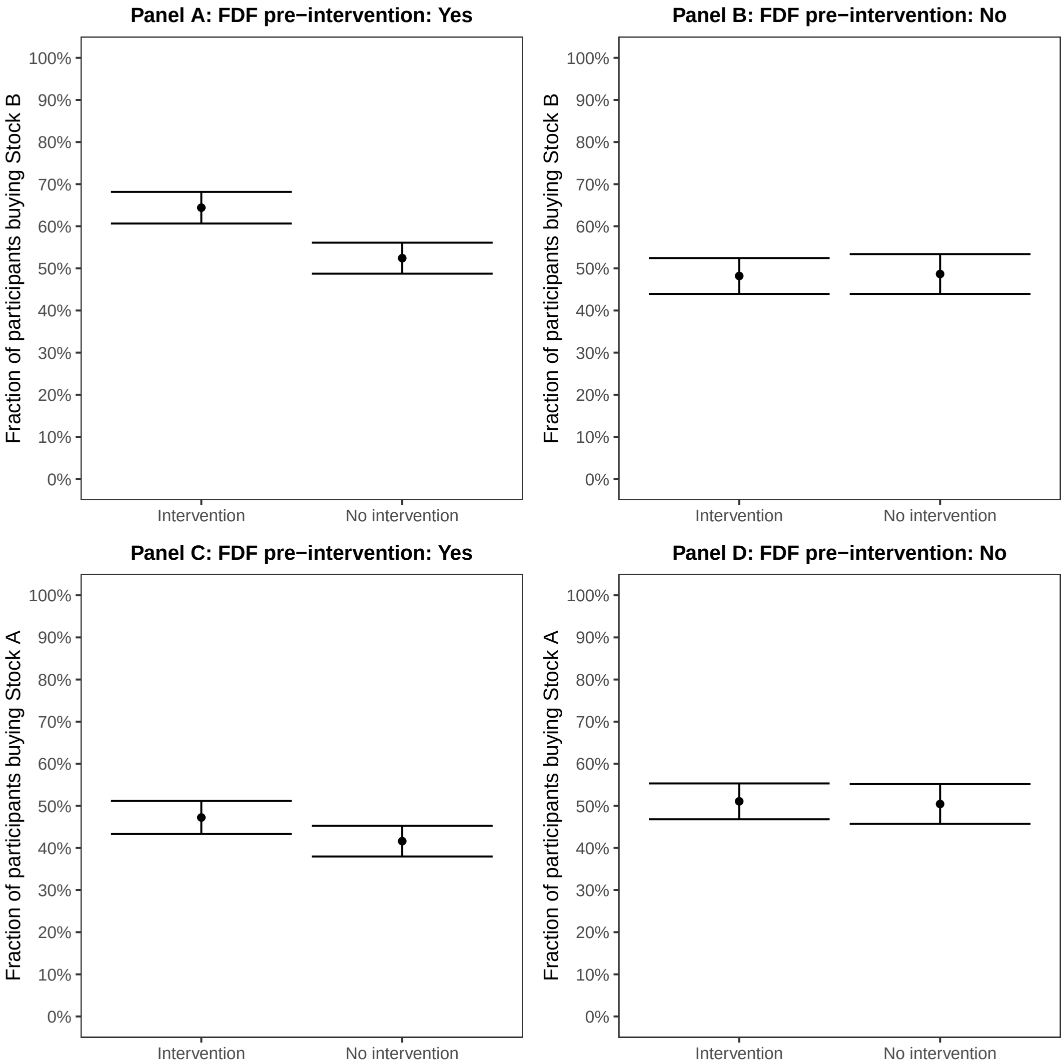
Figure C6: Experiment 1: Investment amounts vs. cash/dividends w/o dividend-based filters





Participants receive a dividend payment between 0% and 20% of their stock holdings. Afterwards, participants can reallocate their portfolio between cash and stocks. The figure plots the amounts invested in stocks and compares those amounts with participants' cash balances (before the investment but after the dividend payment) in the top part and with dividend amounts in the bottom part. One point corresponds to one participant. N = 240 as only participants are included that make positive net investments.

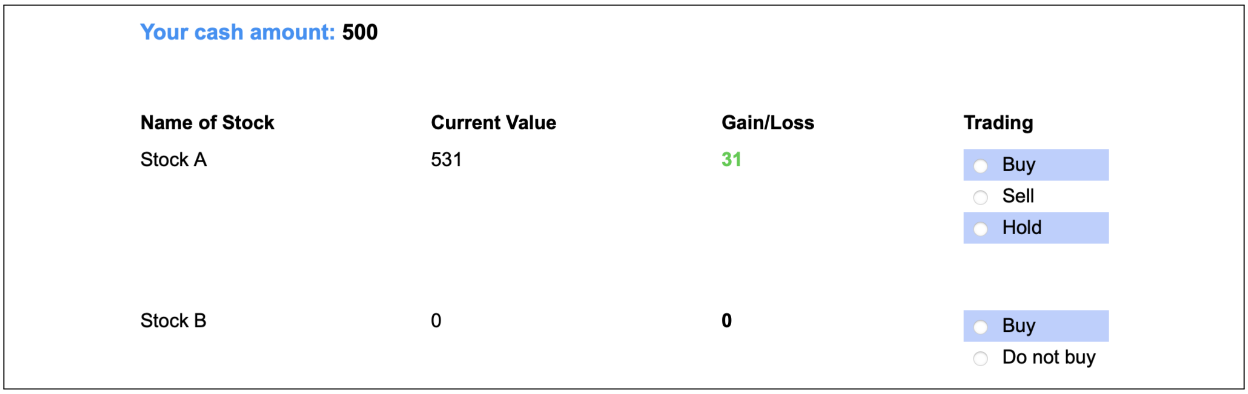
Figure C7: Experiment 2: Choices based on the pre-intervention free dividends fallacy



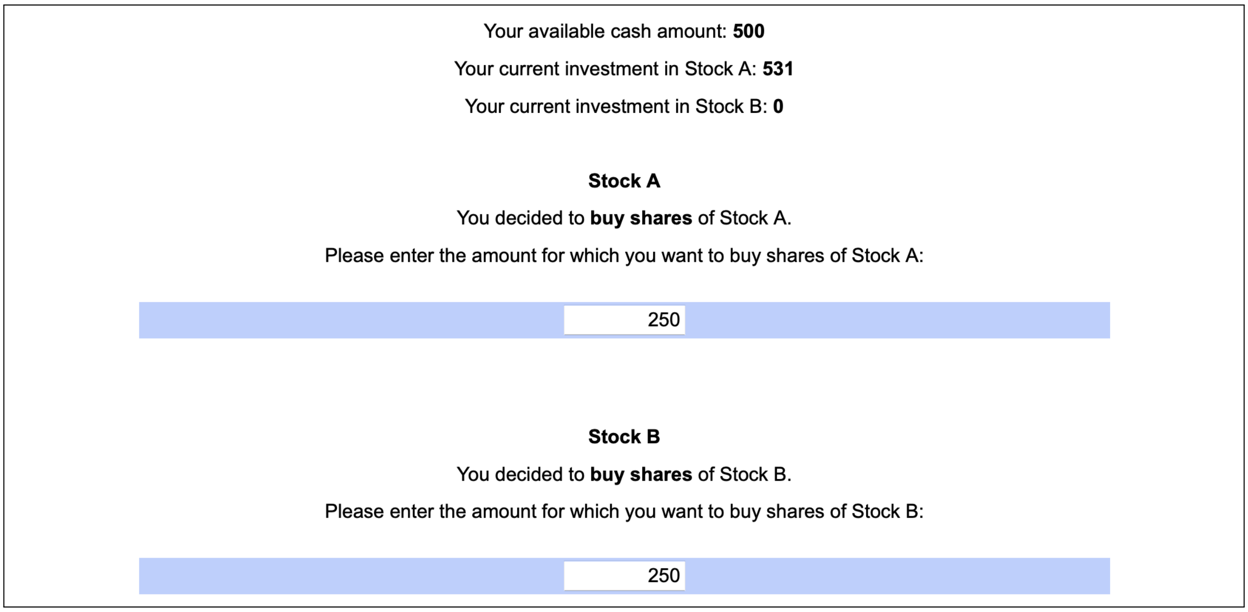
In the intervention (no-intervention) treatment, participants are asked about the relationship between dividend payouts and stock prices at the beginning (end) of the experiment. In this figure, participants are separated by whether or not they answer these questions correctly (dividend payouts reduce stock prices). Participants who answer incorrectly (correctly) are indicated to suffer (not suffer) from the free dividends fallacy and are represented in Panels A and C (B and D). In the intervention (no intervention) treatment, participants are (are not) informed that dividend payouts reduce stock prices before continuing with the rest of the experiment. During the experiment, participants trade Stock A, which pays a dividend. Afterwards, the lottery-like Stock B is introduced and participants can choose to buy/not buy Stock B and/or to buy/hold/sell Stock A. The choices for Stock B (A) are presented in Panels A and B (C and D). N = 600. The bars indicate standard errors.

Figure C8: Experiments 1 and 2: Trading screens

Step 1: Buy/hold/sell decision



Step 2: Amount decision



The figure shows the trading screens that were displayed to participants. In the first screen, participants choose between buying, holding, or selling Stock A and between buying or not buying Stock B. Depending on the choices (buying A and buying B in the example shown), the second screen is displayed, on which participants enter the amount of A/B they want to buy or sell.

Figure C9: Experiment 2: Intervention design

A: Quiz questions

Let's start with the first question: What generally happens to the price of a share just before the dividend is distributed to investors?

- ○ The share price falls by approximately the amount of the dividend
- ○ Nothing
- ○ The share price increases slightly
- ○ Not sure

What do you think of the following statement:

From an investor's point of view, dividend payments hardly differ from the sale of shares. Leaving aside taxes and transaction costs, in both cases part of the portfolio is converted into cash.

- ◉ True
- ○ False
- ○ Not sure

B: Explanations

Great, your responses are correct!

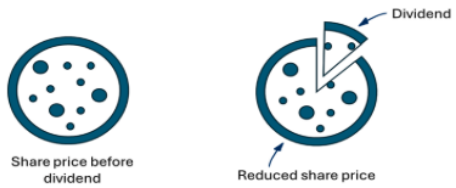
Starting with the so-called "ex-dividend day", a share is traded without the right to the dividend. On this day, **the share price typically falls** by the amount of the dividend. A few days later, the dividend is paid out to investors.

Since dividend distributions typically decrease the value of your investment by the amount of dividends paid, the distribution is comparable to **a partial sale of the respective investment**.

This so-called "dividend discount" can be explained as follows: If the dividend is in the company's bank accounts, it is reflected in the share price. When the dividend is paid out, it is transferred from the company's bank account to the investors' bank account and is consequently no longer included in the company's share price.

What does this mean for investors? **Dividends are not an "additional income"** because they come directly from the share price - just like the slice from the picture below. **After dividend payouts, investors are typically as rich as before.**

So if the dividend is distributed, the share price decreases. This idea can nicely be illustrated with a pizza. Less of the pizza (share price) remains, once the slice (dividend) is eaten.



Main take-away:

Dividends are **not "additional income"** because they are directly deducted from the share price.

In other words, dividends are **comparable to a partial sale of shares** if they are not reinvested.

After the dividend payment, an investor is just **as rich as he or she was before**. It is simply a transfer of wealth from the investment in the shares to the cash balance leaving **the total wealth** of the investor **unchanged**.

In the intervention treatment, the experiment started with the quiz questions displayed in Panel A. Afterwards, participants saw the explanations for the correct answers displayed in Panel B.

Figure C10: Experiment 2: Dividend announcement

A: Intervention treatment

Stock A pays a dividend.

Dividend amount: 53

The dividend is added to your cash.

What happens to your investment and total wealth?

Your investment in Stock A drops exactly by the dividend amount: **531 - 53 = 478**

Thus, you are less invested in Stock A than before the dividend payment.
The amount by which your investment in Stock A drops, you now hold as cash.

B: No-intervention treatment

Stock A pays a dividend.

Dividend amount: 53

The dividend is added to your cash.

Panel A (B) shows how the dividend payout in the second experiment was displayed to participants in the intervention (no-intervention) treatment.

Table C1: Experiment 1: Summary statistics

Variable	Min	P25	Median	Mean	P75	Max
Panel A: Demographics and real-life investments						
Age (in years)	19	29	35	39	48	81
Sex: Male	0	0	100	72	100	100
Sex: Female	0	0	0	28	100	100
Invests in:						
Stock market	100	100	100	100	100	100
Options	0	0	0	10	0	100
Government bonds	0	0	0	30	100	100
ETF or ETC	0	0	0	29	100	100
Unit trusts	0	0	0	15	0	100
Crowdfunding	0	0	0	20	0	100
Private equity fund	0	0	0	15	0	100
Venture capital fund	0	0	0	7	0	100
Angel syndicate	0	0	0	1	0	100
Panel B: Decisions in the experiment						
Round 1 Stock A:						
Buy	0	0	100	71	100	100
Hold	0	0	0	25	25	100
Sell	0	0	0	4	0	100
Net investment (in CU)	-500	0	200	205	400	500
Round 5 Stock A:						
Buy	0	0	0	43	100	100
Hold	0	0	0	46	100	100
Sell	0	0	0	12	0	100
Net investment (in CU)	-1,184	0	0	41	100	600
Round 9 Stock A:						
Buy	0	0	0	40	100	100
Hold	0	0	0	45	100	100
Sell	0	0	0	15	0	100
Net investment (in CU)	-1,219	0	0	17	100	1,028
Round 9 Stock B:						
Buy	0	0	0	41	100	100
Hold	0	0	100	59	100	100
Net investment (in CU)	0	0	0	79	100	1,220
Panel C: Post-experiment survey						
Receives dividends in real life: Yes	0	100	100	77	100	100
Believes the ex-dividend price is:						
Lower	0	0	0	37	100	100
The same	0	0	0	6	0	100
Higher	0	0	0	14	0	100
No general statement possible	0	0	0	21	0	100
I do not know	0	0	0	22	0	100

This table presents summary statistics for the participants in the first experiment. Data in Panel A (B and C) are from Prolific (our experiment). All data are in percent except where noted otherwise. N = 400.