Methods

Bias	Formula	Variables	Interpretation
Disposition Effect	Proportion of gains realized $(PGR) = \frac{\text{Realized gains}}{\text{Realized gains + Paper gains}}$; Proportion of losses realized $(PLR) = \frac{\text{Realized losses}}{\text{Realized losses + Paper losses}}$.	account identifier, buy/sell indicator, number of shares traded, commission paid, principal amount. inside quote data (from NASTRAQ)	We examined the PLR/PGR ratio. If > 1 ⍰ a stock whose value was up was more than 50% was more likely to be sold from day to day than a stock whose value was down. Disposition-prone = investors for which **PGR > PLR.**
Disposition Effect	**Calculating Duration** We calculated the duration between the opening transaction and the subsequent roundtrip trade. (If a roundtrip trade closed out more than one opening transaction, we used a weighted average of the various opening positions). 3 duration : roundtrip, by time of day, by trade size $\text{Dur} = \frac{1}{P}\left(C\frac{(1+ai)(1+i)^m-(1+i)-(m-1+a)i}{i^2(1+i)^{(m-1+a)}}+\frac{FV(m-1+a)}{(1+i)^{(m-1+a)}}\right)$	trader's identification, time the order, volume, price, order type *(limit order, stop limit order, etc.)*, action taken *(buy, sell, short, cover),* location of the trade, contra parties on the trade. *FV* = par value *C* = coupon payment per period *i* = discount rate per period *a* = fraction of a period remaining until next coupon payment *m* = number of full coupon periods until maturity *P* = bond price (present value of cash flows discounted with rate *i*)	We examined the mean and median differences in holding times for roundtrip trades on both winning and losing roundtrips. The higher the mean and median are, the longer the losers/winners are kept.

Disposition Effect	**Calculating Trading Profits** To determine the trading profit on a roundtrip transaction, we matched the opening trade for each stock in each trader's account with the subsequent trade of the opposite sign each day. We calculated the average absolute price change and average absolute trading profit for all winning and losing roundtrips. For Buy Positions: Profit/Loss = (Contract × ClosePrice) - (Contract × OpenPrice) For Sell Positions: Profit/Loss = (Contract × OpenPrice) - (Contract × ClosePrice)	Contract: the size of the contract in the base currency ClosePrice: the rate when the position is closed OpenPrice: the rate when the position is opened	*(same)*
Disposition Effect	**Disposition proxy:** $$W_t = \frac{(S_{lt} - S_{gt})}{(S_{lt} + S_{gt})}$$	W: Disposition proxy S_{lt}: Sells-at-loss for a day t S_{gt}: Sells-at-gain for a day t W represents the **% of the disposition investors** in the market (μ) and should be **negatively related to both stock volatility and return.**	W ↑ for stocks for which % disposition investors ↓ W ↑ →volatility/return ↓ Result: on average the high-disposition portfolios underperform the low-disposition ones.

Disposition effect	$$DE_i = PGR_i - PLR_i$$ $$PGR_i = \frac{N^i_{gr}}{N^i_{gr} + N^i_{gp}}, \quad PLR_i = \frac{N^i_{lr}}{N^i_{lr} + N^i_{lp}}$$	where N^i_{gr} (N^i_{lr}) is the number of trades by investor i with a realized gain (loss), and N^i_{gp} (N^i_{lp}) is the number of potential trades for investor i with a gain (loss).	
Disposition effect	$$DE_i = \frac{N^i_{gr} - N^i_{lr}}{N^i_{gr} + N^i_{lr}}$$	where N^i_{gr} (N^i_{lr}) is the number of trades by investor i with a realized gain (loss), and N^i_{gp} (N^i_{lp}) is the number of potential trades for investor i with a gain (loss).	Measure the disposition effect on investor i
Disposition effect	$$DE_i = \frac{N^i_{gr}}{N^i_{lr}} - \frac{N^i_{gp}}{N^i_{lp}}$$	where N^i_{gr} (N^i_{lr}) is the number of trades by investor i with a realized gain (loss), and N^i_{gp} (N^i_{lp}) is the number of potential trades for investor i with a gain (loss).	(same)
Overreaction and Underreaction	**Cumulative Abnormal Return:** $$CAR_{p,z,t} = \sum_{t=1}^{T} \quad (\frac{1}{N} \sum_{i=1}^{N} \quad \mu_{i,t})$$ **Abnormal Return (AR):** $$\mu_{i,t} = R_{i,t} - E(R_{i,t})$$	p: type of portfolio (winner/loser/arbitrage) Z: the period T: number of months in the period $R_{i,t}$: actual return for firm/stock i on month t $E(R_{i,t})$: expected return for firm/stock i on month t	Cumulative Abnormal Returns are usually calculated over small windows, often only days. This is because evidence has shown that compounding daily abnormal returns can create bias in the results.

Overreaction and Underreaction	**Average Cumulative Abnormal Return:** $$ACAR_{p,t} = \frac{\sum_{z=1}^{Z} CAR_{p,z,t}}{Z}$$ → the grand mean for Z periods' CAR	**Overreaction:** $ACAR_L > 0$ (losers) $ACAR_W < 0$ (winners) $ACAR_A \neq 0$ (arbitrage) losing portfolio (value stocks) strongly outperformed the winning portfolio (growth stocks) = overreaction **Underreaction:** $ACAR_L < 0$ (losers) $ACAR_W > 0$ (winners) $ACAR_A \neq 0$ (arbitrage)	**Over- (resp. Under-)reaction:** $ACAR_p$: an indicator to whether there are negative (resp. positive = Momentum) autocorrelations in the returns in the long run (resp. short run). Investors first overreact by excessively favoring stocks, and then underreact to this asset mispricing.
Overreaction and overconfidence	Somme(purchases+sales per month for each investor) / respective end of month portfolio stock option		To calculate the monthly average turnover per investor, we only consider investors who have at least five end of stock portfolio.
Overreaction and overconfidence	$$R_{ht}^{gr} = \sum_{i=1}^{S_{ht}} w_{iht} R_{it} \text{ with } w_{iht} = \frac{P_{it} n_{iht}}{\sum_{i=1}^{S_{ht}} P_{it} n_{iht}}$$	Rit return of stock i in month t Sht number of stocks held by individual h in month t Pit the price of stock i at the begining of month t niht is the number of stocks of company i held by investor h in month t Wiht is the begining of month t market valueof the whole stock portfolio of investor h	Performance du portefeuille comparée au nombre de trade du mois suivant. Possibilité de changer la fréquence du test.

Herding effect	$H_{|1|}^{qs} = \left\lvert \frac{b^{qs}}{n^{qs}} - \hat{\pi}^{q} \right\rvert - \underbrace{E\left[\left\lvert \frac{\tilde{b}^{qs}}{n^{qs}} - \hat{\pi}^{q} \right\rvert ; \tilde{b}^{qs} \sim B(\hat{\pi}^{q}, n^{qs}) \right]}_{AF^{qs}}$		Traditional measure of herding effect
Herding effect	$H_2^A = \sqrt{\mathbb{H}_2^A}.$ $\mathbb{H}_2^{qs} = \frac{(b^{qs} - \hat{\pi}^{q} n^{qs})^2 - n^{qs}\hat{\pi}^{q}(1 - \hat{\pi}^{q})}{n^{qs}(n^{qs} - 1)}$,		Measure created for the study.