Catching the Falling Knife: Retail Liquidity Provision Amid Institutional Selling Pressure

Håkan Jankensgård[a], *Per Malm*[b], *Anders Vilhelmsson*[c]

Abstract

This study revisits the claim that retail investors provide liquidity to institutional sellers. Using comprehensive ownership data that covers the full shareholder base and directly tracks institutional selling pressure, we find that retail investors increase buying and become more contrarian when institutions sell heavily—yet consistently fail to earn a return premium. Their net trades predict negative future returns, even under conditions typically associated with liquidity provision. In contrast, foreign institutions buy into institutional sell-offs and earn positive returns, consistent with informed and selective liquidity provision. Our findings challenge the view of retail investors as effective liquidity providers and underscore the importance of sophistication, flexibility, and scale in absorbing institutional trading pressure.

Keywords: *retailers, institutional investors, contrarian, momentum, liquidity provision*

JEL Codes: G32, G31, L71

[a] Håkan Jankensgård is Associate Professor at Stockholm Business School, Stockholm University, SE-106 91, Stockholm, Sweden. Email: hakan.jankensgard@sbs.su.se.

[b] Per Malm is a PhD candidate at Stockholm Business School, Stockholm University

[c] Anders Vilhelmsson is Associate Professor at the department of Economics, Lund University.

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1. Introduction

Previous research suggests that institutional investors requiring immediacy must offer price concessions to attract risk-averse counterparties (Stoll, 1978; Grossman & Miller, 1988; Campbell, Grossman, & Wang, 1993). Shleifer and Vishny (1992) argue that price concessions in asset sales are often driven by the financial distress of the seller. Such fire sales can also occur when the seller is compelled to liquidate assets for other reasons, such as investor withdrawals or fund redemptions. Coval and Stafford (2007) provide empirical support for this view, showing that stocks face price pressure when constrained funds are net sellers. This typically results in a temporary undervaluation of the stock, creating a trading opportunity for buyers. As Coval and Stafford conclude, "investors who trade against constrained mutual funds earn significant returns for providing liquidity."

When it comes to the question of *who* provides liquidity to institutional investors, more recent research points to retail investors as key players (Kaniel, Saar, & Titman, 2008; Kaniel et al., 2012; Kelly & Tetlock, 2013; Barrot et al., 2016). These studies suggest that retail investors, being less constrained and more willing to take on risk, are able to earn a premium by stepping in when institutions face selling pressure. Barrot et al. (2016) find that the contrarian behaviour among retail investors becomes more pronounced during periods of market stress, when traditional market makers are less able to provide liquidity. They interpret this as evidence that retail investors take on an active liquidity-providing role. The study also shows that retail order imbalances tend to positively predict returns, especially in times of heightened uncertainty—when the price concessions from institutional sellers, the authors argue, are likely to be largest.

In this article, we challenge the claim that retail investors act as liquidity providers. Our analysis draws on a dataset that offers several key advantages over the

broker-level data used by Barrot et al. (2016). Specifically, we utilise complete ownership data for all publicly listed firms in Norway, detailing all equity holdings above a 0.01% ownership threshold. Holdings below this cutoff are aggregated into a residual category, adding up to 100% of the ownership. The data, provided by Euronext Verdipapirsentralen—Norway's official share registry—allows us to observe daily net trading across more than 20 investor categories in relation to the entire shareholder base. Furthermore, the structure of the data allows for a classification of retail investors that is tightly aligned with the conventional characterisation — private individuals trading relatively small positions. We identify these investors using personal identification numbers, defining retailers as natural persons (as opposed to legal entities) whose individual holdings each account for less than 0.01% of a firm's outstanding shares.

A central advantage of this dataset, particularly in testing the liquidity provision hypothesis, is its ability to directly capture institutional selling pressure. This eliminates the need to rely on indirect proxies such as the implied volatility (VIX) or other broad indicators of market stress. Consistent with Coval and Stafford (2007), we are able to verify that intense selling by institutional investors coincides with negative same-day returns, indicating that the off-loading of these shares puts downward pressure on stock prices, as well as positive next-day returns, which is consistent with the idea that prices recover once the effects of the above-baseline selling subsides.

To assess whether retail investors "step up to the plate" and provide liquidity, we begin by analysing the means of retailers' net trading (changes in aggregate shareholdings) conditional on heavy institutional selling. Unconditionally, this measure is close to zero, suggesting that on any given day, retail investors are just as likely to be net sellers as net buyers. Likewise, the mean conditional on moderate institutional selling is also zero. However, on days of heavy institutional selling, the mean increases

significantly, by about 0.2% in relation to their average overall shareholdings. Heightened retail activity in response to intense institutional trading pressure is indicative of behaviour consistent with liquidity provision.

As their primary indicator of liquidity provision, Barrot et al. (2016) examine the extent to which investors behave as contrarians—specifically, by purchasing stocks that have recently experienced negative returns. To isolate the liquidity provision channel, they condition their analysis on a range of indirect proxies for "tight liquidity conditions," interpreted as signals of institutional willingness to accept price concessions. Following their approach, we analyse the sensitivity of retail investors' net trading to past returns. However, rather than relying on indirect market-wide measures, we interact past and contemporaneous returns with a binary indicator for heavy institutional selling, which offers a more direct test of the liquidity provision channel. If retail investors are indeed stepping in to absorb selling pressure and capture associated price discounts, one would expect them to buy more aggressively in stocks that have declined due to institutional offloading. Our results show that retail investors' contrarianism is significantly stronger under such conditions, consistent with a liquidity-absorbing response.

While the evidence suggests that retail investors *behave* as if they are absorbing institutional selling, this does not necessarily equate to liquidity provision in the economic sense of the term. The Kyle (1985) model provides a foundational framework in which informed traders strategically supply liquidity by trading gradually, concealing their informational advantage to extract profits from less informed participants. Prices are set by a competitive market maker who adjusts quotes based on total order flow, which also includes noise traders acting for non-informational reasons. In this view, liquidity provision is a deliberate and profit-driven activity shaped by asymmetric information. A complementary perspective is offered by Grossman and Miller (1988),

who characterise liquidity provision as the temporary absorption of order imbalances when natural counterparties are absent. In such moments, liquidity providers must commit capital and accept price risk while awaiting rebalancing—and are therefore expected to earn compensation for bearing that transitory risk.[1]

The premise in the literature is therefore that true liquidity provision should be associated with positive subsequent returns, as prices revert once transitory pressure dissipates. The question becomes whether retail investors really act like Kyle's informed trader, selectively providing liquidity when they expect short-lived price dislocations, or whether they act like noise traders, absorbing the order flow without informational advantage?

Directly contradicting the liquidity provision hypothesis, we find that retail net buying predicts subsequent stock returns negatively, even under conditions that should, in theory, favour liquidity provision. In this part of the analysis, we follow the methodology of Barrot et al. (2016) to predict cumulative future returns, controlling for both current and past returns. Retail investors' net trading is negatively associated with next-day returns, with the effect statistically significant at the 1% level. This negative relationship persists over a 30-day horizon. Across all tests incorporating proxies for institution-driven trading pressure, the pattern remains consistent: subsequent returns from retailers' net buying do not improve. When we focus specifically on mutual funds—often viewed in the literature as particularly likely to engage in forced selling—the interaction between retailers' net trading and institutional selling pressure remains insignificant. Rather than liquidity provision, the patterns in the data are consistent with the view that retailers act as less informed noise traders.

[1] While other and more long-term oriented conceptualisations of liquidity provision are possible, in this study we adopt a short-term perspective along the lines of Grossman and Miller (1988).

Casting additional doubt on the liquidity provision hypothesis, retail investors' performance deteriorates systematically as market liquidity improves, as measured by stock-specific turnover. Presumably, this reflects more informed and momentum-driven trading in liquid stocks (Korajczyk and Sadka, 2004; Lee and Swaminathan, 2000). As new information is incorporated more rapidly in liquid markets, retail buying in response to perceived dips may exacerbate losses, as prices continue to decline under the weight of momentum traders' selling. Thus, rather than providing liquidity, retail investors may be unwittingly trading into adverse momentum cycles driven by more informed traders. Supporting this notion, we find that retailers' contrarian behaviour is only present in the most liquid segment of the market - they are not contrarian in smaller, less traded stocks.

If retail investors are not the ones providing liquidity to institutions, then who is? Our findings indicate that foreign institutions are the primary liquidity providers to their domestic counterparts. Analysis of conditional means reveals that foreign institutions significantly increase their shareholdings on days characterized by heavy domestic institutional selling, effectively trading against them. Both retail investors and foreign institutions increase their net buying by approximately 0.2% relative to their average holdings. This suggests a similar directional trading response, consistent with a contrarian or liquidity-absorbing motive. However, despite similar behavioural shifts in net trading relative to holdings, the economic role of the two investor groups diverges sharply. Retailers' increased net buying translates to a negligible share of aggregate order flow, while foreign institutions absorb nearly half of the selling pressure from domestic institutions, underscoring their role as the primary liquidity providers.

The finding that foreign institutions strategically step in as liquidity providers when domestic institutions engage in heavy selling mirrors hedge funds' well-documented ability to absorb large trades during periods of liquidity-driven sell-offs.

While we do not have the precise registration status of these foreign investors, hedge funds are, by the nature of their flexible investment strategies, well-positioned to exploit market dislocations using sophisticated order flow analysis. Such strategies would enable them to effectively distinguish between liquidity-driven and information-driven trades, positioning themselves to earn a premium as prices rebound.

Consistent with the notion that foreign institutions possess an informational edge, they appear to earn a liquidity provision premium: on days of heavy selling by domestic institutions, the net buying by their foreign counterparts is positively associated with subsequent returns. While retail investors are behaviorally just as likely to step in as counterparties, they lack the analytical sophistication required to distinguish between liquidity-driven and information-driven trades. This distinction is central to the literature on adverse selection and informed trading (e.g., Glosten and Milgrom, 1985): liquidity provision is profitable only when counterparties are trading for non-informational reasons. Foreign institutions—likely hedge funds and other tactical investors—may act as selective liquidity providers, absorbing flow only when price pressure is transitory. In contrast, retail investors appear to act indiscriminately, often absorbing informed flow and incurring losses. Despite a similar relative tendency to trade against institutional selling, the two groups differ markedly in execution style. Foreign institutions exhibit momentum-driven, low-persistence trading, consistent with opportunistic positioning, while retail investors are contrarian and highly persistent, suggesting behavioral rather than strategic motives.

This study makes three contributions. First, it adds to the literature by challenging the assertion that retail investors serve as liquidity providers to institutions under selling pressure. While retail investors appear behaviourally contrarian in response to institutional offloading, our results show that they fail to earn any return premium for doing so, consistent with noise trading rather than informed liquidity

provision. Building on previous research that interprets contrarian retail trading as evidence of liquidity absorption (Kaniel, Saar, & Titman, 2008; Barrot et al., 2016), we offer a more direct test using comprehensive ownership data that spans the entire shareholder base of all publicly listed firms in Norway, allowing for identification of retail investors using personal identification numbers and the size of overall shareholdings. The adding-up property of our dataset allows us to avoid any bias that may arise when investor behavior varies systematically across trading platforms. For example, the average size of retail trades in Barrot et al (2016) is $70,000, raising concerns about representativeness.

Second, we contribute novel empirical evidence on the role of foreign institutions as strategic liquidity providers. Our data reveal that foreign institutions increase their net buying significantly on days of heavy domestic institutional selling—absorbing nearly half of the total selling pressure. Importantly, this buying is associated with positive subsequent returns, indicating that these investors are able to selectively provide liquidity when price pressure is transitory. This pattern mirrors the behaviour often attributed to hedge funds, who possess the informational and technical sophistication to exploit temporary dislocations without falling prey to adverse selection. By contrast, retail investors, while displaying similar directional behavior, deploy far less capital and apparently fail to distinguish between liquidity-driven and information-driven trades. The contrast between the two groups highlights that liquidity provision is not merely about contrarian behavior, but about the capacity to take calculated risks when the market is imbalanced.

Third, our study enhances the methodological toolkit for testing liquidity provision by introducing direct measures of institutional selling pressure. Previous literature has relied on market-wide indicators such as implied volatility (e.g., VIX) or trading volume to proxy for strained liquidity conditions. In contrast, our approach

identifies specific days with elevated institutional net selling and directly links these to price pressure and subsequent investor behavior. This allows us to test the liquidity provision hypothesis in its purest form: do counterparties to institutional selling earn a premium for absorbing order flow imbalances? For retail investors, the answer is a clear no; for foreign institutions, the answer is a qualified yes.

2. Data, methodology, and variables

2.1 Data

The dataset used in this study is drawn from ownership records between 2012 and 2023, maintained by Euronext Verdipapirsentralen (VPS), the official share registry in Norway responsible for clearing trades and recording ownership for all publicly listed companies. These records provide daily snapshots of shareholdings for each investor in a firm. Additionally, the dataset includes information on the registration status and nationality of each investor. Holdings below a specified threshold (0.01%) are not shown individually but are aggregated as a single entry. The register thus accounts for 100% of the shareholder base.

A strength of the VPS register is that it tracks "ultimate ownership", which is to say that they show the actual beneficiary of the holdings. This holds true even when the shares are administered by a nominee, such as an online trading application. Norway has a strong data infrastructure centred around the use of personal identification numbers, making it possible to trace out the ultimate beneficiary even for retail holdings. However, similar to studies based on a similar finnish dataset, e.g. Grinblatt and Keloharju (2000), this does not extend to foreign individuals trading through nominee accounts, making it impossible to identify the underlying beneficiaries in these cases.

Investors are classified into more than 20 categories, such as financial institutions, retail investors, corporate owners, government entities, municipalities, and religious organizations. Each investor is also identified either as a private individual (using a personal number) or as a corporate entity (using an organization number). There is also an indicator for nominee accounts, representing financial institutions that hold shares on behalf of clients.

Unlike datasets that rely on transaction records from specific brokers or trading platforms, our ownership data provides a complete and exhaustive account of net trading activity across the entire shareholder base. This approach eliminates potential biases associated with platform-specific samples, ensuring that all changes in shareholdings — regardless of venue or intermediary — are accurately captured. As a result, we can assess net trading behaviour comprehensively, without the distortions that arise from platform selection or reporting gaps. This level of completeness is particularly advantageous in contexts where investor behavior may vary systematically across trading platforms, as it allows for a more robust analysis of aggregate trading patterns.

Firms are included if their ownership records are present in the VPS dataset within the period covered by our data license, spanning January 1st, 2012, to June 30th, 2023. This results in a sample consisting of 221 unique firms and 385,418 firm-day observations.

2.2 Methodology

Our methodology is closely aligned with that of Barrot et al. (2016), who propose a three-step analytical framework. The first step examines order imbalances as a function of past returns. The extent to which order imbalances respond to past returns is

generally interpreted as an indicator of an investor category's tendency to act either contrarian (a negative relationship) or momentum-driven (a positive relationship). Barrot et al. utilise the degree of contrarian behavior among retail investors to assess whether they are likely to be providing liquidity, based on the rationale that purchasing stocks that have recently declined in price constitutes a form of liquidity provision.

The primary distinction in our approach is that we use the change in shareholdings as the dependent variable rather than order imbalance, as detailed in Section 2.3.3:

$$\Delta\text{Retail baseline}[0]_{it} = c + \alpha_0 \text{Return}[-1,0]_{it} + \alpha_1 \text{Return}[-5,-1]_{it} + \alpha_2 \text{Return}[-26,-6]_{it} + \alpha_3 \log(\text{Market Cap}_{it}) + \pi_t + \eta_i + \varepsilon_{it} \quad (1)$$

To examine how retail investor ownership responds to past stock performance, we estimate Equation (1), which models the contemporaneous change in baseline retail ownership as a function of lagged stock returns and firm characteristics. Here, $\Delta\text{Retail baseline}[0]_{it}$, is the change in retail investor ownership for firm i on day t=0, capturing shifts in retail participation on the current trading day. The model includes cumulative stock returns over three horizons: the past day $\text{Return}[-1,0]_{it}$ to capture short-term reversals, as well as past week $\text{Return}[-5,-1]_{it}$, and past month $\text{Return}[-26,-6]_{it}$, allowing us to test for contrarian or momentum trading behavior. We control for firm size via the log of market capitalization. The regression includes firm and day fixed effects, and standard errors are clustered at the firm level

The second step in Barrot et al. (2016) assesses the predictive power of order imbalances for future returns. Testing whether net trading by specific investor categories, such as retail investors, is associated with subsequent returns is a standard procedure in the literature. The logic is that if a particular investor group possesses superior investment skills, their net buying should exhibit a positive correlation with future returns. Again,

our adaptation replaces the order imbalance measure with the change in retail investors' combined shareholdings.

To assess whether changes in retail ownership help predict future stock returns, we estimate the following specification:

$$\text{Return}[x,y]_{it} = \beta_0 + \beta_1 \Delta\text{Retail baseline}[0]_{it} + \beta_2 \text{Return}[-1,0]_{it} + \beta_3 \text{Return}[-5,-1]_{it} + \beta_4 \text{Return}[-26,-6]_{it} + \beta_5 \log(\text{Market Cap}_{it}) + \pi_t + \eta_i + \varepsilon_{it} \quad (2)$$

In this equation, $\text{Return}[x,y]_{it}$ denotes the cumulative return for firm i from day x=1 to day y, capturing post-event return windows of interest. The key independent variable is $\Delta\text{Retail baseline}[0]_{it}$ which measures the change in retail ownership on day t=0, allowing us to test whether retail net trading contains predictive information for future returns. We control for lagged stock performance over three return horizons—prior day, prior week, and prior month to account for momentum or reversal effects. The model also includes controls for firm size (log market capitalization), as well as firm and day fixed effects. Standard errors are clustered at the firm level.

The third step in Barrot et al. (2016) explores whether the contrarian behavior and return predictability of retail investors vary with the "tightness" of liquidity conditions in the market. If net trading by a particular investor category predicts returns positively, it may indicate that they are successfully providing liquidity — effectively earning returns by acting as counterparty to trades where institutional investors demand immediacy. This liquidity provision should in principle be more valuable when liquidity is scarcer, manifesting as increased return predictability under such conditions. As the authors put it: "We show that the predictability of individual trades increases when the rewards to liquidity provision are high, consistent with the idea that they provide liquidity."

To capture tight liquidity conditions, Barrot et al. (2016) rely on broad market indicators such as the VIX, which measure overall market volatility without directly referencing institutional trading activity. However, asking for liquidity involves two key elements: the volume of shares brought to market and the method of execution. While our dataset lacks direct information on trade execution, it does provide data on institutional trading derived from the same shareholding records as our measure of retail trading. Thus, rather than conditioning retail investors' net trading on broad market proxies, we use variables that directly incorporate the selling pressure from institutions.

These variables, described in greater detail in Section 3.3, are contingent on institutions being net sellers, making them more likely to reflect genuine liquidity demands. Although we do not have specific information on the financial condition of sellers (as in Pulvino, 1998) or the urgency of their sales (as in Coval and Stafford, 2007), the volume of shares being net sold serves as a reasonable proxy for price pressure. Since at least Scholes (1972) it has been recognised that sellers of large blocks need to offer price concessions due to facing limited demand. We extend the analysis to investigate how retail trading impacts future returns conditional on institutional selling pressure by estimating:

$$\begin{aligned}\text{Return}[x,y]_{it} = {} & \beta_0 + \beta_1(\text{High Sell Pressure}[0]_{it} \times \Delta\text{Retail baseline}[0]_{it}) + \beta_2 \Delta\text{Retail baseline}[0]_{it} \\ & + \beta_3 \text{High Sell Pressure}[0]_{it} + \beta_4 \text{Return}[-1,0]_{it} + \beta_5 \text{Return}[-5,-1]_{it} \\ & + \beta_6 \text{Return}[-26,-6]_{it} + \beta_7 \log(\text{Market Cap}_{it}) + \pi_t + \eta_i + \varepsilon_{it} \quad (3)\end{aligned}$$

The variable $\text{High Sell Pressure}[0]_{it}$ is a binary indicator equal to 1 when institutional investors are net sellers on day t=0, specifically when the change in institutional ownership is negative and falls below the conditional median of all negative institutional changes, and zero otherwise. The interaction term between $\text{High Sell Pressure}[0]_{it} \times \Delta\text{Retail baseline}[0]_{it}$ captures whether the predictive relation

between retail trading and future returns varies when institutional selling pressure is unusually high. The model also controls for the direct effects of retail trading and institutional sell pressure, lagged returns over three horizons, firm size, as well as firm and day fixed effects. Standard errors are clustered at the firm level.

2.3 Variables

2.3.1 Delta shareholdings

Rather than focusing on individual trades, our analysis is based on daily changes in investor shareholdings, which we interpret as net trading activity—that is, the overall position an investor takes in a stock each day. As noted, our dataset has a useful adding-up property, enabling an aggregate view of net trading across the entire shareholder base. This approach allows us to move beyond transactional noise and focus on strategic shifts in portfolio composition. To account for the standard settlement lag between trade execution and the corresponding update in the VPS registry, all changes in holdings are lagged by two trading days. Since shareholdings are recorded as proportions of total shares outstanding, changes can be readily expressed in percentage points of firm ownership. For instance, an increase from 0.5% to 0.6% implies a net buy of 0.1 percentage points.

Shareholdings are summed by investor category, and our analysis focuses on the following groups: retail investors, institutions (domestic), foreign institutions, mutual funds, and blockholders. Retail investors are further defined based on the size of their holdings, as detailed in the next section.

$\Delta MicroRetail$ is defined as the change in the sum of shareholdings for investors whose individual holding each is smaller than 0.01% of the firm's outstanding stock, conditional

on the owner being a physical person (as opposed to a legal entity.) We believe that this threshold does justice to how retailers are characterised in the literature and popular culture: as individuals with relatively small holdings, who are likely to be at an information disadvantage (and highly unlikely to be privy to any kind of insider information.)

ΔMediumRetail is the change in the sum of shareholdings for investors whose holding is smaller than 1% of the firm's outstanding stock, but larger than 0.01%, conditional on the owner being a physical person (as opposed to a legal entity.)

ΔLargeRetail is the change in the sum of shareholdings for investors whose holding is smaller than 5% of the firm's outstanding stock, but larger than 1%, conditional on the owner being a physical person (as opposed to a legal entity.)

ΔInstitutional is the change in the sum of shareholdings for investors who have registration status as mutual fund, foundation, bank, insurance company, or pension fund.

ΔMutualFund is the change in the sum of shareholdings for investors who have registration status as a mutual fund. We include mutual funds in the analysis because previous literature has indicated that these are the most likely to be constrained, given their exposure to withdrawals by investors in the fund (Coval and Stafford, 2007).

ΔForeignInst is the change in the sum of shareholdings for investors with registration status as a non-norwegian investor *and* is a legal entity (as opposed to a physical person.) The inclusion of this category is motivated by the finding in previous literature that foreign institutions appear to trade in a manner distinct from domestic players, while generating superior returns in the process (Grinblatt and Keloharju, 2000).

ΔBlockholders is the change sum of shareholdings for investors who's holding exceeds 5%. In the literature, large blocks are associated with influence, control and access to

privileged information. Blockholders are therefore a reasonable proxy for informed trading, as well as deep financial resources that would put them in a position to act as liquidity providers.

2.3.2 Institutional selling pressure

InstSellHigh is a binary variable that takes the value 1 if ΔInstitutions is negative, meaning that institutions are net sellers, *and* the value is below the conditional median of those negative changes, zero otherwise.

InstSellLow is a binary variable that takes the value 1 if ΔInstitutions is negative, meaning that institutions are net sellers, *and* the value is above the conditional median of those negative changes, zero otherwise.

InstNetBuy is a binary variable that takes the value 1 if ΔInstitutions is positive, meaning that institutions are net buyers.

2.3.3 Other variables

In addition to the ownership-based variables, this study includes a number of other variables sourced from Capital IQ. Except for the turnover ratio, these variables are computed as in Barrot et al. (2016). The return-variables and turnover are winsorized at the 1st and 99th percentiles.

Return[x, y] is the cumulative holding period return between day x and day y. Following Barrot et al, we use *[-1,0]* (the return on day 0), *[-5,-1]*, and *[-26,-6]*,

Turnover is defined as daily trading volume divided by the number of outstanding shares.

Market cap is defined as the log of the market value of the firm's equity.

3. Empirical analysis

3.1 Descriptive statistics

We begin by analysing the delta of each of the investor categories. As can be seen in Table 1, the means of all deltas are close to zero. This indicates that, on any given day, each of the categories is as likely to be a net buyer as net seller. Medium Retailers has a mean of 0.02, suggesting that, over the time period analysed, they have gradually increased their overall importance in the ownership of Norwegian listed companies. Foreign institutions have by far the largest standard deviation, suggesting that they trade in a manner different from its domestic counterparts. To a larger extent than other investors, they appear to take relatively large ownership stakes and unwind them as quickly.

Table 1 Descriptive statistics

	N	Mean	Std. Dev.	min	max
⊿Micro Retailers	385418	.00067	0.01863	-.06666	.09604
⊿Medium Retailers	385418	.00244	0.04634	-.18892	.24523
⊿Large Retailers	385418	.00007	0.00059	0	.00573
⊿Foreign Retailers	385418	-.00007	0.00775	-.0455	.04162
⊿Institutions	385418	-.00136	0.04749	-.24662	.22187
⊿Blockholders	385418	.00023	0.05669	-.34744	.32036
⊿Mutual Funds	385418	-.001	0.03663	-.19179	.17048
⊿Foreign Inst.	385418	.00177	0.16306	-.77512	.85925

Table 2 analyses correlations between the delta shareholdings-variables. Micro and Medium Retailers exhibit a positive correlation (0.2) while Large Retailers are uncorrelated with the other two. When considering these facts, it should be remembered that Large Retailers trade less frequently. The large proportion of non-trading days reduces the variability of that variable, and consequently also the how the covariance aligns. Again, Foreign institutions stand out in that their net trading correlates negatively with all domestic categories of investors. Micro Retailers and Institutions, the key variables in our analysis, do exhibit a negative correlation, albeit not a very large one (-0.06).

Table 2 Correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1)*Δ*Micro Retailers	1.000										
(2) *Δ*Medium Retailers	0.189	1.000									
(3) *Δ*Large Retailers	0.005	-0.036	1.000								
(4) *Δ*Foreign Retailers	0.026	0.106	0.007	1.000							
(5) *Δ*Institutions	-0.061	-0.056	-0.008	0.009	1.000						
(6) *Δ*Blockholders	-0.050	-0.113	-0.029	-0.029	0.085	1.000					
(7) *Δ*Mutual Funds	-0.054	-0.054	-0.006	0.007	0.786	-0.035	1.000				
(8) *Δ*Foreign Inst.	-0.134	-0.141	-0.007	-0.011	-0.133	-0.008	-0.021	1.000			

As noted, Barrot et al (2016) assess liquidity provision partly by measuring the degree to which retail investors trade in a contrarian way. While informative, it does leave out any actual "asking" for liquidity by the institutional investors supposedly in need of immediacy. Contrarianism, as construed here, merely means a tendency to buy stocks whose price has recently declined. This is not equivalent to saying that institutions are in fact demanding liquidity in any given situation, or that they are the ones pushing prices lower by extensive selling.

To provide a more precise estimate of who is counterparty to large net selling by institutions, we analyse conditional means using the binary variables introduced in section 2.3.2. Table 3 reports the results. The conditional mean of institutions is –0.087, indicating that, on average, the investor group reduces its holdings by 0.087% of the firm's total shares on days when *High Sell Pressure* equals one. For a firm with 100,000 shares outstanding, this corresponds to a net sale of 87 shares. Given that the average ownership of institutions is 10.56, the reduction reflects an offloading of nearly 1% of their position in a single trading day, suggesting deliberate portfolio adjustment or exit behavior. By way of comparison, average daily turnover in small- and mid-cap stocks typically ranges from 0.1% to 0.5% of the float. The observed reduction—0.087% of total shares outstanding—therefore often represents a sizable share of daily trading volume, particularly in less liquid stocks.

For comparison, we reproduce the sample average in the leftmost column in Table 3. The conditional means of both ΔMicro retail and ΔMedium retail are higher than the sample (unconditional) average, which is close to zero. What is more, these conditional means are not higher when the selling pressure is low. When institutions are net buyers, the mean is again indistinguishable from zero. These numbers suggest that retailers are

indeed stepping up their purchasing of stocks when institutions are off-loading large quantities of shares. What stands out in Table 3, however, is the conditional mean for ΔForeign institutions, which rises to 0.043, almost 50% of the size of the divestments by domestic institutions. While this is similar to retail investors' conditional mean when expressed as a percent of their mean overall shareholdings (0.2%), the foreign institutions' much larger ownership share makes them economically more meaningful as a potential liquidity provider in the stock market.

Despite similar behavioral shifts in net trading relative to holdings, the economic role of the two investor groups diverges sharply. Retailers' increased net buying translates to a negligible share of the selling pressure from domestic institutions while foreign institutions absorb nearly half of it, underscoring the role of scale in assessing liquidity provision.

Table 3 - Conditional means of delta shareholdings

	All observations Mean	High Sell Pressure Mean	Low Sell Pressure Mean	Net buy Mean
ΔMicro Retailers	.00067	.00483	.00063	-.00004
ΔMedium Retailers	.00244	.00977	.00134	-.00015
ΔLarge Retailers	.00007	.00005	.00002	.00002
ΔForeign Retailers	-.00007	-.0001	-.00003	-.00004
ΔInstitutions	-.00136	-.08707	-.00707	.04194
ΔBlockholders	.00023	-.00745	-.00005	.00418
ΔMutual Funds	-.001	-.06034	-.00564	.02912
ΔForeign Inst.	.00177	.04329	.00717	-.01785

The analyses so far have revealed a very distinct trading behaviour on part of foreign institutions: their net trading has a much larger standard deviation and they systematically bet against institutions and most other domestic investor categories. To investigate this further, we analyse the lag structure (up to three auto-lags) of the delta shareholding variables. The results are presented in Table 4.

The domestic investors all display persistence in their net trading. The strong autocorrelation in retail investors' net trading is particularly noteable, suggesting a high degree of persistence in this investment category. In previous literature, such autocorrelated trading patterns tend to be interpreted as indications of delayed reactions or herding behavior among retail investors (e.g. Barber, Odean, and Zhu, 2009).

For our purposes, an important observation in Table 4 is that there is pronounced persistence also in institutional net selling under high-pressure conditions (AR1 = 0.137). This pattern suggests a strategic response to liquidity constraints. When faced with large outflows, mutual funds are often compelled to liquidate positions but may do so gradually over multiple days to minimize price impact. This behavior is consistent with execution strategies designed to optimize trade timing under pressure (Bertsimas and Lo, 1998) and aligns with evidence that institutional investors, especially mutual funds, split trades when responding to redemption-driven selling (Grinblatt and Keloharju, 2000; Covrig and Ng, 2004). The marked asymmetry in persistence between high and low selling pressure supports the interpretation that such selling is not routine, but rather reflects episodes of liquidity-driven, staggered offloading.

Also in respect to persistence, foreign institutions stand out with a distinctly different behaviour compared to the rest. The weak and even negative autocorrelation observed in foreign institutional trading suggests an opportunistic, short-horizon approach. Rather

than building positions gradually, these investors appear to enter and exit quickly, consistent with flexible, event-driven strategies that exploit temporary dislocations—such as fire sales by domestic institutions. This interpretation aligns with evidence that hedge funds are more reactive and tactical than traditional institutions (Griffin, Harris, and Topaloglu, 2003; Sadka, 2010). While it is possible that some foreign investors follow passive or benchmark-driven mandates, such investors would likely display low, but not negative, autocorrelation. The observed reversal pattern is therefore more plausibly attributed to active trading, not occasional reallocation.

Table 4 Autoregressive structures

	AC1	AC2	AC3
ΔMicro Retailers	0.133	0.070	0.063
ΔMedium Retailers	0.062	0.031	0.029
ΔLarge Retailers	0.058	0.033	0.033
ΔForeign Retailers	-0.070	0.000	-0.020
ΔInstitutions	0.084	0.041	0.044
ΔBlockholders	0.057	0.024	0.031
ΔMutual Funds	0.096	0.042	0.046
ΔForeign Inst.	-0.026	0.025	0.008
ΔInstitutional selling high	0.137	0.077	0.075
ΔInstitutional selling low	0.084	0.047	0.046

3.2 The impact of institutional selling pressure on contemporaneous returns

We now turn our attention to whether the market can absorb the selling pressure from institutions that are divesting heavily. According to the price pressure hypothesis, flows driven by liquidity needs can temporarily depress prices (Shleifer, 1986; Coval and Stafford, 2007). A direct implication is that near-term returns should exhibit a rebound as the temporary impact subsides and prices revert toward fundamental values. We investigate this by regressing same-day and next-day returns on InstSellHigh, following the empirical approach of Barrot et al. (2016). Table 5 reports the results (Models A and B).

While the price pressure hypothesis suggests temporary dislocations due to uninformed order flow, the extent of that dislocation likely depends on the stock's liquidity. In thin markets, where fewer shares are traded relative to the float, prices should be more susceptible to shocks from institutional offloading. In this sense, liquidity acts as a key moderator of price pressure. To test this theoretical corollary, we extend the baseline model by including the turnover ratio and interacting it with InstSellHigh (Models C and D, Table 5).

The results are consistent with transient price pressure from institutional selling, particularly in illiquid stocks. While the model without liquidity controls (Model A) suggests no significant price impact, inclusion of the turnover ratio (Model C) reveals a pronounced negative return on high-sell days, with the effect magnified as liquidity deteriorates. The interaction between institutional selling and liquidity aligns with theories of limited market capacity (Amihud and Mendelson, 1986), underscoring that price effects are most pronounced when the market's ability to absorb trades is constrained. A positive next-day return (Model B) suggests partial reversal, consistent

with temporary dislocations rather than information-based trading. However, the magnitude of this rebound appears largely invariant to liquidity conditions (Model D).

Table 5

Variable	Coefficient	Std. Err.	z	P>|z|	[95% Conf. Interval]
High Sell Pressure	-0.00178	0.00032	-5.54	0.000	[-0.00241, -0.00115]
Return[-5,1]	-0.03102	0.00305	-10.16	0.000	[-0.03699, -0.02503]
Return[-26,-6]	-0.00320	0.00056	-5.68	0.000	[-0.00430, -0.00209]
Log(Market Cap)	0.00127	0.00016	7.93	0.000	[0.00095, 0.00158]
Turnover	0.64533	0.05790	11.15	0.000	[0.53184, 0.75881]
High Sell Pressure × Turnover	0.20910	0.09691	2.16	0.031	[0.01915, 0.39905]

3.2 Retail investors' contrarianism as function of institutional trading pressure

In this section we analyse how the net trading of retail investors responds to past returns. In the literature, this sensitivity is commonly associated with a contrarian trading strategy (if negative) or a momentum-driven trading strategy (if positive). As discussed in the introduction, Barrot et al. (2016) use this empirical framework to gauge whether retailer investors assume a liquidity providing role. The premise is that a larger negative coefficient (an increase in the tendency to buy stocks whose price has declined) equates with liquidity provision. The test is the same as in their paper, except that we use ΔMicroretail rather than retail order imbalance as the dependent variable (equation 2 from section 2.3.3). To avoid multiple interaction terms on the various return variables, we instead split the sample into thirds based on the turnover ratio to investigate whether retailers' trading behaviour relates systematically to the liquidity of the stock.

Table 6 presents the regression results using ΔMicroRetail as the dependent variable. Model A reports estimates for the full sample, while Models B and C focus on the most and least liquid subsamples, respectively. In the full sample, the coefficients on past returns are insignificant. However, the coefficient on the contemporaneous return is negative and highly significant. The effect is particularly pronounced—both statistically and economically—in the most liquid subsample. As this pertains to same-day returns, the direction of causality is not clear-cut. On one hand, the result may reflect price pressure stemming from elevated retail trading activity. On the other hand, it could indicate that retail investors are disproportionately drawn to stocks already declining in value—effectively "catching the falling knife." This latter interpretation aligns with a broader literature suggesting that retail investors often act on noisy signals and are prone to premature entry in response to intraday price drops (Hvidkjaer, 2008).

The analysis of the subsamples split according to turnover shows that the result on contemporaneous return is driven by the most liquid stocks. This challenges the liquidity provision hypothesis: if retail investors were actively supplying liquidity to capitalise on price concessions, one would expect their contrarian behaviour to be most pronounced in illiquid stocks, where liquidity is scarcest and the potential rewards for stepping in are greatest. Instead, the observed pattern suggests a form of reactive trading: in liquid stocks, contrarianism may reflect a perception of short-term mispricing rather than a deliberate attempt to provide liquidity. In illiquid stocks, where informational frictions are more severe and institutional guidance less visible, retail investors may resort to feedback-based heuristics, chasing recent winners rather than counteracting transitory price dislocations. Indeed, in the illiquid subsample, the coefficient on past month's return is positive. This is consistent with findings by Barber and Odean (2008), who show that retail investors are heavily influenced by attention-grabbing stocks, and by Kaniel, Saar, and Titman (2008), who document contrarian buying by retail investors in visible, liquid stocks.

Table 6 : Baseline regression on retail net buying and most/least liquid segment

	(1) Micro Retail Full_sample	(2) Micro Retail Top 1/3	(3) Micro Retail Bottom 1/3
Return[-1,0]	-0.1019***	-0.3133***	-0.0099***
	(0.0159)	(0.0286)	(0.0018)
Return[-5,1]	0.0027	-0.0048	0.0021***
	(0.0034)	(0.0078)	(0.0008)
Return[-26,-6]	-0.0014	-0.0066***	-0.0003
	(0.0010)	(0.0022)	(0.0004)
Log Market Cap	0.0002	-0.0043***	0.0002
	(0.0001)	(0.0009)	(0.0001)
Obs.	348858	108613	108355

R-squared	0.0477	0.1599	0.0455

Standard errors are in parenthesis
*** *p<0.01, ** p<0.05, * p<0.1*

Figure 1 visually illustrates the results presented in Table 6. It shows…

[INSERT FIGURE 1 ABOUT HERE]

We proceed to analyze whether institutional flows shape the degree to which retail investors behave in a contrarian manner. As outlined in Section 2, we extend the empirical specification by interacting past returns with an indicator for heavy institutional selling (High Sell Pressure), aiming to assess whether retail investors are more inclined to buy stocks that have recently declined in price when institutions are net sellers. While the linkage between past return sensitivity and liquidity provision is not conceptually watertight, the approach follows a precedent established in Barrot et al. (2016) and serves as a behavioral lens through which liquidity provision can be indirectly inferred. The idea is that institutional selling may temporarily depress prices below fundamental values, creating an opportunity for liquidity providers to step in. If retail investors are acting as such providers, one might expect their contrarian behavior to intensify under institutional selling pressure.

However, this interpretation must be approached with caution. As the broader empirical literature demonstrates, momentum strategies—buying past winners and selling losers—tend to outperform contrarian strategies over short- to medium-term horizons (Jegadeesh and Titman, 1993; 2001). From this perspective, short-term contrarianism

may reflect poorly timed trading or behavioral biases rather than deliberate liquidity provision. Our findings support this interpretation. As reported in Table 7, we find some evidence that retail sensitivity to the previous week's returns increases under mutual fund selling pressure. Yet the stronger and more consistent relationship lies in the contemporaneous return: on days when institutions are net sellers and retailers are net buyers, same-day returns are significantly more negative than in the baseline in Table 6. This pattern suggests that retail investors may be reacting to price declines driven by institutional offloading - however it is not evidence that they successfully identify transitory price dislocations.

Table 7 Regression on retail net buying conditional on selling pressure

	(1)	(2)	(3)	(4)
	Micro Retail	Micro Retail	Micro Retail	Micro Retail
	Institutions		Mutual Funds	
Return[-1,0]	-0.0934***	-0.0964***	-0.0897***	-0.0958***
	(0.0140)	(0.0155)	(0.0140)	(0.0156)
Return[-5,-1]	0.0023	0.0032	0.0035	0.0036
	(0.0028)	(0.0033)	(0.0029)	(0.0033)
Return[-26,6]	-0.0010	-0.0012	-0.0005	-0.0012
	(0.0009)	(0.0010)	(0.0009)	(0.0010)
Log Market Cap	0.0002	0.0002	0.0002	0.0002
	(0.0001)	(0.0001)	(0.0001)	(0.0001)
High Sell Pressure	0.0157***	0.0016***	0.0131***	0.0011*
	(0.0018)	(0.0006)	(0.0020)	(0.0006)
High Sell Pressure X Return[-1,0]	-0.0581***		-0.0924***	
	(0.0168)		(0.0196)	
High Sell Pressureh X Return[-5,-1]	0.0058		0.0003	
	(0.0056)		(0.0072)	

High Sell Pressure X Return[-26,-6]	-0.0014		-0.0055**	
	(0.0020)		(0.0022)	
High Sell Pressure X logME	-0.0013***		-0.0011***	
	(0.0002)		(0.0002)	
Low Sell Pressure X Return[-1,0]		-0.0800***		-0.0996***
		(0.0135)		(0.0159)
Low Sell Pressure X Return[-5,-1]		-0.0049		-0.0132***
		(0.0030)		(0.0035)
Low Sell Pressure X Return[-26,6]		-0.0016		-0.0022
		(0.0014)		(0.0013)
Low Sell Pressure X logME		-0.0002***		-0.0001**
		(0.0001)		(0.0001)
Obs.	348858	348858	348858	348858
R-squared	0.0546	0.0488	0.0551	0.0493

3.3 Stock returns as function of retail net trading and institutional trading pressure

A natural test of whether retail investors act as liquidity providers is to examine the return profile that follows their trading activity. According to the liquidity provision hypothesis, retail investors who absorb institutional selling should be compensated with higher future returns, as prices recover once transitory pressure subsides (Grossman and Miller, 1988; Pastor and Stambaugh, 2003). A negative relationship, however, would constitute a decisive rejection of the hypothesis.

To formally investigate this, we follow Barrot et al. (2016) and estimate the predictive regressions laid out in Equation 2, using accumulated returns over varying time horizons as the dependent variable. While Barrot et al. find significant excess returns over 16 days following positive order imbalance, we apply the specification using horizons of 1, 5, 10, 15, and 30 days. Table 7 reports the results. Across all horizons, retail net buying is associated with significantly negative future returns (1% level), a

finding that unambiguously contradicts the liquidity provision hypothesis. Rather than being rewarded for stepping in against selling pressure, retail investors appear to trade in the wrong direction, consistent with catching the falling knife: betting based on misperceptions of value and reactive, uninformed behavior.

Table 7 : Baseline regression on future cumulative returns

	(1) Cum returns 1-day	(2) Cum returns 5-day	(3) Cum returns 15-day	(4) Cum returns 30-day
Delta Micro Retailers	-.0270***	-.0557***	-.0686**	-.0984**
	(.0056)	(.0145)	(.0286)	(.0449)
Return[-1,0]	-.0948***	-.1443***	-.1405***	-.1199***
	(.0099)	(.0189)	(.0232)	(.0254)
Return[-5,-1]	-.0162***	-.0318***	-.029**	-.0301
	(.0052)	(.0113)	(.0146)	(.0196)
Return[-26,-6]	.0013*	.0032	.0035	.0198
	(.0008)	(.003)	(.0089)	(.0147)
Log Market Cap	-.0021***	-.0095***	-.0264***	-.05***
	(.0005)	(.0024)	(.0069)	(.0131)
Obs.	348858	348858	348858	348858
R-squared	.0181	.0253	.0347	.0436

Standard errors are in parenthesis
*** *p<0.01, ** p<0.05, * p<0.1*

Up to this point, we have concluded that retail net trading predicts future accumulated returns negatively. The liquidity provision hypothesis might still be salvaged to some degree if one were to argue that retail investors might do poorly overall due to largely uninformed trading, yet still improve their lot by trading against institutions requiring immediacy (in other words, doing less poorly under these circumstances). To pursue this idea, we implement equation 3, which tests the proposition that retail net buying predicts subsequent returns positively conditional on intense selling pressure from

institutions. Table 8 reports the results. In columns (1) and (2) we report the effects from using High Selling Pressure and Low Selling Pressure, respectively, as previously defined with reference to ΔInstitutional. In columns (3) and (4) we define similar binary indicators based on ΔMutual, on the argument that mutual funds have been highlighted in previous literature as more likely to be constrained than other forms of institutions (Coval and Stafford, 2007).

Panel 8A: Regression on future returns condition on INSTITUTIONAL sell pressure

	(1) Cum returns 1-day	(2) Cum returns 5-day	(3) Cum returns 15-day	(4) Cum returns 30-day
High Sell Pressure	0.0034 **	0.0056	-0.0002	0.0035
	(0.0016)	(0.0042)	(0.0091)	(0.0173)
Return[-1,0]	-0.1062 ***	-0.1644 ***	-0.1622 ***	-0.1358 ***
	(0.0104)	(0.0203)	(0.0250)	(0.0278)
Return[-5,-1]	-0.0192 ***	-0.0385 ***	-0.0314 *	-0.0309
	(0.0058)	(0.0123)	(0.0162)	(0.0208)
Return[-26,-6]	0.0006	0.0024	0.0020	0.0171
	(0.0008)	(0.0032)	(0.0090)	(0.0154)
Log Market Cap	-0.0021 ***	-0.0095 ***	-0.0263 ***	-0.0499 ***
	(0.0005)	(0.0024)	(0.0069)	(0.0132)
High Sell Pressure s x Return[-1,0]	0.0867 ***	0.1515 ***	0.1737 ***	0.1267 **
	(0.0156)	(0.0281)	(0.0429)	(0.0490)
High Sell Pressure s x Return[-5,-1]	0.0179 ***	0.0442 ***	0.0077	-0.0042
	(0.0064)	(0.0170)	(0.0213)	(0.0442)
High Sell Pressure x Return[-26,6]	0.0045*	0.0030	0.0110	0.0224
	(0.0024)	(0.0065)	(0.0139)	(0.0296)
High Sell Pressure x Log_ME	-0.0003 **	-0.0006	-0.0001	-0.0006
	(0.0002)	(0.0004)	(0.0010)	(0.0018)
Micro Retailers	-0.0269 ***	-0.0568 ***	-0.0709 **	-0.1126 ***
	(0.0067)	(0.0152)	(0.0298)	(0.0430)
Micro Retailers x High Sell Pressure	0.0072	0.0188	0.0336	0.0733
	(0.0106)	(0.0219)	(0.0498)	(0.0815)
Obs.	348858	348858	348858	348858
R-squared	0.0182	0.0254	0.0348	0.0436

Standard errors are in parenthesis
*** *p<0.01*, ** *p<0.05*, * *p<0.1*

Panel 8B: Regression on future returns condition on MUTUAL FUNDS sell pressure

	(1) Cum returns 1-day	(2) Cum returns 5-day	(3) Cum returns 15-day	(4) Cum returns 30-day
High Sell Pressure Mutuals	0.0030*	0.0017	-0.0054	-0.0056
	(0.0018)	(0.0046)	(0.0103)	(0.0172)
Return[-1,0]	-0.1028 ***	-0.1589 ***	-0.1528 ***	-0.1263 ***
	(0.0105)	(0.0203)	(0.0253)	(0.0280)
Return[-5,1]	-0.0183 ***	-0.0364 ***	-0.0296 *	-0.0298
	(0.0057)	(0.0123)	(0.0161)	(0.0208)
Return[-26,-6]	0.0007	0.0029	0.0029	0.0187
	(0.0008)	(0.0032)	(0.0094)	(0.0156)
Log_ME	-0.0022 ***	-0.0095 ***	-0.0263 ***	-0.0499 ***
	(0.0005)	(0.0024)	(0.0069)	(0.0131)
High Sell Pressure Mutuals x Return[-1,0]	0.0711 ***	0.1304 ***	0.1168 ***	0.0628
	(0.0133)	(0.0265)	(0.0399)	(0.0595)
High Sell Pressure Mutuals x Return[-5,1]	0.0141 **	0.0348 **	-0.0018	-0.0070
	(0.0063)	(0.0175)	(0.0234)	(0.0473)
High Sell Pressure Mutuals x Return[-26,-6]	0.0051 **	-0.0005	0.0052	0.0100
	(0.0023)	(0.0057)	(0.0123)	(0.0286)
High Sell Pressure Mutuals x Log_ME	-0.0003	-0.0002	0.0004	0.0003
	(0.0002)	(0.0005)	(0.0011)	(0.0019)
Micro Retailers	-0.0238 ***	-0.0506 ***	-0.0651 **	-0.1017 **
	(0.0066)	(0.0160)	(0.0307)	(0.0432)
Micro Retailers x High Sell Pressure Mutuals	-0.0038	-0.0010	0.0123	0.0365
	(0.0099)	(0.0226)	(0.0410)	(0.0768)
Obs.	348858	348858	348858	348858
R-squared	0.0182	0.0254	0.0347	0.0436

Standard errors are in parenthesis
*** *p<0.01*, ** *p<0.05*, * *p<0.1*

Table 8C : Regression on future stock returns for MEDIUM conditional on high net selling by institutions

	(1) Cum returns 1-day	(2) Cum returns 5-day	(3) Cum returns 15-day	(4) Cum returns 30-day
netsell_high	0.0035 **	0.0054	-0.0009	0.0004
	(0.0016)	(0.0041)	(0.0087)	(0.0169)
Return	-0.1046 ***	-0.1631 ***	-0.1602 ***	-0.1326 ***
	(0.0106)	(0.0202)	(0.0250)	(0.0269)
Cum_past_week	-0.0194 ***	-0.0393 ***	-0.0323 **	-0.0322
	(0.0058)	(0.0124)	(0.0162)	(0.0208)
Cum_past_month	0.0006	0.0023	0.0019	0.0170
	(0.0008)	(0.0032)	(0.0090)	(0.0153)
Log_ME	-0.0022 ***	-0.0095 ***	-0.0264 ***	-0.0500 ***
	(0.0005)	(0.0024)	(0.0069)	(0.0132)
netsell_high x return	0.0870 ***	0.1556 ***	0.1796 ***	0.1429 ***
	(0.0156)	(0.0271)	(0.0423)	(0.0447)
netsell_high x past week	0.0178 ***	0.0445 ***	0.0083	-0.0022
	(0.0064)	(0.0168)	(0.0212)	(0.0432)
netsell_high x past month	0.0046*	0.0031	0.0112	0.0228
	(0.0024)	(0.0065)	(0.0139)	(0.0294)
netsell_high x Log_ME	-0.0003 **	-0.0006	-0.0000	-0.0003
	(0.0002)	(0.0004)	(0.0009)	(0.0018)
Medium Retailers	-0.0041	-0.0196 *	-0.0225	-0.0358 *
	(0.0132)	(0.0106)	(0.0154)	(0.0208)
Medium Retailers x netsell_high	-0.0022	0.0123	0.0226	0.0662
	(0.0134)	(0.0145)	(0.0318)	(0.0499)
Obs.	348858	348858	348858	348858
R-squared	0.0182	0.0254	0.0347	0.0436

Standard errors are in parenthesis

*** *p<0.01, ** p<0.05, * p<0.1*

3.4 Foreign institutions as providers of liquidity

Behaviorally, retailers exhibit several traits consistent with potential liquidity provision: they tend to buy stocks that are falling in value and increase net buying on days when institutions are heavy sellers. However, their trades consistently predict negative future returns, even when trading against institutions, suggesting a lack of informational advantage or timing ability. Moreover, their net trades are small in economic terms relative to the scale of institutional sales. These limitations raise the broader question: if not retail investors, then who is providing liquidity during periods of institutional outflows?

To address this, we investigate three investor categories that may have sufficient resources and risk appetite to provide liquidity: foreign institutions, blockholders (those holding more than 5% of a firm's outstanding shares), and large private owners (holding between 1% and 5%). Of particular interest are foreign institutions, which we have already shown absorb nearly half of the most intense domestic institutional selling pressure. We now re-estimate equation 3, evaluating each of these three categories as potential liquidity providers.

Table 9 reports the results. Foreign institutions exhibit a positive and statistically significant relationship with next-day returns (1% level), consistent with the view that they earn a premium for absorbing institutional flows. For blockholders and large private owners, however, no such relationship is found. This divergence likely reflects differences in capital flexibility and investment mandates. Unlike hedge funds or other tactical foreign investors, large private owners and blockholders are often wealth-constrained, with a substantial portion of their capital already tied up in existing positions. Their ability to provide liquidity may be limited not only by wealth constraints but also by having a strategic, long-term focus rather than trying to tactically exploit short-term price dislocations that makes them less prone to rebalance in response to

short-term price pressure. Thus, while foreign institutions are positioned to act opportunistically and selectively as liquidity providers, domestic blockholders and large private investors may be structurally constrained from doing so.

As previously discussed, a plausible interpretation of the foreign institutional trading pattern is that it reflects the activity of hedge funds and other highly flexible investment vehicles. These investors typically possess not only the capital and risk tolerance needed to step in during temporary price dislocations, but also the analytical resources to assess when price pressure is likely to be transitory. Access to short-term trading signals, order flow analysis, and rapid execution tools would allow them to absorb liquidity-driven sales selectively, positioning them to earn a premium as prices revert.

Table 9A : Regression on future stock returns for FOREIGN INSTITUTIONS conditional on high net selling by institutions

	(1) Cum returns 1-day	(2) Cum returns 5-day	(3) Cum returns 15-day	(4) Cum returns 30-day
netsell_high	.0031 **	.0052	-.0006	.0031
	(.0016)	(.0042)	(.0093)	(.0177)
Return	-.1038 ***	-.1591 ***	-.1557 ***	-.1259 ***
	(.0104)	(.02)	(.0245)	(.0271)
Cum_past_week	-.0193 ***	-.0388 ***	-.0315 *	-.0314
	(.0058)	(.0123)	(.0162)	(.0209)
Cum_past_month	.0006	.0024	.0019	.0172
	(.0008)	(.0032)	(.009)	(.0154)
Log_ME	-.0022 ***	-.0095 ***	-.0263 ***	-.05 ***
	(.0005)	(.0024)	(.0069)	(.0132)
netsell_high x return	.0873 ***	.1511 ***	.1723 ***	.1224 **
	(.0151)	(.0274)	(.0383)	(.0494)
netsell_high x past week	.0177 ***	.0439 **	.0073	-.0042
	(.0064)	(.0171)	(.0214)	(.044)
netsell_high x past month	.0045*	.0029	.011	.0222
	(.0024)	(.0065)	(.014)	(.0297)
netsell_high x Log_ME	-.0003*	-.0006	-.0001	-.0005
	(.0002)	(.0004)	(.001)	(.0019)
Foreign Institutions	-.0204	.0804	.0794	.0614
	(.0231)	(.1338)	(.1272)	(.1372)
Foreign Institutions x netsell_high	.1154 ***	.1597	.1376	.1598
	(.0431)	(.1672)	(.1727)	(.1629)
Observations	348700	348700	348700	348700
R-squared	.0182	.0254	.0347	.0436

Standard errors are in parentheses
*** p<.01, ** p<.05, * p<.1*

Table 9B : Regression on future stock returns for PRIVATE BLOCKHOLER conditional on high net selling by institutions

	(1) Cum returns 1-day	(2) Cum returns 5-day	(3) Cum returns 15-day	(4) Cum returns 30-day
netsell_high	.0043 ***	.0066	-.0021	.0003
	(.0016)	(.0043)	(.0096)	(.0172)
Return	-.1069 ***	-.1614 ***	-.1564 ***	-.1252 ***
	(.0104)	(.0205)	(.0254)	(.0285)
Cum_past_week	-.0205 ***	-.0425 ***	-.0369 **	-.0343
	(.0061)	(.0124)	(.0162)	(.0212)
Cum_past_month	.0008	.0014	.0006	.0158
	(.0009)	(.0033)	(.0092)	(.0157)
Log_ME	-.0021 ***	-.0095 ***	-.0265 ***	-.0504 ***
	(.0005)	(.0025)	(.0072)	(.0137)
netsell_high x return	.0919 ***	.1622 ***	.1804 ***	.1357 ***
	(.015)	(.0285)	(.0391)	(.0515)
netsell_high x past week	.0196 ***	.0479 ***	.0151	.0121
	(.0068)	(.0173)	(.0213)	(.0425)
netsell_high x past month	.004	.0037	.0086	.0219
	(.0025)	(.0062)	(.0133)	(.0272)
netsell_high x Log_ME	-.0004 **	-.0007	.0001	-.0002
	(.0002)	(.0005)	(.001)	(.0018)
Private Blockholders	0.0000	-.0058	-.0052	-.0053
	(.0003)	(.0065)	(.0055)	(.0063)
Private Blockholders x netsell_high	-.0003	.004	.0044	.0056
	(.0005)	(.0066)	(.0059)	(.0072)
Observations	330393	330393	330393	330393
R-squared	.018	.0251	.034	.0424

Standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

Table 9C : Regression on future stock returns for LARGE conditional on high net selling by institutions

	(1) Cum returns 1-day	(2) Cum returns 5-day	(3) Cum returns 15-day	(4) Cum returns 30-day
netsell_high	0.0031 **	0.0051	-0.0001	0.0033
	(0.0016)	(0.0042)	(0.0090)	(0.0161)
Return	-0.1038 ***	-0.1596 ***	-0.1562 ***	-0.1263 ***
	(0.0104)	(0.0203)	(0.0247)	(0.0273)
Cum_past_week	-0.0193 ***	-0.0387 ***	-0.0316 *	-0.0312
	(0.0058)	(0.0123)	(0.0162)	(0.0209)
Cum_past_month	0.0006	0.0024	0.0021	0.0173
	(0.0008)	(0.0032)	(0.0090)	(0.0153)
Log_ME	-0.0022 ***	-0.0095 ***	-0.0264 ***	-0.0500 ***
	(0.0005)	(0.0024)	(0.0069)	(0.0132)
netsell_high x return	0.0886 ***	0.1549 ***	0.1759 ***	0.1259 **
	(0.0152)	(0.0273)	(0.0382)	(0.0493)
netsell_high x past week	0.0179 ***	0.0443 ***	0.0080	-0.0038
	(0.0064)	(0.0170)	(0.0213)	(0.0439)
netsell_high x past month	0.0046 *	0.0030	0.0110	0.0223
	(0.0024)	(0.0065)	(0.0140)	(0.0297)
netsell_high x Log_ME	-0.0003 *	-0.0005	-0.0001	-0.0005
	(0.0002)	(0.0004)	(0.0009)	(0.0017)
Large Retailers	-0.0219	-0.5896	-1.1033	-0.9339
	(0.1678)	(0.4816)	(1.2436)	(2.2452)
Large Retailers x netsell_high	-0.0140	0.0605	-0.9988	-0.4361
	(0.5920)	(1.6409)	(3.2093)	(6.8419)
Obs.	348858	348858	348858	348858
R-squared	0.0182	0.0254	0.0347	0.0436

Standard errors are in parenthesis
*** *p<0.01,* ** *p<0.05,* * *p<0.1*

3.5 Robustness

The retail liquidity provision hypothesis gives rise to several testable predictions. Chief among them is the expectation that retail investors earn excess returns when they buy in the face of heavy institutional selling. However, the data do not support this claim. On the contrary, retail investors' net buying is a negative predictor of subsequent returns, suggesting systematic mis-timing rather than opportunistic liquidity provision.

While it is intuitive that large institutional sell-offs can generate temporary price pressure, identifying the motive behind such trades—whether driven by information or liquidity needs—is inherently difficult. Without institution-level data on portfolio constraints, fund flows, or mandates, one cannot definitively classify a given trade. No feasible regulatory reform could resolve this issue at scale. Likewise, research designs exploiting quasi-exogenous shocks, such as index exclusions (as in the U.S. setting), are not viable in Norway due to the far smaller number of publicly traded firms.

In light of these constraints, inference must rely on the information content of future returns. Institutional selling likely contains both informed and liquidity-driven components. The key question is: who is on the other side of these trades, and are they able to differentiate between the two? A trader who correctly identifies and trades into liquidity-driven price concessions should earn positive returns ex post. By contrast, a heuristic-driven "buy-the-dip" approach that fails to discriminate between informed and uninformed selling is more likely to be met with continued price declines.

Our results suggest that foreign institutions display a consistent ability to time their trades around institutional selling, earning positive future returns. Retail investors, however, do not. To further test this characterization, we focus on a subset of the data: trading days when InstSellHigh = 1, indicating elevated institutional selling pressure. As previously shown, these days are associated with contemporaneous price pressure.

We define a dummy variable, *Rebound*, equal to one if the next-day return is positive, and zero otherwise. Similarly, *Rebound1%* equals one if the next-day return exceeds 1%—a sizable gain over a single trading day.

We then re-estimate Equation (1), using ΔMicroretail and ΔForeignInstitutions as dependent variables in separate regressions, and including Rebound as an explanatory variable. The underlying idea is that true liquidity providers should be able to anticipate when price pressure is likely to reverse, and increase their exposure accordingly. If so, the coefficient on Rebound should be positive. Conversely, if investors are trading against informed order flow—mistaking it for temporary dislocation—we would expect a negative coefficient, indicating net buying ahead of continued losses.

Table 10 confirms this pattern. Both Rebound and Rebound1% load positively and significantly for foreign institutions, consistent with selective liquidity provision and informed timing. For retailers, however, the coefficients are negative, suggesting a tendency to increase exposure precisely when prices are about to fall further. This supports the interpretation of retail investors as noise traders rather than rational liquidity providers.

While this approach does not offer clean identification of forced institutional sales, it nonetheless strengthens the central narrative of the paper: that it is foreign institutions—not retail investors—who act as true liquidity providers in the face of institutional selling pressure.

4. Conclusions

Several researchers have suggested that retail investors perform an important function in stock markets—namely, providing liquidity to constrained institutional investors. In this study, we show that this is unlikely to be an accurate depiction of the role they actually play. In reaching this conclusion, we leverage a dataset with a unique adding-up property: complete daily ownership lists for all publicly listed firms in Norway. This allows us to observe the trading behavior of all investors—both those who are active and those who remain on the sidelines—on a daily basis.

At a glance, retail investors appear to behave in ways suggestive of liquidity provision: they are net buyers and become more contrarian when institutional selling intensifies. However, our findings indicate that these patterns are more consistent with reactive, heuristic-driven decision-making than with deliberate attempts to capitalise on price concessions from liquidity-seeking institutions.

Foreign institutional investors emerge as the true providers of liquidity. They absorb a significant share of institutional net sales on days of intense selling pressure and earn a return premium for doing so. This highlights the importance of both timing and scale—retail investors simply constitute too small a share of ownership to meaningfully absorb institutional liquidity demand. While foreign institutions, like retailers, step up their net buying during institutional sell-offs, they behave quite differently in most other respects. Their trading is momentum-driven, exhibits low persistence, and reflects greater informational sophistication. Hedge funds and similar tactical investors likely deploy advanced order flow analysis to distinguish between liquidity- and information-driven trades. In this regard, retail investors appear to be operating in the dark.

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