

Investment Patterns of Japanese Retail Investors in Foreign Exchange Margin Trading

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Japanese retail investors in foreign exchange margin trading have long been known to be contrarian and are expected to reduce price fluctuations to a certain degree. In contrast, a recent survey among these investors suggests that 70 percent of them adopt a trend-following strategy. Given that these trend followers are expected to both buy and sell in a very short time frame, this report examines the investment patterns of retail investors by investment time horizon using high-frequency transaction data. The result confirms a contrarian pattern for trading where positions are held overnight or longer. However, a trend-following pattern can be observed for trading within a day depending on the market situation (while a contrarian pattern is observed as a whole), which implies that trading within a day does not necessarily reduce intraday fluctuations.

Introduction

Japanese retail investors in foreign exchange (FX) margin trading have long been known to follow a contrarian investment strategy—buying and selling against market trends (selling in an upward trend and buying in a downward trend). This contrarian strategy is generally expected to reduce price fluctuations, including those driven by transactions among other various market participants, to a certain degree.¹ However, a recent survey among retail investors shows that 70 percent of them take a trend-following strategy—buying and selling along market trends (buying in an upward trend and selling in a downward trend). In this case, the investment patterns of retail investors might have changed resulting in a different impact on exchange rates relative to what was expected.²

Given that these trend followers are expected to both buy and sell in a very short time frame, this report examines the investment patterns of retail investors, making a distinction between trading where positions are held for an overnight or longer, and trading within a day (where positions are closed during a day). It provides an overview of FX margin trading, and then explores the difference in retail investors' behavior by investment time horizon.

Overview of FX Margin Trading

What is FX margin trading?

FX margin trading is defined as an FX transaction in which customers deposit a portion of their trading amounts (margin deposit) in FX firms beforehand, and they are allowed to postpone the settlement date at their own discretion. It can be classified into over-the-counter (OTC) trades, where currencies are exchanged between customers and FX firms, and on-exchange trades that are made on a formal exchange, such as “Click 365” provided by the Tokyo Financial Exchange.

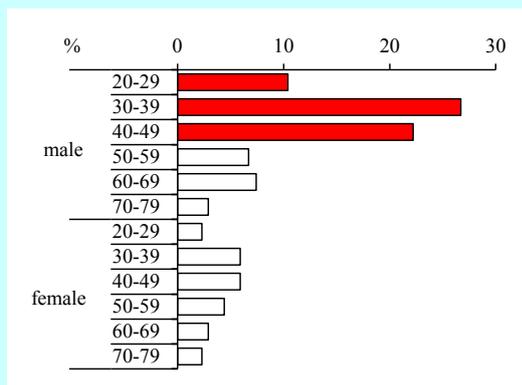
Who are the main players?

FX margin trading allows retail investors to use leverage, a ratio of the notional amount to the margin deposit, up to 25 times and carry a large position. Japanese retail traders are widely known internationally as *Mrs. Watanabe*. That said, contrary to this well-known nickname, the recent opinion survey indicates that the main players are men in their 20s–40s, who are in the stages of accumulating assets (Figure 1).

Trends in the number of accounts and trading volumes

Both the number of accounts and trading volumes show that FX margin trading has been increasing, led by OTC trades, albeit with fluctuations.³ Looking at

[Figure 1] Investor profile in FX margin trade

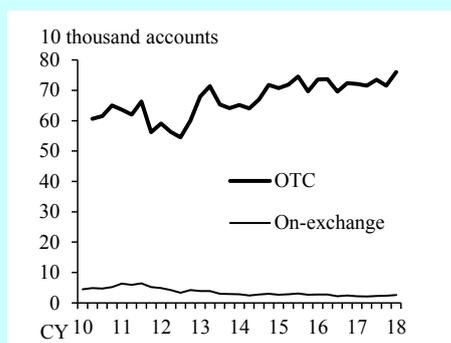


Note: The sample consists of 135 people who have an experience of FX margin trade among 2,000 respondents.

Source: The Financial Futures Association of Japan "Financial Futures Attitude Survey of Individual Investors (April 2017)."

the details, the number of accounts and trading volume in the on-exchange trades peaked in 2011, while the level of those in the OTC trades have shifted up since then (Figures 2 and 3).

[Figure 2] Number of active accounts

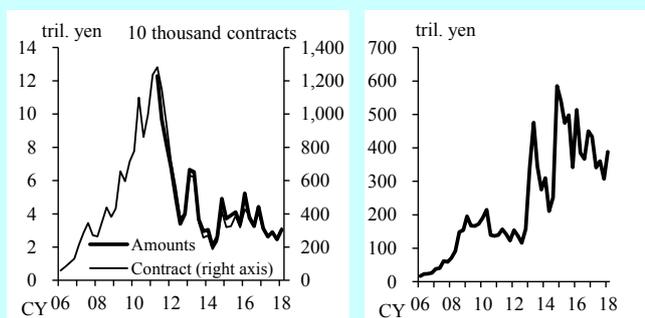


Source: The Financial Futures Association of Japan.

[Figure 3] Trading volume (monthly average)

(1) On-exchange

(2) OTC



Source: The Financial Futures Association of Japan.

These differences in the developments between the OTC and on-exchange trades can be attributable to the fact that high-frequency trading appears more

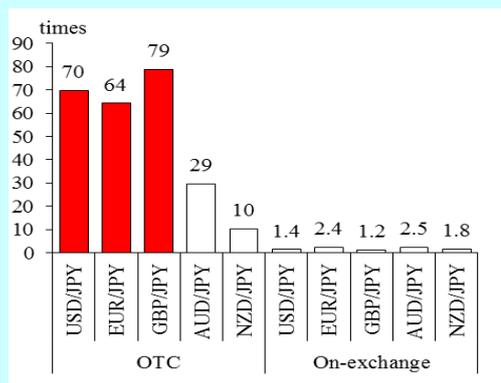
active in the OTC trades, coupled with the impact of the tax reform in 2012.⁴

Trading characteristics of OTC and on-exchange trades

In OTC trades, high-speed trading, which transacts a number of orders within a day, seems to be prevalent, as the spread (the difference between the prices quoted for a sale and a purchase) is narrower, and the transaction costs tend to be lower. However, it is believed that many investors tend to carry their positions overnight or longer for major high-yield currencies in on-exchange trades, as the swap point (profits based on the interest rate differential between high-yield and low-yield currencies) is greater than in OTC trades.⁵

These tendencies can be seen from the actual turnover ratio (monthly transaction volume/open contract at the end of the month).⁶ The turnover ratio for OTC trades is about 70 times for major currency pairs, including USD/JPY, while it is around 1 in on-exchange trades (Figure 4).

[Figure 4] Turnover ratio

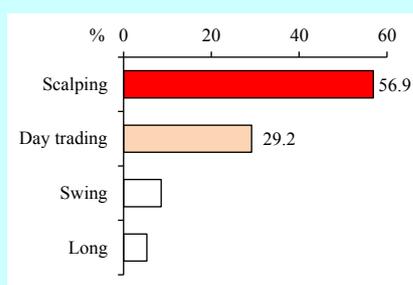


Note: Monthly transaction volume during March 2018 divided by open contract as of end March 2018.

Sources: The Financial Futures Association of Japan; Tokyo Financial Exchange.

Given that the trading volume in OTC trades has been remarkably high among all FX margin trades, many investors appear to transact a number of orders within a very short time frame. In fact, according to the survey on the number of accounts by investment time horizon, trading within a day (scalping: a trading strategy which aims for profits on minor price changes within seconds or minutes; day trading: a trading strategy which buys and sells within a day without carrying the position overnight) accounts for more than 80 percent of all OTC trades (Figure 5).

[Figure 5] Share of accounts by investment time horizon



| Classification | Investment Time Horizon |
|----------------|------------------------------------|
| Scalping | 0-1 hour |
| Day trading | 1 hour-1 day |
| Swing | 1 day-1 week (5 business days) |
| Long | 1 week- 1 month (20 business days) |

Note: As of 2015. Based on the transaction data of FX firms which are the members of the Financial Futures Association of Japan. Excluding positions carried over more than 1 month.

Source: Iwatsubo "Investment Strategy and Performance of FX Margin Trade (2016)."

Meanwhile, market intelligence suggests that scalping mainly on USD/JPY has been increasing, although whether it has actually increased or not cannot be confirmed due to data limitations. The increase in volatility (the increase in profit-taking opportunities) arising from the major political and economic events since 2013 (e.g., the Brexit referendum and the U.S. presidential election) also seems to have contributed to the increase of scalping.

Investment Patterns of Retail Investors

Following the above argument, this section examines whether retail investors are more likely to take a contrarian strategy or trend-following strategy, while making a distinction between trading in which positions are held overnight or longer and trading within a day.

Trading in which positions are held overnight or longer

First, we regress the change in net position on the change in the exchange rates using weekly data for the OTC and on-exchange trades, respectively, to check the investment patterns for trading in which positions are held overnight or longer.⁷ If the sign of the estimated coefficient is positive, it implies an increase in net buying when the currency appreciates, namely, a trend-following pattern. Conversely, if the sign of the estimated coefficient is negative, this suggests a contrarian pattern. The results confirm a significant contrarian pattern for both OTC and on-exchange trades (Figure 6).⁸

[Figure 6] Panel regression results

| Explanatory variable | OTC | On-exchange |
|------------------------|--------------------|--------------------|
| Change in the FX rates | -2.32*** (0.14) | -1.75*** (0.09) |
| Constant | 0.07 (0.25) | -0.01 (0.17) |
| Adjusted R-squared | 0.168 | 0.208 |
| Sample size | 1,450 | 1,450 |

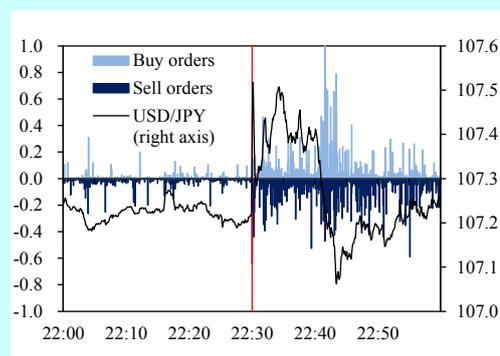
Note: *** indicates statistical significance at the 1 percent level. Standard error in parenthesis. Pooling regression model is employed. The sample period ranges from January 2013 to July 2018.

Trading within a day

Next, regarding trading within a day, intraday data are required to analyze the investment patterns before positions are closed, as retail investors buy and sell during a day, and thus daily data cannot keep track of the transactions. Given that high-frequency trading becomes active when the market is volatile, this report analyzes the relationship between order flows and the change in exchange rates using second-level transaction data for the specific day when the USD/JPY fluctuates.

For instance, the USD/JPY pair moved up and down sharply on February 14th, 2018, right after the U.S. consumption price index was released. The customer transaction data of a major FX firm shows that the trading volume actually increased, and the FX margin trades became active after 22:30 (Figure 7). Similar to the previous estimation, the result confirms a contrarian pattern, as the sign of the estimated coefficient is significantly negative when order flows are regressed on the change in the exchange rates.

[Figure 7] Order flows for USD/JPY when the U.S. CPI (January 2018) was released



Note: Buy and sell orders are indexed by dividing by the maximum value (in absolute term) of the sample period (22:00-22:59). 5 second-level data are used. A vertical line shows the release time of the U.S. CPI for January 2018 (February 14th, 2018).

Nevertheless, it is noted among market participants that these retail investors who trade within a day could switch to a different strategy, e.g., when

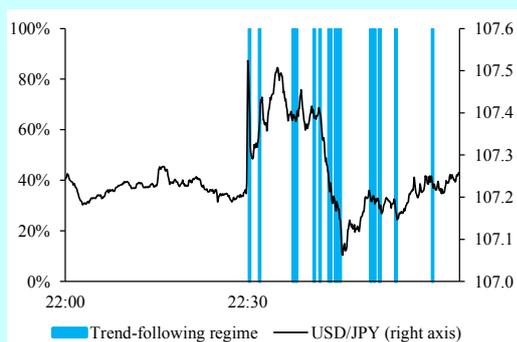
exchange rates suddenly fluctuate beyond a range which most investors have in mind. Considering this possibility, we also employ a Markov switching model which assumes the two regimes, allowing for the change in the estimated coefficients over time.⁹ The results suggest not only a contrarian but also a trend-following pattern (regime), once we allow the possibility that the estimated coefficient would take a different value depending on a regime (Figure 8). A trend-following regime can be observed in the time zone when the exchange rates were relatively volatile.¹⁰

[Figure 8] Results of a Markov switching model

| Explanatory variable | Regime 1 | Regime 2 | No regime switching |
|------------------------|-------------------|---------------------|---------------------|
| Change in the FX rates | 1.24*** (0.14) | -0.22*** (-0.22) | -0.11*** (0.03) |
| Constant | -0.00** (0.00) | 0.00** (0.00) | 0.00*** (0.00) |
| Sample size | 653 | 653 | 653 |

Note: *** and ** indicate statistical significance at the 1 and 5 percent levels, respectively. Standard error in parenthesis. 5 second-level data are used, excluding missing values.

<Trend-following regime>



Note: A trend-following regime corresponds to a state where a filtered probability for regime 1 is greater than 50 percent.

These results imply that retail investors who trade within a day could switch to a trend-following strategy once exchange rates start to fluctuate significantly, while they are likely to follow a contrarian strategy like those carrying positions overnight or longer when the market is not that volatile.

Concluding Remarks

To sum up, the investment patterns of retail investors could be different depending on the investment time horizon, as discussed above. In other words, retail investors who hold their positions overnight or longer could follow a contrarian strategy. However, retail investors who trade within a day could switch to a trend-following strategy once the market becomes volatile, while they are likely to follow a contrarian

strategy when the market is not that volatile.

The results have two implications. First, regarding foreign exchange market stability, the analysis reaffirms that the contrarian behavior of retail investors is expected to reduce price fluctuations to a certain degree. However, it also suggests that trading within a day does not necessarily reduce fluctuations, but rather could amplify them through trend-following behaviors once the market becomes volatile.¹¹

In relation to the market monitoring, the second implication is that it would be useful to closely check more granular data, such as second-level data, to monitor the foreign exchange market. Going forward, the Bank of Japan is willing to continue collecting and analyzing granular data on the FX market in coordination with market participants and others, while exchanging views with market participants for enhanced monitoring.

¹ For instance, please see Tomohiro Niimi, “Recent Trends in Foreign Exchange (FX) Margin Trading in Japan” (Bank of Japan Review, 2016-E-5, 2016). It is widely known that a forced liquidation of positions under loss cutting rules could amplify market fluctuations in the wake of a significant fall in exchange rates. For the mechanism of loss-cut, see the box in the above report.

² According to the survey by Gaitame.com Research Institute conducted in June 2018, about 70 percent of respondents recognized themselves as a “trend-follower,” with 31.9 percent of them as a “trend-follower” and 36.9 percent of them as “somewhat of a trend-follower”. The survey has an open-ended question on the reason for their trading style; some of the trend-followers answered that they cannot take high risks in short-term trades, while several contrarian traders said that they buy and sell at the lower and upper bound of a range, as they mainly trade when market fluctuations are within a certain range. It also suggests that a large number of day traders are a part of the reason why trend followers account for about 70 percent.

³ At the end of March 2018, the outstanding margin deposits for the OTC trades were about 1.3 trillion yen, and those for the on-exchange trades amounted to around 0.5 trillion yen, respectively.

⁴ The decline in the trading volume of on-exchange trades can be attributable to the fact that its tax merit disappeared. Before 2011, profits from OTC trades were subject to comprehensive taxation (tax on aggregate income), but they have been made subject to a separate self-assessment taxation (like profits from the on-exchange trades) since the 2012 tax reform. Thus, the comparative advantage of on-exchange trades relative to the OTC trades was diminished, leading to a shift of retail investors toward OTC trades, where transaction costs are lower.

⁵ The swap point in the on-exchange trades tends to be greater than that of the OTC trades (albeit depending on the currency pairs), where a part of the swap point is deducted as a commission fee to the FX firms.

⁶ Open contract here is the sum of both long and short open contracts. At the end of March 2018, the open contract for USD/JPY in the OTC trades amounted to about 3.8 trillion yen, which is the largest among other currency pairs, corresponding

to 6 times that of the on-exchange trades (around 0.6 trillion yen).

⁷ The analysis uses panel data for five currency pairs (USD/JPY, EUR/JPY, GBP/JPY, AUD/JPY, and NZD/JPY), based on the availability of weekly data. For OTC trades, it uses the data by QUICK, which are collected from nine major FX firms. The open contract of their customers' accounts for about 20 percent of the OTC trades for the above five currency pairs. To avoid the simultaneity bias (retail investors transactions→the impact on the exchange rates), we use the weekly change of the exchange rates as of the previous day as an explanatory variable, and use net position/open contract (the change from the previous week) as a dependent variable.

⁸ The pooling regression model was selected based on the F statistic. The results do not change qualitatively if the fixed effect model is employed.

⁹ For the investment patterns, there could be several regimes where the relation between the variables varies depending on the situations. The model which assumes the regime change is called a regime switching model. A Markov switching model is often applied to the case the regime would change due to unobservable variables.

¹⁰ Similar results are observed for several other days (e.g., September 15, 2017, when North Korea conducted a missile test; and July 31, 2018, after the monetary policy meeting).

¹¹ While the analysis in this report does not directly examine the impact of order flows on the exchange rates, the earlier literature finds that the order flows affect the exchange rate dynamics. For instance, please see below.

M. Evans and R. Lyons [2002], "Order flow and exchange rate dynamics," *Journal of Political Economy*, University of Chicago Press, vol. 110(1), pages 170-180, February.

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