

Developments in and Characteristics of Japan's FX Market: An Analysis Based on the 2022 BIS Triennial Central Bank Survey

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In 2022, foreign exchange (FX) markets saw a rapid and significant depreciation of the Japanese yen (JPY) against the U.S. dollar (USD). Based on the results of the Triennial Central Bank Survey conducted by the Bank for International Settlements (BIS) in April 2022, this paper explores FX turnover in Japan -- which reached a historical high since the start of the survey -- by currency, type of instrument, and counterparty. It then examines the impact of the increase in FX turnover on the USD/JPY exchange rate. In addition, it explains the background of the long-term downtrend in the share of Japan in the global FX market through a comparison with global survey results, mainly by analyzing turnover by currency.

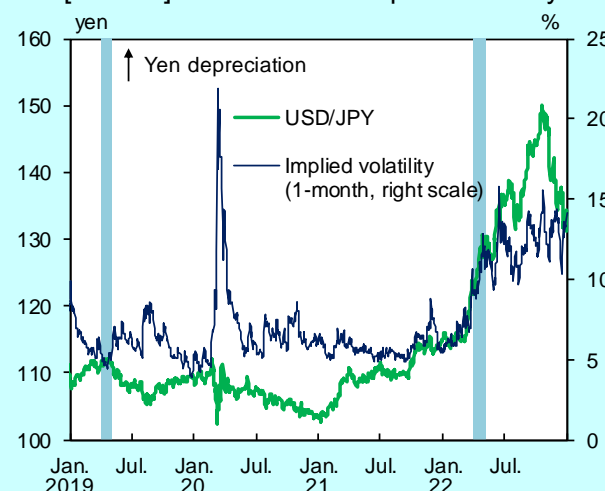
Introduction

Central banks and other authorities around the world survey FX turnover in April every three years, under the coordination of the BIS. This is a part of the BIS Triennial Central Bank Survey (the BIS Triennial Survey), a comprehensive source of information on FX trading.¹ The BIS Triennial Survey collects a wide range of data from over 1,200 financial institutions located in more than 50 jurisdictions with a common international methodology, although there are some constraints, such as its frequency and the time taken to compile the data.²

In 2022, FX markets saw a rapid and significant depreciation of the JPY against the USD from March onwards. The latest BIS Triennial Survey covers data for April 2022, a month that experienced the largest JPY depreciation of the year (Chart 1).

Based on the results of the 2022 BIS Triennial Survey, this paper summarizes the developments in FX trading in Japan in April 2022 from a variety of perspectives -- such as by analyzing turnover by currency, type of instrument, and counterparty -- and discusses their effects on the USD/JPY exchange rate. It also explores the longer-term trends in Japan's FX market through a comparison with the global survey results.

[Chart 1] USD/JPY and Implied Volatility



Sources: Bloomberg; EBS.

Notes: 1. Shaded areas denote the previous and latest survey periods. Latest data as at end-December 2022.

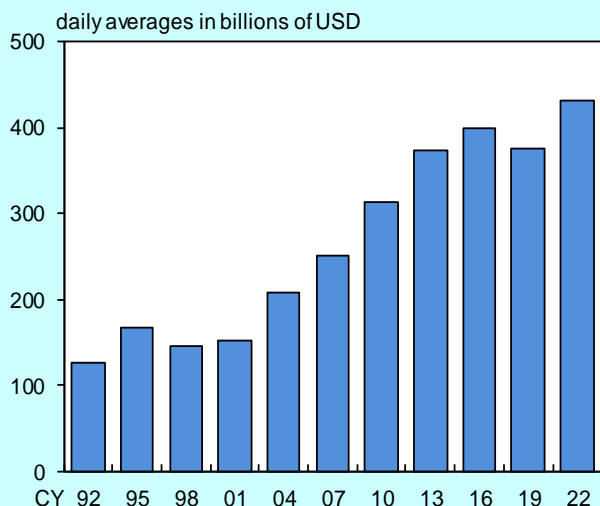
2. Figures of USD/JPY are based on EBS.

Developments in Japan's FX Market in 2022

Key results of the 2022 BIS Triennial Survey

According to the April 2022 BIS Triennial Survey (hereafter the latest survey), the average daily FX turnover in Japan reached \$432.5 billion, the highest since the survey began and up 15 percent from the 2019 survey (Chart 2). This section explains the factors behind this increase, by examining turnover by currency pair, type of instrument, and counterparty, and then analyzes the impact of the increase on the USD/JPY exchange rate.

[Chart 2] FX Turnover in Japan



Source: BIS.

Notes: 1. Turnover is adjusted for the local double counting of transactions between two reporting dealers in Japan ("net-gross" basis).

2. Turnover is daily average in each survey period in USD (the same shall apply hereinafter).

Characteristics of FX turnover as analyzed by currency pair and by type of instrument

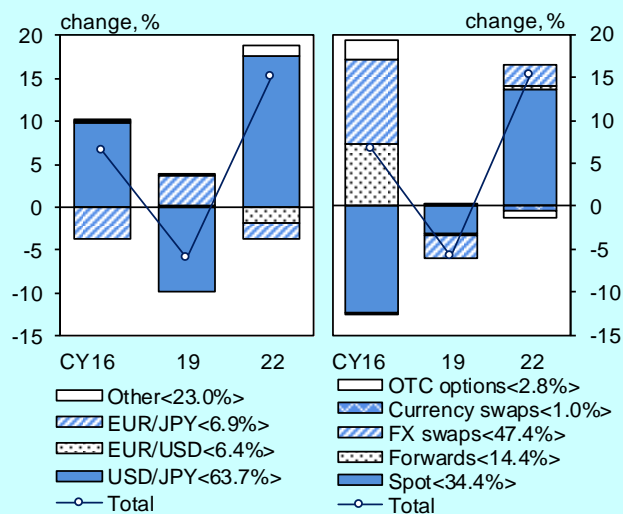
By currency pair, FX turnover in Japan in April 2022 shows that an increased volume of USD/JPY drove up the overall turnover (Chart 3). By type of instrument, spot transactions -- which are settled within two business days -- saw a significant increase. This indicates that increased spot USD/JPY transactions were the main driver of the growth in total turnover in Japan.

These results suggest that the JPY depreciated against the USD in April 2022, with the significant increase in spot USD/JPY transactions. In the following, the factors behind the JPY depreciation are examined by analyzing turnover by counterparty, with a special focus on spot USD/JPY transactions.

Spot USD/JPY transactions by counterparty

FX transactions can be categorized into "inter-dealer trading" and "customer trading" at the broadest level. In the latest survey, spot USD/JPY transactions increased significantly in both segments (Chart 4). Within the "customer trading" category, turnover markedly increased with a wide range of entities, including "non-financial customers," "institutional investors," and "other financial institutions."

[Chart 3] Breakdown of FX Turnover in Japan
1. by Currency Pair 2. by Instrument

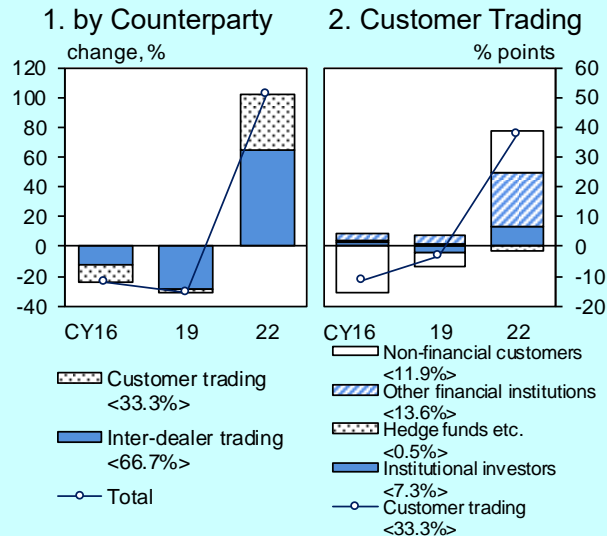


Source: BIS.

Notes: 1. "Net-gross" basis.

2. Figures in angular brackets represent share of the total of the latest survey.

[Chart 4] Turnover of Spot USD/JPY Transactions in Japan
1. by Counterparty 2. Customer Trading



Source: BIS.

Notes: 1. "Net-gross" basis.

2. "Inter-dealer trading" is a sum of transactions with reporting dealers and those with non-reporting banks.
3. Chart 4-2 indicates the contribution to "Total" of Chart 4-1.
4. Figures in angular brackets represent share of the total of the latest survey.

In terms of trading with "non-financial customers," Japanese importers considerably increased their transactions, in response to a surge in commodity prices after Russia's invasion of Ukraine in February 2022. More specifically, the rise in commodity prices resulted in greater demand for the USD, since about 70 percent of Japan's total imports and most of its imports of commodities, such as crude oil and natural gas, are denominated in USD. This led to an increase in spot transactions to purchase the

USD against the JPY. Transactions with Japanese importers appear to have continued increasing from May onward, based on the subsequent expansion in Japan's trade deficits.

Spot transactions with "institutional investors" increased, as life insurance companies increasingly unwound FX hedges for their existing foreign securities. Japanese institutional investors hedge FX risk primarily with FX swaps, which involve the simultaneous purchase and sale of two different currencies of equal value on two separate delivery dates. For example, when investing in U.S. Treasuries, they would use their JPY-based capital to purchase some USDs against the JPY in the spot market and JPY against the same amount of USDs in the forward market. The maturity of such FX swaps is usually three or six months, and they are generally rolled over at any time up to the maturity date of the U.S. Treasuries. Japanese institutional investors increased their purchases of the USD against the JPY in the spot market to close out their existing FX swaps, as their FX hedging costs surged with a widening of the interest rate differential between Japan and the United States.³

Among "other financial institutions," trading with FX retail aggregators (so-called "FX firms") increased. FX firms internally offset buy and sell orders from Japanese individual investors (known as "Mrs. Watanabe" from overseas) and then cover their positions mainly through FX trading with banks. In 2022, trading with FX firms increased, as individual investors actively engaged in FX trading, mainly of volatile USD/JPY. In particular, FX firms increased their purchases of the USD against the JPY, as individual investors were active in cutting losses from taking contrarian positions and employed a trend-following strategy amid the significant depreciation of the JPY against the USD.

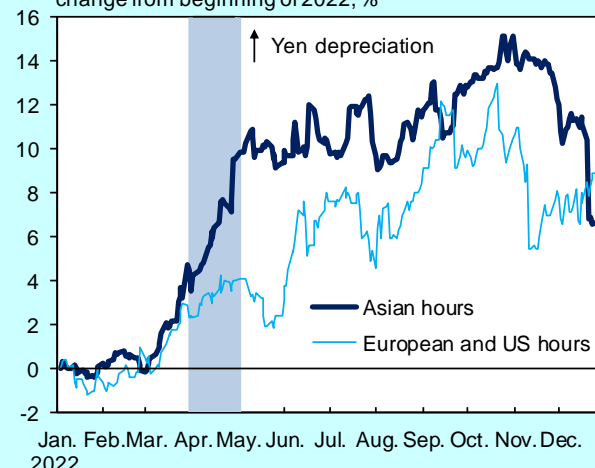
In line with the rise in customer trading, "inter-dealer trading" also saw a significant increase. This was because interbank dealers increased the purchases of the USD against the JPY to cover their positions, as their FX risk was heightened by customer orders to purchase the USD against the JPY. Such cover deals by interbank dealers arising from customer trading were also spurred by dealers' heightened demand for risk hedging due to high volatility in the USD/JPY exchange rate (Chart 1).

Impact of greater FX turnover in Japan on the USD/JPY exchange rate

This final part of the section delves into the impact of

the developments in FX trading in Japan on the USD/JPY exchange rate. FX trading takes place globally, with trading centers, such as Tokyo, London, and New York, shifting depending on trading hours. With this in mind, looking at the cumulative changes in the USD/JPY exchange rate from the beginning of 2022 by trading hour, the JPY significantly depreciated against the USD during Asian hours in April, when Japanese market participants carry out most of their transactions (Chart 5). Together with the analysis results of turnover by counterparty, this suggests that a wide range of entities in Japan increased their purchases of the USD against the JPY, leading to the significant depreciation of the JPY against the USD.⁴

[Chart 5] USD/JPY Performance by Trading Hour
change from beginning of 2022, %



Source: EBS.

Notes: 1. "Asian hours" refers to 4 pm in New York to 5 pm in Tokyo. "European and US hours" refers to the remaining times.

2. Shaded area denotes the latest survey period. Latest data as at end-December 2022.

In addition, the greater fluctuations in the USD/JPY exchange rate in 2022 can also be attributed, to some extent, to the deterioration in market liquidity for USD/JPY trading. To understand the functioning of Japan's FX market, the results of the "functioning survey," a qualitative survey on the market functioning, in the "local survey" by the Tokyo Foreign Exchange Market Committee provide useful insights (see Box).⁵

Characteristics of Japan's FX Market with Respect to the Global Survey Results

Share of Japan in global FX turnover

Looking at the share of each participating market in global FX turnover using the aggregated global survey results of the BIS Triennial Survey, including turnover

[Chart 6] Share of Jurisdiction in Global FX Turnover

	2010	2013	2016	2019	2022
1st	UK (36.7%)	UK (40.8%)	UK (36.9%)	UK (43.2%)	UK (38.1%)
2nd	US (17.9%)	US (18.9%)	US (19.5%)	US (16.5%)	US (19.4%)
3rd	Japan (6.2%)	Singapore (5.7%)	Singapore (7.9%)	Singapore (7.7%)	Singapore (9.4%)
4th	Singapore (5.3%)	Japan (5.6%)	Hong Kong (6.7%)	Hong Kong (7.6%)	Hong Kong (7.1%)
5th	Switzerland (4.9%)	Hong Kong (4.1%)	Japan (6.1%)	Japan (4.5%)	Japan (4.4%)

Source: BIS.

Notes: 1. "Net-gross" basis.

2. Figures in parentheses represent share of jurisdiction in global FX turnover.

in the global FX markets and that by jurisdiction, the top five trading centers remained unchanged since the 2016 survey, with the United Kingdom ranking top, followed by the United States, Singapore, Hong Kong SAR, and Japan (Chart 6).

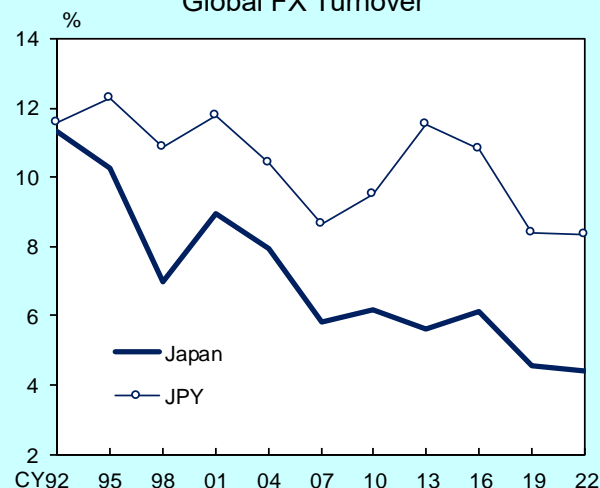
The share of Japan in global FX turnover was virtually unchanged from the previous survey, despite the turnover in Japan reaching a record high, buoyed by an increase in USD/JPY trading. From a longer perspective, its share has been declining gradually. By contrast, the shares of Singapore and Hong Kong SAR have grown and moved up the ranking. This section discusses the background of the declining share of Japan, by examining turnover in the global FX market with a focus on currencies traded in the markets.

Shares of participating markets and their local currencies in global FX turnover

Turnover of local currencies tends to be high in the currency issuing countries, because FX trading mainly arises from economic and financial cross-border activities, such as trade and foreign investment, by economic entities in each jurisdiction. The shift in the share of a market can be analyzed, therefore, through comparing it with the share of its local currency.

In this respect, the share of the JPY -- Japan's local currency -- in global FX turnover has declined, while the turnover of emerging market economy (EME) currencies, such as the Chinese yuan (CNY), has increased (Chart 7). In tandem with the declining JPY share, the share of Japan -- in which trading is predominantly JPY-denominated -- has also fallen. Moreover, the decline in the share of Japan is larger than that of the JPY.

[Chart 7] Share of Japan and JPY in Global FX Turnover



Source: BIS.

Note: Share of Japan is calculated using turnover on "net-gross" basis. Share of JPY is calculated using turnover adjusted for both local and cross-border double counting of transactions between two reporting dealers ("net-net" basis).

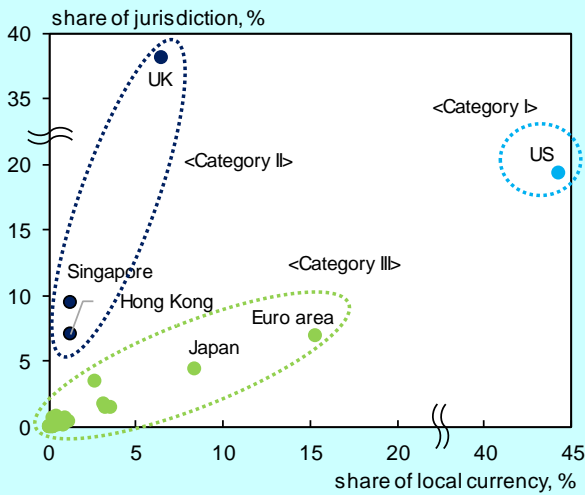
To further elaborate on this point, the correlation between the shares of Japan and the JPY is compared with those in other jurisdictions. The comparison suggests that there is generally a positive correlation between the shares of a market and its local currency (Chart 8). That said, different markets have different correlations, and the participating markets can be divided into the following three categories depending on the type of the correlation.

Category I (the United States): This market is unique in that the USD -- its local currency -- acts as a vehicle currency in various currency transactions and has a substantial share of more than 40 percent in global FX turnover.

Category II (international financial center type): In the United Kingdom -- where major financial institutions are concentrated -- the market has a substantial share, compared with that of its local currency. Singapore and Hong Kong SAR have similar characteristics.

Category III (other): The shares of other markets, such as the euro area and Japan, and those of their local currencies are generally proportionate, while trading in these markets is predominantly made in their local currencies. However, the shares of these markets are smaller than the shares of their local currencies, in contrast to the markets in Category II.

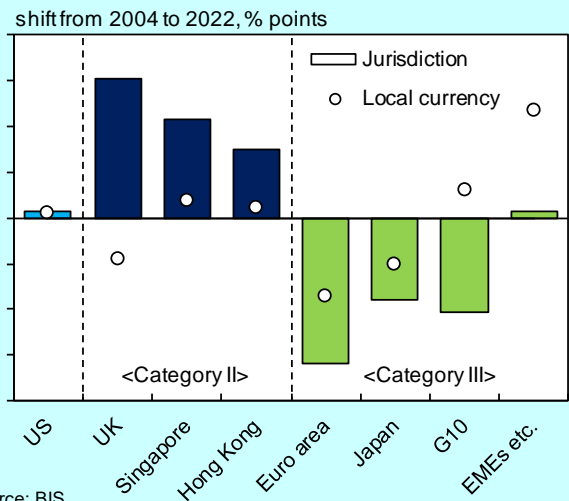
[Chart 8] Share of Jurisdiction and Local Currency in Global FX Turnover



Source: BIS.

- Notes: 1. Share of jurisdiction is calculated using turnovers on "net-gross" basis. Share of local currency is calculated using turnovers on "net-net" basis. Based on the latest survey.
2. "Euro area" comprises all euro area countries that reported to the latest survey.

[Chart 9] Shift in Share of Jurisdiction and Local Currency in Global FX Turnover



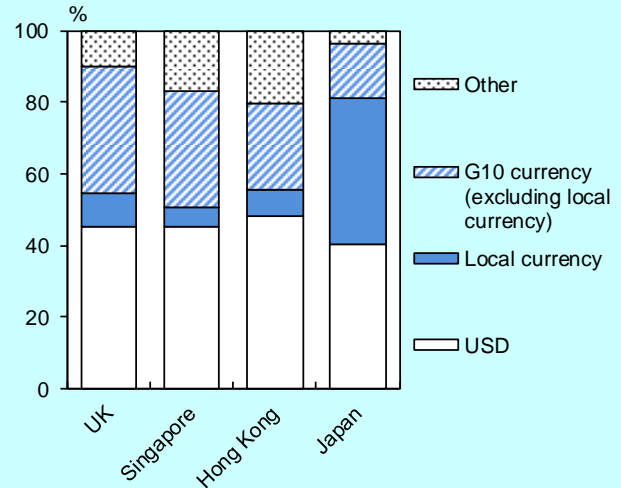
Source: BIS.

- Notes: 1. Share of jurisdiction is calculated using turnovers on "net-gross" basis. Share of local currency is calculated using turnovers on "net-net" basis.
2. "G10" comprises Australia, Canada, New Zealand, Norway, Sweden, and Switzerland. "EMEs etc." (emerging market economies etc.) comprises the remaining countries.

The long-term shifts in the shares of markets and local currencies by category from 2004 through 2022 show the following (Chart 9). First, there is some correlation between the shifts in the shares of the markets in Category III, including Japan, and those of their local currencies. For example, the share of the euro area market fell significantly and the share of its local currency declined as well. In addition, the shares of EME markets were unchanged, and the shares of their local currencies grew. Secondly, overall, the shares of the markets in Category III were on a downtrend relative to those of their local currencies. These two characteristics are similar to the correlation between the shares of Japan and the JPY (Chart 7). In contrast to the markets in Category III, the shares of the markets in Category II remarkably outgrew those of their local currencies.

These findings suggest that the growth in the shares of the markets in Category II was mainly owing to an increase in foreign currency trading in these markets. A comparison of traded currencies in Japan (Category III) and Category II also confirms this point: with the USD's dominance in both markets as a vehicle currency, the JPY was the most traded currency apart from the USD in Japan, whereas the shares of foreign currencies were greater than those of their local currencies in Category II (Chart 10).

[Chart 10] Turnover by Currency



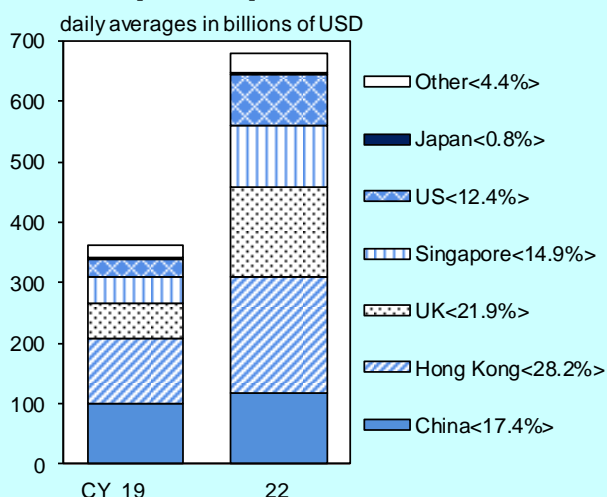
Source: BIS.

- Notes: 1. "Net-gross" basis. Based on the latest survey.
2. "G10 currency" comprises AUD, CAD, CHF, EUR, GBP, JPY, NOK, NZD, and SEK.

Comparison of Japan's FX market with the markets in Category II

In the latest survey, the turnover of the CNY increased substantially from the previous survey. As a result, it became the fifth most traded currency in the world, following the USD, the euro, the JPY, and the pound sterling, up from the eighth place in the previous survey. By jurisdiction, the turnover of the CNY increased notably in the United States and in Category II rather than in China (Chart 11). In contrast to the growing shares of the United States and the markets in Category II, the share of Japan in the total turnover of the CNY remained less than 1 percent.

[Chart 11] Turnover of CNY

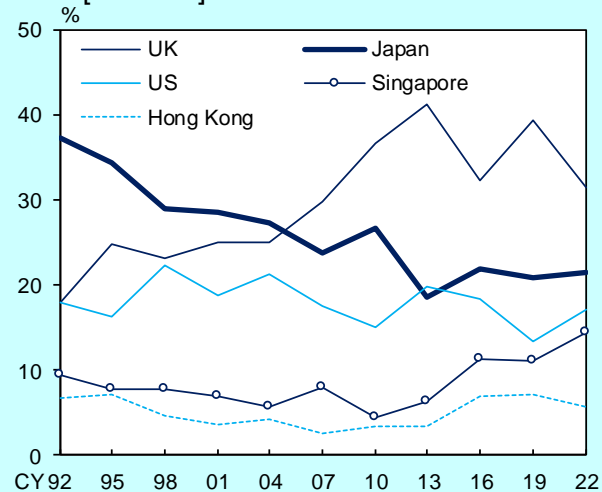


Source: BIS.

Notes: 1. "Net-gross" basis. Includes both offshore CNH and onshore CNY.

2. Figures in angular brackets represent share of the total turnover of CNY of the latest survey.

[Chart 12] Share in Turnover of JPY



Source: BIS.

Note: "Net-gross" basis.

The shifts in the shares of Japan and the markets in Category II are apparent not only from the turnover of EME currencies but also from that of the JPY (Chart 12). While JPY trading remains concentrated in the United Kingdom, Japan, and the United States, the JPY is traded globally, with its trading center shifting depending on trading hours. However, the share of Japan in JPY trading has been on a gradual downtrend, while that of Singapore has increased substantially in recent years.

It can therefore be assumed that the downtrend in the share of Japan in global FX turnover is attributable to the following. (1) The share of the JPY -- Japan's local currency -- has declined. (2) The shares of the markets in Category II have increased, and this has resulted in the declining share of Japan

in JPY trading. Furthermore, (3) the share of Japan has also decreased in the turnover of foreign currencies, mainly EME currencies such as the CNY.

Several factors have contributed to the continued and growing presence of the markets in Category II. Firstly, while the turnover of EME currencies has increased markedly on a global basis, the geographical and historical proximity has encouraged trading of such currencies in these markets. Secondly, the efficient execution of various types of currency trading has been made possible in these markets, owing to the concentration of major banks -- which have FX desks within the same location as their other functions, such as money market and treasury units -- and of financial-related industries including IT, accounting, legal services, and investment-related businesses. Thirdly, it has been pointed out that a highly concentrated market structure amplifies the network effects, given that capital account and currency convertibility restrictions mainly in EMEs vary across jurisdictions.⁶

Conclusion

This paper explored FX turnover in Japan in April 2022, using the data from the latest BIS Triennial Survey and examined its impact on the USD/JPY exchange rate. It also explained the background of the longer-term decline in the share of Japan through a comparison with the aggregated global survey results, mainly by analyzing turnover by currency.

The results of the BIS Triennial Survey provided useful insights to analyze FX turnover in Japan by counterparty and revealed that, during the survey period, the JPY depreciated rapidly and significantly against the USD in Asian hours, when Japanese market participants carry out most of their transactions. In addition to the changes in turnover due to cyclical factors, the long-term and structural trends in Japan's FX market were also examined, through a comparison with the aggregated global survey results.

Continuous monitoring is required to understand the developments in globally expanding FX trading and the structural changes in the FX markets. The results of the BIS Triennial Survey, together with the local surveys conducted by foreign exchange market committees in major FX markets, provide useful insights for the analysis.

BOX: Functioning of Japan's FX Market with Respect to the Local Survey Conducted by the Tokyo Foreign Exchange Market Committee (TFEMC)

The FX market committees in the United Kingdom, the United States, Singapore, Hong Kong SAR, Japan, Canada, and Australia separately conduct local surveys on FX turnover in their jurisdictions in April and October. These local surveys complement the BIS Triennial Survey in that they are conducted semiannually using a methodology aligned with the BIS Triennial Survey, although they have smaller numbers of survey items and cover fewer jurisdictions (BOX Chart 1). In Japan, the Tokyo Foreign Exchange Market Committee (TFEMC) coordinates and conducts the survey with the Bank of Japan's technical assistance in collecting and aggregating the data.

Japan's local survey is unique in that it includes a "functioning survey," a qualitative survey on the functioning of Japan's FX market. Specifically, it publishes diffusion indexes (DIs) for reporting dealers' evaluations of (1) "the offer-bid spread," (2) "the level of ease in conducting cover deals," and (3) "the overall market functioning."

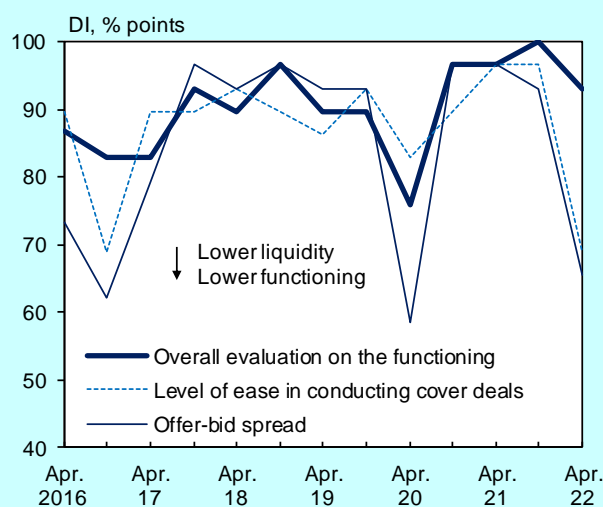
The DIs for the evaluations of "the offer-bid spread" and "the level of ease in conducting cover deals" deteriorated significantly in the April 2022 survey (BOX Chart 2). Given that the DI for "the overall market functioning" remained at a high level, it can be inferred that the plunge in the market liquidity reflected an increase in spot USD/JPY transactions, mostly to purchase the USD against the JPY, and higher market volatility due to uncertainty over the outlook.

[BOX Chart 1] Survey on FX Turnover in Japan

	BIS Survey	Local Survey
Publisher	Bank of Japan	Tokyo Foreign Exchange Market Committee (TFEMC)
Frequency	Triennial (April)	Semi-annual (April and October)
Start period	CY 1986	CY 2006
Survey items	Instruments	
	Spot, Forwards, FX swaps, Currency swaps, OTC options	
	Counterparties	
	Reporting dealers Other financial institutions -- Non-reporting banks -- Institutional investors -- Hedge funds etc. -- Official sector financial institutions -- Other Non-financial customers	Reporting dealers (local) Non-reporting banks Other financial institutions Non-financial customers
	Currencies	
	39 currencies	23 currencies
Participating jurisdictions	52 jurisdictions	7 jurisdictions

Sources: BIS; Tokyo Foreign Exchange Market Committee.

[BOX Chart 2] Functioning of Japan's FX Market



Source: Tokyo Foreign Exchange Market Committee.

Note: "Overall evaluation on the functioning" is a diffusion index (DI) of "high" minus "low." "Level of ease in conducting cover deals" is a DI of "easy" minus "difficult." "Offer-bid spread" is a DI of "tight" minus "wide."

¹ For the results of the BIS Triennial Survey on FX turnover in April 2022, see the following.

Turnover Data for Japan (link to the Bank of Japan's website): <https://www.boj.or.jp/en/statistics/bis/deri/deri2204.htm>

The aggregated global survey results (link to the BIS website): <https://www.bis.org/statistics/rpfx22.htm>

For the analysis by BIS staff using the global survey results, see the following BIS Quarterly Review.

https://www.bis.org/publ/qrpdf/r_qt2212.htm

² The basis of reporting is the location of the sales desk of the trade in the BIS Triennial Survey.

³ The USD/JPY forward rate is determined based on the interest rate differential between Japan and the United States. When interest rates are higher in the United States than in Japan, the USD becomes relatively cheaper against the JPY in the forward market than in the spot market. Therefore, if the interest rate differential between the two jurisdictions widens, hedging costs increases for Japanese institutional investors investing in foreign securities and hedging FX risk with FX

swaps, because the value of the investment profits declines when converted into the JPY in the forward market.

⁴ Turnover of spot USD/JPY transactions in the Asia-Pacific region in April 2022 increased by about 90 percent from the previous survey. By jurisdiction, Japan was the largest contributor to this increase, with the impact of a 55 percentage point, followed by Singapore with the impact of a 28 percentage point.

⁵ For the results of the local survey conducted by the Tokyo Foreign Exchange Market Committee, see the following.
https://www.fxcomtky.com/survey/index_e.html

⁶ Schrimpf and Sushko (2019) explained the concentration of the trading functions and related industries. Patel and Xia (2019) assessed the significance of the network effects. For further details, see the following.

Schrimpf, A and V Sushko (2019): "Sizing up global foreign exchange markets," *BIS Quarterly Review*, December, p 33.

Patel, N and D Xia (2019): "Offshore markets drive trading of emerging market currencies," *BIS Quarterly Review*, December, p 60.

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