
Mizuho Economic Outlook & Analysis

February 27, 2019

BOJ ETF Purchases After Flexibility *Delaying aggravating side effects still leaves an element of risk*

< Summary >

- ◆ In the hope of avoiding aggravating the side effects, in July 2018 the Bank of Japan (BOJ) introduced flexibility into the annual purchase amounts and raised the purchasing ratio of TOPIX-linked stocks. Under the policy of flexibility, the frequency of purchases on a slight share price decline has decreased.
- ◆ The change in the purchasing method has mitigated the problem of biased capital flow toward a limited group of stocks, but the number of stocks for which the BOJ's holding rate is growing is expected to increase and the number of stocks with a holding rate greater than 5% appears to be greater than 190.
- ◆ With the rise in the book value of ETFs held by the BOJ, the share price line that produces unrealized losses has also risen. In particular, TOPIX-linked stocks have little buffer against share price declines. The worrisome impact is that it raises doubts about the continuity of policy.

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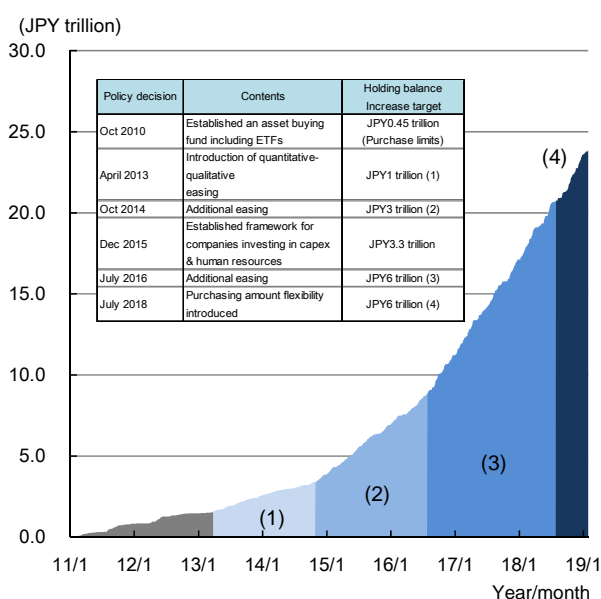
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1. Introduction

Heading into 2019, calm returned to the financial markets after the confusion that began with the fall in global share prices at the end of 2018. One of the reasons for this was the market taking a cautious stance with respect to the FRB's normalization of monetary policy. In January an FOMC statement and comments by FRB chairman Jerome Powell suggested the possibility of an early-term rate hike and an end to balance sheet reduction, thus partly easing suspicions that US normalization of monetary policy was being carried out indifferently against stewing concerns about an economic slowdown. On the other hand, the slowing pace of normalization of monetary policy in the US is putting upward pressure on the yen in the foreign exchange market through the narrowing of the gap between US and Japan interest rates. In fact, soon after the FOMC January Meeting, the yen became rapidly appreciated and the dollar sank as the USD/JPY exchange rate went from the mid-109 to the mid-108 yen level against the dollar. Although the yen's further appreciation was avoided and the dollar has risen again recently, it is highly likely that the final phase of

US monetary policy normalization will draw the attention of the financial markets. In addition, Japan-US trade negotiations that lie ahead in and after the early spring represent an event that also can trigger the yen's appreciation, so concerns about a higher yen will continue to linger in Japan's economic and financial markets in 2019. Moreover, even if the risk of yen appreciation is removed, the current state of the Japanese economy is lacking in strength, and the future downside risk is larger given the scheduled hike in the consumption tax in the fall. Under these economic and market circumstances, the means of additional easing actions by the BOJ to be taken when the yen appreciates sharply, etc., has been increasingly discussed in the financial markets. In this discussion, which is happening amidst a feeling of monetary policy stalemate, one of the leading means of additional easing cited by market participants is the expansion of the amount of money

Chart 1. BOJ's ETF holdings



Note: Holdings are on book value basis.
Source: Made by MHRJ based upon BOJ

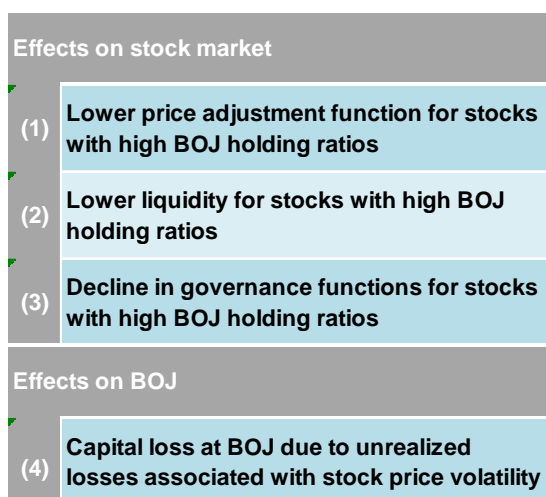
for purchasing ETFs, which currently sits at around six trillion yen annually. However, alongside an expansion of the pace of purchasing is the fact that the amount of ETFs held by the BOJ stood at 24 trillion yen (book value basis) at the end of January 2019 (**Chart 1** on the previous page), resulting in a growing central bank presence in the stock market and concerns about the impact on the market, which some have pointed out is leading to side effects. In addition, since 2018 the BOJ itself has begun to express concern about side effects, such as a reduction of market functions due to monetary easing, and in fact slightly adjusted its ETF purchase policy in July. As the BOJ's ETF purchases are attracting attention, in this report we would like to sort through the current state of purchases following the July adjustment and the situation of the BOJ's ETF holdings, and consider future policy directions based on this.

2. The BOJ has made minor policy adjustments to delay the aggravating side effects

(1) The annual purchase amount will be made flexible and purchases on a slight decline will decrease

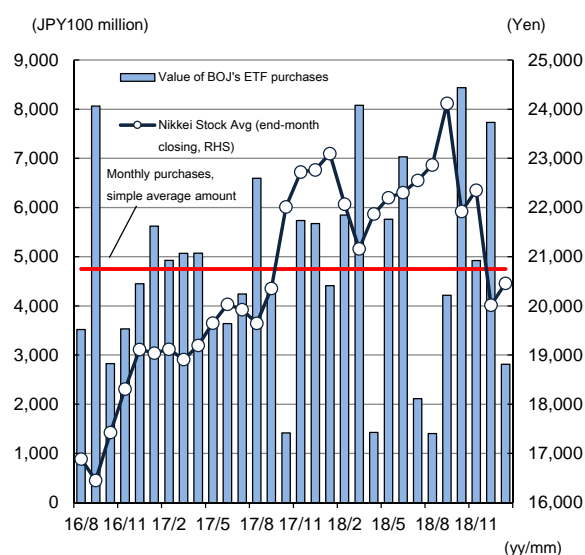
ETF purchases by the BOJ, which began in October 2010, have gone through various policy changes. The annual pace of purchases was expanded from an initial 0.45 trillion yen to six trillion yen by July 2016, more than 10 times the original amount. As indicated in **Chart 2**, the four main side effects associated with the BOJ's purchase of large-scale

Chart 2. Indicated side-effects of the BOJ's ETF purchases



Source: Made by MHRI

Chart 3. BOJ's ETF results and share prices



Note: Excluding ETF purchases that support companies actively engaged in capital & human resource investment

Source: Made by MHRI based upon BOJ and Bloomberg

ETFs are the (1) through (3) risks that affect the stock market and the risk shown in (4) that affects the BOJ's financial position. In an effort to avoid aggravating these side effects, the BOJ included a statement in its July 2018 Monetary Policy Meeting minutes that “it might increase or decrease the amount of purchases depending on market conditions” in regard to the purchase of ETFs. At that point in time, since the prevailing economic outlook was that the global economy would continue to strongly improve, particularly in the United States, and stock prices stayed firm, the financial markets took the view that BOJ normalization was in the works. However, since global share prices were hit by concerns about a slowdown in the world economy starting in the beginning of fall, a look at the monthly trends of BOJ’s ETF purchases shows that the amount purchased far exceeded the six trillion yen pace as a result of Japanese stocks falling sharply in October and December (**Chart 3** on previous page). On the other hand, by observing the timing of purchases, it is possible to see a change in the BOJ's stance toward ETF purchases. **Chart 4** shows the relationship between the TOPIX morning session rise/fall rate and the frequency of purchases in each of the phases (1) through (4) of the BOJ's annual ETF purchases. Since the introduction of flexibility in purchasing amounts (4), there were purchases on all trading days when TOPIX was down more than 0.5% in the morning session. However, the frequency of purchases declines sharply on days of a modest decline in the range of 0 to -0.5%, suggesting that the BOJ's intention is to avoid unnecessary purchases.

(2) A review of the purchase limit for each stock and the easing of the flow of funds to certain stocks

Of the four side effects mentioned above, the three that affect the stock market are all attributable to the increase in the BOJ's shareholding ratio for issued stocks. When the BOJ expanded the buying pace to six trillion yen annually in July 2016, the purchase ratio of ETF stocks corresponded to the market capitalization ratio of each stock. This meant that since the ratio of the market capitalization of ETFs linked to the Nikkei 225, which has a small composite of stocks, was high, the purchases were biased in favor of stocks with the largest weight in the Nikkei 225. To address this problem, the BOJ changed the stock-specific purchase limit two times in September 2016 and July 2018 to raise the purchase ratio of ETFs linked to stocks with a higher composite in TOPIX. Before the two changes, stocks linked to the Nikkei 225 accounted for more than 50% of ETFs purchased, but now they are down to 11% and stocks linked to the TOPIX account for nearly 90% (**Chart 5**). Based on this change, the issue of the capital flowing into extremely specific stocks to distort the price adjustment function of these stocks and

reducing liquidity was partially mitigated. On the other hand, if the BOJ continues to make further purchases on top of already holding a market value of 27 trillion yen (equivalent to 4.6% of TSE 1 market capitalization), the effects on the stock market gradually accumulate, and also the BOJ's rising financial risk is clear. In this section, we provided an overview of changes in the ETF purchase amounts and methods that were done in order to make the purchases sustainable by delaying aggravation of the side effects associated with ETF purchases. The next section will once again examine in more detail the impact on stocks and the impact on BOJ finances.

Chart 4. Relationship between stock price by ETF purchase amount and purchase frequency

(%)	TOPIX morning session rise/fall			
	-1% or less	-0.5%- -1%	-0%- -0.5%	0% or above
JPY1 trillion annually (1) 13/4-	100.0	90.2	33.7	0.0
JPY3 trillion annually (2) 14/11-	96.8	84.2	52.4	0.5
JPY6 trillion annually (3) 16/8-	97.1	100.0	51.2	0.0
Flexibility (4) 18/8-	100.0	100.0	21.4	0.0

Drop in purchasing on small share price declines

Note: Estimations based on actual BOJ purchases as of end-Jan 2019 in response to daily range of TOPIX morning session share price rates of decline.

Source: Made by MHRI based upon BOJ and Nikkei NEEDS-Financial QUEST

Chart 5. Changes in BOJ's ETF stock buying limit

Time changed	Sep 2016	July 2018
Stock purchase limits	Before change: Proportional to the market cap of each stock After change: JPY2.7 trillion: TOPIX-linked JPY3.0 trillion: Proportional to the market cap of each stock	Before change: Proportional to the market cap of each stock After change: JPY4.2 trillion: TOPIX-linked JPY1.5 trillion: Proportional to the market cap of each stock
TOPIX-linked	Before change: 44% After change: 71%	Before change: 75% After change: 88%
Nikkei 225-linked	Before change: 56% After change: 29%	Before change: 22% After change: 11%

Source: Made by MHRI based upon BOJ and Bloomberg

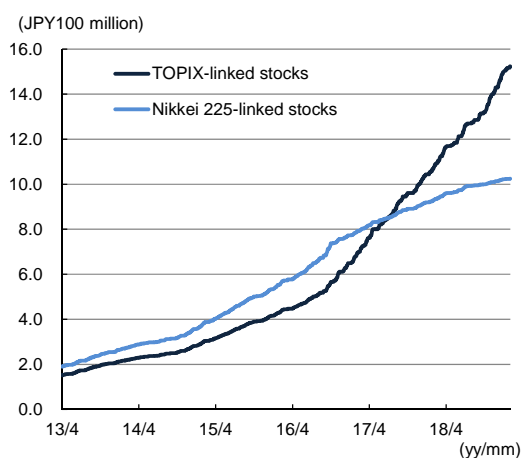
3. Reassessment of risk due to BOJ's ETF holdings

(1) The BOJ's holding ratio is steadily increasing. Although the period until problems become serious is long, postponement cannot be continued

As mentioned above, by decreasing the ratio of purchases of specific stocks linked to the Nikkei 225, the rapidly rising pace of BOJ holdings of stocks with a large weight in the Nikkei 225 has slowed. As of the end of January 2019, the balance of ETFs held by the BOJ is estimated to have reached nearly 27 trillion yen on a market value basis, broken down into about 57% or 15 trillion yen in stocks linked to TOPIX and about 38% or 10 trillion in stocks yen linked to the Nikkei 225 (**Chart 6**). However, as the purchase limits for stocks has changed, the growth in holdings of stocks linked to

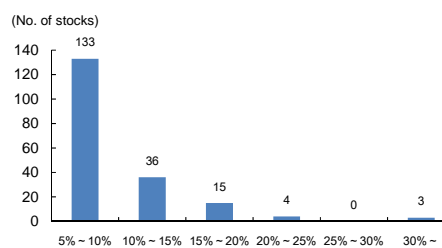
TOPIX has been extraordinary since August 2016, and the number of stocks for which the BOJ's holding ratio in relation to outstanding shares had reached certain amounts has steadily increased. **Chart 7-1** shows the estimated BOJ holding ratios for these stocks as of the end of January 2019. Although the number of stocks with holdings exceeding 20%, which is the standard for equity-method affiliates, was only seven, the number of stocks exceeding 5%, which is the standard for submitting large share-holding reports, was 191. In a report published in October 2016 ¹ the author also examined the impact of the risk of BOJ's bulk purchases of ETFs on number of stocks in which the BOJ held more than 5% of outstanding shares was around 50, so over two years the number of such stocks has increased nearly four times. Moreover, assuming the purchasing pace and methods remain the same, it is estimated that the increase in the number of stocks held by the BOJ that have a holding rate in excess of 50%, which is the standard for subsidiary status, will happen very gradually over the next five years, but over 25 years it will become a rapid increase (**Chart 7-2** on the previous page).

Chart 6. Balance of BOJ's ETF holdings by stock



Note: Holdings are estimated by MHRI based on the BOJ's basic purchasing policy on a market value basis.
Source: Made by MHRI based upon BOJ and Bloomberg

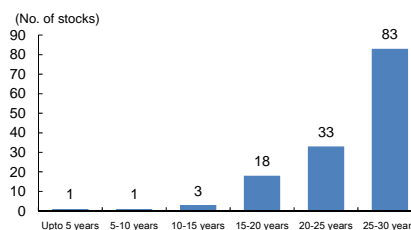
Chart 7-1. BOJ stock holding ratios (floating shares basis) and number of stocks



Note: Period over which it is estimated that BOJ will purchase all floating shares when buying at the pace of ¥6tr annually using the current buying method.

Source: Made by MHRI based upon BOJ & Bloomberg

Chart 7-2. Number of stocks in the case that BOJ continued current purchasing levels by period when the BOJ's holding ratio exceeds 50%



Source: Made by MHRI based upon BOJ and Bloomberg

¹ Rieko Otsuka (2016) "An Analysis of the BOJ's bulk purchase of ETF – Possible risk of aggravating side effect if protracted," *Mizuho Market Insight*, Mizuho Research Institute (October 25, 2016)

Although this is a long way off, it is hard to imagine that, if that situation comes into view, the current purchasing can be continued while avoiding discussion about the stock market's price adjustment function and a decline in liquidity. Also, from the point of view of corporate governance, while the voting rights of the shares held by the BOJ are exercised by trust banks that accept the stewardship code, a discussion about the decline of governance functions is probably unavoidable as well.

(2) The line of share prices for unrealized losses rises. The suspension of purchases rather than BOJ finances itself is worrying

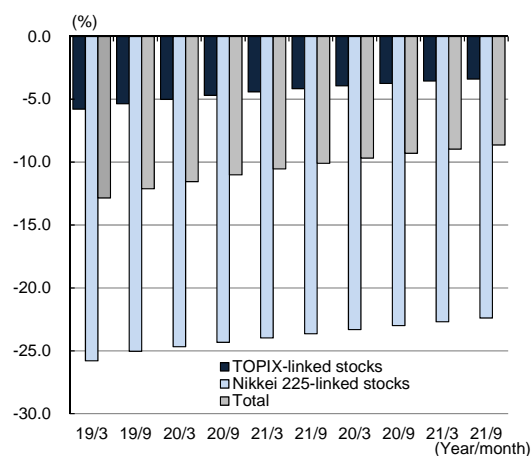
As of the end of January 2019 it was assumed that unrealized profits existed as the market value of the BOJ's ETFs was greater than book value. However, towards the end of 2018 when stocks saw a sharp decline, there were concerns that market value had fallen below book value, creating the possibility of unrealized losses. According to the BOJ's accounting rules, ETFs are valued at cost using the moving-average cost method. When the total market value is less than the total book value, the difference is recognized at the end of the first half or the end of the business fiscal year as an index-linked exchange-traded funds trading loss allowance (hereafter, "allowance"). Based on the BOJ's ETF evaluation method, Japanese share prices have risen despite short-term adjustments following the easing of the unprecedented rapid rate of EDF purchasing, so if purchasing continues at the current share price the book value will gradually rise. Particularly in regard to stocks linked to TOPIX the book value versus the market value seems to be high, as the purchase amount has increased rapidly since

**Chart 8. BOJ ETF holdings
(as of the end of January 2019)**

JPY trillion	Book value	Market value	Unrealized losses	Unrealized loss ratio (%)
TOPIX-linked	14.4	15.2	0.9	6.1
Nikkei 225-linked	8.1	10.2	2.1	26.1
JPX-Nikkei 400-linked	0.5	0.6	0.0	2.1
Total	23.0	26.0	3.0	13.1

Note: MHRI estimates based on the BOJ's basic purchasing policy.
Source: Made by MHRI based upon BOJ and Bloomberg

Chart 9. Rate of decline in stock prices causing unrealized losses if BOJ continues its current purchasing



Note: If purchased at the end-Jan 2019 share price level based on the current pace & stock limits. Total excludes JPX-Nikkei 400.
Source: Made by MHRI based upon BOJ and Bloomberg

September 2016 when the purchase limit amount for stocks was changed. **Chart 8** estimates the book value and the market value for the stocks that the BOJ has purchased. The unrealized gains on stocks linked to the Nikkei 225 is about two trillion yen, which is about 26% of the market value of shares held of these stocks, whereas the unrealized gains on stocks linked to TOPIX are around 0.9 trillion yen, with the holding value ratio limited to 6.1%.

If stock prices fall sharply, unrealized losses on stocks linked to the JPX-Nikkei 400 and TOPIX will occur before stocks linked to the Nikkei 225 are affected. However, since the creation of an allowance is required when the market value is less than book value in regards to "total value." Therefore, even if unrealized losses occur in stocks linked to the JPX-Nikkei 400 or TOPIX, no allowance will be required up to the share price level at which these unrealized losses are offset by the unrealized gains of stocks linked to the Nikkei 225. In **Chart 9** on the previous page, using the share price as of the end of January 2019 (Nikkei Stock Average: 20,774 yen), we calculate the unrealized losses that will occur in index-linked stocks and the total amount in percentage terms based on future scenarios of sudden steep stock price declines, assuming that the BOJ continues the current pace of purchases and methods. Stocks linked to TOPIX, which have book values that are relatively higher than market value, would see unrealized losses on a price drop of around 5% if, for example, share prices experienced a sudden shocking fall at the end of March 2019. On the other hand, since stocks linked to the Nikkei 225, which have book values that are low relative to market value, will not see unrealized losses unless they fall by about 25, and unrealized losses will occur based on a total market decline of 13%, at this line (the stock price level is a Nikkei Stock Average of around 18,100 yen) it is necessary to book an allowance.

In addition, the implication is that as the book value rises by continuing purchases at a market price higher than book value, the stock price level causing the unrealized losses gradually increases. In the above-mentioned October 2016 report that we published, we calculated the stock price level at which price volatility causes unrealized losses and makes an allowance necessary. Considering the fact that at that time the line we saw was a Nikkei Stock Average in the lower 14,000-yen range and, though share prices had risen (at the end of September 2014 the Nikkei Stock Average was 16,450 yen), in a little over two years the line at which the absolute value of stock prices makes an allowance necessary had gone up.

In the BOJ's finances, the allowance would be recorded as an extraordinary loss, so hitting the current surplus itself does not have a large direct negative impact on the economic and financial markets. Looking at the BOJ's financial statements for the first

half of fiscal year 2018, it had capital of approximately 8.7 trillion yen, which is the sum of approximately 3.2 trillion yen in legal reserves and approximately 5.4 trillion yen in accounts for provisions. If the BOJ's current surplus turns into a deficit, it does not necessarily mean that the central bank will immediately fall into negative net worth. Also, as the characteristics of a central bank are different from a private company, even if the former finds itself with negative net worth, it does not mean that doubts about business continuation arise. In fact, at the end of September 2018 the FRB actually had negative net worth. Looking at the FRB's financial statements at the end of the third quarter of 2018, the US central bank had unrealized losses of approximately US\$66.5 billion on its bond holdings, exceeding its capital of US\$39.1 billion. In this regard, "a central bank with a negative net worth matters not in theory," former FRB governor Kevin Warsh told a US media outlet. ² "But in practice, it runs the risk of chipping away at Fed credibility, its most powerful asset." As for unrealized losses in the BOJ's ETFs, there are concerns that the appearance of unrealized losses and a fall into negative net worth will elevate criticism of the BOJ's monetary policy. It may be that the financial markets could cause Japan's central bank to stop buying ETFs, possibly leading to confusion, such as a sharp drop in stock prices.

4. Conclusion

We have examined the BOJ's holding status of ETFs in terms of the effect on stocks and the effect on the BOJ's finances. In light of these effects, when considering expanding the ETF purchasing pace, which is seen as a possible measure for additional easing, from the first viewpoint involving increasing the ration of individual stocks held, the number of stocks held by the BOJ would steadily increase up to a certain percentage. However, the situation in which a broad number of stocks would have a holding ratio of over 50% lies for now in the distant future, so by increasing purchasing in the short term such problems as a weakening of the price adjustment function or a decline in liquidity or corporate governance functions will not become serious. It is, nevertheless, obvious that a situation in which a large of stocks held by the BOJ exceed 50% is unusual, and it is necessary to discuss up to what number of stocks and up to what holding ratio side effects can be tolerated.

Second, in terms of the impact on the BOJ's finances, the book value has already been raised due to the large-scale ETF purchases. Even at this point, a share price decline of about 15% will cause unrealized losses, but expansion of the purchasing pace will raise

² Bloomberg (December 12, 2018) "*Fed Piles Up \$66 Billion in Paper Losses as It faces Trump Wrath*"

the book value more. A sharp share price decline of 15% is a realistic scenario considering that share prices fell from their high by about 20% in the latter half of 2018. If in this case doubts about the continuity of ETF purchases increase and share prices do not stop falling because of the possibility, the BOJ will see unrealized losses or negative net worth, and the BOJ may eventually be forced to expand the pace of purchasing. In that case, it will not be easy to reduce the amount of purchasing once additional easing has become committed to increasing the annual purchasing pace. Even if the BOJ applies such words as "forward guidance" in consideration of side effects, there is a concern that financial markets may overreact to the timing of a reduction. Therefore, if yen appreciation and a sharp share price decline means some action is required in the financial markets, we believe that the BOJ will increase purchases in the short-term while being flexible about the amount. Although this is counter to initial speculation that the BOJ was preparing for tightening, the adjustment the central bank made in July 2018 to make the amount flexible was probably wise as it leaves a way to increase the amount of purchasing over the short term without committing to an annual purchase amount.

Refer to the original Japanese report by clicking the URL below for the reference material and Addendum

<https://www.mizuho-ri.co.jp/publication/research/pdf/insight/jp181214.pdf>