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BANK OF JAPAN'S EXCHANGE-TRADED FUND PURCHASES AS AN UNPRECEDENTED MONETARY EASING POLICY

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Abstract

This paper highlights exchange-traded funds (ETF) purchases conducted by the Bank of Japan under Quantitative and Qualitative Monetary Easing with Yield Curve Control. The policy to indirectly purchase stocks is unprecedented in terms of the scale and duration among major central banks. The purpose of this policy is to promote portfolio rebalancing among individuals in addition to achieving the 2% price stability target. While stock prices have more than doubled, individuals have remained largely risk-averse and foreign investors have increasingly dominated the stock market. Moreover, the BOJ has become one of the largest (silent) investors, with growing impacts on stock prices through reducing downside risk and possibly overvaluing some small-cap listed firms. Given that achieving 2% inflation is a distant future prospect, the BOJ may find it necessary to gradually unwind the policy by purchasing ETFs only when the stock market is under severe stress, and thereby reduce the annual pace of ETF purchases from about ¥6 trillion. This view is in line with the BOJ's adjustments announced in July 2018 on introducing flexibility and changing the composition of ETF purchases. Whether the BOJ will be able to take a clearer, more decisive step remains to be seen.

Keyword: exchange-traded funds, price-earnings ratio, bubbles, corporate governance, portfolio rebalance

JEL Classification: E52, E58

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1. INTRODUCTION

In January 2013, the Bank of Japan (BOJ), led at the time by its previous Governor, Masaaki Shirakawa, introduced its 2% price stability target. In April 2013, under current Governor Haruhiko Kuroda, the BOJ adopted massive and various monetary easing tools to achieve the target—so-called *Quantitative and Qualitative Monetary Easing (QQE)*. QQE was expanded in October 2014, supplemented with a negative interest rate in January 2016, and further with yield curve control in September 2016—hereafter called *QQE with Yield Curve Control* (see Shirai 2018a). Adopting a 2% target to raise inflation in a low inflationary or mildly deflationary environment like Japan is a rare experiment in the world.

As part of QQE, the BOJ has been purchasing Japanese stocks—not directly but indirectly through the purchases of *Exchange-Traded Funds* (ETFs). There are very few central banks in the world that have purchased stocks on this scale and for such a long time (for more than 5 years under QQE but for nearly 8 years since its introduction) as part of the conduct of monetary policy. The case of the intervention by the Hong Kong Monetary Authority (HKMA) in 1998 cannot be compared with the case of the BOJ in terms of scale and duration. So, when the BOJ embarked on its course of action, it had no reference to the experiences of other central banks. Similarly, the BOJ's extremely challenging task of normalizing the policy and ultimately disposing of the stocks purchased is without precedent.

The main pillars of the BOJ's monetary easing are large-scale purchases of Japanese government bonds (JGBs), a negative interest rate, and a 10-year yield target under yield curve control. This paper sheds light only on the BOJ's ETF purchases, as there has been very little research on this. The paper is made up of five sections. Section 2 provides a brief review of the BOJ's history of stock purchases from 2002–2010, as well as ETF purchases initiated by Masaaki Shirakawa, who was Governor of the BOJ until March 2013. Section 2 also looks at the case of Hong Kong, China, where the HKMA intervened briefly in the stock market in 2008. Section 3 focuses on the current ETF purchasing program conducted under Governor Kuroda. Section 4 sheds light on the features of stock markets and side effects. Section 5 concludes.

2. BOJ'S PURCHASE OF STOCKS AND EXCHANGE-TRADED FUNDS BEFORE APRIL 2013

2.1 Central Banks' Purchases of Stocks under the Foreign Reserve Management Strategy

Central banks across the world rarely purchase domestic stocks as a monetary easing tool. But some central banks do purchase foreign stocks and ETFs as part of their foreign reserve management strategies. Such purchases should be distinguished from the practices adopted by the BOJ and HKMA, as these two central banks have focused on domestic stocks (stocks listed on the domestic stock markets). While the monetary policy meeting of a central bank determines the types and the amount of assets to be purchased to achieve its price stability mandate, foreign reserve management is generally conducted by professional external (private sector) reserve managers appointed by a central bank.

These foreign reserve assets have been accumulated by a central bank typically through foreign exchange market interventions to reduce appreciation pressures of their exchange rates and contain excessive volatility. Foreign reserve assets are generally managed in accordance with specified objectives—including (1) providing confidence to foreign investors that would provide foreign capital to the domestic government or to firms about the ability to repay the foreign currency-denominated debt; and (2) supporting the exchange rate of the domestic currency at times of capital flight and depreciation pressures. Reserve managers tend to purchase stocks as a portfolio strategy by paying attention to liquidity, various risks (such as market, credit, and exchange rate risks), and reasonable returns in line with instructions set by a central bank.

Central banks in emerging economies usually attempt to hold ample foreign reserve assets as compared with short-term foreign debt in preparation for volatile cross-border capital flows, especially when their exchange rates tend to face sharp depreciation pressures. Among advanced economies, the Swiss National Bank (SNB) has intervened heavily in the foreign exchange markets since the global financial crisis, as the Swiss franc appreciated sharply and became overvalued due to its status as a safe haven currency, like the Japanese yen. Given that the amount of government bonds issued by the government has been limited due to prudent fiscal policy in Switzerland, the SNB has found it necessary to intervene in the foreign exchange markets rather than conduct unconventional quantitative easing through government bond purchases. The SNB continues to intervene in the foreign exchange market because the Swiss franc has remained overvalued. Diversification of resultant accumulated foreign reserve assets is sought through purchasing various foreign assets including stocks.

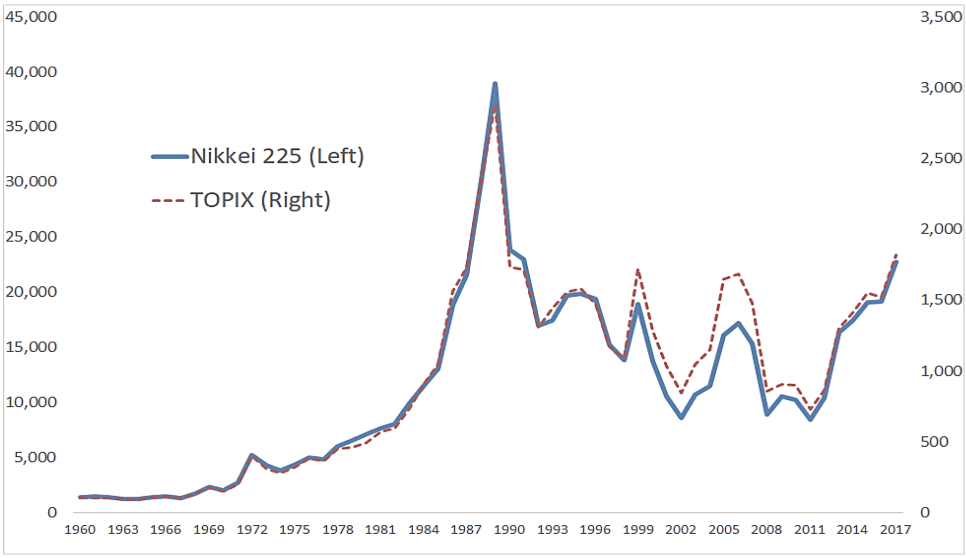
Recently, reserve managers of foreign reserve assets have increasingly invested in sovereign bonds in non-standard economies such as emerging economies as well as equities and other assets (Jones 2018)—mostly as passive investors. This reflects their search for yields in an extremely-low interest rate environment. After the global financial crisis of 2008–2009, many central banks in advanced economies in the United States, Europe, and Japan adopted unconventional monetary easing measures such as large-scale purchases of government bonds and other bonds. This resulted in long-term bond yields falling to historically low levels in advanced economies. Consequently, in their search for returns, reserve managers have had to turn to types of financial assets they had in the past hardly invested in.

2.2 BOJ's Purchases of Stocks from Banks in 2002–2010

The asset price bubbles in stocks and real estate had occurred in the second half of the 1980s partly as a result of the government's economic policies and the BOJ's monetary easing to cope with recession in the manufacturing sector, in response to a sharp appreciation of the yen after the Plaza Accord of 1985. The Nikkei 225 reached ¥38,915 and the TOPIX 2,884 points in late 1989, their highest ever levels (Figure 1). Generally, the Nikkei 225 and the TOPIX tend to show similar trends. The Nikkei 225—formally called the Nikkei Stock Average—is a stock price average published by Japanese newspaper publisher Nikkei Inc., using a method of calculation similar to that of the Dow Jones Industrial Average in the United States. It has been published since 1950 and is comprised of the 225 stocks of the Tokyo Stock Exchange First Section, which are selected based on high liquidity and by taking into account changes in the industry structure and the balance of the sectors in terms of the number of constituents. The TOPIX, also known as the Tokyo Stock Price Index, is a capitalization-weighted index of all companies listed on the First Section of the Tokyo Stock Exchange and calculated by the Japan Exchange Group (2,106 as of 8 August 2018), using a method of calculation similar to that of the S&P 500 in the United States. The TOPIX has been calculated since July 1969 and assumes that market capitalization as of the base date (4 January 1968) is 100 points. Since the TOPIX is adjusted for free floats and capitalization-weighted, the indicator is considered superior to the Nikkei 225.

The bubbles collapsed in the early 1990s after the Ministry of Finance had tightened regulations against banks to reduce their lending concentration to the real estate sector and the BOJ had tightened monetary policy. The resultant bursting of the bubble generated non-performing loans among financial institutions in Japan in the early 1990s. After that, financial conditions deteriorated and eventually caused a financial crisis starting in 1997, when several securities companies, banks, and insurance firms collapsed and there were runs on several banks. Under these circumstances, the BOJ twice bought banks' stocks for *financial system stability purposes*: in a first round in 2002–2004 (when Japan suffered a domestic banking crisis), followed by a second round in 2009–2010 (during and after the global financial crisis). The BOJ purchased stocks worth about ¥2 trillion in 2002–2004 and about ¥400 billion in 2009–2010.

Figure 1: Performance of the Nikkei 225 Stock Market Index (¥) and TOPIX Index



Source: Bloomberg.

2.2.1 The First Round of the Stock Purchasing Program (November 2002–September 2004)

In September 2002, the BOJ decided to purchase stocks directly from troubled banks to help them resolve their non-performing loan problems and to ensure the stability of the financial system. The purchase, which began in November 2002, was aimed, therefore, at *improving financial system stability rather than conducting monetary easing*. Mounting non-performing loan problems as a result of the bursting of the asset price bubble led to banks disposing of more than ¥90 trillion worth of assets. Nonetheless, new non-performing loans emerged as a result of banks' aggressive restructuring efforts, low interest margins (the gap between lending and deposit rates), and unrealized losses on the stocks held by banks. For the banking sector crisis to be resolved, it was necessary for banks to urgently evaluate non-performing loans more properly, dispose of them as soon as possible, and become more profitable. The BOJ took the view that the stocks held by banks had prevented banks from promoting these processes smoothly.

To reduce the constraint as soon as possible, the BOJ decided to purchase these stocks to reduce banks' holdings of listed stocks with a credit rating of BBB- and above at the market price. The BOJ set the maximum total amount of stocks it would purchase at ¥2 trillion and would do so until end of September 2003 (with a possible extension until end of September 2004 should the cumulative amount of purchased stocks not have reached ¥2 trillion by end of September 2003). The maximum amount of stocks purchased from an individual bank would not exceed the lesser of the bank's Tier I capital or ¥500 billion. The maximum number of shares per issuer would not exceed the lesser of 5% of all voting rights or specific amounts applied to the amount of turnover per year and issuers with different credit ratings.

In September 2003, this purchasing program was extended for another year until end of September 2004 and the maximum total amount of stocks to be purchased was expanded to ¥3 trillion. At the end of September 2004, the BOJ decided to discontinue its stock purchasing program, having purchased stocks worth ¥2,018 billion in total. The BOJ also confirmed its intention not to start selling the purchased stocks until the end of September 2007 at the earliest, as well as its plan to complete the disposal at stock exchanges by the end of September 2007. The disposal of stocks began in October 2007 according to plan.

2.2.2 The Second Round of the Stock Purchasing Program (February 2009–April 2010)

The disposal of stocks held by the BOJ was subsequently suspended in October 2008 due to unfavorable developments in financial markets at home and abroad caused by the global financial crisis. As a result, the amount of the BOJ's remaining stock holdings recorded ¥1,273 billion on a book value basis as of the end of September 2008.

In February 2009, the BOJ resumed its stock purchasing program in the midst of the deepening global financial crisis and associated stock market instability globally and in Japan. While massive losses stemming from non-performing loans were largely associated with financial institutions in the United States and Europe, Japanese financial institutions also faced massive realized and unrealized losses from their stock holdings, even though the amount of stock holdings had been reduced in the first half of the 2000s as pointed out above. Therefore, the BOJ decided to purchase stocks from banks to reduce their market risk associated with holdings of listed stocks with a rating of BBB- and above at the market price until the end of April 2010. The total amount of ¥1 trillion would be used for (1) banks with stock holdings exceeding 50% of their Tier 1 capital, (2) banks with total stock holdings exceeding ¥500 billion, or (3) banks adhering to a capital adequacy ratio based on international standards. The maximum amount of stocks purchased from an individual bank would not exceed ¥250 billion. The disposal of the purchased stocks would not be resumed until the end of March 2012 (with full disposal of all the stocks to be completed by the end of September 2017).

Like the first round of stock purchases, this action was aimed at *stabilizing the financial system, not at conducting monetary easing*. The purchasing continued until April 2010 and the total amount of purchases amounted to ¥388 billion. In April 2016, the BOJ finally decided to begin selling the purchased stocks of about ¥3 trillion over the next 10 years at about ¥300 billion annually on a mark-to-market value basis as of the end of November 2015. This disposal is associated with a roughly equivalent increase in

ETF purchases as part of an initiative to promote firms' investment in R&D and human capital, as mentioned below. Hence, this disposal would roughly maintain the neutral impact on stock prices.

2.3 ETF Purchases as a Monetary Easing Tool since 2010

The idea of purchasing the ETFs had been developed and announced in October 2010 under the previous Governor Shirakawa as part of monetary easing. The ETFs trace the Nikkei 225 and the TOPIX, meaning that this amounts to an indirect purchasing of stocks. The ETF purchases were *part of a monetary easing policy package* called *Comprehensive Monetary Easing (CME)* – unconventional monetary easing conducted in the face of the virtually zero lower bound. The main element of CME was to purchase various financial assets under the Asset Purchase Program. The main assets purchased were Japanese government bonds (JGBs) with remaining maturity of up to 3 years -- to exert downward pressure on relatively longer-term interest rates. The BOJ also aimed at *reducing risk premia* through purchasing risk assets such as the ETFs, commercial paper, corporate bonds, and Japan real estate investment trusts (J-REITs).

Lowering risk premia was expected to support risk asset markets and induce a portfolio rebalancing effect. And a wealth effect was envisaged too. Especially, the BOJ hoped to generate "healthy" risk-taking behavior among individuals, not just among firms and financial institutions, as risk money (such as investment in stocks and real estate and foreign investment) could energize the Japanese economy and encourage individual investors to diversify their financial assets. Traditionally, individuals have held over a half of their financial assets in the form of cash and deposits in Japan. They are highly risk-averse, as only 10% has been invested in stocks, compared with 36% in the United States and 18% in the Eurozone, according to the BOJ (2017). Firms also hold about ¥274 trillion in the form of cash and deposits. Banks hold substantial amounts in JGBs to fill the growing gap between deposits and loans extended to the private sector. Given this background, the BOJ decided to purchase ETFs at market price as trust property through trust banks, which were designated by the BOJ as trustees until the end of December 2011.

The BOJ had initially decided that the maximum outstanding amount for ETFs was to be about ¥450 billion. In case of selling the purchased ETFs, the BOJ had set some basic principles, i.e. to avoid, as much as possible, incurring losses and destabilizing the financial markets. ETFs purchases were extended and increased thereafter. The holdings of ETFs had reached ¥1.5 trillion by the end of March 2013 before the new Quantitative and Qualitative Monetary Easing (QQE) was implemented under the newly appointed Governor Kuroda. Thus, the amount of ETF purchases under the CME was limited.

2.3.1 Limited Effectiveness of CME and Stock Prices

The effectiveness of CME on macroeconomic performance and financial markets seemed limited. JGB yields on 1-year, 2-year, and 3-year JGBs had dropped from 0.11%, 0.12%, and 0.13%, respectively, at the end of September 2010 to 0.05%, 0.057%, and 0.05%, respectively, by the end of March 2013. Moreover, the JGB purchases with maturity of up to 3 years induced longer-term yields, as demonstrated by a drop in the 10-year yield from 0.94% at the end of September 2010 to 0.56% by the end of March 2013. Nonetheless, mild deflation continued persistently and the prospect of achieving 2% inflation was considered most unlikely by economists and market participants.

The yen continued to appreciate against major currencies as a safe haven currency. It appreciated against the US dollar from around ¥84 in September 2010 to around ¥76 immediately after the great East Japan earthquake and tsunami of 11 March 2011. This led to coordinated intervention in the foreign exchange market on 18–19 March 2011 by the Minister of Finance of Japan with the Bank of England, the Federal Reserve, the Bank of Canada, and the Swiss National Bank, with the total amount of intervention reaching about ¥800 billion (of which Japan contributed about ¥693 billion or 87% of the total amount). The yen again appreciated to around ¥76 on 4 August 2011, which led to another intervention in the foreign exchange market, but this time it was conducted solely by the Ministry of Finance of Japan on a massive scale of ¥4.6 trillion. However, the yen continued to move below ¥80, which led to further interventions on 31 October 2011 with an amount of ¥8.7 trillion, and on 1–4 November 2011 with an amount of around ¥1 trillion. After that, the Ministry of Finance stopped intervening in the foreign exchange market. The criticism by the public and markets against the BOJ strengthened, as the BOJ failed to provide sufficient monetary easing, given the overvaluation of the yen. The yen remained at around or below ¥80 until October 2012.

Similarly, Japanese stock prices remained stagnant for most of the same period, as shown in Figure 1. The Nikkei 225 rose from around ¥9,367 at the end of November 2010 to over ¥10,000 in December 2010; from March 2011, it remained mostly below ¥10,000. The Tokyo Stock Price Index (TOPIX) was about 830 points at the end of September 2010 and remained at this level after October 2010 until it dropped to below 800 points from August 2012 to November 2012. Therefore, a decline in JGB yields under CME generated an accommodative monetary environment, but this was somewhat offset by the yen's sharp and continuous appreciation and sluggish stock prices until the end of 2012.

From late 2012, however, the financial markets showed a remarkable turnaround in anticipation of massive monetary easing to be introduced by the next BOJ governor appointed by Prime Minister Abe. The yen began to depreciate vis-à-vis the US dollar to around ¥84 in December 2012 and ¥95 in March 2013, just before the introduction of QQE. The yen's nominal effective exchange rate also depreciated. Moreover, stock prices began to rise from around ¥9,500 to around ¥12,400 over the same period, and the TOPIX from around 780 points to around 1,000 points.

2.4 Stock Purchases by the Hong Kong Monetary Authority in 1998

A well-known case of a central bank's purchase of stocks is the intervention by the Hong Kong Monetary Authority (HKMA) in 1998, when it intervened simultaneously in the foreign exchange, stock and stock futures, and interbank markets. The stock purchase was conducted only for a very short period (about two weeks). Thus, this purchase program *should not be regarded as unconventional monetary easing* as had been undertaken under QQE by the BOJ led by Governor Kuroda, due to the differences in the period of intervention (about 2 weeks in Hong Kong, China vs. more than 5 years in Japan) and the objectives (fighting against short-term oriented speculative activities in Hong Kong, China vs. achieving the 2% price stability target in Japan).

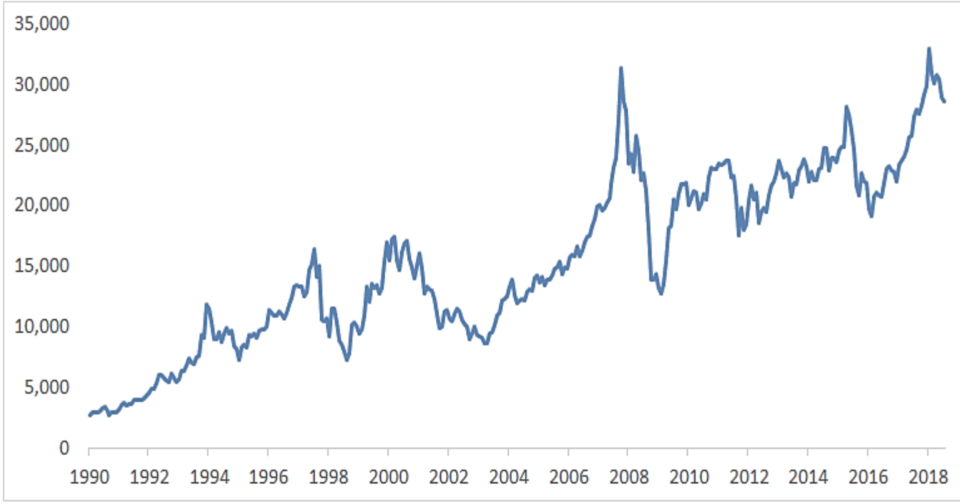
The Government of the Hong Kong Special Administrative Region of the People's Republic of Chinadecided to intervene in the stock market in the face of speculative attacks over the Hong Kong dollar fixed exchange rate policy. This policy was meant to stabilize the Hong Kong dollar against the US dollar under the Linked Exchange Rate System—the so-called currency board system where the monetary base is fully backed up with reserves denominated in the US dollar. Speculators led by foreign hedge funds adopted a "double-market play" strategy, by which they pre-funded themselves with Hong Kong dollars and then used the cash to build up large short positions in the cash and future stock markets and simultaneously sold the Hong Kong dollar in large quantities to drive up inter-bank interest rates. Although the Hang Seng Index had already dropped sharply from about 16,000 in August 1997 to about 8,000 in August 1998, a further drop was anticipated by these speculative short selling activities—even though the price-earnings ratio recorded just 8 times at about 8,000, suggesting that stock prices had been substantially low. The Government of the Hong Kong Special Administrative Region of the People's Republic of China became concerned about potential losses to shareholders in the face of a sharp fall in the stock market and weakening public and market confidence about the sustainability of the exchange rate policy.

The Government of the Hong Kong Special Administrative Region of the People's Republic of China considered the market conditions to be market failure and therefore intervening in the stock market could be justified. In response, HKMA intervened in the stock market on 14 August 1998 to purchase stocks listed on the Hong Kong Stock Exchange using foreign reserves as sources of funding to counter the speculative attacks. The stock market intervention was completed very shortly by the end of August 1998 with a total of about HK$120 billion spent by the HKMA to purchase stocks. The HKMA stressed that the intervention was an extraordinary measure taken at an extraordinary time and thus would arrange to dispose of stocks quickly. Moreover, the Government of the Hong Kong Special Administrative Region of the People's Republic of Chinapromised that it would not intervene in the daily operations of the listed companies concerned through its shareholdings. The scale of intervention had been sufficient to terminate the speculative attacks by the end of August 1998, as the Hang Seng index had risen from 6,700 just before the intervention to 7,800 points (Chan 2015).

In November 1999, the HKMA adopted an exit policy when stock prices were rising by launching the Tracker Fund, which is an open-ended exchange-traded fund, and reselling HK$33.3 billion worth of stocks to 180,000 investors (Figure 2).In the subsequent three years until the end of 2012, during which stock prices were more or less on a rising trend, the HKMA continued to recoup over HK$100 billion through the same mechanism.The disposal of the stocks generated a profit of nearly HK$100 billion at prevailing stock prices for the HKMA at that time because of higher stock prices (Figure 2). HKMA's successful exit from the stock purchase program could be attributed to the short-lived nature of the purchasing intervention in the stock market, which meant it generated little distortion to stock prices itself. Moreover, favorable stock market conditions enabled the HKMA to conduct a smooth exit policy and generate a profit.

HKMA's intervention in the stock markets was extremely short-lived and its main purpose was to eliminate speculative attacks targeting the fixed exchange rate regime and the associated automatic adjustment system. Thus, the measure was significantly different from the measures taken by the BOJ, in the case of both purchases of stocks from financial institutions and ETF purchases.

Figure 2: Performance of the Hong Kong Hang Seng Index



Note: The Hang Seng Index is a market capitalization-weighted stock market index in Hong Kong, China.
Source: Bloomberg.

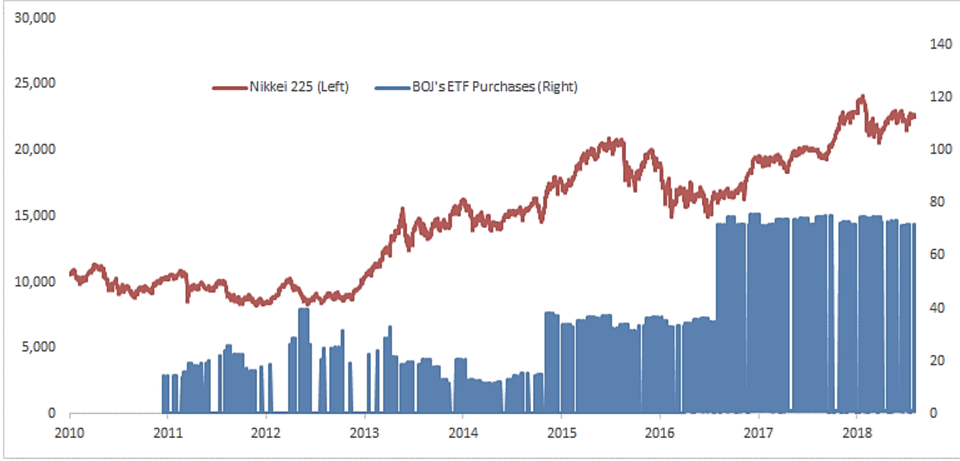
3. AN UNPRECEDENTED SCALE OF ETF PURCHASES SINCE APRIL 2013

3.1 Doubling ETF Purchases to Achieve 2% Inflation in about 2 Years

In March 2013, Haruhiko Kuroda was appointed as the new governor and immediately launched massive monetary easing to achieve the 2% price stability target in April 2013. QQE was introduced as an extension of the previous CME, with an increase in the scale of asset purchases and a lengthening of the maturity of JGBs to the maximum 40 years. The yearly increase in the amount of JGBs outstanding held by the BOJ was initially set at about ¥50 trillion, and then expanded to about ¥80 trillion in October 2014. The holdings of commercial papers and corporate bonds were maintained at about ¥2.2 trillion and ¥3.2 trillion by adopting reinvestment strategies—mainly because of the small size of markets and high demand for these assets. Thus, the BOJ increased the purchases of risk assets through ETFs and J-REITs. Given their greater market size, ETF purchases are more important than REIT purchases.

The BOJ decided that the amounts of ETF purchases would be expanded annually—initially by ¥1 trillion in April 2013 (Figure 3). To demonstrate its intention to achieve 2% inflation at the earliest possible time, with a time horizon of about 2 years, the BOJ announced that it would double the monetary base and the amounts outstanding of JGBs and ETFs in 2 years under QQE – from the level prevailing prior to QQE (end of December 2012). In the case of ETFs, the amount of ETFs outstanding was projected to double from the end of 2012 to the end of 2014 with the expansion by about ¥1 trillion per year for 2 years. The BOJ used the number “2” a great deal—the 2% price stability target, a time horizon of about 2 years, doubling the monetary base and the amounts outstanding of JGBs and ETFs, and doubling the average remaining maturity of JGB purchases. The BOJ did so to send a clear message about the new framework and its strong determination to achieve the 2% target as soon as possible.

Figure 3: BOJ's Purchases of ETFs(Billions of ¥) **and Nikkei 225** (¥)



BOJ = Bank of Japan; ETFs = exchange-traded funds.

Note: BOJ's purchases are on a daily basis.

Source: Bank of Japan and Bloomberg.

As the economy began to slow, partly due to a consumption tax hike from 5% to 8% in April 2014, and inflation expectations began to decline in early 2014, the BOJ decided to expand asset purchases. To send a clear message about the boldness of QQE expansion, the BOJ intentionally used the key number "3" this time, compared with the key number "2" when QQE was launched. For example, the BOJ emphasized the annual increase in its JGB holdings by "+30 trillion yen" (from about ¥50 trillion to about ¥80 trillion); the increase in the average remaining maturity target of JGB purchases by "+3 years" (from around 6–8 years to 7–10 years); the pace of purchases of ETFs and J-REITs "tripled" from ¥1 trillion to ¥3 trillion and from ¥30 billion to ¥90 billion, respectively.

In November 2014, the BOJ also included the ETFs that track the JPX–Nikkei Index 400 as ETFs eligible for purchase.

3.2 Initiative to Promote Firms' Investment in R&D and Human Capital

In December 2015, the BOJ established a new program for purchasing ETFs comprising stocks issued by firms that are proactively investing in physical and human capital at an annual pace of about ¥300 billion. In March 2016, the BOJ provided details on ETFs to Support Firms Proactively Investing in Physical and Human Capital. The new ETFs should have portfolios comprising stocks of firms whose (1) capital expenditure or research and development (R&D) expenditure shows an upward trend (investment in physical capital); (2) expenditure on human capital shows an upward trend as demonstrated by indicators including the number of employees, wages, salary expenses, spending on career development, etc. (investment in human capital); and (3) investment in physical and human capital is reasonably considered to enhance their growth potential through effective corporate governance, from the perspective of the firms' sales, profitability, productivity, corporate value, or other indicators (growth potential). This new program started in April 2016.

It should be noted that the amount of ¥300 billion did not increase the BOJ's aggregated holdings of stocks and ETFs. This is because the BOJ decided simultaneously to sell existing holdings of stocks purchased directly from commercial financial institutions for the above-mentioned financial stability purposes. In April 2016, the BOJ decided to begin selling the purchased stocks over the next 10 years at an amount of about ¥300 billion annually (based on the mark-to-market value at the end of November 2015). Since the annual sales amount was roughly the same as the annual ETF purchases of around ¥300 billion, these operations offset each other.

3.3 Expanding the Annual Pace of ETF Purchases and Changing the Composition of the Purchase Program

In July 2016, the BOJ decided to increase ETF purchases such that their amount outstanding would increase at an annual pace of about ¥6 trillion—almost doubling the previous pace of about ¥3.3 trillion. This was to enhance monetary easing against uncertainties related to the United Kingdom's vote to leave the European Union and a slowdown in emerging economies and associated volatile developments in global financial markets. Rather than deepening the negative interest rate adopted in January 2016, the BOJ chose to increase the amount of ETF purchases.

In September 2016, moreover, the BOJ decided to modify the composition of ETF purchases. This was not done to increase monetary easing, but rather to reduce the distortions created in the stock market as a result of massive purchases of ETFs that trace the Nikkei 225 Stock Average. Out of an annual increase of ETF purchases of ¥5.7 trillion—excluding the ¥300 billion allocated for ETFs to Support Firms Proactively Investing in Physical and Human Capital from ¥6 trillion—the BOJ decided to increase TOPIX-related ETFs and reduce Nikkei 225-related ETFs. Before this adjustment was made, the amount of ETF purchases for each index was roughly proportionate to the total market value of that ETF issued; thus, the amount of ¥5.7 trillion was mostly split between the TOPIX and the Nikkei 225 Stock Average, as the JPX–Nikkei 400 market is relatively small.

This modification was in reaction to growing criticisms from market participants since early 2016 that such a composition had distorted stock market prices. Specifically, the BOJ's proportionate purchase practice had tended to favor stocks included in the price-weighted Nikkei 225 Stock Average as compared with the market value-weighted TOPIX. The TOPIX covers 2,106 firms listed in the Tokyo Stock Exchange First Section, whereas the Nikkei 225 covers only 225 listed firms. As some small-cap firms are included in the Nikkei 225 with higher weights due to their relatively higher stock prices, the continuation of the BOJ's purchases tended to generate overvaluation of such stocks. A famous example was Fast Retailing Co., owner of the well-known apparel chain Uniqlo, whose weight accounted for around 8% of the Nikkei 225 Stock Average while accounting for only 0.3% of the TOPIX at that time. As a result, Fast Retailing Co. had benefited substantially from the BOJ's purchase of the Nikkei 225. The BOJ already owned about half of Fast Retailing Co.'s free floating stocks, which were expected to rise to over 60% by the end of December 2016.

In response, the BOJ decided to reduce ETF purchases in the Nikkei 225 Stock Average and instead increase ETF purchases tracking the TOPIX. Out of ¥5.7 trillion, the BOJ would allocate ¥2.7 trillion annually to TOPIX ETFs, while the remaining ¥3 trillion would be spread out between TOPIX, the Nikkei 225 Stock Average, and the JPX–Nikkei 400 ETFs—roughly in proportion to the total market value of each ETF issued. Consequently, the BOJ would allocate about 70% of the ¥5.7 trillion to TOPIX ETF.

3.4 Introduction of Flexibility in the Purchasing Program and a Further Change in the Composition

The BOJ made two adjustments to ETF purchases in July 2018. One was to make monthly adjustment more flexible by purchasing more when the risk premium rises while keeping an annual purchase pace of about ¥6 trillion. This means that the BOJ would purchase ETFs more flexibly by buying more when sharp falls occur and less when mild falls occur. While the BOJ stressed that the annual purchase amount of about ¥6 trillion is to be maintained, this may lead to "stealth tapering", as is the case with JGBs—reducing the annual pace of JGB purchases to well below ¥80 trillion while specifying the continuation of about ¥80 trillion in the Statement on Monetary Policy. This could be a step toward normalization (Shirai 2018b).

Another adjustment was to change the composition of ETF purchasing again. This is a good move because the continuation of Nikkei 225-related ETFs would distort stock prices more heavily than that of TOPIX-related ETFs, as pointed out above. The stock prices of a number of small-cap firms among the Nikkei 225 firms could be over-priced, as the BOJ has already become the major investor in these stocks, with fewer floating stocks available in the market. Before the adjustment, TOPIX-related ETFs, Nikkei 225-related ETFs, and JPX Nikkei Index 400 based on the purchased price (based on the market price) had accounted for about 57% (54%), 37% (41%), and 6% (5%) of the total outstanding amount of about ¥21 trillion (about ¥27 trillion) held by the BOJ, respectively, as of August 2018. For new purchases, the BOJ would allocate ¥4.2 trillion annually to TOPIX ETFs while the remaining ¥1.5 trillion would be spread out between TOPIX, Nikkei 225 Stock Average, and JPX–Nikkei 400 ETFs—roughly in proportion to the total market value of each ETF issued. Consequently, the BOJ would allocate over 80% of the ¥5.7 trillion to TOPIX ETF. This would enable the BOJ to continue the ETF purchases for longer.

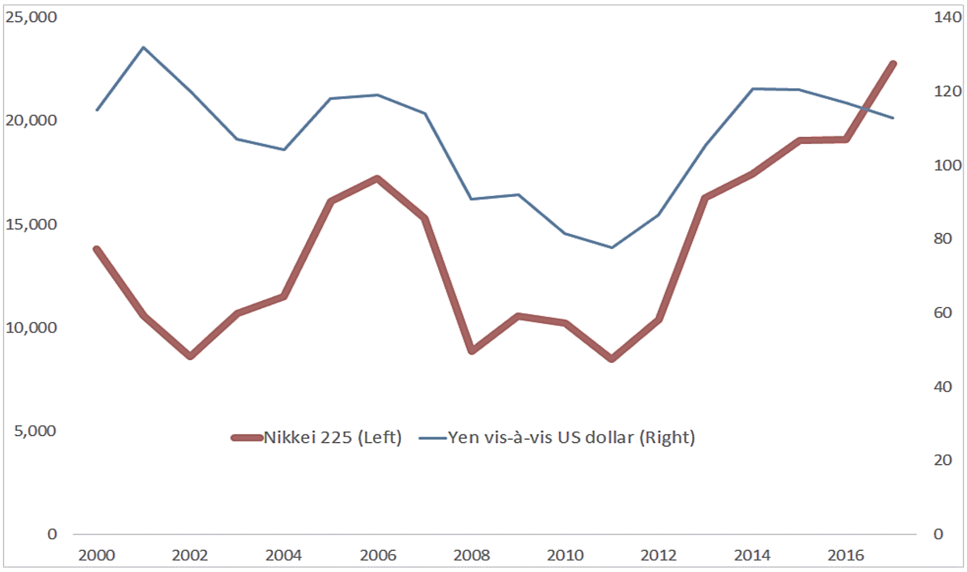
4. EFFECTS OF QQE AND ETF PURCHASES ON STOCK MARKETS

4.1 Stock Market Performance during 2012–2018

Since late 2012, around the time when Shinzo Abe became Prime Minister, stock prices began to rise rapidly and the yen depreciated sharply (Figure 4). The Nikkei 225 (and the TOPIX) rose from around ¥9,000–9,500 (¥700–800) between June and November 2012 to above ¥10,000 in late December 2012, as short-term oriented foreign investors held the view that the new government led by the Liberal Democratic Party leader Abe would adopt comprehensive economic strategies, including massive monetary easing to be initiated by the BOJ's incoming new governor. Massive monetary easing has clearly contributed to an improvement in stock indices as well as the sentiment of the corporate sector and existing investors.

There is generally a positive correlation between the exchange rate and stock prices, and the correlation became stronger from late 2012 to 2015. This was mainly due to the yen's depreciation, contributing to higher yen values of foreign profits earned by Japanese multinational firms. Given that those multinational firms tend to be listed on the stock market, the higher consolidated profits led to higher stock prices.

Figure 4: The Yen vis-à-vis US Dollar and Nikkei 225 (¥)



Source: Bloomberg; Bank of Japan.

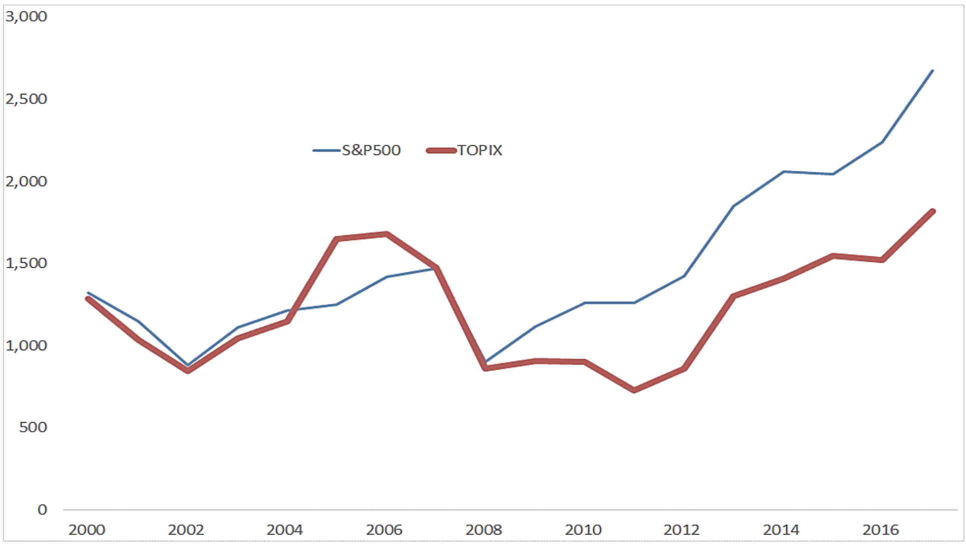
4.1.1 Fall in Stock Prices after the Negative Interest Rate and Recovery Supported by the US Presidential Election

Stock prices dropped in 2016 when the yen appreciated sharply after the adoption of a negative interest rate. Doubling the annual pace of ETF purchasing to about ¥6 trillion in July 2016 and adopting yield curve control in September 2016 resulted in neither a sharp appreciation of the yen nor a stock price plunge. This suggests that while the negative interest rate policy adopted earlier in January 2016 had led to a sharp appreciation of the yen and a stock price plunge, expanding the ETF purchases and adopting the yield curve control did not disappoint foreign investors—even though the yield curve actually rose and steepened. At the same time, however, it did not generate strong positive momentum in the foreign exchange and stock markets, as demonstrated by the limited impact on the depreciation of the yen and the stock price hike.

Yield curve control appears to have become effective after the US presidential election of 8 November 2016 and the resultant rapid rise in stock prices and yields in the United States. Longer-term yields in the US rose rapidly in the immediate aftermath of Donald Trump's surprise victory in the US presidential election; the 10-year yield, for example, rose by about 60 basis points, from around 1.8% on 7 November to around 2.4% by the end of the same month. This move reflected the anticipation of higher economic growth and inflation, mainly driven by massive tax cuts, infrastructure investment, and deregulations promised during the election campaign. An expectation of the imposition of higher tariffs under expected new anti-global trade regimes and stricter immigration controls further added to the higher inflation outlook. The yen began to depreciate sharply from below ¥105 vis-à-vis the US dollar to over ¥117 in December 2016. This was because the US presidential election and the anticipated tighter monetary policy by the Federal Reserve, together with yield curve control, led to a rapid expansion of the interest rate differential between the United States and Japan. Together with a depreciation of the yen, stock prices rose from around ¥17,000 to over ¥19,000 in December 2016; the TOPIX rose from around 1,300 points to over 1,500 points over the same period.

Japanese stock prices are not only positively associated with the dollar/yen exchange rate, but also closely associated with US stock prices (Figure 5). After the Lehman Shock,US stock prices showed strong rising trends and recorded their highest levels ever. And after the US presidential election, stock prices strengthened again. The strong US stock price performance contributed to higher global stock prices, including Japanese stock prices, throughout 2017.

Figure 5: The Performance of TOPIX and S&P 500



Source: Bloomberg.

4.1.2 Suspension of Rising Stock Price Trends since Early 2018

In early 2018, when the US 10-year yield rose from around 2.4% to around 3% as a result of the release of strong wage data, US stock prices stopped rising. Since then, US stock prices and global stock prices have fluctuated and have not recovered to their recent highs. While the S&P 500 managed to reach its highest level in July 2018, the Dow Industrial Average has not managed to reach its highest level recorded in January 2018 again.

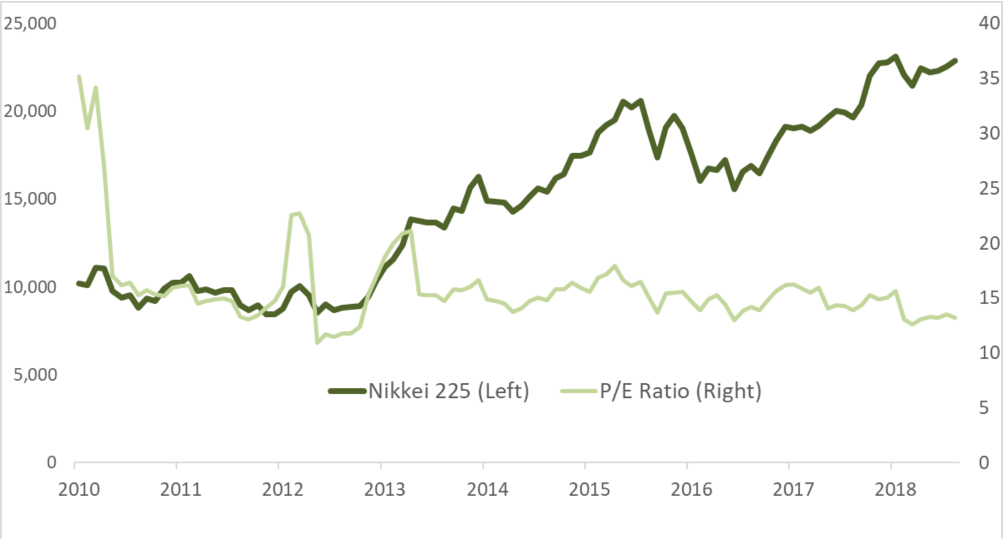
Favorable global stock market trends, including in Japan, have come to an end for several reasons. First, the normalization of monetary policy by the Federal Reserve has led to capital outflows and the resultant sharp depreciation of exchange rates in emerging economies. In response, many central banks in these emerging economies have raised their policy rates. Second, the intensification of trade protectionism led by the US government, together with growing trade conflicts between the United States and the People’s Republic of China, have increased concerns over global growth prospects. Third, the rising oil price since late 2017 and a further hike after the US withdrawal from the nuclear deal between Iran and six other countries and the resultant sanctions against Iran have amplified concerns that economic growth in oil-importing economies may slow.

The Nikkei 225 achieved its recent maximum level of ¥24,124 on 23 January 2018, but since then has been fluctuating at around ¥22,000 and it has never reached its previous maximum level of ¥38,915 recorded on 29 December 1989. Similarly, the TOPIX reached its recent maximum level of 1,911 points on the same date, 23 January 2018. Since then, it has fluctuated at around 1,700 points, so it has never regained its previous maximum level of 2,884 points recorded on 18 December 1989.

4.2 Why Has Japan's P/E Ratio Declined Recently?

It is often pointed out that the peak of the stock price bubble in Japan in late-December 1989 was excessive because the Price–Earnings Ratio (P/E Ratio) was about 80 times, for example, that of the Nikkei 225. The P/E ratio of the Nikkei 225 has since 2014 fluctuated within a range of 14–16 times—the level generally regarded as appropriate. Nonetheless, the fact that stock prices have not so far regained their maximum level suggests that the profits of listed firms have not been strong enough to reach the maximum stock prices recorded in 1989 after the bubble burst. It also gives investors the impression that capital gains are unlikely to be large, which may deter new investors.

Figure 6: Nikkei 225 (¥) and P/E Ratio



P/E Ratio = Price–Earnings Ratio.

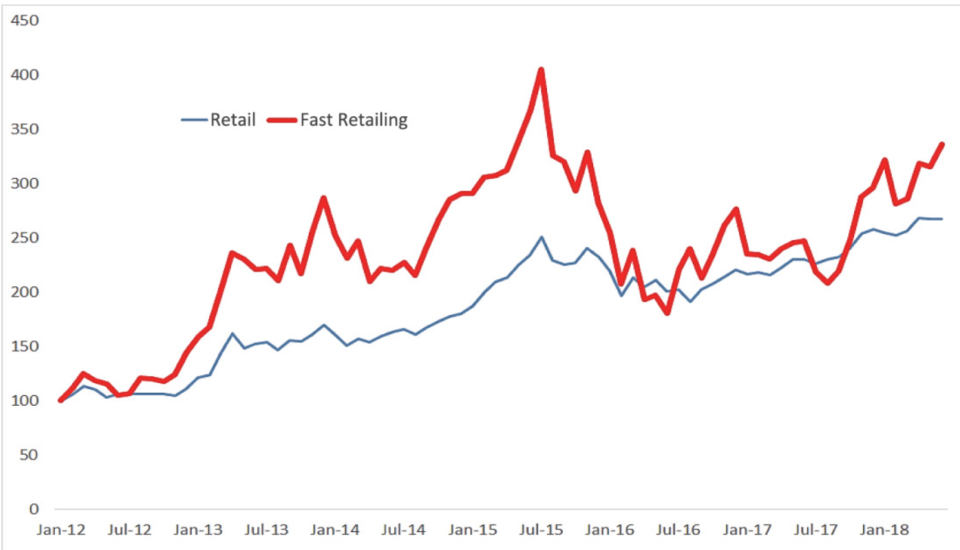
Source: Bloomberg.

In addition, the P/E ratio based on the Nikkei 225 has declined (to about 13.5 times as of early August 2018) and current earnings per share (EPS) have risen steadily since 2017 (Figure 6). As a result, the gap between the Nikkei 225 and P/E ratio has widened. A similar pattern is observed in the case of the TOPIX. These features indicate that stock prices have not caught up with current favorable corporate profits. On the one hand, this could indicate that *Japanese stock prices have become somewhat underpriced* despite the BOJ's monetary easing including ETF purchases. On the other hand, this could be associated with market participants' negative outlook on future corporate profits as compared with current profits. Corporate profits began to rise steadily in 2013, reflecting the yen's depreciation and the associated higher yen-value of foreign profits, public investment mainly related to the 2020 Tokyo Olympic Games, real estate development activities, and lower oil prices since fiscal year 2014 (Figure 6). Corporate profits recorded their highest level in fiscal year 2017, although the pace of increase relative to the previous year moderated. The level of corporate profits for fiscal year 2018 is widely expected to be lower than that of fiscal year 2017. Thus, the recent sluggish P/E ratio may reflect such an expected slowdown in corporate profits. Some market participants hold the view that the BOJ's expected unwinding of ETF purchases—expected to begin with a decline in the amount of annual purchases from about ¥6 trillion—may have discouraged active investment.

4.3 Greater Impact on the Stock Prices of Small-Cap Companies

The BOJ's holdings of ETFs recorded about ¥21 trillion on a book value basis as of August 2018. The BOJ could be the third largest shareholder of listed shares after the Government Pension Investment Funds (GPIF) and Blackrock, which hold Japanese stocks worth about ¥41 trillion and ¥30 trillion, respectively, as of June 2018 . GPIF manages about ¥163 trillion of the Reserve Funds of the Government Pension Plans, making it one of the largest sovereign wealth funds in the world. Out of ¥21 trillion held by the BOJ, about ¥12 trillion and ¥7.8 trillion are estimated to have been allocated to TOPIX-related ETFs and Nikkei 225-related ETFs, respectively. Some concerns have been raised by market participants over the BOJ's substantial purchases of ETFs, since the central bank has become one of the largest shareholders of listed stocks on a per-investor basis, with no voting rights being exercised. As the BOJ does not exercise voting rights, the presence of a public entity as the major silent shareholder may delay Japan's much needed corporate governance reform. Also, concerns continue to be raised with regard to a possible overvaluation of the stocks of some small-cap firms, particularly those included in the Nikkei 225.

Figure 7: Stock Prices of Fast Retailing Co. and Retail Sector



Source: Bloomberg.

Figure 7 depicts the movements in the stock prices of Fast Retailing Co. as well as the retail sector (to which Fast Retailing Co. belongs). The figure shows that the stock price of Fast Retailing Co. has been higher than the retail sector trend since 2013, especially when the retail sector stock prices (also the overall stock prices) have shown a rising trend. Moreover, the P/E ratio of Fast Retailing Co. is around 38 times as of August 2018—much higher than the 13.5 times in the case of the Nikkei 225 and 17 times in the case of Tokyo Stock Exchange Section 1. Such seemingly overpriced stocks may face a sharper fall when the BOJ unwinds its monetary easing stance. While there may be other firm-specific factors contributing to this gap, the stock price could be overpriced partly as a result of the BOJ's purchases of Nikkei 225-related ETFs. The difference between the weight in the Nikkei 225 (7.5%) and the TOPIX (0.3%) is one of the highest among other stocks. This indicates that the BOJ has been purchasing this stock heavily as compared with the outstanding number of stocks issued.

Nikkei Newspaper reported on 17 June 2018 that the BOJ has become one of the top 10 largest shareholders in about 40% of listed firms as of the end of March 2018. Of these, the BOJ has become the major shareholder in five listed companies including Fast Retailing Co., when only floating shares are taken into account. For example, the BOJ holds about 17.5% of the total number of shares issued, but this ratio becomes much higher, namely 70%, in terms of floating shares.

In response, the BOJ attempted to improve the situation by buying more TOPIX-related ETFs and fewer Nikkei 225-related ETFs in July 2018, as mentioned above. This had been very much expected by market participants. Nonetheless, the continuation of ETF purchases of about ¥6 trillion annually is likely to intensify stress in the stock market, since price distortions would be likely to continue and intensify not only for small-cap firms included in the Nikkei 225 but for all stocks included in the TOPIX. The longer the BOJ continues with the ETF purchases, the more turbulence the stock market is likely to experience when the BOJ makes a major step toward normalization. This might make it much harder for the BOJ to adopt a smooth exit strategy. The dilemma between achieving the 2% price stability target and coping with various side effects may become amplified.

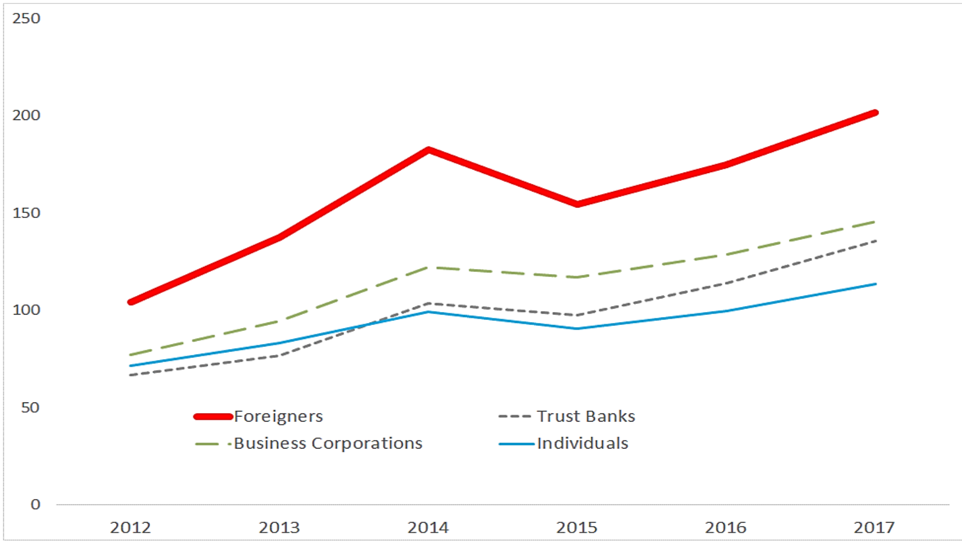
4.4 Stock Market Dominated by Foreign Investors as a Group

Foreign investors as a group were the largest shareholders of listed firms including the 1st, 2nd, Mothers, and JASDAQ Sections. They hold about ¥200 trillion on a market value basis or 30% of the total as of fiscal year 2017. Business corporations (non-financial firms) were the second largest investors as a group, with ¥146 trillion or 22% of the total. The third largest investors were "trust banks", with ¥136 trillion or 20.4% of the total. Trust banks' stockholdings include stocks held by the BOJ, GPIF, other pension funds, and investment trusts. Individuals were the fourth largest investors as a group, with stock holdings of ¥113 trillion or 17% of the total (Figure 8).

4.4.1 Foreign Investors' Presence as the Largest Shareholder

In addition, foreign investors increased their presence over the period between fiscal year 2012 and fiscal year 2017, with the ratio of their stock holdings to the total market value of stocks rising from 28.5% in fiscal year 2012 to 30% in fiscal year 2017. Next, business corporations and trust banks also increased their stockholding ratios over the same period from 21% to 22% and from 18% to 20%, respectively. Stockholdings of business corporations include own stocks purchased through a buyback strategy. An increase in the ratio of trust banks reflects an increase in the BOJ's ETF purchase as well as the 2014 reform of GPIF with regard to the basic portfolio guidance. The GPIF reform increased stockholdings and reduced holdings of domestic bonds including JGBs. With effect from the end of October 2014, the allocation of domestic bonds dropped from 60% to 35% (with a permissible range rising from ±8% to ±10%), while the allocation of both domestic stocks and foreign stocks rose from 12% to 25%, respectively (with a permissible range rising from ±6% to ±9% for domestic stocks and from ±5% to ±8% for foreign stocks). The allocation of foreign bonds also grew from 11% to 15% (with a permissible range declining from ±5% to ±4%). Some of the other public pension funds changed their asset portfolio in line with the GPIF reform.

Figure 8: Stockholdings at Market Value (¥ Trillion)



Source: Japan Exchange Group.

By contrast, individuals as a group were not very enthusiastic investors over the same period, as their share dropped from 19.5% to 17% in spite of an increase in the number of individual investors from about 46 million in fiscal year 2012 to 61 million in fiscal year 2017. The increase in the number of individual investors is attributable to a series of government tax exemption initiatives (with regard to a 20% levy on income from dividends and capital gains) to encourage individuals to invest in stocks and diversify their financial assets. The initiatives include (1) *Nippon Individual Savings Account (NISA)*, adopted in 2014, which enables individuals of at least 20 years of age to open a NISA account (for a maximum investment of ¥1.2 million a year, up to ¥6 million for 5 years), (2) Junior NISA, adopted in April 2016, which enables individuals under 20 years of age to open a Junior NISA account (for a maximum investment of ¥800,000 a year, up to ¥4 million for 5 years), and (3) Installment-type NISA, adopted in 2018, for a maximum investment of ¥400,000 a year, up to ¥8 million for 20 years. In addition, the government promoted an individual-type *Defined Contribution Pension Plan (iDeCo)* or a private-pension plan with all contributions being tax-deductible for virtually all individuals aged 20–59. Notwithstanding these measures, together with the BOJ's monetary easing and GPIF reform, individuals have still not become enthusiastic about investing in Japanese stocks.

4.4.2 Foreign Investors Have Become an Active Trading Player

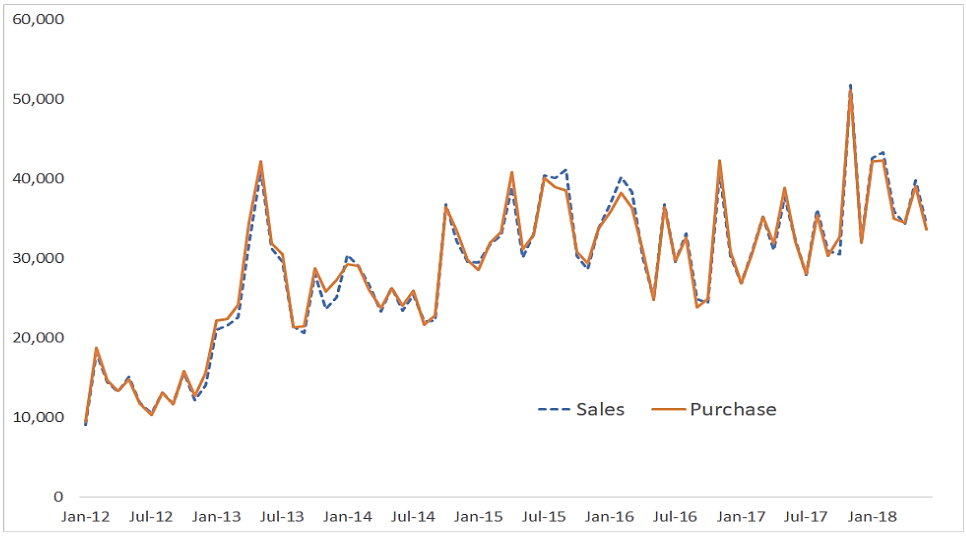
In addition to being the largest group of shareholders, foreign investors have been the most active players in both selling and purchasing transactions. They accounted for over 60% of the total value of selling and purchasing transactions as of June 2018, respectively—both rising moderately from below 60% in 2012. The next largest selling and purchasing amount was achieved by individual investors. However, the ratio dropped from around 15–19% in 2012 to around 15% in June 2018 in terms of both selling and purchasing transactions, after a temporary increase to over 20% each in 2013, when strong rising stock prices and the yen's depreciation had generated momentum.

Transactions by trust banks—with the third largest selling and purchasing values—were much smaller than individuals, despite their large-scale holdings of stocks. This could suggest that most of the stocks managed by trust banks are maintained without active trading—a buy and hold approach. Their selling and purchasing transaction values have remained stable after a moderate increase in 2013. Meanwhile, investment trusts increased the values of selling and purchasing transactions over time, since some individuals increased investment in stocks directly through investment trusts. Nevertheless, these values of selling and purchasing transactions were much smaller than those of individuals.

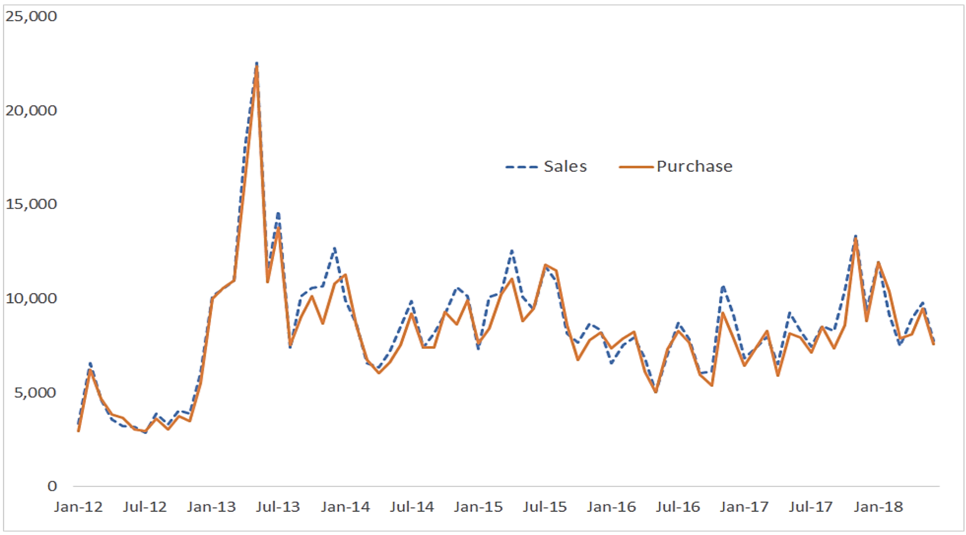
Figure 9a and Figure 9b show the values of the selling and purchasing transactions of the two largest trading players—foreign investors and individual investors. The figures show that foreign investors were dominant and actively increased both selling and purchasing transactions over time. This is in contrast with individual investors, who remained inactive except in 2013.

Figure 9: Selling and Purchasing Transactions (¥ Billion)

(1) Foreign Investors



(2) Individual Investors



Source: Japan Exchange Group.

5. CONCLUSIONS

This paper highlighted ETF purchases conducted by the BOJ under the current monetary easing policy. This policy is unprecedented among major central banks in terms of its scale and duration. Stock prices began to rise from late-2012 together with a sharp depreciation of the yen in anticipation of the BOJ's aggressive monetary easing. Stock prices rose due to various domestic and foreign factors. Domestic factors include the BOJ's monetary easing (through a decline in short- and long-term interest rates, ETF purchases, and depreciation of the yen), as well as favorable corporate profits, which are also partially supported by the BOJ's policy. Foreign factors include higher US stock prices and the appreciation of the US dollar against major currencies.

The purpose of the BOJ's monetary easing was to increase aggregate demand and thus inflation (and inflation expectations), as well as to promote portfolio rebalancing among individuals and other entities. Regarding individuals, their outstanding amount of stockholdings rose only moderately and lagged behind foreign investors. In addition, the value of transactions in the stock market by individual investors did not show a rising trend. In other words, individuals remained largely risk-averse and did not actively rebalance their portfolios in favor of risk assets. This was despite the BOJ's policy, GPIF reform that increased stockholdings, and a series of government tax incentives to promote stock investment for individuals. Japan's stock market has been dominated by foreign investors and their presence has increased over the past 5 years.

Moreover, the BOJ's continuation of large-scale purchases has turned the BOJ into one of the top investors after the GPIF on a per-investor basis. Since the BOJ does not exercise voting rights, this growing presence of the central bank as a silent investor may adversely affect the corporate governance reform being pursued by the Japanese government. In addition, ETF purchases have affected stock prices through reducing downside risk as well as the possible overvaluation of some small-cap listed firms. Given that it is likely to take a long time to achieve 2% inflation, the BOJ may find it necessary to unwind ETF purchases from the annual pace of about ¥6 trillion—by purchasing only when the stock market is under severe stress. The BOJ's decision to make an adjustment to its ETF purchases in July 2018—purchasing more flexibly depending on stock market conditions and changing the composition of ETF purchases—suggests that the BOJ's intention is to cope with side effects. Whether the BOJ is able to take a clearer, more decisive approach toward normalization remains to be seen.

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