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In search of post-QQE monetary policy for Japan

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I. QQE is nearing the limit in terms of quantity

Since the start of quantitative and qualitative monetary easing (QQE) in April 2013, the BOJ's monetary policy has entered an entirely new domain. Our outlook is for an enormous increase in the BOJ's assets due to the execution of a framework aimed at reinforcing inflation expectations. The BOJ's balance sheet will probably stand at ¥380.2 trillion at the end of 2015 compared with ¥158.4 trillion at the end of 2012. The BOJ's mechanism for monetary easing has been greatly altered under the QQE regime. Now, the mechanism primarily involves massive purchases of long-term government bonds in order to push down the entire yield curve across the maturity spectrum. The resulting decline in medium to long-term interest rates has probably made a big contribution to ending deflation in Japan by having a positive effect on the real economy as well as foreign exchange rates and asset markets.

QQE in the form of massive asset purchases by the BOJ has produced a big short-term benefit. However, while the 2% inflation target is still unlikely to be achieved, limitations on the supply of long-term government bonds are now in sight. On the other hand, according to our estimates, the BOJ's current program of purchasing ¥80 trillion of long-term government bonds each year can continue only through FY (fiscal year) 2017. If the BOJ does not change its course, the bank will have to make net purchases of ¥240 trillion of long-term government bonds in FY2015-2017 (an annual ¥80 trillion x 3 years = ¥240 trillion). Looking at changes in long-term government bond holdings in different sectors of financial institutions we see that about ¥155 trillion of these bonds will be available for the BOJ to purchase from these institutions between now and end-FY2017. During this three-year period, the Japanese government's net issuance of new long-term bonds will be some ¥28 trillion annually, a total of about ¥84 trillion. New bonds and bonds available for purchase therefore total ¥239 trillion, about the same as all purchases planned by the BOJ.

If the BOJ continues to buy long-term government bonds at the current pace, the bank may find it difficult to make its planned purchases by the end of FY2017. Actually, this analysis requires more breadth. The reason is that maturities of long-term government bonds purchased and other factors may very well prevent the BOJ from making purchases earlier than the end of FY2017. Right now, we

believe that (1) the BOJ probably wants to start reducing the amount of government bond purchases early enough, and that (2) the BOJ will want to avoid starting to taper these purchases at the same time as the consumption tax hike planned in April 2017. Based on these views, we expect that the BOJ will start scaling back its bond purchases in October 2016.

Having analyzed above, the BOJ will probably be able to continue buying long-term bonds at the rate of ¥80 trillion per year with relative ease through the end of FY2017 if two conditions are met. First is a demand by the Japanese government that Japan Post Bank and Japan Post Insurance sell large volumes of government bonds to the market. Second is an institutional reform that would enable financial institutions to use their current account deposits (excess reserves) at the BOJ as collateral for derivative and other transactions. But even if the Japanese government takes these actions, the BOJ will very likely become unable to continue buying long-term government bonds as planned during FY2018.

Regardless of what happens, the more the BOJ delays a decision about tapering bond purchases, the greater the risk will become of the bank suddenly being unable to buy these bonds and therefore unable to implement predetermined monetary policy initiatives. Therefore, in our view, the BOJ is very likely to

select a method that does not make the bank vulnerable to this type of loss of credibility.

The real problem here is the risk of creating worries in financial markets about a decline in the BOJ's commitment to monetary easing if the BOJ simply reduces its bond purchases. The BOJ's current policy actions are laying emphasis on influencing expectations of consumers and businesses. As a result, rising concerns about the BOJ's commitment could reduce effects of the bank's monetary policy. When the BOJ started QQE, the bank appeared to emphasize the scale of asset purchases. It is still possible for the BOJ to increase planned purchases of assets other than government bonds such as stocks and other assets with risk. We indeed anticipate an increase in these purchases. However, a reduction in purchases of government bonds, the largest asset category of BOJ purchases, may be interpreted as a decline in the bank's commitment, even if the bank has no other choice but to do so due to practical problems.

II. Seeking the source of QQE effects – Attempt to calculate "natural yield curve"

We expect the BOJ to taper government bond purchases due to fears about an excessive drop in the yield curve and resultant undesirable side effects in case of no reduction in purchases. A big drop in the yield curve could, for instance, result in a negative yield for 10-year bonds. If this situation persists, there could

be negative effects on the earnings of regional financial institutions and the operations of life insurers. The impact on these institutions could easily damage the Japanese economy as they reduce lending and take other steps to reduce risk exposure. It is inconceivable that the BOJ would want to maintain negative long-term interest rates over a period long enough to create this type of risk. This thought process will probably lead to an actual reduction in bond purchases. However, the BOJ will have to implement its policies while thinking about the relationship between the size of a bond purchase reduction and the corresponding change in the yield curve. In other words, the BOJ must take actions while viewing the yield curve as the actual target.

In this case, what would be the basis for the BOJ's decision in setting a yield curve target? The key point to consider this issue is the thinking that "monetary policy has been producing effects mainly through a decline in the real yield curve." In May 2015, the BOJ Monetary Affairs Department published a paper titled *Quantitative and Qualitative Monetary Easing: Assessment of Its Effects in the Two Years since Its Introduction*, Bank of Japan Review Series. The paper stated that the economic benefits of QQE were produced primarily through a reduction in real long-term interest rates. Upcoming BOJ policy actions are very likely to be based on this thinking. More specifically, the BOJ will probably incorporate the stance in a BOJ working paper titled *The Natural Yield Curve: Its Concept and Measurements*, Bank of Japan Working Paper

Series, published in June 2015 by Kei Imakubo, Haruki Kojima and Jouichi Nakajima. This paper was written by members of the BOJ Monetary Affairs Department. With major central banks shifting to policies influencing entire yield curves, this paper presented awareness of the issue: "it is necessary to pay attention to shifts of the entire yield curve, not a single maturity sector, in order to assess the degree of monetary easing correctly."

The paper expands the conventional concept of the real equilibrium interest rate to the yield curve in order to attempt to measure the "natural yield curve." Based on a Keynesian framework analysis using the IS curve, "a natural yield curve" that is neutral to economic cycles was measured. It was then demonstrated that the yield curve under the current QQE regime is far below the "natural yield curve." Research involving the "natural yield curve" has just started, and the model must be refined. Nevertheless, we agree with the stance that the degree of monetary easing should be determined by taking the entire yield curve into account. The policy framework thus far has been focused on the amount of asset purchases. From now on, the key point for monetary easing should instead be how much the yield curve is to be shifted away from the "natural yield curve", which is neutral to economic cycles.

III. Policies with a *de facto* yield curve target

We believe that these types of policies that have a *de facto* yield curve target can, generally speaking, be positioned as the next step of quantitative easing measures. In case of the United States, three stages of monetary easing have successfully led to the policy exit, so there are no problems. But in case of Japan, where there is a high inflation target of 2%, a relatively long time will be needed to reach this target, and policy initiatives of this type involving large-scale asset purchases will ultimately reach their limits due to the falling availability of assets targeted for purchases. However, even if the BOJ is forced to reduce the amount of asset purchases, the effects of monetary easing will continue because the yield curve will be below the "natural yield curve." This is why it is natural to focus on monetary easing effects produced by the level of the yield curve, which has always been the true source of these effects.

Furthermore, actions that target the yield curve are possible in part because the implementation of quantitative easing has expanded central bank balance sheets. Looking forward, inflation, overseas interest rates and other financial environment changes may require policy initiatives aiming at pushing up the yield curve as well as those aiming at bringing down the yield curve. Their balance sheet expansion should enable central banks to push the yield curve higher by selling government bonds.

At some point in the future, while taking account of the degree of monetary easing effects, the BOJ is highly likely to estimate a yield curve that is required for 2% inflation and adopt a policy initiative to adjust its asset purchases in order to achieve the yield curve, in our view. Based on our macroeconomic forecast, we believe that Japan is very likely to achieve 2% inflation around 2023. As a result, we foresee a continuation of policies aimed at keeping the yield curve below the "natural yield curve." In this case, overnight interest rates will probably be kept at zero until inflation climbs to 2%. In addition, the BOJ is likely to continue to purchase risk assets such as equity ETFs while considering the resulting creation of inflation expectations.

The key question is in what way to announce the yield curve that the BOJ aims to realize. As announcing target interest rate levels across the entire yield curve is practically difficult, the BOJ will most likely announce a target yield level only for government bonds with 10 years remaining to maturity, for example. We believe that the BOJ has the following five options depending on the degree of its commitment concerning target long-term interest rates. These options are listed beginning with the strongest commitment (see Figure 3). For simplicity, the following discussion is based on policies that target the 10-year interest rate.

Option I: Target long-term interest rates (announce a nominal, specific level)

The easiest policy to understand would be one targeting nominal long-term interest rates. While this option (which we are calling Option I) has a clear advantage of being easy to understand and communicate, it would entail a number of policy and practical costs. The first and most significant cost would be its tendency to encourage large-scale capital inflows and outflows. Option I would completely fix short- to long-term nominal interest rates. Put another way, this policy would obstruct the market's mechanism for adjusting interest rates, which would be disadvantageous if key overseas interest rates were to fluctuate. For instance, if US long-term interest rates were to fall substantially, we would normally expect an inflow of funds away from the United States and into Japanese government bonds as investors seek relatively higher yields. As a result, long-term interest rates in Japan would decline as well. In this instance, the yen would be highly likely to rise modestly against the dollar, but drops in Japanese long-term interest rates to some degree would then stem the capital inflow, causing exchange rates to stabilize. The ability of long-term interest rates to move flexibly allows this adjustment mechanism to work. However, if the BOJ were to fix Japanese long-term interest rates in nominal terms through a policy of interest rate targeting, US-Japan long-term interest rate differentials would remain wide, potentially prompting either large-scale or excessive capital inflows from the United States to Japan. Continued capital flows into Japan would tend to cause the yen to appreciate significantly against the dollar. The BOJ would naturally monitor this situation, but the bank holds its monetary

policy meeting only eight times a year. In the interval until the BOJ lowers its long-term interest rate target at its next monetary policy meeting, the capital influx could be excessive. The situation would be different if the BOJ were to revise its target interest rate level on a daily basis, but that would be unfeasible from a policy standpoint.

The second cost of this option would be its likelihood of encouraging speculative attacks on the target interest rate level. Fixing the target interest rate level could invite speculative moves (speculative attacks) to profit from speculation aimed at a rate higher (or lower) than the fixed rate. These speculative moves could extend beyond the cash bond market to include the futures and derivatives markets, so if the BOJ were to adopt this sort of policy the bank would need to constantly monitor cash bond and derivatives markets including overseas markets, standing ready to intervene in these markets if necessary.

Third, this approach would hamper the flexibility of policy conduct. This is related to the first point. The BOJ needs the flexibility to adjust its target in response to inflation trends and overseas-domestic interest rate differentials. However, this approach would hamper policy flexibility, as the BOJ basically needs to change its targets at monetary policy meetings.

The fourth issue is the need to obtain the Ministry of Finance's consent in policy operations. A policy of targeting nominal interest rates would in effect fix interest rate levels on all government bonds, so the BOJ would need prior agreement on the target levels with the Ministry of Finance, which has charge of government bond issuance. This process could raise problems with regard to the central bank's independence.

Fifth, this approach would make it more difficult to surprise the market on the quantitative front than with QQE. The bond purchase amount necessary to maintain the target interest rate level depends on the supply–demand situation at each juncture, so it would not be possible to determine purchase amounts in advance. Option I would therefore be incompatible with base money and other quantitative targets. In this sense, it would become difficult to surprise the market as much as with the first round of QQE (April 2013) and the second round (October 2014).

In terms of monetary easing effects, although targeting long-term interest rates in real terms might be appropriate in theory, it is difficult to set an explicit interest rate target in real terms given that no highly reliable long-term inflation target exists.

Option II: Target a long-term interest rate range (announce a nominal, specific range)

As with Option I, targeting a long-term interest rate range by announcing a specific range in nominal terms has the advantage of being an easy policy to understand. In addition, this approach also would allow the interest rate adjustment mechanism to function to some extent. A framework that sets the ceiling and floor nominal interest rates still has some of the same disadvantages as Option I, but because interest rates have some leeway to move, from a policy operation standpoint the costs are less pronounced than with Option I. For this policy to work, setting the range of movement would be an important consideration from the perspective of policy operation. Setting a relatively broad range would simplify policy implementation, but the commitment to interest rates would tend to be weak. Conversely, setting the range relatively narrow would maintain a stronger commitment, but at a higher cost for policy implementation.

Option III: Cap long-term interest rates (announce a nominal, specific level as the ceiling interest rate)

The approach of setting a nominal interest rate cap equates to Option II, but with the lower limit removed. Monetary easing policy as it is currently being implemented sets an interest rate cap (ceiling), but monetary tightening requires a policy that sets an interest rate floor (lower limit). During times of monetary

easing, this policy also signals a strong BOJ commitment with regard to easing. This policy also has some of the disadvantages noted with Option I, however. Setting the interest rate cap at a relatively high level would make policy implementation relatively simple but would tend to weaken the commitment to easing. Conversely, while setting the cap relatively low would strengthen the commitment, this would come at a higher cost for policy implementation. Unlike with Option I and Option II, the BOJ under Option III could announce its guidelines as to the pace of government bond purchases. Put the other way around, announcing the pace of purchases would signal the BOJ's purchasing amount guidelines to market participants, facilitating smooth operations. Of course, after setting the cap the BOJ might need to make large-scale purchases of government bonds to keep long-term interest rates from exceeding the target level. Accordingly, announcing its amount of government bond purchases would merely serve as a guideline, so market participants would need to be aware that such a level would be of only secondary policy importance.

Option IV: Target a nominal, long-term interest rate range without indicating a specific level (policymakers assume but do not announce a specific range level; instead they announce only directions as to the range's breadth and central value)

Under Option IV, the BOJ would communicate to the market its intent to maintain a nominal, long-term interest rate range but not the specific level.

Instead, in this policy the BOJ provides guidance on long-term interest rates by communicating to the market only directions regarding the range and central value. Policy committee members would discuss ranges at each monetary policy meeting and, if any decision was reached to change the range from that decided in the previous policy meeting, the BOJ would communicate only the change in direction. For example, if the underlying inflation rate were to exceed expectations, it would become necessary to raise the long-term interest rate range in nominal terms. In this instance, the BOJ's message would be along the lines of "We will maintain the size of the range on long-term interest rates while increasing the central value." If interest rate volatility were likely to increase as a consequence of turmoil in overseas financial markets, the BOJ might communicate "We will maintain the central value on long-term interest rates, while broadening the range." The benefits of Option IV are that because specific target interest rate levels are not indicated, market participants would have less of an incentive to break the range set by the BOJ. Compared with Options I through III, pursuing Option IV should tend to discourage speculative activity.

Compared with Options I through III, the interest rate target for Option IV would be somewhat vague, so it would be more necessary to complement the easing policy by announcing guides for the scale of government bond purchases. Of course, because the interest rate range is assumed, the BOJ could purchase

more government bonds than the guide would suggest, as is discussed in Option III.

The thinking behind this policy has similarities to the foreign exchange policy employed by Singapore's central bank. The Monetary Authority of Singapore (MAS) pursues a policy of maintaining a nominal effective exchange rate (NEER) within a specified band. However, MAS does not announce the band's actual central value or width. In principle, MAS's reporting framework involves indicating the central value level and range, as well as direction, when revising its policy outlook semiannually. MAS aims to curb excessive speculation by obscuring the boundaries of intervention in this way.

Option V: Announce a direction toward easing or tightening over the entire yield curve

In Option V, the BOJ does not communicate to the market its assumptions as to a specific range or central value for long-term interest rates, but announces only its policy direction with respect to the current yield curve: easing, neutral or tightening. As the specific interest rate level is not indicated in Option V, to demonstrate to the market its commitment to easing, the BOJ would need to complement this announcement with a specific guide as to the scale of government bond purchases (or the scale of sales if tightening). The advantage of this option is that it curbs speculation, as no specific interest rate level is

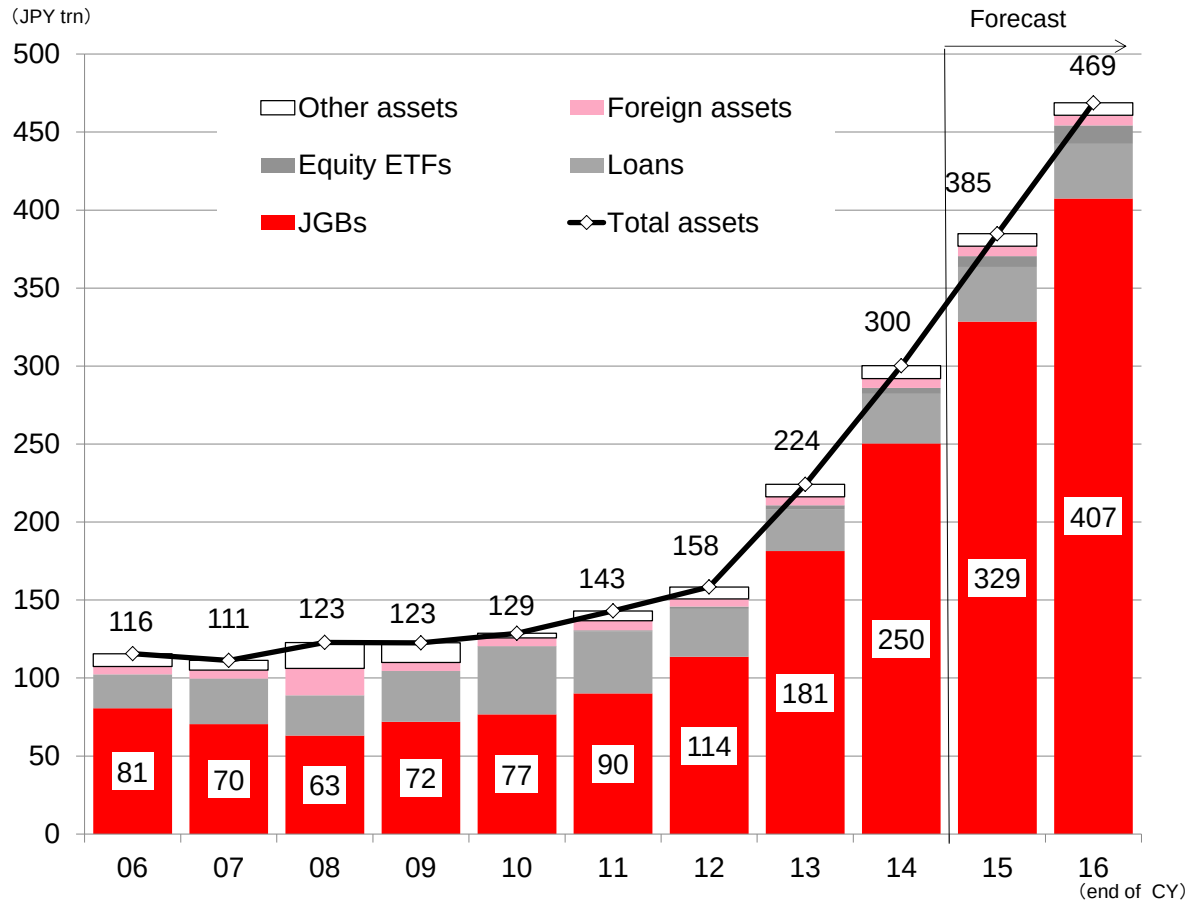
indicated. Also, by indicating guidelines as to the scale of purchases, the bank would be better able to have a surprise impact with respect to monetary easing. Compared with QQE, with Option V the BOJ would be committing less firmly to an amount of government bond purchases, however, which would dampen the effect of its commitment to monetary easing.

Next, it might be beneficial to touch on the question of how QQE differs from the above-mentioned options.

Comparing the five options considered above, Options I, II and III are easy-to-understand policies in which the BOJ's commitment is clearly indicated, but implementing these policies comes at a relatively high cost, such as the risk of generating excessive capital movements. In contrast, Option V is perhaps best understood by saying that it makes less of a commitment to easing than current QQE. Considering QQE in this context, QQE has the ability to surprise the market in the short run by increasing the amount of bond purchases. However, we could point out that its commitment effects tend to weaken if there are constraints such as those on the amount of government bond purchases. Taking these points into consideration, of the policies mentioned here Option IV would probably be the most appropriate policy to adopt as a next step following QQE.

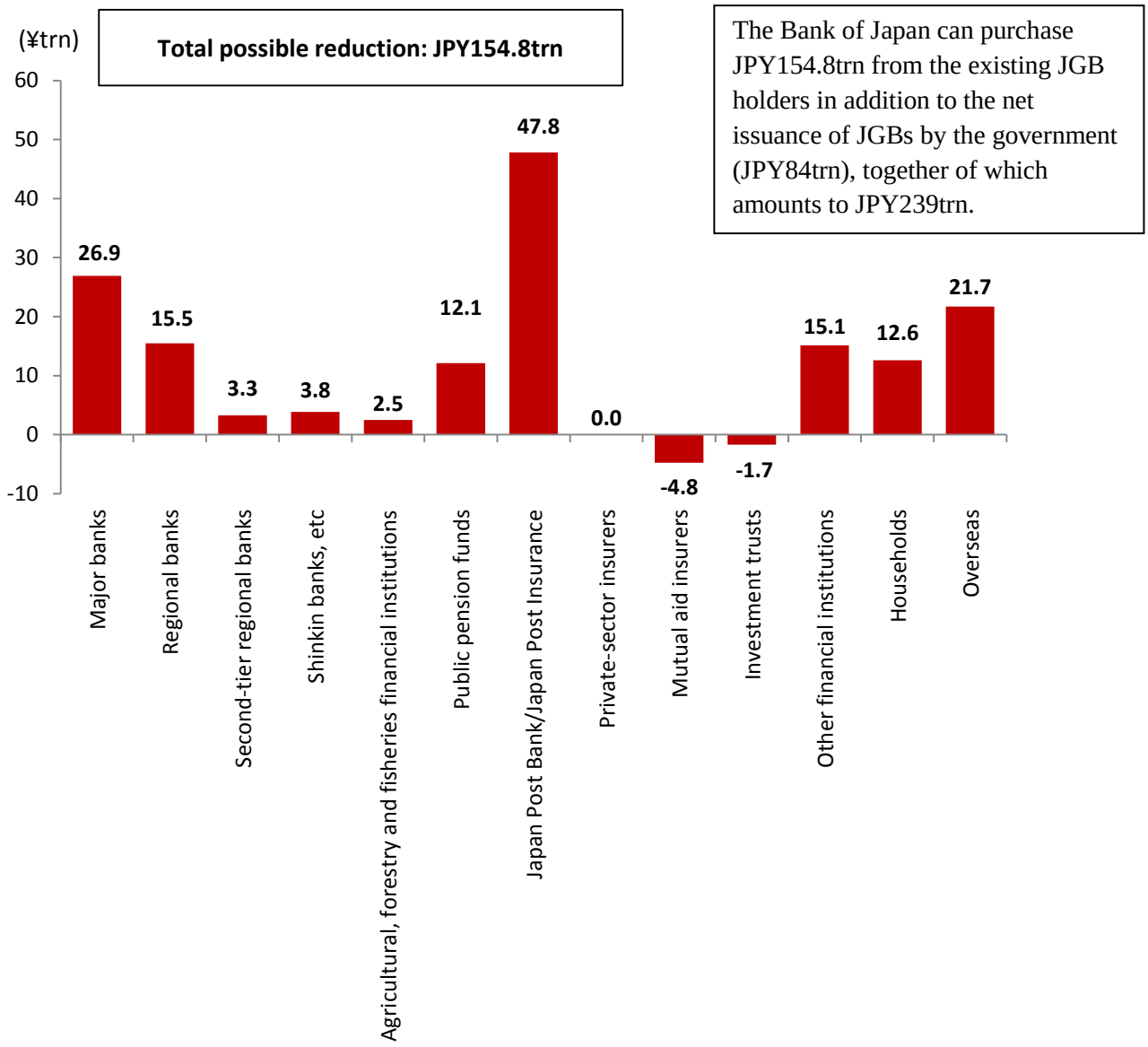
In conclusion, we would like to touch on the implications a shift from QQE to one of the above-mentioned "*de facto* yield curve target" policies would have on the BOJ's balance sheet. If the BOJ aims to achieve the 2% inflation target and maintain a low and stable yield curve, it is unrealistic to expect the bank's balance sheet, which has expanded, to start contracting soon. Rather, we consider it more likely that the bank would work to prepare an environment for policy flexibility in which it could use its expanded balance sheet to push the yield curve upward or downward.

Figure 1: Assets of the Bank of Japan



Source : Bank of Japan and Nomura

Figure 2: Estimating the amount of JGBs that the BOJ can purchase during FY2015-17



Source: The Bank of Japan, Nomura

Figure 3: Options for post-QQE policy framework

Degree of commitment to specific levels of long-term interest rate		Method of announcing targeted long-term interest rate	Methof of announcing the pace of JGB purchase	Advantages	Disadvantages	Memo
Very strong	**Option I**	**Target long-term interest rates** (announce a nominal, specific level)	Announcement cannot be made as the BOJ intervenes as necessary	Easy to understand and to show BOJ's commitment to the market	(1) This option tends to encourage large-scale capital inflows and outflows, (2) it also tends to encourge speculative attacks on the target interest rate level, (3) it would hamper the flexibility of policy conduct, (4) it probablly requires the Ministry of Finance's consent in its funding operations	The BOJ needs to monitor and intervene in the JGB market (including cash, future and derivatives markets) as necessary under all options
	Option II	**Target a long-term interest rate range** (announce a nominal, specific range)	Same as above	Easy to understand and to show BOJ's commitment to the market	All factors shown in Option I apply	
	Option III	**Cap long-term interest rates** (announce a nominal, specific level as the ceiling interest rate)	It is possible to announce a rough pace of purchase	Easy to understand and to show BOJ's commitment to the market	All factors shown in Option I apply	In case of monetary tightening, the BOJ sets a interest rate floor instead of a cap.
	Option IV	**Target a nominal, long-term interest rate range without indicating a specific level** (policymakers assume but do not announce a specific range level; instead they announce only directions as to the range's breadth and central value)	It is possible to announce a rough pace of purchase	Possibility of speculative attcakes should be smaller than in Options I and II as specific targets are not released	This is not necessarily an easy-to-understand option	The framework is similar to Singapore's FX policy which adopts NEER-based targetting policy
Very weak	**Option V**	**Announce a direction toward easing or tightening over the entire yield curve**	It is probably bnecessary to announce a rough pace of purchase to show commitment	BOJ may be able to stage surprise effects in the market if the polcy change involves ssubstantial increase in the size of asset purchase	(1) Commitment towards policy easing may not be presented as clearly as in the QQE policy, (2) It is quite difficult to raise the pace of JGB purchse given the JGB scarcity problem	
<Reference> **No commitment to specific long-term interest rates**		**QQE policy**	Announce the pace of purchase	Easy to show BOJ's commitment to the market. Possibility of speculative attackes is small as the BOJ does not commit to the long-term	Although the short-term policy impact on the market may be large, issues such as JGb scarcity problem may reduce the effectiveness over time. It is also difficult to predict the impact of a chnage in the pace of asset	

Source: Nomura