Monetary easing policy and stable growth: a theoretic approach

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Abstract

After the 2008 global financial crisis, the regulatory tightening, coupled with the spontaneous reaction of financial institutions to avoid risks, prevented increases in money supply in circulation even under the large-scale reserve supply. The reason of non-achieved 2% inflation target is attributable to such factors as, the increasing Marshallian K, the reluctance of financial institutions to give loans to small and medium firms, the weak loan demand, and the permanent income decline stems from the public concern on Japan's fiscal crisis. The 2% inflation under the balanced budget principle as a long-run target over a half century is the only practical solution for the fiscal crisis, by halving the real burden of the government debts in 33 years. Constitutionalizing the 2% inflation target is a way to enhance the public confidence towards the future and boost the consumption. The negative interest rate policy adversely affected money supply increase, since it is practically a tax on financial institutions which narrows their profit margins, depriving the capacity of risk taking from them. As money supply in circulation cannot be controlled by the BOJ only, closer collaboration among government agencies such as the MOF and the FSA are required to promote financial institution's growth money supply. Enhancing the growth rate is Japan's policy objective of the top priority. The role of monetary policy is to prepare a foreseeable future with a stable value of money to promote technical progress as the source of the growth. The key to promote stable growth is opening profit opportunities to challengers to new technologies. The barrier for Japan's growth is the vested interests built on the old technologies which slows down political decisions to change regulations. The right growth strategy is to destroy the vested interests built on old technologies through prompt deregulation, promote free and open competition, and provide profit opportunities to challengers to new technologies.

Keywords Monetary base · Money stock · 2% inflation target · Marshallian K · New technology · Deregulation

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Introduction

Scope of this paper

Since the Global Financial Crisis (GFC) in 2008, monetary policies in Japan, the US and the EU are equally under new regime, so-called “unconventional” or “new dimension”, which are still ongoing. After a decade at the yearend of 2018, the US, where super easing monetary policy was initiated, is finally in the process of the exit policy after successful achievement of 2% inflation and 3% growth rate and gradually raising the interest rate. While the EU continues the negative interest rate policy, she has started to search for the exit policy with some ambiguity towards the future. Japan, on the other hand, has succeeded to get out of deflation, but not achieved the 2% inflation target even after repeated extensions of its target date without any prospect of the growth rate recovery. Japan is a unique country in the world whose growth has almost been stopped for more than 30 years and now positions at around 150th in the world growth rate ranking.

Why the unconventional super easing monetary policy was not so effective globally as was expected? Why is Japan most lagged in the recovery and achieving the 2% inflation target? What should Japan’s monetary policy and the growth strategy be to recover the growth? In the following, we present our theoretical analysis to answer the above three questions.

On these important topics, numerous arguments and controversies are underway on a variety of scenes, including political, journalistic, as well as academic levels [1]. Especially at present, as the world is in the middle of a big change of the fourth industrial revolution under the unconventional monetary policies, the points of argument could tend to become unfocused. Nevertheless, a policy proposal based on a rigorous economic analysis with a clearly defined time horizon is needed, since the essence of economic activity has never been changed.

In the following sections, we present the answers to the above-mentioned three questions. First, “What is the problem of unconventional monetary policy commonly adopted in the advanced economies?” Second, “What’s wrong in Japan?” Finally, “What should Japan’s growth strategy be?” Our purpose is to propose the practical policy solutions to the challenges we are confronting now.

What’s wrong about unconventional monetary policy?

Regulatory-constrained

Regardless of the conventional or the unconventional monetary policy, the one and the common role of monetary policy is to control the amount of money in circulation. The conventional policy used the interest rate to control the demand side and the amount of reserve to control the supply side. The unconventional policy used

the zero-interest rate to boost demand side and used the large-scale asset purchase (LSAP) to enhance the supply side. This new policy, however, has not been working as originally expected. Why? What has changed in the financial market?

After the GFC, financial market regulations were greatly strengthened to limit the risk-taking of financial institutions on a global scale. The stricter capital adequacy regulation, the liquidity regulation, the Volker rule, the more detailed and stringent management rules and supervisions, the expansion of regulatory bodies, etc. Nobody could oppose these regulatory tightenings just after such a big financial crisis that costed a massive public money injection. This regulatory regime shift limited financial institution's ability to make loans and risk taking. They are not "reserve-constrained" any more, but rather "capita-constrained," or in other words, "regulatory-constrained."

Especially in Japan, the bank loans were heavily constrained by the equity ratio and the stock prices since the financial crisis and the following regulatory tightening in 1990s. The BOJ's LSAP is theoretically the same with an early redemption of the government bonds when the government and the BOJ are consolidated. The reduction of the risk-free and safe government bonds in the market is a limiting factor of financial transactions, since they are extensively used as the collateral of transactions. The change in the BOJ's balance sheet has changed the playground of the monetary policy through its effect on the financial markets.

"Self-Constrained" and Lucas critique

At the same time, responding to the GFC, financial institutions as well as all firms and enterprises started to limit and curtail their risk-taking behavior towards the risk-averse direction as a natural response for their survival. Even at the zero-interest rate environment, firms are cautious to take risks to start new ventures that require a large funding. Especially small and medium firms that do not have alternative funding sources became cautious to depend on banks as a lender of last resort in case of their difficulty. In other words, banks have lost its credibility as a lender of last resort through the history of the long-lasting financial crisis especially in Japan.

Financial institutions tightened their credit standard criteria as the natural spontaneous response to the GFC to protect themselves from another crisis, independently from the regulatory tightening. They accumulated reserves to protect themselves from the possible unexpected future crisis. The large-scale reserve supply to them through the BOJ's LSAP was not an effective incentive to increase loans. A central bank can control only the amount of reserves, but not the amount of bank loans. Money supply in circulation cannot be increased without increasing bank loans. Thus, LSAP did not work to boost the money supply in circulation. After the GFC, the financial institutions are not only "regulatory-constrained", but also "self-constrained."

It is understandable that politicians as well as regulators were obliged to do something when such a big crisis like the GFC happened. At the same time, however, regulators tend to underestimate the spontaneous responses of financial institutions

to lessons they learned through their experience. If their responses were correctly accounted for, the resulting regulatory tightening might have been excessive.

This is the same problem which was pointed out by “Lucas critique” on economic policy evaluation in 1976 [6]. He argued that it is naive to try to predict the effects of a change in economic policy entirely on the basis of relationships observed in historical data, especially highly aggregated historical data. Exactly same logic applies to this case of the regulatory reform after crisis occurred. New regulations were enacted based on the historical data what happened at the time of or prior to the crisis. By the time of new regulations created based on what happened in the aggregated financial market came into effect, the behavior of individual financial institution had already changed based on their historical experience. Hence, the new regulatory tightening could well be excessive. This is what happened commonly in the global financial markets after the GFC, making the unconventional monetary policy looks not effective as was expected. The Lucas critique in the regulatory reform is an important issue to be explored in depth in the field of economic policy research. The financial regulatory reform is an important topic that needs to be examined in relation to the moral hazard and the time inconsistency problem as well, which we discussed elsewhere [8–10].

The double impacts and slow-to-change regulations

These double impacts of the regulatory tightening and the spontaneous self-restraining behavior of financial institutions combined have changed the behavior of the financial markets globally and drastically. Thus, both conventional and unconventional policies did not work as used to be.

The unconventional monetary policy is simply an extended version of the conventional monetary policy, in the sense that the former is simply an intensified version of the latter policy tool in the form of interest rate control and reserve supply. It is not a new policy to handle the new financial environment. This is the reason why both policies were not as effective as expected.

The too-much regulations may not have been necessary, since financial institutions as well as all firms have their own intrinsic instinct to defend themselves for survival responding to all kinds of environmental changes. Once regulations are enacted, it is extremely difficult to abolish them, even after the economic condition has recovered to the original level. Thus, the recovery process is unbearably slow [3, 4].

According to the rational expectations theory, a big shock experienced once would have a long lasting influence on people’s behavior. The slow recovery process is due to this tendency of human nature. It takes a long time to change people’s expectations and behavior.

The monetary authorities in advanced countries, like Japan, the US, and EU, are now conducting mutually conflicting policies at the same time, i.e., enforcing a contracting pressure on money supply in circulation by tightening regulations and, at the same time, trying to increase it through LSAP. This is the nature of current

Fig. 1 Monetary base/average amounts outstanding Source: Bank of Japan [1]

monetary policy in the world. How to change the status is an important topic to be explored in other papers [13–15].

What's wrong in Japan?

The reality of Japan's monetary policy

Let us observe the real data prior to our discussion on Japan's monetary policy.

Figures 1 and 2 show the movement of monetary base. Responding to the GFC, the BOJ introduced LSAP lastly among three major economies in 2013, which was 5 years later than the US. In April 2013, the BOJ announced the policy goal to achieve the 2% inflation target in 2 years by doubling monetary base in 2 years. In fact, monetary base doubled from 135 trillion yen to 270 trillion yen in 2 years and to 506 trillion yen at the end of 2018 which amounts to about 90% of Japan's GDP. The rate of growth is, however, steadily decreasing since 2014.

During the 5 years after the GFC until 2013, only Japan did not adopt the large-scale monetary easing (LSE). As a natural result, Japanese economy went through a hard time under a greatly appreciated yen to less than 100yen/\$ as shown in Fig. 3.

As soon as LSE was expected to be implemented by the start of Abe administration at the end of 2012, yen was quickly depreciated back. It is evident that LSE corrected the super-appreciated yen exchange rate. This evidence shows the fact that the domestic monetary policy has to be in line with the global trend of monetary policy. Thus, the super-low interest rate policy through LSE in the US led to the global trend of super-low interest rate. In other words, the US low

Fig. 2 Monetary base growth rate relative to the previous year Source: Bank of Japan [1]

Fig. 3 Yen/Dollar exchange rate Source: Bank of Japan [1]

interest rate policy promoted a cheap currency competition, enforcing other countries to introduce the low interest rate policy to avoid appreciation of their own currency. Although an independent currency policy is a respectful idea, it was one factor contributed to Japan's long-lasting stagnation. Japan's LSEP, so-called

Fig. 4 Money stock growth rate Source: Bank of Japan [1]

Fig. 5 Measure of underlying inflation Source: Bank of Japan [1]

“easing of a different dimension”, was a remarkable success in getting out of deflation that lasted over 20 years by following the global trend of LSEP.

Despite of 30–50% increase in monetary base, however, money stock in circulation increased only 3–4% range as shown in Fig. 4 even after 2013, resulted in only around 1% increase in consumer price index as shown in Figs. 5 and 6. The reason for unachieved 2% inflation rate even under LSEP is a common global problem of the monetary policy theory to explore.

What is needed now at the end of 2018 is a concrete policy proposal to regain Japan’s growth power including the monetary policy management. Monetary policy prepares a stable and foreseeable environment for the private sector to work actively. Growth is achieved by the enhanced economic activity of private sector who believes in their brighter future. In the following, we theoretically analyze the Japanese economy to present our proposal in the last section.

Fig. 6 Various measures of core inflation Source: Bank of Japan [1]

Money stock determines the price level

Monetary base vs. money stock in circulation

The BOJ's LSEP was a policy to double the monetary base in 2 years which the BOJ can directly control. In fact, the BOJ kept the promise and did even more than the double in 5 years as already explained in Figs. 1 and 2 in “[The reality of Japan's monetary policy](#)” section. The still unsuccessful achievement of 2% inflation target under LSEP since April 2013 provokes a skepticism on the power of monetary policy.

As the price level is determined by the supply and demand of money stock in circulation, monetary base is only one factor of money stock supply. Although the latter is an important factor affecting money stock increase, the relationship is not one to one. An increase in monetary base should clearly be differentiated from an increase in money supply which leads to a rise in the price level. The degree of LSEP that affects economic activity should be measured based on money stock, specifically, M2 + CD and/or M3.

The growth rate of money stock in circulation in Fig. 4 is only around 3–4% up to the present since the start of LSEP in 2013. It was certainly higher than the preceding period, but its growth rate is not an order of magnitude that justifies the name of “LSEP of a different dimension”. In this sense, the quantity easing policy since 2013 was not LSEP in the sense of increasing money supply in circulation.

Nevertheless, by comparing Fig. 4 with Figs. 5 and 6, the periods when money stock rapidly increased matched with the periods when the inflation rate hiked in 2013, from the mid 2014 to the mid 2015, and from the mid 2017 to the early 2018. These are data consistent with the fact that an increase in the growth rate of money stock, even at a lower level, contributes to a price increase.

Fig. 7 Marshallian K in Japan and the US. Source: RIETI

Long-term rising trend of Marshallian K

The demand for money has a long-term rising trend globally, which was described as “money is a luxury” by Milton Friedman. This trend is most distinct in Japan. Japan’s Marshallian K (M2/Nominal GDP), the inverse of velocity of money, has been on a rising trend much higher than in the US over 60 years including the high growth period in 1960s as shown in Fig. 7.

The linear trend estimates of Marshallian K over 35 years from 1980 to 2015 is 2.2–2.6% as shown in Figs. 8 and 9. Therefore, money stock in circulation needs to rise at 5.2–5.6% to achieve the government target of 3% nominal GDP growth, i.e., 1% real GDP growth plus 2% inflation. On the other hand, as in Fig. 10, Japan’s money stock growth over 2013–2017 is only 3.01%, which is lower than 5.78% in the US and 3.91% in the EU. To achieve 2% inflation target, additional money stock increase of 2.2–2.6% is needed. This is the reason why only Japan is behind in the exit policy from the US and the EU. The EU’s lag behind the US in her exit policy can be explained as well by her slower growth of money stock than the US. The successful achievement of the 2% inflation and the 3% growth in the US is attained by 5.78% growth of money stock and the inflation and the growth of both around 2% in EU is consistent with 3.91% increase in money stock over the last 5 years.

Graphical explanation

Figure 11 shows the previously mentioned relationship in a graph. The vertical axis represents the price of money, i.e., the inverse of price level, and the vertical axis is amount of money stock. The supply of money stock (MS_0) and the money demand (MD_0) in 2013 intersect at point **a** with the price level of P_0 . If the money demand stays

Fig. 8 Linear trend of Marshallian K in Japan. Source: Shoko Research Institute, *Graphics: Small and Medium Enterprises 2016*

Fig. 9 Trend increase in Marshallian K in Japan. Source: RIETI

constant, with an increase in money supply by 3% from MS_0 to MS_1 , the intersection moves to point **c** and the price level goes up to P_3 , achieving the 2% inflation target. If at the same time, however, money demand increased by 2.2–2.6%, the money demand curve shifts from MD_0 to MD_1 and the intersection moves to point **d**, leading the price level increase only up to P_1 , failing to achieve the 2% inflation target. This is the reason why inflation rate still stays less than 1%. To raise the price level to P_3 , additional supply of money stock by 2.2–2.6% is needed to move the intersection to point **e** where 2% inflation is attainable.

Fig. 10 Money stock growth in major developed countries. Source: IMF [4]

Fig. 11 Demand and supply of money stock determine price level

Fig. 12 Amount outstanding of bank lending (Source: Bank of Japan [1])

Increased loans needed for money stock increase

Risk aversion of financial institutions

Then, the question is how to increase money stock in circulation. Increased loans by financial institutions are indispensable as a channel of money supply. Figure 12 shows the movement of bank lending outstanding. While it recovered from the preceding negative range after 2013 when LSEP started, it stayed stable around 3% without any remarkable increase. Although loans to small and medium firms were on a recovery trend after 2013 as in Fig. 12(2), the ratio of loans to small and medium firms was decreasing and loans to local government were increasing as in Fig. 13. It seems to reflect a trend of risk aversion on the side of banks and a lower demand on the side of private borrowers.

Figure 14 is the financial position diffusion index by the size of firms after 1986. Especially for small and medium firms, the index was consistently in the negative range over 2 decades up until 2013. For a total loan increase, increased lending to small and medium firms is indispensable, since large firms can now easily get funds from the capital market. After the burst of bubbles and the following financial crisis in 1990s, financial institution's attitude of risk aversion has been settled due partly to the restrictive financial administration aimed for the financial market stability.

Fig. 13 Bank loan ratio to small and medium firms. Source: Shoko Research Institute

Fig. 14 Financial position diffusion index (Source: Bank of Japan [1])

Impact of financial crisis in 1990s

Before Japan's financial crisis in 1990s, it was common for small and medium firms to borrow normal working capital in a form of short-term note loan and refinance it at its due date, extending its due date each time. The working capital lending in the form of note loan was a safe form of bank lending even without collateral, since working capital was backed up by business assets and borrowers were careful to manage finance, because a failure to have funds to repay at its due date directly leads to a bankruptcy. This is the reason why short-term note loan were regarded as “pseudo capital” that did not require repayment.

After the burst of bubbles, however, the Financial Service Agency (FSA) obliged banks to examine whether short-term continued loans were bad loans or not, responding to many default cases of normal working capital. Then, all banks uniformly switched short-term continued loans to long-term certificate loans that required spirit repayments with collateral and guarantee at higher interest rates. The repayment pressure of normal working capital which was not required so far compressed borrower's financing management, contributing greatly to Japan's long-lasting deflation. In addition, the practical abolishment of short-term continued loans led to a loss of bank's ability to collect information by making it unnecessary for banks to visit borrowers for rewriting the documents of short-term loans.

Since 2015, the FSA has corrected this policy and been promoting the supply of normal working capital through short-term continued loans. It strongly pushes an aggressive supply of growth money based on business evaluation as well as breaking away from "Japan-style lending" that heavily depends on the collateral and guarantee. Nevertheless, this already long-lasting lending practice has not been changed. Short-term continued loans have not revived and the repayment pressure of long-term note loans is normalized. A financial environment has settled for small and medium firms hard to make aggressive business expansion plans.

During Japan's financial crisis in 1990s, small and medium firms experienced severe credit crunch and lending-off affected by the Basel capital adequacy regulation. Small and medium firms went through the experience of credit crunch, not because of borrower's performance, but of bank's performance affected by the general economic condition such as the stock prices. Their confidence in financial institutions as a lender of last resort has collapsed, having an impact to ramp up their risk management and atrophy investment plans. Although nowadays its effect has been fading away, the managers who were grown under the crisis environment might have acquired a prudent attitude towards risk taking, in front of the continued financial crises such as the Asian financial crisis and the GFC. From the view point of financial institutions, this market condition means the lack of active loan demands [11, 12].

Then, under such a circumstance, the current issue is how to increase the lending. In the trend of population decline and intensified competition with new sources of funds backed by new financial technologies, the traditional financial institutions need to create new business models. Despite of the historically lowest level of bankruptcy at present, the financial world is still not out of the inertia of financial crisis mode.

To achieve the government target of GDP 600 trillion yen, it is necessary to change the business mind of small and medium firms by reinjecting the "pseudo capital" in the form of short-term continued loans. The details on these points are out of the main points of this paper which we have already discussed on another occasion [16, 17]. So please refer to the articles mentioned below. Since the only base money supply by the BOJ cannot achieve money stock increase needed for the 2% inflation, the financial institution's business model change is needed in order to facilitate their growth in a dramatic environmental change through a closer exchange of information among the public authorities, such as the government, the MOF, the BOJ, and the FSA.

Fig. 15 Average propensity to consume (Source: Bank of Japan [1])

Boosting consumption

Permanent income/life cycle theory and rational expectation

The stagnating consumption is pointed out as a cause of the low growth rate in Japan. As shown in Fig. 15, the consumption that began to rise in 2013 declined again rapidly after the consumption tax increase in April 2014. As a theory to explain consumption, the permanent income/life cycle theory is established. According to it, people decide their current consumption based on their prediction of lifetime income. Pessimistic factors now predominate with respect to the future income, such as, the declining birthrate, the aging society, the declining growth potential, increase in the social security expenses, financial crises and the expected tax hike, etc. in the future forecast in Japan. It is natural that consumption stagnates under such circumstances.

Permanent income growth

To boost the consumption, it is necessary to raise the permanent income, i.e., the expected income over the lifetime towards the future. The public worry about the lack of solution of the fiscal crisis, stems mainly from the accumulating social security expenditure that is unlikely to shrink due to the declining birthrate and the aging population. Naturally, people are afraid and prepare for the possible future tax increases by reducing their current consumption.

As we see again later, the 2% inflation target is the only “practical” way to solve the fiscal crisis, alongside of the accumulation of achievements through steadily realized growth strategies that can lead to fostering the public expectation of increase in their permanent income. As the economy is moved by the behavior of each citizen,

the government and the BOJ have to offer a nice playground for them to work. The citizens are unconsciously collecting all kinds of information sensitively and making reasonable future predictions. To increase the consumption, the persuasive explanation on the future prospect is indispensable which is frank and easy-to-understand. In this sense, a frank dialogue with the market is important for the monetary policy. Although surprise policy initially gained a great success due to a regime change, a limitation naturally exists as a policy to be repeated many times. Ben Bernanke, the former chairman of the Federal Reserve Bank of the US, said in this regard “Monetary policy is 98% dialogue and 2% action” [2].

The 2% inflation target [11]

Short-term target vs. long-term target

What we need to clarify about the monetary policy is the distinction between the “exit-deflation” as a short-term goal and the “2% inflation” as a long-term goal. Since the achievement of the 2% inflation in 2 years was raised as a goal of LSEP, there might be a public recognition to identify the 2% inflation with the exit-deflation. The internationally recognized inflation target of 2% is a number obtained by adding 1% unforeseen margin of error on top of the 1% correction term of upward bias of the price index to make sure that the inflation rate will never fall below zero. It is a number set with a margin of 1% as a variation width.

As seen in Figs. 5 and 6, the inflation rate in the past 5 years is in the plus zone. Hence, Japan has already been out of deflation in the sense of sustained price decline. As discussed in the next section, the 2% inflation target is a long-term goal to be maintained over at least a half century or more. To clarify this point, it is recommendable to constitutionalize the 2% inflation target by changing the BOJ law. The government and the BOJ should jointly declare the completed exit of Japanese economy out of deflation. These are useful tools of dialogue with the public to change their expectation and to set a guide line for them to act towards the future.

The benefit of 2% inflation

All citizens of Japan are concerned about the fate of Japan’s financial crisis. It is a highly important challenge to generate a sense of security for the future by honestly communicating the method of solving the problem to the people. It is not only to influence the consumption trend, but also an extremely important task for fostering the happiness of the people. The key to do this is to define the 2% inflation target as a long-term policy goal. If the 2% inflation continues steadily over a long time, the real value of government bonds will halve in 33 years. In the case of 40-year government bonds, the real value at the time of the redemption will be decreased to 44%. Once the refinancing is repeated at the due dates, it is practically permanent bonds. In other words, with a slow and time-consuming pace of annual 2% inflation, the fiscal crisis will be solved in the long run. As a prerequisite, however, it is necessary

to maintain balanced budget in the long-run so that future budget deficits will not accumulate further.

Unlike individuals, the longevity of a country is eternal. So, the fiscal crisis can be solved by the method of multiplying time with the thin and wide burden on the people. This is the significance of 2% inflation as a long-term and continuous goal. For this end, it is necessary to convince the public in general and foster a sense of security through a frank explanation on this point. As a result, an increased consumption, decreased demand for currency to hoard, as well as increased investment would come about. And then, the opportunity for recovery of growth potential will be born. Since the inflation target is originally a framework to prevent an excessive inflation, it is necessary to promote the public understanding on the guarantee of no excessive inflation.

Current BOJ's policy

LSAP: practical public financing by the BOJ

Currently, the BOJ supplies base money through LSAP, which is effectively equivalent to public financing. While the public financing by the BOJ's direct underwriting of government bonds is prohibited by the law, a sure purchase by the BOJ immediately following the government bond issue is theoretically not different from the public financing by the BOJ.

Since money is essentially a permanent government bond with a zero-interest rate, the zero-interest rate government bonds are equivalent to money. In particular, the 40-year government bonds are close to a permanent government bond with the zero-interest rate, having the characteristics similar to the money creation. Since there is no prospect of reducing fiscal deficits, as mentioned in the preceding section, the only practical way to solve Japan's fiscal crisis is to reduce the real value of government debts by a taxation through a mild inflation for a long time.

Citizens' belief in a brighter future and fostering a sense of security will be the key to restoring growth potential, where trusts and confidence in the government and the BOJ are indispensable. People's concern over the public finance is stubborn. A credible future prospect will be formed by a combination of an expenditure reduction and an effective growth strategy. How to present an effective growth strategy under a gentle de facto public financing by the BOJ is a challenge for the government and the BOJ.

Negative interest rates as tax on financial institutions

The negative interest rate policy, introduced since January 2016, applied only to a small fraction of bank's deposits at the BOJ. It was initially thought to have a limited impact with a symbolic meaning only. On the contrary, it has exerted a much bigger influence than expected on the interest rates in not only the bond market but also the large loan market. It aimed to increase money stock by encouraging corporate

borrowing demand and facilitate lending by financial institutions. Nevertheless, the expansion of borrowing demand has been much smaller than expected, resulting in a squeezing pressure on the bank's profit margins. As a result, the BOJ conducted a comprehensive verification of the policy in September 2016, resulting in the introduction of the "yield curve control" and the "overshooting type commitment". The latter is an important commitment to achieve the 2% inflation as a long-term target, but the former is a policy that cannot be maintained for a long time, which should be regarded as a compromise measure against the pressure on the profits of financial institutions.

In an environment where the deposit interest rate cannot be negative, the negative interest rate is theoretically a tax on financial institutions. A tax is passed on to the consumers in some way or another, which will offset the positive effect on the borrowing demand. The current challenge is how to increase the loan amount to increase money stock. This objective cannot be achieved without any change in the business models of financial institution to shift towards a more aggressive lending mode. In that sense, it is important to develop an environment in which financial institutions are willing to increase loans, but the negative interest rates policy has not been successful in that sense. A more aggressive risk-taking is needed on the part of financial institutions. The supervisory system needs to be converted from the GFC mode of supervision toward one that facilitates more aggressive supply of growth money.

As the negative interest rate is not an effective tool as a monetary policy, it is necessary to stop at some near date. However, it needs to be cautious to rise the market interest rate once declined to the limit. As it could have a negative impact, an extremely careful consideration, such as dialogue with markets offering information on the policy management to provide a better future visibility, would be needed.

Slow and mild helicopter money

A direct and sure way to increase money stock in circulation is the money printing, through which the 2% inflation target can be achieved. This method is called "helicopter money", but its definition is ambiguous. Due to its image of the word, political and emotional oppositions prevent it to be a practical policy option. As mentioned in Policy Proposals F in "[Conclusion](#)" section, however, the super long-term government bond issue with zero interest rate is practically equivalent to an increase in money stock. In this sense, a slow helicopter-money policy has already been implemented. It should not be identified with an extreme hyperinflation policy by just the image of "helicopter money". Another way to increase money supply other than increasing monetary base, such as asset purchase from non-financial institutions by the BOJ, is an option to increase money supply. This policy is one plausible option that falls into the category of helicopter money, which could be considered seriously.

As stated in "[Growth strategy](#)" section, if the 2% inflation has been realized steadily over the long-term under a sustained balanced budget, the public loses the value of their financial assets by 2% annually. On the other hand, it becomes possible to

Fig. 16 World population and production (Source: Lucas [7], *Lectures on Economic Growth*)

anticipate a recovery of the fiscal robustness and a reduced chance of the tax hike. In other words, this is nothing but a slow inflation tax on cash, deposits, and financial assets. This is a method of collecting taxes from the general public over a long time, which is different from the so-called inflationary tax under hyperinflation. Public understanding of this difference is the key to reestablish the health of public finance, creating hopes among the people for a brighter future. For this purpose, an honest and polite explanation jointly by the government and the BOJ is necessary.

Closer collaboration among the government bodies

The effect of fiscal policy largely differs depending on its financing method. The role of monetary policy is to create a stable and foreseeable economy as the playground for the public to perform error-free economic activities. It is self-evident for the monetary policy alone to achieve the 2% inflation target and higher growth rate altogether. It is necessary to create an environment with minimum uncertainty by establishing a policy that could bring about brighter prospects that induces active investments towards the future. To that end, it is necessary to divert from excessive dependence on the monetary policy and establish an appropriate policy mix, formulating a growth strategy through closer information exchange within the public sector, such as the government, the BOJ, the MOF, the FSA.

Growth strategy

Technical progress as the source of growth

Figure 16 is a logarithmic graph showing the trend of population and production of the world over the past 1000 years. Prior to 1700, the population and the production increased almost in parallel, implying no per-capita productivity growth. Only after

Fig. 17 Innovation and shorted period of speed (Source: Brett king [5])

the middle of 1700s, when the industrial revolution started, the production growth began to exceed that of population. Economic growth is a phenomenon that is limited to the most recent 250 years in the human history and occurred only since the beginning of technological progress by the industrial revolution. Economic growth means an increase in per capita income, that is, an increase in the individual wealth. Thus, an increase in GDP due to the population growth should not be tabbed as an economic growth. From its definition, it is obvious that population decline is not a cause of the slower economic growth rate in Japan.

Growth strategy to encourage spread of new technologies

Economic growth stems from the productivity gains by replacing labor with machines that embody new technologies. With the ever-accelerating evolution of the fourth industrial revolution based on the digital technology, the global GDP is now growing at the highest rate in the human history. Technological progress is not identical with invention itself, but its spread to the whole society is the key to push up the productivity and income of the whole economy.

As shown in Fig. 17, it took several decades for a certain technology to spread widely in the whole society in the past. The speed of technology spread has been accelerating exponentially over time, creating a new global standard in yearly basis. This popularization speed is the source that creates remarkable economic growth in the recent world.

The ever-increasing speed of technological propagation is accompanied by side effects of unemployment and inequality expansion among people who cannot go along with it. The frustration of the American white of middle and low-income class who gave birth to President Trump is in line with Luddite movement in England at the time of the Industrial Revolution. The decline in employment in the United States is not only for overseas relocation of companies, but due partly to the increasing speed of productivity gains through the propagation of new technologies.

Right growth strategy

Then, as new technologies exist and are available worldwide, why is Japan solely dependent on low growth for many years? The cause is the slow propagation speed of new technologies to the whole society. The propagation of new technologies changes the industrial structure along with the existing profit and income structure. Regulations and vested interests prevent introduction of and competition with new technologies, even though they are available, such as Uber dispatch applications.

A lot of barriers exist in Japan; the slow political decision respecting for consensus, the culture to evade fierce competition and dislike protrusion, difficulty of revival of businesses losers, disparity criticism in the globally most equitable country of Japan, financial institutions that continue to provide loans secured by collateral and guarantee in the era of automated service technologies, and erroneous conception to regard population decline as a source of the low growth. From the global view point, Japan is regarded as a “country of slow to change”. The causes of Japan’s slow growth are obvious.

The necessary growth strategy is nothing else other than the removal of the causes mentioned previously that prevents the propagation of new technologies. In other words, the removal of vested interests through deregulation to encourage the introduction of new technologies, quick political decisions to change the traditional pattern of vested interests, promoting free competition, education to enhance the ability to adjust to new technologies, fostering challengers to risks of new technologies by offering profit opportunities, establishing politically and financially independent think tanks to create a new system of policy making, which used to depend on bureaucrats, and to agilely respond to changing environment, and a mandatory sunset clause to all regulations that sets the automatic expiration date after a certain time. If still necessary, the regulation could be reenacted under a new environment. Strong political power is indispensable to promote deregulation that breaks vested interests. In this sense, the current political environment where a long-term administration is expected is a good opportunity to promote the right growth strategy.

Since the core of the growth strategy is to provide profit opportunities to challengers to new technologies that would benefit the next generation, politicians need to take risks as well with a long-term perspective to be praised by the future generations.

Fig. 18 Policy proposals

Policy Proposals	
A.	Closer Information Exchange among MOF, FSA, and BOJ
B.	Encourage local banks to increase loans for the growth of small & medium firms by taking more risks
C.	Abolish the negative interest rate policy
D.	Establish policy rules for the foreseeable future <ul style="list-style-type: none"> • Constitutionalize 2% inflation target as a long-term rule • Explain the importance of 2% inflation as a solution for Japan's fiscal crisis • Present a Long-term vision of Japan encompassing future generations
E.	Establish a credible balanced budget plan
F.	Growth strategy financed by the super-long-term Gov. bonds
G.	Deregulation to open profit opportunities to challengers to new technologies

Conclusion

Figure 18 summarizes our policy proposals. Those proposals are not necessarily theoretically ideal, but the practical and plausible guideline to overcome challenges that Japanese economy faces under the present circumstance.

Currently, the monetary policy bears an excessive burden as a measure to deal with diverse tasks globally. The role of monetary policy is to keep the price stability as a playground for all economic agents to perform error-free and efficient economic activities. Taking an analogy of highway, maintain a smooth and straight road with a good visibility so that all cars can run at a high speed and reach their destination as quickly as possible without any accident. The role of the government would be to remove obstacles (regulations) on the way so that all cars can run faster without any congestion. It is important to indicate where the exit is in advance so that a driver can prepare for it.

The monetary policy in the world faces many challenges in a rapidly changing world. Under this environment, ad hoc arguments without robust theoretic ground tend to spread using undefined words, such as “conventional vs. unconventional monetary policy”. Economic theory is a powerful and useful tool to find solutions for problems we face. This paper offers practical and implementable solutions to the challenges Japan faces based on the orthodox theoretical analysis.

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