The Mayekawa Lecture: Fiscal Policy under Low Rates: Taking Stock

by Olivier J. Blanchard

I. Introduction

Let me first thank the Bank of Japan (BOJ) for inviting me to the conference. I am honored to deliver the Mayekawa Lecture. The topic of my talk is fiscal policy under low rates, which is an issue that I have thought about for a few years. In this lecture I hope to present my current but evolving thoughts on this topic.

For the past few decades, advanced economies, including Japan, the U.S., and most European countries, have faced low nominal and real interest rates, and this is the starting point of my talk. Low interest rates have two important but distinct dimensions.

The first dimension has come to be known as "secular stagnation," although this term may be not the best. I would define this as a situation in which the neutral interest rate r^* — the real interest rate consistent with aggregate demand sufficient to achieve a level of output equal to the potential level of output — is less than the growth rate of the economy g.

The second dimension is the zero lower bound (ZLB) of nominal interest rates, meaning that nominal interest rates cannot be strongly negative. Although we have learned that the nominal rate can decrease a little below zero, the ZLB still puts a lower bound on the real interest rate, which is equal to the nominal rate minus the inflation rate.

We may have secular stagnation without the ZLB, but we have had both in many countries for the last 10–20 years. Given the prolonged duration, this is a good time to take stock of the situation. As mentioned by Governor Kuroda in his opening remarks, these two dimensions have serious implications for the way we think about fiscal and monetary policies.

I focus on three issues that have been discussed at length in Japan but are still highly relevant. The first issue is what will happen to interest rates in the future. Are we likely to face both secular stagnation and the ZLB in the future? If interest rates increase to much higher levels, we could return to the old way of doing business. The second issue is how we should assess debt sustainability in the low interest rate environment. It is clear that the old rules regarding levels of debt or debt-to-GDP ratios are just not the

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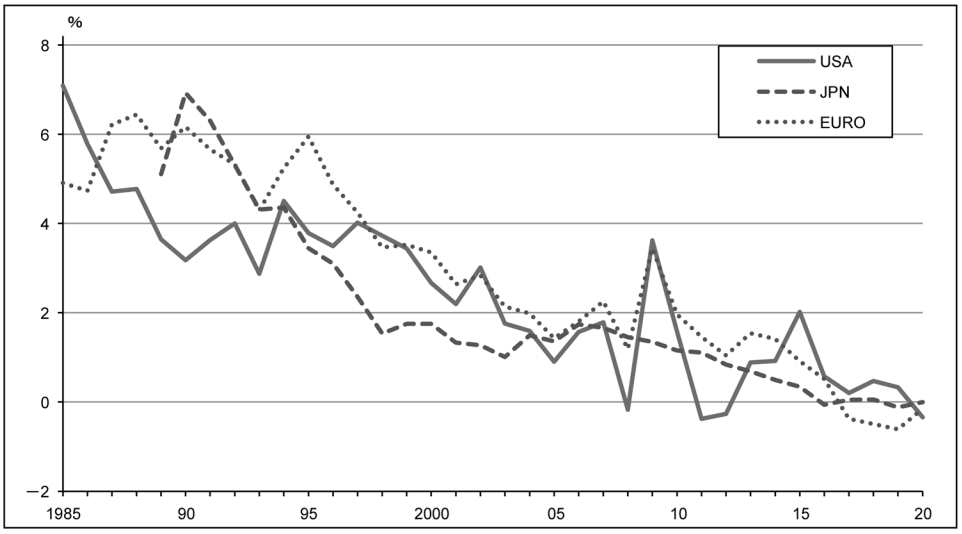
Figure 1 Real 10-year Rates



Sources: Private communication, ECB.

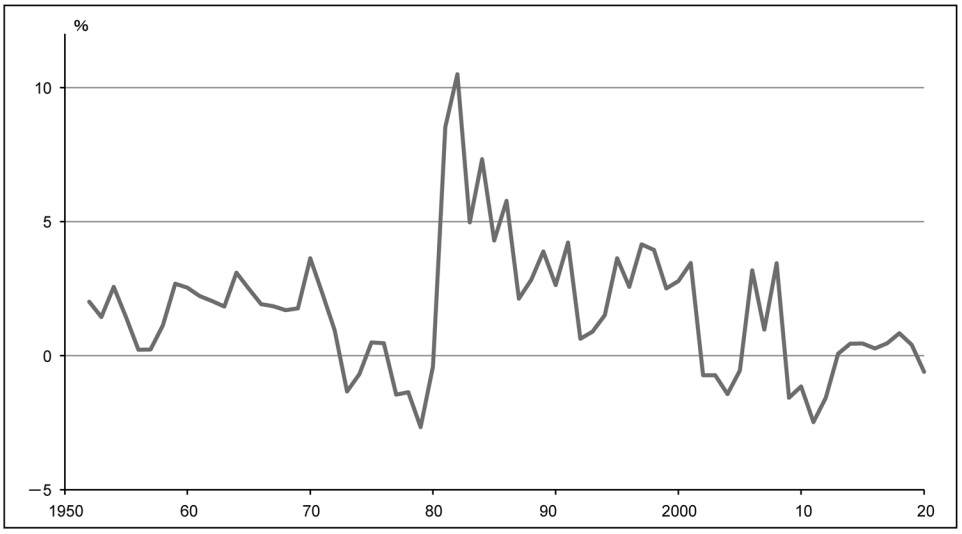
appropriate ones for assessing debt sustainability. Finally, the third and most difficult issue is how we should conduct fiscal policy in this environment. I am going to review both the theory — the way we have thought about the issue in academia — and the practical implications for policymakers. I feel slightly awkward in giving this lecture in Japan because Japanese policymakers have been ahead of the game; they are ahead in taking decisions. In general, they have taken the right decisions and have played a major role in what has happened and in determining how we think about fiscal policy.

II. Interest Rates Now and in the Future

Let me start with the first question on interest rates now and in the future. There has been an enormous amount of empirical work on this issue. I would like to focus on three graphs. The first graph, Figure 1, shows the evolution of 10-year real interest rates in the U.S., the Eurozone, and Japan. This graph is striking in that it shows interest rates have been steadily decreasing. It is also clear that the decline in interest rates has been steady, not just a temporary decline due to the financial crisis or the COVID-19 crisis.

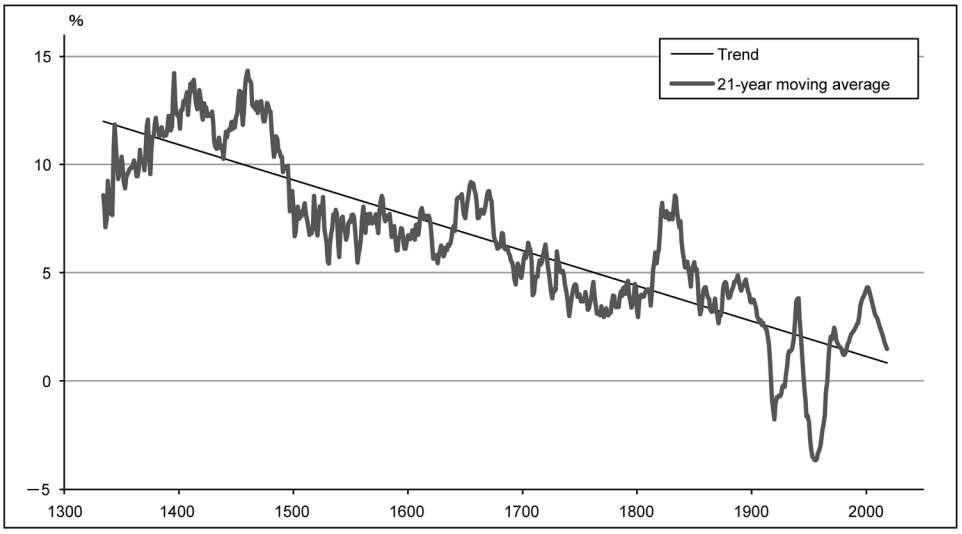
However, Figure 1 is somewhat misleading. Figure 2 shows a longer series, 10-year real interest rates for the U.S., going back to 1950 (updating a series constructed by Robert Shiller). If we look at the graph starting in 1985, the decline is absolutely striking. But, if we take a longer view, it is not obvious that there has been a major decline. More importantly, it is the 70s and the 80s that look exceptional. In the 70s, inflation was high, but the nominal rate did not increase accordingly, and thus the real rate became strongly negative. In the 80s, the Volcker and the Thatcher disinflation led to a sharp increase in interest rates. This suggests that these two decades are actually the exceptions, and that we should take out the period between 1970 and 1990 to explore whether there has still been a decline in interest rates. Figure 2 shows that, while there

Figure 2 USA Real 10-year Rate



Source: Shiller (2015), updated using Federal Reserve Bank of St. Louis FRED data set.

Figure 3 Real Safe Interest Rate (Global Measure)



Source: Schmelzing (2020).

has indeed still been a decline, it is less dramatic than the decline shown in Figure 1.

To examine the decline further, I am going to show you a third graph, Figure 3, which was created by Paul Schmelzing of Harvard University, who has made an extremely valuable contribution by finding a series of proxies for the safe interest rate starting in the 1300s. Based on his work, safe interest rates in various places are shown in Figure 3. At the beginning, they are basically interest rates for Venice borrowing from the rest of the world. At the end, they are mostly U.S. treasury interest rates. The decline in interest rates is striking: a decline of about 2–3 basis points a year on aver-

Table 1 Probability that the nominal interest rate is less than some threshold, 5 or 10 years out

Currency	Expiry	< 0%	< 1%	< 2%	< 3%	< 4%
USD	5y	12%	29%	60%	81%	90%
EUR	5y	54%	81%	92%	96%	98%
GBP	5y	24%	53%	78%	90%	95%
USD	10y	15%	25%	44%	65%	80%
EUR	10y	37%	61%	78%	88%	93%
GBP	10y	26%	44%	66%	81%	89%

Source: Private communication.

age for more than 700 years. Figure 3 indicates therefore that the decline is really an underlying trend and suggests that it is likely to continue. This is my interpretation of this graph and my own assessment of what is likely to happen to interest rates.

The downtrend in interest rates suggests that there are low frequency fundamental factors at work. While studies of the decline in interest rates have pointed to a range of factors, two of them seem plausible here. The first factor is that as income has increased, savings have likewise increased more than in proportion: Poor people and poor countries save little. In addition, as life expectancy has increased, people have started saving for retirement, which has also increased savings. The second factor is an increase in the liquidity of these safe assets. If you had a claim on Venice in the 1300s, it may have been safe but not easy to exchange to get cash. On the other hand, if you now have treasury bills, you can sell them in the market, and liquidity is no issue. These could be the two main factors underlying the decline in interest rates and, if so, the implication is that these low rates are there to remain.

However, there might be bumps in the rates, and I would not be surprised if interest rates exceeded growth rates occasionally. For example, President Biden's stimulus program may be too strong, forcing the Fed to increase the interest rate to a level higher than the growth rate, and this may be the case for a few years. However, what matters here is not such temporary deviations but the steady state. I think we can assume that we are going to be with high probability in a regime of secular stagnation for some time. But not with 100% probability: While we have convincing plausible explanations for past declines in interest rates, we are not sure exactly what factors lie behind these declines and how powerful a role they will play. If I were a policy maker, I would therefore work under the assumption that the neutral interest rate r^* is going to be likely less than the growth rate g but I would not assume that this will happen with probability one.

What do investors think? Options traded on sovereign bonds allow us to compute the implied probability of interest rates reaching certain levels in the future. As shown in the first row of Table 1, investors in the U.S. implicitly put the probability at 90% that the short rate will be less than 4% in 5 years. This is an interesting number because it is roughly what we expect the nominal growth to be; 2% for the real growth rate and 2% for the inflation rate. Accordingly, they put very high probability on real interest rates being less than the growth rate 5 years on. The probability goes to 98% for Europe and a still high 93% 10 years on. Investors clearly expect to be in a low interest rate

environment for some time.

Turning to the ZLB, I also think that we are going to be in a regime in which the ZLB remains relevant for policymakers. While nominal rates will likely be a bit higher than today, say 2% or 3%, they will still reduce the room that monetary policy has to maintain output at potential and inflation at the target level in the face of adverse shocks. This is the world that we should be expecting for the next decade or so.

III. Debt Sustainability

A. Basic Dynamics of Debt-to-GDP Ratios

Let me now move on to the issues surrounding fiscal policy. The first issue is debt sustainability. We now understand that there is no magic number for debt-to-GDP ratios. Japan has convinced the world that it can sustain a 250% for the ratio of gross debt to GDP without a debt crisis. The reason is clear. The sustainable level of debt-to-GDP ratios depends on the safe interest rate, and what matters to a first approximation is the product of debt-to-GDP ratio and the interest rate.

Let me start from the basic dynamics of debt-to-GDP ratios. I would like to introduce some notations. Let us take d to denote a debt-to-GDP ratio, r the real interest rate, g the growth rate, and s the primary balance, which is positive if there is a surplus and negative if there is a deficit. Then, the basic dynamics of debt-to-GDP ratios are described as

$$d=\frac{(1+r)}{(1+g)}d(-1)-s. \tag{1}$$

The primary balance that stabilizes the debt-to-GDP ratio can be computed by equating the current debt-to-GDP ratio d and the debt-to-GDP ratio last year $d(-1)$ in (1) as to get:

$$s=\frac{(r-g)}{(1+g)}d. \tag{2}$$

Then, (2) implies, if $r-g$ is negative, that the right-hand side is also negative, which means that the government can stabilize the debt-to-GDP ratio with a negative primary balance, that is, with a primary deficit.

The implications from (2) can be stated in three ways. First, as I have just shown, the government can run a primary deficit to keep the debt-to-GDP ratio constant. Second, even if the government runs an even larger primary deficit, the debt-to-GDP ratio will converge to a higher value, but it will not explode. In other words, when $r-g$ is negative, debt can increase to high levels, but it does not spiral out of control in the way that it would if $r-g$ were positive. Third, maybe even more strikingly, it implies that the government can issue more debt without having to raise taxes later to pay for it. The reason is that issuing more debt raises the debt-to-GDP ratio, but, from then, the debt ratio will slowly decrease over time as $r-g$ is negative in equation (1). Who is paying for the higher debt, if not the taxpayers? Implicitly, it is the investors who are accepting such a low rate.

If we were in a world in which $r - g$ was negative forever with probability 1, all these conclusions would be the right ones, and there would be no issue of debt sustainability.

However, this is much too strong a statement, and there are two reasons why we must be careful about debt sustainability. The first reason is uncertainty. As I mentioned, while the probability that r will be greater than g is small, it is positive and one must take this probability into account. Debt sustainability could be an issue if we have a high level of debt and there is a change in the environment. If the debt-to-GDP ratio is very large, as in Japan, the impact of a change in $r - g$ becomes magnified. In such a case, you may find yourself having to generate a much greater primary surplus if circumstances go against you.

The second reason is the effect of debt itself on the real interest rate r through crowding out. In a closed economy, when government debt increases, capital is crowded out and the marginal product of capital increases. Then, at a sufficiently high level of debt, r will eventually exceed g. Hence, there is a limit on debt sustainability. In an open economy, since what matters, if financial markets are integrated, is more global than national debt, an individual country has more room to issue debt, but there is eventually also a limit to the level of global debt.

B. How to Assess Debt Sustainability

Having provided general considerations, I want to move on to how to assess debt sustainability. First, "debt sustainability" needs to be defined. Let me offer a definition. Debt is sustainable if the probability that a country will be able to generate a sufficient primary balance to cover interest payments over the next 5–10 years (longer horizons that have just too much uncertainty) is very high. This is an operational definition, which is clear and implementable:

The probability of debt sustainability depends not just on the level of debt, but also on several other factors. The first factor is the distribution of $r - g$, which I have already discussed. Both the expected path of $r - g$ (the first moment) and how much $r - g$ can fluctuate (the second moment), and in particular the probability that $r - g$ turns positive, matter. Second, it is also important to take into account implicit liabilities. Pension systems and social insurance may have to be partly financed from the budget in the future. Third, the path of a primary balance must be taken into consideration, including both the first and the second moments. Fourth, the initial tax level is important, because the higher the initial tax rate, the less the room there is to generate a primary surplus by increasing taxes. For example, my country, France, is perhaps close to the limit of increasing taxes. Fifth, the nature of the government also matters. If a large adjustment is needed to shift from, say, a primary deficit to a primary surplus, it will be politically costly. It therefore makes a difference whether, for example, the government is a coalition or a single party government. The ability to implement large adjustments depends on the political circumstances. Finally, debt maturity is important, because, if $r - g$ changes, the dynamic effects on debt payments will depend on the maturity of the debt. If the maturity of the debt is long, it gives more time for the government to adjust. If the maturity of debt is 10 years, for example, the fiscal authority has roughly 10 years to move from a primary deficit to a primary surplus. On the other hand, if the maturity of debt is just one year, the fiscal authority is likely to be in serious trouble.

A general rule that captured all these elements and ensured debt sustainability just cannot be written ex ante. This is the problem for example with European Union fiscal rules: they cannot fit all situations. This is an assessment that can only be done at one time in one place, each year, in each country. The right tool exists. It is called stochastic debt sustainability analysis (SDSA), and it can be used to compute, based on existing policies and commitments, the distribution of outcomes 5 or 10 years on. It allows one to assess the probability that, based on existing policies and commitments, the government will fail to either cover the interest payments on the debt, and debt will increase. It then allows an examination of what the government needs to do to avoid that outcome. I have seen this method used a number of times when I was at the IMF, and although a full SDSA depends on many assumptions and does not give definitive answers, I have found that it does allow for a very useful discussion. It requires the contribution of an independent expert authority to ensure the plausibility and the reliability of results. And if that expert authority, for example a fiscal council, concludes that there is an issue regarding debt sustainability, there must be a process through which the government explains how it will modify its policies, and a monitoring process of how the issue evolves over time. I believe a process along these lines is the way to assess debt sustainability.

C. Multiple Equilibria and the Role of Central Banks

Sometimes, interest rates increase suddenly. One of the reasons is that sovereign bond markets are prone to multiple equilibria, a phenomenon we call "sudden stops." Even if there is no change in fundamentals, if investors start becoming anxious and anticipate some probability of default, they will ask for a higher spread. Unfortunately, these higher rates may well make their worries self-fulfilling by making it harder for the government to control debt, and thus there can be a large range of equilibria. We have plenty of models in which this happens, and there are a plenty of cases where this has in fact happened. Emerging market economies are particularly prone to this danger, but it is not irrelevant even for advanced economies.

The question then is, what should be done when this happens? One response would be to ensure a level of debt so low that these worries about default cannot become self-fulfilling. If debt is very small, even a larger spread will not lead to much larger interest payments. However, this response is misguided, because the range of multiple equilibria where we can have both a normal equilibrium or a bad one can be very large. Hence, fiscal austerity that reduces the debt-to-GDP ratio from 100% to 90% does not eliminate multiple equilibria. So, this does not provide a good argument for trying to reduce debt, because it would be necessary to reduce debt-to-GDP ratios to 40% say, which is not possible over only a decade or so.

Central banks have a role to play here. If investors start worrying about debt sustainability without any change in fundamentals, central banks with deep pockets can play the role of a large stable investor to prevent self-fulfilling non-fundamental runs on government debt. This is what the BOJ has been doing. In this case, investors have no reason to fear and do not run. This has worked so far.

However, I feel a warning is warranted here. When investors' concerns partly reflect adverse changes in fundamentals and a higher risk of default, it is not certain that

central banks' interventions will succeed. Central bank interventions basically swap two assets. That is, when a central bank intervenes, it buys government bonds and issues central bank reserves — which typically pay an interest rate close to that on short term government bonds. This swap of government debt for bank reserves is just a change in the composition of the liabilities of the consolidated government (central government plus central bank), but the total liabilities of the consolidated government have not changed. Thus, this swap does not reduce overall default risk, and the spread on government bonds may not come down despite the central bank intervention. So far, BOJ and other central banks interventions have been successful in reducing spreads. So my concerns may be overblown, but I still worry that central banks' interventions may not work if investors get worried about an increase in fundamental risk. This is an issue I think warrants careful consideration.

IV. Optimal Debt Policy

A. Dynamic Inefficiency

Let me now move on to the final topic, optimal debt policy. This is different from debt sustainability: we may be able to sustain debt at a 150% of GDP, but that does not mean that such a level of debt would be the right level to aim at.

In considering optimal debt policy in terms of welfare, a major question is whether low rates are a sign of what is called "dynamic inefficiency." Dynamic inefficiency means that there is too much capital and the marginal product of capital is too low, which is reflected in safe interest rates as well as other rates. To explore this issue, Peter Diamond, more than 50 years ago, developed an overlapping generation model and showed that, when r was less than g, this was a sign of excess capital accumulation[1]. In this case, he showed, issuing more debt would be welfare-improving. All generations would benefit from the government issuing debt until additional crowding out of capital made the interest rate equal to the growth rate. By the government issuing debt and using the funds to distribute goods to those currently alive, those currently alive would be better off. Capital would be crowded out and future generations would have less capital, but this would be beneficial because capital was just not very productive in the first place.

When I was teaching at MIT, I used to say that this was an important theoretical possibility, but it would probably never happen. I am not so sure today.

The question is what rates should we be looking at in assessing dynamic inefficiency? Should we be looking at the safe rate, which is less than g, or at the average marginal product of capital, which is higher than g? I started considering these questions three years ago in my AEA Presidential Lecture[2]. I found that indeed, there was a strong presumption for the safe rate, i.e. the risk adjusted marginal product of capital, to be the right rate to compare to the growth rate, suggesting that we were indeed in a regime of dynamic inefficiency. But I showed that potential general equilibrium effects implied that the right rate was close to but was not quite the safe rate. Basically, it

1. For details, see Diamond (1965).
2. For details, see Blanchard (2019).

was a weighted average of the safe rate and the average marginal product of capital. Turning to the data, this implied that the condition for dynamic inefficiency may not be satisfied, that the welfare cost of debt might be positive, but quite small.

The safe rate may not the appropriate rate to be looking at for at least two other reasons. The first reason is the equity premium puzzle, which is one of the major unsolved puzzles in macroeconomics. Investors ask for a large premium on risky assets. Put another way, they accept very low safe rates given the average rate of return on risky assets. It is hard to reconcile this behavior with what we think are reasonable degrees of risk aversion. Until we can explain the equity premium, we should be careful to take the safe rate as a good indicator of what the correctly risk-adjusted marginal product of capital. The second reason is known as "financial repression," which has happened many times in history. Under financial repression, the treasury forces central banks or private banks to hold sovereign bonds at low rates. Although we no longer observe, in advanced economies, this kind of explicit financial repression, we have something similar in the macro prudential liquidity requirements, though these are perfectly justified in terms of financial stability. Liquidity requirements force banks to hold more safe assets than they would want, with the result that safe rates are depressed relative to what they would otherwise be. This effect should also be taken into account in considering the appropriate rate for assessing dynamic inefficiency.

My bottom line guess is that we are probably not in the dynamic inefficiency region, but that debt is not so costly from a welfare viewpoint, because private capital is just not highly productive. While debt crowds out capital, the cost of issuing debt may not be very large in terms of welfare. In the current environment, if governments have good uses for debt, they should issue more.

B. Practical Advice for Policymakers

Finally, I want to translate the above discussion into practical advice for policymakers. I proceed in two steps.

In the first step, I ignore the ZLB and assume that monetary policy can choose the appropriate interest rate to maintain output at potential. In this case, we do not have to worry about the adverse effect of fiscal austerity on demand and in turn on output: monetary policy can undo those adverse effects. Then it is probably better to slowly decrease debt-to-GDP ratios, for two reasons. First, a decrease in debt-to-GDP ratios enhances debt sustainability, albeit very slowly. Realistically, the process must be slow: an annual decrease in debt-to-GDP ratios of 1% or 2% at most. The limit is given by what monetary policy can offset. Any faster decrease might be too much to be offset by monetary policy. Second, if we believe that the economy is dynamically efficient, a slow decrease in debt-to-GDP ratios improves the welfare of future generations. Increasing debt may however be justified if it is used for investment to improve the future, such as investing in measures to limit global warming.

The world considered in the first step is not however the world we are likely to be in in the next decade or so. As I discussed before, the ZLB will be relevant in the following sense: Although the ZLB may not be strictly binding, the low nominal interest rate environment will continue, and this will reduce the room central banks have to offset the adverse effects of fiscal austerity on output. The first step ignored the ZLB. Now

in the second step, let me begin by assuming that the ZLB is strictly binding, so that central banks cannot maintain output at potential even absent adverse shocks, which is the situation in many countries at this point. In this case, it is obvious that fiscal policy is needed to keep output at potential. The fiscal authority must run a deficit sufficient to increase demand and get the economy back to full employment. There is a trade-off: running a deficit gets output closer to potential, but it entails a slightly higher future cost and a slightly lower probability of debt sustainability. If the probability of sustainability remains high however, there is no question about the desirability of running deficits in this case. This is what the Japanese authorities have concluded and decided to do, and I totally agree with that decision. Even if the ZLB is not strictly binding and nominal interest rates are, say, 2% or 3%, there may still be limited room for monetary policy to react to adverse shocks, in which case governments will again need to be ready to use expansionary fiscal policy. The implication of this line of arguments is that, with low rates, fiscal policy has become much more important than it used be. With respect to adverse shocks, we must design much stronger and better automatic stabilizers.

COVID-19-related spending is an example of appropriate policies that have given protection to firms and people and increased aggregate demand. "Whatever it takes," even if the COVID-19-related fiscal spending increased deficits and debt, was the right policy principle.

With respect to public investment, two things are worth mentioning. First, we should make sure that all public investment that has a risk adjusted social rate of return higher than the safe rate is done. In what areas could such investments be made in Japan? Although Japan may have no great need for traditional infrastructure investment, such as in roads and bridges, there are many other dimensions to public investment. Some of these have been triggered by COVID-19, and this is clearly an area in which public investment is possible. So is the need for public (and private) green investment. Second, whether such spending is financed by debt or taxes should depend on the state of the economy. If private demand is too weak to achieve potential output, spending should be financed by debt, which is more expansionary. On the other hand, if private demand is strong enough, spending should be financed by taxes. This is a very simple financing rule, which depends on the state of the economy.

Let me take on a last issue. What if we remain in an environment in which the ZLB keeps binding and the fiscal deficits required to boost aggregate demand are large enough to lead to a steady increase in debt ratios? Again, this resonates with Japan because Japan has been in such a situation for a long time. Suppose that that situation lasts for another ten or twenty years. Other ways to stimulate demand will have to be considered, because at some stage the debt levels will become too high. What can be done?

Theoretically, there are two ways to stimulate demand: reduce saving or increase investment. On the saving side: I do not know how much room there is in Japan to reduce precautionary saving, but, in the U.S. for example, having a good health insurance system such as Medicare for all would make a considerable difference. It would be good on its own, and most likely decrease precautionary saving. On the investment side: During the COVID-19 pandemic we have realized that there is a number of potential public investment projects which are very much needed, many in the form of

R&D, with respect to both public health and global warming issues. There is also some evidence that the spillover effects of public green investment on private green investment can be quite strong. If we did either one or both of these measures, we could maintain output at potential without having to run large deficits and increase debt. This sounds worth exploring.

Although there is much more to be done, this summarizes my thoughts at this point. Thank you very much.

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