

# Reconsidering the Prospects of Japan's Long-term Interest Rates

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## Abstract

No economic problem can be more obvious than the one with Japan's public finance. Government debt amounts to 180 percent of GDP and the primary balance still remains in deficit. Yet Japan's long-term interest rates have stayed very low, at least so far. The combination of low long-term rates and a high debt/GDP ratio has been seen as an "anomaly" in the financial market for a long time.

This paper argues that, in general, the bond market takes inflation much more seriously than government debt. That is probably because inflation is a better indicator of fiscal crisis than government debt. Therefore, the combination of low long-term interest rates and high debt/GDP ratio is not an anomaly given that Japan is in deflation. This is not to say that the level of government debt is irrelevant. There seems to be an upper limit to the amount of debt, above which the market will refuse to finance the government anymore. However, we cannot know where the threshold lies beforehand. As a second best, I propose to watch inflation carefully, because the end of deflation can be a trigger of fiscal crisis.

## 1. Introduction

No economic problem can be more obvious than the one with Japan's public finance. Government debt amounts to 180 percent of GDP, the highest level among developed countries. Furthermore, there is little scope for the ratio to decline in the near future.

Rational thinking tells us that the bigger the amount of debt, the more difficult it is to pay back. And someone who is likely to have difficulty paying back money usually has to pay higher interest rates to borrow. Therefore, interest rates on Japanese government bonds must be very high.

Of course, that is not what we see, at least so far. The yield on 10-year Japanese government bonds (JGBs) has stayed below 2 percent since 2000 amid increasing government debt. Many have warned of possible capital flight and collapse of the JGB market, but the reality keeps proving them wrong. The combination of low long-term interest rates and large amount of public debt has long seemed an "anomaly" for market participants. Why are long-term rates in Japan so low despite the high debt/GDP ratio? When, if ever, will the JGB market collapse and long-term rates shoot up very high? This paper is an attempt to answer those questions.

I must first warn readers that the approach in this paper is not theoretical. One reason is that I could not find a theoretical model that could answer my question directly. For example, I could not find any theory that suggested the upper limit of public debt/GDP ratio above which a country must face fiscal crisis. This paper is not based on comprehensive empirical analysis either. Nevertheless, I speculate on what is likely to trigger a fiscal crisis in Japan by means of limited information at hand.

The huge amount of household financial assets and large current account surplus are often claimed to be factors that are holding long-term interest rates low in Japan. Household financial assets amounting to 1,400 trillion yen help finance Japan's public debt because half of that amount is in the form of deposits in commercial banks which in turn invest the money in government bonds. The current account surplus also helps government finance because it implies that the nation has excess money that can be used to finance the government without relying on foreign investors.

Those claims may be accurate in terms of *describing how* government debt is financed. However, they do not *explain why* domestic investors keep investing in government bonds of a country already saddled with a huge amount of debt. The notion of "home country bias" seems to me to be just another way of saying that investment strategies of Japanese investors are difficult to explain rationally.

This paper argues that, from a historical point of view, the combination of low long-term interest rates and high government debt/GDP ratio is not necessarily

abnormal. When it comes to determining long-term rates, the bond market seems to be concerned mainly with inflation, not with public debt, possibly with a good reason. In this context, the reason why Japan's long-term rates are low is that the economy is in deflation. The high level of public debt is, in a sense, irrelevant.

This is not to say that public debt is irrelevant forever. There seems to be a limit to the amount of government debt above which the market decides not to finance a government anymore. However, we do not know where that threshold lies.

So my proposal would be that, as a second best, instead of the debt/GDP ratio, we should pay more attention to inflation. Currently, deflation is helping government finance despite the high debt/GDP ratio. However, Japan's deflation should end someday, though not very soon. Then the bond market will have to start thinking hard to form expectations about long-term inflation; will it be 1%, 2% or 10%? What I worry is that, by that time, if there is no convincing fiscal consolidation plan, market expectations may not be able to find a focal point. To avoid a fiscal crisis, it is essential that Japanese government come up with a clear and effective fiscal consolidation program by the time deflation ends.

## **2. Bond markets have focused on inflation**

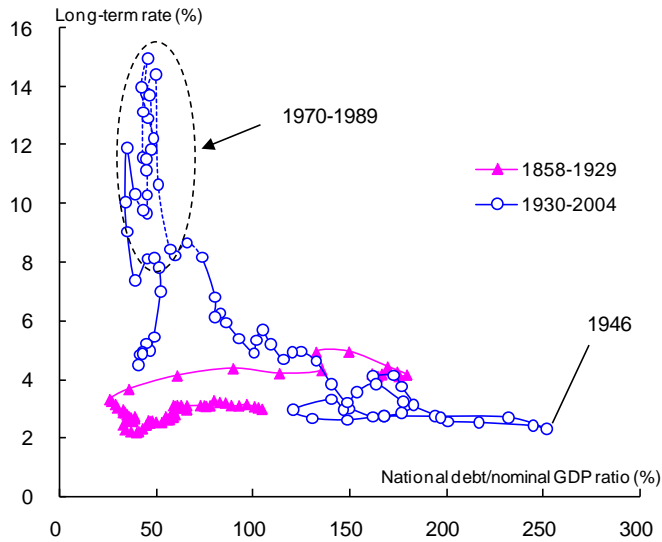
### (1) Relationship between long-term interest rates and government debt/GDP ratio

Japan's government debt/GDP ratio is startlingly high at about 180 percent. However, long-term interest rates are very low. It looks as though the bond market does not care about the level of government debt. However, rational thinking tells us that the debt/GDP ratio cannot rise indefinitely without long-term rates rising significantly. The first question we can ask is how high the debt/GDP ratio has to go for investors to start selling government bonds.

A natural way to answer that question is to simply compare the past behavior of long-term interest rates and government debt/GDP ratios. Figures 1 to-3 compare long-term interest rates and debt/GDP ratios for the UK, the US and Japan, respectively. Common sense may have suggested that the relationship would be upward sloping, implying that the bond market discounts higher debt/GDP ratios.

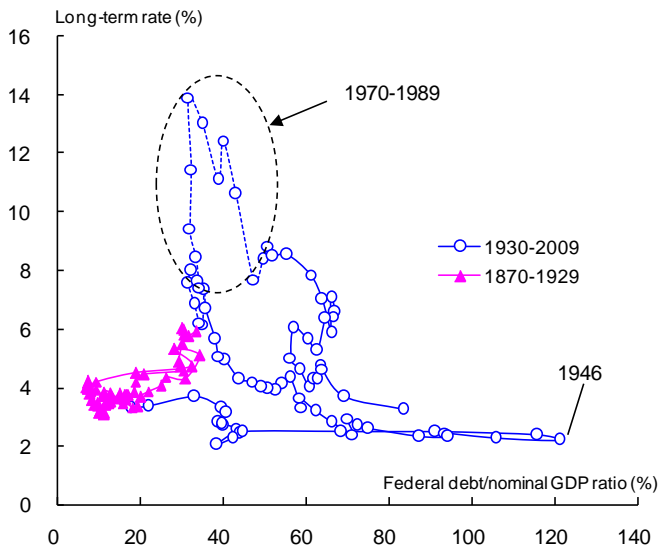
Interestingly, however, we find no evidence that the greater a country's debt, the higher its long-term interest rates. If anything, the three figures even suggest an inverse correlation with long-term interest rates declining as the government debt/GDP ratio rises. I do not dare to claim that this inverse relationship holds in general, but at least the bond market does not seem to discount high debt/GDP ratios very much.

**Figure 1. Long-term interest rates and government debt in the UK**



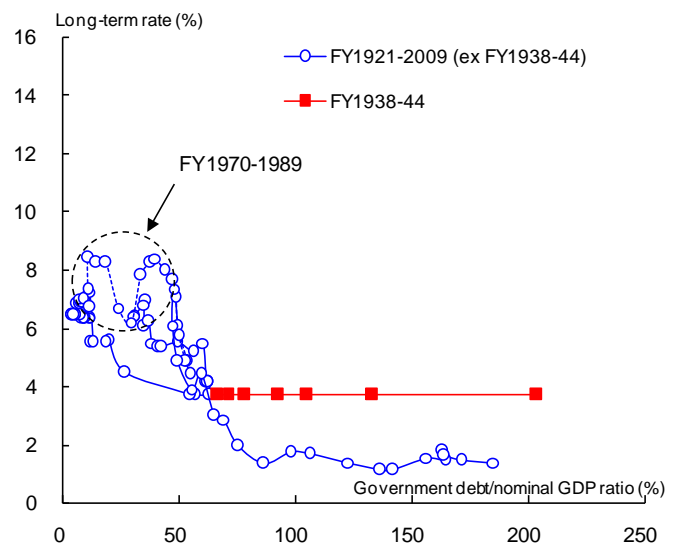
Note: National debt is one form of central government debt.  
 Source: Nomura, based on measuringworth.com, UK Treasury and NRI/AURORA data.

**Figure 2. Long-term interest rates and government debt in the United States**



Source: Nomura, based on US Department of Commerce, US Treasury Department and measuringworth.com data

**Figure 3. Long-term interest rates and government debt in Japan**



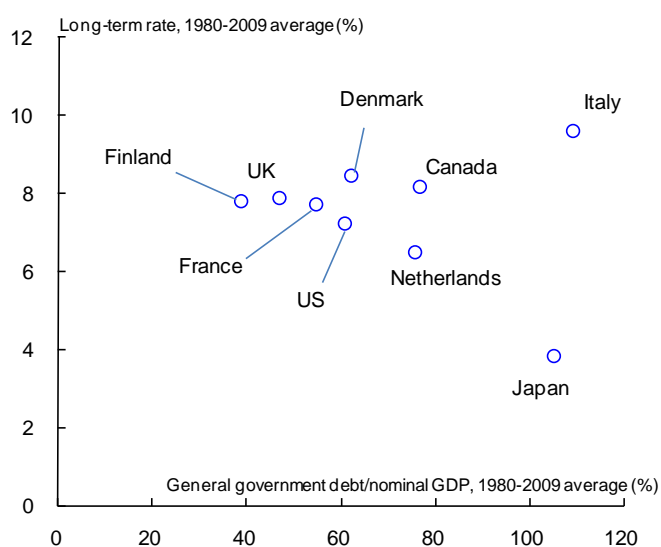
Source: Nomura, based on Japan Statistical Association, Ministry of Finance and BOJ data and Palgrave Macmillan's International Historical Statistics

Figures 1 to-3 tell us also that the UK, the US and Japan experienced a period of high long-term interest rates in the 1970s and 1980s. Note that those were also times of worldwide high inflation. In other words, long-term interest rates were high in those countries not when they had high level of debt as a percentage of GDP, but when inflation was high.

A similar exercise that uses cross sectional data provides a similar conclusion. Figure 4 compares government debt as a percentage of GDP and long-term interest rates for a number of advanced economies, based on average values since 1980. We find no relationship whereby countries with higher percentages of government debt have higher long-term interest rates. Our conclusion remains the same when looking by decade at the 1980s, 1990s, and 2000s in isolation (figure 5).

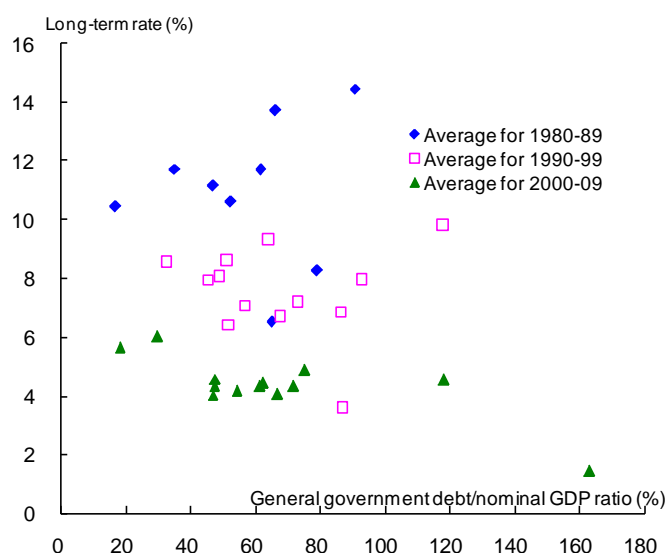
International disparities in long-term interest rates generally appear to correspond to disparities in inflation rates. As seen in figure 6, which compares inflation rates (consumer price index basis) and long-term rates based on average values since 1980, countries with higher inflation rates clearly tend to have higher long-term interest rates. Furthermore, a disparity of 1 percentage point in the inflation rate largely corresponds to a disparity of 1percentage point in the long-term rate. We see the same pattern when looking at individual decades (figure 7).

**Figure 4. Long-term interest rates and government debt in advanced economies, 1980-2009**



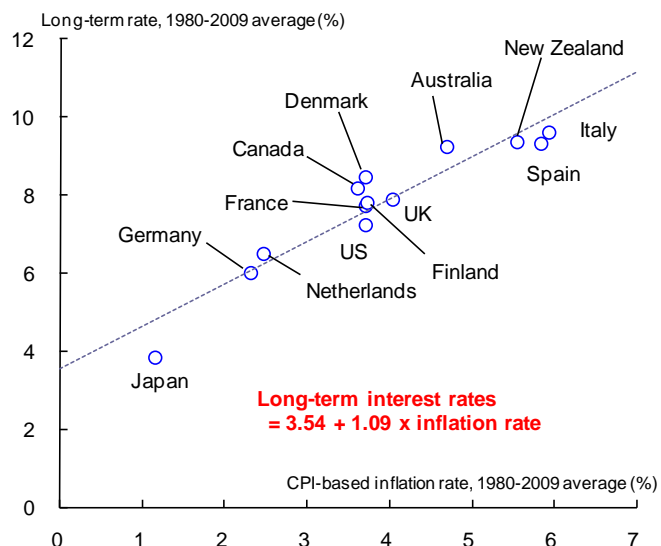
Source: Nomura, based on IMF and OECD data

**Figure 5. Long-term interest rates and government debt in advanced economies, by decade**



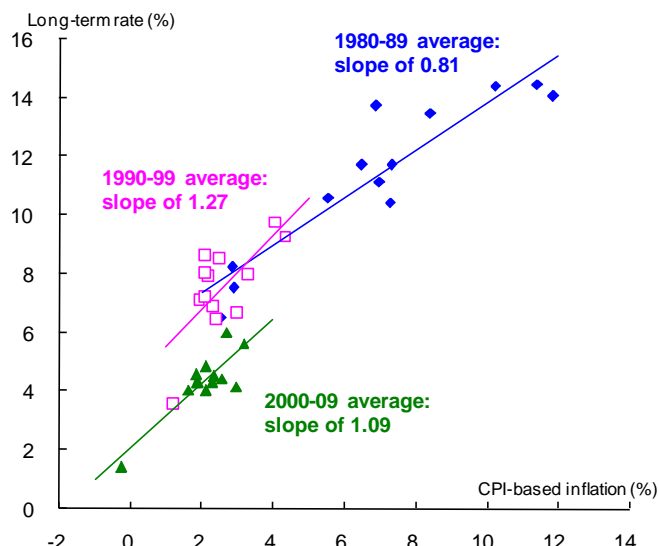
Source: Nomura, based on IMF and OECD data

**Figure 6. Relationship between long-term interest rates and inflation in advanced economies, 1980-2009**



Source: Nomura, based on IMF and OECD data

**Figure 7. Relationship between long-term interest rates and inflation in advanced economies, by decade**



Source: Nomura, based on IMF and OECD data

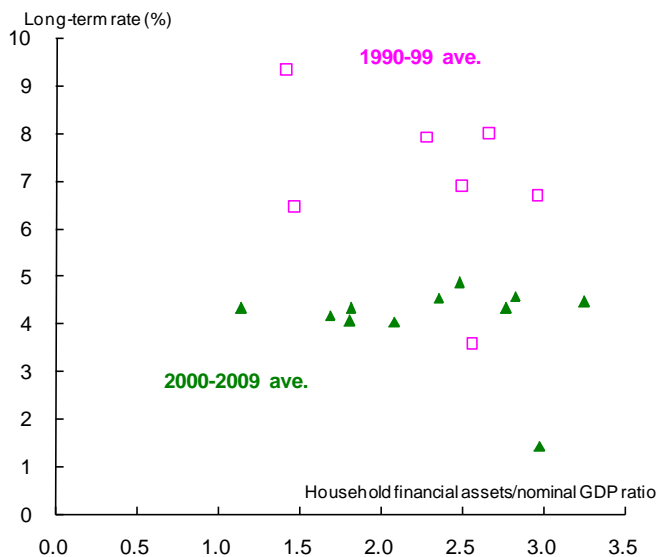
Historically, long-term interest rates were high not when government debt/GDP ratios were high but when inflation was high. Internationally, long-term rates are high not in those countries with high debt/GDP ratio but in those countries with high inflation. Simple comparison between long-term rates and government debt/GDP ratios does not give us any clue regarding the level of government debt that triggers long-term interest rates to shoot up. The bond market appears to focus mostly on inflation, not on government debt.

(2) Relationship between long-term interest rates and current account balances

Huge amount of household financial assets and current account surplus are often claimed to be keeping long-term interest rates low in Japan. I already argued that those views are descriptions of what's happening, not an explanation of why it's happening. Nonetheless, let us briefly see if those claims have general applicability.

Figure 8 compares long-term interest rates and the household financial assets/GDP ratio for each OECD country, using averages for the 1990s and 2000s. There is no clear indication that household financial assets drives long-term interest rates down. Figure 9 shows household financial assets net of household debt and government debt instead of gross household assets. Again, we see no clear relationship between households' capacity to finance government and long-term interest rates.

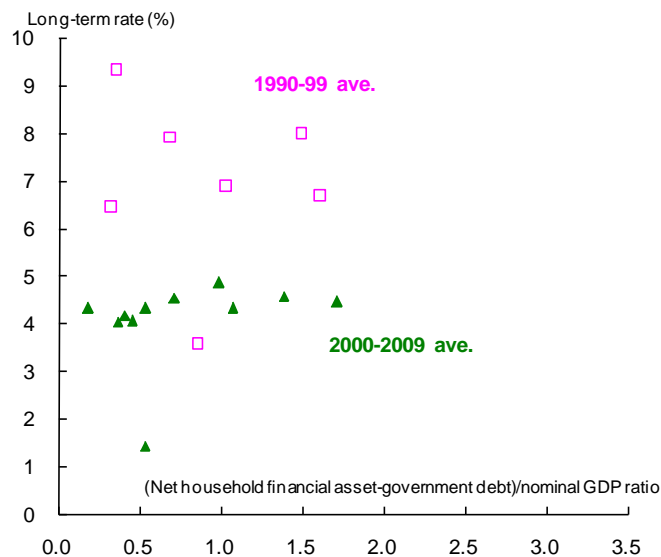
**Figure 8. Relationship between long-term interest rates and household financial assets in advanced countries**



Note: Points represent data for the US, Canada, Japan, France, Germany, Italy, Netherlands, Spain, the UK, Denmark and Finland.

Source: Nomura, based on OECD.

**Figure 9. Relationship between long-term interest rates and net household financial assets net of government debt in advanced**



Note: Points represent data for the US, Canada, Japan, France, Germany, Italy, Netherlands, Spain, the UK, Denmark and Finland.

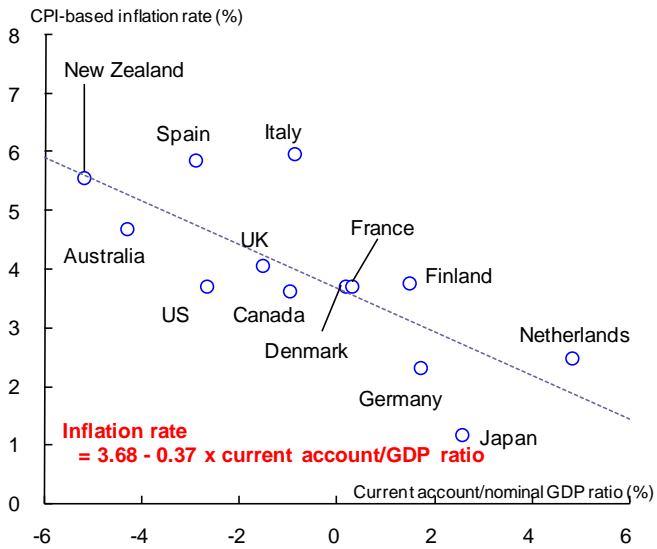
Source: Nomura, based on OECD.

How about the relationship with the current account? Figure 10 is a comparison between long-term interest rates and the current account/GDP ratios in different countries using average values for the period 1980-2009. This time, we do see a downward sloping relationship, with bigger current account deficits associated with higher long-term rates. The claim that the current account surplus is keeping long-term rates down in Japan may seem to have some solid ground.

However, note that the relationship between long-term interest rates and the current account differs greatly from decade to decade, as one can see in figure 11. The two variables show a clear inverse association in the 1980s, but after that, the correlation largely disappears.

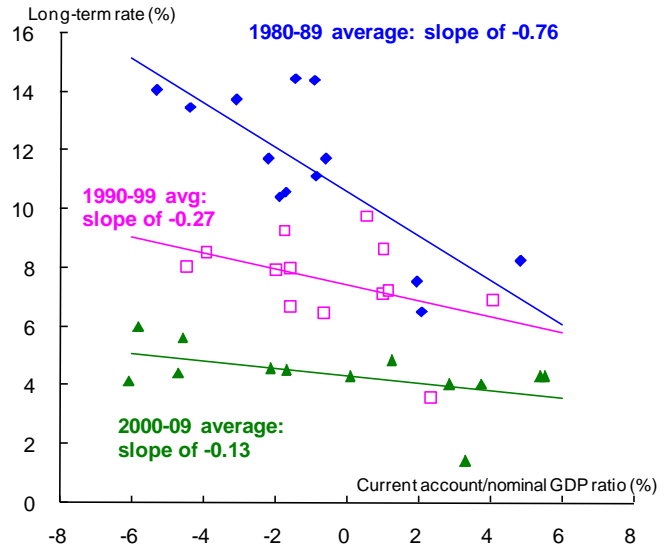
To examine the relationship between long-term interest rates and the current account balances more closely, I broke long-term rates into inflation (CPI-based) and real interest rate (=nominal rate – inflation rate) components and compared them with current account balance. Interestingly, I could not identify any clear correlation between real interest rates and current account balances (figure 12). On the other hand, as figure 13 shows, I found a clear relationship between inflation rates and current account balances only for the decade of the 1980s.

**Figure 10. Relationship between long-term interest rates and current account balances in OECD countries**



Source: Nomura, based on IMF data

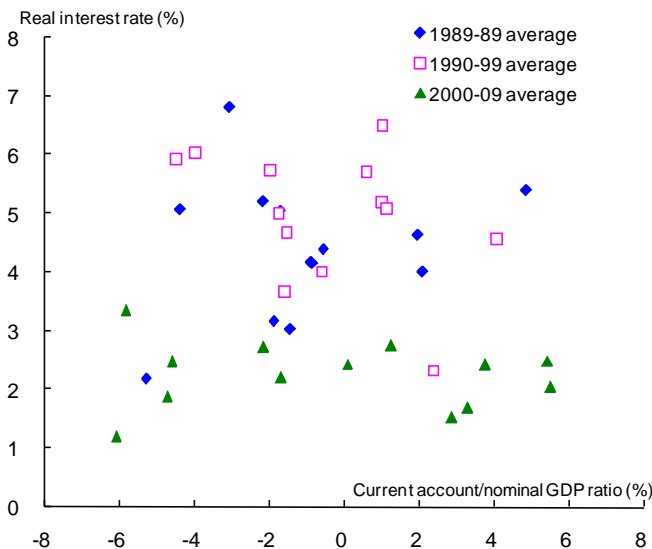
**Figure 11. Relationship between long-term interest rates and current account balances in OECD countries by decade**



Note: Each data point indicates a country (US, Canada, Australia, Japan, New Zealand, France, Germany, Italy, Netherlands, Spain, UK, Denmark, Finland)

Source: Nomura, based on IMF data

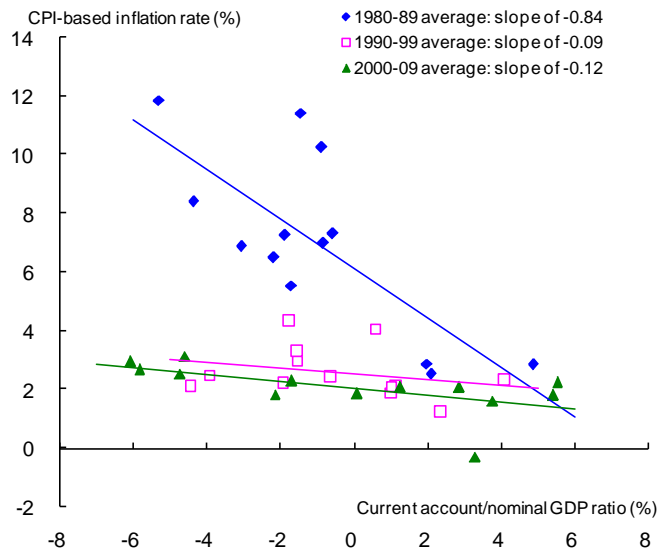
**Figure 12. Relationship between real interest rates and current account balances in OECD countries by decade**



Note: Real interest rate = long-term interest rate – CPI-based rate of inflation. Data points represent individual OECD countries (US, Canada, Australia, Japan, New Zealand, France, Germany, Italy, Netherlands, Spain, UK, Denmark, Finland)

Source: Nomura, based on IMF data

**Figure 13. Relationship between inflation and current account balances in OECD countries by decade**



Note: Each data point indicates a country (US, Canada, Australia, Japan, New Zealand, France, Germany, Italy, Netherlands, Spain, UK, Denmark, Finland)

Source: Nomura, based on IMF data



Long-term interest rates appear to have been associated with the size of the current account surplus in the 1980s, but not since the 1990s. I find it difficult to generalize a particular relationship between those variables. More specifically, it was the inflation component, not real interest rates, that was associated with current accounts during the 1980s. I cannot explain why such an association was present only for the decade of the 1980s. Perhaps the bond market was just looking at inflation, which accidentally resulted in a superficial correlation between long-term nominal rates and current accounts in the 1980s. Again, it seems that the most important determinant of long-term rates is inflation.

### **3. Consideration of past fiscal crises**

If everything else is fixed, the likelihood of default should rise with the ratio of government debt to GDP. Nevertheless, the bond market appears to pay closer attention to the inflation rate than to government debt, at least when we look at the retrospective, long-term picture. Why?

My hypothesis is that inflation is a more reliable indicator of fiscal crisis than is government debt. That is why the bond market generally cares about inflation, not public debt. Below I look at the experiences of developed countries, especially periods of fiscal crisis, to attempt to understand the behavior of bond markets.

#### (1) The UK's experience in the post-World War II period

The hypothesis that inflation is a more reliable indicator of fiscal crisis than government debt is best exemplified in the experience of the UK after World War II. Looking back at figure 1, note that the government debt/GDP ratio in the UK reached 250 percent in 1946. That ratio is much higher than in Japan today. Nevertheless, long-term interest rates in the UK at that time were around 2%. We see no particular indication of fiscal crisis.

I would like to contrast that case with the UK's experience of fiscal crisis in the 1970s. From 1973 to 1974, long-term interest rates in the country rose from around 10 percent to above 15 percent (figure 14). Downward pressure on the British pound increased in 1976. Eventually, in January 1977, the IMF decided to provide the UK with stand-by credit. Although the UK did not actually default, it arguably came close to that situation since it was forced to borrow from an external source.

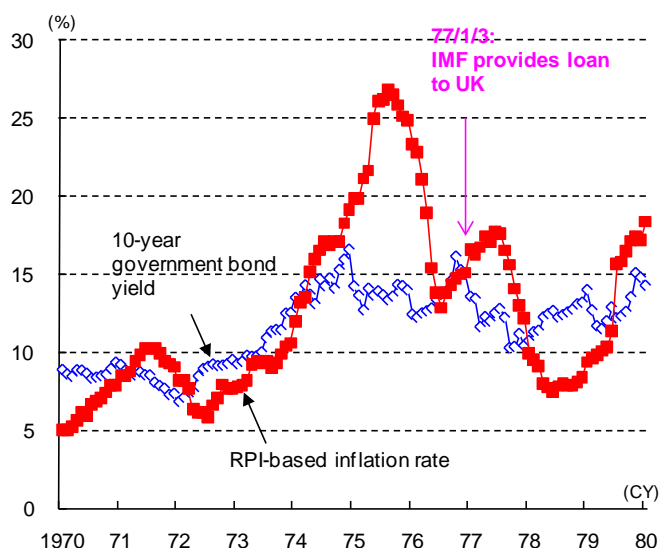
The important aspect of the UK's IMF crisis is that government debt/GDP ratio at the time of crisis was not high. As shown in figure 15, the UK debt/GDP ratio was on a downward trend throughout the 1970s. Moreover, the ratio was below 50 percent in

1976 and '77; in other words, the UK experienced a fiscal crisis when its debt/GDP ratio was very low, at least by today's standard.

In short, in the UK fiscal crisis occurred not when the government debt/GDP ratio was 250 percent but when it was below 50 percent. Therefore, we must conclude that a country may not experience a fiscal crisis when the debt/GDP ratio is high, but it may face a fiscal crisis even if the ratio is low. Information on government debt is not very useful in predicting a fiscal crisis.

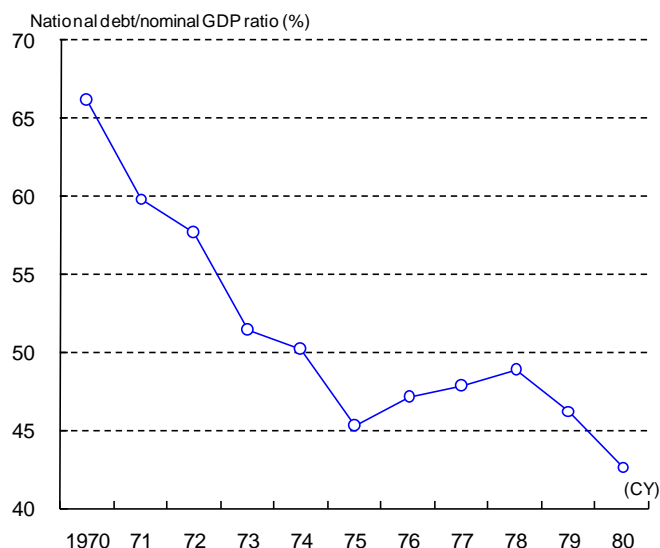
In that case, is there a better indicator? My candidate is inflation. In the UK experience of the 1970s, for example, the rate of inflation based on the retail price index reached 25 percent in 1975, before the crisis. It looks like inflation preceded the fiscal crisis.

**Figure 14. UK inflation and long-term interest rates during the 1970s**



Source: Nomura, based on Thomson Reuters Datastream, NRI/Aurora data

**Figure 15. UK government debt during the 1970s**



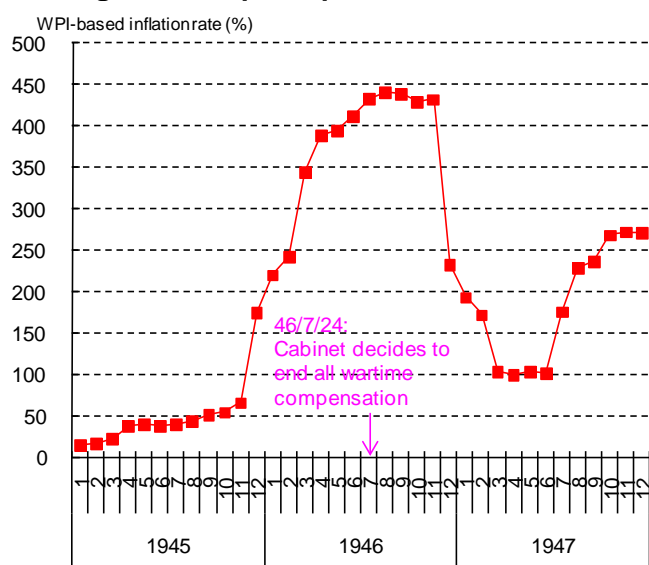
Note: National debt is one form of central government debt.  
Source: Nomura, based on UK Treasury data

(2) Japan's experience with the ending of indemnity payments after World War II

The pattern that inflation precedes fiscal crisis applies to Japan's experience right after the World War II. During the war, the Japanese government provided companies with various forms of compensation in return for producing equipment and materials required for war. In July 1946, the government declared an end to this system of compensating companies, the cost of which had by then ballooned to ¥56.5 billion. The government appears to have been concerned that continuation of the system would have widened the fiscal deficit and exacerbated the existing problem of high inflation.

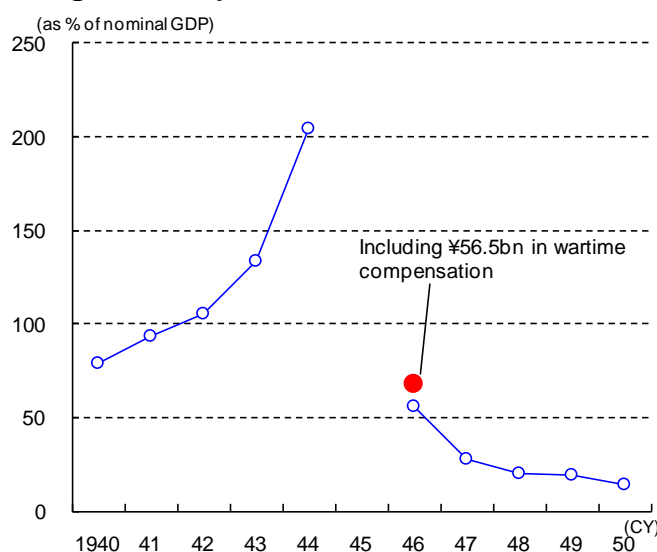
Although Japan's wholesale price inflation had already reached a relatively high level, it gained further momentum from end-1945, becoming a hyperinflation exceeding 400% by mid-1946 (figure 16). Note that Japan's inflation rate rose before government default was apparent. The ratio of government debt to GDP in 1946 was only 56 percent excluding wartime compensation, and only 68 percent even including wartime compensation (figure 17).

**Figure 16. Japan's post-war inflation**



Source: Nomura, based on BOJ data

**Figure 17. Japan's national debt in the 1940s**



Source: Nomura, based on Japan Statistical Association, Ministry of Finance data and Palgrave Macmillan's International Historical Statistics

### (3) Experiences of fiscal crisis in France and Italy in the 1920s

Looking further back than the Second World War, France and Italy each experienced a fiscal crisis in the 1920s. Neither country could reduce the fiscal deficit it inherited from the First World War. Eventually, both countries faced difficulties in refinancing government bonds in 1926.

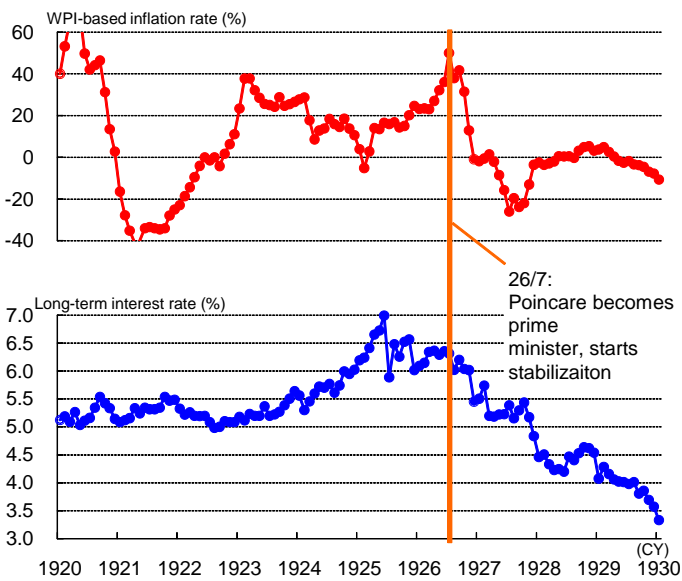
One of the victorious nations in the First World War, France had persisted with its expansionary fiscal policy in anticipation of war reparations from Germany, but it experienced fiscal deterioration when Germany failed to pay the reparations as scheduled. The long-term interest rates climbed to nearly 7% for a time in 1925, after remaining at the low 5% level up to 1923 (figure 18). The country eventually decided on a radical fiscal restructuring after Raymond Poincaré became prime minister in 1926, after which the long-term interest rate clearly entered a declining trend.

Italy carried out fiscal reforms, such as reducing fiscal expenditure and introducing an income tax, from the time Mussolini took power in 1922. In 1925, however, the lira lost value in response to economic overheating, resulting in a national bond refinancing crisis in July 1926. Mussolini responded in August the same year by declaring that he would use whatever means necessary to stabilize the lira, and in November the government forcibly converted national bonds with a short duration into national bonds with a long redemption period.

Although the outcomes of their fiscal crises differed—France avoided default by fiscal consolidation while Italy defaulted by forcing investors to refinance government debt—both countries faced a crisis situation at the same time. The similarity was not just in the timing, but also in the fact that both France and Italy had experienced high rates of inflation prior to the crisis.

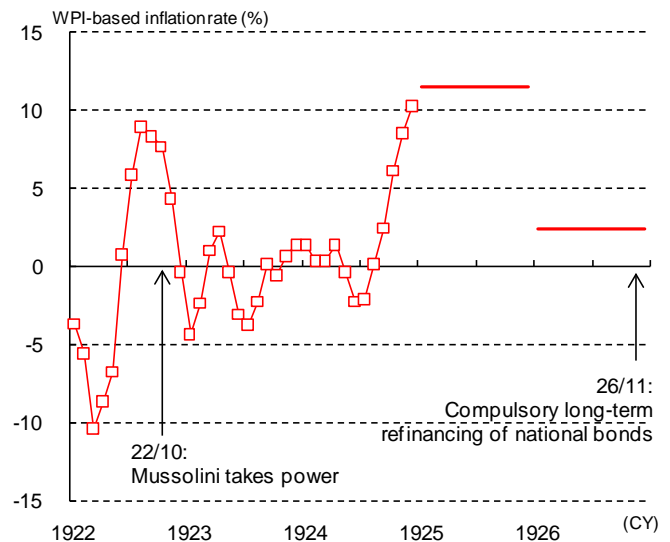
Between 1923 and 1926 when Poincaré took office, France experienced generally high rates of inflation, between 10 and 40 percent, although inflation did turn negative for a time (figure 18). Likewise, in Italy, just before the compulsory conversion of national bonds, WPI-based inflation had accelerated sharply from end-1924 to reach an annual average of more than 10 percent in 1925 (figure 19). Although the magnitude was relatively subdued compared with other cases, Italy's sovereign default also was preceded by a significant rise in inflation.

**Figure 18. France's inflation and long-term interest rate in the 1920s**



Source: Nomura, based on NBER data

**Figure 19. Italy's inflation in the 1920s**

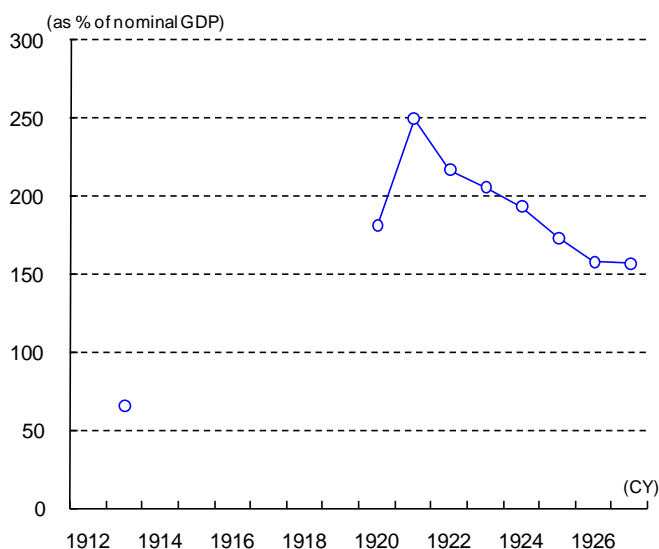


Note: Shows annual average data for 1925–26, due to unavailability of monthly data.

Source: Nomura, based on John Parke Young's *European Currency and Finance* (1925), Palgrave Macmillan's *International Historical Statistics*

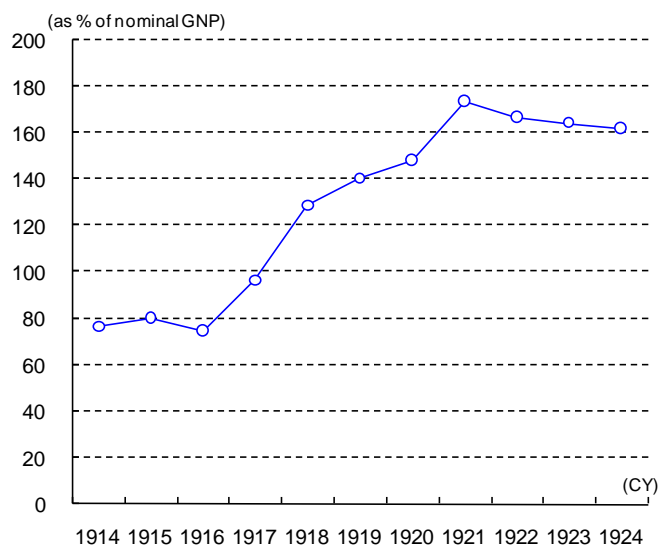
Both France and Italy had high ratios of government debt to GDP in the period before their fiscal crises. The debt/GDP ratio was 250 percent in France in 1921 (figure 20) and over 160 percent in Italy from 1921 (figure 21). However, in both cases, the debt ratios had begun to decline after 1921. This downward trend would have made it difficult to predict fiscal crisis only from information about each country's debt burden.

**Figure 20. France's government debt in the 1920s**



Source: Nomura, based on Palgrave Macmillan's International Historical Statistics and Rogers' The Process of Inflation in France, 1914–1927 (1929) data

**Figure 21. Italy's government debt, 1914-24**



Source: Nomura, based on John Parke Young's European Currency and Finance (1925), Palgrave Macmillan's International Historical Statistics

#### (4) Inflation rates reflect a country's sovereign credit

Looking at past experiences of economically advanced countries for which government debt data are available, I conclude that it would have been difficult to predict the fiscal crises in the UK, Japan, France and Italy only from information about each country's public debt. On the other hand, in all four cases the fiscal crises were preceded by an acceleration of inflation. Therefore, I conclude that inflation is a better indicator of fiscal crisis than public debt. Admittedly, high inflation is not always followed by a fiscal crisis. Also, I do not claim that inflation is the best among all possible choices, merely that inflation is a better choice than public debt.

Why can inflation be a better indicator than government debt? To answer this question requires bit of speculation, for there is no theoretical way to determine an absolute level of the debt/GDP ratio above which a country must face a fiscal crisis; it can happen with whatever level of government debt. On the other hand, the currency

embodies a nation's credibility. Therefore, the risk of a sovereign crisis, in which case a country loses its credibility, is vividly reflected in the change in the value of the currency, that is, inflation.

This hypothesis can rationalize the behavior of the bond market that I described already. The clear association of long-term interest rates with inflation but not with government debt/GDP ratios is reasonable if inflation is the better indicator of fiscal crisis. By the way, if inflation is a sign of the loss of credibility in the national currency which precipitates a fiscal crisis, then it is also easy to understand why inflation did not soar during the recent Greek fiscal crisis; the euro represents credibility of 16 EU member countries, not only Greece's.

Under my hypotheses, given that Japan is in deflation, the current combination of low long-term interest rates and high government debt/GDP ratio no longer seems to be an anomaly. A natural implication is that the end of deflation may be a trigger of fiscal crisis in Japan.

Deflation will eventually end if Japan's economy continues to recover. I am worried about what would happen in bond market then. Participants have to start forming long-term expectations of inflation, instead of deflation. They have to wonder if inflation rates will be 1%, 2%, or 10%. They have to think about why they are observing a rise in inflation. Is it because of strong demand, or is it a consequence of the eroding credibility of the yen? Can the Japanese government tolerate a slightly higher long-term interest rate? There will be many things to worry about. If we do not have a concrete fiscal consolidation plan by the time deflation ends and inflation begins, I am not sure whether the market can find a focal point, or whether the focal point will be a reasonably comfortable one.

#### **4. Germany's experience in the 1920s**

I argued that the bond market usually focuses mainly on inflation, not on the government debt/GDP ratio. This may seem to suggest that information on government debt is irrelevant when we think about long-term interest rates. But, how can that be? Intuitively, the level of government debt must have something to do with interest rates that are contracted with that debt. The debt/GDP ratio cannot just keep increasing to infinity anyway.

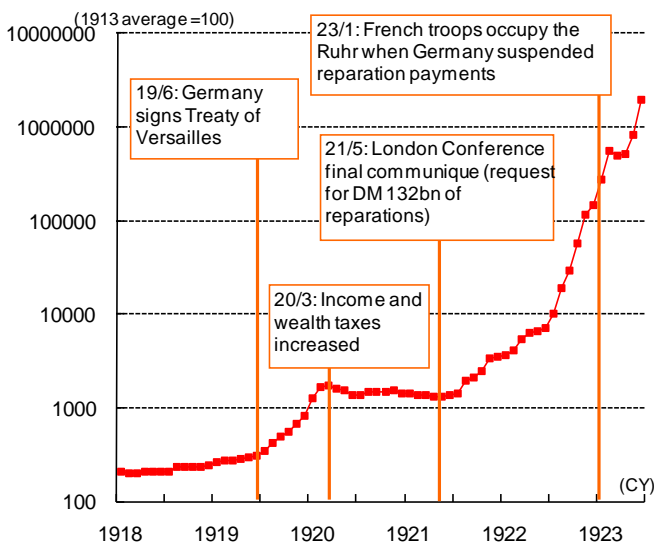
Indeed, my view is that there is a threshold or upper limit to the level of government debt; below this level the market may "ignore" debt in determining long-term interest rates but above it no more debt is acceptable. I came to this insight by looking at Germany's experience after the First World War.

When Germany signed the Treaty of Versailles in June 1919 following its defeat in WWI, the amount of reparations it was to pay had yet to be decided. The inflation rate was initially high, but prices stabilized after the decision to raise various taxes in March 1920.

The decision at the London Conference in May 1921 to set reparations at DM132 billion sparked the beginning of hyperinflation in Germany (figure 22). Watching the situation there, France occupied the Ruhr in January 1923 with the intent of ensuring that Germany make good on its reparations. This had the reverse effect, prompting Germany to suspend payment. Even in this case, inflation preceded debt default.

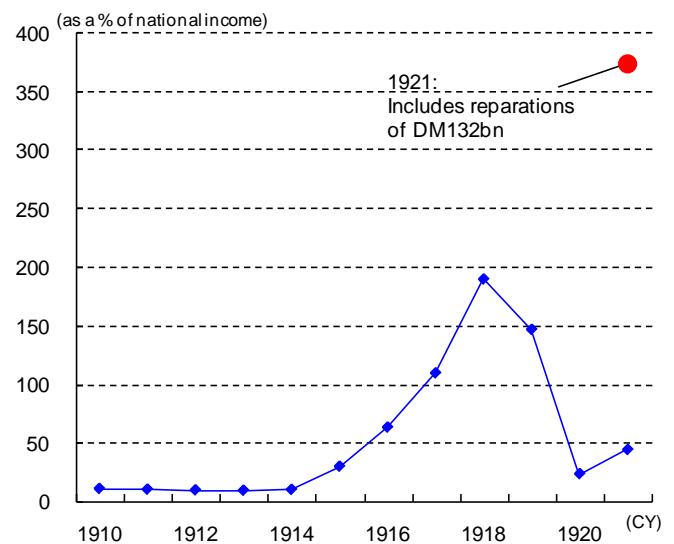
A characteristic of this case is that we can clearly see the amount of debt that triggered the market reaction causing Germany's hyperinflation. It appears that the market back then could not accept the added burden on Germany from DM132 billion in reparations. If data on long-term interest rates were available for this period, they would surely show how rates shot up after the decision on reparations. From this experience I assume that there should be a threshold in public debt above which the market decides not to finance a government anymore.

**Figure 22. Germany's wholesale price index after World War I**



Source: Nomura, based on Young's *European Currency and Finance* (1925) and Rogers' *The Process of Inflation in France, 1914–1927* (1929) data

**Figure 23. Germany's government debt in the 1910s**



Note: It is assumed national income in 1921 was DM40bn. This number is taken from Eichengreen (1995) "Golden Fetters". The level of national income from 1914 to 1920 was linearly interpolated using the actual figure for 1913 and the assumed figure for 1921. Source: Nomura, based on Palgrave Macmillan's *International Historical Statistics* and Young's *European Currency and Finance* (1925)

The amount of reparations demanded of Germany was at least three times its national income in 1921. If obligations other than reparations are included, the debt balance to national income reached nearly 400% in 1921 (figure 23). That is, the level of government debt close to 400% of national income was not acceptable to the market at that time.

Germany's case does not imply that the threshold above which a country inevitably will face a fiscal crisis is necessarily 400% of national income (or GDP). All we know is the level of debt that Germany owed in 1921—close to 400% of national income—was not acceptable to the market. Even if the reparation was half the amount actually demanded, it would have triggered inflation in Germany.

Germany's experience can tell us that there may indeed exist a threshold above which markets will no longer accept more government debt. In this sense, government debt is very relevant when thinking about long-term interest rates. However, we cannot know the particular threshold beforehand. Therefore, information on public debt is not necessarily useful for forecasting long-term rates. Inflation remains the better, though second-best, indicator.

## **5. Political economics of long-term interest rates**

### (1) Projections for the future of Japanese government finance

Germany's experience in 1921 suggests the possibility that the sheer size of government debt itself can cause a fiscal crisis. Even though information on public debt usually is not useful in forecasting long-term interest rates, to have a sense of future path of Japan's government finances is not such a bad idea. I will attempt to make projections on government finance based on the following simple assumptions:

- A. Social welfare spending will grow at a rate that factors in the growth rate of the population aged 65 and older and the inflation rate.
- B. Public works spending will decline at a nominal 3% per year until it reaches 3% of nominal GDP, and remain flat thereafter.
- C. We factor in spending incorporated in the manifesto adopted by the current government headed by the Democratic Party of Japan (DPJ)<sup>1</sup> (spending on the child allowance will grow at a rate determined by growth in the population aged 0–15 and the inflation rate; spending on subsidies for secondary schooling will grow at a rate

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<sup>1</sup> DPJ's manifesto 2009 proposed an introduction of child allowance, subsidies for secondary schooling, subsidies for farmers, reduction of gasoline tax, subsidizing freeways and so on.



determined by the rate of growth in the population aged 16–18 and the inflation rate, and the like).

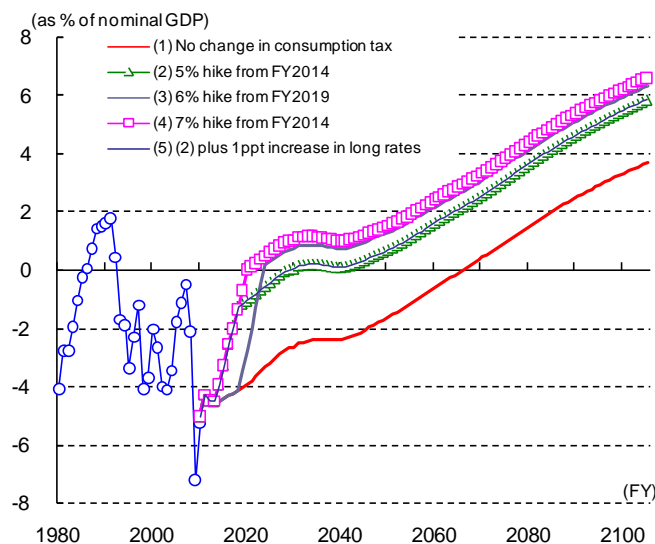
D. We assume that items other than social welfare spending, public works spending, manifesto spending, tax revenues, government bond expenses and government bond revenues remain constant relative to nominal GDP.

E. We break the nominal GDP growth rate down into growth in real GDP per capita, growth in the population and change in the GDP deflator. We assume that per capita real GDP growth will be 1.5% and adjust according to the degree of tax increase. The population growth rate is based on the median forecast of the National Institute of Population and Social Security Research, and we assume the rate of change in the GDP deflator will rise gradually and stand at 1% from FY2016.

F. Long-term interest rates will be the higher of 1.1% or nominal GDP growth plus 0.4 percentage points.

G. Under our scenario for no change in the consumption tax (i.e., where we assume no fiscal consolidation measures are taken), tax revenues are constant, at 16.5% of nominal GDP.

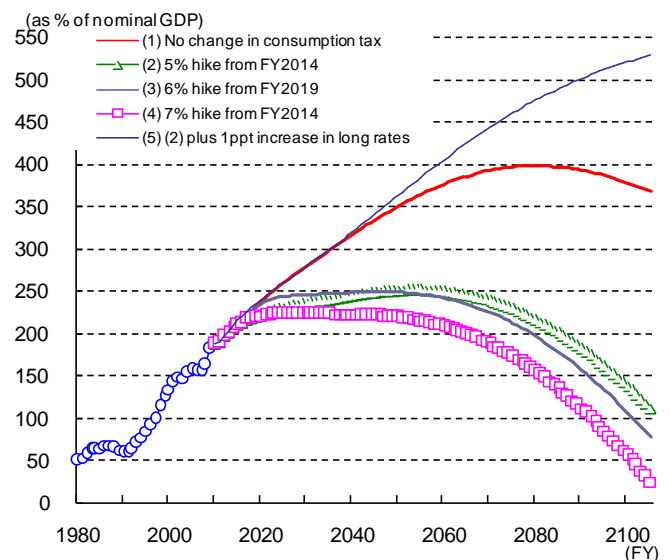
**Figure 24. Projections for national, local-government primary balance, 5 scenarios**



Note: (1) Assumes no increase in consumption tax. (2) Assumes consumption tax raised by 1ppt each year for five years from 2014. (3) Assumes consumption tax raised by 1ppt each year for six years from 2019. (4) Assumes consumption tax raised by 1ppt each year for seven years from 2014. (5) Assumes scenario (2) plus a 1ppt increase in long-term interest rates from 2012.

Source: Nomura, based on MOF, Ministry of Internal Affairs and Communications (MIAC), Cabinet Office data

**Figure 25. Projections for national, local government debt, 5 scenarios**



Note: (1) Assumes no increase in consumption tax. (2) Assumes consumption tax raised by 1ppt each year for five years from 2014. (3) Assumes consumption tax raised by 1ppt each year for six years from 2019. (4) Assumes consumption tax raised by 1ppt each year for seven years from 2014. (5) Assumes scenario (2) plus a 1ppt increase in long-term interest rates from 2012.

Source: Nomura, based on MOF, Ministry of Internal Affairs and Communications (MIAC), Cabinet Office data

Figures 24 and 25 show my projections for national and local government primary balances and debt under five scenarios. In scenario (1), which assumes that no fiscal reconstruction measures, such as an increase in the consumption tax, are undertaken, Japan's debt/GDP ratio would reach almost 400% around the year 2080. Note that a ratio of around 400% triggered inflation in Germany in the 1920s.

Of course this does not imply that Japan's government finances will be sound until 2080 without fiscal consolidation. As I already argued, 400% is not a specific threshold for fiscal crisis. What scenario (1) implies is that, under simple assumptions, Japan's debt/GDP ratio will eventually reach the level at which inflation was triggered in Germany and it is probably safe to assume that Japan will have a fiscal crisis before the ratio reaches that level.

Does that mean it would be wise to sell Japanese government bonds right now? The answer is not so simple. As shown by scenario (2), if the consumption tax were raised by 1 percentage point each year for five years from 2014, the debt/GDP ratio would peak at around 250 percent. The UK economy experienced this level of debt in 1946 without significant increase in interest rates. Admittedly, nothing guarantees Japan's ability to do the same as the UK. Still, it is also difficult to deny altogether the possibility that Japan could survive a 250% debt level without crisis, since it would not be the first time.

With even larger hikes in the consumption tax I calculate that debt would still remain below 250% of GDP even if the increases were delayed somewhat after 2014. For example, assuming we do not begin fiscal consolidation until 2019 scenario (3) shows that if the total consumption tax increase were 6 percentage points instead of 5 percentage points, then debt to GDP would remain below 250%. Naturally, it would be better for the health of national finances to implement a bigger rise in the consumption tax earlier, as in scenario (4).

Scenarios (1) through (4) may give readers an impression that Japan's fiscal situation is not so hopeless. However, those scenarios all assume no sizeable rise in long-term interest rates. In other words, markets remain confident in the government's ability to achieve fiscal reconstruction. Instead, if, as in scenario (5), long-term rates are assumed to rise just 1 percentage point higher than in scenario (2) and if everything else stays the same, Japan's debt/GDP ratio would not peak even by the year 2100.

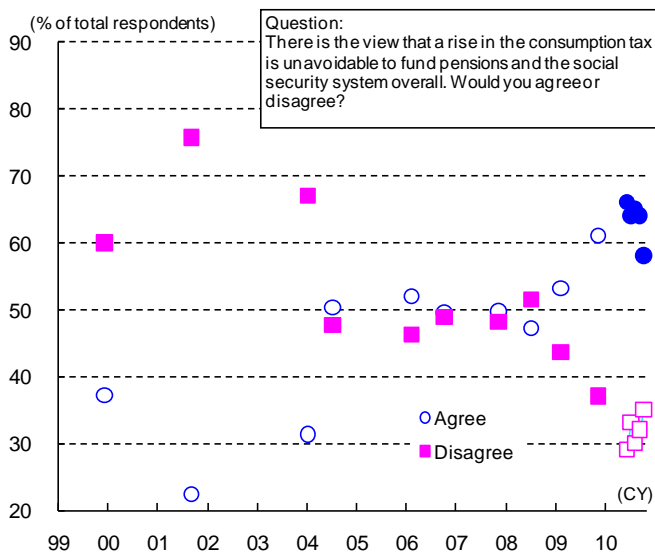
These exercises suggest that the outcome varies greatly depending on the assumptions. Under the assumption that fiscal consolidation will take place in the future and the market believes that it will, then fiscal crisis can be avoided. Under the assumption that fiscal consolidation will not take place or if the market does not believe

it will take place, avoiding crisis will be difficult. It almost feels like we are assuming the results.

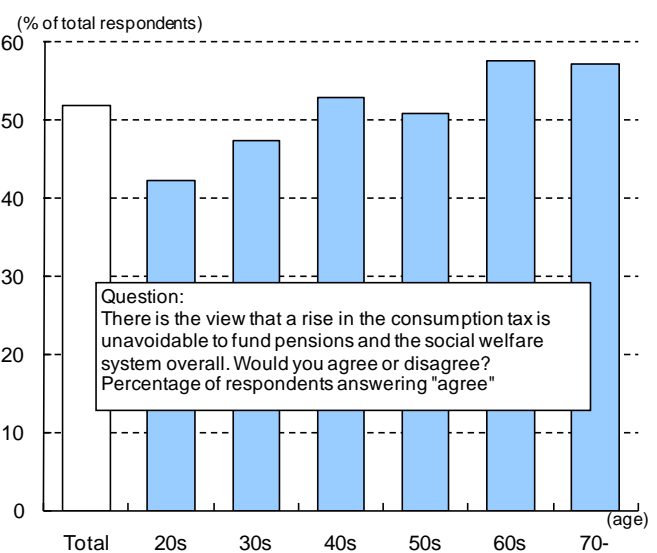
(2) Political economics of an aging society

If the goal is to decide whether to sell Japanese government bonds now, the exercises above do not give much information. What really matters is not different projections under different assumptions, but which assumption—that is, whether fiscal consolidation actually take place or not—is more likely to be realized. This is equivalent to asking whether politicians who are determined to restructure government finance will be elected and whether fiscal consolidation laws will pass the Diet. That is a question of political economics.

**Figure 26. Yomiuri Shimbun public opinion poll results**



**Figure 27. Yomiuri Shimbun opinion poll results: 11-12 February 2006**



Note: (1) "Agree" data in graph is the total for respondents answering "agree" or "probably agree"; "disagree" is the total for "disagree" and "probably disagree." (2) Response options were "support" or "oppose," not "agree" or "disagree," up until January 2004. (3) The latest five polls include fiscal consolidation as a purpose of consumption tax hike, not only social security system. Source: Nomura, based on *Yomiuri Shimbun* data

Note: Total for respondents answering "agree" or "probably agree." Source: Nomura, based on *Yomiuri Shimbun* data

It has been discussed for a long time whether Japan should raise its consumption tax rate, which is still a relatively low five percent. In this regard, a result of a poll by one of Japan's biggest newspaper companies is worth looking at. The *Yomiuri Shimbun* has for some time carried out public opinion polls asking if readers

supported or opposed a hike in the consumption tax aimed at maintaining the social welfare system. Since July 2004, the percentage of respondents supporting such a tax hike was consistently around 50%, but in the two polls in 2009, it rose, reaching 60% in November (figure 26). This suggests that voters are becoming more concerned about the possibility of a fiscal crisis.

A consumption tax is often thought to be regressive, so one may expect it to be difficult to raise the rate in an aging society where the elderly with low income occupy a large share of voters. However, that may not necessarily be the case. The *Yomiuri's* February 2006 survey, which detailed responses by age group, revealed that less than 50% of respondents aged 39 or younger supported a consumption tax hike, but more than 50% of those aged 40 or older did (Figure 27). An aging society does not necessarily mean it is more difficult to raise the consumption tax rate.

Judging simply by the newspaper opinion poll results, a consumption tax hike should be able to obtain majority support. However, in the latest lower house election on July 11, 2010, the ruling Democratic Party of Japan (DPJ) lost ground after it intentionally provoked a discussion on a consumption tax hike as the main issue. It might look as if the DPJ was defeated because it mentioned the consumption tax.

However, that does not seem to be the case since the largest opposition party, the Liberal Democratic Party of Japan (LDP) gained in the election even though it also clearly mentioned a consumption tax hike in its manifesto. In addition, three *Yomiuri* opinion polls during the month right before the election and one right after the election found that support for a consumption tax hike stayed around 65% through this period (figure 26).

If mention of the consumption tax did not cause the DPJ to lose the election, then what did? The media often criticized Prime minister Kan's strategy to change the DPJ policy declared in the 2009 lower house election, but the public overwhelmingly supported flexible modification of the 2009 manifesto in newspaper opinion polls gathered from late August to early September 2010 (table 1). However, the strength of support for a consumption tax hike in these surveys seems to depend on whether they specified how the tax revenues would be used. The largest share of responses "agree to consumption tax hike," almost 60 percent, was reported by the *Yomiuri* poll of August 28-29—and this was the only poll that specified that the revenues from the tax increase would go toward the social security system and fiscal consolidation. Moreover, the LDP manifesto specified that the consumption tax would be used for the social security system, while the DPJ's manifesto did not.

**Table 1. Newspaper opinion poll results on the DPJ manifesto and consumption tax issues**

(share in all respondents, %)

Time of survey		Flexible modification of manifesto		Consumption tax hike	
		Agree	Disagree	Agree	Disagree
Nikkei	Aug. 27–29			45	46
Mainichi	Aug. 28–29	70	27	51	44
Yomiuri	Aug. 28–29	79	15	58	35
Yomiuri	Sep. 3–5	71	17		
Asahi	Sep. 4–5	63	24	48	44
Nikkei	Sep. 4–15			46	44

Note: Details of questions differ by newspaper.

Source: Nomura, based on newspapers listed in the table

From these bits of evidence we can surmise that the public supports a hike in taxes that will be used to improve the provision of services for the elderly or the government’s fiscal position. It is too soon to decide that Japan can never reach a political agreement to lay out a concrete fiscal consolidation plan.

## **6. Conclusion**

Obviously, Japan needs a concrete plan for fiscal consolidation in order to avoid a future fiscal crisis. There must be an upper limit to the government debt/GDP ratio above which the market will refuse to finance the government anymore. The problem is, we do not know beforehand where that threshold lies.

As a second best indicator to the debt/GDP ratio, I propose to focus on inflation instead. In fact, in the past the bond market has taken inflation much more seriously than information on government debt. There probably is a good reason for that; inflation is a better indicator of fiscal crisis than the debt/GDP ratio. The combination of low long-term interest rates and high debt/GDP ratio is not an anomaly given that Japan is still in deflation.

A natural implication is that the end of deflation could be a trigger of fiscal crisis. Japan’s deflation will eventually end (at least in my view). I am worried about what would happen in the bond market then. Participants will have to start forming long-term expectations regarding inflation instead of deflation. They will have to wonder whether the rate will be 1%, 2%, or 10%. They will have to think about the

reason why they are observing a rise in inflation: is it because of strong demand or is it a consequence of the eroding credibility of the yen? They will ask whether the Japanese government can tolerate a slightly higher long-term interest rate. There will be many things to worry about. If we do not have a concrete fiscal consolidation plan by the time market participants begin to ask these questions, I am not sure whether the market will be able to find a focal point, or whether the focal point will be a reasonably comfortable one.