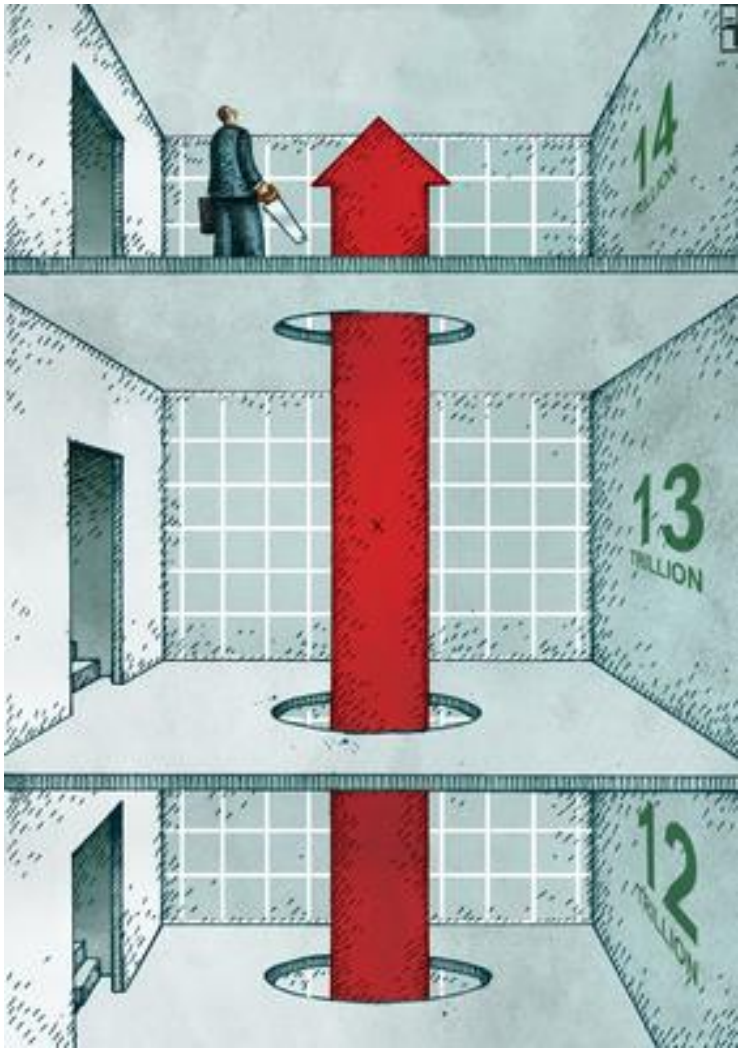
# The sharp accumulation in government debt can't go on forever




**Summary**:

- Sovereign debts have increased sharply since the eighties;
- Global monetary stimulus has created a low interest rate environment but public authorities have failed to benefit from cheap money to reduce debt;
- Relying solely on monetary easing to mitigate the sovereign risk is too dangerous especially given the weakness of the economic growth.

**Keywords:** sovereign debts, interest rate, growth, government, budget deficit, recession, monetary policies.

Government debts in most developed countries have increased markedly since the eighties. Ultra-expansionary monetary policies have dragged down sovereign interest rates below growth rates preventing any fiscal solvency [1] issues in the short run. However, monetary easing failed to stimulate growth significantly and most countries have not benefited from the low interest environment to generate budget surpluses. The sharp accumulation in government debt can't go on forever. Don't be surprised to see global growth damped by debt in the coming years…

1- Government debt sustainability
2- Debt ratios at historically high levels
3- Perverse effects of ultra-accommodative monetary policies

## 1- Government debt sustainability

Similarly to households, the government is subject to a flow budget constraint. The government collects money from households – VAT, income taxes – and firms – corporate taxes – in order to purchase goods and services and finance the debt servicing – pay interest on debt already issued –. The government is said to run a budget deficit when spending, plus interest payments exceed taxes. In this case, the increase in national debt in year t is equal to the deficit in year t. By contrast, when the government runs a surplus – outlays are below revenues – the national debt decreases. All in all, the government debt at the end of year t $D_t$ is equal to the stock of debt in t-1 $D_{t-1}$ plus interests payments$i_t D_{t-1}$, minus the primary balance - revenues $R_t$ minus spending $G_t$- (Appendix 1).

As an economy grows over time, the government debt is usually expressed as percentage of the national output. By dividing the government budget constraint by the nominal output $P_t Y_t$ and using the real growth rate $g_t = \frac{Y_t}{Y_{t-1}} - 1$ and the real interest rate $r_t = \frac{1+i_t}{1+\pi_t} - 1$ we can find that:

$$\Delta d_t = d_t - d_{t-1} = \frac{(r_t - g_t)}{(1 + g_t)} d_{t-1} - pb_t + of_t$$

Table 1.2 – Definitions (variables expressed as % of GDP)

| Variable | Definition | Variable | Definition |
|---|---|---|---|
| $d_t = \frac{D_t}{P_t Y_t}$ | stock of public debt at the end of year t as % of GDP | $d_t - d_{t-1}$ | change in debt (deficit/surplus) as % of GDP |
| $r_t$ | real interest rate | $g_t$ | real growth rate |
| $pb_t$ | primary balance as % of GDP | $of_t$ | other flows as % of GDP |

Put it simply the change in debt as percentage of GDP in the year t is the sum of three terms:

-The differential between real interest rate and real GDP growth divided by $1 + g_t$– also known as the automatic debt dynamic – multiplied by the debt-to-GDP in the year t-1. Hence, when the differential is negative it reduces the debt-to-GDP;

- The primary balance or the difference between outlays and spending $R_t - G_t$ as % of GDP. The primary balance reduces debt when outlays exceed spending $R_t - G_t > 0$;

- Other flows that are usually one-off transactions such as bank recapitalization.

When the real interest rate paid on the government debt exceeds the real GDP growth ($r_t > g_t$) the debt is said to be "explosive" since it will increase more and more each year unless the government generates sufficient primary surpluses. Empirical evidence indicates that the real interest rate is usually higher than the real GDP growth. In order to avoid such a situation, the government can:

- finance the servicing of the debt with primary surpluses such as $pb_t^* \geq \frac{(r_t - g_t)}{(1+g_t)} d_{t-1} + of_t$;

- rely on expansionary monetary policies in order to reduce long term interest rates;

- Implement specific measures such as one-off transactions – telecom auction that would increase the government revenues –.

## 2- Debt ratios at historically high levels

In the 1960s, most countries experienced strong real growth ($g_t > r_t$) reducing the debt-to-GDP ratios while the 1970s were characterized by low real economic growth but also low real interest rates ($g_t > r_t$) leading to further reduction in debt ratios. The great story ended in the 1980s as shown in table 2.1. Public debt ratios in most developed countries increased sharply as growth slowed while real interest rates increased ($g_t < r_t$). Against this backdrop, most economies ran strong fiscal deficits – instead of generating sufficient fiscal surpluses to stabilize debt –resulting in rapid accumulation of debt. Public finances worsened even more dramatically in the wake of the 2008 financial crisis deteriorating further debt-to-GDP ratios. Budget deficits rose considerably due to automatic stabilisers – lower tax revenue such as VAT, corporate taxes, higher unemployment and welfare benefits – and to fiscal easing initiated in attempt to mitigate the effect of the recession.

Chart 2.1 – Government debt (%GDP)

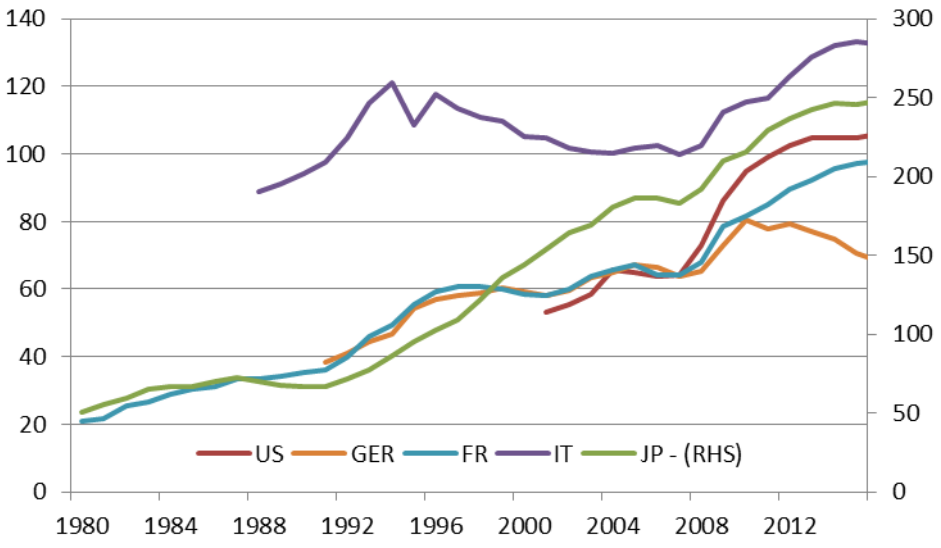


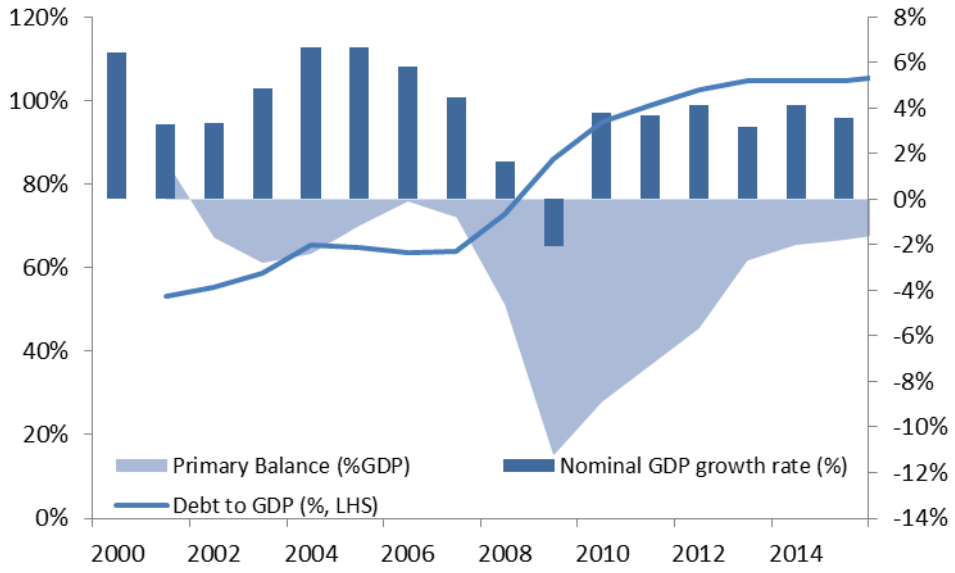
Table 2.1 – Debt-to-GDP ratios

| | United States | Germany | France | Italy | Japan |
|---|---|---|---|---|---|
| 1980 | 41.2% | - | 20.7% | - | 50.6% |
| 1990 | 61.9% | - | 35.2% | 94.2% | 67.1% |
| 2000 | 53.1% | 59.1% | 58.4% | 105.1% | 143.8% |
| 2005 | 64.9% | 67.2% | 67.0% | 101.9% | 186.4% |
| 2010 | 94.8% | 80.5% | 81.4% | 115.3% | 215.8% |
| 2015 | 105.3% | 70.7% | 97.1% | 133.1% | 245.9% |

Table 2.2 – Deficit-to-GDP ratios

| | United States | Germany | France | Italy | Japan |
|---|---|---|---|---|---|
| 2000 | - | 1,0% | -1,3% | -1,3% | -7,8% |
| 2001 | -0,6% | -3,1% | -1,4% | -3,4% | -6,0% |
| 2002 | -3,8% | -3,9% | -3,1% | -3,1% | -7,7% |
| 2003 | -4,7% | -4,1% | -3,9% | -3,4% | -7,8% |
| 2004 | -4,3% | -3,7% | -3,5% | -3,6% | -5,9% |
| 2005 | -3,1% | -3,3% | -3,2% | -4,2% | -4,8% |
| 2006 | -2,0% | -1,5% | -2,3% | -3,6% | -3,7% |
| 2007 | -2,9% | 0,3% | -2,5% | -1,5% | -2,1% |
| 2008 | -6,7% | 0,0% | -3,2% | -2,7% | -4,1% |
| 2009 | -13,2% | -3,0% | -7,2% | -5,3% | -10,4% |
| 2010 | -10,9% | -4,1% | -6,8% | -4,2% | -9,3% |
| 2011 | -9,6% | -0,9% | -5,1% | -3,5% | -9,8% |
| 2012 | -7,9% | 0,1% | -4,8% | -3,0% | -8,8% |
| 2013 | -4,7% | 0,1% | -4,1% | -2,9% | -8,5% |
| 2014 | -4,1% | 0,3% | -4,0% | -3,0% | -7,3% |
| 2015 | -3,8% | 0,5% | -3,8% | -2,7% | -5,9% |

Chart 2.2– US Government debt (%GDP)




As illustrated the government deficit reached its peak in the US and Japan in 2009 at 13.2% and 10.4%, respectively. In Ireland, the massive property bubble burst led the government to bail out several financial institutions deteriorating further the cumulative deficit at around 73.3% of GDP during the 2008-2012 period!

Chart 2.3 – Ireland Government debt (%GDP)

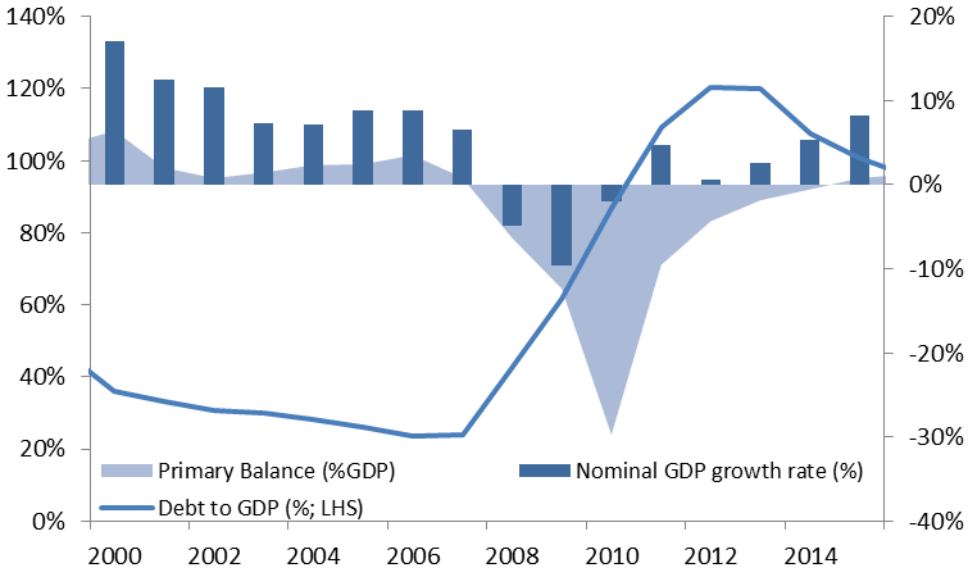


Chart 2.4 – Japan Government debt (%GDP)

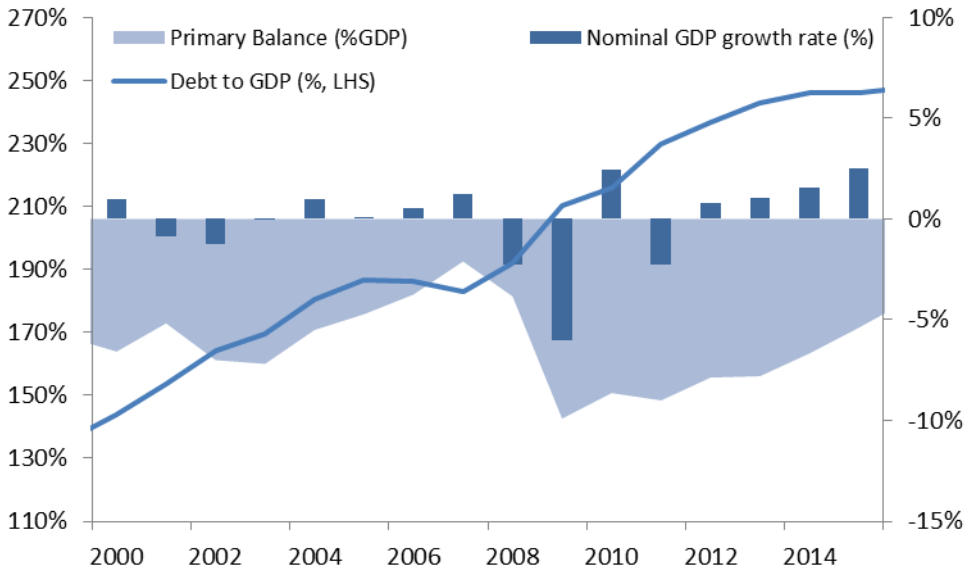
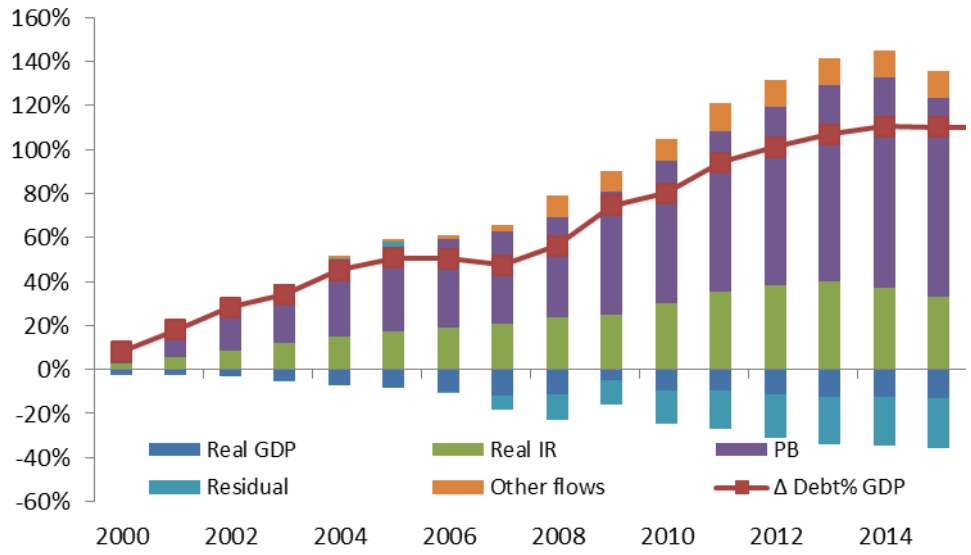



Chart 2.5 – Japan debt creating flows in cumulative terms




Among all countries, Japan has the largest debt-to-GDP ratio. The country is already a "lost cause". Over the last two decades, Japan has used fiscal and monetary easing in attempt to jump start the economy. Even the latest experiment known as "Abenomics" seems to have failed to revive Japan's economy. The massive monetary and fiscal easing program was planned to boost corporate earnings that would feed through higher wages to workers who would in turn increase private consumption and help sustain price gains. However, wage growth is lacklustre and largely insufficient to stimulate consumer spending. Given the country's long list of structural difficulties and the substantial amount of debt – 245% of GDP – Japan will have to technically – or not – default on its debt someday.

The truth, however, is that most OECD countries may follow the same path in the near future. Any adverse shock in combination with structural headwinds– that haven't been addressed yet– could easily increase the already huge amount of public debt.

## 3- Perverse effects of ultra-accommodative monetary policies

In the aftermath of the 2008 crisis, the Federal Reserve launched the biggest emergency economic stimulus in history. It introduced the zero-interest rate policy, bought sizeable amounts of US Treasuries, month after month, increasing the Fed's balance sheet by more than $3.5 trillion. In all, it pushed interest yields deeply lower and helped the economy to recover although at a moderate pace. While some say the Fed has saved the economy [2]–at least in the short run – the country's public finances have never looked so vulnerable.

In fact, the US government – and most OECD countries – has not been able to benefit from low interest rates to deleverage but instead it has continued to accumulate more debt since the cost and interest payments on debt are relatively cheap. However, this can't last forever because debt service ($i_t D_{t-1}$) is set to soar year after year –with interest rates having reached the lower bound, the stock of debt at record high[3]and GDP set to grow at moderate pace – causing a vicious circle that may hurt the debt sustainability and lead to an economic depression [4]or a sovereign debt crisis.

The growth sluggishness suggests that most developed countries haven't dealt yet with structural issues that monetary policy cannot fight. Indeed, monetary policy is powerless to stimulate "structural growth" [5] and can only act through the cyclical component of growth. One way to understand the ineffectiveness of monetary policies conducted by most central bankers is to have a look at the private sector deleveraging. When the private sector decides to deleverage – reduce debt – in spite of very low interest rates, the transmission of monetary policy is broken as all money supplied is not feeding the real economy due to a lack of borrowers. Much more worrisome is the preserve effect of the use of ultra-accommodative monetary policy during a prolonged period of time.As the BIS economists put it, "This is also a world in which interest rates have been extraordinarily low for exceptionally long and in which financial markets have worryingly come to depend on central banks' every word and deed, in turn complicating the needed policy normalisation"[6].At the same time, most countries have failed to benefit from the low level of interest payments on debt to deleverage. Instead governments have decided to run up more debt relying on monetary stimulus meaning lower interest rates, no risk premia on sovereign bonds hence no incentive totackle public-sector debt.

## Conclusion

However, countries are still struggling to deliver decent rates of growth illustrating limits of activity financed by debt –fiscal deficits – and money – quantitative easing–.Given the high level of debt and the moderate path of growth, central banks will struggle to exit their accommodative monetary policies as any shock leading to a rise in interest rates could easily escalate and lead to a debt crisis. Put another way, fiscal outlook seems increasingly murky and investors should not expect a good fortune – stronger growth and inflation – or a magic trick from central banks. Most authorities don't perceived the urgency of the situation but they have to take up slack of monetary policy otherwise the huge pile of debt will result in a giant economic and financial disaster.

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## Appendix

### 1- The government debt constraint

In its simplest form, the government budget constraint can be written as:

$$\Delta D_t = D_t - D_{t-1} = G_t + i_t D_{t-1} - R_t + OF_t$$

Table 1.1 – Definitions

| Variable | Definition | Variable | Definition |
|---|---|---|---|
| $D_t$ | stock of public debt at the end of year t | $D_t - D_{t-1}$ | change in debt (deficit/surplus) |
| $G_t$ | government primary spending | $i_t D_{t-1}$ | debt service |
| $i_t$ | nominal interest rate | $R_t - G_t$ | primary balance |
| $R_t$ | public revenues | $OF_t$ | other flows, usually one-off transactions |

### 2- The government debt constraint as % of GDP

As an economy grows over time, the relevant analysis is expressed as % of GDP. Using the real output $Y_t$ we can find that:

$$\Delta d_t = d_t - d_{t-1} = \frac{(r_t - g_t)}{(1 + g_t)} d_{t-1} - pb_t + of_t$$

Table 1.2 – Definitions (variables expressed as % of GDP)

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| $r_t$ | real interest rate | $g_t$ | real growth rate |
| $pb_t$ | primary balance as % of GDP | $of_t$ | other flows as % of GDP |

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**Notes**

[1]Fiscal solvency: refers to the ability of the government to meet its long-term financial obligations.

[2]Ben Bernanke (2015), The Wall Street Journal "*How the Fed Saved the Economy*"Available at: http://www.wsj.com/articles/how-the-fed-saved-the-economy-1443996826

[3]Several countries already experienced high level of debt such as France (150% of GDP), Germany and the UK (130% of GDP) after the WWI and they successfully emerged from that situation

[4]An economic depression: is more severe than a recession (which refers to the contraction in the business cycle, or a short-term debt cycle) and typically lasts about 50 to 75 years.The economy enters into a deleveraging phase.

[5] Structural issues: slowdown in productivity gains, population ageing, high structural unemployment etc.

[6]Bank for International settlements (2015), "*BIS Quarterly Review September 2015*", Available at: http://www.bis.org/publ/qtrpdf/r_qt1509_ontherecord.htm