Flash Economics

N° 108
September 4th, 2025

Will inflation strengthen as public debt levels rise?

We examine the "fiscal theory of the price level". In the usual approach, a country that fails to ensure the sustainability of its public debt has two options for restoring it:

- Default on a sufficiently large proportion of its debt;
- Reduce its primary public deficit (or increase its primary public surplus).

Proponents of the fiscal theory of the price level argue that it is an upward jump in the price level that brings the public debt ratio down to a level compatible with the sustainability of public debt.

One can also point out that when public debt sustainability is not assured, it is fiscal dominance that appears, i.e. a highly expansionary monetary policy, with monetary financing of the public deficit that restores debt sustainability and that is inflationary.

In countries with very high public deficits (e.g. the United States and France), could there then be a transitory period of high inflation due to problems of public debt sustainability?

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The usual theory of public debt sustainability

In the usual theory of public debt sustainability, a country that does not ensure this sustainability (where public debt is greater than the discounted sum of future primary budget surpluses, or more simply, where the public debt ratio is growing continuously) has a choice:

- **Default on a sufficiently large proportion of its public debt**, so that the public debt ratio can fall thanks to the primary budget surpluses that are generated;
- **Reduce its primary budget deficit** (a primary budget deficit is compatible with a stable public debt ratio if the long-term real interest rate is lower than potential growth) **or increase its primary budget surplus** (if the long-term real interest rate is higher than potential growth).

We can see that in the case of **Greece**, both solutions were used: cancellation of part of the debt (in 2011) and transition to a primary budget surplus with the sharp reduction in public spending (**Charts 1/2/3**).

Chart 1
Greece: Public debt (as % of nominal GDP)

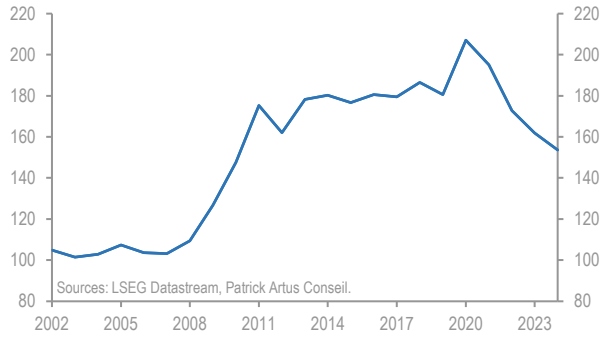


Chart 2
Greece: Primary fiscal surplus or deficit (as % of nominal GDP)

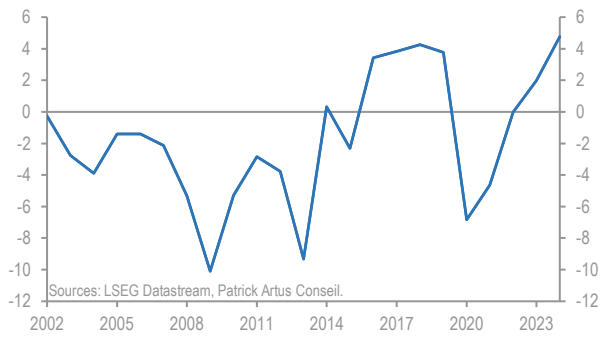
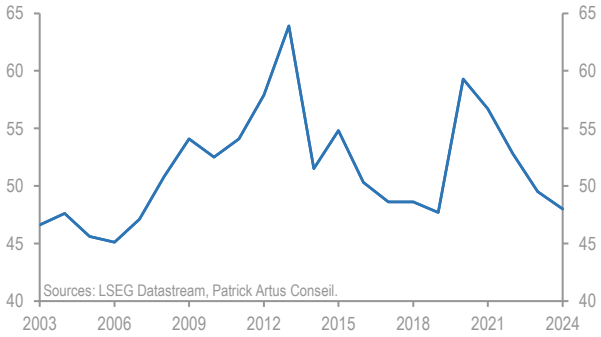


Chart 3
Greece: Public spending (as % of nominal GDP)



The fiscal theory of the price level

The fiscal theory of the price level assumes that, when a country **does not ensure the sustainability of its public debt** - i.e., if public debt is greater than the discounted sum of future primary budget surpluses - **it is an instantaneous upward adjustment in the price level that reduces the level of public debt in real terms and restores the sustainability of public debt**.

In reality, there has been no upward leap in price levels, but **a fairly low level of public debt has been maintained thanks to very high inflation**. For example, look at **Argentina** (**Charts 4A/4B**) or **Turkey** (**Charts 5A/5B**).

Chart 4A
Argentina: Public debt (as % of nominal GDP)



Chart 4B
Argentina : inflation
(Consumer price index, Y/Y as %)

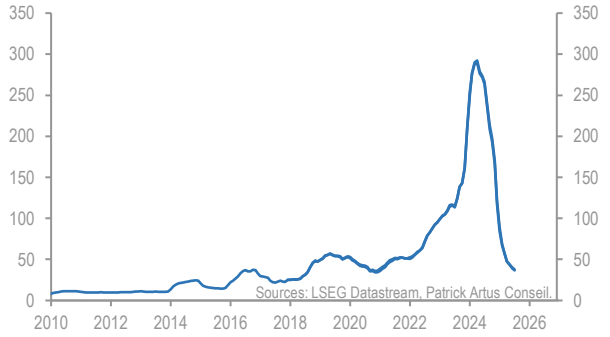


Chart 5A
Turkey: Public debt (as % of nominal GDP)

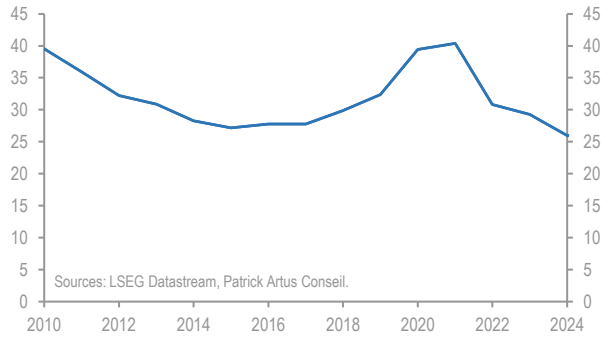
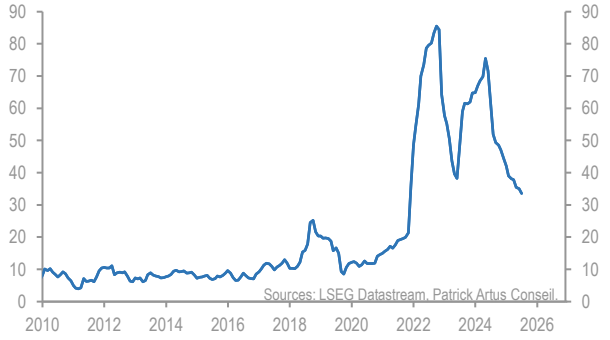


Chart 5B
Turkey: inflation
(Consumer price index, Y/Y as %)



Of course, it could be argued that the mechanism is different. If the sustainability of public debt is not assured, and if fiscal policy remains expansionary, it is possible that there will be a shift to **fiscal dominance**, i.e. to a monetary policy that ensures the sustainability of public debt. This is a highly expansionary monetary policy, with monetary financing of the public deficit and negative real interest rates.

Charts 6A and 6B show that in **Argentina** and **Turkey**, both high inflation and strong monetary expansion were used to reduce the public debt ratio.

Chart 6A
Argentina: Monetary base (2010.M1 = 100)

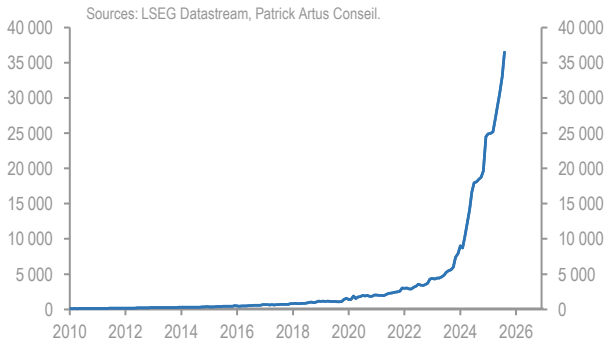
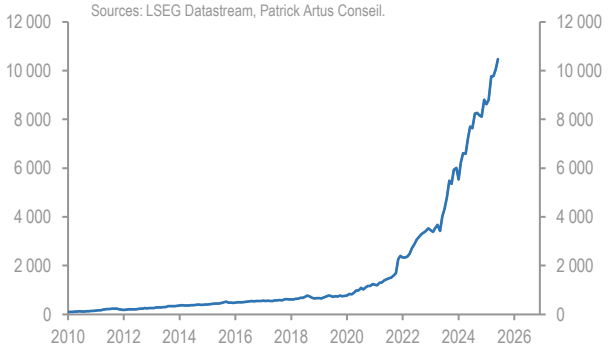


Chart 6B
Turkey: Monetary base (2010.M1 = 100)

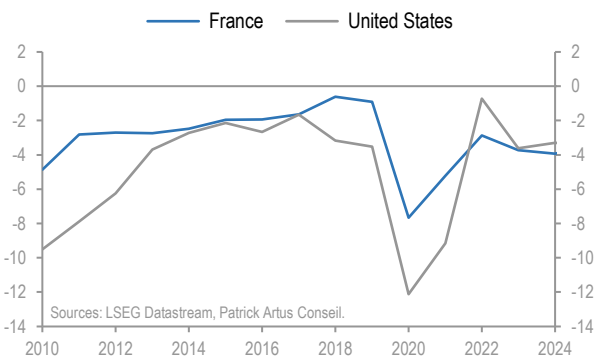


Summary: the cases of OECD countries where public debt sustainability is not assured

Let's take two examples: **the United States** and **France**.

In both countries, **the primary public deficit is currently very high**, and **the sustainability of public debt is not assured** (**Chart 7**).

Chart 7
Primary fiscal deficit (as % of nominal GDP)



In the United States and France, a partial default on public debt is out of the question, and there is no sign of any economic policy aimed at rapidly reducing the primary public deficit.

The question is whether a rapid upward adjustment in the price level will restore debt sustainability.

This adjustment could come from:

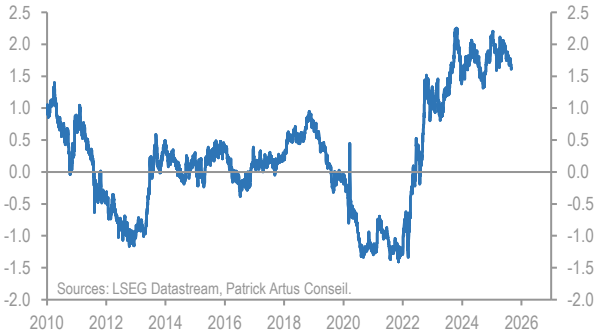
- Either by witnessing the implementation of the fiscal theory of the price level, with the tenet of the price level increasing until public debt becomes sustainable;
- Or by a return to quantitative easing, with the Central Bank holding a larger proportion of public debt and a shift to lower long-term real interest rates.

Today, the **long-term interest rate** is below potential growth in the United States, and close to potential growth in France (**Charts 8A/8B**), but the recent trend has been for the long-term real interest rate to rise, making it more difficult to revert to public debt sustainability.

Chart 8A
France: Real interest rate on 10-year government bonds (deflated by 10-year inflation swap, as %)



Chart 8B
United States: Real interest rate on 10-year Treasuries (deflated by 10-year inflation-swap, as %)



Appendix

Sustainability of public debt

The dynamics of public debt can be written as:

(1) $D_{t+1} = D_t(1+r) + Def_t$

where D is the public debt

r is the nominal interest rate

Def the primary public deficit

Dividing expression (1) by nominal GDP (product of volume GDP Y and price level P), we obtain:

(2) $\frac{D_{t+1}}{P_{t+1}Y_{T+1}} = \frac{D_t}{P_tY_t}(1+r)\frac{P_tY_t}{P_{t+1}Y_{T+1}} + \frac{Def_t}{P_{t+1}Y_{t+1}}$

Or

(3) $d_{t+1} = d_t(1+r-g)\frac{P_t}{P_{t+1}} + def$

where d is the public debt ratio

def is the primary public deficit as a percentage of GDP

1. Usual theory

In the usual theory, the real interest rate is exogenous in the long term (it depends on the growth of technical progress).

This gives:

(4) $d_{t+1} = d_t(1+R-g) + def$

where R is the real interest rate

For the public debt ratio to be stabilised at level $\bar{d}$, either:

- There is a primary budget surplus at least equal to

(5) $exc > \bar{d}(R-g)$

- Or the public debt ratio falls, with a default on part of the public debt, to level $\frac{exc}{R-g}$, if $R-g>0$
- Or the public debt ratio falls, still with a partial default on the debt, to level $\frac{def}{g-R}$ if $R-g<0$

2. Fiscal theory of the price level

With the fiscal theory of the price level, the price level adjusts to restore the sustainability of public debt, while fiscal policy remains unchanged (and expansionary).

Public debt is sustainable if it is less than the discounted sum of future budget surpluses. If sustainability is to be ensured in period $t+1$, it is necessary that:

(6) $d_t(1+r-g)\frac{P_t}{P_{t+1}} \leq EXC$

where EXC is the discounted sum of future budget surpluses.

(6) is ensured by an upward jump in prices P_{t+1}

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