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Article

Insights from the 2017-2018 US fiscal stimulus : = Quels sont les effets macroéconomiques du récent stimulus budgétaire américain?

Insights from the 2017-2018 US fiscal stimulus

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Introduction

Fiscal stimuli support economic activity and a hot economy boosts inflation. Such is the simple logic of standard economic thinking. Yet, despite the adoption of a substantial fiscal package by the Trump Administration in late 2017-early 2018, and with the unemployment rate near an all-time low, price pressures have largely been declining in the US since mid-2018.

Against this background, this article takes stock of the macroeconomic impact of the 2017-2018 US fiscal stimulus, focusing on the link between higher fiscal deficits and inflation. Section 1 summarises the main features of the fiscal package. Sections 2 and 3 look at the inflationary consequences of fiscal easing, respectively, from a theoretical and an empirical point of view. Sections 4 and 5 address the expected and actual macroeconomic effects of the stimulus. Finally, section 6 briefly discusses the current inflationary environment and the risk of fiscally-induced inflation going forward. The article concludes that while the link between fiscal deficits and inflation has actually been rather weak (generally, and in particular when considering the 2017-2018 package), it should not be dismissed altogether. Fiscally-induced inflation may indeed materialise, most likely suddenly, and especially when economic agents expect government debt to move onto an unsustainable path.

1. The 2017-2018 US fiscal package in a nutshell

At the end of 2017 and beginning of 2018, the US Congress enacted two significant pieces of legislation entailing a reduction in the level of taxation and an increase in public spending.

The first is the **Tax Cuts and Jobs Act (TCJA)**[1], involving a comprehensive overhaul of the US tax system. According to the Joint Committee on Taxation (JCT, 2017), a non-partisan US Congress committee, it is the most significant change in the US tax code since 1986 and the Reagan era. It is expected to reduce taxes by an estimated $ 1.5 trillion over 10 years. It was signed into law by the President on 22 December 2017 and took effect on 1 January 2018. Its main provisions include[2]:

1 The Tax Cuts and Jobs Act is the original name, which was not approved by the Senate in the final enactment of the law. The official name is the "Act to provide for reconciliation pursuant to titles II and V of the concurrent resolution on the budget for fiscal year 2018". The short title has nevertheless gained large currency in the public sphere and, by way of convenience, we will refer to it.

2 For more details about the provisions, see for instance CRS (2019), CBO (2018) or Barro and Furman (2018).

1) For individuals, substantial tax cuts until the end of 2025, including a drop in the top income tax rate from 39.6 to 37 %.
(2) For corporations, a permanent cut in the statutory business tax rate, from 35 to 21 % and a full deduction of investment in equipment from the corporate tax base for 5 years.
(3) With respect to international tax rules, a shift from a worldwide tax system (in which foreign income of domestic corporations is taxed when repatriated) towards a more territorial tax system (in which foreign income of domestic corporations is largely exempt). It also imposes a one-time tax on existing overseas earnings, amounting to 15.5 % on cash and 8 % on other assets.

The TCJA was largely expected to encourage workers to work more hours, due to higher after-tax income, and businesses to step up investment, thereby raising employment, income as well as potential output.

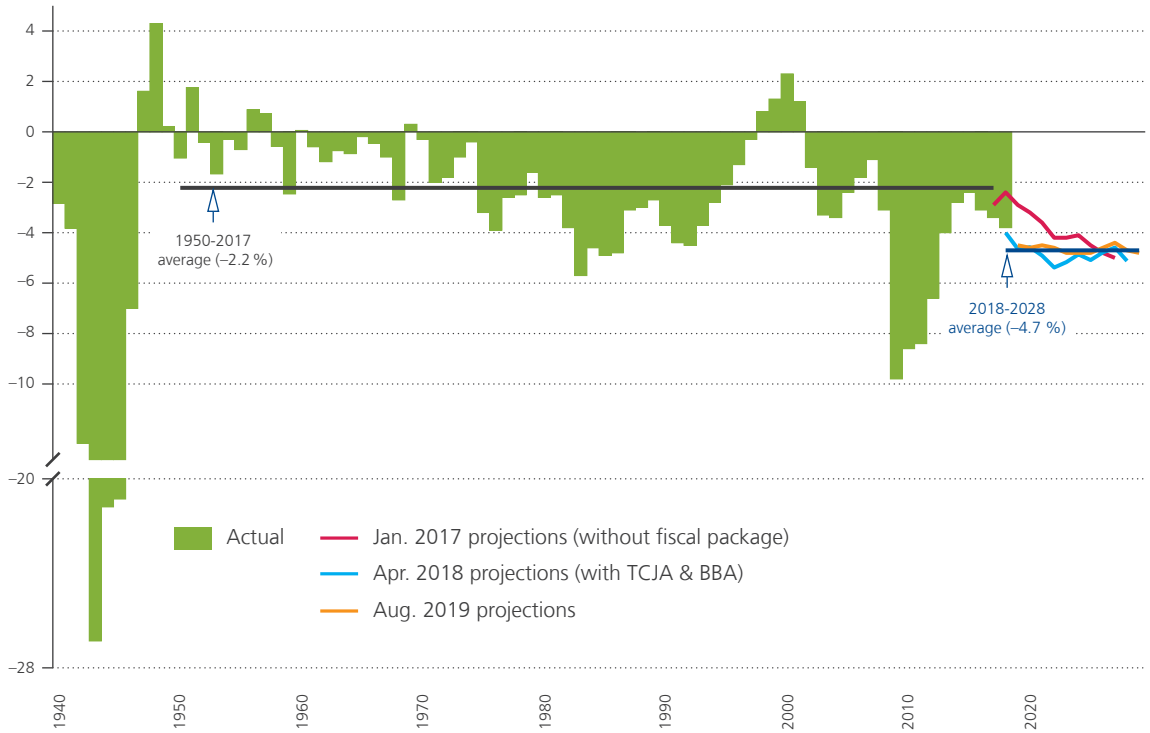
The second piece of legislation is the **2018 Bipartisan Budget Act (BBA)**, which raised the spending caps for two years in anticipation of a fiscal stimulus that would begin in the second quarter of 2018. It was signed into law on 9 February 2018 and provided for big increases in defence and non-defence spending. The defence discretionary funding cap was thus raised by $ 80 and $ 85 billion respectively in fiscal years 2018 and 2019, while the non-defence domestic discretionary spending cap was increased by respectively $ 63 and $ 68 billion. In addition to raising the budget caps, the Act provided for $ 90 billion in disaster relief.

Taken together, these major pieces of legislation significantly reduce federal revenues and increase federal spending, leading to a marked rise in budget deficits. In its April 2018 projections, the Congressional Budget

Chart 1

US federal budget deficit / surplus and projections

(in % of GDP)



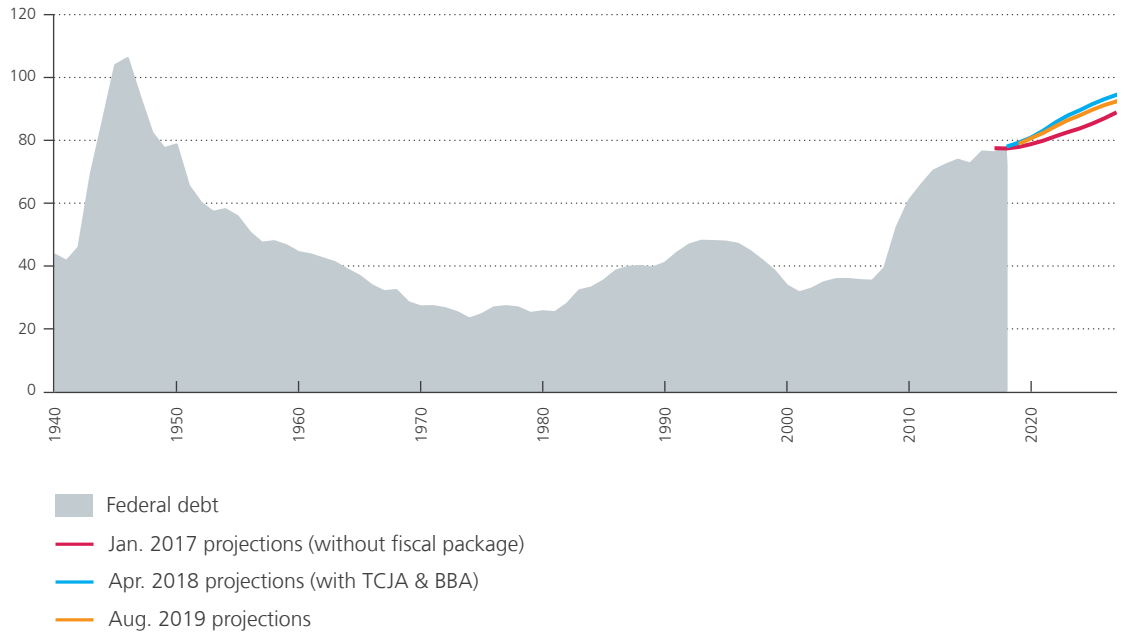
Source: CBO.

Office (CBO, 2018) – which produces independent analyses of budgetary and economic issues in support of the US Congress – said it expected the total budget deficit to rise to 4 % of GDP in 2018 and 4.6 % in 2019, up from 3.4 % in 2017 and 2.9 % in 2016 (see chart 1). Over the 2018-2028 period, the deficit would average 4.7 % of GDP, compared to 2.2 % between 1950 and 2017. In line with this, federal debt held by the public[1] would climb from 76.5 % of GDP in 2017 to 96.2 % by 2028 (see chart 2).

Chart 2

US federal debt and projections

(in % of GDP)



Source: CBO.

According to estimates by Cohen-Setton *et al.* (2018), the new laws are expected to induce a fiscal stimulus of some 1.4 % of GDP in calendar year 2018, 1.9 % in 2019 and 1.7 % in 2020. About ¾ of the stimulus stems from the TCJA. The package represents the most procyclical fiscal policy stance since the mid-1970s and the end of the Vietnam War (Mahedy and Wilson, 2018). The new Acts actually arrived at a time when the US economy had been steadily expanding for more than eight years and US unemployment had fallen back to a near-historic low of 4 %.

2. What does macroeconomic theory say about fiscal deficits and inflation?

There are several theories that explain how an exogenous increase in the budget deficit could have an impact on the real economy and inflation, with the sign of the impact differing from one theory to the other. The purpose

1 This includes US households, the Fed, pension and retirement funds, mutual funds, state and local governments and foreign owners.

of the review below is to highlight three main channels through which a fiscal stimulus may, in general, affect prices; these being aggregate demand, expectations and aggregate supply.

According to the Keynesian view, which has regained importance since the great recession, higher government deficits may, through stimulating aggregate demand, put upward pressure on inflation (see, for example, Keynes, 1936). Through more government spending and (in the case of tax cuts) higher private consumption and investment, bigger deficits boost aggregate demand in the short run and thus push up the output gap (meaning that it becomes more positive or less negative), which in turn creates upward inflationary pressures (i.e. the Phillips curve relationship linking domestic economic activity with inflation). The impact of a fiscal stimulus depends upon a lot of factors though. It is, for instance, state-dependent, i.e. the fiscal multiplier tends to be above one in bad times but below one in good times. This notably reflects monetary policy's different reaction to the fiscal stimulus. When the economy is operating at or close to full capacity, in reaction to the fiscal stimulus and the inflationary pressures it generates, the central bank will raise interest rates which may in turn reduce private investment. Consequently, the fiscal multiplier may be below one as the fiscal stimulus crowds out private demand. On the other hand, when there is considerable slack in the economy and monetary policy is constrained by the lower bound on interest rates (i.e. in a liquidity trap, when monetary policy loses traction on the economy), the central bank will not counteract the impact of the fiscal stimulus by tightening monetary policy. The subsequent rise in (expected) inflation drives down the real interest rate, thus supporting private spending. As a result, the fiscal multiplier may be above one. Other important factors that determine the macroeconomic impact of a fiscal stimulus include, for example, its composition, the extent to which it benefits hand-to-mouth consumers, the slope of the Phillips curve and economic agents' expectations.

Once agents' expectations are taken explicitly into account, the effects of fiscal stimulus can be different. Under Ricardian equivalence, agents expect that higher fiscal deficits need to be reversed in the future in order to stabilise government debt. Consequently, they may not have any real nor nominal effects (see, for example, Buchanan, 1976). Under this view, forward-looking agents save the proceeds from a debt-financed fiscal stimulus in anticipation of future tax increases or spending cuts that will offset the debt increase. In an extreme case, private consumption might even drop to further support private savings, leaving total spending unchanged. Ricardian effects may come into play especially when public debt is already high or expected to rise to unsustainable levels.

The fiscal theory of the price level (FTPL) points out that higher fiscal deficits may equally lead to expectations of higher inflation, which is in fact another way of stabilising the public debt (see for example Cochrane, 2011)[1][2]. In the Ricardian view, public debt is real, implying that an increase in the debt requires an adjustment in budget deficits to keep the debt level stable. In the FTPL, however, public debt is nominal, implying that a higher debt can also be offset by an increase in prices (i.e. the debt can be inflated away). It is worth noting that, in contrast to the Keynesian view in which the impact of the fiscal stimulus depends upon its materialisation – it must be spent –, the FTPL (like the Ricardian view) stresses that a fiscal expansion is not a stimulant in itself. Expectations about future deficits are crucial. If policy-makers want an increase in the debt to push prices up, they have to clearly communicate that there will be no future consolidation as a counterpart to the fiscal expansion. It should also be noted that the FTPL explicitly acknowledges that inflation is determined by both monetary and fiscal policy. In order to stabilise inflation, both policies must work together. The FTPL is inconclusive about the real effects of fiscally-generated inflation: it may lead to a boom (through a combination of Keynesian demand and FTPL inflation expectation effects) but just as well to stagnation (in line with the stagflation of the 1970s).

1 See also the NBB article on the interactions between monetary and fiscal policy by Boeckx and Deroose (2016) and the article by Sargent and Wallace (1981) which lays the ground for the FTPL.

2 The government debt valuation equation (which in a simple form reads as "nominal government debt/price level = expected sum of future discounted real primary surpluses") illustrates this clearly. It shows that an increase in nominal government debt can either be offset by an increase in the price level or by expectations of higher government surpluses in the future, in order for the real value of government debt to be stabilised.

A deficit-financed fiscal stimulus may also have important supply-side effects, which will tend to dampen inflation. This channel is generally considered to work in the longer term : productivity-enhancing fiscal measures (e.g. on the one hand, increased spending on infrastructure, education and research and development and, on the other hand, reducing distortionary taxes like those on personal and corporate income) may raise potential output over time and consequently lower the output gap (meaning that it becomes more negative). The disinflationary supply-side effects of such a fiscal stimulus may thus reduce its inflationary demand-side effects. More recently though, theoretical models have been developed through which a general, rather than a productivity-enhancing, increase in government spending may already boost the economy's supply side in the short run, while reducing inflation (see e.g. D'Alessandro *et al.*, 2019 and Jorgensen and Ravn, 2019).

3. Can empirics and past experience provide some guidance ?

Theory is ambiguous about the inflationary effect of fiscal stimulus and so is empirical evidence. Some studies find that prices go up in response to a fiscal expansion (Caldara and Kamps, 2008), others that they decline (Mountford and Uhlig, 2009 ; Jorgensen and Ravn, 2019) and yet others find that the response is insignificant (Fatas and Mihov, 2001) or somewhat mixed (Perotti, 2004), depending on the model specification. While they offer varied results across time and space, estimates point overall to a loose relationship between fiscal policy and inflation, certainly for low-inflation countries. This seems, in part, to reflect the importance of institutional constraints, like monetary policy independence and credibility as well as fiscal rules, in reducing the link between fiscal deficits and inflation (see, for example, Catao and Terrones, 2005).

Yet, studies on the relationship between fiscal stimulus and inflation are relatively limited. By contrast, there is a large literature addressing the link between fiscal policy and GDP growth (see, for instance, Blanchard and Perotti, 2002 ; Romer and Romer, 2010 ; and Mertens and Ravn 2013). Studies differ in methodologies and estimates of the tax multiplier, but a large majority conclude that fiscal stimulus has a positive effect on output.

Looking at past US fiscal expansions highlights the importance of the interaction between the fiscal and monetary authorities in driving macroeconomic outcomes. The monetary policy stance does indeed play a key role in the transmission of fiscal policy to the economic activity and prices. Two prominent episodes deserve a closer look : (1) the mid-1960s and (2) the mid-1980s.

In the mid-1960s, monetary policy accommodated fiscally-induced inflation

At the beginning of the 1960s, the US economy was coming out of a recession, the nation's output was below its potential and unemployment was close to a post-war record high. After taking office in 1961, President Kennedy thus pushed for a Keynesian discretionary fiscal policy, to steer the economy towards full employment. The combination of tax cuts and new major spending programs – the Great Society Programs of 1964-65 [1] and the Vietnam War – pushed the budget deficit higher, from 0.7 % of GDP in 1963 to 2.7 % in 1968.

From 1961 until late 1965, monetary policy was also continuously expansionary and accommodated the growth in credit demand while maintaining remarkably stable and relatively low long-term interest rates. Federal funds rates were raised – reflecting a deliberate action to keep key short-term rates in the US aligned with those abroad to limit capital outflows –, but their inflation-adjusted counterparts remained moderate. Following the fiscal expansion, GDP growth was boosted from 4.3 % in 1963 to 6.6 % in 1966 while the unemployment rate fell below 4 % in 1966. Inflation rose substantially, from 1.2 % in 1963 to 2.5 % in 1966 and 4.5 % in 1969,

1 The Great Society was a set of domestic programmes in the United States launched by President Lyndon B. Johnson with the main goals of ending poverty, reducing crime, abolishing inequality and improving the environment.

despite a significant rise in interest rates as from 1966. It would accelerate further over the 1970s, a period infamously known as the Great Inflation.

In the mid-1980s, monetary policy tamed fiscally-induced inflation

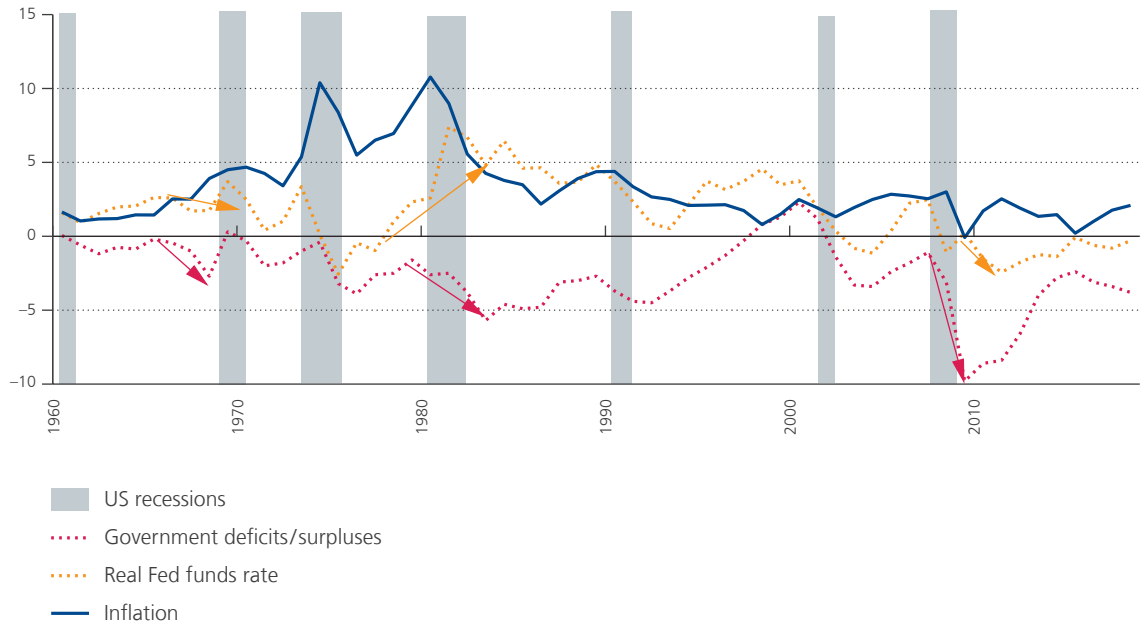
At the beginning of the 1980s, President Ronald Reagan inherited an economy mired in stagflation. To spur economic growth, he aggressively cut income and corporate taxes. For instance, in 1981, the top personal income tax rate was cut from 70 % to 50 %. This helped boost GDP growth for the next few years, with the economy growing by 7.9 % in 1983, 5.6 % in 1984 and 4.2 % in 1985. At the same time, the unemployment rate fell from 10.8 % at the end of 1982 to below 7 % at the beginning of 1986. In that year, the highest tax rate was cut again to 38.5 %, declining further to 28 % in 1988. The US federal budget deficit surged from 2.5 % of GDP in 1981 to 5.7 % in 1983 and 4.8 % in 1986.

In 1981, inflation was above 10 % and, under Chairman Paul Volcker, the Federal Reserve had pushed interest rates into double digits, peaking at 11.5 % in the summer of 1984. The real policy rate was also effectively raised. In this context, despite the expansionary character of fiscal policy, inflation declined rapidly and significantly. It fell to 4.8 % at the end of 1982 and remained below 5 % for the rest of the 1980s.

Chart 3

US government deficit, Fed funds rate, inflation and GDP growth

(in % of GDP, in %)



Sources: CBO, Datastream.

When looking at historical data since the 1960s, it is hard to see any clear relationship between government deficits and inflation, even when accounting for the monetary policy stance (see chart 3). Over the more recent period, inflation's muted response to the sizeable US fiscal and monetary stimulus following the global economic and financial crisis of 2007-2009 has also raised questions about both policies' effectiveness in steering it. In this respect, considering the impact of other shocks that are hitting the economy is crucial. In fact, they may actually blur the link between fiscal deficits and inflation.

4. *Ex-ante* assessment of the 2017-2018 fiscal stimulus

Based on economic theory and past experience, what did economists expect the US fiscal package to deliver in terms of output and inflation? This section briefly reviews some institutional forecasters' macroeconomic projections in this respect and touches upon the role of other factors – some of which are more predictable (like the monetary policy reaction function) than others (as the escalating trade tensions) – in shaping the economic outlook and thus blurring the impact of the fiscal package.

Estimates of the economic impact of the fiscal package have varied widely, although most indicated a noticeable response of GDP. For instance, the CBO (2018) estimated that the TCJA and BBA would boost real GDP by 0.6 % in 2018 and by 1.2 % in 2019. In the longer term though, higher interest rates – reflecting monetary policy's endogenous reaction to the fiscal stimulus – were projected to temper the increase in real GDP. Cohen-Setton *et al.* (2018) calculated that the fiscal package would raise real GDP growth by 0.3 to 1.4 percentage points in 2018 and by 0.2 to 0.8 of a percentage point in 2019, depending upon whether they use a state-dependent multiplier (lower estimates) or a linear multiplier (higher estimates). As the latter multiplier does not account for the state of the business cycle, they consider its estimates less plausible[1]. With real effects estimated to be positive, the fiscal stimulus has led to significant upward revisions in the short-term economic growth path of the US (see table 1). Besides the impact of the fiscal package, other shocks, like stronger-than-expected domestic activity in 2017 and higher projected external demand, have also contributed to these upward revisions, albeit to a smaller extent. On the other hand, escalating trade restrictions and retaliations were mentioned as a downside risk to the outlook.

Table 1

US GDP and inflation projections

(annual percentage change)

	Real GDP				Inflation			
	2018	2019	2020	2027	2018	2019	2020	2027
IMF								
October 2017	2.3	1.9	1.8		2.1	2.6	2.4	
April 2018	2.9	2.7	1.9		2.5	2.4	2.1	
CBO								
January 2017	2.0	1.7	1.5	1.9	2.0	2.0	2.0	2.0
April 2018	3.0	2.9	2.0	1.8	1.8	1.9	2.1	2.0

Sources: CBO, IMF.

By contrast, analyses of the fiscal package have tended to neglect or not explicitly quantify its impact on inflation. When comparing the CBO's and IMF's 2017 and 2018 inflation projections, it appears that the real inflation profile has been much less affected. For instance, while the CBO (2018) expected inflation to pick up[2], the increase is rather muted. The CBO mentions several factors explaining the very marginal increase in its inflation profile.

1 Most analyses focus on the macroeconomic impact of either the TCJA or the BBA; combined analyses are rare. For an overview of other organisations' estimates of the real effects of the TCJA see for instance Box B-2 in CBO (2018).

2 Note that the downward revision in the projection of inflation in 2018 reflects the unexpectedly low inflation in 2017.

First, it points out that the fiscal stimulus raises both aggregate demand and aggregate supply, limiting upward price pressure. On the one hand, increased fiscal spending (via the BBA) and higher disposable (after-tax) income for households (due to the TCJA) should boost aggregate demand and thus push up actual GDP too. On the other hand, the Tax Cuts and Jobs Act should stimulate investment (and therefore labour productivity which may lead to higher wages, but not necessarily higher prices) and labour supply (the lower marginal income tax rates should encourage workers to work more hours) thereby raising aggregate supply and potential GDP. Indeed, the CBO assumes that the rise in the output gap (due to excess demand throughout the 2018-2022 period) is mitigated by the acceleration in potential GDP (as a result of the TCJA). Consequently, upward inflationary pressures are also dampened.

Second, the CBO assumes that the link between domestic economic activity and inflation is weak. Even if the fiscal stimulus is likely to substantially raise actual GDP growth and the output gap, the rather flat price Phillips curve implies that it does not have to result in significantly higher inflation.

Third, the CBO considers inflation expectations to be well-anchored, thus keeping a lid on wage and price rises. With little role for economic slack, inflation expectations are an important driver of actual inflation (see e.g. Jordà *et al.*, 2019). With inflation being close to target over the past two decades, the Fed has gained credibility in its ability to control price rises as evidenced by inflation expectations being well-anchored around the target. So, with respect to the fiscal stimulus, consumers and businesses probably expect the central bank to remain successful in preventing inflation from deviating excessively from its target.

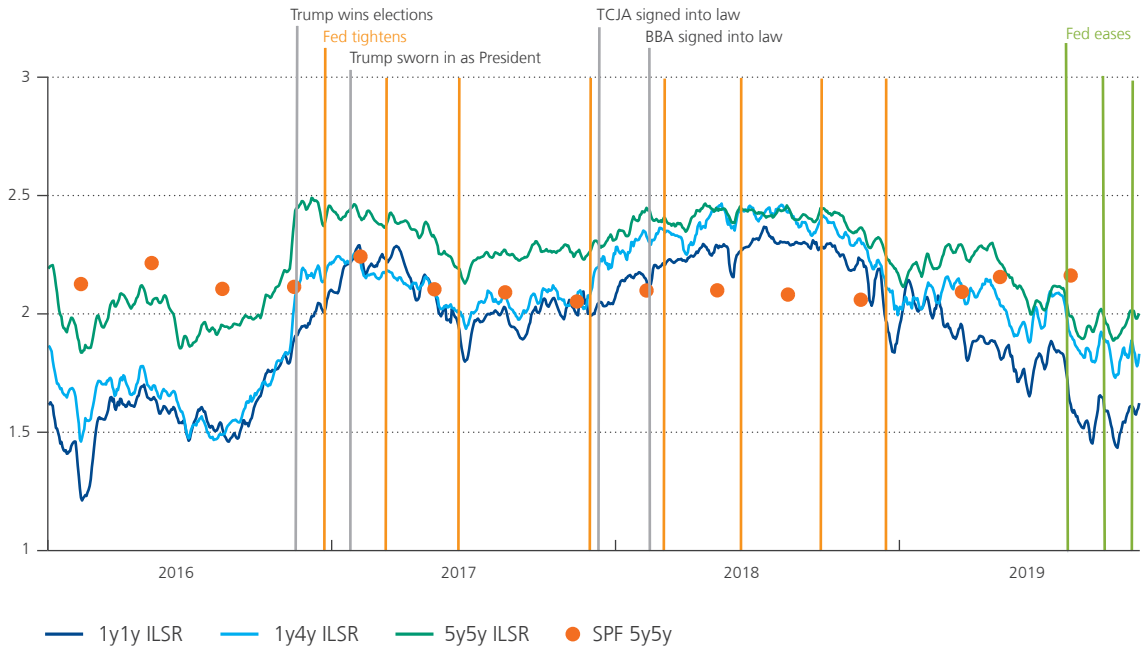
And indeed, US survey- and market-based inflation expectations have reacted modestly to the fiscal package, remaining overall well-anchored. As the fiscal package was pre-announced – Donald Trump presented his tax-cut plan already back in Autumn 2015 – the impact of the stimulus on financial markets' inflation expectations can probably already be traced back to the day that Mr Trump won the presidential elections, i.e. 9 November 2016. With his victory coming as a surprise, financial markets significantly reassessed their expectations regarding longer-term inflation. More precisely, the 5y5y inflation-linked-swap rate (ILSR) jumped by 13 basis points, with the change belonging to the top 5 % daily movements since 2005. Shorter-term inflation expectations also increased but less so. This could reflect the fact that financial markets expected the extra government debt to be partly inflated away in the future (in line with the FTPL) and thus not fully being wiped out by higher taxes in the future (as Ricardian equivalence would predict). The jump in inflation expectations was, however, temporary, and there was no meaningful reaction to the signing into law of the TCJA and BBA.

Finally, the CBO takes into account the belief that monetary policy will tighten, preventing a significant or persistent increase in inflation (expectations) above 2 %. According to conventional economic thinking and market expectations, adding fiscal stimulus to a full-employment economy should prompt the central bank to tighten monetary policy. And indeed, the Fed reduced its monetary stimulus, raising the federal funds rate seven times over 2017-2018. Over 2019, however, it has reversed its tightening stance, cutting the federal funds rate in July, September and October. The Fed's tightening over 2017 and 2018 could explain *inter alia* the lack of any persistent or more pronounced response of inflation expectations to the fiscal stimulus. But other factors have also had an impact, the sign of which is sometimes difficult to determine. For instance, while upbeat and subsequent downbeat expectations about the global economy appear in line with the rise in inflation expectations over 2018 and their decline as of late 2018, the impact of hikes in trade tariffs is less straightforward : do they reflect an adverse supply shock or rather a contractionary demand shock ?

Chart 4

US inflation expectations from financial markets (full line) and surveys (dots)

(in %)



Sources: Bloomberg, Federal Reserve Bank of Philadelphia.

Note: the AyBy ILSR refers to the average inflation rate over an A-year period starting in B years' time. Inflation expectations from surveys were taken from the Survey of Professional Forecasters (SPF).

5. *Ex-post* realisations: the effects of the fiscal stimulus have been small so far

In practice, the economic effects of the fiscal package are difficult to assess, for several reasons: first, macroeconomic data are regularly revised; second, a counterfactual is not available; third, the impact of the various shocks impacting the economy cannot easily be isolated; and fourth, economic agents may only react to policy changes with a time lag. Thus far, the response of real and especially nominal macroeconomic variables seems to be rather limited, which is in line with what empirical evidence and economic projections suggest (see chart 5).

Impact on economic growth in line with expectations

In 2018, real GDP grew by 2.9%, up from 2.4% in 2017 and 1.6% in 2016. By comparison, in its April 2018 forecast, the CBO projected a 3% growth rate, including 0.6% attributed to the fiscal package. The first-year effect of the package on economic growth thus appears broadly in line with expectations, when factoring in the counter-effects arising from new trade tariffs and tightened monetary policy.

Growth in personal consumption expenditure – accounting for about 70% of US GDP – remained relatively contained. It reached 3% in 2018, up from 2.6% in 2017 and 2.7% in 2016. A limited increase in personal consumption could indicate that consumers are only responding with a time lag to the fiscal package. But it

may also reflect that much of the TCJA was directed at businesses and higher-income individuals, who are less likely to spend. Finally, this may be evidence of some Ricardian effects.

Likewise, growth in government consumption expenditure and gross investment accelerated but remained moderate, as it takes some time to spend the extra government funds authorised by law. It reached 1.7 % in 2018, up from 0.7 % in 2017 but below the 1.8 % growth rate seen in 2016.

Finally, private non-residential fixed investment further intensified in the first half of 2018, but it has declined since then. Annual growth was 7.8 % in 2018, up from 5.4 % in 2017.

In a recent IMF working paper, Kopp *et al.* (2019) find that US business investment grew more significantly over the two years 2017-2018 than had been forecast before the enactment of the TCJA. The uptick is largely attributed to the strength of the expected aggregate demand, likely reflecting, in part, a rise in disposable household income resulting from the TCJA and the government spending increase from the BBA. By contrast, the TCJA's lowering of the effective business tax rate is not considered as a major factor behind the higher investment. To explain this, the authors point to policy uncertainty and, especially, the lower sensitivity of investment to tax policy changes in an environment of greater corporate market power. The demand-side interpretation of the strength in business investment since 2017 is also consistent with responses to company surveys: only a small proportion of firms directly attribute increases in planned investment to the corporate tax cut. The Congressional Research Service (CRS, 2019) also argues that the stronger investment growth was unlikely to be due to the TCJA as the growth patterns of the sub-components of non-residential fixed investment are not consistent with the direction and size of the supply-side incentives one would expect from the TCJA. Changes in the user cost of capital on account of the tax reform would imply higher growth of investment in structures, followed by equipment and lower growth in intellectual property products. To date, the observed pattern has been the other way round. The CRS also stresses that it takes time for investment to react to fiscal incentives as it must be planned in advance. Finally, some commentators (Arnon, 2018, and Smith, 2018) have suggested that the main driver behind the pick-up in US investment in 2018 was not the fiscal stimulus but the energy sector, as the increase coincided with higher oil prices and a recovery of domestic oil production.

Small, if any, effect on wage growth and inflation

In line with the economic expansion and continued improvements in the already tight labour market, wage growth accelerated in the first half of 2018. But since then, annual wage growth has tended to stabilise, ranging between 3 and 4 %.

It had been argued that the fiscal package would push up wages. For instance, the increase in corporate resources generated by the TCJA could have been used to raise wages or bonuses in the short run, or they could have been used for investment with the resultant rise in productivity[1] raising wages in the longer run. Evidence of this has so far been limited, however. Data indicate that most of these funds have been used for a record-breaking amount of stock buybacks (CRS, 2019).

In sync with the improvement in wage growth and inflation expectations (see section 4), inflation accelerated from the second half of 2017 until mid-2018, catching up with the Fed's 2 % target. Nevertheless, the gains in inflation appeared less robust than those in wage growth. In February 2019, inflation had fallen back to 1.3 % and has largely remained below 1.5 % since then. Core PCE inflation fell to 1.5 % in March 2019 but had recovered to 1.7 % by September.

Some sector-specific factors have been holding inflation down. For instance, specific policies (e.g. Obamacare) have resulted in prolonged softness in health care services inflation. Housing inflation has also moderated over the last two years, due to high-end apartment over-supply and slower growth of construction costs. More

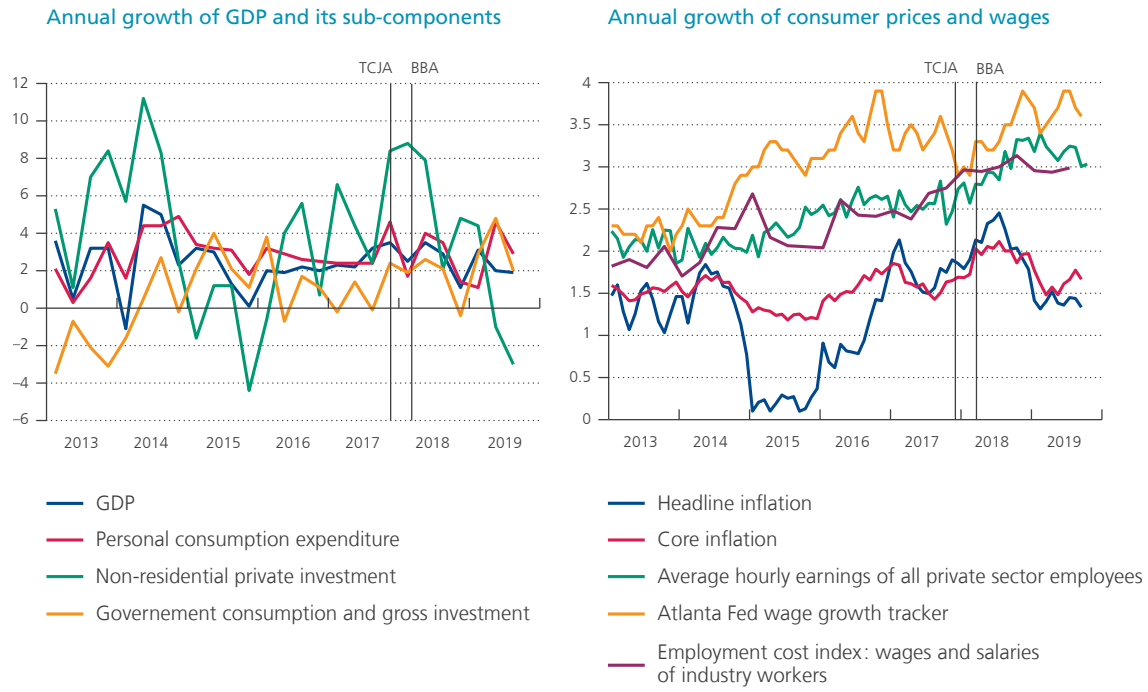
1 According to CBO (2018), over the first few years, the tax cut is not expected to affect labour productivity but, by 2027, potential labor productivity is expected to increase by 0.3 %.

recently, the US stock-market sell-off at the end of 2018 triggered falling management and performance fees for portfolio managers and investment advisers, resulting in slowing financial services inflation. With respect to the trade war, the effect of the newly-imposed tariffs on domestic inflation has been limited for now (CBO, 2019). This reflects the fact that the value of consumer goods subject to trade tariffs is small relative to the total value of US imports and that businesses tend to absorb some of those higher input costs.

Chart 5

Economic developments before and after the US fiscal stimulus

(in %)



Sources: FRED, Refinitiv.

6. Looking ahead: inflation on the horizon?

So far, US inflation seems to have barely responded to the large fiscal stimulus. This is not surprising as, in recent decades, the link between fiscal stimulus and inflation has tended to be rather weak in economies with independent central banks geared towards price stability. The specific features of the TCJA, not least the fact that it mainly benefits high-income households and corporations, may also explain why it has only had a moderate effect on the economy. In addition, any inflationary effect of the package may also have been countered by the widespread presence of disinflationary factors. On top of the sector-specific forces temporarily holding down US inflation (see previous section), some structural forces in the global economy – including globalisation and the significance of global supply chains, technological progress such as digitisation and ageing societies – have probably weighed on inflation and are expected to continue to do so for some time in the future[1].

1 See, for example, Sánchez and Sung Kim (2018) for an overview.

Leaving aside these disinflationary factors, to what extent might the fiscal stimulus still generate upward price pressures in the future? Overall, the risk of an upward drift in inflation (expectations) appears limited, given the gains in monetary policy's credibility and the rather flat Phillips curve, for instance. Nonetheless, a scenario in which higher inflation materialises on account of the fiscal stimulus cannot be fully dismissed. Especially in a situation of sustained fiscal deficits (which the CBO appears to expect, see chart 1 and 2) and accommodative monetary policy, rapid rises in inflation may well occur through the channels identified by Keynesians, as well as advocates of the FTPL.

For instance, while the slope and the level of the Phillips curve may currently be rather low, this is not set in stone and may well evolve over time, allowing for inflationary Keynesian demand effects to materialise. Indeed, some studies have found that the Phillips curve is non-linear, implying that prices and wages could suddenly and quickly accelerate when the economy is overheating[1]. In addition, the 1960s give an illustration of the instability in the Phillips curve. Bad economic outcomes resulted from monetary and fiscal policy trying to exploit the apparent non-responsiveness of inflation to economic slack (see Orphanides and Williams, 2011 and section 3).

Alternatively, the fact that US inflation expectations remain well-anchored today – possibly reflecting beliefs of Ricardian equivalence or of the budget-neutrality of the tax reform – does not necessarily imply that they may not rise suddenly. The fiscal theory of the price level in fact warns that a small event might lead people to reassess the sustainability of public debt. This means that they might suddenly expect the public debt to be no longer adequately backed by future public surpluses, which causes an increase in inflation expectations and thereby in actual inflation, in turn stabilising the real value of government debt.

The future impact of fiscal policy on inflation will therefore not only depend upon US policy-makers' future fiscal measures, but also on their communication about the path of US debt and fiscal-monetary interactions. With some important US politicians' commitment to budget orthodoxy apparently fading, the probability of fiscally-induced inflation materialising does not appear to be nil. For instance, in August 2019, President Trump signed another Bipartisan Budget Act raising spending limits for 2020 and 2021. In addition, members of both the Republican and Democratic Parties have suggested that higher US debt levels may be inflated away. Before becoming President, Mr Trump explicitly said that the United States issues nominal debt which can always be inflated away by printing more money[2]. At the same time, some Democrats have been embracing modern monetary theory (MMT)[3], which calls for monetary financing of big public spending programmes and proclaims that a country with its own currency does not need to worry about public deficits – meaning that government debt is nominal. Especially in a context of a flat Phillips curve, MMT sees little harm in bigger budget deficits as higher public debt may not have fiscal costs – it may have little impact on inflation and thus only cause a small increase in interest rates. Add to this the observation that the Fed's independence has come under some pressure[4], the possibility of inflation expectations picking up may not appear so fanciful.

A combination of uncontrolled fiscal spending and a drift away from central bank independence would result in bad macroeconomic outcomes and is thus highly undesirable. At the same time, somewhat paradoxically, a better alignment between monetary and fiscal policy actions might be needed to tackle the current low inflation and low growth environment.

1 For evidence on the US, see Kumar and Orrenius (2016) and Hooper *et al.* (2019).

2 See for instance Trump on CNN: "This is the United States government. First of all, you never have to default because you print the money, I hate to tell you, OK?", May 10, 2016.

3 For more information on MMT, see Kelton (2020).

4 The frequent opinions expressed by President Trump about the Fed's policies are testimony to this.

Conclusion: Fiscal deficits are not necessarily inflationary, but ...

At the end of 2017 and begin 2018, the US Congress enacted two significant pieces of legislation entailing a reduction in the level of taxation and an increase in public spending. Taken together, these laws were expected to induce a significant fiscal stimulus to the tune of some 1.4 % of GDP in 2018, 1.9 % in 2019 and 1.7 % in 2020. The package was highly procyclical as it arrived at a time when the US economy had been steadily expanding for more than eight years and US unemployment had fallen back to a near-historic low of 4 %.

US economic activity has temporarily been boosted by the stimulus. In 2018, the effect was broadly in line with expectations, around 0.6 % of GDP. By contrast, inflation appears to have barely responded. This is not so surprising as both theory and empirical evidence point to a mixed and rather weak link between fiscal stimulus and price developments. In addition, and more specifically for today's situation, several factors have been softening inflationary pressures.

Leaving aside the many factors currently depressing inflation and merely considering the impact of the fiscal stimulus, the risk of an upward drift in inflation in the future appears limited, given the gains in monetary policy's credibility and the rather flat Phillips curve. Nonetheless, a scenario in which fiscally-induced inflation materialises cannot be fully dismissed. That holds in particular were fiscal sustainability to suddenly be questioned, and monetary policy perceived as willing to tolerate higher inflation. For now, however, the conditions conducive to a higher-inflation regime appear absent. While there are some voices arguing for a better alignment between fiscal and monetary policy, a fundamental overhaul in the objectives and assignments of the two policy domains is not on the table. Fiscal policy is still geared towards long-run budget control and monetary policy towards stable and low inflation, preventing a sudden shift in inflation (expectations).

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