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Why fiscal and Phillips Curve theories of inflation are not working

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Abstract. During the 2016-17 bull market in the US investors have been subjected to two main market scares – the possibility of near term inflation and the threat of an imminent recession, both spelling the end of the business cycle expansion. This paper examines first two commonly cited theories of inflation: the fiscal theory of the price level, and the Phillips curve (or output gap). Each is a form of reduced form analysis that omits any reference to the underlying monetary causes of inflation. I show that both in the US and more broadly across the OECD money and credit growth remain subdued. Since inflation is ultimately a monetary phenomenon, no sharp upswing in inflation can occur without a sustained period of faster money and credit growth. Second, the paper reviews briefly the basis for an extended business cycle expansion. The shape of the yield curve, money growth and the health of private sector balance sheets imply there is currently no basis for predicting an imminent recession. This justifies the view that the current expansion will continue for several more years with low inflation.
Keywords. Fiscal theory of the price level; Phillips curve; Inflation; Monetary growth.
JEL. E62; H54; O40.

1. Introduction

Over the past two years US financial markets have been subject to two opposing market scares – most recently that inflation is about to spike upwards in an alarming way, and previous to that a common view that a recession was imminent and therefore the current business cycle expansion was approaching an end. Neither of these two scare stories has much substance, and yet they have dominated financial market sentiment and financial commentaries for months at a time.

The inflation scare, which is very much current, is based on widespread misunderstandings of the inflation process. Although measured inflation may move upwards slightly during 2018, there is no basis for predicting or expecting any significant surge of inflation any time in the next two or three years.

The recession scare was dealt a significant blow by the passage of President Trump's tax cuts in December 2017, but the legislation was not fundamental to the maintenance of the current business cycle expansion. On the basis of the NBER definitions, the current expansion is likely to be the longest in recorded US financial history, exceeding even the ten-year expansion of the 1990s (March 1991-March 2001).

This article will explain why these two market beliefs are unsound, and why the basis for continued expansion at low rates of inflation is still largely intact.

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2. Inflation since the Global Financial Crisis

In the US, Japan and the Eurozone core inflation has persistently undershot official targets of 2% p.a. in every year since 2009. Figure 1 shows semi-annual data for the targeted price index in each country on a year-on-year basis – i.e. January-June compared with the previous year and July-December compared to the previous year. The only six-month period when measured inflation exceeded 2% was when Japan's Goods and Service Tax was raised by 3% in 2014, which of course is not inflation in the fundamental sense – this was an administrative measure that led to a step increase in the price level (which is reflected in two successive increases of the year-on-year percentage changes of the semi-annual rate), not a sustained or continuing increase in prices. After the tax change, Japan's price inflation returned to its trend before the GST price increase.

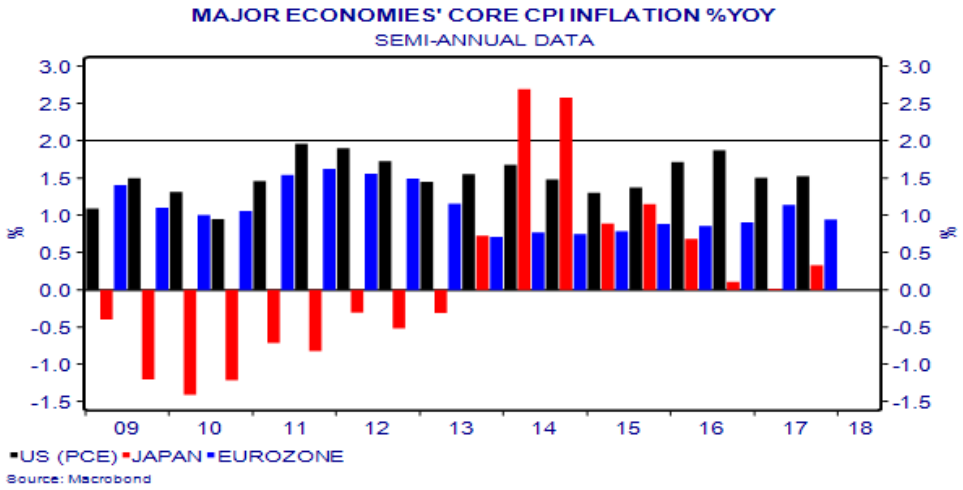

Figure 1. *Prolonged Undershoot of 2% Inflation Targets in Major Economies*

Yet central bankers, investment bank economists and many others have explained the low rates of inflation by referring to one-off factors. They often quote weak commodity or oil prices, or the fact that a particular currency has been strong, or other idiosyncratic events such as the "Verizon effect" in March 2017 when there was a price war among leading providers of data for US mobile phone users. Such explanations may suffice on occasion to explain temporary undershoots, but they cannot be used to explain nine years of sub-target inflation – either in the US, the Eurozone, or Japan.

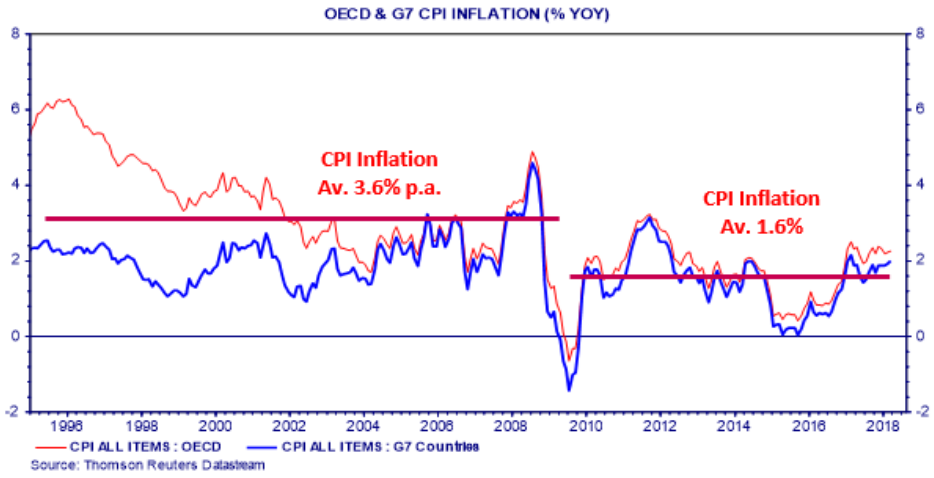

Figure 2. *Inflation in the G7 and OECD Economies*

The low inflation rates since 2008 are not limited to the US, the Eurozone and Japan. Figure 2 shows the GDP-weighted inflation rates – this time as measured by the overall or headline CPI in each country -- for the 35 OECD member nations as a group, and for the G7 countries.

For the OECD as a whole and for the G7 the average inflation rate has fallen well below its pre-crisis norm. From an average of 3.6% p.a. in the pre-crisis years 1995-2008 the average OECD CPI inflation rate has fallen by two percentage points to 1.6% p.a. in the period since the GFC. In the G7 the average rate has fallen from 2.1% pre-crisis to 1.3% post-crisis. In other words, the problem of inflation undershooting is more general than simply confined to the US, Eurozone and Japanese economies.

3. Two Popular Explanations for Inflation

Why has inflation fallen so broadly? What is it that has changed fundamentally in such a way as to generate this result? Before answering these questions, it is worthwhile considering two popular explanations frequently quoted by financial market participants.

(1) Fiscal Expansion

The financial markets tend to embrace one theory, often to the exclusion of others, when explaining inflation (or, indeed, other economic phenomena). In late 2017 and early 2018 there was widespread concern that a large increase in the US budget deficit as a result of President Trump's plans to cut taxes and increase infrastructure spending would cause rising inflation. This 'fiscal theory of the price level', which sees inflation as dependent on changes in government fiscal policy, attracted much attention.

Table 1. *US Fiscal Deficits and Inflation, 1980-86*

The Experience of Fiscal Deficits and Inflation under Ronald Reagan			
Federal Budget Balance as % GDP		Consumer Price Inflation %yoy	
1980	-1.3%	Mar-80	14.8%
1981	-2.8%	Jan-81	11.8%
1986	-5.9%	Dec-86	1.1%

However, the view that larger fiscal deficits invariably produce inflation is not supported by the evidence. One previous occasion when there was a significant cut in US taxation and rise in government spending was during

President Reagan's period in office. The federal deficit rose from 1.3% of GDP in 1980 to 5.9% of GDP in 1986. However, far from increasing, the inflation rate plummeted – from 14.8% in March 1980 to just 1.1% in December 1986 (see Table 1). That result was due to the tight control of money growth implemented by the Fed under Chairman Paul Volcker. Another case is Japan in the period 1993-2015 when numerous fiscal stimulus programs failed to re-ignite either economic growth or inflation. The lesson is that without an accompanying easing of money and credit conditions (and particularly money growth), increased fiscal deficits will not bring higher inflation.

More generally, a fiscal deficit (or more accurately an increase in the fiscal deficit) can only be financed in three ways: by increased taxation, by increased central government borrowing, or by the printing of money to fund the new spending through the banking system.

Table 2. *Fiscal Policy versus Monetary Policy*

Combinations of Fiscal and Monetary Policy				
Case	Fiscal Policy	Monetary Policy	Case Histories	Outcome
A	Expansionary	Contractionary	US under President Reagan, 1981-86	Economy recovered; inflation declined
B	Contractionary	Expansionary	UK 1981 Budget under PM Thatcher	Economy recovered
C	Expansionary	Expansionary	China, 2008-10	Economy recovered, inflation increased

If the increased government spending or deficit is financed by taxation but overall spending in the economy remains broadly unchanged, then there is simply a shift of spending from the private sector to the government sector. If the increased government spending or deficit is financed by borrowing, then borrowing by the private sector will be crowded out, overall spending in the economy will not change, and again there is simply a shift of spending from the private sector to the government sector. If, however, the increased government spending or deficit is financed by the printing of money (i.e. by the creation of new credit and a corresponding increase of deposits in the banking system) then overall spending can rise and – if the monetary acceleration is sustained -- inflation will follow.

Now consider the interaction of fiscal and monetary policy in Table 2. Case A cites the case of fiscal expansion against a backdrop of slower money growth – as in the US under Reagan and Volcker. In this example monetary policy dominated over fiscal policy. Case B, the case of the 1981 budget in the UK under Margaret Thatcher is similar, although the opposite policies were in force -- fiscal policy was contractionary but monetary policy expansionary. Once again monetary policy dominated. Finally in Case C, if both fiscal policy and monetary policy are operating in the same direction, the result will be clear, but it may be hard to determine which policy was dominant. The clearest recent illustration of this is the case of China's fiscal stimulus of 2008-10.

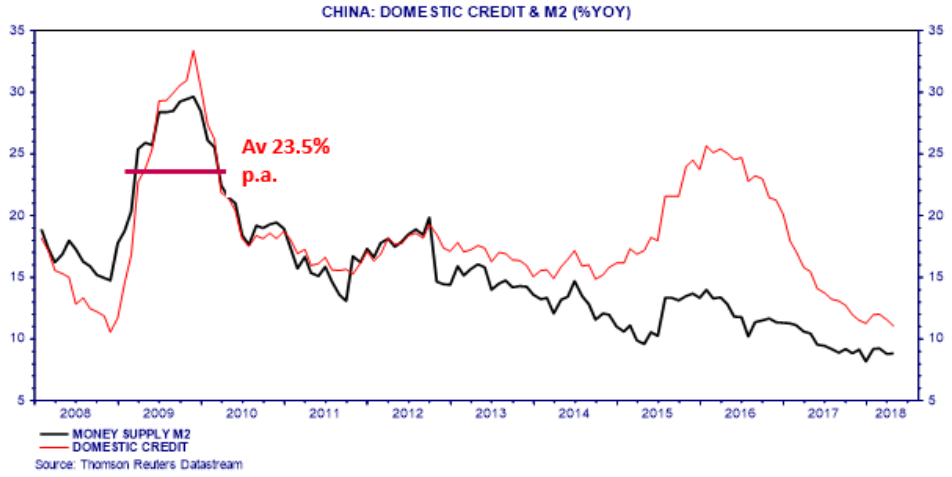

Figure 3. *Money and Credit Growth in China, 2004-18*

China's fiscal stimulus of 2008-10 is often cited as an example of successful fiscal stimulus, and indeed some writers have credited China's fiscal package and the subsequent recovery in 2008-10 with rescuing the global economy. But was it really the fiscal stimulus that explains the doubling of stock prices by July 2009, the surge in property prices, the commodity price bubble, China's strong economic recovery in 2009-10, and China's 6-7% consumer price inflation in 2010-11?

Briefly, RMB 4.0 trillion of fiscal spending (equivalent to US$ 586 billion at the time, equivalent to 5.6% of China's GDP) was announced in November 2008, but the central government would only provide 1.2 trillion yuan of funds. The rest was to come from provincial and local governments. In practice the provincial and local entities did not have the funds, so they turned to the banks, often creating Local Government Financing Vehicles (LGFVs) for the purpose. Banks were authorised and encouraged to support the funding needs of these provincial entities.

The result, as shown in Figure 3, was that M2 and bank credit surged from growth rates of around 15% p.a. to peaks of 30% and 34% respectively, or an average growth of 23.5% growth rates over two years. In other words, China's spectacular recovery was based at least as much on monetary expansion as on fiscal expansion. By contrast, much of the developed world was also running large fiscal deficits, but – despite QE in several economies - in no case was there an equivalent expansion of money and credit. The result, in developed economies, was anaemic recovery, and below-target inflation.

(2) The Phillips Curve

A second misguided view of the causes of inflation, popular in the financial markets and amongst academic and central bank economists, is the Phillips curve or – closely related – the output gap theory of inflation. A "typical" Phillips curve relationship, shown in Figure 4, sees wage inflation rising as the unemployment rate falls (as shown by the stylised red curve), and wage inflation feeding directly into overall price inflation. This concept is a standard feature of many economists' and central bank models of inflation.

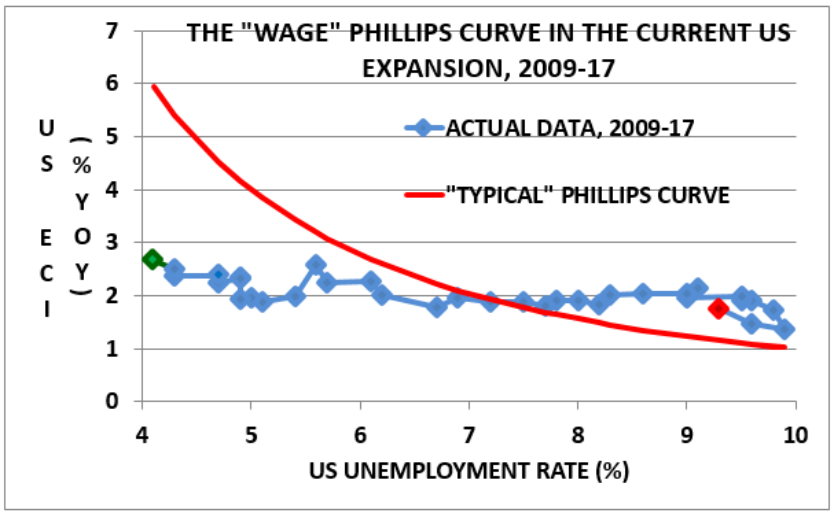

Figure 4. *The US Wage Phillips Curve, 2009-17*

In practice, as shown by the blue line, which plots successive co-ordinates of the US unemployment rate and wage increases as measured by the Employment Cost Index, the US "wage" Phillips curve has been almost flat in the current economic expansion, as well as in the two previous expansions on 1991-2001 and 2002-07. The same broad flatness of the plotted wage Phillips curve relationship is found in the UK, Germany, Japan and elsewhere.

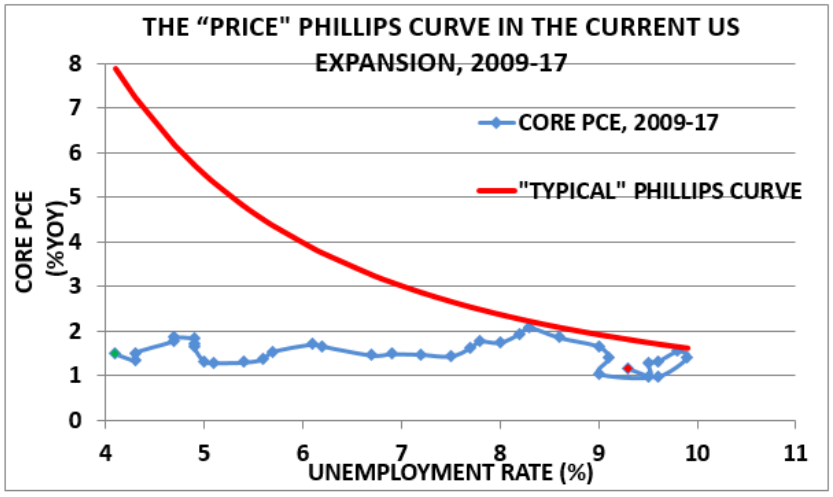

Figure 5. *The US Price Phillips Curve, 2009-17*

Figure 5 shows the "price" version of the Phillips curve – i.e. instead of wage increases on the vertical axis it shows inflation on the vertical axis. In this case we have chosen to show the quarterly data for year-on-year increases of the PCE deflator which is the preferred measure of inflation for the Fed and its FOMC members.

When asked why the Phillips curve is not working, most economists will say that although it does not appear to be working now, at some stage there will be a trigger point at a lower level of unemployment that will cause wages and inflation to increase much more quickly. In other words, they imply that the shape of the Phillips curve is more like a rectangular parabola, kinking sharply upwards at some undefined, lower level of unemployment. However, in my view this is not credible.

The problem with this approach to inflation is that while the Phillips curve is an empirical relationship that sometimes holds, it is not a complete theory of the inflationary process. Therefore although the Phillips curve relationship can be observed in numerous past episodes when a tightening of the labour market was followed by wage increases which in turn were accompanied by or followed by rising consumer prices, this need not always be the case. Moreover, there is no theoretical reason why this should always be the case. In other words, it may be feasible for the economy to experience rates of unemployment below the supposed "natural rate", and yet for inflation to remain low.

The same problems apply to the output gap theory of inflation. In the past there have been numerous episodes when inflation has increased following the supposed closing of the output gap. But again this is an empirical observation, not a complete theory of inflation. Leaving aside the problem of measuring the output gap and the potential level of real GDP, there is no theoretical basis for asserting that closing the output gap will inevitably lead to inflation. The truth is that these explanations of wage increases or price increases deriving from tighter labour market conditions are what economists call "reduced form" relationships – i.e. simplified versions of reality, but not the whole story.

Figure 6. *The Mechanism Underlying the Business Cycle*

More fundamentally, the key point is that inflation is a monetary phenomenon, and therefore it will only rise after a sustained period of faster money and credit growth. Moreover, inflation should be seen as a part of the business cycle which itself is a monetary phenomenon.

A stylised, flow-chart version of the relation between (broad) money growth, asset prices, economic activity and CPI inflation is shown in Figure 6. It will immediately be apparent that the Phillips curve and the output gap explanations of inflation only focus on the two right hand boxes in the diagram. The Phillips curve says, in effect, because the labour market (in the Economic activity box) has tightened, goods and service price inflation (in the final box) will follow.

In a case where a tight labour market has been preceded by a sustained period of more rapid money growth, such a forecast will probably turn out to be correct. However, in a case where there has been no such acceleration of money growth it does not follow that there need be any significant increase in the inflation rate. As we shall see below, in most developed economies since 2009 there has been no sustained acceleration of money growth sufficient to cause a surge in inflation. Until there has been, it follows that inflation will remain low.

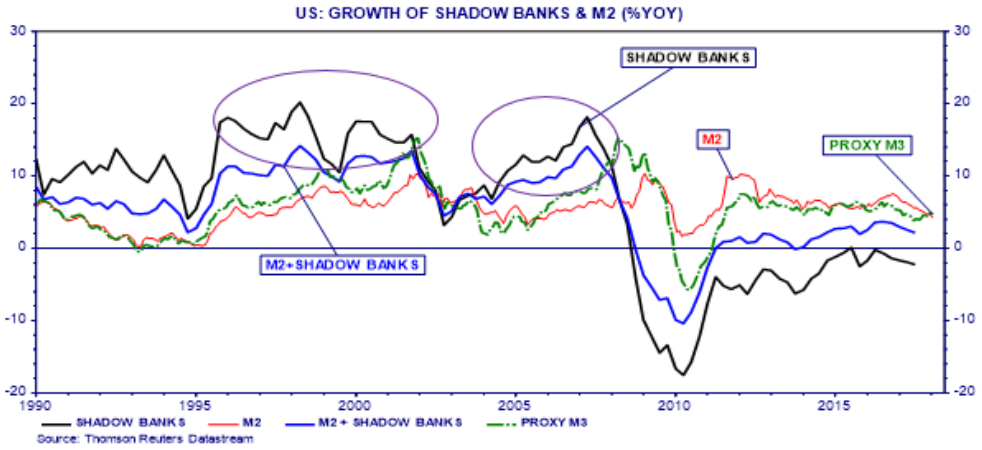

Figure 7. *Money and Shadow Banking Growth in the US, 1990-2017*

Taking the US first, Figure 7 shows year-on-year rates of change for the key monetary aggregates of the United States – M2 and M3, and data for the shadow banking system. The money growth rates since around 2012 have been low and broadly stable with M2 and M3 averaging 6.6% and 5.2% year-on-year respectively. Historically such growth rates have never led to a significant rise in inflation, so there is no reason to expect any upsurge over the next two years.

Notice that Mo (or the monetary base or the Fed's balance sheet) is not included in the chart because inflation is related to rates of growth of broad money held by the non-bank public (i.e. mostly firms and households), not the size of the central bank's balance sheet.

Notice also that the circled periods, namely the tech bubble of the 1990s and the housing bubble of the early 2000s, were both accompanied by double-digit growth of credit in the shadow banking system and accelerating growth of M3. Since the GFC, shadow banks have essentially been in hibernation, with shrinking balance sheets. Consequently the total for M2+Shadow banks has only been growing at about 2% p.a.

Since the start of 2017 M2 and our proxy for M3 (which is in many ways preferable to M2) have slowed to 3.7% and 4.2% year-on-year respectively in April 2018 – enough to support the growth of the economy and an inflation rate of around 2%, but not much more.

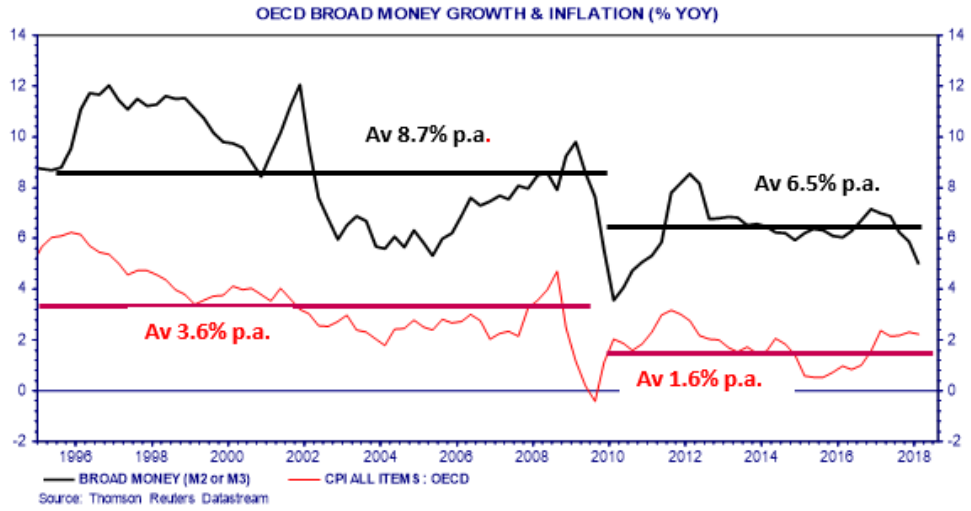

Figure 8. *Money Growth and Inflation in the OECD, 1995-2018*

Low and stable money growth is not confined to the US. The Eurozone, the UK and other developed economies have all experienced significantly slower growth rates of broad money and credit than in the period before the GFC. Consider the weighted growth of broad money (M2 or M3) in the 35 economies of the OECD in Figure 8, where the data are shown on a quarterly, year-on-year percentage change basis. Between 1995 and 2008 average money growth was 8.7% p.a., which generated an average CPI inflation rate of 3.6% p.a. over the same period. Since the GFC, in the period 2009 to 2017 average broad money growth has been 6.5% p.a. which has generated a CPI inflation rate of 1.6% p.a. across the OECD as a whole (to 2018 Q1).

In effect the OECD average broad money growth rate has slowed by 2.2 percentage points since the GFC while the CPI inflation rate has slowed by 2.0 percentage points. Given the way in which these data were collected from such a wide variety of sources, it cannot be mere coincidence that these reduced rates of money growth and inflation are so close numerically.

In 2018 Q1 (the latest data available) OECD money growth slowed to 5.0% while CPI inflation stood at 2.2%.

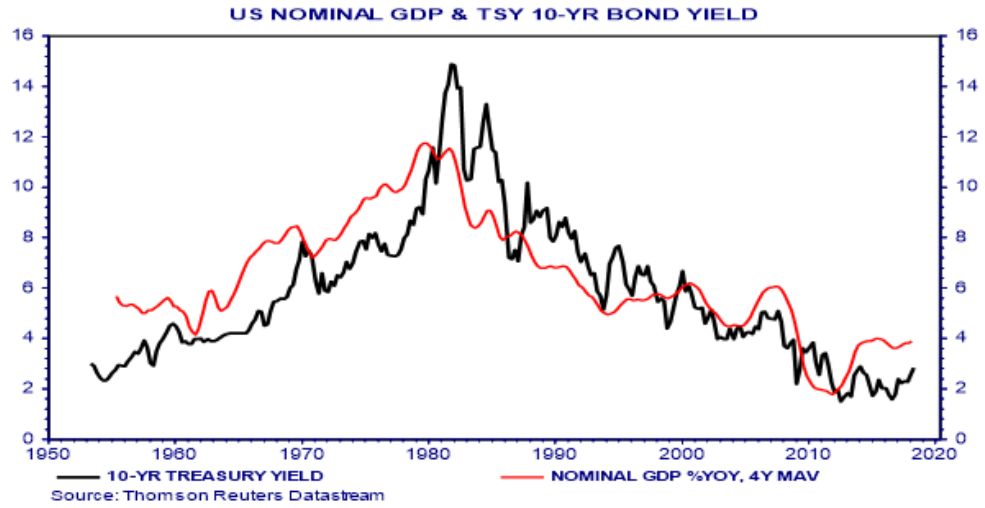

Figure 9. *US Nominal GDP and 10-year Treasury Bond Yields, 1953-2018*

For the US, the low growth of money and credit in recent years implies that inflation, a primary driver of long bond yields, will remain subdued. However, as mentioned at the start, there have been significant inflation scares – mostly deriving from President Trump's tax cuts combined with his proposed increased infrastructure spending and the prospect of a larger budget deficit.

These background developments in fiscal policy fell on fertile ground – a climate of ideas dominated by the fiscal theory of the price level, together with a widespread reliance on economic models that rely heavily on the "Phillips curve" or an "output gap" framework. All this means that inflation expectations have become much more sensitive to current developments. For example, the modest increase in US average hourly earnings to 2.9% year-on-year (compared with consensus expectations of 2.6%), announced on Friday, February 2, 2018 produced an abrupt rise in 10-year Treasury bond yields to over 2.8% for the first time in four years. (Figure 9 shows bond yields for April at 2.83%.)

Thus despite near full employment, despite low unemployment, despite the fiscal deficit, and despite the weak dollar in 2017 it is likely that as long as money and credit growth remain low (as in the past few years), actual inflation will not match expected inflation.

4. Popular Explanations for the End of the Business Cycle Expansion

The second scare story mentioned at the start of this article was an imminent recession. In my view this idea, which admittedly has been less prevalent since the Trump tax cuts of 2017 but was nevertheless widely explored in numerous models of "recession probability" in 2016 and 2017, is largely groundless. A recession is probably at least two years ahead, possibly more. Before explaining the rationale for a continued business cycle expansion we examine some popular views about why the cyclical upswing may be about to end.

First, the best indicator by far of an imminent recession in the US has been the inversion of the yield curve shown by the spread between the 10-year Treasury yield and the 3-month Treasury bill yield in Figure 10. However, the yield spread is composed of the difference between two rates: a long term rate determined in the market, and a short term rate largely determined by the Fed.

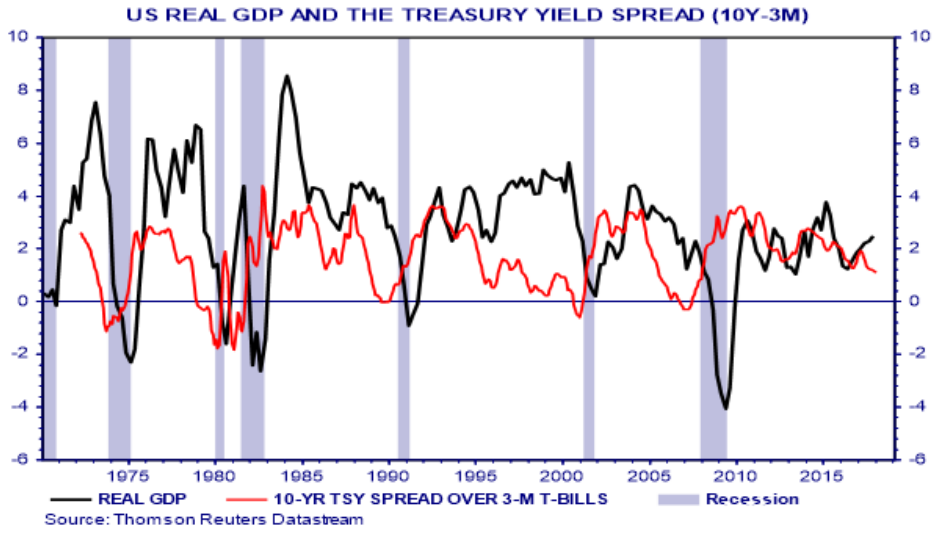

Figure 10. *US Real GDP Growth and the Treasury Yield Spread*

The cause of an inversion is almost always a steep rise at the short end of the curve – i.e. by deliberate Fed tightening (for example, to deal with inflation). Consequently the yield curve is a symptom of underlying tightening of policy; the real cause of the inversion is the tightening of policy (usually reflected in slower growth of money and credit aggregates).

In most historical cases an inverted yield curve implies that short term rates have been raised, tightening monetary policy and slowing money growth. Thus ahead of every NBER-designated recession since 1973 the yield spread has turned negative, although in 1989 the inversion was only marginal. The growth rate of real GDP is shown in Figure 10 on a year-on-year basis in order to reduce its volatility, although it should be noted that the NBER does not measure recessions based solely on changes in the real GDP.

In any case the yield curve is far from inverted currently. The latest data in the chart (for April 2018) show a yield spread of 1.03%. Assuming no decline at the long end of the curve, short rates would need to rise abruptly by 1.03% or more in order for the yield curve to invert.

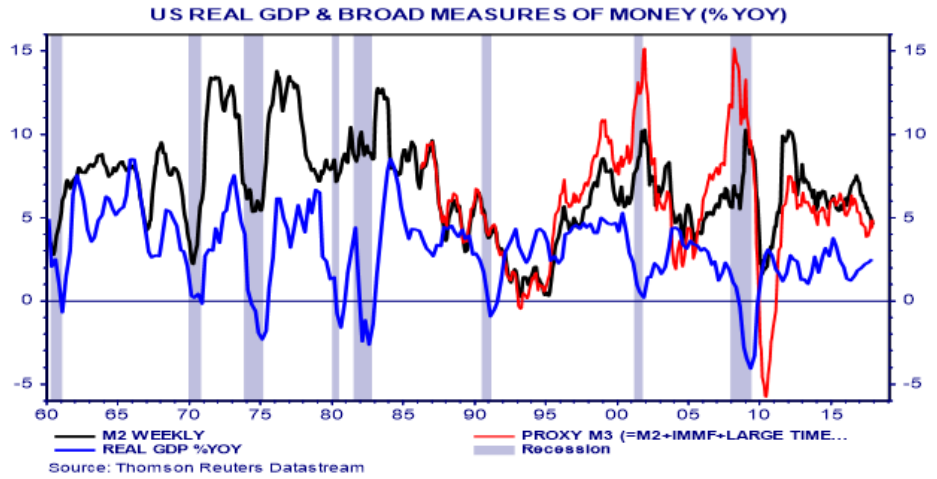

Figure 11. *US Money Growth and Real GDP Growth*

The second indicator that could spell a recession ahead is a slowdown in money growth. The chart shows the NBER-designated recession bands, this

time since 1960. Ahead of every recession from 1960 to 1980 there was a slowdown in M2 growth. In 1981-82 the recession came about largely as a result of the high inflation rate interacting with limited money (so real money growth declined), but deregulation of interest rates and other similar measures meant that M2 growth did not show the same sort of slowdown as in earlier episodes. The recessions of 1990-91 and 2001 were each preceded by monetary slowdowns, and for these episodes there is data for M3 which showed a very similar profile to M2 in each case. The interesting case is the recession of December 2007 to June 2009 when there appeared to be no slowdown of M2 or M3 – on the contrary they both accelerated. For a proper understanding it is necessary to consider the rapid growth of credit -- or financial liabilities -- in the shadow banking system (Figure 7). This peaked in 2007 Q2, and then slowed sharply in the period up to the Lehman Brothers bankruptcy in September 2008, when it plunged into negative territory. The bankruptcy precipitated a sudden freeze in the credit markets, and a dramatic shift of funds back into the banking system. So the surge in M2 and M3 in 2007-09 was a result of the run on the shadow banking system, not a sign of ample liquidity in the financial system as a whole.

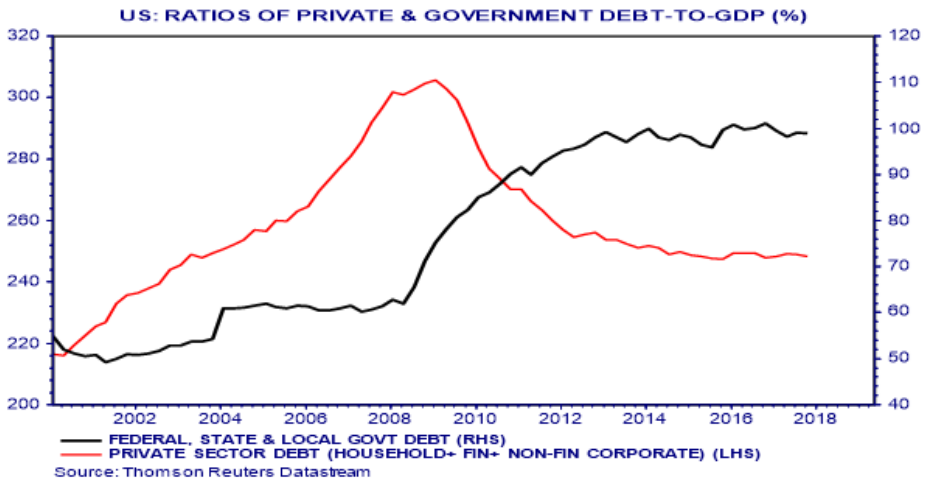

Figure 12. *Private sector deleveraging has improved resilience of US to possible recession*

A third indicator that is important in the aftermath of the 2007-09 balance sheet recession is the health of private sector balance sheets. The chart above shows the ratios of private and public sector debt to GDP for the US since 2000.

US private sector debt – which includes the debt of the household sector, non-financial business sector and financial sector -- peaked at 305% of GDP in 2009 Q1. Since then the private sector leverage ratio has declined to 248% as of 2017 Q4, a cumulative decline of 57 percentage points. This means that the private sector leverage ratio has returned to the level of 2003, unwinding two thirds of the leverage built up since 2000. Most of the deleveraging has been achieved by balance sheet repair in the financial sector (banks and shadow banks), with the household sector contributing to a smaller degree. The US public sector debt ratio -- which includes federal, state and local government debt -- began rising in 2008 soon after the start of the US recession in 2007 Q4. So far the all-government debt ratio has risen from 62.6% of GDP in 2008 Q2 to 99% in 2017 Q4.

We cannot know in advance how much the US private sector will de-lever, and relative to GDP there may be further deleveraging ahead. However, the key point is, as regularly reported by the New York Fed, consumer balance sheets are in much better shape, so that even if rates continue to rise, US consumer spending should remain resilient.

5. Conclusion

The two main threats to financial markets – inflation and recession – have been exaggerated. Financial market participants and others have relied on unsound theories of inflation: the fiscal theory of inflation, and the Phillips curve or output gap.

Fundamentally, however, inflation is a monetary phenomenon and requires sustained faster growth of money and credit to support any significant increase in goods and service prices. Yet in the US and across the OECD money and credit growth remain subdued since the GFC. Money growth is not so rapid as to cause inflation, nor has it slowed sufficiently to precipitate a recession. It follows that the current US business cycle expansion is based on firm foundations, and should be able to continue for several more years, with low inflation. Similarly, the yield curve, money growth and the health of private sector balance sheets imply there is currently no basis for predicting an imminent recession.

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