



Global

The Phillips curve — rumours of its death are greatly exaggerated

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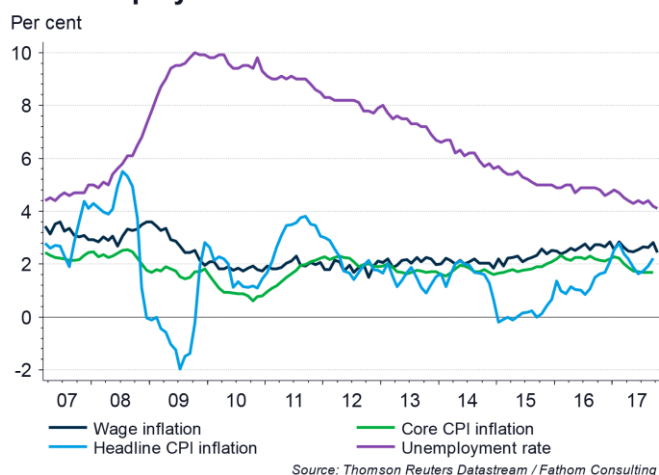
“Reports of my death have been greatly exaggerated” is one of Mark Twain’s more frequently referenced quips. Leaving aside the fact that it is a slight misquotation, it is an amusing line, and one that neatly captures Fathom’s belief in the continued validity of the Phillips curve. There is a widespread perception that the relationship between labour market slack and inflation is, at best, diminished and, at worst, no longer intact. Fathom does not subscribe to this view. Instead, we believe that the impact of changes in unemployment on a worker’s remuneration has been masked by a sustained decline in the labour share, and by a reduction in the variability of inflation expectations. None of this implies that the Phillips curve is broken — it is merely hidden! As long as there is uncertainty about other determinants of pay, over and above measures of labour market slack, we find that the output gap may be a more reliable indicator of domestic inflationary pressures. The alternative, a broken Phillips curve — a world in which a country’s price level no longer depends on the balance between demand and supply — is quite literally a licence to print money.

The Phillips curve is named after Alban William Phillips, whose study of UK wage inflation and unemployment between 1861 and 1957 found an inverse relationship between the two variables. Initially, it was believed that this relationship prevailed over the long term, allowing policymakers to trade higher inflation for permanently lower unemployment. Stagflation in the UK during the 1970s and early 1980s blew this theory out of the water, with inflation and unemployment simultaneously breaching 10%. Nowadays, the Phillips curve describes a supposed relationship between some measure of real economic slack, be it unemployment relative to the NAIRU, or output relative to potential, and the degree of upward or downward pressure on some nominal quantity, typically wages or prices.

Nowadays, the Phillips curve describes the relationship between real economic slack and inflation



US unemployment rate and inflation



US inflation has not responded to the substantial decrease in unemployment since 2011

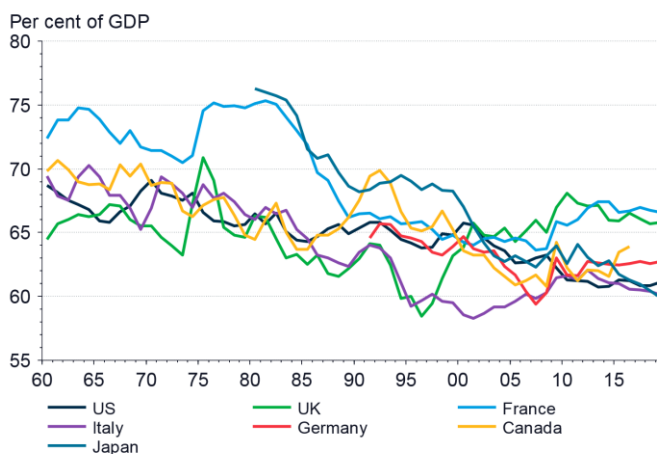
In the decades since Phillips published his research, the redefined Phillips curve has become a cornerstone of modern macroeconomic models. By raising or lowering the real rate of interest to affect aggregate demand, and with it the unemployment rate, monetary policymakers were able to exert some influence over the rate of inflation, relative to expectations. It seemed like a very useful tool for managing business cycles, particularly for inflation-targeting central banks. Until now, that is. Since the global financial crisis, unemployment has fallen back close to, or below, its natural rate in many advanced economies. Yet, to date, sustained wage growth has been elusive. This has led some commentators to propose that the relationship is no longer stable, or worse still, that it has ceased to exist altogether. Proponents of this view point to the US, where despite an almost six percentage point drop in unemployment, there has been only a very small increase in wage or inflation.

This perception of a deceased, or at least gravely ill, Phillips curve has seeped into the policymaking sphere. In a recent speech, BIS chief economist Claudio Borio noted that the relationship between domestic slack and inflation had been “weak and elusive” for a couple of years now, emphasising the role that globalisation had played in reducing inflation in advanced economies. To demonstrate this point, Borio presented his own statistical estimates of the slope of the Phillips curve for the G7 countries. He found that the response of wage inflation to unemployment had declined steadily since the 1980s, while the response of headline inflation was apparently no longer evident at all. The speech concluded that, should inflation be dependent on real factors outside the control of policymakers, and not simply a domestic monetary phenomenon, then the capacity of central banks to “fine-tune” inflation would be more limited than previously thought. Furthermore, misidentifying weak inflation as demand driven, rather than the result of favourable supply side developments, risked the justification of a dangerously accommodative monetary policy stance.

There is a perception that the Phillips curve is either dead, or dying



Labour share



Picking up our economic stethoscope, Fathom has done its own check-up on the health of the Phillips curve. Back in July, as part of our *Global Economic and Markets Outlook* for 2017 Q3, we estimated equations linking real wage inflation to the unemployment rate in a number of major economies over the period from 1960 to 2008. The estimated equations subsequently overpredicted real wage inflation when used to forecast out of sample, by between 1.5 percentage points, in the case of the US, and almost 2.5 percentage points, in the case of major euro area economies. Why? To start with, inflation-adjusted wage growth will be determined in part by productivity growth — a worker is unlikely to be paid more in real terms, for a given labour share of income, unless he or she is able to produce more. We found back in July, that the dearth of productivity growth was an important factor, but not the sole explanation for lower-than-expected real wage growth. Following further digging, we now conclude that long-term factors putting downward pressure on the labour share are likely to account for most of the remaining shortfall.

The labour share refers to the part of national income that is allocated to labour. It has been in long-term decline across the majority of G7 countries. Workers are taking home a smaller and smaller slice of the national pie, due to:

Globalisation — international migration and the capacity to locate activities offshore has exposed employees in the advanced economies to international competition and hence reduced their bargaining power.

Demographics — an increasing share of the global population is now of working age, which has increased the relative supply of labour.

De-unionisation — lower trade union membership has reduced workers' bargaining power, as has the reduction in insider power associated with collective bargaining.

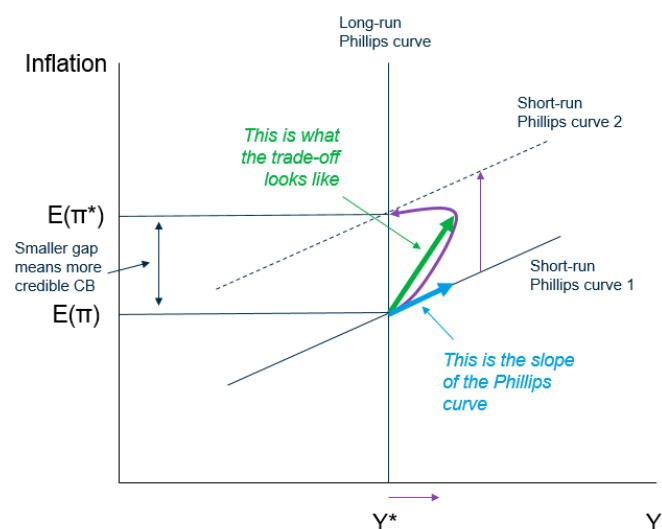
Labour-replacing technology — the elimination of some roles through technological progress has increased the returns accruing to capital.

Unemployment is not the only determinant of wage growth... so much more is going on





Rise of the 'gig' economy — increasing informality in the job market, such as zero-hour contracts, has increased the flexibility of the hiring process for firms, meaning that unemployment rates no longer accurately capture the true level of slack in the economy. Furthermore, employees may now prioritise securing greater employment protection ahead of wage increases.



While tighter labour markets still encourage wage increases, the reduction in the labour share has been pushing in the opposite direction in advanced economies. This background noise has hidden the Phillips curve, and made it appear that the impact of labour market slack on wages has been diminished. Crucially, we believe that some of this background noise may start to fade. Some factors, such as de-unionisation and demographics, appear to have peaked while political pressures appear to be limiting further globalisation, if not throwing it into reverse.

If the Phillips curve is not dead, has it flattened as Borio suggested? We do not think so, if it is correctly specified. The long-run Phillips curve is generally accepted to be vertical at the level of full employment. Meanwhile, the level of the short-run curve, which shows Phillips' original inverse relationship between labour slack and inflation, is dependent on inflation expectations. Should workers' inflation expectations fall, they will demand lower remuneration at each level of unemployment and the Phillips curve will shift down. Repeated revisions to inflation expectations may thus explain why labour slack is appearing to have less impact on inflation.

The observed ability of central banks to achieve a period of relative price stability has enhanced the credibility of their targets, and consequently anchored inflation expectations. As Borio's regression did not control for the effect of inflation expectations, his estimate of the slope of the Phillips curve may well be biased downwards, implying a false flattening of the slope.

Other factors have made u^ an unreliable friend*

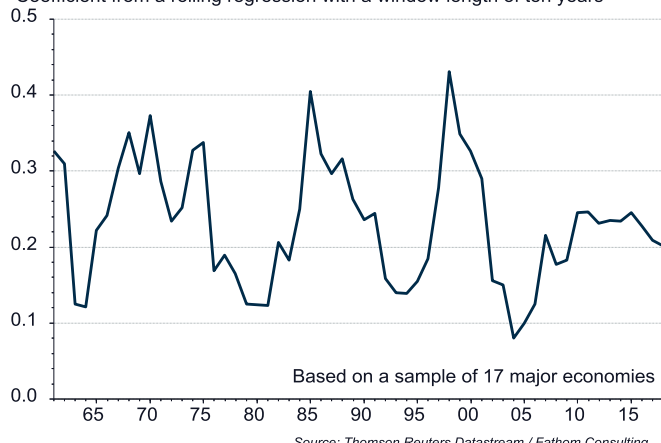
The Phillips Curve has not flattened, it has shifted down





Impact of the output gap on domestic inflation¹

Coefficient from a rolling regression with a window length of ten years



Ultimately, price pressures must emerge when resources are insufficient to maintain the current level of demand at current prices. In a Utopian economy where this was not the case, governments could increase spending without limit, and central banks could issue money until the printing presses ran dry, with no noticeable impact on the price level. The output gap, which measures the difference between the current level of output and its potential, provides an alternative measure of slack to use in a Phillips curve model. Our own research, presented to clients as part of our *Global Economic and Markets Outlook* for 2017 Q4, suggests that the relationship between the output gap and domestic inflation has been broadly stable for the past 50 years or so across 17 major economies. Given the background noise that is continuing to affect domestic labour markets, we argue that the output gap is perhaps a more reliable indicator of upward or downward pressure on inflation than the unemployment rate.

Despite criticism of the relevance of the Phillips curve in modern economies, the relationship between slack in the economy and price pressures still holds, as all macroeconomic theory suggests it must. However, there are many more influences on wages than just the unemployment rate — productivity, globalisation and demographics, to name but a few. This clouds the picture and makes the Phillips curve relationship less obvious. While we expect the cloud to lift as some of the factors driving the labour market share diminish, the solution in the meantime is to use the output gap as an indicator of future price pressures. In a number of advanced countries, the output gap is close to zero. Outside of the UK, we expect above-trend growth in the next two years. The result will be inflation — economic Utopia is still a fictional land.

Macroeconomists can sleep easy...low levels of economic slack will still generate inflation

1. The chart shows the coefficient on the output gap in an equation for GDP deflator inflation, estimated across 17 major economies, using a rolling regression with a window length of ten years. While this coefficient looks broadly stable, the coefficient on the lagged dependent variable has fallen significantly since 1990. This would be consistent with a world in which inflation expectations have become better anchored and less dependent on past inflation.



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