

# Should We Worry About Inflation?

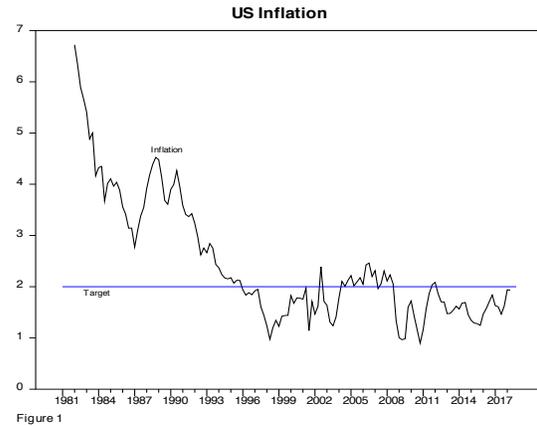
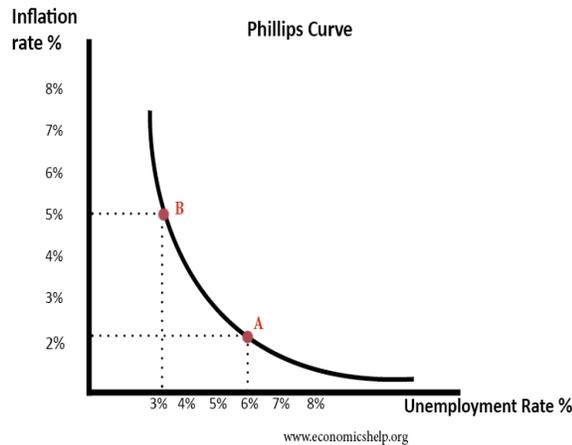
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The Humphrey-Hawkins legislation mandates the Fed pursue maximum employment, production, and purchasing power. This is a tall order for the Fed. It must achieve price stability, national output, and employment objectives with a single policy instrument - monetary policy. The ability of the Fed to achieve the optimal combination of these objectives with a single instrument depends on the existence of a relationship between inflation, unemployment, and gross domestic product (GDP).

Various schools of thought suggest dissimilar relationships between these variables. For example, the textbook representation of the Keynesian theory asserts an unemployment-inflation tradeoff. The relationship is observed in the Phillips Curve, which provides a rationale as to why strong economic performance and low unemployment rates are stoking the economy's inflationary flames.

The dual mandate represented in the Humphrey-Hawkins legislation effectively forces the Fed into a Phillips Curve type of relationship. One can argue the success of the Trump Administration's policies is forcing the Fed to increase interest rates faster than they had previously anticipated. Critics of the Fed have questioned whether the Fed's attempt to reduce the developing inflation predicted by the Phillips Curve would lead to not only a lower inflation rate, but also to a lower real GDP growth rate. The administration apprehends that if Fed policy becomes too restrictive, it could derail Trump's plans for economic expansion.

Economists do not universally agree on the validity



of the Phillips Curve view. Monetarists contend that money is only a veil, and will have no long run effect on the real economy. Therefore, there is no unemployment-inflation tradeoff and this presumed tradeoff will only result in an ever-rising inflation rate. In addition, a Fed reduction in the quantity of money in circulation has a deflationary, not an inflationary effect. Hence, monetarists are not concerned about rising inflationary pressures.

If the inflation rate does not flare up, the anticipated increases in nominal interest rates will be the results of rising real interest rates. The nature or source of the increase matters a great deal. If the increase in real interest rate is the result of a decline in credit, a shift in the supply curve will result in lower output, and a lower valuation - a bearish outlook. On the other hand, if the higher rates are the result of a rising demand for credit investors, the new equilibrium will be restored at a higher interest rate, higher output, and a higher market valuation. This would be a bullish outlook.

## Grading the Fed

Monetarists believe that the role of monetary policy should focus solely on the underlying inflation rate. In their eyes, there is a simple way to evaluate the Fed's performance; how well the Fed adheres to the target inflation rate. The Fed currently defines price stability at a 2% annual inflation. If the Fed implements successful policy, the underlying inflation rate will not significantly deviate from the target rate. However, if the Fed overplays its hand with too restrictive of a strategy, an excessive reduction in the quantity of money will reduce inflation below the target rate. On the other hand, if the fed is too easy and its actions are insufficient, the

inflation rate could increase above the fed target rate. Under these criteria, the evaluation of the Fed performance is straight forward. How close the fed keeps the inflation rate to its target rate.

Recall that in 1979, Paul Volker abruptly changed the Fed's operating procedures. The incident had a strong and adverse impact on the economy. Perhaps that convinced the Volker Fed to pursue a somewhat gradualist approach to reaching the desired long run inflation target rate of 2%. The inflation rate gradually declined and by the 1990's, the Fed reached its 2% target inflation rate.

U.S. inflation has hovered around the 2% rate since the early 1990's, falling below the target rate only during two different time periods: The period preceding Dot Com Bubble and the period following the Financial Crisis. During the former, the economy posted a strong and above average growth rate. In the latter period, it represents sluggish economic performance.

Conversely, below average inflation periods do not necessarily correlate with the level of economic activity, but it does take two to tango. If inflation is too much money chasing too few goods, the below average inflation rate means that the Fed actions fell short and did not match the changes in money demand. Departures from the price rule can occur during good times and during slow times. That is why it is essential that we always need to keep an eye on the Fed. These two episodes document that when the Fed deviated from the price rule, it is necessary to point out that they were neither excessive nor permanent. Overall, the Fed has acted in accordance with the mandate and should be given the benefit of

the doubt. Trust but verify.

### The Unemployment and inflation rates

If the Phillips Curve holds, the negative relationship between inflation and unemployment rates will be observed. A related version of the same story is that as the unemployment rate declines, output and prices increase. Hence the underlying Phillips Curve hypothesis theorizes a positive correlation between output and inflation.

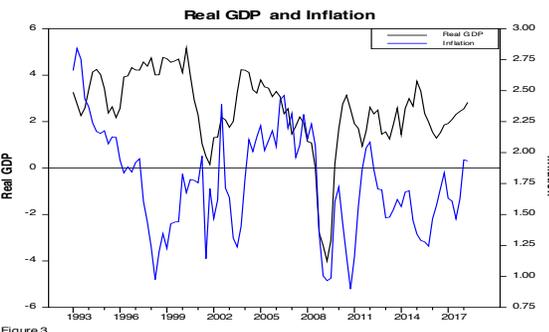
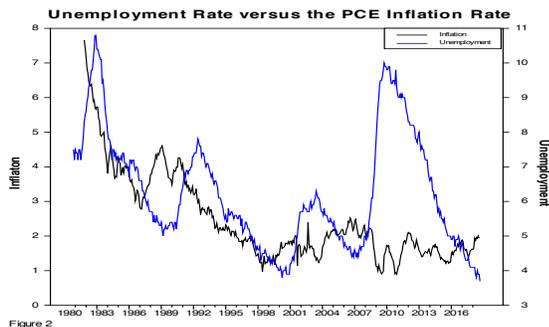
Figure 2 documents the relationship between US unemployment and the trailing 12-month inflation rate. Notice the negative correlation between the unemployment and inflation rate is non-existent. Figure 3 shows the absence of a positive correlation between the inflation rate and the real GDP Growth rate.

The lack of correlation between the unemployment and inflation rates, as well as between the real GDP growth rate and inflation rate leads us to question the usefulness of the Phillips Curve and to search for another explanation for the variance in the underlying inflation. If anything, a case can be made that the spikes in the two series, except for the Financial Crisis, are negatively correlated. Later on, we will discuss the correlation between the peaks and troughs using a monetarist interpretation.

### Monetarism and the inflation rate

If one is willing to take the position that real GDP is a good representation of the demand for money, and that the peaks in the GDP series represent unanticipated shifts in the demand for money, then it follows that the unanticipated increases in money demand will result in a lower inflation rate. The negative correlation between peaks and troughs of the real GDP growth and inflation rates shown in Figure 3 is consistent with the monetarist interpretation that unanticipated increases in money demand result in a lower inflation rate. But what about the non-peaks? Again, if one is willing to take the position that the non-peaks represent fully anticipated changes in the money demand, then it follows that a Fed focused on price stability should be able to easily accommodate these shifts in order to keep the inflation rate within the desired target range. Such a strategy is not really out of the realm of possibilities. In fact, this is precisely what Alan Greenspan said his objectives at one of the Jackson Hole conferences.

While we believe he did a great job running the Fed, his batting average anticipating demand shifts was far from perfect. Mr. Greenspan correctly anticipated the



1990's productivity surge. However, the fact that the inflation rate declined suggests that he did not fully accommodate the increased demand associated with the productivity surge and faster real GDP growth rate. This is to be expected from a risk averse Fed.

The Maestro was also concerned about what he called the “*Century Date Change*”, more commonly known as Y2K. At the time, his concern was that the computers would malfunction around the new millennium and electronic banking would come to a halt - that a shortage of cash could create economic and financial chaos. Mr. Greenspan flooded the market with cash in anticipation of the event. When the Y2K problems did not materialize, Greenspan was forced to rapidly withdraw the cash, further compounding the negative effects of a slowing economy. The Y2K incident demonstrates the perils of forecasting and accommodating shifts in money demand in anticipation of their occurrence.



Figure 4a

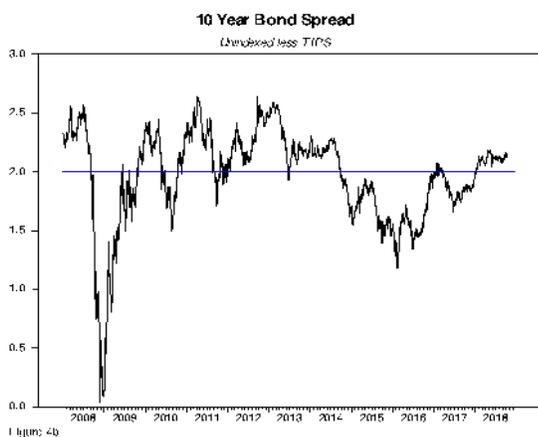


Figure 4b

## Are inflationary expectations rising?

A strict interpretation of the Efficient Market Hypothesis suggests that bond yields contain unbiased information about the market expectations regarding the average nominal returns over the life of the bonds. The TIPS or inflation indexed bonds contain information regarding the average real rate of return expected over the life of the security. Thus, the yield differential between the regular bond yields and the TIPS provide us with an estimate regarding the average expected inflation rate over the maturity of the security in question. This makes the yields of the constant maturity 10-year government bonds and corresponding inflation indexed bonds (TIPS) shown in figure 4a quite useful. The differential or spread between the two yields provides us with an estimate of the economy's expected inflation and real rate of return over the life of the bonds, Figure 4b.

The data in Figure 4b shows that while it is true that the inflation expectations have risen slightly, they are well within the Fed's target range. Hence there is no reason to be too concerned about inflation expectations getting out of hand. The Fed is doing a good job of keeping the inflation rate around the 2% target range.

## The Inflation outlook

Figure 4b shows that the spread declined below the 2% Fed target rate for an extended period during two different cycles: During the Financial Crisis and during Janet Yellen's tenure as Fed chairman. During both periods, the best that can be said of the real economy is that if the economy expanded, it did so at an anemic pace. The below average growth and below average inflation rate results are consistent with the Phillips Curve. It predicts a below average inflation during periods of below average growth.

There is also a monetary explanation for the results. During the crisis, as the economy was slowing, a flight to quality led to an increase in the demand for money. To prevent a collapse of the financial system and to ensure that there was enough liquidity in the economy, the Bernanke Fed flooded the market with cash. The increase resulted in a Fed balance sheet expansion, see Figure 5. However, we claim that the balance sheet expansion was not large enough to meet the increase in demand and achieve a 2% inflation target. The shortfall resulted in a below 2% inflation. During Ms. Yellen's tenure, the Fed has embarked in a gradual reduction of its balance sheet with a corresponding decline in the economy's monetary base, i.e. money supply. The net effect of

the Fed actions and the weak recovery resulted in an excess demand for money and a mild decline in the underlying inflation rate.

Depending on one's political persuasion, President Trump's election victory either coincided or resulted in a resurgence of the US economy. If inflation is too much money chasing too few goods, then we should not worry about the inflation rate creeping up. The strong economic performance means that there are more goods than before. The faster growth results in an increase demand for money. In turn the Fed balance sheet reduction points to a decline in the monetary base, the number of greenbacks circulating in the economy will decline. Less money and more goods do not portend a higher inflation rate, quite the opposite.

We see the inflation rate remaining in the 2% range. How is that possible? The impact of the reduction of the fed balance sheet on the underlying inflation rate is much more nuanced than a simple reduction in the monetary base. Figure 5 shows the tremendous expansion of the balance sheet in response to the financial crisis. Looking at Figure 5, it is also apparent that the Fed balance sheet expansion was matched almost one for one by an expansion of the banking system excess reserve. Since the latter are not deployed, they have no impact on the price level or the bank credit and deposit creation.

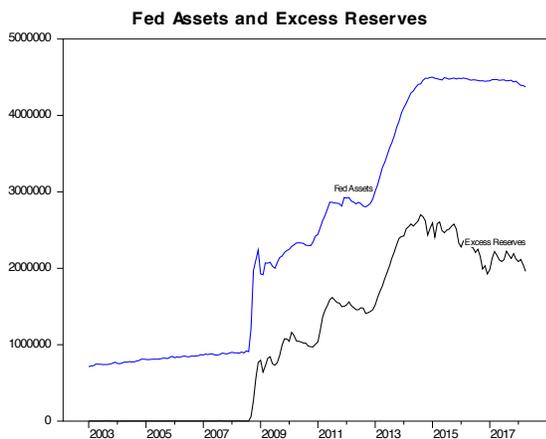


Figure 5

The data shown in Figure 5 also shows that the Yellen Fed began reducing the Fed balance sheet, albeit at a snail pace. Not the actions of an aggressive Fed. This suggests that if the Fed continues at its gradualist approach, it has a long way to go before its balance sheet returns to "normal".

Whether the Fed balance sheet reduction is deflationary or not depends on how the reduction is

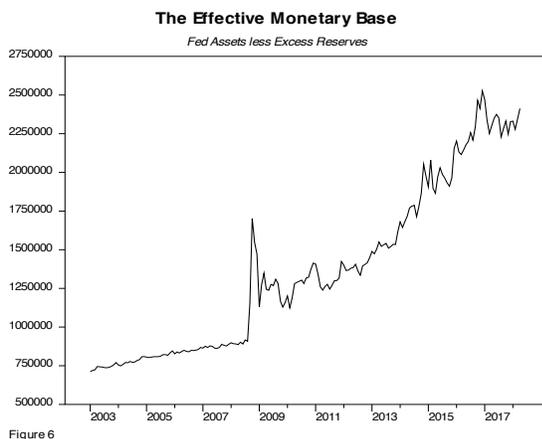
affected. If the Fed balance sheet reduction results in a dollar for dollar reduction in the excess reserves held by the banking system, then there will be no impact on the underlying inflation rate or the banking system deposit and credit creation. On the other hand, if the balance sheet reduction results in a reduction in the required reserves, the balance sheet reduction will result in a lower deposit and bank credit creation. The reduction in the quantity of money will be highly deflationary and the reduction in bank credit will lead to a lower GDP and an increase in the price of credit.

Looking at Figure 5, notice that the excess reserves of the banking system have been declining faster than the reduction of the balance sheet. This means that the excess reserves are declining by an amount large enough to accommodate the balance sheet reduction and still deliver additional greenbacks to be deployed on the economy. As the idle reserves are called into service, the banking system is able to accommodate, of course at a price, the increased demand for credit. This explains why the Fed actions have not had a deflationary effect that monetarist would predict. As an aside, this also provides an explanation as to why the Fed balance sheet expansion did not produce the rise in inflation that the monetarist predicted at the time.

It is also important to note that the excess reserves have declined by a larger amount than the Fed balance sheet. If such a trend continues at some point the banking system will run out of excess reserves and a further reduction in the Fed balance sheet will be deflationary.

### The effective monetary base and the banking system credit creation

The data shown in Figure 5 shows that in response to the financial crisis, the Fed expanded its balance sheet and that in turn led to an increase in the monetary base, i.e. the greenbacks circulating in the economy. The data also suggests that the increase in the balance sheet/monetary base was matched by a corresponding increase in the banking system excess or idle reserves. The latter have no impact on the amount of greenback being put to work in the form of currency in circulation or required reserves backing deposits. Therefore, including the excess reserves in these calculations would overstate the expansion of the monetary aggregates and the banking system credit creation. A more accurate picture of the true impact of the Fed's action on these variables can be obtained by netting out the excess or idle reserves from these aggregates. Figure 6 shows that the "adjusted monetary base" did in fact increase in the



aftermath of the financial crisis. However, the increase was much less pronounced than the raw monetary base numbers inclusive of the excess reserves suggests. Figure 6 also shows that since the crisis, the adjusted monetary base has continued to expand in spite the reduction in the Fed balance sheet.

The banking system credit creation is the one remaining issue to discuss. Under a fractional reserve banking system, a reduction in the monetary base has to be affected through a reduction in either the currency in circulation, excess reserves and required reserves. Each of these has a different impact on the quantity of money, MZM, circulating in the economy and the amount of credit created by the banking system.

- A reduction in the excess reserves does not impact MZM or the banking system credit creation.
- A reduction in the currency in circulation will reduce MZM without impacting the banking system credit creation.
- In contrast a reduction in the required reserves leads to decline in MZM and the bank credit creation.

Different combinations of these three adjustment mechanisms will have a differential impact on MZM and the banking system credit creation.

The total credit created by the banking system is nothing more than MZM less the currency in circulation and required reserves, what we have labelled the “effective monetary base”. In the aftermath of the financial crisis, MZM continued on its upward trend unaffected. This suggests that the Fed did a great job in keeping the MZM circulating in the economy. The data also shows that the bank

credit creation declined, and conditions remained tight up to 2014. Since then, it has resumed its upward trend parallel with the MZM. The data also shows that the gap between MZM and the banking system has widened and does not appear likely to return to its pre-crisis levels any time soon. One possible interpretation of the data is that as a result of the crisis, the Fed and banking regulators increased their oversight and regulation. That led to a reduction in the banking system leverage factor or credit creation. As the banking system has adjusted to the new regulatory environment, with no incremental regulatory burden, the credit creation increases in parallel with the MZM growth.

### Are rising interest rates bearish or bullish?

The data in Figure 4b shows that the inflation expectation experienced small variations around the 2% fed inflation rate. The range of variation in the inflation expectations was about half of the range of variation on the TIPS and about two thirds of the range of variation in the government bonds. Collectively the data suggests that the major source of variation in the nominal interest rate is attributable to the real interest rate as opposed to expectations of inflation. Put another way, the rise in interest rates does not appear to be the result of rising inflation expectations. It is the results of a rising real rate of return. Is this a bullish or bearish development?

**The bearish scenario:** Under this scenario, the Fed will be the one driving the interest rates as it extinguished the banking system credit creation ability. An increase in the real rate due to an aggressive Fed whose balance sheet reduction causes a decline in credit, is a bearish outcome. Output will decline and so will the stock market. Under this scenario we should observe a negative correlation between interest rates and the bank. This is the scenario that worries President Trump as he criticizes the Fed.

**The bullish scenario:** On the other hand, if the Fed is being accommodative, increases in rates is the result of an increase in demand for credit the outcome will be quite bullish. The result is a higher output and stock market.

Under this scenario, we will observe a positive correlation between interest rates and bank credit creation. In this scenario, fed is marking to market and as long as the Fed does not take an overly aggressive stance, the expansion and interest rate increase will continue. The surge in economic activity experienced during this administration goes a long way to explain the rise in rates.