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False Narratives on Inflation and Disinflation

By John Greenwood

Overview

- Since 2021 the central banks, accompanied by mainstream academic and business economists, have maintained the false narrative that the post-Covid inflation was primarily the result of a succession of exogenous shocks which the central banks were powerless to prevent. I contest this version of events.

- The standard narrative on the causes of inflation goes something like this. Inflation can be analysed econometrically by breaking it down into its component parts (electronic chips, food, energy, wages, etc), and when those components are combined together, the overall magnitude and pattern of inflation can be "explained".

- This is of course a complete fiction. The ***components*** cited in this type of econometric exercise are ***symptoms*** of the inflation, whereas the ***cause*** was excess demand, almost always in the form of excess money growth.

- Similarly on the downside. Since early 2023 there has been growing attention given to the other side of the topic, namely disinflation. Here again some false narratives are starting to gain momentum. In this 14-page Newsletter I tackle one of them: the idea that productivity gains explain the rapid downturn of (US) inflation.

- Rapid disinflation in many economies is the result of the abrupt slowing of money growth since early 2022. In most economies the monetary squeeze curtailed spending on goods and more recently on services. It is reflected in the softening in the components of inflation. But the softening of the ***components*** was not the ***cause*** of the disinflation.

- Because the downturn in inflation has coincided with the start of an AI-boom, many commentators are falsely attributing the fall in inflation to the promise of higher productivity at some point in the indefinite future.

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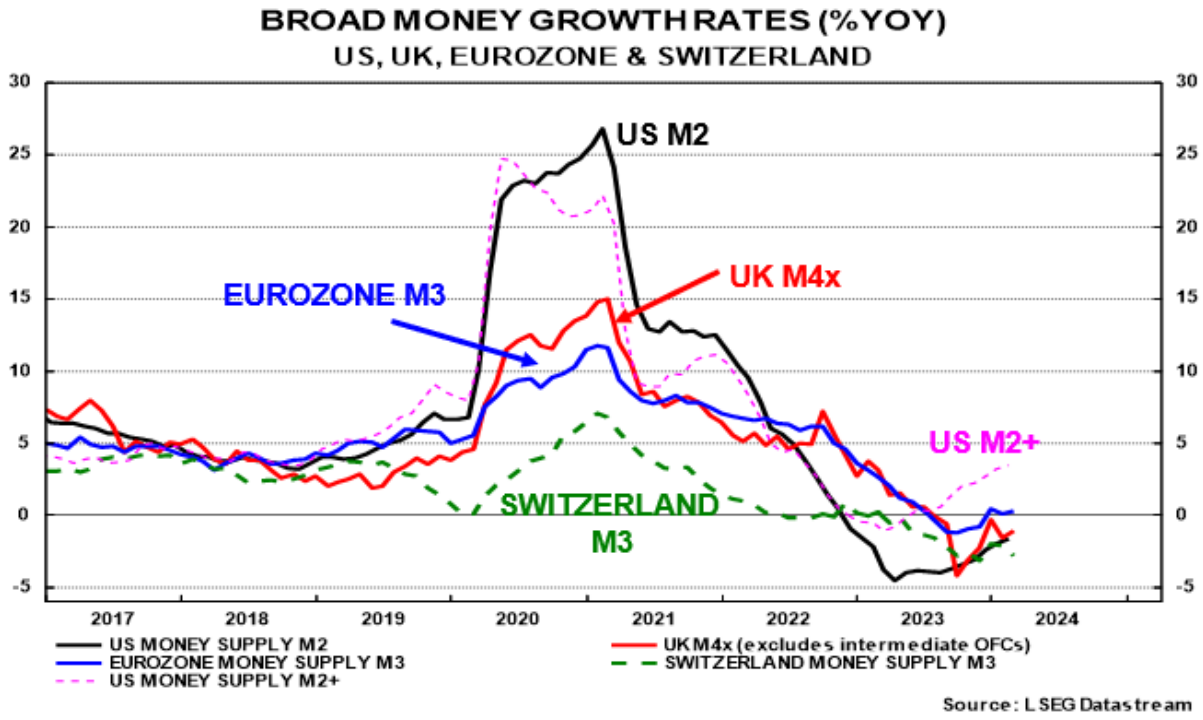
Introduction: The True Story on Inflation

Inflation is a monetary phenomenon. The source of the inflation during and after the Covid pandemic was the excess broad money growth due to the QE and lending operations implemented by major central banks from March 2020 until early 2022.

Figure 1. Major Central Banks Generated Excess Broad Money Growth in 2020-22, but Some Avoided that Mistake.



Although there is no exact arithmetic correspondence between the broad money growth rates and subsequent inflation rates (due to differences in underlying real GDP growth and trend changes in money holdings), we can make the following generalisation. Those economies – like the US, the UK, and the eurozone – that experienced faster broad money growth rates also experienced higher rates of inflation. Those economies – like Switzerland, Japan, India, and China – that experienced no significant acceleration of broad money growth during Covid also experienced much lower inflation on average. In 2021 Steve Hanke and I successfully used this idea of monetary dominance in our forecasts of relative inflation rates.[1]

Figure 1 illustrates the record of broad money growth in the US, the UK, the eurozone, and Switzerland since 2017. In each economy I have selected the most appropriate broad money total that is readily accessible (respectively US M2, UK M4x, eurozone M3, and Swiss M3). These aggregates are comprised of money held by households, non-financial companies, and other non-government holders (such as

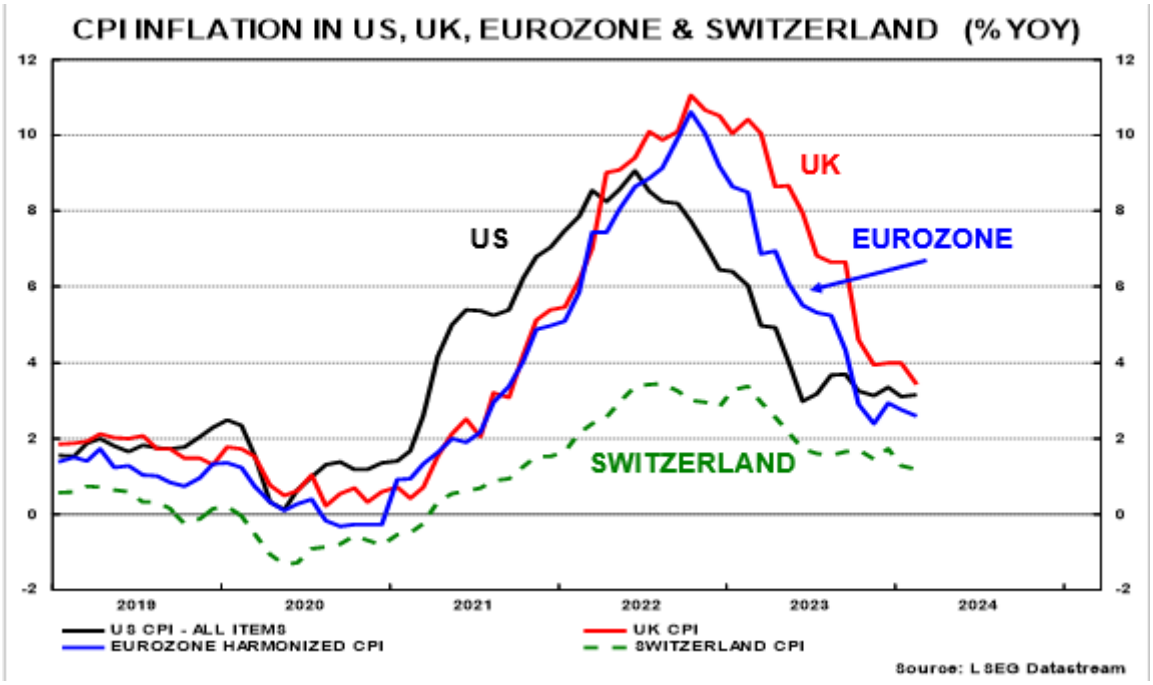
[1] Journal of Applied Corporate Finance, Fall 2021 On Monetary Growth and Inflation in Leading Economies, 2021-2022: Relative Prices and the Overall Price Level - Greenwood - 2021 - Journal of Applied Corporate Finance - Wiley Online Library

pensions, or charities etc), and are "appropriate" because inflation is largely a result of spending by households and companies on final goods and services.

One area of controversy is the appropriate aggregate for the US. The US Federal Reserve's definition of M2 omits large time deposits (presumably because the Fed prefers a transaction-oriented definition of money) but includes retail money market fund (MMF) holdings. I prefer a portfolio-oriented definition of money so in Figure 1 I have added back large time deposits and institutional MMF holdings to create M2+.

However, there are several objections to the inclusion of MMFs in broad money. (1) MMFs are equity-based assets, i.e., they are shares of mutual funds, not deposits corresponding to loans created by the issuer. (2) In order to purchase MMF shares any individual or entity must draw down his/her/its checking account at a bank and transfer the funds. When new MMF shares are issued, the depositor obtains MMF shares and the MMF acquires a bank deposit. Adding MMF shares to M2 means there is double counting. (3) Unlike banks, MMFs cannot create new money.

Figure 2. Swiss Inflation Never Reached the Peaks Seen in the US, the Eurozone or UK. Now it has Fallen below 2%.



Although money growth provides the best explanation of inflation in the medium term, the varying time lags involved and the randomness of monthly inflation data mean that it will always be difficult to precisely predict the magnitude and timing of inflation. With that caveat, it was nevertheless quite natural – given the modest growth of Swiss M3 shown in Figure 1 – that in Figure 2 the 3.4% peak rate of CPI inflation in Switzerland was strikingly lower than the peak rates of inflation in the US (9.1%), the eurozone (10.6%), and the UK (11.1%).

Moreover, as a result of zero to negative M3 growth from mid-2022 onwards, Swiss inflation fell below 2% year-on-year in June 2023, and has remained on a generally downward track ever since. In March 2024 the CPI inflation rate surprised analysts (who forecast 1.3%) by falling to 1.0% year-on-year. This is clearly well below the inflation rates in other major economies and is a result of zero or negative M3 growth in Switzerland since mid-2022.

Section 1. The False Narrative Emerging as the Consensus Explanation for Covid-era Inflation.

It is one thing to acknowledge – for the reasons cited above and others besides – that inflation prediction can never become a precise science, but quite another to ignore monetary factors entirely either in the conduct of monetary policy or in predicting or accounting for inflation.

Yet this is the current consensus in modern macroeconomics. Money is omitted.

As a prominent example of the technique, we may take the paper written by Ben Bernanke and Olivier Blanchard in May 2023 for the Brookings Institution, "What Caused the U.S. Pandemic-Era Inflation?"[2] The methodology of their paper has been subsequently applied to numerous other economies by central banks, and notably by the two original authors in "Analysing the inflation burst in eleven economies" which forms Chapter 16 of "Monetary Policy Responses to the Post-Pandemic Inflation" (CEPR). [3]

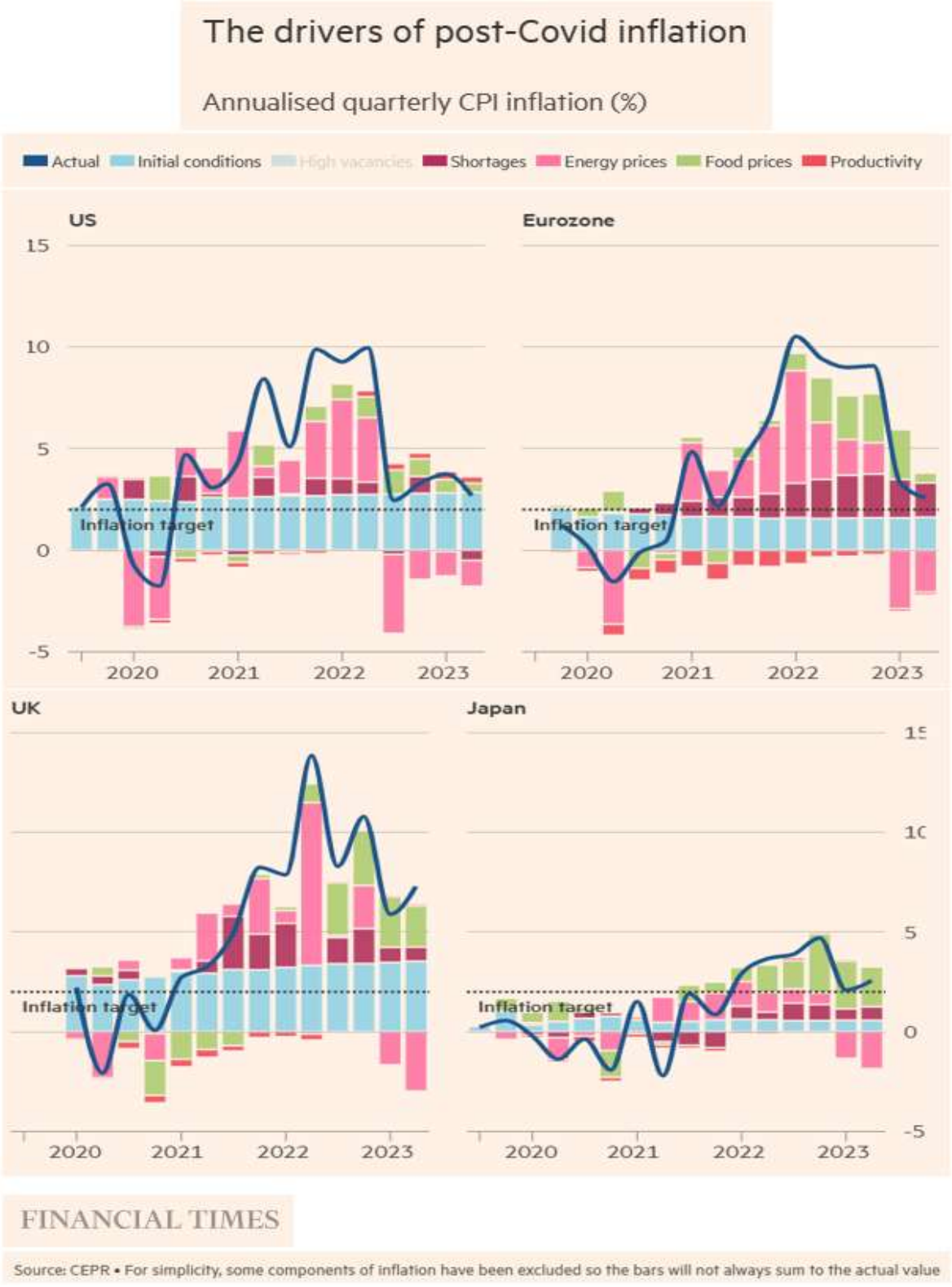
The authors claim, "*The list of potential sources of post-COVID inflation is a long one, from macroeconomic [i.e., fiscal] stimulus and strong aggregate demand, to sharp increases in commodity prices, notably food and energy, to price spikes reflecting disruptions of supply chains, to attempts by firms to increase markups over costs, to increases in short- and long-term inflation expectations and real wage rigidity as amplifiers of the effects of the initial demand and supply shocks" (p. 291).* But the central cause – excess money growth due to QE or central bank lending – is not even considered.

The original study and its successors – which are being pursued by 10 central banks – adopts the following interpretation of events. "*Inflation was mainly triggered by price shocks of two types: large increases in the relative prices of energy and food, reflecting a combination of strong global demand and adverse supply shocks; and price spikes reflecting shortages, due to the combination of strong global demand and supply chain disruptions." (p. 293)*

While the full details can be read in the original, Chris Giles of The Financial Times conveniently reported on the Bernanke-Blanchard study on February 20, 2023,

[2] bernanke-blanchard-conference-draft_5.23.23.pdf (brookings.edu)
[3] 197150-monetary_policy_responses_to_the_post_pandemic_inflation.pdf (cepr.org)

Figure 3. Inflation and its Components: Causes or Symptoms?



under the title, "What caused the great inflation?"[4] His summary naively accepts the Bernanke-Blanchard story almost entirely. In his words, "*The beauty of the simple Bernanke-Blanchard model is its flexibility. There is an underlying Phillips curve relationship between tight labour markets and inflation at work, but it allows high inflation to be determined also by supply shocks, energy shocks and even (indirectly) by greedflation. The results therefore give an extremely helpful decomposition of the causes of inflation in different countries, all measured on a consistent basis.*"

None of the charts in Figure 3 – which all come from the FT summary of the Bernanke-Blanchard study – convey any hint of an inflation problem until 2021 Q2. But monetary data on the rate of change of broad money (Figure 1) was already pointing towards the risk of double-digit inflation by May 2020. (See Tim Congdon's IIMR letter of May 2020.[5])

The Bernanke-Blanchard method decomposes inflation into what I would call its **components**, not its **causes**. The equations capture some of the key **symptoms** of inflation at different stages in the transmission process. In the pandemic-era inflation, one of the first symptoms was a shortage of semi-conductor chips from mid-2020. This was triggered in turn by lockdowns in Taiwan and Korea affecting the production of chips, and the surge in demand for autos and game consoles as the US and European economies locked down.

By contrast, in the 1973-74 episode of inflation the price hikes were triggered by a jump in oil prices. In other cases, the inflation has begun with an increase in wages.

In any sustained and significant episode of inflation, all prices can be expected to rise by approximately the same relative amounts, but some will move earlier and faster, and then perhaps suffer a setback, while others will need to catch up later. In the Bernanke-Blanchard model a grab-bag of **symptoms** is grouped together to "explain" the current, prevailing rate of overall inflation, but no **cause** or **source** is offered.

Since no central bank policy can ever explicitly target or contain any of those relative price elements, the price or wage changes in various sectors will occur at different stages depending on the circumstances. The right policy would have been to prevent the excess growth of money in the first place.

What is for sure in the pandemic-inflation, and what is not really dealt with at all in the Bernanke-Blanchard approach, is that without the prior injection of purchasing power by monetary means, the excess demand necessary to drive up inflation could not have occurred. In their analysis, Bernanke and Blanchard have omitted the chief culprit.

[4] What caused the great inflation? (ft.com)

[5] Money growth at highest-ever level in US peacetime history: more inflation ahead (mailchi.mp)

Some may argue that episodes of inflation like that in 1973-74, for example, were entirely due to energy prices rising. But this is mistaken. Broad money growth in the US, Japan and the UK had already been growing at double digit rates from 1971 – i.e., for two years or more. OPEC's oil price hikes merely exploited a pre-existing situation of excess demand.

Similarly in 2020-21, the central banks of US, the UK, and the eurozone had all engaged in vigorous asset purchases (QE) and lending policies that increased the quantity of broad money at double-digit rates in each area. The three economies all suffered a series of price increases in different sectors starting with electronic chips and second-hand autos, moving on to energy and food prices in 2021-22.

The Bernanke-Blanchard analysis implies that any price increases will be sustained irrespective of prior central bank policies, and furthermore, that repeated "exogenous shocks" are additive. In other words, they imply the increase in electronic chip and auto prices were added to by energy price increases and again by food price increases and finally by wage increases. There is no budget constraint in this model.

But none of these price increases would have been sustainable without the prior increase in money growth which created the excess spending. Why not?

The first thing to say is that electronic chip prices or energy prices or food prices are "**relative**" prices and do not determine "**overall**" prices or the "**overall**" price level as reported by the GDP deflator or by the CPI.

Second, in the short-term, individual consumer or household budgets are fixed.

For example, suppose we have a consumer with a budget constraint of $100. Normal expenditure in any period consists of 10 equally valued items, each valued at $10, one of them being energy. The basket is initially worth 10*$10=$100.

Suddenly, the energy price doubles. But there has been no increase in money and therefore no increase in incomes and no increase in the consumer's budget.

Now if the energy price rises but the individual or household still buys the same ***quantity*** of energy, he or she will now have less money (a reduced budget) left over to spend on other goods and services. Consequently, demand for those other items must fall and their prices will decline, counter-balancing the rise in the energy price.

Reflected in a national price index such as the GDP deflator or CPI, this would mean that while there were changes in the prices of the components of the index, the amount of the consumer's total expenditure would be unchanged (at $100) and the overall price index would remain broadly unchanged.

The consumer's adjusted budget might look something like this:

$$(1*\$20) + (9*\$8.889) = 100 \qquad (A)$$

This is essentially what happened in Japan, Switzerland, India, and China.

If, however, the central bank increases the money supply and this translates over time into higher nominal incomes (and hence bigger budgets) for individuals, then people will have more money to spend (e.g., $110 instead of $100). Now the individual can spend more on energy but still spend the same amount on other items. Reflecting the increase in the money supply and the higher price of energy, the national price index will have risen. In this case we might have:

(1*$20) + (9*$10) = 110 (B)

But this was only possible because the money supply and hence the purchasing power of the consumer increased. This was the story of the US, the UK, and the eurozone in the pandemic inflation.

One can only conclude that the Bernanke-Blanchard model and its progeny offer a flawed or incomplete description of the inflation process. Their model describes an inflation process that contains a series of (B)-type additive shocks, but it does not tell us how such increased expenditure was possible.

Moreover, as we can clearly see in the examples of Switzerland, Japan, China, or India, none of these economies suffered inflation on anything like the scale seen in the US, the UK or the eurozone because they did not allow excess money growth.

Section 2. Productivity: A False Narrative Emerging as an Explanation for the Decline in (US) Inflation

I turn now to analysis of the decline in inflation rates being seen across major economies. While there are often commentaries to the effect that the tightening of monetary policies by central banks (through the raising of interest rates) has contributed to the process, there is little detailed diagnosis of the mechanisms at work.

In the US, in particular, there is a popular view that the introduction of AI (Artificial Intelligence) will have a transformative impact on all kinds of industries, raising productivity and thereby lowering inflation. People then jump to the conclusion that the current decline in inflation can be associated with the AI-related boom in the stock market. It is this false narrative that I will contest here.

First, what is meant by productivity change?

As shown in Figure 4, productivity is measured as an index of output (real GDP) per hour worked, or

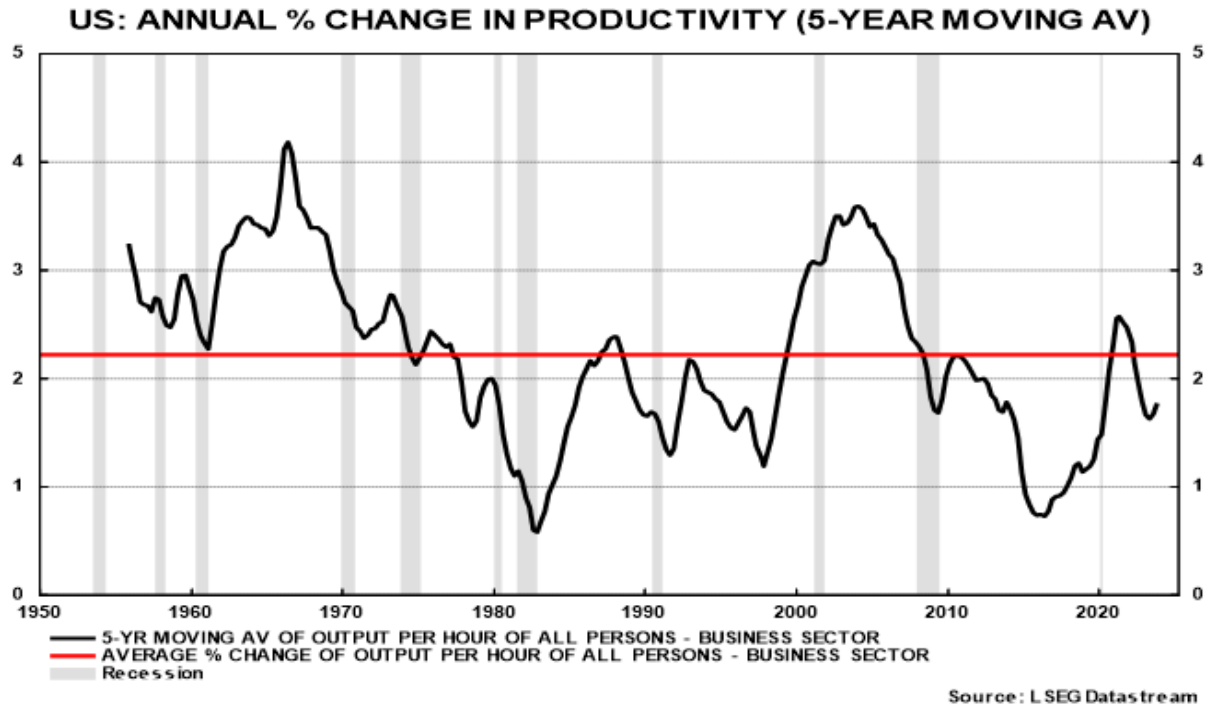
Productivity = Real GDP/(Total labour force x hours worked) (C)

The chart also shows that annual changes in productivity tend to be highly volatile, rising during business expansions and falling during recessions (shaded areas in the chart). The range of annual fluctuation on this basis has varied between a maximum of 7.2% p.a. in 2020 Q2 and Q3 and a minimum of -2.4% p.a. in 2022 Q2. Excluding the Covid period, the maximum annual change was 6.8% p.a. in 1961 Q4 and the minimum was -2.2% p.a. in 1974 Q1.

Figure 4. Productivity is Volatile and Pro-Cyclical.

Historically, pro-cyclical variations in productivity have reflected the tendency of employers to respond to downturns by cutting hours worked and laying off employees, but to do so with a lag, so that the declines in the denominator on the

Figure 5. A 5-Year Moving Average Captures the Long Swings in Productivity.



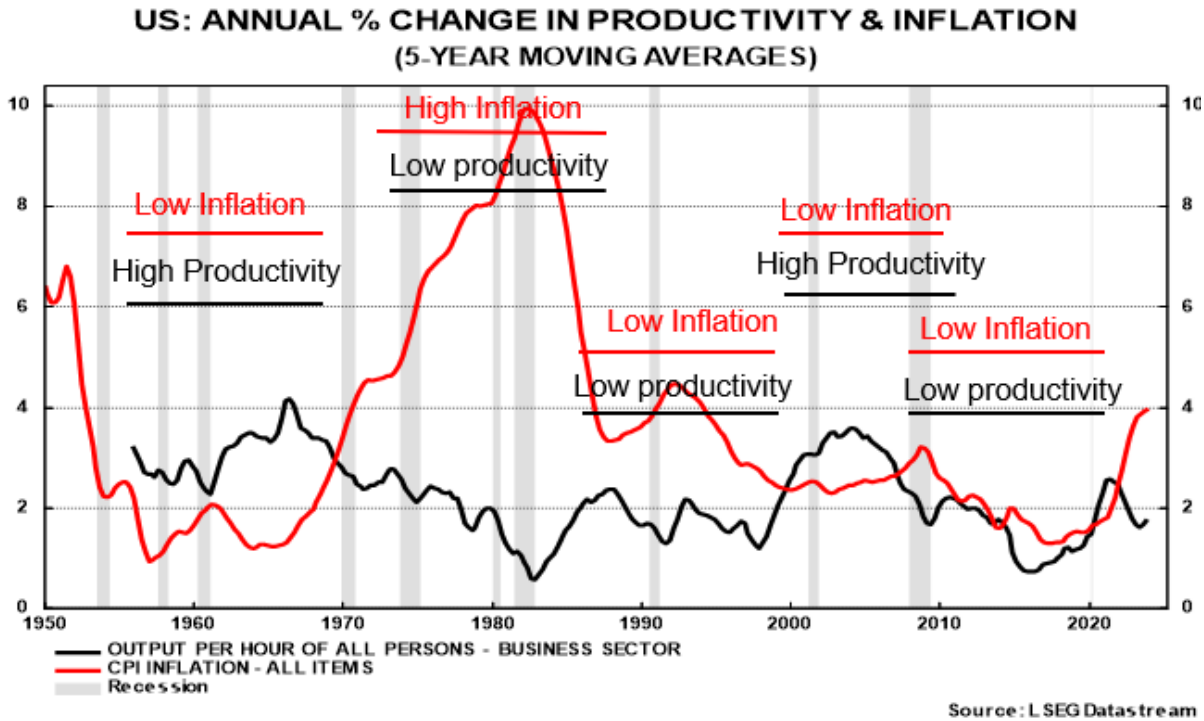
right of equation (C) on p.8 above lagged changes in the numerator. Conversely, when the economy recovers, increases in output tended to precede new hiring or increases in hours worked, giving rise to sharp increases of productivity at the start of an expansion.

Given the high degree of cyclicality of changes in productivity, it is useful to average productivity changes over a number of years. Since the factors driving productivity changes tend to be slow-moving (e.g., changes in technology, changes in the skills of the labour force etc), I have chosen five years as a suitable period to capture the longer-term swings in the underlying drivers of productivity.

Note that the average annual rate of change of productivity has been 2.2% p.a. over the 72-year period 1951-2023. Based on my five-year moving average, the peak annual rate of change was 4.2% p.a. in 1966 Q2, and the trough was 0.6% p.a. in 1982 Q4. (See also Robert J Gordon, *The Rise and Fall of American Growth*.)

The relation between productivity and inflation is neither direct nor simple.

Figure 6. What is the Relation between Productivity and Inflation?



Fundamentally, long-run average productivity is driven by real factors (labour force skills, investment etc.), while short-run productivity changes may be driven by the business cycle. Inflation, on the other hand, is a monetary phenomenon, typically lagging money growth by as much as two years or more.

Insofar as money growth drives the business cycle and short-term changes in productivity are driven by the state of the business cycle, there may at times appear to be a short-term relationship.

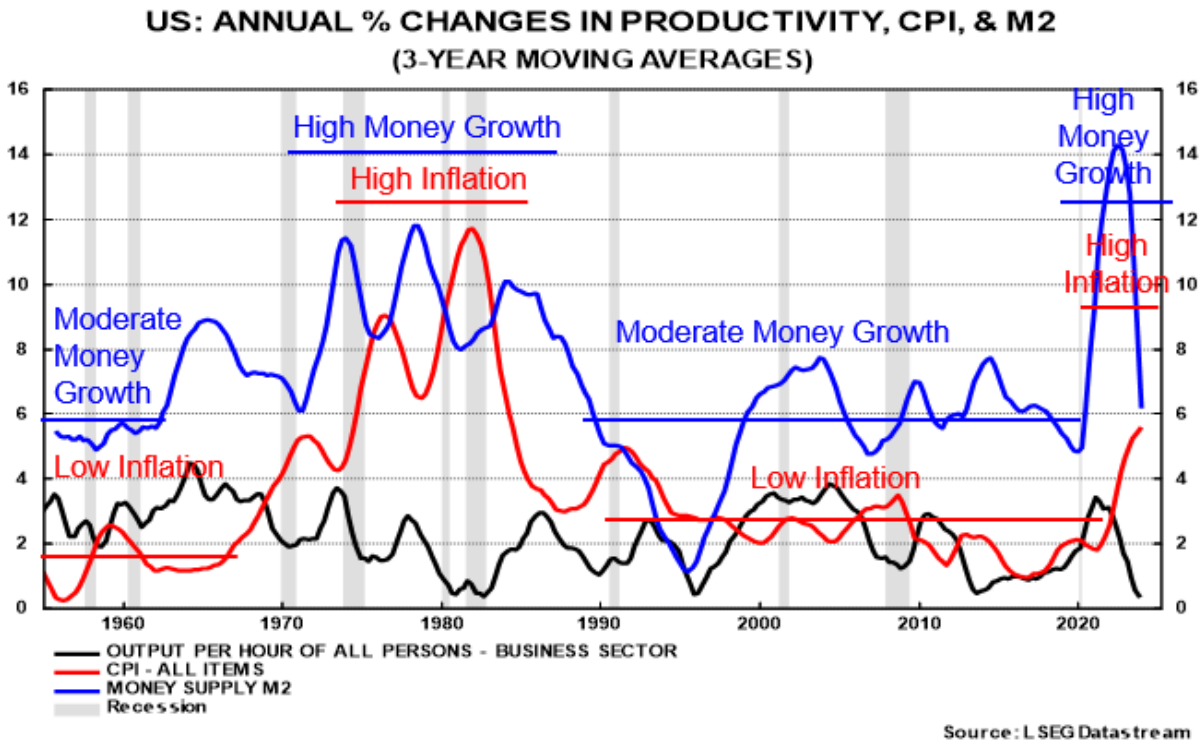
However, over the medium or longer-term there is essentially no relationship. Figure 6 above shows multi-year combinations of high and low inflation coinciding with multi-year periods of low and high productivity growth. The only combination that does not seem to occur on any sustained basis is high inflation and high productivity growth, probably on account of the damage that high inflation does to relative pricing and hence to the efficiency of the overall economy.

If it is not productivity that explains inflation, what is it?

High inflation. As Figure 6 above shows, during the high inflation era of the 1970s and early 1980s there was a wide divergence between the 5-year average changes in productivity (in black) and the 5-year average changes in CPI inflation (in red). Figure 7 below switches to a 3-year moving average for the variables to capture the shorter-term relation between money and inflation. It shows there was a much better relation between high money growth (in blue) and inflation (in red) during those years, as well as in the recent, Covid-related inflation episode (2021-23).

Low inflation. In the two low inflation periods, prior to 1966 and between the mid-1980s and 2019 (just before the onset of Covid), Figure 6 shows productivity was relatively high in the 1960s and accelerated for roughly a decade from around 1996 to around 2006, but this only covers a small part of the second low inflation period.

Figure 7. Swings in M2 Growth, not Productivity, Dominate Changes in Inflation.



A much better explanation for low inflation comes from the slow growth of M2 in both periods (Figure 7). From 1955 until 1962 M2 averaged 5.2% while inflation

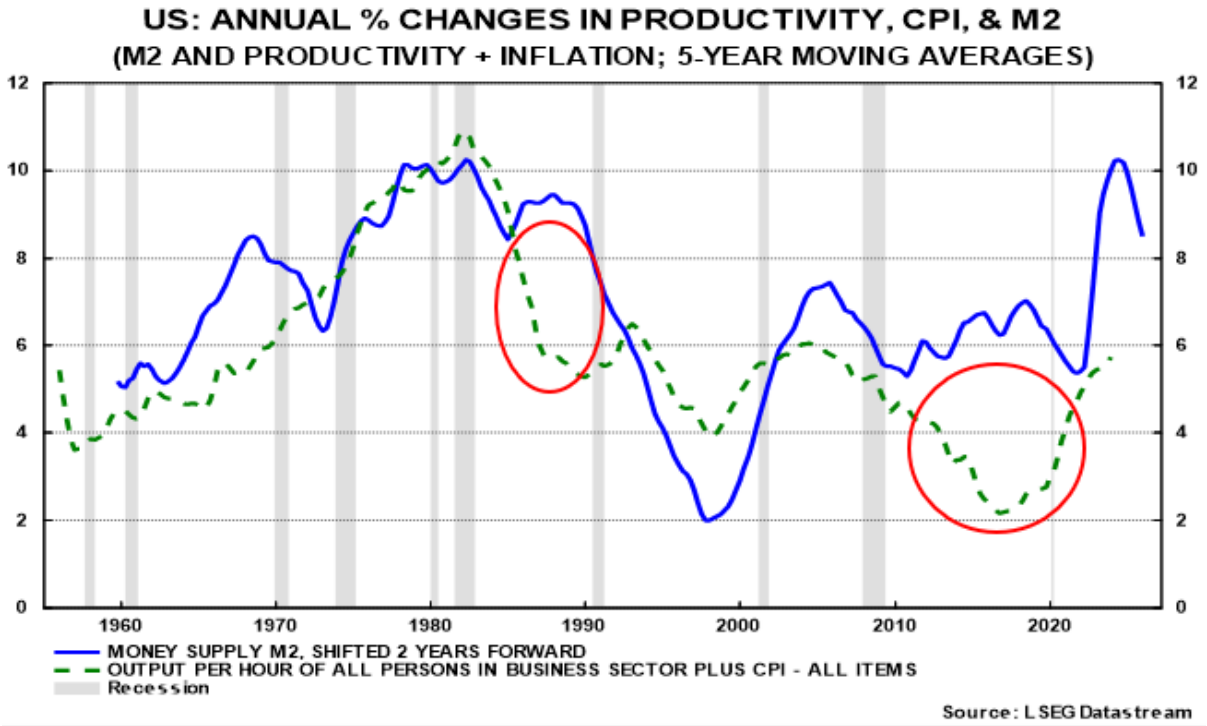
remained below 2%. Similarly, in the period 1984-2019 M2 growth slowed to 5.7% p.a. and the average inflation rate fell to 2.7%, in contrast with the period 1962-83 when M2 had averaged 8.8% p.a. and inflation averaged 5.7% (with a rising trend).

The conclusion is that it is not productivity that explains inflation, whereas annual changes in M2 (in blue) provide highly plausible explanations of (1) the surge of inflation in the 1970s and early 1980s, and (2) the low inflation in the years before Covid. In addition, the surge in M2 during the Covid period provides a satisfactory explanation of (3) the post-Covid inflation episode.

N.B. In 1983-84 the decline in inflation ***preceded*** *the decline in M2 growth. We believe this was due to (1) specific regulatory changes affecting interest payments on deposits as well as (2) innovations that were brought in at this time that boosted M2 growth relative to other forms of financial asset holdings.*

Nominal GDP can be written as "real GDP x inflation", or "growth in labour force x growth in productivity x inflation". In Figure 8 we omit changes in the labour force and compare changes in 5-year money growth with changes in the 5-year growth of productivity and 5-year inflation.

Figure 8. The Bulk of Changes in Productivity plus Inflation is Explained by Changes in M2.



As can be seen in Figure 8, the change in 5-year money growth (in blue) provides a reasonable proxy in most years for changes in the sum of productivity growth and inflation (in green).

However, there are exceptions (circled) such as the early slowdown of productivity plus inflation in 1985-88 and again in 2010-2020 relative to M2. The first deviation is explained in italics on p. 11. The second deviation comprised the post-GFC period of low inflation as banks and households repaired their balance sheets and an arguably unrelated episode of low productivity growth in the 2010s.

To conclude this section, this brief survey of the relation between productivity and inflation has shown that productivity is not a significant driver of low inflation. Inflation depends far more on changes in the rate of monetary growth. In terms of magnitude, changes in money growth far exceed any conceivable changes in productivity growth when measured over a few years.

Changes in productivity, though highly pro-cyclical, have averaged 2.2% p.a. since 1951, but changes in M2 growth have fluctuated much more widely than changes in productivity and have also provided a far better explanation of inflation.
In a fundamental sense, inflation is driven by money growth, but with a "long and variable" lag. Productivity, on the other hand, is only affected by money growth insofar as it reacts to the business cycle – expanding in upswings and slowing in downswings. In the longer run it is determined by real factors unrelated to money growth such as technological changes or changes in the skills of the labour force.

I summarised this by saying that money growth provides a reasonable explanation of changes in the sum of productivity plus inflation, as one would expect from the relation MV=Py when V has a generally stable downward trend. This is because productivity is a (varying) component of y (real income) while P (price inflation) is driven by money over a 2- or 3-year period.

All this means that the current downturn in inflation is dominated by the slowdown in broad money growth over the past 2-3 years, not by any prospective upturn in productivity.

Summary and Investment Conclusions

- Since 2021 the central banks, accompanied by mainstream academic and business economists, have maintained the false narrative that the post-Covid inflation was primarily the result of a succession of exogenous shocks which the central banks were powerless to prevent. I contest this version of events.

- The standard narrative on the causes of inflation goes something like this. Inflation can be analysed econometrically by breaking it down into its component parts (electronic chips, food, energy, wages, etc), and when those components are combined together, the overall magnitude and pattern of inflation can be "explained".

- This is of course a complete fiction. The ***components*** cited in this type of econometric exercise are ***symptoms*** of the inflation, whereas the ***cause*** was excess demand, almost always in the form of excess money growth.

- Similarly on the downside. Since early 2023 there has been growing attention given to the other side of the topic, namely disinflation. Here again some false narratives are starting to gain momentum. In this Newsletter I tackle one of them: the idea that productivity gains explain the rapid downturn of (US) inflation.

- Rapid disinflation in many economies is the result of the abrupt slowing of money growth since early 2022. In most economies the monetary squeeze curtailed spending on goods and more recently on services. It is reflected in the softening in the components of inflation. But the softening of the ***components*** was not the ***cause*** of the disinflation.

- Because the downturn in inflation has coincided with the start of an AI-boom, many commentators are falsely attributing the fall in inflation to the promise of higher productivity at some point in the indefinite future.

- Investors should be aware of significant risks in seeking exposure to tech-related equities or even equities in general. This is because, despite the overhang of excess money growth from 2020-22 and despite some short-term upward movements of commodity prices, the dominant trend of broad money growth has been downward in major economies.

- Downward movements of broad money growth tend to be reflected in lower nominal GDP. On this occasion, this is likely to consist of a slowdown in real GDP and in inflation – unless AI kicks in immediately – in which case inflation will be even lower than supposed.

- There is an analogy between the budget constraint for individuals (p. 7) and the nominal GDP constraint on real GDP plus inflation.
