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UK Monetary Policy – the costs of "Going big" in 2020-21

By John Greenwood

Introduction and Overview

- Excessive money creation during the pandemic has resulted in Britain's worst episode of inflation since 1990-91. The backdrop to this strategic error in monetary policy is the Bank of England's aggregate demand/aggregate supply framework together with the MPC's failure to focus on broad money.
- An alternative way to operate monetary policy is urgently needed. A significantly improved monetary policy outcome could be achieved by reliance on income velocity (the ratio of nominal GDP to broad money).
- The current approach to monetary policy has already produced a massive overshoot of money growth on the high side during the pandemic. There is a high risk that it could produce a serious undershoot on the downside after QT begins in September.
- The result would be a more severe asset price crash and recession than is already likely to occur from the erosion of UK households' income by inflation.
- Inflation was already baked in for 2022 and 2023 due to the excess of M4x growth in 2020-21. I forecast average annual CPI inflation to be: 10% in 2022, 8% in 2023, and 3% in 2024.

"Monetary policy is not about interest rates; it is about the growth of the (broad) quantity of money" (Milton Friedman)

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The IMM Newsletter offers economic research written by John Greenwood, founder and Chief Economist of International Monetary Monitor Ltd. John was also the publisher, editor and lead author of **Asian Monetary Monitor**, a bi-monthly publication that he operated for 20 years from Hong Kong between 1977 and 1996. He was a pioneer of monetary research in Asia. From 1999 to 2021 he was Chief Economist at Invesco, based in London.

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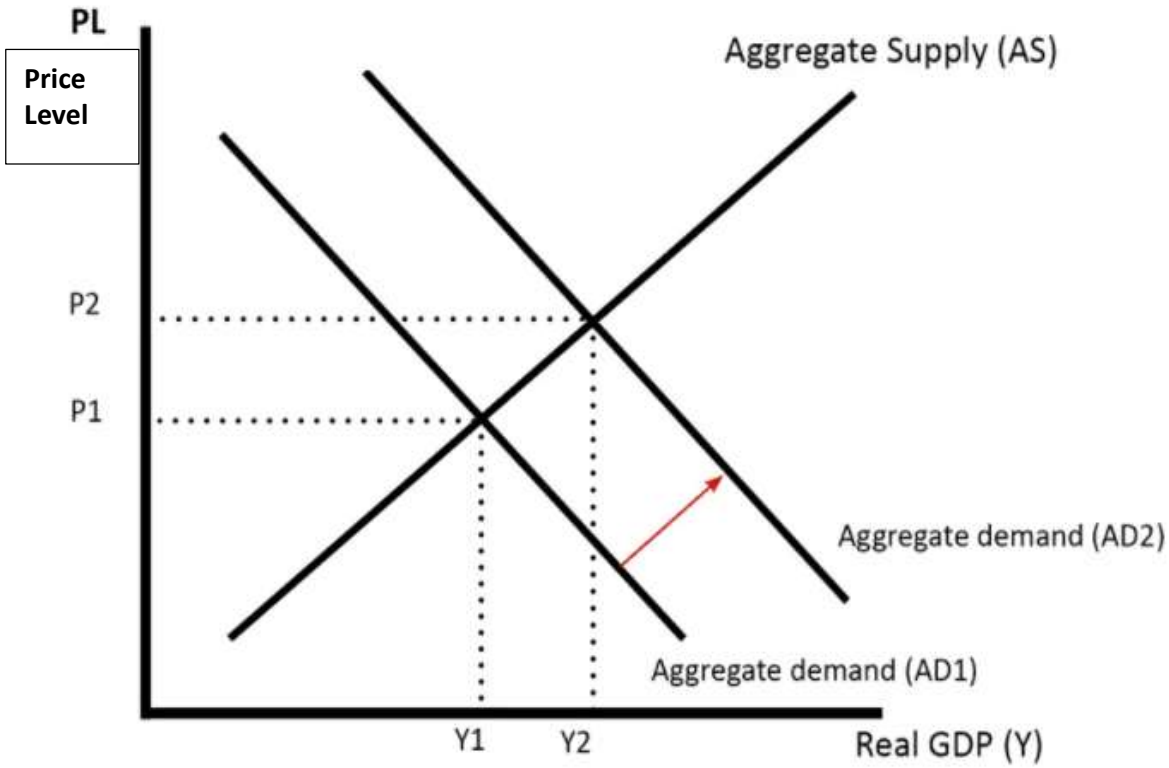
The Bank of England's Monetary Framework

When the coronavirus Covid-19 struck the UK in March 2020, the fiscal and monetary authorities responded with strong measures to minimise short-term and long-term damage to the economy. In this article I concentrate on the monetary measures taken by the Bank of England. First, I review the Bank's framework for conducting monetary policy during the period since the Bank gained monetary independence in 1997. Second, I explore an alternative monetary framework that would reduce the risks of major policy errors such as occurred during Covid-19. Third, acknowledging the Bank's rate rises and plans for balance sheet reduction (or QT), I use the quantity theory of money (QTM) to make forecasts of real GDP and inflation in 2022, 2023 and into 2024.

Every quarter (in February, May, August and November) since gaining independence in 1997 the Bank of England has published its own report card, long known as the "Inflation Report", but recently re-branded "Monetary Policy Report". The quarterly report invariably features chapters on aggregate supply and aggregate demand, two concepts at the core of the Bank's framework for monetary policy decisions.

Figure 1. The BOE's Aggregate Demand and Aggregate Supply Framework for Conducting Monetary Policy



The analysis comes straight out of a typical modern economics textbook such as "Macroeconomics" by Parkin, Powell and Matthews (Ch. 26, pp 613-632). Briefly the

underlying idea is that, given the Bank's mandate to maintain price stability by pursuing an inflation target (defined since December 2003 as a 2% annual increase in the CPI), the Bank will seek to manage aggregate demand (AD) to ensure it does not deviate too much from aggregate supply (AS).

In Figure 1, output or real GDP is shown on the horizontal axis with the overall price level on the vertical axis. Aggregate supply is normally thought of as the product of the labour force, the number of hours worked and the average level of skills or productivity, which in turn reflect the educational attainment of the labour force, and the stock of capital invested. Normally the economy will progress by gradual movements along the supply curve -- upwards and to the right -- but occasionally events such as a change in immigration or emigration, or an event like Brexit could lead to a rightward or leftward shifts of the entire supply curve, raising or lowering potential output. Whatever the circumstances, the Bank sees its role as anticipating or adjusting to these changes, aligning aggregate demand (AD) with changes in aggregate supply (AS) allowing prices to rise by 2% p.a.

Aggregate demand is thought of as total real spending on GDP or its equivalents -- total value added or national income in real terms. Adjustments of monetary policy, primarily through Bank rate changes, are thought to impact total spending by encouraging or discouraging borrowing and lending activity. However, the theory underpinning the relation between AD/AS and interest rates is not sound; the empirical record is unreliable; and as a result, reliance on interest rates can lead to serious errors of monetary policy.

Based on the AD/AS framework, when the Bank of England's Monetary Policy Committee (MPC) wishes to boost AD (=spending in real terms as they would see it), they will vote to lower interest rates; conversely, to reduce AD they will vote to raise interest rates. Implicitly they see a direct connection between the rates set by the central bank and the ultimate level of AD. But how does the MPC decide whether there is headroom for an increase in AD or whether it needs to curtail AD?

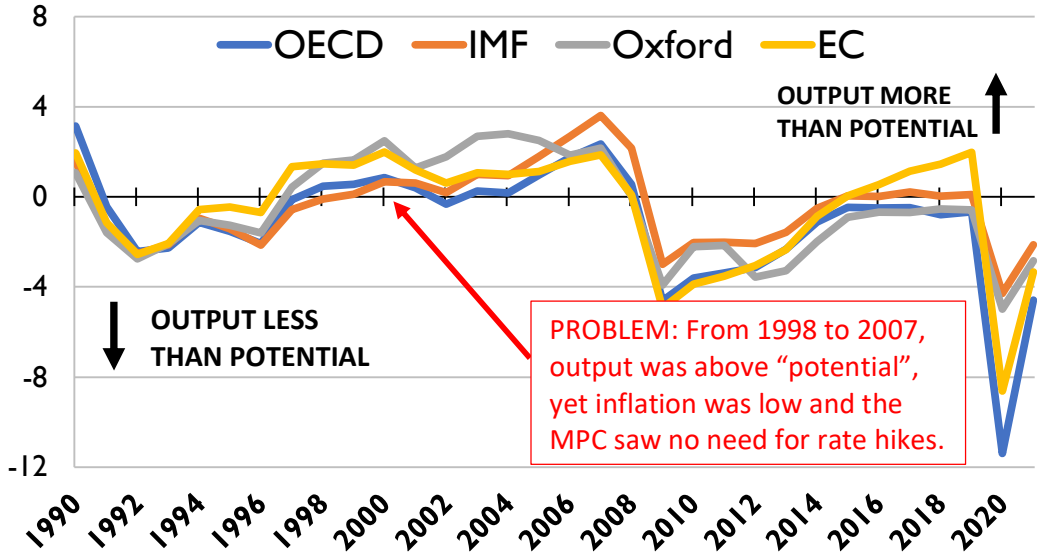
Judging by BOE Monetary Policy Reports, staff economists prepare estimates of the "output gap" and its component parts, i.e., where the economy is currently operating in relation to its potential output (or income or spending) -- usually in real terms.

One set of measures of the output gap is the difference between current real GDP measured from the spending or production side (the AD side) and its potential output (the AS side). Potential output or real GDP is estimated based on (i) the underlying growth of the labour force, (ii) its skills and the technology available (i.e., the productivity of labour), and (iii) the number of hours worked.

Another set of measures of the output gap applies the same concept to the labour market. Here the objective for AD is usually expressed in terms of employment or unemployment – attaining either "full employment" (as Fed's FOMC attempts to do) or achieving and maintaining a targeted low rate of unemployment such as the NAIRU – the non-accelerating inflation rate of unemployment -- at which

(supposedly) inflation neither increases nor decreases, a concept related to the Phillips curve.

Figure 2. UK Output Gap Measures from Four Sources (% of GDP)

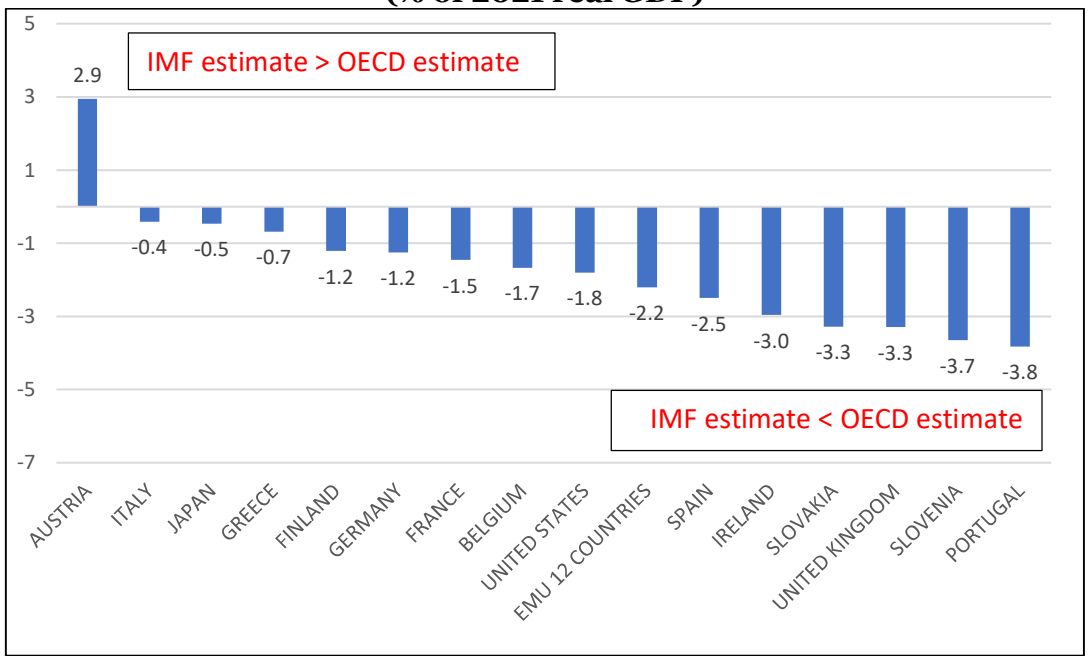


Over many years considerable efforts have been invested in establishing the growth potential of an economy and assessing the economy's current position relative to its potential output level. Large organisations with highly qualified teams of economists and financial analysts devote significant resources to measuring the "output gap" – i.e., the difference between the calculated potential output of the economy and the currently assessed position of the economy relative to that potential.

Figure 2 shows various output gap measures for the UK economy published by three well-known, public-sector organisations – the IMF, the OECD and the European Commission – and Oxford Economics, a private sector research group. It is instantly apparent that there are significant differences among the estimates amounting to as much as three percentage points in the period before Covid-19 and even greater divergences during the pandemic.

Extending the assessment of output gaps to a wider range of economies, we find in Figure 3 that divergences in the assessment of the output gap in 2021 between the IMF and OECD, two highly reputable organisations with large resources for economic research, are stark, varying from +2.9 percentage points in the case of Austria to -3.8 percentage points in the case of Portugal and -3.3 percentage points in the case of the UK. The problem is that the respective methodologies for assessing output gaps differ widely. Essentially each organisation is like the proverbial blind man feeling an elephant – their estimates may differ for a variety of reasons that are by no means straightforward to identify.

Figure 3. Output Gap Difference between IMF and OECD Estimates (% of 2021 real GDP)



Confronted with these data what should a policymaker – for example, in UK – do? Even assuming both organisations agreed that the UK economy was operating below potential, the question would be, given the wide difference of 3.3 percentage points between the IMF and OECD estimates of the output gap, how much stimulus to provide? A small stimulus or a very large one to close the output gap? Similar dilemmas would arise for policymakers in economies at both ends of the chart.

The basic point, then, is that assessments of an economy's current situation relative to its potential – even by authoritative organisations – vary widely. In turn, this implies that reliance on the output gap as a tool for making policy decisions in real time does not ensure a strong foundation for monetary policy.

My provisional conclusions on the aggregate demand—aggregate supply (AS/AD) methodology as an approach to managing the economy are that: (1) measures of the level or growth of aggregate supply (AS) are hard to quantify accurately enough to provide quarter-by-quarter guidance; (2) measures of aggregate demand (AD) or spending are even more unreliable. Typically, in BOE publications the estimates of AD appear to be built from the bottom up. Starting with the expenditure formula for demand-side GDP, $Y = C + I + G + (X - M)$, modellers will construct estimates of C (final consumption expenditure), I (investment spending), G (government spending), and X-M (the change in the current account balance) and add them up. The resulting AD estimate of GDP must then be assessed against any AS estimate to arrive at a current measure of the output gap. (3) The differences in output gap measures are testimony to the wide-ranging uncertainties inherent in the approach.

Is there a better alternative?

An Alternative Monetary Framework

My preferred approach is to start from monetary analysis and use the stable, medium-term relationship between broad money and nominal GDP as the basis for designing an appropriate monetary policy. Such a policy would focus primarily on broad money growth, ensuring it was maintained within a range set by experience in recent years of stable growth and low inflation. To expand or contract the amount of money in the economy, the central bank would rely mainly on open market purchases or sales of securities. Such asset purchases from non-banks create new money, credited to the deposit account of the seller, while asset sales, debited to the deposit account of the seller, remove deposits from the banking system and reduce the money supply.

At this point it is important to emphasise that the monetary target, expressed as something like "a 3-5% annual growth of M4x", should operate in good times and bad, remaining largely impervious to external shocks[1]. In this way, episodes of unwarranted tightening such as after the GFC -- when the Bank of England lowered interest rates, but money growth collapsed – or excessively rapid money growth such as during the Covid-19 pandemic would be avoided.

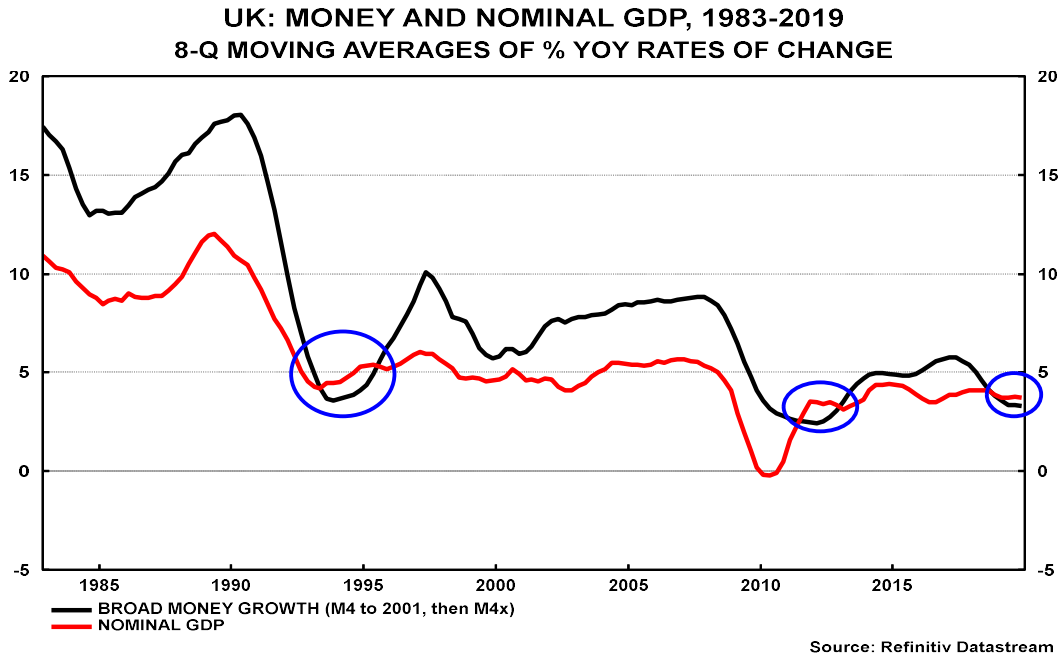
It is also worth stating that there is no purpose in attempting to steer monetary growth on a week-by-week basis in the way that was attempted in 1979-82 in the US under Paul Volcker at the Fed. Money growth has its impact over the following 2-3 years, not instantly. Moreover, that attempt was doomed to failure by the selection of non-borrowed reserves as the immediate operating target and M1 as the intermediate target variable. First, as with other liabilities of the Fed, non-borrowed reserves were not subject to direct control by the Fed; central banks can control the size and composition of their assets, but not the composition of their liabilities. Second, checkable deposits in M1 were and are always subject to transfers to other components of broad money (M2 or M3) as financial conditions change, but this period saw an unusual amount of financial deregulation and innovation such as the elimination of ceilings on deposit interest rates, the introduction of NOW accounts and the start of money market mutual funds. (Much more could be said about the choice of broad money to be used as a target, and why it would not be subject to Goodhart's Law[2], the idea – often exaggerated -- that any targeted variable necessarily becomes unstable. However, space does not allow in this article.)

[1] In my view a target of this kind should be included in a revised mandate for the Bank of England.
[2]Goodhart's Law was the observation that "Any observed statistical regularity will tend to collapse once pressure is placed upon it for control purposes." Or, more concisely, "When a measure becomes a target, it ceases to be a good measure." But this is only true in relation to instances where human behaviour can exploit the weaknesses in, for example, a government instruction to citizens or employees to meet a target but the means to do so are left to the discretion of the individuals. This can easily lead to abuses. In financial markets, as elsewhere, design is key. Thus, when the Bank of Japan targeted broad money (M2+CDs) growth from July 1974, it had no difficulty in achieving its targets and hence comparative price stability in Japan for the next decade.

The Stable Relation between Broad Money and Nominal GDP

Here I will illustrate the stable relation between broad money growth and nominal GDP growth – the core feature of the Quantity Theory of Money (QTM) – in two ways: first, by studying the relation between rates of change of broad money (M4x) and nominal GDP (spending in current pounds), and second by exploring the behaviour of income velocity.[3]

Figure 4. Due to QTM and the Downward Slope of Velocity, Broad Money Growth Generally Creates a Ceiling for Nominal GDP Growth



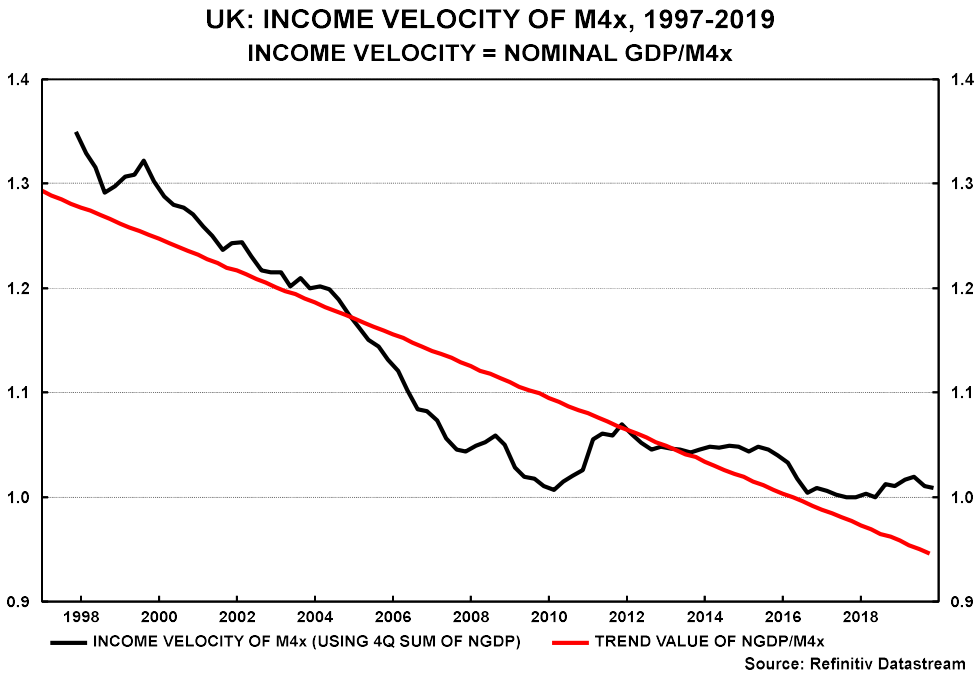
First, consider the relation between broad money (M4 to 2001, and then M4x) and nominal GDP using eight quarter moving averages of the year-to-year rates of change of each variable. The reason for using the 8-Q moving average is that changes in money growth impact real GDP and later inflation only after "long and variable" lags of – typically – 6-9 months in the case of real GDP and 12-24 months in the case of inflation. Figure 4 shows that broad money tends to grow faster than nominal GDP by a percentage point or two most of the time, with few exceptions. This is because the downward slope of income velocity (of which more below) implies, to use the technical jargon, an elasticity of the demand for money balances greater than one. In other words, people tend to hold relatively larger money balances as they become richer. In the UK the average annual percentage increase in money balances per unit of income over the period 1997-2019 (before Covid), equivalent to the average difference between nominal GDP and M4x growth, was +1.3% p.a.

[3] See also my Business Cycle Basics, Part 6, "Velocity has a Stable, Downward Trend in most Economies" -- 8th March 2022 available at www.eri-c.com

In effect what we have shown – and this is true for all 89 other economies where we have studied the relationship – is that broad money growth creates a ceiling for nominal GDP growth. In Figure 4 there are three episodes circled in blue where nominal GDP growth temporarily exceeded money growth, the first two resulting from non-monetary shocks, but the third being a result of a mistake in monetary policy:

(1) Between 1992 Q3 and 1995 Q2 the UK left the ERM, giving a boost to export industries previously constrained by the policy of pegging the pound to the DM.
(2) Between 2011 Q3 and 2012 Q4 the economy exhibited a natural bounce-back from the GFC, even though deleveraging and monetary contraction were still on-going in the banking and shadow banking systems.
(3) In the third episode, 2018 Q3 to 2019 Q4, the Bank allowed the growth of M4x to slow too much, from 4.2% year-on-year in February 2018 to a range of just 1-2% for the two years to February 2020. In the absence of Covid and the monetary response to it by the Bank of England, the UK economy was headed for deflation in 2020-21.

Figure 5. Income Velocity (Nominal GDP/M4x) and its Trend Line Before the Covid Crisis



The second way to show the stability of the relation between broad money and nominal GDP is to examine the trend of income velocity. Figure 5 shows UK income velocity for M4x (which is available in a quarterly series from 1997). The average annual decline in income velocity was -1.2% p.a. and the maximum deviations from the trend line were in the crisis years 2007 Q3 (by -7.5%) and 2009 Q2-2010 Q1 (averaging - 7.4%). For statisticians, the standard deviation was 4.19, but insofar as the instability of velocity was policy-generated, it is not clear that the standard

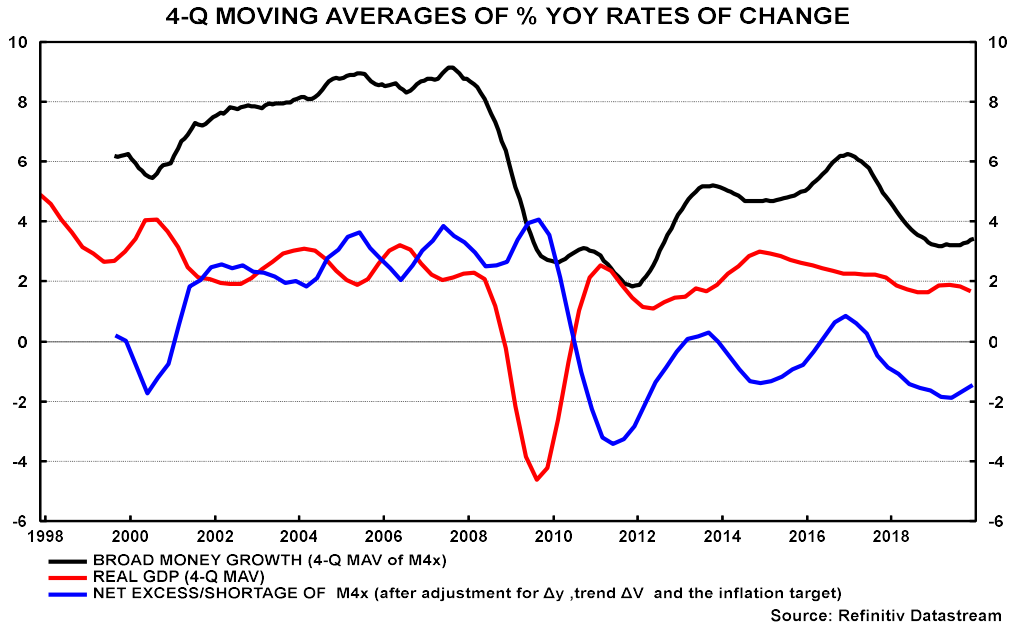
deviation has much meaning. I ended the chart in 2019 Q4 to avoid the huge disruption to the trend caused by the Covid-19 countermeasures from 2020 Q1 onwards – disruptions shown in Figures 8, 9, & 10 below.

Given the stability of the relation between broad money and nominal GDP over more than three decades (and well before that also), we can use the quantity theory of money (QTM) to estimate an appropriate rate of broad money growth for any given inflation target. In the text that follows we use the year-on-year % rates of change.

From the Quantity Theory of Money, and using Δ (delta) signs for annual % changes,
$\Delta M + \Delta V = \Delta P + \Delta y$, (1)
and therefore
$\Delta P = \Delta M + \Delta V - \Delta y$ (2)

For the UK economy, it follows that policymakers need to aim at a growth rate of broad money, which, when adjusted for trend changes in V and for normal real GDP growth, generate a net 2% on the right-hand side of the equation, equal to the 2% inflation target on the left-hand side. (Note that ΔV is a negative number.)

Figure 6. The Excess or Shortage of M4x in the UK, after Allowing for Real GDP growth, Trend Velocity, and a 2% Inflation Target



The first step in Figure 6 is to deduct the smoothed real GDP (in red) from broad money growth. Next, we deduct the trend rate of change of velocity over a suitable period. I have chosen the period 1997-2019 which covers the years since the Bank of England became independent and was also a period during which money holdings (the inverse of velocity) changed at a stable rate. During these years the average annual change in income velocity of M4x was -1.2% p.a. The final adjustment is to deduct the 2% inflation target which M4x needs to finance.

The net result is the blue line which shows the excess or shortage of M4x available to generate inflation or deflation. Ideally the blue line would run at about 0% per annum. However, in the pre-GFC years M4x growth was too rapid, contributing to asset price inflation. In fact, this rapid growth of money was commented upon by Governor Mervyn King on more than one occasion.[4]

Conversely, after the GFC there was inadequate growth of M4x which explains the painful, disinflationary environment for several years after the crisis. Although it took some time, in line with Friedman's dictum that the lags are long and variable, by 2014 the inflation rate had fallen almost to zero. For 2015 as a whole the year-on-year change of the CPI averaged just 0.1%. (This monetary account of these years provides a far better explanation of the economic distress at that time than the fiscal austerity narrative told by mainstream neo-Keynesian economists.)

In summary, even allowing for non-monetary or "exogenous" shocks, unstable money growth has been allowed to introduce instability into the British economy in the form of both erratic real GDP growth and variable inflation. In future, therefore, the Monetary Policy Committee of the Bank needs to pay far more attention to broad money growth[5] on a medium-term basis if the economy is to be managed on a more stable trajectory and the inflation target is to be met more consistently.

The Bank of England's Monetary Response to Covid-19

In this section we will first summarise how much the Bank of England and the UK banks together have added to M4x during the pandemic. Second, I will explain how to think about the implications for spending in current pounds or nominal GDP, Third, using the equation of exchange from the QTM as an organising framework, I will spell out what the past and present growth of M4x means for real economic activity over the next year and for inflation over the next two or three years.

A. Impact of Bank of England and Commercial Bank Actions on M4x

Within a few weeks of the onset of the Covid-19 pandemic the UK government decided to lockdown large parts of the economy and social life with a view to minimising the spread of the infection and protecting the NHS from being overwhelmed with serious or emergency cases.

To its credit, the Bank of England began its response even more rapidly. The MPC cut Bank Rate from 0.75% to 0.1% and announced the start of asset purchases on 19 March 2020. The Bank's existing stock of securities was to be expanded by £200bn from March and a further £100bn from June. In addition, the Bank revived its Term Funding to banks. "To maximise the effectiveness of monetary policy, the TFSME will, over the next 12 months, offer four-year funding of at least 10% of participants'

[4] For example, in a speech at the CBI Dinner in Cardiff, 11 June 2007. https://www.bankofengland.co.uk/speech/2007/mervyn-king-cbi-dinner

[5] The Bank's quarterly Inflation Report (now the Monetary Policy Report) has not even mentioned the money supply or M4x since August 2018.

stock of real economy lending at interest rates at, or very close to, Bank Rate. Additional funding will be available for banks that increase lending, especially to small and medium-sized enterprises (SMEs)." The Bank of England was going flat out.

Speaking in August 2020 at the "virtual" symposium of the Federal Reserve Bank of Kansas City, normally held at Jackson Hole, Wyoming, Bank of England Governor Andrew Bailey claimed that there was evidence to the effect that "in conditions of market dysfunction and illiquidity ***'going big and fast'*** with QE is particularly effective." This was a phrase he repeated several times in interviews during the year.

My point of focus is the effect of these actions not on the central bank's balance sheet itself, but on the broad quantity of money because, as I have shown above and elsewhere, it is M4x that is the primary driver of spending and inflation in the economy. As I like to say, **"It is money in the hands of the public that matters** (for spending and inflation)**, not money on the books of the central bank."**

To analyse the effect of the Bank's actions I use the same framework as I outlined in Newsletter #2 ("Causes and Consequences of the Abrupt Downturn in US M2 Growth") to break out the asset-side drivers as opposed to the liability-side components of changes in M4x. The details are shown in a revised note in the Appendix (p. 19).

Figure 7. Sources of Cumulative Increase in M4x During the Pandemic

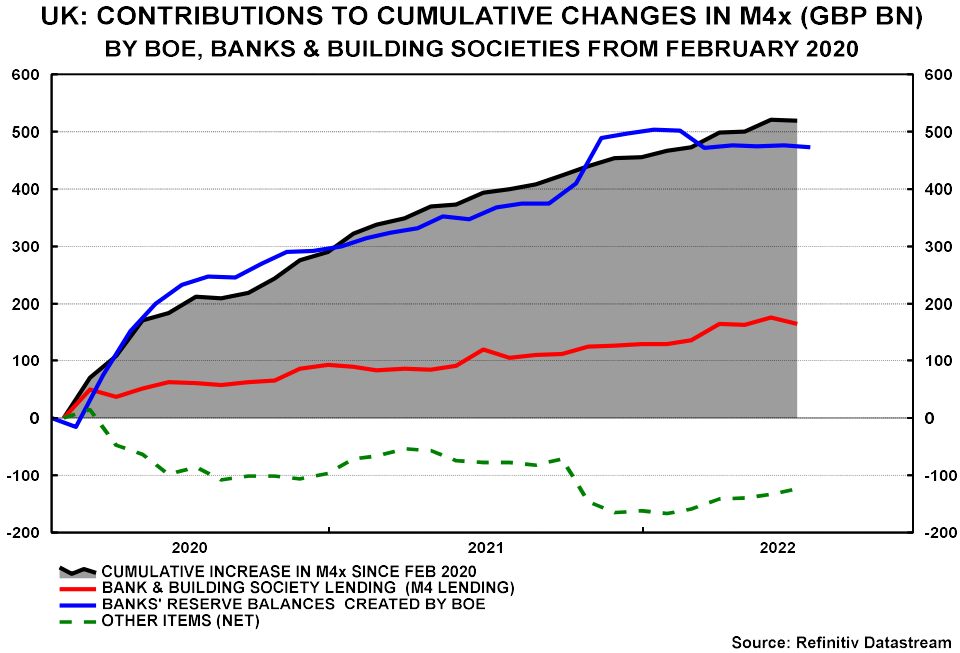


Figure 7 illustrates the results of this exercise. Between February 2020 and June 2022 M4x increased by £519 billion, a cumulative increase of 23% in just under two and a half years, with the vast bulk of the increase (£473 billion or 91%) coming directly from the Bank's asset purchases (gilts and corporate bonds) and to a lesser

degree from its Term Funding schemes. Bank lending by commercial banks and building societies added only £165 billion (31%), while the residual was a negative £124 billion (-24%).

Why was the Bank of England's contribution to M4x so large?

A benign interpretation would be that the Bank's motive in conducting the large-scale asset purchases in 2020-21 was to overcome "market dysfunction and illiquidity."[6] Unfortunately, the Bank ignored most of the monetary consequences.

First, the BOE, like the Fed, buys most of the securities in its asset purchase programme from non-banks, not banks. When a central bank purchases securities from an insurance company, pension fund or asset manager, the seller receives a credit directly from the central bank. This is a new deposit (i.e., new money) in the banking system. In purchasing £473 billion of gilts (and other) securities, the Bank was adding an equivalent amount to M4x. (By contrast, when the Bank of Japan or the ECB purchase such securities as part of their "QQE" or "PEPP" programmes, most of the power to create money is wasted because these central banks buy their securities mainly from banks, not non-banks. Unless the Japanese and European banks follow up by expanding lending after receiving reserves from the central bank, the transactions amount merely to an asset swap with no impact on broad money.)

Second, despite the admonition of Mervyn King (Governor of the Bank of England, 2003-13) to present-day central bankers that QE "is an expansion of the money supply although most central banks are reluctant to describe it as such"[7], the Bank largely ignores the impact of its actions on the stock of broad money. Senior Bank of England officials prefer to watch "financial conditions" not money. As a result, their mantra has become that monetary policy works through "financial conditions", which are typically measured in terms of interest rates, yields, yield spreads, exchange rates and stock prices – never in terms of quantities.

The problem with this perspective is (1) it not only conveys a wrong or at best superficial understanding of the transmission mechanism of monetary policy, but (2) it can lead – and has led – to serious errors of monetary policy. (This will be explained in a future issue of IMM's Newsletter.)

B. Changes in M4x and Spending (or Nominal GDP)

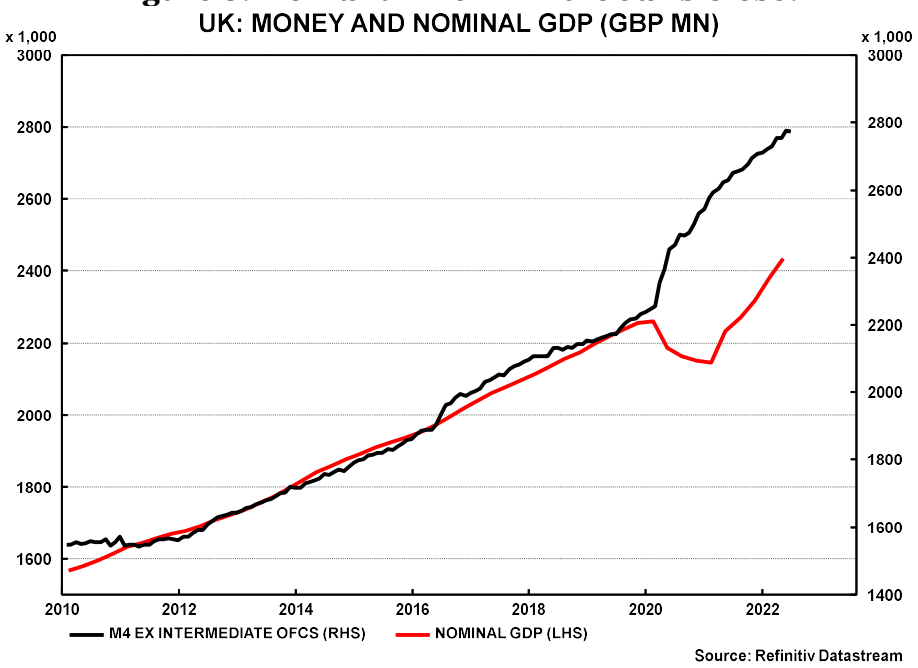
Comparing next the amount of M4x outstanding and the level of nominal GDP (expressed at annual rates), we note that between 2010 and 2019 the two had a very close relationship. In practice M4x grew at an average annual rate of 3.8% p.a. while current spending or nominal GDP grew at an annual average rate of 3.0% over the corresponding period starting and ending one year later (2011-2020).

[6] The quote is from Andrew Bailey, as reported by The Guardian, 28 August 2020.

[7] King, Mervyn, "Monetary Policy in a world of radical uncertainty" p. 7. Institute of International Monetary Research, Buckingham (2022).

When the pandemic began, the Bank cut Bank Rate to 0.1% and announced large asset purchases and Term Funding schemes which resulted in a huge surge in broad money (M4x) to a peak year-on-year growth rate of 15% in February 2021. Over the period January 2020 to June 2022 M4x growth has averaged 9.1% p.a., more than double and nearly three times its 3.8% growth rate in 2010-19. Nominal GDP, by contrast, has been much slower to react, thanks to the standard lags in effect of monetary growth, exacerbated no doubt by recurrent Covid-related disruptions and business shutdowns or by social distancing and quarantining requirements.

Figure 8. How and when will the Jaws Close?



The effect in graphical terms, shown in Figure 8, is of a set of jaws opening up between M4x and nominal GDP. The question is, how and when will the jaws close?

Based on our understanding of the relationship between broad money and nominal GDP from a study of 89 economies currently in progress, we can be almost 100% certain that the jaws will close by nominal GDP catching up to M4x, and not the other way around. In effect, the British people, in common with people all over the world, wish to hold a stable – albeit gradually growing -- proportion of their income in the form of money expressed *in real terms*.

Having seen that stable ratio disturbed by the actions of the Bank of England during the pandemic, the British population are now seeking to run down their excess money balances by spending. The problem is that one person's spending is another person's income. Therefore, the amount of money, taken as a whole, cannot be reduced, only redistributed. But the *attempt* to make spending exceed receipts will tend to produce an increased flow of spending. Ultimately, the only way to reduce the

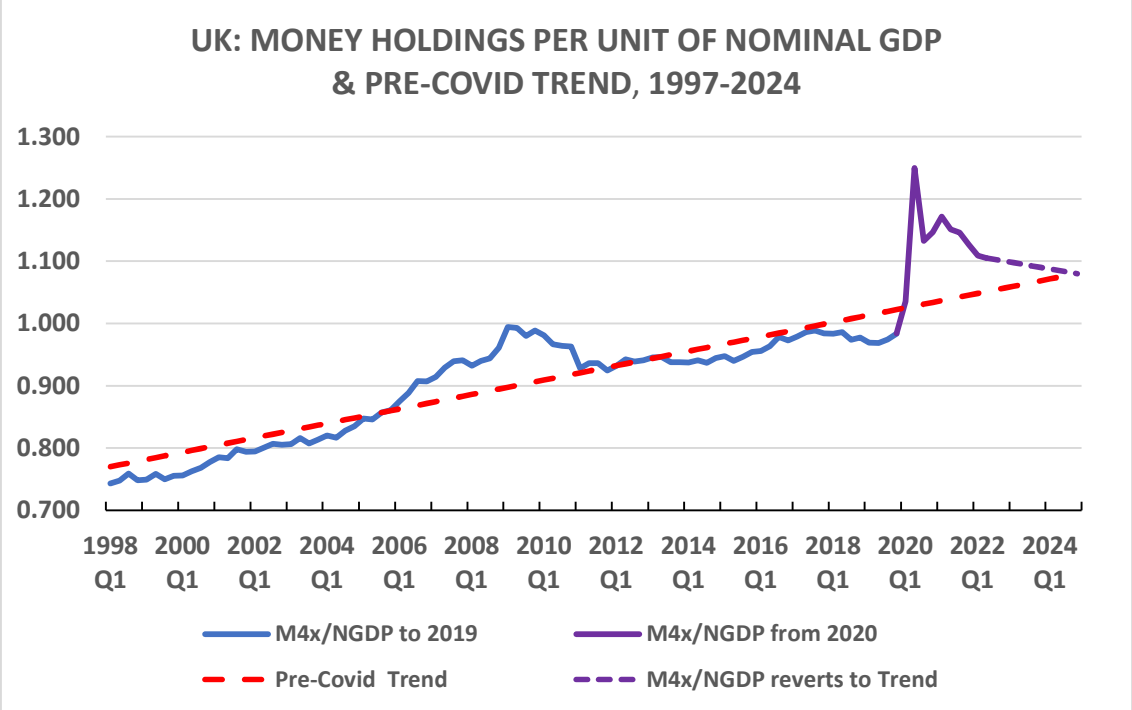
outstanding real value of the excess money balances is for prices to rise. The key question is how much must prices rise?

C. Forecasting M4x, Real GDP and Inflation based on QTM

Looking ahead, we use the Quantity Theory of Money (QTM) equation,
MV=Py, in the form $\Delta M + \Delta V = \Delta y + \Delta P$ (1)
Or, re-arranging, $\Delta P = \Delta M + \Delta V - \Delta y$ (2)
as an organising framework to make forecasts, the deltas meaning annual % changes.

Money: For the purpose of my forecast, I assume that (a) M4x grows at 5% p.a. between now and the end of 2024, and (b) the two lines in Figure 8 converge by the end of 2024. Normally this would mean that, in a steady state, $\Delta M + \Delta V$ would amount to 5% + (-1.2%) = 3.8%, to be divided between $\Delta y + \Delta P$. However, there are lags in the process, and there are currently substantial excess money balances outstanding shown in Figure 9. Meantime, the impact of each new year of M4x growth plus past excess money growth will show up as changes in money holdings, changes in real GDP, and changes in inflation – all spread out over time.

Figure 9. Excess Money Balances Relative to Nominal GDP now being Reduced



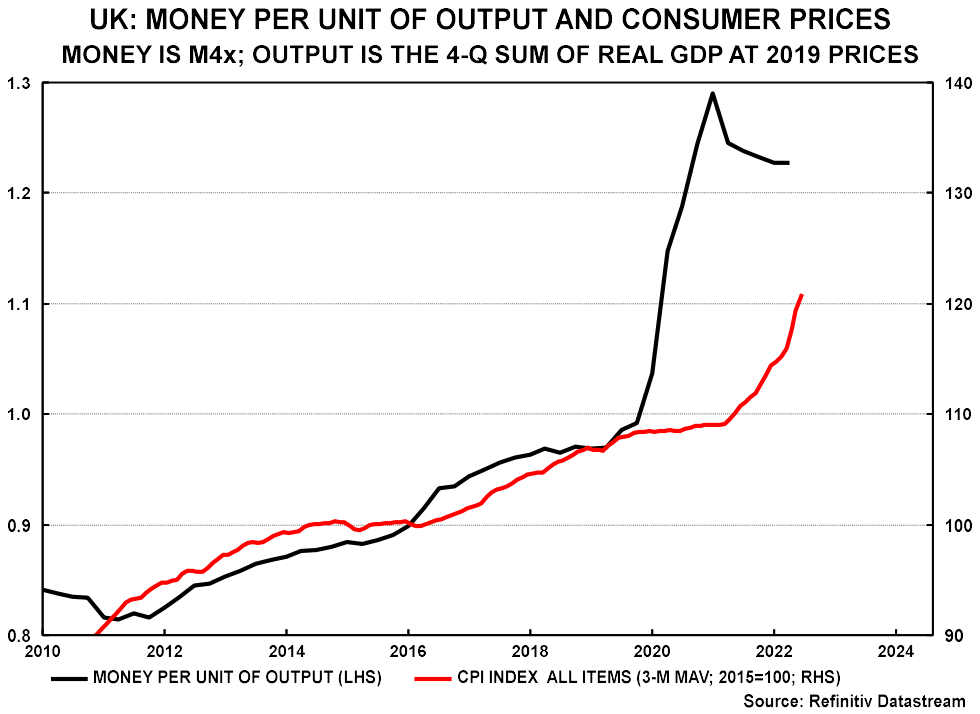
Money holdings, or the inverse of velocity: At the start of the pandemic there was a "dash-for-cash" or "dash for safe, liquid securities". By purchasing long-dated securities in exchange for cash the BOE largely met the demand for liquidity, but these operations also resulted in a huge increase of M4x money holdings by the private sector (and a simultaneous steep fall in velocity). Firms and households are now attempting to reduce those excess money balances and restore the ratio of

money balances to income to "trend" as suggested by the purple dashed line in Figure 9. In other words, for the next year or two the annual change velocity will be higher (less negative or even positive) than normal, leading to a potential overshoot of the trend. This analysis feeds into my nominal GDP, real GDP and inflation forecasts.

Real GDP: Economic activity slumped at the start of the pandemic due to widespread lockdowns. The service sector was worst affected, and recurrent surges of infection due to the virus or new variants intermittently set back the recovery. However, now that most of the population has been vaccinated, real GDP has largely recovered its pre-pandemic level and is in a position to resume its trend growth. But even under the most optimistic scenario, real GDP growth will only absorb 1-2% p.a. of the excess M4x growth in 2020-21.

One alternative scenario to consider, however, is that M4x growth slumps as a result of the Bank's plan to shrink its balance sheet from September. In this event, slowing money growth will impact not only inflation but also real GDP. Firms and households should therefore brace for a recession — and stagflation — during the final months of 2022, during 2023 and possibly into 2024.

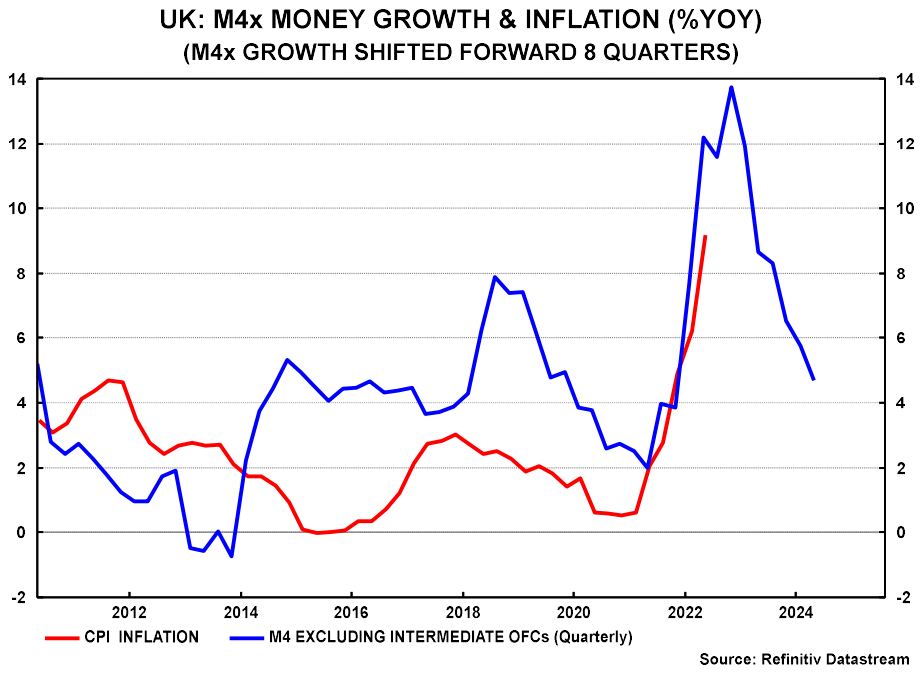
Figure 10. How Much Inflation Still Ahead?



Prices or Inflation:
The residual of excess money balances that does not form part of the private sector's permanently increased money holdings and that is not used to finance real GDP will show up as inflation. Based on the data in Figure 10, I estimate that by end-2024 the overall UK CPI price level will have risen by at least 23% as a result of the estimated

36% increase in M4x between 2019 Q4 and 2024 Q4. As shown in Figure 10, the CPI Index has already risen from 108 to 121, and the chart implies it will likely rise to at least 135 before this episode is over, though there could be a further increase if M4x grows at 5% p.a. as assumed. This could happen even if the economy remains in recession – which would push the black line in Figure 10 upwards from its current level. For the three years 2022-2024 this would imply an inflation profile something like: 2022 10%, 2023 8%, and 2024 3% (see Table on p. 18).

Figure 11. The Inflation Horse has already Bolted, but the Depth and Duration of the Coming Recession can still be Moderated



The Bank started raising interest rates with a rise from 0.1% to 0.5% in December 2021, and further increases to 0.75% in March, 1.25% in June, and 1.75% in August. There are some who argue that the Bank is ahead of other central banks such as the ECB in raising rates, but the truth is that the inflation horse has long since bolted – in fact, two years ago (see Figure 11). The damage was done by the huge surge in M4x in 2020 and its continued rapid growth due to extended QE into 2021. Just as predicted by Milton Friedman as far back as the 1960s and in the summer of 2020 by monetary economists Tim Congdon, Juan Castaneda, and a handful of others, excess money growth has resulted in a painful and largely unnecessary episode of inflation for the UK economy.

It is now too late to prevent the inflation already released by the Bank's egregious monetary expansion of 2020-21, and naïve to imagine that rate hikes during 2022 can do anything to suppress price increases. Again, there are some, particularly at the Bank of England, who argue that the important thing now is to stop the inflation psychology becoming embedded – otherwise, they say, a wage-price spiral will ensue.

Such thinking and language betray a fundamental misunderstanding of one of the core findings of monetary research – that "inflation is always and everywhere a monetary phenomenon" which cannot occur in any sustained or significant degree unless preceded by a period of rapid money growth in excess of the requirements of the particular economy. As a challenge to my students, I sometimes ask them to try to find a sustained episode of inflation (i.e., two years or more) that occurred in the absence of rapid broad money growth. None has succeeded so far.

In my view, the last decade (2010-2019) has provided strong evidence that monetary analysis still provides the best explanation for the low inflation during these years. It was the consistently low broad money growth in the US, the euro area, Japan and the UK which produced the low inflation, not the success or otherwise of central banks' ability to contain inflation expectations or their much-trumpeted Flexible Inflation Targeting regimes (or the Fed's latest iteration: Flexible *Average* Inflation Targeting). The refusal to acknowledge one of the most basic relationships in economics – that too much money chasing too few goods produces inflation – is at the core of the central banks' appalling policy failure during the pandemic.

The alternative policy, pursued by the Bank of Japan, by the People's Bank of China, and by National Bank of Switzerland – even if in some cases as a by-product of other strategies – was to prevent or not allow an excessive growth of broad money during the pandemic and thereby prevent the possibility of a serious inflation outbreak in the first place. Blaming supply chain problems or imported food and energy prices – as Andrew Bailey and Ben Broadbent have repeatedly done in public appearances – is all smoke and mirrors. They are confusing ***relative*** price changes with the ***overall*** price level[8].

The Bank's officials argue that inflation is a global problem, something the Bank can do little to prevent. In their calculation, 80% of the UK's inflation derives from a terms of trade shock – a surge in imported food and energy prices relative to the price of Britain's exports. Yet why is it that despite experiencing the same computer chip shortages, similar supply chain problems, and the same energy and food price shocks as a result of the war in Ukraine, year-on-year consumer price inflation rates in Japan, China, and Switzerland are only 2.4% (in June), 2.4% (in July), and 3.3% (in July) respectively?

It would be absurd to say that these countries somehow had a way of suppressing inflation expectations that was not available to the US, UK, or the Eurozone.

The answer, quite simply, is that during the pandemic the central banks of these three economies, in contrast to the Bank of England, the Federal Reserve System and the European Central Bank, did not preside over the highest rates of broad money growth in a generation.

[8]See JACF, Fall 2021-On Monetary Growth and Inflation in Leading Economies, 2021-22, Greenwood&Hanke.pdf

Summary and Conclusions

- Excessive money creation during the pandemic has resulted in Britain's worst episode of inflation since 1990-91. The backdrop to this strategic error in monetary policy is the Bank of England's aggregate demand/aggregate supply framework together with the MPC's failure to focus on broad money.
- An alternative way to operate monetary policy is urgently needed. Reliance on income velocity, the ratio of nominal GDP to broad money, could be used to generate an improved monetary policy outcome.
- The current approach to monetary policy has already produced a massive overshoot of money growth on the high side during the pandemic. There is a significant risk that it will produce a corresponding serious undershoot on the downside after QT begins in September.
- The result of an overshoot on the downside would be a major setback to asset prices followed by a more severe recession than is already likely to occur as a result of the erosion of household's real income by inflation.
- Inflation was already baked in for 2022 and 2023 due to the excess of M4x growth in 2020 and 2021. I forecast average annual CPI inflation to be 10% in 2022, 8% in 2023, and 3% in 2024.

Figure 11. UK ECONOMY FORECAST TABLE
(Annual average percentage changes)

	NOMINAL GDP	REAL GDP	CPI INFLATION (or GDP deflator)
2022	9%	-1%	10%
2023	6%	-2%	8%
2024	5%	+2%	3%

Appendix

To isolate the contributions of a Central Bank and of Commercial Banks to the growth of broad money – in the UK case M4x -- we break out the drivers (asset changes) as opposed to the components (shifts in deposits etc) of changes in M4x.

First, we assemble the balance sheets of the Bank of England and Monetary Financial Institutions (MFIs, or formerly, the Banks and Building Societies), but we do not consolidate them. Since broad money (i.e., currency plus all deposits at banks) is in part a liability of the Bank of England (i.e., the currency held by the public) and in part a liability of the MFIs (i.e., the deposits), we need to focus mainly on the assets of the banks for the counterparts of deposits in broad money, and to a much lesser degree on assets of the central bank for the counterparts to the currency issue. Next, we derive a residual or balancing item so that the total of the right-hand side of equation (2) below matches the change in M4x. In simple, arithmetic form we have:

Liability side:

(1) Δ M4x = Δ Bank deposits + Δ Cash in circulation with the public, and

Asset side:

(2) Δ M4x = Δ Assets Purchased by the Bank + Δ Commercial Bank Lending +/- Δ Others (net)

Note that in this formulation the residual "Δ Others (net)" includes items like changes in the cash currency holdings of the non-bank public, which is part of M4x but is not reflected in the first two items on the right-hand side of the equation. Also, commercial banks' balance sheets may change for other reasons such as debt or equity issues by banks which can lead to increases in bank credit that do not correspond to changes in the deposits comprising M4x.

Note also that this procedure is different to that adopted by those central banks including the Bank of England and the ECB which compile tables showing the counterparts of broad money. In the standard presentation the balance sheets of both the central bank and the commercial banks are consolidated first and then all the assets combined in distinct pools by sector (e.g., credit to the private sector, credit to the public sector, credit to the overseas sector etc). While this may be interesting for those who wish to follow the amount of credit issued or held by banks, it may not be especially relevant when trying to track the creation or destruction of money.

The problem with the standard presentation is that it does not necessarily isolate the counterparts to broad money because central banks and banks may hold assets and liabilities that are unrelated to the broad money aggregate. In addition, since credit is not necessarily the same as money, the results can be highly misleading. This is the reason why some central bank publications of counterpart tables are so hard to understand or so hard to draw any insight from -- or at least that's what I find! Figure 7 on p. 11 shows the result of my preferred procedure.

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