

The Great Policy Debate

Assessing the Relative Roles of Monetary and
Fiscal Policy from Friedman to the Present

John Greenwood



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Contents

	Preface	i
	Beware financial conditions indicators!	1
1.	<i>Introduction</i>	<i>1</i>
	<i>The Monetarist transmission mechanism</i>	<i>4</i>
	<i>Application of the Monetarist framework to the United States</i>	<i>5</i>
	<i>Transmission of monetary policy based on the FCI framework</i>	<i>7</i>
	<i>Application of monetary and FCI frameworks to the US</i>	<i>9</i>
	<i>Application of monetary and FCI frameworks to the euro area</i>	<i>15</i>
	<i>Application of monetary theory and FCI framework to the UK</i>	<i>19</i>
	<i>Conclusion</i>	<i>23</i>

2.	Milton Friedman's views on the interaction of monetary and fiscal policy	28
	<i>Introduction</i>	28
	<i>Friedman's early views on fiscal policy, 1941-48</i>	29
	<i>Friedman's settled view on fiscal policy, and its interaction with monetary policy</i>	32
	<i>Case studies of the interaction of fiscal and monetary policy</i>	38
	<i>Illustrations from the USA in the 1960s</i>	39
	<i>Classic cases from around the World</i>	41
	<i>Cases from British financial history</i>	44
	<i>Cases from Japanese financial history</i>	49
	<i>Conclusion</i>	56
3.	Monetary Policy is not about Interest Rates; the Liquidity Effect and the Fisher Effect	61
	<i>Keynes' Liquidity Preference Theory</i>	62
	<i>Fisher's Theory of Interest</i>	68
	<i>Case Studies</i>	71
	<i>Conclusion</i>	78
4.	Remembering Milton Friedman:A Eulogy	82
5.	Why Fiscal and Phillips Curve Theories of Inflation are not Working	87
	<i>Inflation are not Working</i>	87
	<i>Inflation since the Global Financial Crisis</i>	88
	<i>Two Popular Explanations for Inflation</i>	90
	<i>Popular Explanations for the End of the Business Cycle Expansion</i>	99
	<i>Conclusion</i>	103
	Conclusion	104
	References	108

Preface

This book illuminates important contemporary economic debates from a deeply rooted monetarist perspective, emphasizing the unquestionably predominant role of monetary policy in determining macroeconomic outcomes. The presented studies question the fundamental tools and analytical frameworks of modern central banking while paying tribute to the enduring intellectual legacy of Milton Friedman, one of economics' most influential figures.

The COVID-19 pandemic, which began in March 2020 and the unprecedented economic responses that followed, has necessitated a reassessment of the reliability of traditional economic models and indicators. In particular, the ability of popular tools such as the Financial Conditions Index (FCI) to explain the complexity of the monetary policy transmission mechanism and its driving forces is being seriously questioned. The first article in this collection sharply compares the FCI model to Friedman's predictive monetarist model. The argument is that the post-March 2020 experience perfectly aligns with the monetarist framework, which demonstrates that movements in interest rates can be explained by a two-stage process: the liquidity effect and the Fisher effect, which follow changes in the money growth rate and act in opposite directions. This finding demonstrates that the FCI approach, which ignores money supply growth when assessing the stance

of monetary policy and relies on a composite index based on interest rates and spreads, produces inconsistent and even contradictory results.

This objection triggers a deeper inquiry into the fundamental nature of monetary policy: Is monetary policy truly about interest rates?

The third article addresses this fundamental question, reconciling Keynes's liquidity preference hypothesis regarding the relationship between interest rates and the quantity of money with Irving Fisher's longer-term findings, including inflation expectations. It proposes that Keynes's liquidity effect is a short-term phenomenon, while Fisher's results are a determinant of long-term interest rates through the influence of inflation expectations. However, the ultimate conclusion of this article is unshakable: Interest rates are a highly misleading guide to assessing the stance of monetary policy; it is always better to rely on the broadly defined growth rate of money for this assessment. This poses a powerful intellectual challenge to central banks' use of interest rates as their primary focus.

This fundamental analytical framework is closely linked to Milton Friedman's evolving views on macroeconomic stabilization policies. The second article traces Friedman's transition from his early acceptance of Keynesian orthodoxy to the radically opposing view that fiscal policy plays almost no role in macroeconomic stabilization. Friedman substantiates his challenge by comparing historical periods in which monetary and fiscal policies moved in the same or opposite directions: monetary policy inevitably dominates fiscal policy in determining macroeconomic outcomes, especially when the two policies conflict. This finding strongly suggests that, in today's environment of increasing popularity of fiscal theories, policymakers should once again turn their attention to money supply dynamics.

This focus extends to inflation theories, another important current economic debate explored in the fifth article. The article examines why the two common theories used to explain inflation, the fiscal theory of the price level and the Phillips curve (or output gap) models, fail. Both models are shown to be reduced-form analyses that make no reference to the

underlying monetary causes of inflation. Consistent with the monetarist view, it affirms that inflation is ultimately a monetary phenomenon and concludes that a sharp rise in inflation cannot occur without a sustained period of faster money and credit growth.

Finally, the fourth article, "An Ode to Milton Friedman," reminds us that he was not only a brilliant theorist but also an economist with a deep interest in applying his theoretical analysis to practical applications. His anticipation of the collapse of the Bretton Woods fixed exchange rate system, his advocacy of the introduction of foreign exchange futures contracts, and his advocacy of fixed exchange rate systems or currency boards for small open economies were reinforced by his direct involvement in the stabilization of the Hong Kong dollar after its collapse in 1983. These examples illustrate how Friedman's academic knowledge strengthened his confidence in policy implementation.

Taken together, all the articles in this volume revitalize the monetarist thesis that money growth is a central indicator of macroeconomic stability and policy stance. This has important implications for policymakers and analysts, especially at a time when global central banks are pursuing unprecedented monetary policies and the threat of inflation is reemerging. These studies direct our attention away from misleading signals like interest rates and complex indices and toward money growth and its inescapable impact on economic outcomes.

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USA

1

Beware financial conditions indicators!

1. Introduction

During the past few months since April/May 2023, US bond yields have been steadily rising. There has been plenty of ink spilled discussing why this has happened. Could it be that real economic growth is going to continue strongly, putting upward pressure on inflation and rates? After all, the Atlanta Fed's GDPNow index is currently suggesting about 5% real GDP growth in 2023 Q3. In addition, Fed Chair Powell's speech at Jackson Hole and his remarks following the FOMC meeting on September 19-20, plus the dot plot on the rates outlook by FOMC members have all suggested that rates would stay higher for longer than market participants had expected.

Or are the expanded funding needs of the US government – from the huge increase in the federal deficit and its higher interest costs – the reason for the upward pressure on bond yields? Or is it due to (cash) sales of US Treasury bonds as part of the “basis” trade? Or is it the withdrawal of numerous foreign central banks and SWFs from the US Treasury market that is the source of rising yields?

In this debate, widely quoted US “Financial Conditions Indices” such as the Chicago Fed’s National FCI in Figure 1 have been supportive of higher yields because they have been tightening in 2023 (red dashed line) along with rising bond yields (second blue solid line). (Note the inverted scale on the right-hand axis, selected to conform with the recent movement of bond yields.)

Yet this narrative, if correct, conflicts with the story that FCIs told in 2021-2022. Over the nine months from October 2021 until June 2022, or arguably until October 2022, “financial conditions” as measured by the Chicago Fed’s National Financial Conditions Index (NFCI) were allegedly easing (blue dashed line) even as Treasury bond yields (blue solid line) were rising. In the background, M2 growth in 2021 was still in double digits, the Fed did not raise rates until March 2022, the economy was growing strongly, and inflation was already rising. Also, it was widely expected that the Fed would continue to hike the Fed funds rate.

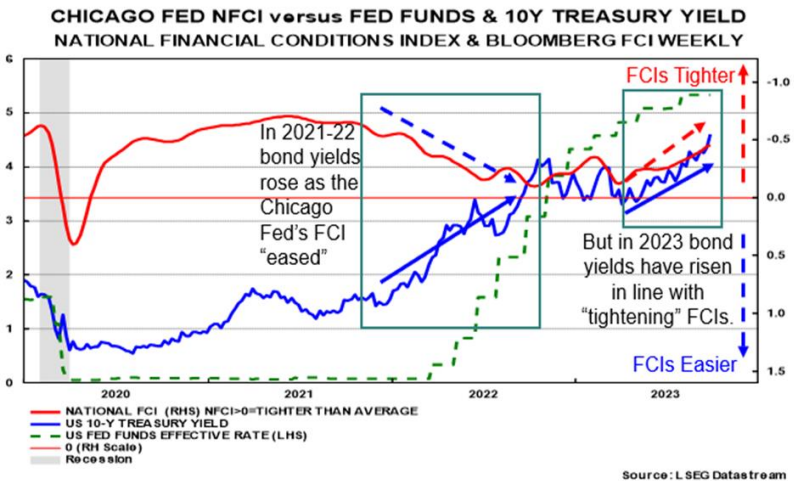


Figure 1. Popular (FCI) theories of the monetary transmission mechanism are obviously wrong or contradictory.

How can both explanations be credible? Clearly, they cannot. The problem is that there is something fundamentally wrong with FCIs.

The reason is that FCIs are fundamentally an example of what Kenneth Boulding called “facts without theories” and, in that sense, “meaningless”.

Central bankers are therefore flying blind. To the extent they rely on FCIs (albeit with other data) and claim they are “data-dependent,” they are not using a properly formulated theory of how monetary policy works, or how money growth is transmitted.

The fundamental problem for FCIs concerns the form and sequencing of the transmission mechanism implicit in their construction. To explain this, I shall set out briefly the monetary transmission mechanism long proposed by Irving Fisher and Milton Friedman, followed by the transmission mechanism implicit in FCIs.

One problem with FCIs is that they are monotonic – that is, they associate higher interest rates and spreads plus lower equity prices with “tighter” conditions, and lower rates and spreads plus higher equity prices with “easier” conditions. In other words, the FCI relationship is one-way. But monetary analysis shows that there is a distinct and important two-way relationship between money and interest rates that is ignored by FCIs (see Section 2).

A second, deeper problem is that FCIs assume that interest rates and spreads rates are the drivers of financial or business conditions whereas monetary analysis shows that rates are symptoms or effects of past money growth, and that the effects come in two stages – first lower then higher rates for a sustained expansionary monetary policy; and first higher then lower rates for a sustained tight or contractionary monetary policy. FCIs therefore fail to take into account the 2-stage impact of changes in money growth on rates and spreads, and this is why they produce inconsistent results.

Market participants mostly make the same presumptions as are implicit in FCIs: i.e., that higher rates mean tighter monetary conditions and lower rates mean easier monetary conditions. But monetary analysis in this paper shows that this is either wrong or contradictory. As a result, there will inevitably be policy mistakes or incorrect forecasts at critical

moments in the business cycle deriving from use of the FCI framework.

2. The Monetarist transmission mechanism

In monetary analysis, sustained and substantial increases in the rate of growth of the quantity of broad money lead first to a decline in velocity (which amounts to saying that temporarily people hold larger money balances than they intended).

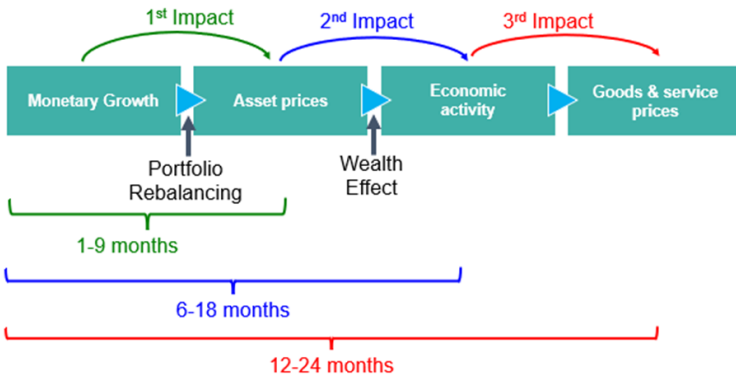


Figure 2. A Monetary View of the Transmission Mechanism and the Lags in

Second, after some weeks or months, portfolios are rebalanced and asset prices rise while market yields on assets decline (i.e., interest rates fall) as the excess money balances are invested in a wide range of existing assets such as bonds, houses, equities, commodities etc. Third, after a further period, typically 6-9 months but sometimes as long as 18 months, economic activity starts to rise under the impetus of the wealth effect, the demand for loans increases and interest rates start to rise. Fourth, still later and after a lag of typically 12-18 or 24 months after the initial surge in money growth, inflation increases and lenders react by raising rates even further to protect themselves against the erosion of the real value of their loans. Other participants in the market – such as firms manufacturing goods or firms providing services, and wage earners – react by raising their prices to compensate for their

loss of profits or purchasing power. (NB This does not “create” inflation. The money to finance the higher prices has already been created.)

A converse set of statements can be made for sustained and substantial declines in the rate of growth of broad money.

In summary, in the monetary model rates first fall under the stimulus of sustained and substantial faster money growth, but then rise, and tend to stay at higher levels for longer (and conversely for monetary decelerations). Quantity Theory (or changes in the quantity of money) provides a credible theory of how the business cycle works, and a clear explanation of what has happened since March 2020.

It follows that if interest rates are the consequence of prior money growth, and that rates can move both downwards and upwards as a result of the same episode of monetary acceleration or deceleration, they cannot be relied on as a sound indicator of business conditions. The key takeaways from this analysis are that (1) money growth is the driver of the business cycle, not interest rates which react to prior sustained and substantial changes in money growth, and (2) there is a 2-stage process for rates with the first effect of faster money growth being lower rates, and the second, more prolonged effect being higher rates. (The converse is true for slower money growth.)

3. Application of the Monetarist framework to the United States

Now apply this monetary analysis of the transmission mechanism to the business cycle in the US since March 2020, as summarised in Figure 3.

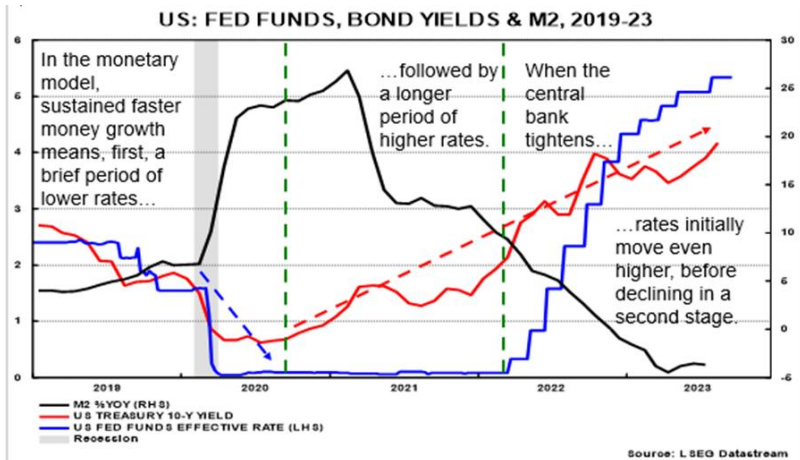


Figure 3. *The Monetary Transmission Process in 2020-2023*

In the period since the start of Covid in March 2020 until mid-2021, the Fed (1) cut the Fed funds rate steeply to 0-0.25%, and (2) conducted aggressive asset purchases (QE) causing M2 to explode upwards. The first set of effects included a substantial decline in market yields, accompanied by a panic or flight to quality, evident in the decline of 10-year Treasury yields from 1.76% in January 2020 to 0.6% in the period April to September 2020 (the period to the first green dashed vertical line, Figure 3).

By September 2020 the economy had started to recover strongly, and market yields had begun rising, pausing from March to December 2021 in face of a new wave of Covid. But then yields resumed an upward path to just over 2% by March 2022 when the Fed first hiked the Fed funds rate (indicated by the second green dashed vertical line). Subsequently, market interest rates have continued to rise, albeit erratically, with the 10-year Treasury yield reaching over 4.6% in September 2023. According to monetary theory, all this is due to the second stage effects of rapid money growth in 2020-21.

To recap, the first effect of rapid money growth in 2020-21 was a brief period of lower rates; the second effect was a much longer period of higher rates. Rates can be high or low under either monetary expansion or monetary slowdown or contraction.

However, as is clear from Figure 3, circumstances have now changed dramatically. Since February 2021 when the year-on-year rate of M2 growth peaked at 26.9%, broad money growth has plunged, especially in 2022 and 2023. M2 reached an absolute peak in March 2022, and since then it has been declining persistently in absolute terms at an annualised rate of -2.7% – unprecedented since the early 1930s.

Based on the monetary analysis above, the first effects of tight money should be higher rates, and the second, more permanent effects will be lower rates. Due to the large overhang of excess money growth in 2020-21, however, it is possible that we are only now just starting to see the first effects of the tighter monetary policy (i.e., the lower money growth rate). This is because there was so much money created by the Fed through QE (almost \$5 trillion, or an astonishing 30% of M2 in February 2020) that part of the excess supply of money relative to demand has remained on household and corporate balance sheets until now. But we can be sure that such a prolonged period of tight money (i.e., low money growth) in 2022-23 will produce both a downturn in economic growth and a sharp decline in inflation once the overhang of excess money has been “used up”, probably in 2024-25.

4. Transmission of monetary policy based on the FCI framework

FCIs or Financial Conditions Indices measure a variety of indicators, but what is their message? The truth is nobody is quite sure. As a result, it has not been possible to find a fully articulated theory of how FCIs impact the economy in the way described above for changes in monetary growth. However, since major central banks and investment banks in the US, the euro area, and the UK all use FCIs in their modelling and analysis, providers and users should at least be able to explain their perceived role.

After providing a concise explanation of the construction of the Bank of England’s Monetary and Financial Conditions

Index (MFCI), a brief article¹ by BOE staffers in April 2021 says that the MFCI is designed to “answer the specific question: how do moves in asset prices and credit indicators affect the real economy?” The Bank’s authors say, “we have used [the MFCI] since 2019, alongside other metrics, to help analyse evolving UK financial conditions... The MFCI incorporates the key variables that influence the outlook for UK GDP (or proxies for them), and each variable is weighted based on its estimated marginal impact on UK GDP. These weights are based on a range of empirical estimates. They are similar in principle to those used in the Monetary Policy Committee’s quarterly forecast, but not identical.”

Chart A: Our index shows some of the variables that affect UK financial conditions
 Decomposition of changes in the MFCI between the November 2020 and February 2021 Monetary Policy Reports

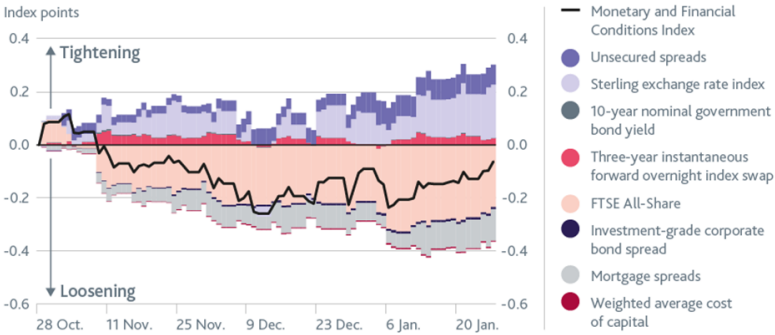


Figure 4. *The Bank of England’s MFCI in 2020-21*

Sadly, this is as close as the Bank comes to connecting their MFCI to broader asset prices (such as houses or commodities), real GDP, or CPI inflation.

The Bank is, however, suitably cautious about the use of its MFCI, stating, “We tend to look at the MFCI over short periods of time [...] Particular care should be taken in interpreting movements in the MFCI over longer time periods, however. That is because the index level exhibits a clear downward trend over time.” Even so, Deputy Governor Broadbent has said explicitly in press conferences after MPC meetings that

¹ See [\[Retrieved from\]](#).

monetary policy is transmitted by means of “monetary and financial conditions” and in April 2023 he gave a tendentious speech arguing that monetary policy is transmitted more through these kinds of market prices than through quantities of money or credit.² MPC member Silvana Tenreiro has also claimed, absurdly, that QE operates in a manner similar to Bank Rate, and there is effectively no “independent ‘money’ channel.”³

This is not the place for a full rebuttal of Broadbent’s claims, nor is it appropriate here to critique Prof. Tenreiro’s stance in any detail. Instead, I shall simply note that the retired former Governor of the Bank of England, Mervyn King, has, on at least two occasions, criticised the policies adopted by the Bank and its MPC (Monetary Policy Committee) during the Covid pandemic.⁴

In short, central bankers are ignoring the quantity of money and placing all their bets on “data dependency” as encapsulated in FCIs. The problem is that (a) FCIs are devoid of theory and (b) lag money by many months, while (c) central bankers are inclined to treat interest rates and other components of FCIs as the primary, causative and monotonic driver of GDP instead of acknowledging that interest rates are largely the effects of prior growth rates of money, and (d) FCIs clearly fail to take into account the critical two-stage impact of changes in monetary growth on interest rates.

4. Application of monetary and FCI frameworks to the US

Now we turn to the FCI view of the US business cycle since March 2020.

² [Retrieved from].

³ [Retrieved from].

⁴ For example, in a speech in Italy in November 2022, as reported by the Financial Times. [Retrieved from]. and in an interview with Bloomberg in July 2023: [Retrieved from].

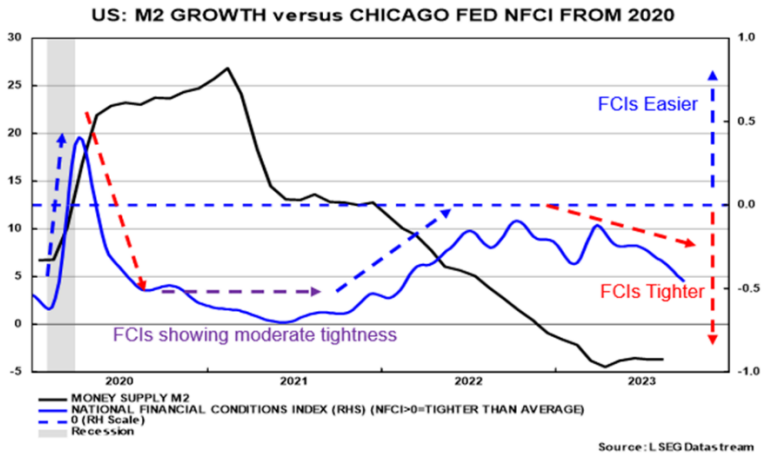


Figure 5. *FCIs are lagging indicators of monetary growth*

As already depicted in Figure 1, FCI indicators have been notably contradictory. In Figure 5 the signal from Chicago Fed’s National Financial Conditions Index (NFCI) is compared only with the year-on-year percentage growth of M2, this time without inverting the FCI scale.

First, from late February 2020 to mid-April 2020 the Chicago Fed’s NFCIs indicated a dramatic easing of financial conditions, with the indices rising (blue dashed arrow) from -0.6 to +0.43. At the same time there was an unprecedented explosion in the growth rate of M2. At this stage, the NFCI is consistent with the sudden monetary expansion. The easing NFCI (first blue dashed arrow) was reflecting the sharp falls in the Fed funds rate, bond yields, and spreads as the Fed initiated its policy of “smoothing market functioning” or “easing financial conditions” with rate cuts and massive QE operations, overcoming the dash-for-cash or the dash for safe securities by panicky investors.

Second, by the end of April 2020, the NFCIs was suggesting the start of some “tightening” or normalising of financial conditions (see first red dashed arrow), but the S&P500 Composite Index had already risen from its low on March 18 of 2,398.10 to 2,939.51 on April 29, a rise of 22.6%, and it continued to rise. By mid-May the NFCI began to indicate a genuine tightening – i.e., the value of the index turned negative (or

“tighter than average”), falling below the horizontal green dashed line in Figure 5 above. But still M2 continued to rise at a prodigious pace and the S&P Composite also continued to rise, only pausing briefly in September-October 2020 when a second wave of Covid threatened.

Nevertheless, the NFCI continued to send a message of moderate “tightness” all the way through the next 15 months from late 2020 until mid-2021 (as shown by the horizontal purple dashed line), and then “easing” from late 2021 to mid/late 2022 (rising blue dashed line) when the indices started to approach the zero line again. Yet all this time (late 2020 to mid-2022) M2 growth on a year-to-year basis remained in double digits and the S&P Composite continued to rise until December 29, 2021, as did house prices and a range of other asset prices.

The episodes of “easing” in 2021-22 (second blue dashed arrow in Figure 5) and “tightening” in 2022-23 (second red dashed arrow) have already been described in the Introduction.

In summary, from April 2020 to October 2021, and again from October 2022 until September 2023, the signal from the Chicago Fed’s NFCI has at best been misleading. More seriously, the “data dependency” that the NFCI and similar indicators encourage along with FOMC members’ rejection of monetary theory is the fundamental reason for their total failure to predict the inflation of 2021-23.

Figure 6 below shows the widely used Bloomberg FCI for the US. When inverted it has the same general profile as the Chicago Fed’s NFCI shown in Figure 1. Confusingly, moves towards a greater negative number by the NFCI show a “loosening” of financial conditions (and conversely for positive or smaller negative readings), while for the Bloomberg US FCI (ticker: BFCIUS <Index>) a larger negative number means a “tightening” of financial conditions. But conditions “eased” (green dashed arrows) soon after the Fed started raising rates in March 2022.⁵

⁵ See how Bloomberg journalists struggled over this in 2022. [[Retrieved from](#)].

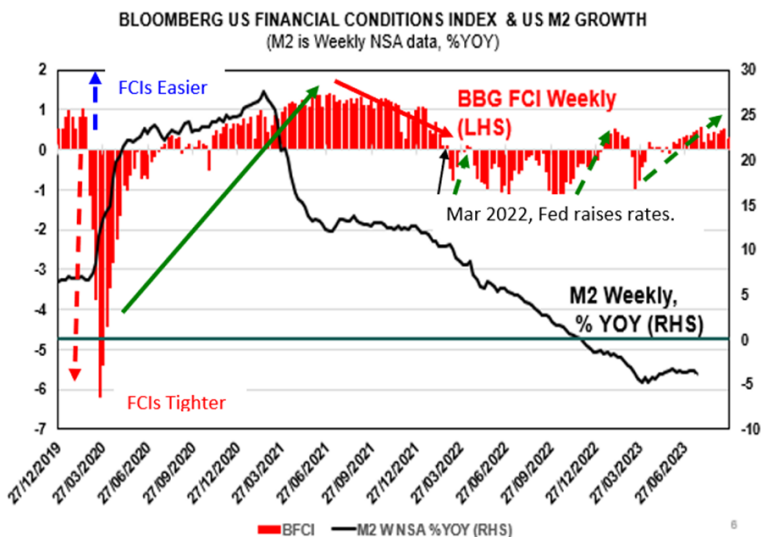


Figure 6. Bloomberg’s FCI and M2 Growth

According to the Chicago Fed, “The NFCI [and Adjusted NFCI] are each constructed to have an average value of zero and a standard deviation of one over a sample period extending back to 1971. Positive values of the NFCI have been historically associated with tighter-than-average financial conditions, while negative values have been historically associated with looser-than-average financial conditions.” This means that the Bloomberg FCI has a much wider arithmetic range of variation than the normalized NFCI or ANFCI measures.

Having said all of that, there is little to be added from an analytical standpoint in respect of the Bloomberg FCI which produces the same anomalies and inconsistencies as the NFCI. Figure 6 shows several cases where the index has been “easing” in line with the huge monetary expansion engineered by the Fed (green solid arrow) or seemingly “easing” despite the Fed raising rates or money growth contracting (green dashed arrows). And what are we to make of the “tightening” in March-May 2020 when the Fed organised the most aggressive expansion in its history? Of course, much of the movement in rates and spreads was market-induced, not policy-imposed, but is it the role of an index to pay more attention to the market or

to policy? Can financial conditions really be tightened by market movements alone?

As a final example of US FCIs, we can look at the St Louis Fed’s Financial Stress Index, or STLFSI. The STLFSI₄, the third revision of the original STLFSI₁, measures the degree of financial stress in financial markets and is constructed from 18 weekly data series: seven interest rate series, six yield spreads and five other indicators. Each of these variables captures some aspects of financial stress. Accordingly, as the level of financial stress in the economy changes, the data series are likely to move together. The remarks in the following three paragraphs are an edited extract from the St Louis Fed’s description of its Financial Stress Index.



Figure 7. *The St Louis Fed’s Indicator Fares No Better*

“In particular, the STLFSI is designed to quantify financial market stress. There’s no specific definition for financial market stress, but periods of stress have historically been characterized by increased volatility of asset prices, reduced market liquidity conditions, or the narrowing or widening of key interest rate spreads.

“The main element of the 4th revision is the replacement of the 90-day backward-looking SOFR rate with the 90-day

forward-looking SOFR rate. In the view of the compilers, the forward-looking SOFR better captures financial market expectations in response to expected changes in the federal funds rate and its attendant effects on other asset prices and yields.

“How to Interpret the Index: The average value of the index, which begins in late 1993, is designed to be zero. Thus, zero is viewed as representing normal financial market conditions. Values below zero suggest below-average financial market stress, while values above zero suggest above-average financial market stress.”⁶

To summarize for the United States, the construction and regular distribution of FCIs by the Chicago or FSIs by the St Louis Federal Reserve Banks shows that considerable efforts are being put into the design and application of these indicators. We know also from comments by Chairman Jerome Powell that FCIs are used by FOMC members and are important in helping to form the views of the committee (refer to the link in footnote 8 on p. 9). Yet the indicators suffer from the same problems as mentioned earlier. To recap, central bankers are ignoring the quantity of money and placing all their bets on a tentative, short-run analysis from FCIs that (a) treats interest rates and other components of FCIs as the primary driver of GDP instead of acknowledging that interest rates (and yields and spreads etc) are effects driven by prior growth rates of money which is the cause; that (b) this framework clearly fails to take into account the critical two-stage impact of changes in monetary growth on market interest rates; and (c) the FCIs are measuring coincident indicators of current market developments; they reflect current market sentiment but have very little capacity to forecast compared with money growth.

⁶ Source: Federal Reserve Bank of St. Louis, St. Louis Fed Financial Stress Index [STLFSI4], retrieved from FRED, Federal Reserve Bank of St. Louis. [[Retrieved from](#)].

5. Application of monetary and FCI frameworks to the euro area

To reinforce the last point -- the difficulty in interpreting and the poor forecasting record of FCIs -- consider the comparison in Figure 8 below between the Natixis FCI for the eurozone and M₃. In each of the selected (arrowed) cases, changes in M₃ growth clearly lead changes in the FCI. Just as futures prices are not always a good guide to future spot prices, any reading from FCIs can be misleading as a predictor of the future direction of GDP or inflation. At best, FCIs are a measure of current sentiment in financial markets as expressed through yields, spreads, and other prices such as exchange rates or equity prices, and they follow monetary growth (as shown in Figure 8). As such, they are vulnerable to abrupt reversal if market sentiment proves to be out of line with underlying realities, as several episodes below illustrate.

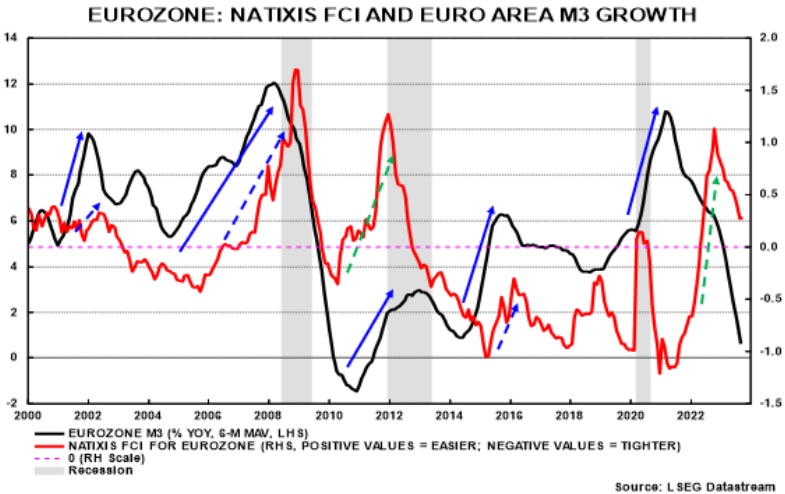


Figure 8. Euro-area FCIs generally lag changes in M₃, and/or they give misleading signals

Figure 8 shows examples from the eurozone of (a) cases where M₃ growth clearly leads the subsequent signal from the FCI (shown by the blue solid arrows for accelerations in M₃ growth, and blue dashed arrows for the later move upwards in

the FCI), and (2) two cases where the FCI gave clearly misleading signals – far greater easing than occurred in reality in 2010-11 ahead of the euro debt crisis, and the surge or easing of the FCI in 2022 contrary to the steep downturn in M₃. (The signals of alleged easing in the FCI are shown by the green dashed arrows). The reason the FCI signals are wrong is that they simply reflect the earlier M₃ surge in 2020-21 (i.e., first falling rates then rising rates), but the lag may be so long that M₃ has already changed direction – as in 2022-23.

It is fair to ask: how relevant are these observations for the ECB's policy decisions? The answer can be gleaned from studying the construction of the regular Monetary Policy Statement read out at each monthly press conference by the President of the ECB, Madame Lagarde. In every recent Statement there is a section entitled, "Financial and monetary conditions" which, in the latest (September 2023) issue explains that "monetary policy tightening continues to be transmitted strongly to broader financing conditions. Funding has become more expensive for banks..." One saving grace for the ECB is that the following paragraph does at least refer to some bank balance sheet measures such as the growth of loans to firms and households and the slowing of M₃ "to an all-time low of -0.4 per cent [year-on-year] in July," although it has to be said that the move into negative territory by M₃ has as yet produced no reaction whatever by ECB officials.

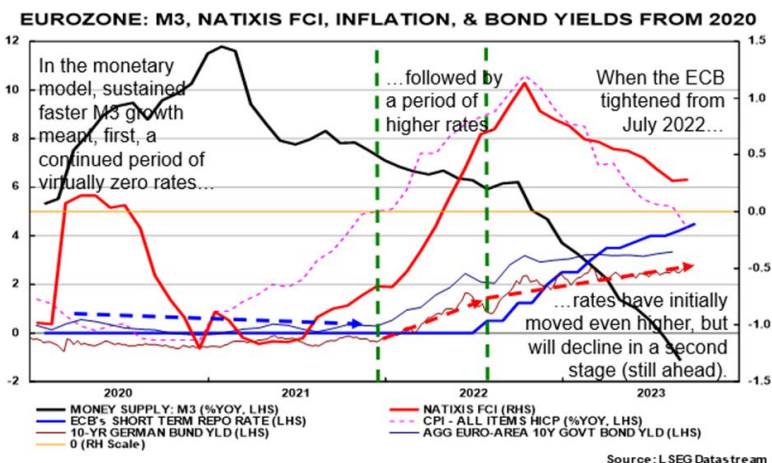


Figure 9. *Since Covid, Euro M3 has been a better guide than FCIs*

Using the same format as in Figure 3 for the US, we can also look at euro-area M3 growth and its consequences for market rates, bond yields, and inflation in Figure 9.

Once again, we divide the business cycle into phases showing how the cycle has conformed to monetary analysis, not the FCI framework. Initially from March 2020 the ECB more than doubled M3 growth by a combination of lending to the banks via T-LTROs and by conducting asset purchases (QE). M3 did not surge at anywhere near the rate seen for M2 in the US (due to the ECB conducting its asset purchases with banks, not non-banks), but even so, the ECB boosted M3 enough to cause market yields to fall (blue dashed arrow), which was the first effect of faster money growth. From August 2020 until December 2021, market interest rates and yields remained close to zero.

However, as the euro area economy recovered in 2021 and inflation moved above 4% year-on-year in October 2021 as a result of the rapid M3 growth in 2020-21 (well before the Russian invasion of Ukraine), market rates and bond yields began rising after the first vertical green dashed line. This was the second effect of faster M3 growth. The ECB Governing Council, still claiming inflation was transitory in the final quarter of 2021, only ended QE in March 2022, and finally raised

its main repurchase rate starting from July 2022 (at the second green dashed line).

In the monetary expansion phase, therefore, the eurozone has shown the same results as the US. The first effect of faster M₃ growth was to lower interest rates, but the second effect was to raise them (from December 2021).

After the T-LTROs had been mostly repaid and the ECB had ceased QE operations, M₃ began slowing (see the black line in Figure 9 just after the second vertical green dashed line). The deceleration of M₃ steepened in the second half of 2022 and into 2023, so that the latest figure for year-on-year growth of M₃ is -1.1% (in August 2023). As expected by monetary theory, the first effect of the slowdown in M₃ has been even higher rates. The overhang of excess M₃ from 2020-21 suggests that market interest rates may have further to rise before a more serious economic downturn takes hold in 2024. But later — perhaps in 2024 — investors will start to envisage the threat of deflation in late 2024 or in 2025. At that point, interest rates will plunge. So the second effect of tight money (i.e., slow money growth) will be lower rates.

As an addendum on the euro area, we should note that in a speech on 25 September in Regensburg ECB Executive Board member Isabel Schnabel discussed the role of money (both M₁ and M₃) in the euro area's inflation.⁷ Her conclusion, after what I assess to be some dubious judgements about monetary history and reliance on econometric studies that start out with some questionable assumptions, is a grudging acknowledgement of the role of money in the current inflation.⁸

Her first “takeaway” is that the response of the economy to QE “fundamentally depends on the broader state of the economy, as reflected in its balance sheet capacity”. QE, in her words, “only becomes inflationary if and when banks, households, firms and governments are both able and willing

⁷ See [Retrieved from].

⁸ In this respect she joins Claudio Borio et al (BIS) in their similarly grudging acknowledgement of the role of money in the current inflation. [Retrieved from].

to respond to low interest rates, thereby boosting money growth, economic activity and, ultimately, inflation.” [Emphasis added.] But monetarists have known this for a long time. In any case, low interest rates are not the issue – think how many countries have progressed from already high inflation with high interest rates to hyperinflation. The truth is that inflation only results from more rapid money growth. Moreover, it is money in the hands of the public that matters, not money on the books of the central bank.

Her second “takeaway” is that “excessive money growth can entrench adverse cost-push shocks. As such, it may have predictive power for risks to price stability that central banks need to monitor carefully. This is especially important for the future in which supply-side shocks, related to the green transition or structural changes in global value chains, threaten to drive inflation away from central banks’ targets more often than in the past. Strong money growth may make such shocks more persistent.”

But these are weasel words. Money has predictive power for inflation (or deflation) irrespective of whether there is a green transition, structural changes in global value chains, climate change, or a host of other modern fads, and (broad) money always has had that predictive power.

She concludes by sitting firmly on the fence: “All in all, while a distinct monetary pillar is no longer essential to conduct monetary policy, money deserves a firm place in central bankers’ analysis.” In short, we can expect the ECB only to pay lip service to ensuring control of monetary aggregates, basically ignoring the monetary causes of business cycle fluctuations and the recent inflation, while continuing to prioritize interest rate management and relying on unreliable measures of the effects of prior monetary growth such as FCIs.

6. Application of monetary theory and FCI framework to the UK

Turning to the UK, if Figure 3 for the US and Figure 9 for the euro area is replicated for the UK, as in Figure 10, the glove fits perfectly. In short, monetary analysis again provides a clear and

comprehensive analysis of the UK's interest rate and inflation experience since the Covid outbreak.

Briefly, the enormous additions to money – GBP 500 billion by January 2022 due mainly to the Bank of England's QE operations from March 2020 and only trivially due to the cut in Bank Rate from 0.75% to 0.1% in March 2020 – translated into a rough trebling of the year-on-year growth rate of M4x from 4.6% in February 2020 to 12.6% by July, and ultimately to a peak of 15.0% in February 2021. As in the US and euro area cases, market rates first declined (blue dashed arrow in Figure 10) through much of 2020 before starting to rise in October 2020 (the first vertical green dashed line) and more significantly from February 2021. Yields then continued rising until the Bank increased Bank Rate in December 2021 (second vertical green dashed line), whereupon a steeper rate of rise in market rates (here represented by the yield on 10-year gilts) took over. The spike in gilt yields in September/October 2022 due to Prime Minister Truss's budget at that time and the knock-on impact on LDI (Liability Driven Investment) portfolios in the UK pensions market was only a temporary interruption of the otherwise steady upswing in gilt yields.

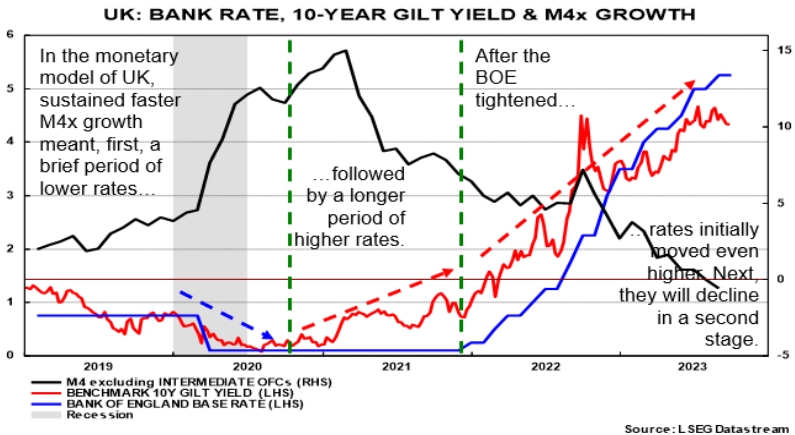


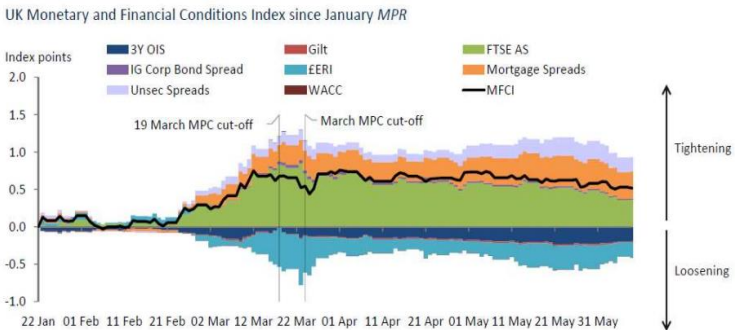
Figure 10. Since Covid, M4x has been a reliable predictor of outcomes

Again, the first effect of rapid money growth in 2020-21 was lower rates; the second and more prolonged effect was higher rates, exactly as spelled out in Section 2 (pp. 4-5) above.

During all of this period, however, the signals from FCIs or from the Bank's own MFCIs have been distinctly mixed and, frankly, confusing. An example is shown in Figure 11 which relates to the period January 2021 to May or June 2021.

Recall that the Bank had kept Bank rate at 0.1% throughout 2021 until December when it was raised only to 0.25%, and M4x growth (which the MPC ignored) remained in double digits on a year-on-year basis until April 2021, only slowing to an appropriate 5.5% year-on-year in January 2022, by which time M4x had averaged 10% year-on-year throughout 2020 and 2021, roughly double the non-inflationary M4x growth rate that it should have been pursuing to meet its 2% inflation target. The inflation horse had already bolted.

UK financial and credit conditions remain tight relative to Jan, which in part informed the vote to extend asset purchases in June



Sources: Bloomberg Finance LP, Eikon from Refinitiv, ICE/BoAML Global Research and Bank calculations.

Figure 11. How the Bank of England was misled by its own MFCI (Monetary & Financial Conditions Index) in 2021

But far from shutting the stable door, the MPC acted on the basis of the signals it was receiving from its MFCI.⁹ The Bank's

⁹ Note: The UK Monetary and Financial Conditions Index (MFCI) summarises information from the following series: short-term and long-term interest rates, the sterling ERI, corporate bond spreads, equity prices, and household and corporate bank lending spreads.

own MFCI was telling them (in August 2021) that “UK financial and credit conditions remain tight relative to Jan[uary]” as reported in the Bank’s own chart (Figure 11, with the Bank’s headline text in blue), and that this assessment “in part informed the vote [of the MPC] to extend asset purchases in June.”

Incredible as it may sound, after 15 months (March 2020 to June 2021) of double-digit money growth, the Bank’s MFCI was still telling key Bank officials and the MPC that monetary and financial conditions were tight!

To my knowledge, the Bank has not released a full data series for its MFCI, despite occasionally publishing different versions of it in its quarterly Monetary Policy Reports (MPR). The index has undergone several changes since it was introduced in 2019, and the lack of a satisfactory correlation with economic activity or inflation data may well be the reason why the Bank is reluctant to release the data. For example, the index has not featured in the quarterly MPR since August 2021. For more information, see the two Bank Overground posts, “How can we measure UK financial conditions?” and “How do we monitor UK financial conditions?”

The conclusion for the UK is no different than the conclusion for the US and the Eurozone. Sustained changes in money growth are essentially the cause of business cycle expansions or contractions; interest rates are one of the effects (of prior monetary growth). FCIs measure the effects; they do not monitor the causes of the change in direction of the business cycle.¹⁰

Moreover, there is a two-stage effect of changes in monetary growth on interest rates. The initial effect of an unanticipated (or ignored) acceleration or deceleration of monetary growth on interest rates and yields is in the opposite direction from the

The series weights are based on the estimated impact of each variable on UK GDP. The chart shows changes in the MFCI from the average level over the 15 working days to 22 January 2020. An increase in the MFCI signals tighter financial conditions and a decrease signals looser

¹⁰ [Retrieved from]; and [Retrieved from].

longer-term effects. This was clear in the initial downward movement of UK rates between February and August 2020, and then in the gradual upward movement of rates subsequently, even though the Bank resisted this tendency, not raising Bank Rate until December 2021.

Reliance by MPC and Bank officials on FCIs rather than on money caused them to ignore the risks inherent in the big changes in the quantity of money which have been responsible for the painful episode of inflation that the UK has suffered in 2021-2023. It caused the MPC to fail completely to forecast inflation successfully. Moreover, it caused them to continue to maintain asset purchases far too long (as we saw in Figure 11).

The conclusion is that, as a tool for formulating policy, FCIs or MFCIs should be ditched in favour of a more reliable monetary indicator such as the growth of M_{4x} in the UK. FCIs are merely coincident indicators of current market developments; they are lagging indicators of prior monetary growth. As such FCIs generate confusing signals. For example, do rising rates (and spreads etc) represent the first stage of a tight monetary policy or the second stage of an expansionary monetary policy?

An equally serious problem for FCIs is that because they inevitably reflect current financial market rates, spreads, and exchange rates etc (that are themselves by-products of prior changes in money growth), they have no reliable capacity to forecast compared with money growth.

7. Conclusion

This paper has discussed what ultimately drives the business cycle, i.e., what creates major turning points in the economy.

Monetary analysis shows that if money growth is too rapid for an extended period, an asset bubble, strong economic growth and inflation will follow. These developments cause market interest rates initially to fall and later to rise, with the latter effect tending to last significantly longer. This is exactly what has happened in most major economies since March 2020.

Monetary growth in major developed economies surged in the early weeks of the Covid pandemic. While central banks cut their policy rates, the first effect was a decline in market interest rates from March to August 2020. However, later in 2020, during 2021 and into 2022 as the economies recovered, the second effect of faster money growth came into operation with rising market interest rates. Currently, in September/October 2023 we are probably seeing the first effects of tight money (i.e., slower money growth); in 2024 and 2025 we will likely see the second effects of tight money growth, namely falling interest rates.

By contrast, FCIs do not have such a clear impact either on subsequent financial conditions or on the real economy and inflation. This paper has shown several examples of cases where FCIs have given the wrong signals. It seems likely that the monotonic properties of FCIs mean that they will only send the correct signal in the first stages of monetary expansion and the first stages monetary tightening. In the second stages of monetary expansion or monetary tightening they will tend to show the wrong signal, but this may happen at other times also. Indeed, the major economies may be approaching a time when FCIs could give misleading signals.

Based on monetary analysis, the major developed economies are approaching just such a critical time. Looking forward to 2024, for example, if rates fall due to recession and falling prices due to the second effects of current tight money (meaning slow money growth), FCIs could well be reporting an “easing” of financial conditions, even if money growth remains too low and therefore too tight.

Interest rates have been rising in the US, the eurozone, the UK, and in other major economies as the second effect of excess money growth in 2020-21. With central bankers still worrying about “wage-price spirals” or inflation somehow becoming “embedded”, they have pushed policy rates up even higher, creating tighter financial conditions, but, more importantly, through a combination of QT and higher rates, they have generated slower and even negative money growth. The second effects of this tight money growth are liable to show up in 2024

as recession, falling interest rates, and substantially lower inflation or even deflation in 2025.

Taking their cue from falling interest rates, FCIs will then convey the message that financial conditions have eased – even if money growth remains too low (too tight) to hit the 2% inflation target. Major economies will then struggle to escape from deflation. (This is exactly the trap that Japan fell into in the 1990s.)

Because central bankers ignore money growth, they stepped too hard on the accelerator in 2020-21, and they are now making the opposite mistake, stepping too hard on the brake by tightening sharply -- causing money growth in the US, the Eurozone and the UK to decline on a year-on-year basis.

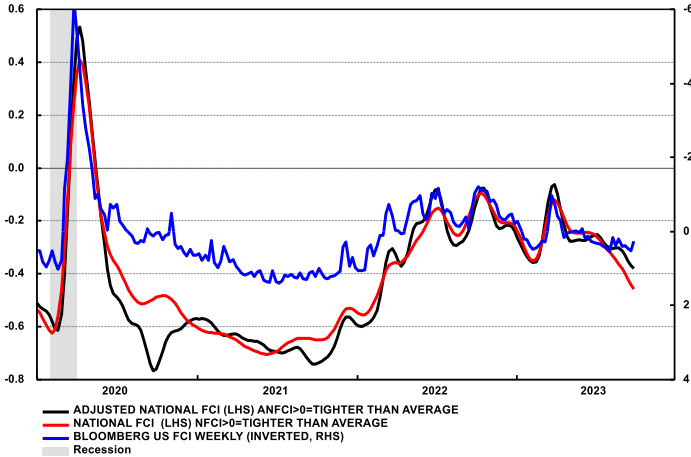
The only thing that has been keeping spending afloat is the overhang of excess money balances from the egregious money supply increases in 2020-21. As soon as that excess is used up, there will likely be an abrupt slowdown in spending (likely in 2024), accompanied by a recession and followed by a sharp slowdown in inflation in 2024 – and possibly even deflation in 2025, i.e., two years after the monetary squeeze in 2022-23.

To my knowledge, these extended lags and the 2-stage effect of money growth on interest rates, have not been successfully modelled by any central bank. But just because, in monetary analysis, short-term correlations between money and its subsequent effects are low does not mean that the monetary transmission mechanism described here is not the correct one. Nor does it mean that the relationship between substantial and sustained changes in monetary growth and subsequent changes in asset prices, output (real GDP) and inflation is not a solid one. Understanding and tracking the famously long and variable lags in effect is a vital part of tracking the transmission mechanism.

Appendix

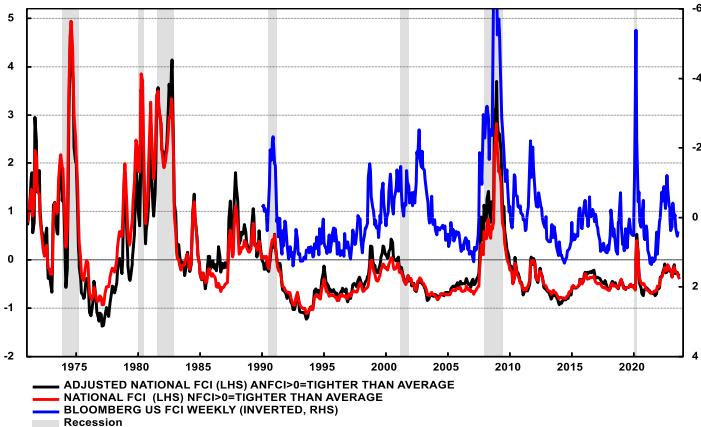
Comparison of Chicago Fed's NFCI & ANFCI with Bloomberg US FCI.

CHICAGO FED NFCI & ANFCI versus BLOOMBERG US FCI
NATIONAL FINANCIAL CONDITIONS INDEXES & BBG FCI, WEEKLY DATA



Source: LSEG Datastream

CHICAGO FED NFCI & ANFCI versus BLOOMBERG US FCI
NATIONAL FINANCIAL CONDITIONS INDEXES & BBG FCI, WEEKLY DATA



Source: LSEG Datastream

Data for NFCI from February 1971; data for Bloomberg FCI (weekly) from February 1990. Note that the Bloomberg FCI must be inverted to conform with the Chicago Fed's NFCI and ANFCI (Adjusted National Financial Conditions Index).

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2

Milton Friedman's views on the interaction of monetary and fiscal policy

1. Introduction

Much has been made of the two views that Milton Friedman held during his lifetime about fiscal policy. As Tim Congdon puts it in his book *Money in a Free Society*, “The inconsistency between [Friedman’s] standpoints in 1948 (when he said fiscal policy mattered enormously) and 1996 (when he said fiscal policy did not matter at all) is so extreme that someone new to his work might ask questions about his intellectual integrity” (p.189).

In this chapter Section 1 deals with the inconsistency between Friedman’s two views of fiscal policy and explains how they can readily be reconciled. Section 2 sets out Friedman’s settled, empirically-based view of fiscal policy which he arrived at in the late 1940s or early 1950s. Section 3 applies this more mature, data-based analysis of the interaction of monetary and fiscal policy to a series of episodes: first in the United States during the 1960s, relying on the content of a lecture given by Friedman in 1969 on the evolution of fiscal and monetary policy through those years; second, some more general cases from different economies and different eras; third in the UK; and finally in Japan. The contribution of this paper is to offer a

simple matrix which is exactly in line with Friedman's formulation of the problem – encapsulating cases where monetary and fiscal policy were acting in the same direction, and cases where they were operating in opposite directions. All the matrices are populated with relevant case studies and an assessment is made of how Friedman's general observations apply to these specific episodes. Section 4 concludes.

2. Friedman's early views on fiscal policy, 1941-48

In his early years as an economist, Milton Friedman's views on fiscal policy were mostly conventional. He first became involved in the public policy debate about fiscal versus monetary policy through his work at the US Treasury Department (1941-43). As he relates in his interview with John Taylor ([Barnett & Samuelson, 2007](#)) (when Friedman was already 88) he became interested in monetary economics "because the crucial question was, "What are we going to do to keep down inflation?" Everybody was aware that, during the First World War, taxes had paid for a very small fraction of the war and, during the Second World War, they were determined to raise the fraction paid for by taxes. At the same time, they also had the problem of predicting inflation, and that's how I got involved."

"The problem – it was interesting from a political point of view and from a scientific point of view – was that a group in the administration who were trying to get a price control statute didn't want us [in the Treasury] to come up with a tax proposal because they were afraid we would say, "we can stop inflation through taxes, we don't need price controls." They wanted price controls." (...)

Taylor: Why didn't people mention money in all of this talk about inflation? Was it discussed at all?

Friedman: Hardly. As a result of the Keynesian revolution, money had almost dropped out of the picture. I look back at that and say, how the hell could I have done that? I had good training in monetary theory at Chicago and yet, once the Keynesian revolution came along, everything was on taxes and

spending, everything was on fiscal policy, and that's why I was trying to answer the question about the level of taxation needed to stem inflation. With a sufficiently expansive monetary policy, no amount of taxes could do it. It was the wrong question. The right question was, "What monetary policy do we need?" That was the result of the mindset we had."

During the 1940s Friedman wrote one article on inflation and two on macroeconomic stabilization which conveyed his Keynesian cast of mind in those years. The first article, *Discussion of the Inflationary Gap* (Friedman, 1953), was later republished in *Essays in Positive Economics* (1953) with corrections and a footnote clearly indicating the shift in his view: "with indicated additions to correct a serious error of omission in the original version" (p.251). He was referring to "the omission from [the original version] of monetary effects... which is not excused but may perhaps be explained by the prevailing Keynesian temper of the times".

The two articles on macroeconomic stabilization were also influenced by Keynesian perspectives, treating monetary policy as something to be managed as the by-product of fiscal policy. "*The Effects of a Full-Employment Policy on Economic Stability: A Formal Analysis*" focused on fiscal policy rules. He proposed that the quantity of money should vary counter-cyclically – increasing when there was a recession and decreasing when there was an expansion. The article developed fiscal policy rules for taxes and spending that would give budget balance on average, but also generate deficits and surpluses over the cycle that would produce the appropriate growth of money. At this stage, fiscal policy was clearly the senior partner in his mind.

Similarly, "*A Monetary and Fiscal Framework for Economic Stability*" (Friedman, 1948) was an article in which the monetary component was based largely on the 100% reserve proposal of the Chicago Plan of the 1930s. This aimed at eliminating the variability of money that derived either from the central bank's discretionary power to create credit (e.g., by rediscounting or by open market operations) or from commercial banks' ability to create loans and hence deposits. The "chief function of the monetary authorities" was "the

creation of money to meet government deficits or the retirement of money when the government has a surplus.” In addition to being a fiscally driven plan for monetary control, this was also an argument from first principles, rather than a proposal based on empirical findings.

However, by the early 1950s Friedman had been persuaded, either by statistical evidence or by other researchers that the quantity of money was the senior partner. As he continued in the Taylor interview:

Taylor: “Was part of the reason for the change [in your view] that the link from deficits and surpluses to changes in money growth were not so tight [as they were] with changes in the money multiplier?”

Friedman: “Partly it was that, and partly it was that the link from fiscal policy to the economy was of no use. (...) Certainly, the argument that money plays an important role in the economy has been settled. (...) [But] I still have more extreme views about the unimportance of fiscal policy than the profession does. (...)”

Taylor: “In looking back at these monetary versus fiscal debates, it seems that most of your articles are empirical rather than theoretical. Macroeconomic models appear sometimes, but they are not the main focus. Would you agree with that?”

Friedman: “I believe that one reason the work had whatever effect it has had is because it did have an empirical base. I believe that I can honestly say that I never reached a judgment about monetary or fiscal policy because of my beliefs in free markets. I believe that the empirical work is independent and honest in that sense. If fiscal policy had deserved to play a much larger role, that would have showed up in the data.”

These exchanges show that Friedman’s early views of fiscal policy were largely in conformity with the prevailing orthodoxy, placing limited reliance on independent, empirical research¹. As an ingenious analyst he was able to formulate a

¹ Edward Nelson has pointed out to me that Friedman’s “chapter in *Taxing to Prevent Inflation* does consider the empirical importance of monetary growth, but that he is too dismissive of the evidence that he does find in that article on money. Also, while his 1940s

plausible theoretical model of the conventional or Keynesian interaction of fiscal and monetary policy, but it was a hypothesis (of countercyclical money) that he would reject just a few years later. For the remainder of his career Friedman was an economist who accepted a theory only when it was supported by empirical evidence.

In addition, he was also sceptical of large-scale econometric models. As he said in relation to time-series analysis later in the Taylor interview (p.133), “I think the major issue is how broad the evidence is on which you rest your case. Some of the modern approaches involve mining and exploring a single body of evidence all within itself. (...) I believe that you have a more secure basis if, instead of relying on extremely sophisticated analysis of a small body of data, you rely on cruder analysis of a much *broader and wider* body of data, which will include widely different circumstances. The natural experiments that come up over a wide range provide a source of evidence that is stronger and more reliable than any single very limited body of data.”² (Emphasis added.)

3. Friedman’s settled view on fiscal policy, and its interaction with monetary policy

I wish to start this section on a personal note. I first met Milton Friedman in Tokyo in September 1969 when he gave a lecture in the auditorium of the Nihon Keizai Shimbun, Japan’s leading financial newspaper (which now owns the Financial

multiplier/inflationary gap work did accept the existing Keynesian analytical framework, it did undertake empirical work within that framework.” (Email to the author, XX November 2018.)

² See for example, Ogus, Simon (2016). “Episodes from Asian Monetary History – A selection of articles published in the Asian Monetary Monitor, 1977-89.” To inject a personal note, I personally believe this explains why Friedman was an enthusiastic reader of my journal, Asian Monetary Monitor (1977-96) since it covered the monetary experience of many Asian economies over two decades, together with some selected episodes from Asian monetary history, providing him with exactly the kind of “broader and wider” evidence that he valued. See also [Friedman, 1990](#).

Times). As an intern at a Japanese company in Tokyo that summer I had acquired a portable Sony tape recorder, which I used to record and later transcribe his lecture.

The lecture was a life-changing event for me. First, he completely overthrew some of the core Keynesian ideas that I had learned at Edinburgh University, including the notion of a monotonically downward-sloping liquidity preference function. Second, he demonstrated the rewards – intellectual and financial -- that came from successfully combining economic theory with real world data. And third, in discussion after the lecture he provided me with a Japanese research project that would keep me occupied for four years before I left for Hong Kong, and a research agenda that would occupy me for the rest of my life. He was an inspiring teacher who I met many times in subsequent years, and somebody who – along with Alan Walters and Max Fry -- provided me with crucial intellectual backing at the height of the Hong Kong dollar crisis in 1983 when I proposed a scheme to stabilize the currency. He mentions that event in his autobiography, “*Two Lucky People*”, (p.326) co-authored with his wife Rose Director Friedman, saying later that he had enjoyed a “ringside seat” during the currency crisis. We remained firm friends thereafter until his death in 2006.

In his 1969 lecture in Tokyo Friedman set out a definitive analysis of the relative roles of monetary and fiscal policy in the United States over the period 1961-69, building on the debate he had had with Walter Heller less than a year previously (Friedman & Heller, 1970). His approach was to divide the decade into four distinct monetary and fiscal episodes. In addition to giving an account of what happened in terms of both fiscal and monetary policy in each period, he also asked the question for each episode, which policy dominated? Was fiscal policy the dominant partner, or was monetary policy the dominant player? The way he set out the history was so compelling that it was difficult to do anything except come to a clear-cut conclusion based on the evidence. He convincingly showed that if fiscal policy was either expansionary or contractionary, it was not at all clear what the outcome would

be without also knowing what had happened to monetary policy. However, if monetary policy was either expansionary or contractionary, that was enough to explain broadly how the securities and asset markets, the economy and later inflation would behave.

My purpose here is not to repeat the empirical content of that lecture, although I will provide some details of those four episodes in Figure 1 of Section 3, but rather to summarise his argument as to why fiscal policy is invariably the junior partner in any examination of the interaction of monetary and fiscal policy.

One of Friedman's favoured approaches was to argue that there are only three ways to finance a budget deficit (or an increase in the budget deficit). First, the government can increase taxes, in which case individuals or firms will have less to spend, and therefore increased government spending will be offset by reduced private sector spending. Second, the government can borrow the funds, in which case there will be less funds available for private sector firms or households to borrow and invest. Third, the government or the central bank can arrange for the additional government spending (or private sector investment spending) to be financed via the central bank or through the banking system by credit creation – in effect, the printing of money. In this case it was unambiguous that total spending would rise, implying that increased fiscal spending is only stimulatory when it is financed through a sustained increase in the quantity of money. This was a position that he came to in the late 1940s or early 1950s, and a conclusion which he continuously reinforced by reference to a growing catalogue of real-world examples.

In Tokyo in 1969 Friedman presented two contrasting examples of fiscal policy: the 1963 tax cut in personal and corporate incomes and the 10% tax surcharge of 1968. Pursuing the narrative in chronological order, he first discussed the tax cut. "Enacted in 1963 it was given, by the public at large as well as by many informed economists, primary credit for the rapid expansion in the American economy which got under way in late 1962 and continued for some years thereafter". In point of

fact, argued Friedman, the evidence on the tax cut was very mixed. The problem was that the rate of growth of the economy started speeding up before the tax cut took effect and continued long afterwards. In order to explain both the early expansion and the continued expansion by means of the tax cut, one must argue that the tax cut had a large part of its effect in advance through anticipations, but also had a further effect again after its implementation.

As it happened, he pointed out, “two things were going on at the same time: there was a tax cut on the one hand, but on the other the rate of growth of the quantity of money speeded up rather sharply in the middle of 1962, and this preceded, by roughly six months, the speeding up of the economy which in turn preceded the tax cut, so that from a scientific point of view the evidence of the period from 1961 to 1964 or 1965 is very mixed. There were two factors at work: on the one hand the changes in fiscal policy and on the other hand the changes in monetary policy. They were both working in the same direction, and therefore one cannot, on a simple view, determine which was primarily responsible.”

In summary, Friedman’s view was that while the tax cut of 1963 was potentially positive (in the view of Keynesian economists), the simultaneous acceleration of monetary growth must at least mean that any widespread acceptance of the tax cut as the major source of stimulus was open to doubt.

The next major fiscal event was the 10% tax increase of 1968. The Keynesian view that tax increases (or reductions in the budget deficit or increases in the surplus) are disinflationary while increases in government spending (or reductions in the budget surplus or increases in the budget deficit) are stimulative was so ingrained that Friedman sometimes resorted to hyperbole or polemics to counter his opponents’ arguments. In Tokyo he started out with the rhetorical question: “How can it be that an increase in taxes is not anti-inflationary? Is it not the most obvious thing in the world that if you raise taxes and thereby cut the incomes of tax-payers -- that they will have to reduce their spending, and that this in

turn will reduce the pressure on prices? How can anybody be so foolish as to suppose anything else?”

“But then how do you explain the results (...) that I have just described? How is it that the sharp tax increase (the 10% surtax on personal and corporate income) in the middle of 1968 in the U.S. appeared to have had little effect on the pressure of spending? The answer is that the usual analysis of the tax increase of the kind that I have given is only half the story. It is true that if taxes are increased, then taxpayers have less to spend. So far as that goes, that does reduce the pressure of demand.

“But we have to look at the other side of the government’s accounts. If the government continues to spend what it otherwise would have, it has to borrow less in order to finance it. If it raises \$10 billion more in taxes, it needs to get financing from other sources of \$10 billion less. If the reduction from other sources occurs because it borrows \$10 billion less, then that means that those who would have loaned funds to the government have \$10 billion more to pay their taxes, or to maintain consumption, or to lend to somebody else. Taxpayers have less; potential lenders have more. So far as that goes, there is no net effect of a tax increase on the funds available. So far as that goes the effect of the tax increase will be to lower interest rates, but it will not directly reduce spending. It will mean that people who would otherwise have loaned the funds to the government will now have to find other borrowers. In order to find other borrowers, they will have to offer slightly lower interest rates. This will induce business investors – or maybe people who want to build houses or [other capital equipment] -- to borrow the funds that otherwise would have gone to the government. The effect of the higher taxes will be lower consumption and higher capital formation – and that is precisely what happened in the last half of 1968.”

In summary, Friedman considered that the 1968 tax increase was not effective in slowing aggregate demand first because the government continued to spend the funds acquired by the tax increase, while at the same time there was merely a shift in private sector spending away from consumption towards

investment. However, there was also a second reason: sustained rapid monetary growth. Once again, monetary policy dominated fiscal policy.

“Of course, if the higher taxes are matched not by a reduction in borrowing from the public, but by a reduced printing of money then the situation is different. Then the tax increase is accompanied by a slower rate of monetary growth, and that will have a definitely deflationary effect. So the reason in 1968 in the United States why you had a controlled experiment was because the counterpart of the tax increase was a reduction in [private] spending but not a reduction in monetary growth. Monetary policy remained expansionary, while tax policy became contractionary. And the results were those that you would expect from the kind of theoretical analysis I just have just given – namely there was no slowdown in the rate of economic expansion, but there was a shift in the composition of output with some slowing down in the rate of consumption spending and some increase in the rate of investment spending.”

Much later in his life Friedman summarised his analysis with the following challenge: “One of the things I have tried to do over the years is to find cases where fiscal policy is going in one direction and monetary policy is going in the opposite. In every case the actual course of events follows monetary policy. I have never found a case where fiscal policy dominated monetary policy and I suggest to you as a test to find a counter-example.” (Snowdon & Vane, 2005, p.217).

I will not expand this account of Friedman’s analysis of the 1960s any further except to distil his framework into four possible cases of the interaction of fiscal and monetary policy: expansionary monetary policy with either expansionary or contractionary fiscal policy, and contractionary (or restrictive) monetary policy with either expansionary or contractionary fiscal policy. Friedman’s separation of these two key tools of macroeconomic policy allows us to construct a simple 2x2 matrix that contains each of these four cases.³ I am not aware

³ Conceptually, the 2x2 matrix could be extended to a 3x3 format where the third element in each column and each row would be

that Friedman ever summarised his analysis in this format, but I have found this presentation helpful, and this idea forms the focus of the next section.

4. Case studies of the interaction of fiscal and monetary policy

Before embarking on selected case studies of the interaction of fiscal and monetary policy it is worthwhile to define the measures of monetary and fiscal policy used in this paper. On the fiscal side the preferred measure is the change in the cyclically adjusted or “structural” budget balance for each economy, meaning the change in the annual budget balance relative to potential nominal GDP – resulting from changes in tax rates, tax collections or government spending. This data is available from successive issues of the IMF’s World Economic Outlook (WEO) from 1980 (in terms of level) and 1981 (in terms of annual change) for the US, UK and Japan, and for China from 1995 (level) or 1996 (annual change). Where the cyclically adjusted data is not available, budget balances relative to GDP are used. In all these instances, a stimulatory fiscal policy is represented by a series of **negative** numbers (i.e., increases in the budget deficit, or movements from a surplus to a deficit), and conversely a tight fiscal policy is represented by a shift to **positive** numbers (i.e., decreases in the budget deficit or increases in the surplus). If budget balances are not available, changes in the outstanding stock of government debt are used.

In practice this means that for case studies in the US and UK in periods after World War 2 but before 1980-81 changes in the budget balance relative to GDP are used. For the UK and Japan before World War 2 changes in the budget balance are used wherever possible, but changes in the outstanding stock of

neither expansionary nor contractionary, but simply neutral. I have not done that in this paper, but if central banks become adept at managing monetary growth so that their economies enter a prolonged steady state with stable real growth and stable, low inflation, it may be worthwhile to include a third column and row in future versions of the tables shown here.

government debt -- the nearest approximation to the changes in the budget balance -- are used when other measures are not available. Deviations from this taxonomy are explained in the footnotes.

On the monetary side we adopt Friedman’s view of monetary policy by using the rate of growth of broad money on a year-on-year basis as the appropriate metric – not changes in interest rates. The use of year-on-year changes of money growth is consistent with Friedman’s view that it requires a sustained change in the rate of broad monetary growth to have any substantial impact on the economy or inflation. Again, any deviations from this procedure are explained in the footnotes.

5. Illustrations from the USA in the 1960s (Figure 1)

Taking the subject of Friedman’s 1969 Tokyo lecture on the evolution of fiscal and monetary policy in the US in the 1960s, I have separated each episode that he discussed into four distinct cells in the matrix in Figure 1. Fortunately there was one case of each type (Cases A, B, C and D) during the decade, and even more remarkably they occurred chronologically in that order. When monetary and fiscal policy were each acting in the same direction (Cases A & D in the matrix) the outcome was straightforward. The test cases were B and C where monetary and fiscal policy were operating in opposite directions.

Figure 1. *The Interaction of Fiscal and Monetary Policy: The United States during the 1960s*

		MONETARY POLICY	
FISCAL POLICY		Expansionary	Contractionary
Expansionary	Case A, 1964 Tax Cut Fiscal Policy: Deficits to fund Great Society Programs and the Vietnam War from 1964. Change in Budget Balance: 1963 1964 1965 +0.7% -0.3% +0.6% Monetary Acceleration: M2 % Jul 60 Feb 61 Nov 63 Apr 65	Case B, 1967 Economic Slowdown or Mini-Recession Fiscal Policy: Budget deficit widened to 4.6% of GDP in 1967. Change in Budget Balance: 1966 1967 -0.2% -1.7%	

	3.0% 6.0% 8.8% 8.4%	Monetary Deceleration: Apr 66 Jan 67 M2 7.8% 4.2%
	Outcome: Economic recovery from recession of 1960-61.	Outcome: Despite increased fiscal deficit, economy slowed significantly.
Contractionary	Case C, Temporary 10% Tax Surcharge, 1968	Case D, Recession of 1969-70
	Fiscal Policy: higher personal and corporate income taxes, effective until June 30, 1969. Change in Budget Balance: 1968 1969 +0.8% +1.1% Monetary Acceleration: Jun 67 Feb 69 M2 4.2% 7.8% Outcome: Despite tightening budget, economy expanded.	Fiscal Policy: Budget deficit narrowed in 1968-69, only widening after the economy entered recession in December 1969. Change in Budget Balance: 1968 1969 1970 +0.8% +1.1% -2.3% Monetary Deceleration: Feb 69 Mar 70 M2 7.8% 2.2% Outcome: Despite wider fiscal deficit, M2 growth plunged, and recession followed.

Data sources: Fiscal policy is measured by the change in the budget balance as a percentage of GDP, using OECD data extracted from Refinitiv Datastream. Negative figures (an increase in government expenditure relative to revenue) indicate a net stimulus in Keynesian terms. Following Friedman, monetary growth refers to percentage rates of change of M2 over the preceding year. Source: FRED, Federal Reserve Bank of St Louis, website as at 23 October 2018.

The outcomes of cases B and C in Figure 1, both drawn from Friedman’s 1969 lecture, were decisive: in each case monetary policy proved more powerful than fiscal policy for macroeconomic outcomes. His analysis of the monetary and fiscal experience in the United States during the 1960s can be readily extended to cover other economies and other eras. In line with his preference for “broader and wider” evidence, Figure 2 highlights some striking cases from China, the US, the UK and Japan in different eras while Figures 3 and 4 below focus on the UK and Japan respectively. In all the case studies in Figures 2, 3 & 4, but particularly Cases B & C of each matrix, the data point to the same conclusion: almost always, when monetary and fiscal policy point in opposite directions, monetary policy (i.e., money growth) has a greater impact on the macroeconomic outcomes than fiscal policy.

The remainder of Section 3 offers a brief overview of the episodes selected in Figures 2, 3 and 4. Most attention will be

paid to episodes listed under Cases B & C in each case where monetary and fiscal policy were operating in opposite directions.

6. Classic cases from around the World (Figure 2)

China's highly successful "fiscal stimulus" of 2008-10 (Case A in Figure 2) is of great importance to anyone interested in the Great Recession of 2008-09 and the countervailing fiscal policies implemented at the time. In contrast to many advanced, western economies which had built up considerable leverage especially in the household and financial sectors, China's economy had entered the Great Recession with those sectors in a much stronger, less leveraged position as measured by the ratios of sectoral debt-to-GDP. Accordingly, unlike those developed economies that needed to undertake an extended period of de-leveraging and balance sheet repair (and whose banks were therefore constrained in their ability to expand credit and hence money), the Chinese authorities were able to launch a strong stimulus programme starting in November 2008.

However, the interesting part of the story is that although the central government of China announced a huge fiscal stimulus plan amounting to CNY 4 trillion, or 6.5% of China's GDP at the time, the central government only increased its deficit from 0.3% of GDP in 2008 to 1.8% in 2009 (according to the IMF's database of cyclically adjusted budget balances – henceforth IMF CABB). This represented a stimulatory shift of only -1.5% (Figure 2) which was almost entirely reversed in 2010 when the budget balance returned to -0.4% of GDP, a contractionary shift of +1.4%. The remainder of the boost to activity and spending came from provincial governments, many of which set up local government financing vehicles (LGFVs) to borrow from the banking system. In short, rather than funding the additional spending by taxation or borrowing, most of it was in fact financed by new credit creation from the banking system. As a result, M2 and bank credit increased enormously over the two years 2009-10. Average growth of M2

over this period was 25% p.a. compared with about 15% p.a. before the crisis (Figure 2). As Friedman would no doubt have pointed out, while fiscal policy was mildly expansionary in 2008 and 2009, monetary policy was highly expansionary. The outcome was that China’s stock market doubled in 2009, there was a surge in house prices and commodity prices, together with a strong economic recovery. In addition, consumer price inflation increased from -1.8% in July 2009 to 6.5% in 2011.

Figure 2. *The Interaction of Fiscal and Monetary Policy: Classic Cases from Around the World*

		MONETARY POLICY	
FISCAL POLICY	Expansionary	Contractionary	
Expansionary	<p>Case A, China Stimulus 2008-10 Fiscal Policy: China’s 4,000 bn. yuan fiscal stimulus, lasting two years. Change in Budget Balance (%) 2008 2009 2010 2011 -0.2 -1.5 +1.4 +0.3 M2 Growth (% yoy): 2008 2009 2010 2011 14.7 29.6 19.5 16.2 Outcome: Rapid, strong recovery; inflation hit 6.5%.</p>	<p>Case B, Reagan Tax Cuts, 1981-86 Fiscal Policy: President Reagan Cut Taxes and Raised Defense Spending, 1981-86 Change in Budget Balance (%) 1981 82 83 84 85 86 +4.6 -0.9 -1.1 -0.6 -0.7 -0.4 M2 Growth (year-ave, % yoy): 1980 1981 1982 1983 1984 8.0 9.0 9.0 11.9 8.4 Outcome: Though M2 did not slow until 1984 & 1987, high real interest rates and supply-side reforms slowed inflation from 13.6% in 1980 to 6.2% in 1982.</p>	
	<p>Case C Britain’s 1931 Budget Britain’s 1981 Budget For further detail, see Figure 3.</p>	<p>Case D Japan’s Matsukata Deflation, 1881-85 and the “Dodge Line” deflation from 1949 For further detail, see Figure 4.</p>	

Data sources: Chinese and US fiscal data show changes in cyclically adjusted budget balances (CABB) as % of GDP, using the IMF’s World Economic Outlook database (October 2008 and October 2018 editions). A negative change indicates stimulatory fiscal policy. Following Friedman, monetary growth refers to percentage year-on-year rates of change of M2. The source for China’s M2 is the Federal Reserve Bank of St Louis’s FRED database, as of November 2018.

By contrast, the story in many of the highly leveraged, developed economies after the 2008-09 crisis such as the US and UK was very different. In these economies, despite budget deficits expanding to 10% of GDP and more, despite interest rates being lowered to almost zero, and despite large amounts

of quantitative easing or QE (initially in the US and the UK), the recoveries proved to be universally sub-par.⁴ The crucial difference between the US, the UK, Japan and other developed economies and China was that none of the former experienced the kind of sustained surge in broad money growth that prompted China's recovery. In short, the lack of expansionary broad money growth in the developed economies was the missing ingredient that was needed for a normal recovery. Again, as Friedman would no doubt have pointed out, circumstances combined to arrange a natural controlled experiment contrasting two very different combinations of fiscal and monetary policy in China on the one hand (Case A) and in the advanced western economies on the other (Case B). In both cases monetary policy (i.e., broad money growth) proved decisive.

Another episode selected for Case B in Figure 2 is President Ronald Reagan's policy of tax cuts and increased defense expenditure in the first half of the 1980s. The episode is interesting in the current circumstances because there are obvious parallels between his fiscal programme and President Trump's fiscal agenda. Under Reagan the budget deficit swelled from 1.6% of GDP in 1981 to 5.3% by 1986 (as measured by the IMF's CABB). At the same time, however, far from accelerating under the pressure of increased government spending, inflation fell sharply from 14.8% in March 1980 to 1.1% by December 1986. How could it be that with such a large stimulatory fiscal spending plan the inflation rate could come down so dramatically? The answer, of course, was that this was the period when Paul Volcker was Chairman of the Federal Reserve Board, and he was on a mission to raise interest rates, squeezing money and credit until inflation fell. Therefore, despite an expansionary fiscal policy, monetary policy was tight, and monetary policy dominated. Although this was a period of confusion for followers of the money supply data -- including Friedman himself -- due to significant deregulation of the financial system and the introduction of NOW (Negotiable

⁴ Japan after 1990 and the Matsukata deflation along with the Dodge Line will be discussed in the section covering Figure 4 below.

Order of Withdrawal) and new “sweep” accounts, the results in terms of inflation were unambiguous. Tight money had brought down inflation -- even in the face of a highly expansionary fiscal policy.

7. Cases from British financial history (Figure 3)

Case A in Figure 3 presents some key statistics on British fiscal and monetary policy during the years of the “Barber Boom” in the early 1970s. The prime minister Edward Heath and his Chancellor of the Exchequer, Sir Anthony Barber, pursued both an expansionary fiscal policy with widening budget deficits together with highly expansionary monetary growth (for details, see Figure 3). Facilitated by a major liberalisation of the banking system following a Bank of England report entitled “Competition and Credit Control” (May 1971), this led to very strong growth of bank lending, much of it to speculative property concerns, and therefore extremely rapid broad money growth exceeding 20% p.a. in 1972 and 1973. The boom inevitably proved unsustainable, with a deteriorating external balance of payments account and high inflation, ending in the deepest post-war recession up to that date. Statistically it would be hard to differentiate which was the dominant partner in the boom – fiscal or monetary policy – but when contrasted with Case B-type episodes in which monetary growth did not accelerate despite large fiscal deficits, the implication is that without monetary expansion the boom would have been far less exuberant.

Case B, Alistair Darling’s budgetary response to the Great Recession of 2008-09, is an example of the policy mix in the developed economies after 2008 that did not work as well as China’s Case A-type policy in Figure 2, discussed above. The reason was that although there was a substantial fiscal “stimulus” in the UK (see Figure 3), there was also a complete absence of any stimulus on the monetary side – at least in terms of growth of the broad quantity of money. The juxtaposition in time of the two plans – in China and the UK respectively –

makes a striking contrast between Case A in Figure 2 and Case B in Figure 3.

Cases Ci and Cii in Figure 3 feature two controversial and much-discussed episodes from British financial history – the 1931 budget of the Labour Party’s then Chancellor of the Exchequer Philip Snowden and the famous – or infamous – 1981 budget of Geoffrey Howe under the first Conservative government of Margaret Thatcher. Both budgets were much tighter in terms of their squeeze on government spending and in their supposed impact on private sector spending than supporters in the two respective political parties had hoped.

Although Keynesian arguments were used to support increased public sector spending as a means of boosting activity and employment in the private sector, Snowden’s 1931 budget ignored such arguments in favour of fiscal conservatism. He opposed radical, expansionary policies to counter the Great Depression and refused to adopt protectionist tariffs. Instead, he pursued a fiscal squeeze at home and orthodox trade policies abroad in the face of recession and deteriorating government finances. He cut unemployment benefits and reduced public sector pay, leading to riots in the streets and a mutiny among sailors of the Royal Navy at Invergordon in Scotland. Nevertheless, the fiscal measures were not especially restrictive in terms of the budget balance (see Figure 3, Case Ci). Indeed, given that Snowden’s budget decisions were occurring against the backdrop of the onset of the Great Depression, it is not surprising that the budget deficit widened as a percentage of GDP in 1931 from 1.5% to 2.4%.

On the monetary side broad money growth was 5% in 1930, falling to -3% in 1931, but surged to 10.7% in 1932. In addition, the 28% devaluation of sterling relative to the US dollar in September 1931 from an average of \$4.86 in 1930 to an average of \$3.50 in 1932 -- after Britain left the gold standard in September 1931 -- doubtless acted as a stimulus to the exporting sector, even if it raised the price of imports for domestic consumers and businesses. The net result, as we saw in the case of the US surtax in 1968, was that monetary ease overcame

fiscal tightness or Treasury orthodoxy; Britain was far less impacted by the Great Depression than the US.

These decisions and their immediate political and economic impact triggered a split in the cabinet – ultimately resulting in the fall of the Labour government later in the same year. Although Snowden (and Prime Minister Ramsay MacDonald) survived politically, winning re-election in a “National” coalition administration, he was widely excoriated for his adherence to liberal, Gladstonian policies and was branded a traitor to Labour’s cause.

Figure 3. *The Interaction of Fiscal and Monetary Policy: Cases from British History*

		MONETARY POLICY	
FISCAL POLICY	Expansionary	Contractionary	
Expansionary	<p>Case A, Barber Boom, 1971-73 Fiscal Policy: Larger deficits Change in CABB (% GDP): 1970 1971 1972 1973 1974 0.2% -1.8% -1.8% -1.3% -1.4%</p> <p>Monetary Acceleration (M3): 1970 1971 1972 1973 1974 12.0% 16.3% 21.7% 22.3% 10.9%</p> <p>Outcome: Economic boom and 26% inflation led to balance of payments and banking crisis.</p>	<p>Case B, Global Financial Crisis, 2008-09 Fiscal Policy: Big deficits during deep recession. Change in CABB (% GDP): 2007 2008 2009 2010 -0.7% -2.0% -1.6% +1.5%</p> <p>Monetary Deceleration (M4): 2007 2008 2009 2010 10.6% 3.7% 1.6% 2.5%</p> <p>Outcome: Despite large budget deficits, slow M4 growth meant the recovery was weak and inflation stayed low.</p>	
	<p>Case C i, Snowden’s 1931 Budget Fiscal Policy: Classic tightening Change in Budget Balance (% GDP): 1930 1931 1932 1933 -0.8% -0.9% +1.8% +1.0%</p> <p>Monetary Acceleration (M3): 1930 1931 1932 1933 5.0% -3.0% 10.7% 1.5%</p> <p>Outcome: Recovery from 1932</p> <p>Case C ii, Howe’s 1981 Budget Fiscal Policy: Tax increases Change in Budget Balance (% GDP): 1980 1981 1982 1983</p>	<p>Case D, Post-WW1 Deflation, 1919-22 under Lloyd George Fiscal Policy: Hugely contractionary after wartime expenditures Change in Budget Balance (% GDP): 1918 1919 1920 1921 1922 +1.5 +17.8 +7.9 -1.9 +1.5</p> <p>Monetary Deceleration (M3): 1918 1919 1920 1921 1922 24.8 15.3 6.0 -3.4 - 9.4</p> <p>Outcome: Economy slumped in 1919-20 and deflation followed.</p>	
Contractionary			

N/A	+1.7	+1.6	-1.7
Monetary Acceleration (M₃):			
1980	1981	1982	1983
17.3	14.0	12.6	13.2
Outcome: Economy recovered			

Data sources: Fiscal data: IMF CABB from 1981; for episodes before 1981, data were obtained taken from the Bank of England's *Three Centuries* database where the budget balance is public sector net lending/ borrowing as a % of GDP. Monetary growth is shown as % year-on-year rates of change of M₃ or M₄, also sourced from the Bank of England's *Three Centuries* database.

Geoffrey Howe's 1981 budget (Figure 3, Case Cii) was delivered at a time when the economy had suffered seven successive quarters of decline in real GDP (from 1979 Q₃ to 1981 Q₁) as part of the struggle against inflation. On the monetary side, a Medium-Term Financial Strategy (MTFS) had been put in place in 1979 to ensure a gradual reduction in the rate of growth of broad money over a period of years and was starting to prove successful, even though broad money growth continued in double digits. On the fiscal side, increases in indirect taxes were imposed along with spending controls designed to achieve a lower public sector borrowing requirement (PSBR), a policy mix which flew in the face of conventional or Keynesian wisdom that the government should use fiscal spending to promote a recovery.

Confronted in 1981 with a projected £14 billion PSBR or fiscal deficit for the 1981/82 tax year, nearly twice what had been forecast in official budget documents a year earlier, Chancellor of the Exchequer Howe and his team nevertheless decided to reduce the PSBR to £10.5 billion in 1981/82, committing the government to a third successive year of austerity. This was to be accomplished on the revenue side mainly by above-inflation increases in indirect taxes (including on petrol and diesel fuels), by new, one-off taxes on the banks and on North Sea oil, and by *not* indexing personal tax allowances for inflation. (These tax increases in the midst of a recession were greeted with the newspaper headline next morning: "Howe it Hurts".) On the spending side the plan was to keep public expenditure flat in real terms, with tight controls maintained on spending by extending the coverage of "cash limits". Separately the Bank of England's Base Rate was cut by two percentage points from

14% to 12%. In the mind of policymakers, the rate cuts were only feasible because the PSBR had been reduced, making “space” for lower interest rates.

Perhaps the most famous response to this combination of fiscal tightening and monetary easing was the indignant letter from 364 disgruntled professional economists who predicted, mainly on the basis of the government’s plans to narrow the fiscal deficit, and echoing criticism of the 1931 budget, that “present policies will deepen the depression, erode the industrial base of our economy and threaten its social and political stability.” (Wood, 2006). Directly countering their Keynesian, “fiscalist” predictions, the economy troughed in the second quarter of 1981 and the recovery started in the third quarter, just a few weeks after the budget. By 1981 Q4 the real GDP had increased by 1.5% over the previous year, rising a further 1.8% in the year to 1982 Q4 and 4.1% in the year to 1983 Q4.

In retrospect, the British budget of 1981 is widely acknowledged to have marked the start of a sustained period of expansion for the UK economy. It also marked a turning point in the management of the fiscal deficit. On a cyclically adjusted basis the PSBR declined from an average of 4.1% p.a. between 1978/79 and 1980/81 to an average of -1.0% p.a. (i.e., a surplus of 1.0%) between 1981/82 and 1983/84. More importantly, as we have seen from Friedman’s forensic separation of fiscal and monetary forces, the continued growth of the quantity of broad money (M_3) played the key role in ensuring the sustained economic expansion of the 1980s. The steady reduction in the PSBR or budget deficit, though important for reducing the role of the state in the economy, was essentially a sideshow compared with the role of monetary policy in securing stronger growth and lower inflation.⁵

⁵ There is a considerable literature on the subject of “expansionary fiscal contractions” featuring writers such as Alberto Alesina, Francesco Giavazzi and others, but this literature mainly focuses on the question of whether cuts in government expenditure or tax increases are more beneficial for an economic recovery. The problem, however, is that even where the analysis does take into

In summary, in both the 1931 and 1981 episodes, the allegedly “tight” fiscal stance was outweighed by the underlying easing of monetary policy (i.e., money growth).

Case D in Figure 3 reports on the post-World War I financial squeeze in Britain that, despite some social programmes such as “homes fit for heroes” under the Addison Act, contemporaries mostly associated with budget cuts such as those recommended by the Geddes committee in 1921. However, since broad money growth was consistently decelerating from 1918 until 1922, slowing from 24.8% growth in 1918 to a 9.4% decline in 1922, both fiscal and monetary policy were contractionary. The data for Case D alone do not permit a judgment as to which policy was dominant. However, if viewed in conjunction with other cases such as Case Ci (Snowden’s 1931 budget) where fiscal policy was contractionary but monetary growth was expansionary, it seems clear that it was monetary growth that made the decisive difference in the early 1920s.

9. Cases from Japanese financial history (Figure 4)

To conclude this survey of the interaction of fiscal and monetary policy, Figure 4 features a number of contrasting episodes from Japanese monetary and financial history.

The two episodes labelled Case Ai and Case Aii in Figure 4 (expansionary monetary and expansionary fiscal policy) both had a momentous impact on the performance of the Japanese economy in widely differing political and intellectual contexts. Finance Minister Takahashi’s monetary and fiscal expansion of 1931-36 succeeded because it was based on an underlying plan

account changes in monetary policy, it does not use changes in the quantity of money as the measure of monetary policy. In Friedman’s terms, overall nominal spending growth is ultimately determined by monetary growth; fiscal policy – changes in government spending or changes in taxes – only determines the division of that spending between the private and the public sectors.

that deliberately combined monetary, fiscal and exchange rate elements.

His fiscal expansionism of the 1930s is sometimes credited with being the first example of the implementation of a Keynesian stimulus -- several years ahead of the publication of Keynes' *General Theory*.

Applying Friedman's analysis, however, its success was at least as much due to the monetary and exchange rate parts of the programme as to the purely fiscal part of the programme. First, after Japan left the gold standard in December 1931 (devaluing the currency by 60% against the US\$ and 44% against the British pound), the performance of exports and industrial production improved dramatically in contrast to the performances of the US or UK. Second, increased spending by the Japanese government during the Great Depression was financed directly by the Bank of Japan from November 1932 when the authorities began to sell entire issues of deficit-financing bonds to the central bank rather than to private sector institutions. There was consequently an acceleration of money in the hands of the public (M2) as the government spent the funds. In effect, the increased government spending was funded entirely by the Bank of Japan. Takahashi's motivating idea was first to boost the money supply and stimulate industry, and then, as conditions improved, to have the private sector buy back the bonds from the Bank of Japan, soaking up money from general circulation and thereby controlling inflation. By 1933, Japan had emerged from the Great Depression.

Figure 4. *The Interaction of Fiscal and Monetary Policy: Cases from Japanese History*

		MONETARY POLICY						
FISCAL POLICY	Expansionary		Contractionary					
		<p>Case Ai, Takahashi Reflation, 1931-36</p> <p>Fiscal Policy: Govt expenditure and deficits increased hugely (%yoy):</p> <table border="1"> <tr> <td>1931</td> <td>1932</td> <td>1933</td> </tr> <tr> <td>-5.2</td> <td>+32.0</td> <td>+14.0</td> </tr> </table>	1931	1932	1933	-5.2	+32.0	+14.0
1931	1932	1933						
-5.2	+32.0	+14.0						

Expansionary	<p>Monetary Acceleration: BOJ buys Govt Debt, Yen devalued 60%. BOJ Holdings of Govt Debt, Yen mn</p> <table border="1"> <tr> <td></td> <td>1918</td> <td>1923</td> <td>1928</td> </tr> <tr> <td></td> <td>35%</td> <td>42%</td> <td>48%</td> </tr> </table> <p>Monetary Deceleration (% yoy):</p> <table border="1"> <tr> <td></td> <td>1917-19</td> <td>1920-30</td> </tr> <tr> <td>M2</td> <td>+37.0% p.a.</td> <td>+2.1% p.a.</td> </tr> </table> <p>Outcome: High unemployment, weak wages, and deflation through 1920s. Inflation:</p> <table border="1"> <tr> <td></td> <td>1917-19</td> <td>1920-30</td> </tr> <tr> <td>WPI</td> <td>+26.4% p.a.</td> <td>-4.4% p.a.</td> </tr> <tr> <td>Tokyo RPI</td> <td>N/A</td> <td>-5.0% p.a.*</td> </tr> </table> <p>Case A ii. Tanaka plan to “remodel Japanese archipelago”, 1972-74</p> <p>Fiscal Policy: Deficits from big infrastructure projects</p> <p>Change in Budget Balance** (% GDP):</p> <table border="1"> <tr> <td></td> <td>1970</td> <td>1971</td> <td>1972</td> <td>1973</td> <td>1974</td> </tr> <tr> <td></td> <td>0.7%</td> <td>-1.0%</td> <td>-0.8%</td> <td>-0.2%</td> <td>-0.8%</td> </tr> </table> <p>Monetary Acceleration (M2):</p> <table border="1"> <tr> <td></td> <td>Jan 71</td> <td>Nov 72</td> <td>Apr 73</td> </tr> <tr> <td></td> <td>17.1%</td> <td>28.5%</td> <td>27.2%</td> </tr> </table> <p>Outcome: Asset prices surged, economy boomed, inflation increased to 26% in 1974.</p>		1918	1923	1928		35%	42%	48%		1917-19	1920-30	M2	+37.0% p.a.	+2.1% p.a.		1917-19	1920-30	WPI	+26.4% p.a.	-4.4% p.a.	Tokyo RPI	N/A	-5.0% p.a.*		1970	1971	1972	1973	1974		0.7%	-1.0%	-0.8%	-0.2%	-0.8%		Jan 71	Nov 72	Apr 73		17.1%	28.5%	27.2%	<p>Case B ii. Japan’s Lost Decade -- fiscal stimulus programs after the asset bubble burst, 1990</p> <p>Fiscal Policy: Repeated large budget deficits through 1990s</p> <p>Change in CABB (% GDP):</p> <table border="1"> <tr> <td></td> <td>1991</td> <td>1992</td> <td>1993</td> <td>1994</td> <td>1995</td> <td>1996</td> </tr> <tr> <td></td> <td>-0.2</td> <td>-0.5</td> <td>-2.6</td> <td>-1.1</td> <td>-1.0</td> <td>-1.0</td> </tr> </table> <p>Monetary Deceleration (average % yoy):</p> <table border="1"> <tr> <td></td> <td>1988-90</td> <td>1991-97</td> </tr> <tr> <td>M2</td> <td>10.9% p.a.</td> <td>2.4% p.a.</td> </tr> </table> <p>Outcome: Despite numerous fiscal stimulus plans and 0% interest rates, economy remained weak and experienced deflation. Deleveraging and loss of risk appetite kept M2 money growth rate low.</p>		1991	1992	1993	1994	1995	1996		-0.2	-0.5	-2.6	-1.1	-1.0	-1.0		1988-90	1991-97	M2	10.9% p.a.	2.4% p.a.
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Figure 4. (continued)

	MONETARY POLICY																																	
FISCAL POLICY	Expansionary	Contractionary																																
Contractionary	<p>Case Ci, Pre-WW1 Prosperity, 1902-14</p> <p>Fiscal Policy: After the Russo-Japanese War of 1904-05, austerity lowered Debt/GDP.</p> <p>Govt Debt/GDP:</p> <table border="1"> <tr> <td></td> <td>1905</td> <td>1908</td> <td>1913</td> </tr> <tr> <td></td> <td>84%</td> <td>67%</td> <td>59%</td> </tr> </table> <p>Monetary Acceleration, 1902-14 (Average % yoy) M2</p> <p>+9.6% p.a.</p>		1905	1908	1913		84%	67%	59%	<p>Case Di, Matsukata Deflation, 1881-85</p> <p>Fiscal Policy: After Satsuma rebellion (1877), govt wanted to deflate and return to silver standard at pre-war parity.</p> <p>Level of Govt Debt (Yen Mn)</p> <table border="1"> <tr> <td></td> <td>1876</td> <td>1877</td> <td>1878</td> <td>1881</td> <td>1884</td> </tr> <tr> <td></td> <td>53.9</td> <td>238.2</td> <td>252.4</td> <td>246.1</td> <td>241.9</td> </tr> </table> <p>Monetary Deceleration: Deflation of paper money to lower price level.</p> <p>Currency issue outstanding (Yen Mn)</p> <table border="1"> <tr> <td></td> <td>1877</td> <td>1878</td> <td>1881</td> <td>1884</td> <td>1885</td> </tr> <tr> <td></td> <td>139.7</td> <td>189.2</td> <td>178.2</td> <td>152.5</td> <td>153.0</td> </tr> </table> <p>Outcome: Despite high debt levels, inflation turned to deflation.</p>		1876	1877	1878	1881	1884		53.9	238.2	252.4	246.1	241.9		1877	1878	1881	1884	1885		139.7	189.2	178.2	152.5	153.0
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Outcome: Economy was buoyant and inflation at a moderate rate.

Wholesale Price Index
+2.2% p.a. (1902-14 average)

Case Cii, The 1980s and Asset Bubble, 1985-90

Fiscal Policy: Budget balance shifted steadily from -6% (1979) to +2% (by 1991).

Change in CABB (% GDP):
1985 1986 1987 1988 1989
+0.6 +0.5 +1.0 0.0 +0.7

1990
+0.2

Monetary Acceleration (M2):

Dec 83 Dec 87 Apr 90
7.6% 11.5% 13.2%

Outcome: Despite budget moving to surplus, asset markets and the economy boomed. Inflation increased to 3.9% by January 1991.

Wholesale Price Index, 1873=100
1877 1878 1881 1884 1885
111 117 162 110 112

Case Dii, The Dodge Line, 1949

Fiscal Policy: Cessation of budget deficits and ban on BOJ funding deficits.

Change in Government Debt (Yen Bn)
1946 1947 1948 1949 1950
+65.9 +95.3 +163.8 +112.8 -83.2

Monetary Deceleration: End to BOJ financing of government budget deficits.

Change in BOJ credit to govt (Yen Bn)
1947 1948 1949 1950
+156.5 +124.9 -40.4 -124.8

M2: 1947 1948 1949 1950
(%yoy) 90.4 89.8 33.3 28.2

Outcome: Abrupt decline in inflation. Wholesale prices (% yoy):
1946 1947 1948 1949 1950
+365 +196 +166 +63 +18

Source: *Hundred Year Statistics of the Japanese Economy*, Statistics Department, The Bank of Japan, July 1966. Thomson Reuters Datastream, OECD Economic Outlook, and IMF WEO databases. Fiscal policy: Where changes in the IMF's CABB were not available, data used was government expenditure (Case Ai), Government debt/GDP (Cases Bi & Ci), or the level of government debt (Cases Di and Dii). Monetary growth refers to the % year-on-year rates of change of M2 where available. The wholesale price index is equivalent to a producer price index.

The fiscal data in Case Aii of Figure 4 summarise the bare bones of Prime Minister Tanaka's much-touted plan to "remodel the Japanese archipelago." As the data show, however, the scale of the fiscal spending boost was not especially large, but at the same time dramatic events were occurring on the monetary side. Following the closing of the gold window by President Nixon in August 1971, currencies such as the German mark, the Swiss franc and the Japanese yen were unpegged from the US dollar and revalued upwards by substantial margins. Japan, being a major trading nation and exporting large volumes was particularly vulnerable to yen appreciation. The Japanese monetary authorities feared that a yen revaluation would precipitate a recession ("*endaka fukyo*"), and therefore promoted a rapid acceleration of monetary growth, allowing M2 to surge to well over 25% year-on-year in both 1972 and 1973 (see M2 data in Case A ii). Consequently,

PM Tanaka's remodelling plan and its large-scale public works fiscal plans were combined with a huge monetary expansion.

Whether PM Tanaka's 1972 fiscal plans would have created a boom on their own will never be known. Fortuitously, their coincidence with a massive monetary expansion due to unexpected international monetary developments generated a domestic monetary explosion – the largest since 1948 in Japan's case – so that both fiscal and monetary policy were highly expansionary. The results were to create a bubble in the stock market, soaring property prices, serious overheating in the economy, and an average CPI inflation rate of 22% for 1974.

The two episodes featured in Cases Bi and Bii of Figure 4 illustrate the futility of trying to boost an economy with fiscal stimulus programmes unaccompanied by monetary expansion. To understand Case Bi we need to begin with the overvaluation of the Japanese yen in the 1920s caused by the surge in the domestic price level at the fixed exchange rate during the First World War (see WPI data). After the war the maintenance of the fixed rate at the high domestic price level led to persistent overall balance of payments deficits which drained foreign exchange reserves and reduced banks' reserves held at the central bank, thus undermining any attempt at monetary stimulus. Periodic attempts at providing a fiscal boost (e.g., after the Great Kanto Earthquake of 1923) failed to reverse high unemployment, weak wages, and persistent deflation. Tragically, this policy combination led to the erosion of democratic government at home and military adventurism abroad in the 1930s.

Case Bii documents how, in the 1990s, even with a generally freely floating exchange rate, repeated attempts at fiscal stimulus failed to overcome the inertia of slow monetary growth. In almost every year of the 1990s the Japanese government consistently ran large deficits in the main budget, regularly boosted by "supplementary" spending programs. Nonetheless, just as in the 1920s, the failure to boost monetary growth in the 1990s meant that Japan continued to suffer from deficient domestic demand and bouts of deflation. In fact, Japanese government deficits continued subsequently between

2000 and 2019 along with slow monetary growth (until 2020), prolonging macroeconomic weakness, and causing the Japanese government's gross debt to rise to over 250% of GDP.

Cases Ci and Cii in Figure 4 feature episodes where contractionary fiscal policies were counteracted by monetary expansion. Case Ci focuses on a relatively little-studied period before the First World War. Although Japan emerged as the winner in the Russo-Japanese war of 1904-05, the country was left with substantial debts. The ratio of government debt-to-GDP reached 84% in 1905 (see Figure 4). Since Japan had adopted the gold standard relatively recently (in 1897), the government considered the reduction of public debt a priority to ensure continued adherence to the gold standard. As a result, a strong policy of fiscal austerity was implemented, but because monetary growth remained buoyant, the economy was able to grow successfully with low inflation even as the debt was reduced.

Case Cii, the Japanese asset bubble of the late 1980s, arose as a result of the two international currency agreements of the 1980s – the Plaza Agreement in September 1985 and the Louvre Accord in February 1987. After a decade of stable monetary growth and approximately steady-state growth and inflation, Japan's monetary policy was derailed by these external agreements. In response to the Plaza Agreement the Bank of Japan lowered interest rates steeply, while in response to the Louvre Accord the Japanese authorities intervened heavily in the foreign exchange market⁶, encouraging rapid money and credit growth both inside and outside the banking system and promoting a wider programme of financial deregulation. Case Cii also illustrates the way private spending can be stimulated by rapid money growth at the same time as the government budget shifts from deficit to surplus. Since Japanese government tax revenues were very buoyant throughout the boom period of 1983-90, a fiscal deficit of 4.0% of GDP in 1983

⁶ Japan's gold and foreign exchange reserves almost doubled between January 1987 (\$51.5 billion) and January 1989 (\$98.2 billion), while M2 accelerated from 8.2% year-on-year in September 1985 to 12.3% by February 1988.

was transformed into a fiscal surplus of 2.0% by 1990, creating – in Friedman’s phrase – a “natural experiment” consisting of monetary expansion combined with fiscal contraction. (This episode is comparable in certain ways to the experience in the US a decade later in the late 1990s under President Clinton when there was an information-technology bubble in the stock market and vigorous growth in the economy, while at the same time the federal government’s budget gradually shifted from deficit to surplus.)

Finally, Case D in Figure 4 features two dramatic episodes of economic stabilisation in Japan following episodes of high inflation. Both the Matsukata and Dodge stabilisation plans relied on abrupt slowdowns or tightening of monetary policy together with fiscal contractions.

In the first case there had been an inflation-financed war in south-western Japan to suppress the Satsuma Rebellion of 1877. The money-printing had drastically raised Japan’s price level. To reduce the price level after the rebellion and to restore equilibrium in the balance of payments under the silver standard, Finance Minister Matsukata deliberately cut government spending and reduced the money supply. After the internal price level was reduced, Japan was able to return the value of the Japanese silver yen to its pre-rebellion parity and to maintain the silver standard until 1897 when it was abandoned in favour of switching to the gold standard.

In case D ii, the “Dodge Line” refers to the policy-mix adopted by the Japanese government in April 1949, following the recommendations Joseph Dodge, a Chicago financier, who had been brought in by the Occupation authorities to restore order to Japan’s chaotic post-war finances. The aim was to end the abusive financing of post-war budget deficits through the Development Bank of Japan and the printing of money by the Bank of Japan to fund such government spending. These policies had caused persistently high, triple digit inflation between 1945 and 1949. It was therefore decided that henceforth the government would, in principle, balance the budget, only borrowing in the open market to finance any future deficits and not funding them via the central bank. In

addition, the Japanese exchange rate was fixed at 360 yen per US\$. In short, for a time both monetary and fiscal policy were contractionary. Just as the Matsukata deflation of the 1880s had enabled Japan to maintain the silver standard, the Dodge Line enabled Japan to adopt and maintain a fixed exchange rate under the Bretton Woods system for the next twenty-two years (1949-71).

10. Conclusion

Friedman often said that for clear thinking on macroeconomic policy, monetary and fiscal issues should be separated from one another. This article has examined a series of macroeconomic policy episodes across some key economies in different eras, dividing them into the contribution of monetary policy⁷ and the contribution of fiscal policy. In all cases Friedman's observations have been validated. When monetary and fiscal policy have been acting in the same direction the results have been clear-cut, whether expansionary or contractionary. However, whenever monetary and fiscal policies have been acting in opposite directions, our case studies suggest that monetary policy (in the sense of broad money growth) invariably dominates.

These were not the conclusions of an ivory-tower economist but were based on a lifetime's study of real-world data. As Friedman wrote, "One swallow does not make a spring. My own belief in the greater importance of monetary policy does not rest on these dramatic episodes. It rests on the experience of

⁷ Notice that in all these case studies we have barely mentioned interest rates. In Friedman's view, interest rates are the price of credit, not the price of money. They can be and are used by central banks as an instrument to encourage or discourage bank lending (and hence deposit money creation), but they are also a symptom of other conditions in the credit market such as risk aversion and inflation expectations. As a result, they are potentially highly misleading. For example, while low rates may reflect the initial stages of a surge in money growth, they may also be low because money growth has been low in the past few years and inflation expectations are low.

hundreds of years and of many countries. These episodes of the past few years illustrate that effect; they do not demonstrate it. Nonetheless, the public at large cannot be expected to follow the great masses of statistics. One dramatic episode is far more potent in influencing public opinion than a pile of well-digested, but less dramatic, episodes. The result in the USA at any rate has been a drastic shift in opinion, both professional and lay." (Friedman, 1970).

The reason why fiscal deficits without monetary expansion are unsuccessful in stimulating economic activity is that the underlying financing requirements effectively neutralise or substantially counteract the stimulus. For example, larger budget deficits always need to be financed, and the financing – whether by taxation or borrowing – invariably offsets the effect of the supposed stimulus. Only in the case of financing by the creation of new money did Friedman find an unmistakably positive effect from the additional government spending, and in those cases it was difficult to say which was more important in providing the stimulus -- monetary policy or fiscal policy. The case studies in this article confirm that logic.

Conversely, if a smaller budget deficit was planned with an unchanged monetary policy, then the government would have less to spend and the private sector would have more. The fiscal multipliers were essentially unity. Only in the case of a reduction of overall spending accomplished by means of slower money growth or a monetary contraction was there an unmistakably negative effect from the reduction in government spending. In these cases where both monetary and fiscal policies were restrictive it was hard to say which policy was responsible for the outcomes -- the reduction in government spending or the tightening of monetary growth. Again, Friedman's findings are confirmed by the case studies in this article.

No wonder Friedman was quoted as saying, “How can the government stimulate the economy by taking money out of one pocket of the public and putting it into another pocket?”⁸

⁸ Where Carter is Going Wrong: Interview with Nobel Prize Winner Milton Friedman, New York: U.S. News and World Report, Inc, March 7th, 1977.

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3

Monetary policy is not about interest rates; The liquidity effect and the Fisher Effect

The Discussions about monetary policy are frequently bedevilled by vague terminology. For example, monetary policy is said to be “easy” or “accommodative”.

This lack of precision arises from the lack of a common criterion by which to assess monetary policy. Most observers, including most professional economists, typically rely on interest rates as their criterion of whether monetary policy is easy, neutral or tight. Consequently, much of the debate among the leading protagonists in recent years has focused on the question of how far interest rates were from the natural or neutral rate, often designated by r^* . A minority of observers and economists focus instead on the quantity of money, which can lead to quite a different assessment of the stance of monetary policy.

The problem with reconciling these two viewpoints is that there is no monotonic relation between money and interest rates. In fact, it is possible, at least in the short run, to have rapid money growth coexist with high or low nominal interest

rates, or conversely to have low money growth coexist with low or high nominal interest rates.

The purpose of this paper is to clarify the relation between money and interest rates. Section 1 will examine the empirical validity of Keynes's claims for his liquidity preference theory by looking at the relation between changes in interest rates and changes in the quantity of money. Section 2 will consider Irving Fisher's findings. Fisher, whose studies had mostly preceded Keynes development of the liquidity preference theory, had shown that over any longer-term horizon the relation between money and interest rates is exactly the reverse of Keynes' short-term relationship. A reconciliation is proposed that treats Keynes' theory as a short-term, liquidity effect, and Fisher's results, which incorporate inflation, as the longer-term determinant of interest rates. Section 3 will apply the resulting combined theory of the relation between money and interest rates to five case studies in recent decades: two from Japan, and one each from the Eurozone, the U.K. and the U.S. The conclusion, in Section 4, is that interest rates are a highly misleading guide to the stance of monetary policy; it is invariably better to rely on the growth rate of a broad definition of money when assessing the stance of monetary policy.

2. Keynes' Liquidity Preference Theory

John Maynard Keynes devised a theory of the demand for money -- which he called liquidity preference theory -- in the 1930s as a hypothesis to explain why monetary policy in the U.S. and U.K. economies was failing to generate a recovery from the Great Depression. Keynes' theory of the demand for money is ingenious, incorporating several types of money-holdings. For example, the demand for non-interest-bearing money in his analysis depends on the interest foregone by not holding bonds or other income-earning assets. He rationalised the demand to hold interest-bearing money such as time deposits as a reward for parting with liquidity, while at the same time he recognised the paradoxical willingness of investors to continue to hold money or liquidity even in conditions of very low bond yields -

- hence his term “liquidity preference”. In this formulation, the interest rate is the “price” of money.

According to Keynes, the demand for money can be decomposed into three types – Transactions demand (for day-to-day expenses), Precautionary demand (liquidity to cover unforeseen expenditures such as an accident or health emergency) and Speculative demand (to take advantage of future changes in interest rates or bond prices). For this last category, the higher the (money market) rate of interest, the lower the speculative demand for money, and the lower the (money market) rate of interest, the higher the speculative demand for money. Summed together, these three create a typical, downward-sloping demand curve similar to that shown in Figure 1.

Figure 1. The Liquidity Preference Function

Keynes’ liquidity preference theory hypothesized that in normal times an increase in the money supply (denoted below by MS) would lead to a fall in interest rates (r), generally followed by higher investment (I) which would then result in higher real income (y) via the multiplier effect and higher inflation (P): $\uparrow MS \rightarrow \downarrow r \rightarrow \uparrow I \rightarrow \uparrow y \rightarrow \uparrow P$

But in the 1930s the yield on bonds and other investable assets fell so low that no matter how low the money market rate of interest, and by implication, no matter how large the stock of money, the demand for investment did not pick up, breaking the causal chain: $\uparrow MS \rightarrow \downarrow r \rightarrow$ no increase in I , therefore no increase in y and no increase in P .

Liquidity preference theory combined with his multiplier theory for autonomous expenditures won many adherents because together they accomplished two things. First, liquidity preference theory seemed to solve the problem of why monetary policy was failing to restore economic growth and employment in the Depression years. By proposing that at some (low) level of interest rates and investment yields the speculative demand for money holdings encountered a “liquidity trap”, Keynes implied that at this lower bound, monetary policy became impotent. Second, the multiplier idea seemed to offer a way out of the monetary and economic

impasse of the early 1930s. Keynes's flash of insight was that in these circumstances, another type of policy could be adopted to overcome the liquidity trap. The alternative policy was fiscal spending by the government which could boost aggregate spending in the economy. Government spending, he argued, was a form of autonomous spending that could replace the apparently moribund private sector investment and thereby revive economic growth and employment.

In summary, since monetary policy was in effect disabled by the liquidity trap and therefore unable to restore economic growth, policymakers could turn to fiscal policy, directly injecting the spending that would enable the economy to recover.

The intellectual framework underlying the twin theories of the liquidity trap and fiscal stimulus achieved widespread success both in the years immediately before, during and after the Second World War. This was in part because the years up to 1945 saw large increases in government spending on armaments and warfare along with a resumption of near-full employment in the U.S. and the U.K. Similarly, the post-war years saw a fairly rapid return to near-full employment (albeit with some inflation) in contrast to the high unemployment and deflation that had persisted in the U.K. after the First World War and in the U.S. after 1929. Consequently, Keynesian concepts of aggregate demand management – led largely by variations in government spending -- became the dominant orthodoxy among academic economists and policy-making practitioners in the post-war western world.

If interest rates and the quantity of money are indeed related in the way described by Keynes's liquidity preference function, then the analysis also implies that countries with high interest rates will be those where the quantity of money has been reduced or its growth rate restricted; and conversely countries with low interest rates will be those where the quantity of money has been substantially increased or its growth has accelerated.

The problem with these implications of the liquidity preference theory is that they are directly contradicted by the

“facts on the ground”. For no matter where one looks around the world, the opposite relationship holds.

For example, in Figure 2, Argentine interest rates at 70% are among the highest in the world today. The Keynesian liquidity preference function would imply that monetary growth had been exceptionally tight. Yet on the contrary, the reason interest rates have been so high is that Argentina has had a long period of rapid money growth and it has been experiencing high and rising inflation. The reason why interest rates have been so high is that inflation is also very high, reflecting the rapid growth rate of the Argentine money supply over a long period.

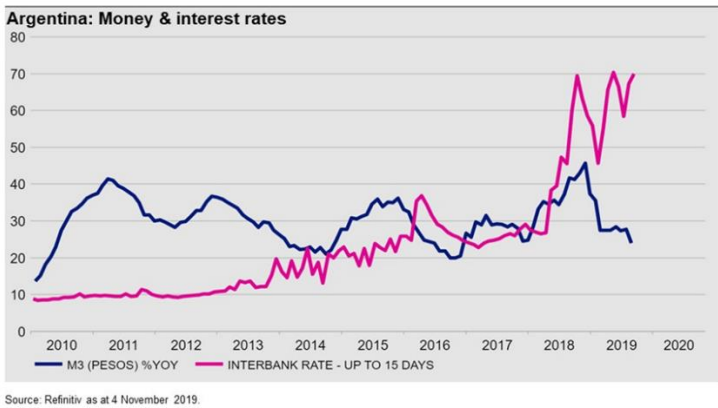


Figure 2. Argentina

Conversely, in Figure 3 (which uses the same vertical scale as in Figure 2) interest rates in Switzerland have been amongst the lowest in the world -- virtually zero for most of the past two decades, and even before that. Again, according to diligent students of the liquidity preference theory that should mean that Switzerland has been increasing the quantity of money very rapidly. Yet on the contrary, as the chart shows, the quantity of money in Switzerland has increased only at very modest rates. The reason why interest rates have been so low is that inflation is very low, reflecting the low growth rate of the Swiss money supply over a long period. Other examples of

economies in a similar situation to Switzerland are Japan, Germany and the Eurozone more generally.

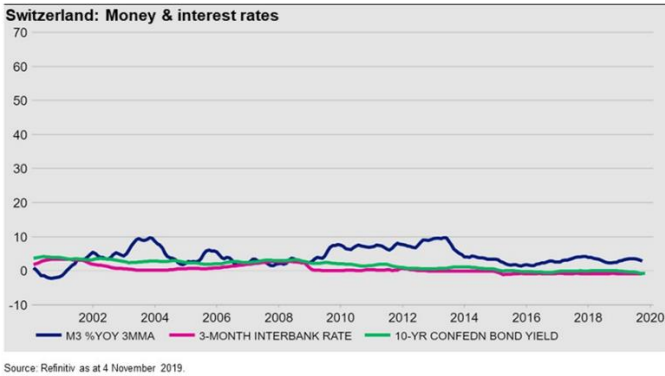


Figure 3. Switzerland

As the examples of Argentina and Switzerland demonstrate, empirical experience in the real world does not support the implications of Keynes' liquidity preference theory. The downwards-sloping liquidity preference function is simply not consistent with the facts. Equally important, the foundations of the liquidity preference framework are questionable on theoretical grounds. One of the most basic analytical tools of the economics profession is the supply-demand diagram in which, for any commodity, the quantity is typically shown on the horizontal axis and the price is shown on the vertical axis. In the case of the liquidity preference diagram the quantity of money is shown on the horizontal axis, but on the vertical axis the "price" shown is an interest rate.

The problem is that interest rates are not the price of money; the price or value of money is whatever has to be given up to obtain it. For example, the diagram would make sense if the vertical axis showed either the domestic or foreign purchasing power of the units of money on the horizontal axis. In the first case it would be reasonable if the vertical axis showed the value of money in terms of domestic purchasing power relative to a basket of goods or an overall price index. (In this case the axis would show $1/P$ or the inverse of the price level where P is the aggregate price level.) Alternatively, in the second case the

vertical axis could show an exchange rate since the price of a unit of currency such as the British pound can be expressed in terms of another currency such as the U.S. dollar. Conceptually the two cases are equivalent; the holder of money is giving up a certain amount of domestic or foreign purchasing power in exchange for holding either a basket of goods and services or different units of currency in preference to the money he or she previously held.

However, in the Keynesian liquidity preference diagram the scale on the vertical axis is always an interest rate, not the value or price of money. But interest rates -- normally expressed in annual percentage rates -- are the price of credit or the price of renting money for a period of time, not the price or value of money itself. In effect the liquidity preference diagram is conveying the idea that, other things equal, the higher the cost of credit (the interest rate) the less individuals and firms will wish to borrow, and conversely the lower the cost of credit the more they will wish to borrow. Insofar as that goes, provided credit was the quantity on the horizontal scale, the diagram could have some practical applications. However, credit is not money; the demand for credit (and hence interest rates) can be high or low irrespective of the quantity of money. In the past decade since the Global Financial Crisis (GFC) of 2008-09, money growth rates in the developed world have been almost universally low, while interest rates have also been very low. In other words, the advanced economies have experienced tight money (in the sense of low growth rates of money) but low rates. Conversely, Argentina, Venezuela and Turkey have experienced very easy money (in the sense of rapid money growth) with very high interest rates. In short, the entire edifice of liquidity preference theory, its application to money (instead of credit) and its extension to monetary policy is therefore constructed on unsound foundations. Both the empirical shortcomings of the liquidity preference hypothesis and the weakness of its theoretical foundations are reasons why monetarists have long emphasised that interest rates are a very unreliable measure of the stance of monetary policy. There can be high interest rates under conditions of rapid money growth

or under conditions of slow money growth; equally, there can be low interest rates under conditions of slow money growth or rapid money growth. Economics therefore needs a better theory of the relation between money and interest rates.

3. Fisher's Theory of Interest

Besides Keynes, another economist who was puzzling over monetary and financial developments in the 1930s was Irving Fisher, the famous American economist who had taught for many years at Yale University. One reason why he was re-examining his theories was that he had been caught out by his rash pronouncement, nine days before the stock market crash of October 1929, that stock prices had "reached what looks like a permanently high plateau."

In his book, *The Theory of Interest* (1930), Irving Fisher took a much more empirical approach than Keynes to the relationship between money, interest rates and prices. Having collected data for British and other prices and interest rates during the century from 1820 to 1924, Fisher came to a very different conclusion compared with the relationship postulated by Keynes in his liquidity preference function.

"Furthermore, the results and other evidence indicate that, over long periods at least, interest rates follow price movements. The reverse, which some writers have asserted, seems to find little support. Experiments, made with United States short term interest rates, to test the alternative hypothesis of distributed influence of interest rate changes instead of price changes, gave results of negligible significance. Our investigations thus corroborate convincingly the theory that a direct relation exists between inflation and interest rates, the price changes usually preceding and determining like changes in interest rates."

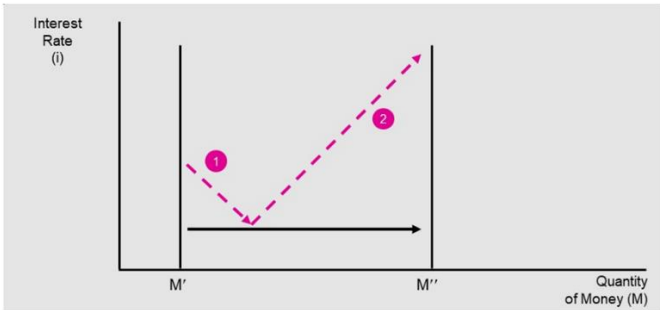
The conclusion of Fisher's analysis was simple: "These highly significant correlations seem to establish definitely that over long periods of time high or low interest rates follow high or low prices by about one year."

As a life-long student of the equation of exchange ($MV=PT$), Fisher attributed changes in the overall price level to changes

in the stock of money. Implicitly, high prices (or inflation) followed from rapid money growth; low prices (disinflation or deflation) followed from low money growth. In turn, this meant that the true or longer term, more permanent relationship between money, inflation and interest rates is precisely the opposite to the one postulated by Keynes' theoretical liquidity preference curve. How can the two theories be reconciled?

Turning to the theoretical side of the analysis, Fisher did not dismiss the idea that easier money (i.e. faster money growth) initially drove interest rates lower. However, in contrast to Keynes's theory of liquidity preference which implied there was a monotonic relation between money and interest rates, Fisher – and later Friedman -- hypothesized the impact of money growth on interest rates as a two-stage process. If the growth of money doubled, for example from 5% p.a. to 10% p.a., and the higher money growth rate persisted (for a year or more), interest rates would initially fall. However, later, as the economy strengthened and the demand for loans increased, inflation expectations and inflation would both increase and interest rates would rise.

In practical terms, the first effect of easy money (i.e. faster money growth) was to lower nominal interest rates (Keynes' liquidity effect); the second and more permanent effect (of faster money growth) was to raise interest rates (the Fisher effect). This relationship is shown in Figure 4.

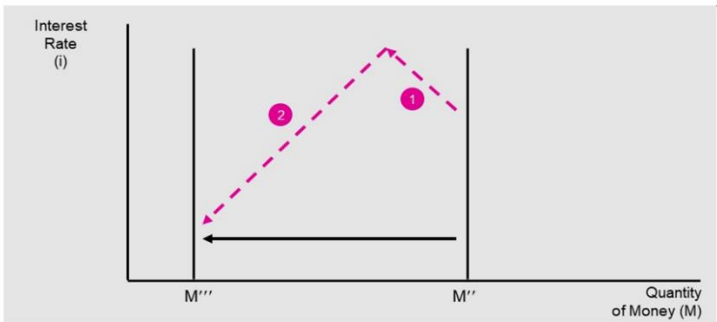


Source: Invesco as at November 2019.

Figure 4. The Relation between Money and Interest Rates after Monetary Acceleration

Conversely, if the growth rate of money halved, for example, and the lower money growth rate persisted for at least a year, interest rates would initially rise as money markets tightened (see Figure 5). Later, as the economy weakened and the demand for loans declined, inflation would decrease, and interest rates would also fall. In short, given a sustained deceleration of monetary growth, the first effect was higher interest rates but the second and more permanent effect was for inflation and interest rates to fall.

One key implication, frequently insisted upon by Friedman, of these opposite effects of the Keynesian liquidity effect and the Fisher inflation effect on interest rates is that interest rates cannot be relied on as a guide to the stance of monetary policy; it is better to rely on money growth in judging monetary policy. For example, the fact that interest rates are extremely low in so many economies today [in 2019] does not constitute evidence that monetary policies are easy; interest rates could be low as the second stage result of a prior tight money, not as the first stage result of a faster money growth rate. In my view, both Keynes’s liquidity preference theory and Fisher’s assessment of the lagged impact of inflation on interest rates must be integrated to convey the true relationship between money, interest rates and inflation.

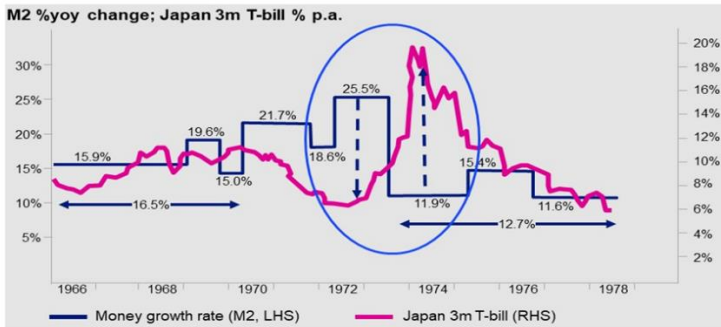


Source: Invesco as at November 2019.

Figure 5. The Relation between Money and Interest Rates after Monetary Deceleration

4. Case Studies

Early in my research career I examined the relationship between money growth and interest rates in Japan in the 1960s and 1970s. As shown in the area depicted by the oval in Figure 6



Source: John Greenwood, Invesco. For illustrative purposes only.

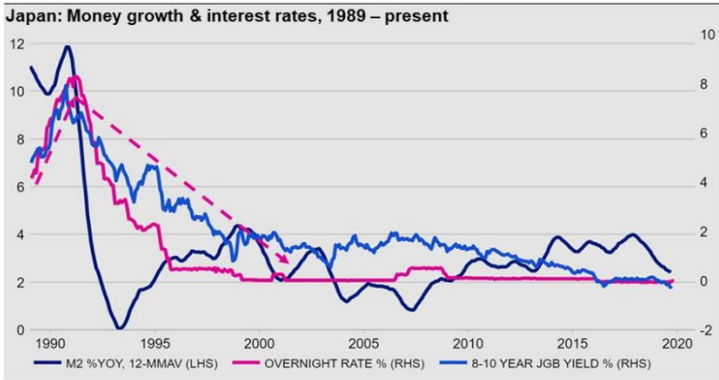
Figure 6. Money Growth and Interest Rates in Japan, 1966-78

(which is drawn from my original hand-plotted chart), when money growth accelerated, as in 1972-73, from an average of 18.6% p.a. to an average of 25.5% p.a. interest rates initially fell until roughly the end of 1972 – in line with the liquidity effect in Keynes’ theory of liquidity preference; but then subsequently, in 1973 as the economy strengthened and inflation increased, interest rates also increased – exactly as predicted by Fisher.

Conversely, when money growth was brought down from 25.5% p.a. in 1972-73 to 11.9% from late 1973 onwards, the initial effect was to push interest rates even higher as one would expect from the downwards-sloping liquidity preference function. However, as the economy subsequently slumped and inflation fell, interest rates declined from a peak of close to 20% ultimately to around 6% by 1978 conforming to the results one would expect from Fisher’s inflation effect.

A similar two-stage process was seen after the bursting of Japan’s notorious asset price bubble of the late 1980s (see Figure 7). The Bank of Japan started tightening monetary policy from May 1989, raising the official policy rate or overnight call

rate from 2.5% to 6.0% by August 1990. Thanks to the availability of overdraft facilities for many companies, M2 only started slowing dramatically in the last quarter of 1990 and the early months of 1991, pushing short-term interbank rates to 8.4%. The equity market peaked in December 1989 and real estate prices peaked about a year later. However, the Bank of Japan continued raising interest rates through August 1990 and did not start to lower them until July 1991.



Source: Refinitiv as at 4 November 2019

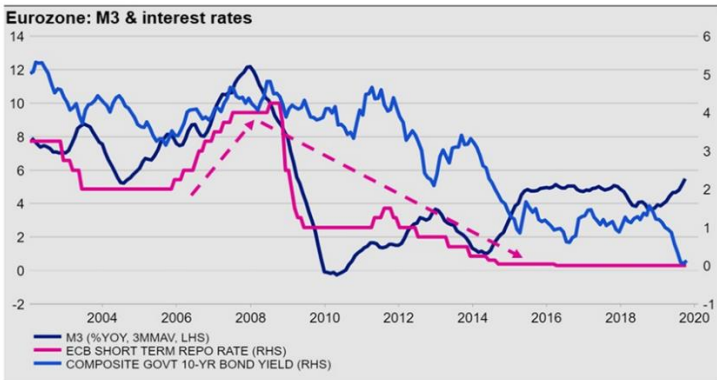
Figure 7. Money and Interest Rates during and after Japan’s Asset Bubble of 1985-90

In the early 1990s, as money growth tightened, the initial effect was to push interbank interest rates higher – as shown by the pink line and the first dashed arrow in Figure 7. However, as economic growth weakened and the demand for credit fell, inflation and subsequently interest rates also fell sharply, as indicated by the second dashed arrow.

Japanese money growth, inflation and interest rates (as well as bond yields) have remained low ever since. On the basis of Irving Fisher’s analysis, Japan’s current low interest rates are not an indication of an easy monetary policy (i.e., rapid money growth), but rather reflect the second stage, lasting effects of a tight monetary policy (i.e., slow money growth). In Irving Fisher’s terms, and to repeat, Japan [in 2019] is therefore not in the first stage of an easy money policy; rather – and despite QE (2001-06) and QQE (since 2013) – Japan is still in the second

stage of a tight money policy. In these circumstances it is not surprising that Japanese inflation and interest rates have not been able to rise.

The pattern in the eurozone is similar to that in Japan. The ECB normalised interest rates between December 2005 and May 2007 (basically following the Fed's interest rate increases between 2004 and 2006), but M3 continued to accelerate until November 2007 when it peaked at 12.6% year-on-year. Bizarrely, the ECB raised rates to 5.25% in July 2008 (in response to higher oil prices) when M3 growth had already fallen below 10% year-on-year and was about to plunge (based on data for loan growth). The abrupt slowdown in M3 was therefore accompanied by higher rates initially, but in the second half of 2008 and subsequently short-term rates fell dramatically along with M3 growth (see Figure 8). Longer term rates such as the composite euro-area bond yield shown in Figure 8 took much longer to fall, but they too have ultimately fallen to very low levels. Since June 2014 the ECB rate on its deposit facility has been negative, and since mid-2016 bond yields across much of the eurozone have moved into negative territory.



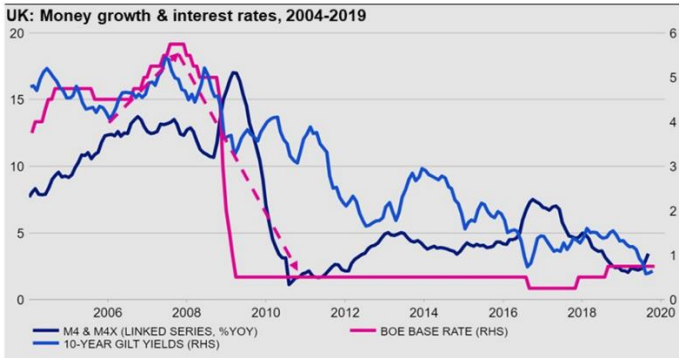
Source: Refinitiv as at 4 November 2019.

Figure 8. Money and Interest Rates in the Eurozone before and after the 2008-09 Crisis

In other words, and consistent with the two-stage pattern of interest rate changes observed in Japan, the first stage effects

of tight money in the Euro-area were higher interest rates; the second stage effects were lower interest rates. Given the persistent weakness of Euro-area money and credit growth ever since, a strong case can be made that interest rates and inflation remain low because the eurozone economy is still in the second stage of tight money policy, not the first stage of easy money policy.

In the U.S. and the U.K. the evidence in favor of rates being low today due to easy money rather than as the second stage result of tight money is more mixed as monetary policy has been easier – i.e., monetary growth has been faster in both economies than in either Japan or the Eurozone. While it is true that both the Federal Reserve and the Bank of England have been able to raise rates since December 2015 and November 2017 respectively -- thanks to faster money growth in recent years -- it is nevertheless also true that in both economies (until 2019 in the U.S.), money growth had remained low at around 4% year-on-year, and therefore interest rates could not rise far or rapidly.



Source: Refinitiv as at 4 November 2019.

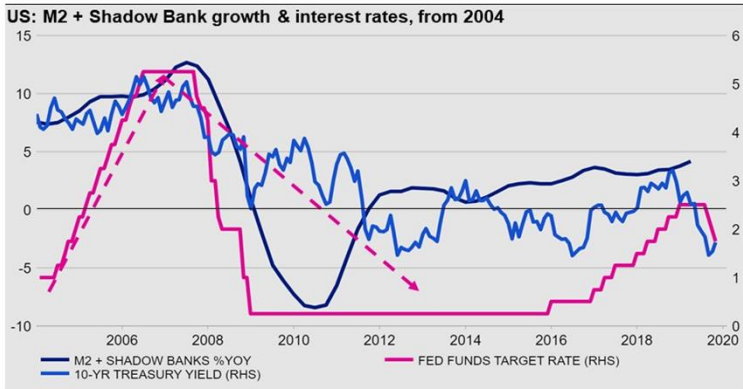
Figure 9. Money and Interest Rates in the UK before and after the 2008-09 Crisis

Also, in both the UK and the US the monetary data must be interpreted with care to take account of developments in the large shadow banking sectors in both economies. In Britain the Bank of England steadily raised its Base rate from 4.5% in July

2006 to 5.75% by July 2007 in a “post-normalization” tightening. During these years Bank of England Governor

Mervyn King said at least a couple of times that he was concerned at double-digit M4 growth. The rate rises prompted some slowdown in M4 from 13.8% in August 2007 to 10.3% by June 2008. However, once the intensive phase of the crisis began in September 2008 the rate of M4 growth surged to 17.8% by February 2009, as shown in Figure 9. The explanation is straightforward: the problems in the shadow banking sector caused many holders of the short-term debt of shadow bank institutions to transfer their funds to the relative safety of the banking system.

Turning to the U.S., the Fed did not engage in any “tightening” rate hikes after the normalisation of rates in 2004-06 (the period indicated by the rising red dashed arrow in Figure 10). Partly as a consequence M2 growth accelerated from 4% in 2005-06 to over 6% p.a. in the first half of 2008, but after the onset of the crisis in September 2008 M2 growth surged from 5.5% year-on-year in August 2008 to a peak of 10.3% by January 2009. This was due to the same phenomenon as in the UK -- shifts of funds from the short-term debt instruments issued by shadow banking entities (such as investment banks and mortgage finance companies) to insured deposits in the relatively safe, regulated banking system. In addition, several investment banks applied to become member banks supervised by the Federal Reserve System and having access to its discount window, further adding to deposits in the reported data for M2.



Source: Refinitiv as at 4 November 2019.

Figure 10. Money and Interest Rates in the US before and after the 2008-09 Crisis

With the deepening of the crisis in the final quarter of 2008 and from the early months of 2009, U.S. banks began shrinking their loan books and writing off loans, while customers scrambled to de-leverage by repaying borrowings. As a result, M2 slumped to an average increase of only 2% year-on-year during the first half of 2010. Subsequent operations by the Fed (mainly QE2 and QE3 together with Fed support to other credit markets) enabled growth to recover in 2011-14. Even so, since December 2015 the Fed was only been able to raise rates at a far more gradual pace than in previous expansions.

If we consider the quantity of “total money” in the US to consist not only of “money in the banking system” (M2) but also “money in the shadow banking system”, we can develop an explanation of the growth of total money and nominal income during this troubled period that is consistent with the two-stage theory of interest rates explained earlier.

Figure 10 shows the year-on-year growth of this concept of “total money” as the dark blue line. As in the U.K., broad money accelerated mildly in 2006-08, before plunging from +12.6% in July 2007 to -8.4% between April and October 2010. During the early part of this period the economy slumped and the demand for credit fell sharply, as did inflation. In the wake of the crisis interest rates – both long and short – fell to their lowest levels

in a generation. This fall in rates was consistent with Fisher's second stage of tight money.

Subsequently the Fed was able to raise rates modestly and slowly between December 2015 and December 2018, but M2 and "total money" growth rates remained very subdued until 2019 when banks' demand for securities aided a resumption of faster money growth. Attempting to normalize or reduce the size of its balance sheet from October 2017, the Fed unintentionally precipitated a brief credit crunch in the repo market in September 2019. In response, the FOMC cut rates three times between August and November 2019.

The conclusion from our two-stage theory of interest rates and from these observations is that attempts by the Fed to pinpoint the appropriate or neutral level of interest rates, or arbitrary adjustments of the size of its balance sheet are misdirected. Yet throughout the years 2015-2018 the Fed was trying to manage interest rates or trying to adjust the size of its balance sheet instead of focusing on delivering the appropriate growth of broad money. In an environment of constrained money growth and still-cautious demand for credit, a rise in interest rates to levels perceived by FOMC members to be appropriate was virtually impossible. Money growth -- both inside and outside the banking system -- had simply been too low.

At this stage it is again instructive to ask whether, in terms of our two-stage concept of interest rate adjustments, U.S. interest rates currently [in January 2020] reflect the first stage of an easy monetary policy or the second stage of a tight monetary policy?

As discussed above, a strong case can be made that -- ever since the recovery from the GFC -- U.S. monetary policy had never been "easy" in the sense of allowing rapid money growth despite the long period of exceptionally low interest rates. There had been no vigorous expansion of "money in the banking system" (i.e., M2), nor had there been exuberant growth of "money outside the banking system" (i.e., in the shadow banking system), and consequently the sum of "money in the banking system" plus "money outside the banking

system” (what I called “total money”) had not shown the rapid growth witnessed in the pre-crisis period. Between 2000 and 2007, the average growth of M2 plus shadow bank money was 9.9% p.a.; between 2012 and 2018 the same aggregate averaged only 2.4% p.a.

On the supply side the slow growth of money (and bank credit) is the result of higher capital requirements, together with enhanced liquidity and loan underwriting standards imposed on banks by Dodd-Frank and Basel III. The sustained weakness of shadow banking activity is also attributable to the new regulations which have limited balance sheet capacity for capital market funding activities such as securitisation and repo financing. On the demand side slow growth of money and bank credit has been partly due to the unwinding of pre-GFC leverage by households and financial firms, and partly due to the Fisher effect – i.e. the resulting lower nominal GDP growth rate.

5. Conclusion

In this paper the stance of monetary policy has been judged by broad money growth, not by interest rates. In this framework, monetary growth becomes the causal variable and interest rates become primarily a symptom of current or prior monetary conditions. According to our two-stage “liquidity effect” and “Fisher effect” concepts, it can plausibly be argued that, following the GFC, the low interest rates, the low nominal GDP growth and the low inflation rates in Japan, the eurozone, the UK and the US are all symptoms associated with the second stage of a tight monetary policy, not the first stages of an easy monetary policy.

The key conclusion is that in order to see a shift to higher interest rates and higher inflation it would be necessary for policymakers in the individual economies to engineer a sustained period of substantially faster growth of broad money – i.e. M2 for Japan, M3 for the euro area, M4x for the UK, or M2 plus shadow bank money for the US – in order to increase nominal GDP and inflation. Only then – according to Fisher’s theory -- after some increase in nominal spending and inflation

due to faster money growth, would significant rate rises become possible.

Monetary policy is not just about interest rates; it is (broad) money growth that matters for nominal spending and inflation. From a theoretical perspective this means that central bank policies that focus solely on achieving some alleged “neutral” rate of interest will only be successful if by chance they simultaneously achieve the appropriate growth of broad money. The practical effect of this prescription for central banks whose interest rates are already near or at the zero lower bound is that policy measures should focus exclusively on increasing broad money growth by quantitative measures, not by the further gradual reduction of interest rates. Such policies would include: central bank purchases of securities from non-banks (not from banks), incentivising commercial banks to increase bank credit (by making more loans or by purchasing more securities), or temporarily easing regulations such as capital and liquidity requirements until money growth reached an adequate growth rate.

In this respect, negative interest rates and yield curve control are policy mistakes; they are not a substitute for well-designed policies that ensure faster growth of commercial bank balance sheets or broad money. Recent experience both in Japan and in the euro area shows that these policies can have adverse consequences for the banks and for other parts of the financial system, prolonging the period of low inflation and low interest rates.

In summary, in terms of the two-stage analysis of monetary policy and interest rates that has been developed here from Keynes’ liquidity preference function and Fisher’s inflation effect, I conclude [as of January 2021] that despite low interest rates, monetary policies in the U.S., the U.K., Japan and the Eurozone are not yet in expansionary mode. With broad money growth lower than is appropriate, inflation remains below the 2% target in all four economies, and mainly for that reason interest rates remain low. Judging the growth of broad money in all four economies from the perspective of Irving Fisher (or Milton Friedman), monetary policy is still in the second stage

of a tight money policy, not the first stage of an easy money policy.

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4

Remembering Milton Friedman - A Eulogy

I was privileged to meet Milton Friedman when I was a student in Japan in 1969. The lecture that he gave that August afternoon in the Nihon Keizai Shimbun Hall in Tokyo on “Monetary versus Fiscal Policy” had a profound impact on my thinking. He inspired me to undertake economic research in Japan, and this decision set the course for my career. He remained an unfailingly loyal friend and supporter for the next 37 years.

Tonight, I want to discuss two related topics in economic analysis that will illustrate Friedman’s extraordinary ability to combine the most rigorous of academic arguments with the practical application of those ideas in the real world – currency futures and exchange rates. Many academics are happy to develop a theory, but when it comes to implementation they often step back and leave that to others. Not Milton Friedman.

Friedman became well known from the early 1950s onwards for his advocacy of flexible exchange rates. By the late 1960s and early 1970s his academic advocacy had become a one-man campaign to end the Bretton Woods system of fixed but

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adjustable exchange rates (and the periodic crises they created), and to replace them with floating exchange rates. Much to the consternation of central bankers he predicted not only that the shift to floating exchange rates was inevitable, but also that this eventuality would be highly desirable. Variable (but relatively stable) exchange rates had after all been the subject of his famous article, “The Case for Flexible Exchange Rates” twenty years earlier in 1953.

Perhaps less well known is that this advocacy positioned him to become the intellectual godfather of financial derivatives. This came about because he clearly foresaw – ahead of other economists of the day -- the imminent demise of the Bretton Woods system. But he did not stop there. He also foresaw that to deal with some of the practical consequences of exchange rates that were free to vary on a day-to-day basis, traders, bankers, businessmen and investors would need wide and deep markets in currency futures, which until then had not existed. (Forward contracts arranged by banks already existed, but this was essentially an OTC market limited to substantial bank clients with approved trade transaction requirements, not a market based on a formal exchange where anyone could hedge or speculate at will.)

In the words of the Chicago-based lawyer and founder of the Chicago International Money Market, Leo Melamed, “I asked him [Friedman] whether he would endorse – when Bretton Woods collapsed – the concept of futures contracts in foreign exchange. Without hesitation, Dr. Friedman embraced the concept and authored a study in December 1971 which became the intellectual foundation for the birth of currency futures. It was not a major treatise, hundreds of pages long with footnotes and a bibliography. The world-renowned economist stated all he needed in just 11 pages. His paper, entitled “The Need for Futures Markets in Currencies,” provided us with academic authenticity of the highest magnitude to prove that our theory was a viable necessity. As I have often stated, Professor Friedman gave my idea the credibility without which the concept might never have become a reality. For with Dr Friedman’s paper in hand, I was able to convince government

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officials, bank presidents and the brokerage community of the Chicago Mercantile Exchange that the idea had merit.”

In effect Friedman created the intellectual framework for the extension of futures markets from their agricultural base (wheat, pork bellies, and the like) to financial instruments. Five months later, in May 1972, the Chicago International Money Market opened. Futures in gold, interest rates, Treasuries and stock indices followed, and in time the modern world of derivatives and risk management was born.

To give some of the flavour of that paper it is worthwhile to quote Friedman’s concluding paragraph: “To summarize this analysis: changes in the international financial structure will create a great expansion in the demand for foreign cover. It is highly desirable that this demand be met by as broad, deep, as resilient a futures market in foreign currencies as possible in order to facilitate foreign trade and investment. Such a wider market is almost certain to develop in response to the demand. The major open question is where. The U.S. is the natural place and it is very much in the interests of the U.S. that it should develop here. Its development here will encourage the growth of other financial activities in this country, providing both additional income in the form of services, and easing the problem of executing monetary policy.” Most of these predictions have proven correct.

The other topic that I want to focus on this evening is Milton Friedman’s position in the debate on fixed versus floating exchange rates. In particular I want to illustrate Friedman’s versatility and his intense interest in real world problems by telling you about his involvement with the fixing of the Hong Kong dollar in October 1983. As many of you will know, after a decade of floating between November 1974 and mid 1983, Hong Kong faced a currency crisis that caused the HK\$ to plunge 40% in the space of a couple of months. Living in Hong Kong at the time I had studied the problem extensively and published several papers on the topic in *Asian Monetary Monitor*, a bi-monthly journal. Among other solutions I had proposed a restoration of the old currency board mechanism that had been used in British colonies and elsewhere – essentially a fixed

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exchange rate system with 100% foreign exchange reserves as cover for the local banknote issue.

I had made little headway with the currency board proposal in the preceding year or two, so when the crisis came in September of 1983, like Leo Melamed, I sought out the strongest academic backing for my proposal that I could muster. Among others I consulted Alan Walters and Maxwell Fry, but I also consulted Milton Friedman. In his autobiography with Rose Friedman, “Two Lucky People” he recounts his role: “John was on the phone almost nightly conferring [...] with me on the details of the proposed reform.” (p.326) Milton was pleased to have what he called a ringside seat, and had numerous helpful suggestions, especially on the detailed mechanics of the proposal.

So here we have the best known academic advocate of floating or flexible exchange rates consulting with me on, and promoting, a fixed exchange rate system for Hong Kong in 1983, barely a decade after the demise of Bretton Woods whose collapse he had cheered on from the sidelines. Moreover, as we know he later became a strong opponent of the single currency for the European region. How to explain these apparently contradictory positions?

Simple really! Circumstances alter cases. One clue was in the words he used to describe the Hong Kong episode in “Two Lucky People”. “The monetary reform, he wrote, led to the Hong Kong dollar being unified with the US dollar.” In effect he was willing to back a thorough-going monetary union between a small territory and a far larger economy, and particularly a small economy like Hong Kong where there was a high degree of flexibility in prices, wages and so on. But the case for a monetary union between two or more larger economies with a range of rigidities in pricing and institutional practice was by no means so clear-cut.

Valuing personal and economic freedom above all, Friedman could see that the benefits to a small, highly externally oriented market economy like Hong Kong would bring benefits far outweighing the costs of any alternative system. By contrast, for much larger, well-established and more rigid (one might even say sclerotic) economies in Europe he

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could see that adherence to a single currency would eventually imply surrender of economic and possibly even political freedom and sovereignty to the much larger entity of the currency union.

I have argued that Friedman's ability to combine powerful, academic theories with contributions to the practicalities of markets (such as currency futures and exchange rate mechanisms) was rare in economists. I will miss him as a friend, as a supporter, mentor and teacher. We will all miss his exceptional ability to convey a complicated analysis in simple, layman's terms.

Thank you.

5

Why fiscal and Phillips Curve theories of inflation are not working

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

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

The recession scare was dealt a significant blow by the passage of President Trump's tax cuts in December 2017, but the legislation was not fundamental to the maintenance of the current business cycle expansion. On the basis of the NBER

definitions, the current expansion is likely to be the longest in recorded US financial history, exceeding even the ten-year expansion of the 1990s (March 1991-March 2001).

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

2. Inflation since the Global Financial Crisis

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

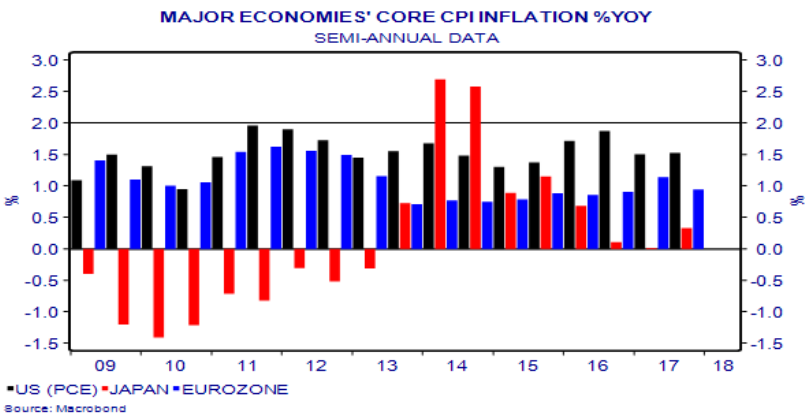


Figure 1. Prolonged Undershoot of 2% Inflation Targets in Major Economies

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

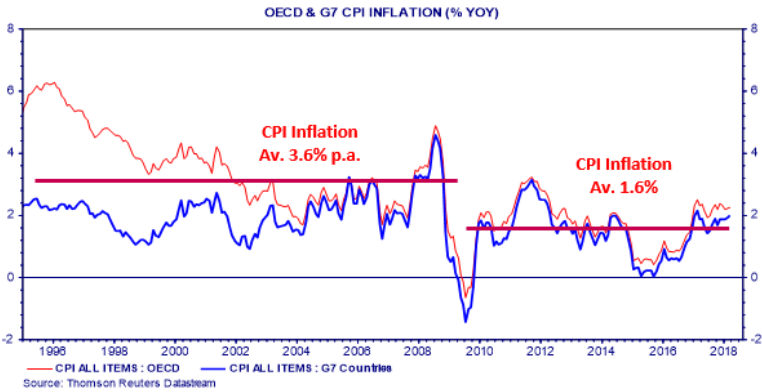


Figure 2. Inflation in the G7 and OECD Economies

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

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

3. Two Popular Explanations for Inflation

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

(1) Fiscal Expansion

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

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

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

However, the view that larger fiscal deficits invariably produce inflation is not supported by the evidence. One previous occasion when there was a significant cut in US taxation and rise in government spending was during President Reagan’s period in office. The federal deficit rose from 1.3% of GDP in 1980 to 5.9% of GDP in 1986. However, far from increasing, the inflation rate plummeted – from 14.8% in March 1980 to just 1.1% in December 1986 (see Table 1). That result was due to the tight control of money growth implemented by the Fed under Chairman Paul Volcker. Another case is Japan in the period 1993-2015 when numerous fiscal stimulus programs failed to re-ignite either economic growth or inflation. The lesson is that without an accompanying easing of money and

credit conditions (and particularly money growth), increased fiscal deficits will not bring higher inflation.

Table 2. Fiscal Policy versus Monetary Policy

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

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

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

Now consider the interaction of fiscal and monetary policy in Table 2. Case A cites the case of fiscal expansion against a backdrop of slower money growth – as in the US under Reagan and Volcker. In this example monetary policy dominated over fiscal policy. Case B, the case of the 1981 budget in the UK under Margaret Thatcher is similar, although the opposite policies were in force -- fiscal policy was contractionary but monetary policy expansionary. Once again monetary policy dominated.

Finally in Case C, if both fiscal policy and monetary policy are operating in the same direction, the result will be clear, but it may be hard to determine which policy was dominant. The clearest recent illustration of this is the case of China’s fiscal stimulus of 2008-10.

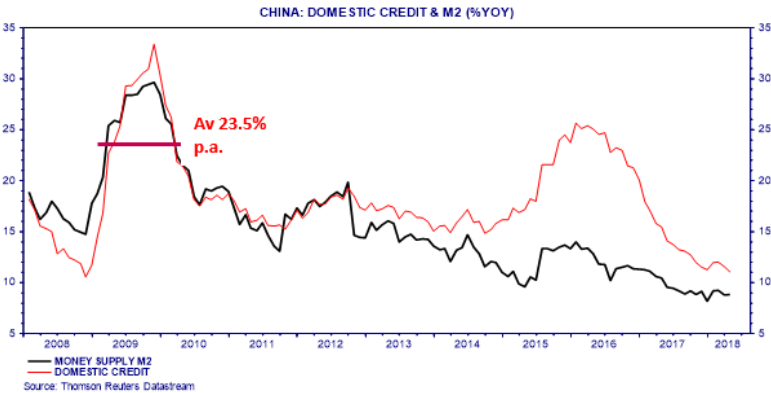


Figure 3. Money and Credit Growth in China, 2004-18

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

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

The result, as shown in Figure 3, was that M2 and bank credit surged from growth rates of around 15% p.a. to peaks of

30% and 34% respectively, or an average growth of 23.5% growth rates over two years. In other words, China’s spectacular recovery was based at least as much on monetary expansion as on fiscal expansion. By contrast, much of the developed world was also running large fiscal deficits, but – despite QE in several economies – in no case was there an equivalent expansion of money and credit. The result, in developed economies, was anaemic recovery, and below-target inflation.

(2) The Phillips Curve

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

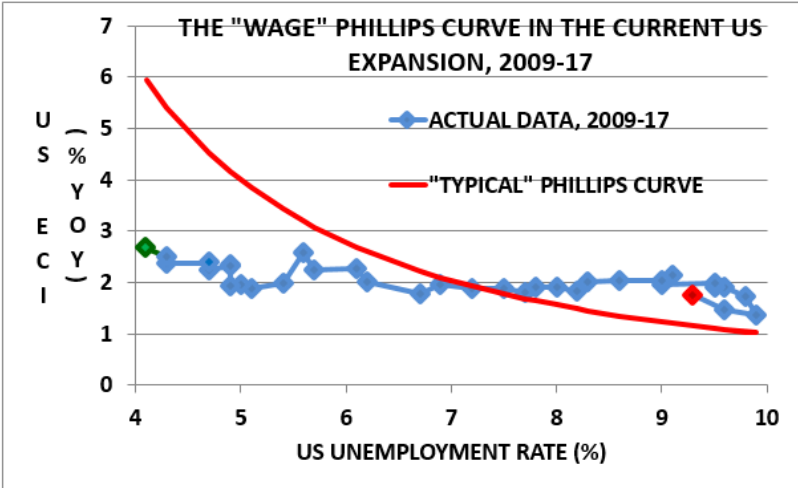


Figure 4. The US Wage Phillips Curve, 2009-17

In practice, as shown by the blue line, which plots successive co-ordinates of the US unemployment rate and wage increases as measured by the Employment Cost Index, the US “wage”

Phillips curve has been almost flat in the current economic expansion, as well as in the two previous expansions on 1991-2001 and 2002-07. The same broad flatness of the plotted wage Phillips curve relationship is found in the UK, Germany, Japan and elsewhere.

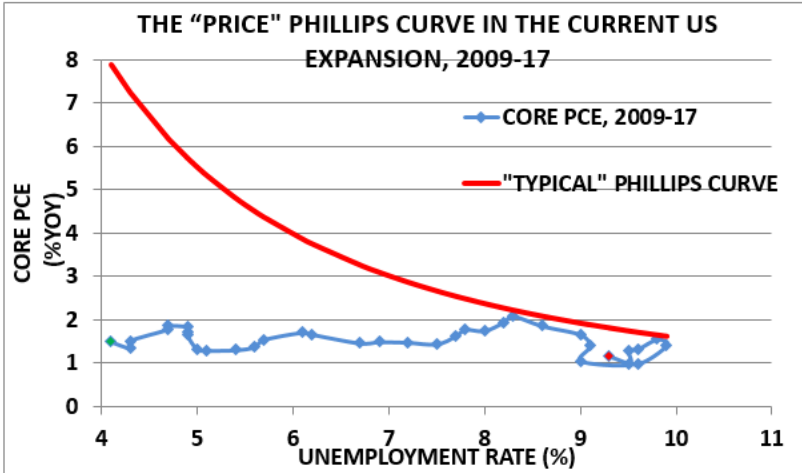


Figure 5. The US Price Phillips Curve, 2009-17

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

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

The problem with this approach to inflation is that while the Phillips curve is an empirical relationship that sometimes

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

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



Figure 6. The Mechanism Underlying the Business Cycle

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

A stylised, flow-chart version of the relation between (broad) money growth, asset prices, economic activity and CPI inflation is shown in Figure 6. It will immediately be apparent that the Phillips curve and the output gap explanations of

inflation only focus on the two right hand boxes in the diagram. The Phillips curve says, in effect, because the labour market (in the Economic activity box) has tightened, goods and service price inflation (in the final box) will follow.

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

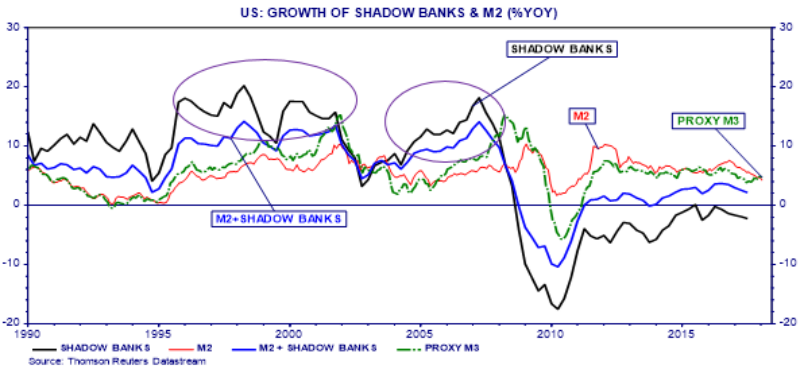


Figure 7. Money and Shadow Banking Growth in the US, 1990-2017

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

Notice that M0 (or the monetary base or the Fed’s balance sheet) is not included in the chart because inflation is related to rates of growth of broad money held by the non-bank public

(i.e. mostly firms and households), not the size of the central bank's balance sheet.

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

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

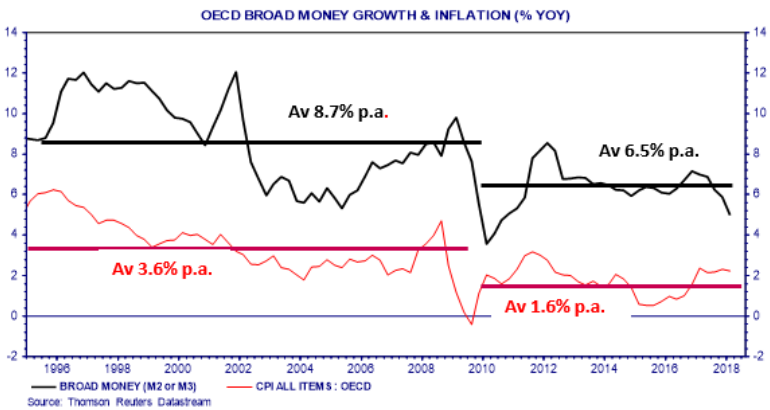


Figure 8. Money Growth and Inflation in the OECD, 1995-2018

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

broad money growth has been 6.5% p.a. which has generated a CPI inflation rate of 1.6% p.a. across the OECD as a whole (to 2018 Q1).

In effect the OECD average broad money growth rate has slowed by 2.2 percentage points since the GFC while the CPI inflation rate has slowed by 2.0 percentage points. Given the way in which these data were collected from such a wide variety of sources, it cannot be mere coincidence that these reduced rates of money growth and inflation are so close numerically. In 2018 Q1 (the latest data available) OECD money growth slowed to 5.0% while CPI inflation stood at 2.2%.

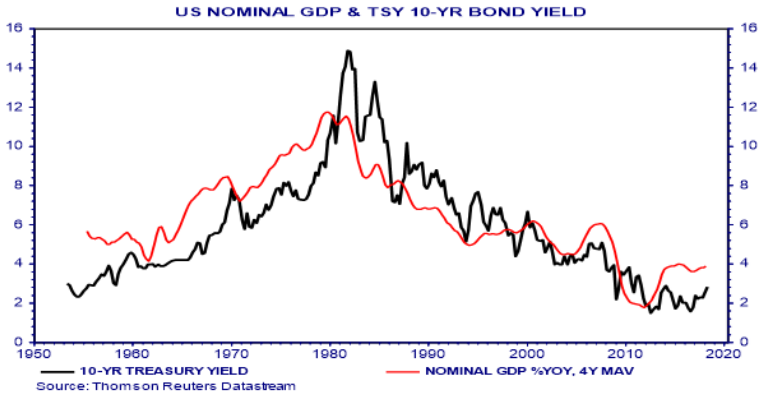


Figure 9. US Nominal GDP and 10-year Treasury Bond Yields, 1953-2018

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

These background developments in fiscal policy fell on fertile ground – a climate of ideas dominated by the fiscal theory of the price level, together with a widespread reliance on economic models that rely heavily on the “Phillips curve” or an “output gap” framework. All this means that inflation

expectations have become much more sensitive to current developments. For example, the modest increase in US average hourly earnings to 2.9% year-on-year (compared with consensus expectations of 2.6%), announced on Friday, February 2, 2018 produced an abrupt rise in 10-year Treasury bond yields to over 2.8% for the first time in four years. (Figure 9 shows bond yields for April at 2.83%.)

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

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

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

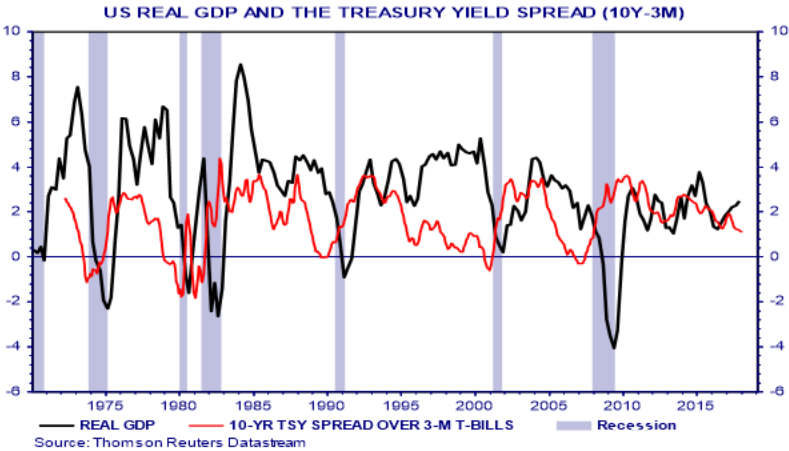


Figure 10. US Real GDP Growth and the Treasury Yield Spread

First, the best indicator by far of an imminent recession in the US has been the inversion of the yield curve shown by the spread between the 10-year Treasury yield and the 3-month Treasury bill yield in Figure 10. However, the yield spread is composed of the difference between two rates: a long term rate determined in the market, and a short term rate largely determined by the Fed. The cause of an inversion is almost always a steep rise at the short end of the curve – i.e. by deliberate Fed tightening (for example, to deal with inflation). Consequently the yield curve is a symptom of underlying tightening of policy; the real cause of the inversion is the tightening of policy (usually reflected in slower growth of money and credit aggregates).

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

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

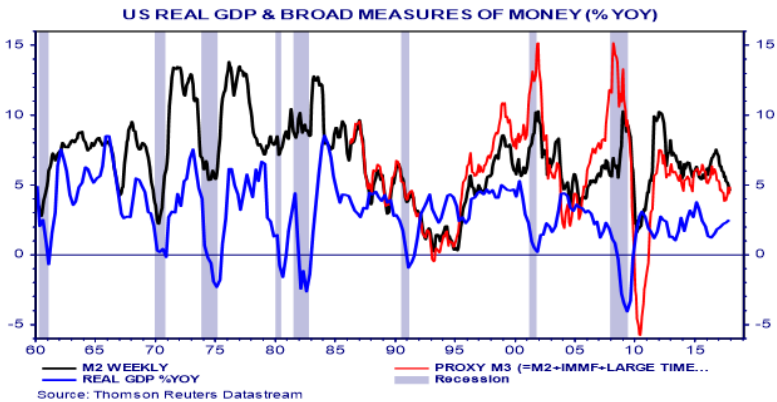


Figure 11. US Money Growth and Real GDP Growth

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

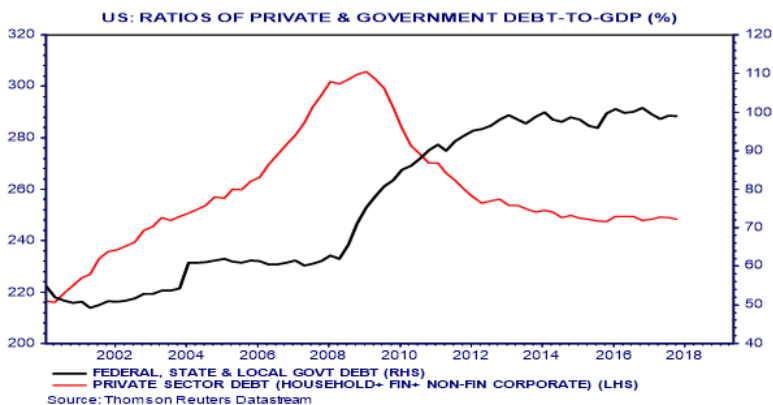


Figure 12. Private sector deleveraging has improved resilience of US to possible recession

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

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

We cannot know in advance how much the US private sector will de-lever, and relative to GDP there may be further deleveraging ahead. However, the key point is, as regularly reported by the New York Fed, consumer balance sheets are in

much better shape, so that even if rates continue to rise, US consumer spending should remain resilient.

5. Conclusion

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

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

Conclusions

The analyses presented in this work compile strong and consistent evidence from various academic papers, confirming a fundamental paradigm for macroeconomic stability and monetary policy evaluation: The monetarist framework retains its superiority over popular alternative models in making sense of contemporary economic events.

The core conclusion is that money growth is the ultimate and most reliable indicator for assessing the stance of monetary policy and forecasting future economic developments.

The Unreliability of Financial Conditions Indices: Experiences gained since March 2020 have demonstrated that the Financial Conditions Index (FCI) model, a composite of interest rates, spreads, and other market indicators, is inadequate for explaining the monetary policy transmission mechanism. This model largely ignores money growth, a fundamental variable. In contrast, the monetarist model, by predicting two opposing interest rate movements—the liquidity effect (short-term) and the Fisher effect (longer-term,

incorporating inflation) following changes in money growth—has shown an almost perfect fit with the evidence during this period. Given the inconsistent and sometimes contradictory results generated by the FCI model, the conclusion is that policymakers should be cautious about these indices and base their analytical priorities on more solid foundations.

Interest Rates are Misleading; Focus Must be on Money Growth: The studies clearly show that interest rates are a highly misleading guide to the true stance of monetary policy. Interest rates are complex indicators subject to conflicting effects, such as the short-term liquidity effects consistent with Keynes's liquidity preference hypothesis, and Fisher's long-term inflation expectation effects. These variable dynamics confirm that relying on the growth rate of a broad definition of money is inevitably a more accurate approach for central banks when assessing monetary policy stance. Money growth provides a clearer and less complex signal about the liquidity injected into the economy and the potential for credit.

Monetary Policy Dominates Fiscal Policy: The lessons drawn from Milton Friedman's intellectual journey emphasize the undisputed dominance of monetary policy in macroeconomic stabilization. As Friedman proposed and proved, historical cases where monetary and fiscal policies moved in contradictory directions consistently show that monetary policy prevailed over fiscal policy in determining macroeconomic outcomes. This finding is a strong challenge to contemporary arguments advocating the role of fiscal theories in inflation and the price level.

Inflation is, Ultimately, a Monetary Phenomenon: The analysis of inflation theories demonstrates that models such as the fiscal theory of the price level and the Phillips Curve (based on the output gap) are inadequate because they are reduced-form analyses that neglect the underlying monetary causes of inflation. The evidence for the monetarist thesis that inflation is an inescapable monetary phenomenon is robust: No sharp upswing in inflation can occur without a sustained period of faster money and credit growth. This requires policymakers to focus on money and credit supply dynamics rather than supply-side factors and the output gap when assessing inflation risks.

Conclusions

In conclusion, the combination of these works demonstrates the enduring intellectual influence and profound practical insights of Milton Friedman on the analysis and implementation of monetary policy. His foresight in predicting the collapse of Bretton Woods and advocating for derivatives markets, as well as his support for fixed exchange rate systems or currency boards for small open economies (as exemplified by his involvement in stabilizing the Hong Kong dollar in 1983), underscores that his academic knowledge reinforced his confidence in the implementation of those ideas.

The collective evidence strongly suggests that policymakers and analysts must adopt a more rigid monetarist framework when assessing macroeconomic conditions and formulating policy. The lessons learned—that sustained inflation requires sustained money growth, and that rate movements are merely complex effects of prior monetary actions—are critical for navigating the current and future global economic environment. These conclusions serve as a powerful call to return to the fundamental principles of monetary economics, shifting attention from volatile, often confusing price signals (interest rates) back to the quantity dynamics (money growth) that truly drive the business cycle and price level.

Conclusions

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**The Great Policy Debate:
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from Friedman to the Present**

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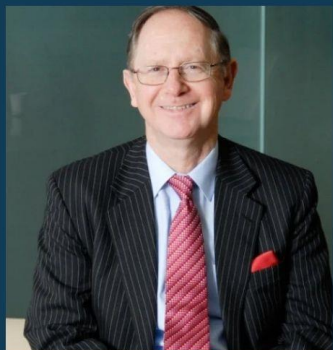
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John Greenwood

Chief Economist at INVESCO plc, John Greenwood OBE, is a graduate of Edinburgh University. He did economic research at Tokyo University and was a visiting research fellow at the Bank of Japan (1970-74). From 1974 he was Chief Economist with GT Management plc, based initially in Hong Kong and later in San Francisco. As editor of Asian Monetary Monitor he proposed a currency board scheme for stabilizing the Hong Kong dollar in 1983 that is still in operation today. John was a director of the Hong Kong Futures Exchange Clearing Corporation (1987-91) and council member the Stock Exchange of Hong Kong (1992-93). An economic adviser to the Hong Kong Government (1992-93), he has been a member of the Committee on Currency Board Operations of the Hong Kong Monetary Authority since 1998. He is also a member of the Shadow Monetary Policy Committee in England. John is a director of INVESCO Asia Ltd in Hong Kong, INVESCO Asset Management Singapore Ltd, and the Hong Kong Association in London.

In 1980 he translated Yoshio Suzuki's book, "Money and Banking in Contemporary Japan" from Japanese. In 2007 he completed a book entitled Hong Kong's Link to the US Dollar: Origins and Evolution which covers the collapse of the currency in 1983 and its subsequent restoration to stability under the plan he devised.

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