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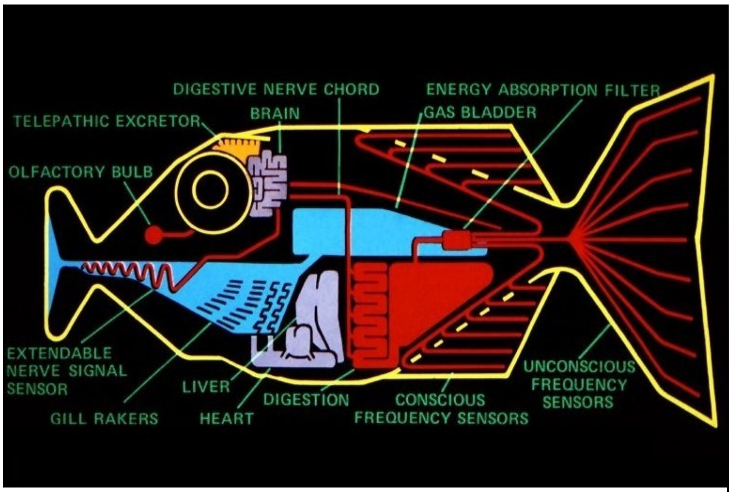

The Hitchhiker's Guide to the Federal Reserve's Monetary Policy Toolkit

The Global Financial Crisis and Great Recession posed daunting new challenges for central banks around the world and spurred innovations in the design, implementation, and communication of monetary policy. With the U.S. economy now nearing the Federal Reserve's statutory goals of maximum employment and price stability, this conference provides a timely opportunity to consider how the lessons we learned are likely to influence the conduct of monetary policy in the future.

The theme of the conference, "Designing Resilient Monetary Policy Frameworks for the Future," encompasses many aspects of monetary policy, from the nitty-gritty details of implementing policy in financial markets to broader questions about how policy affects the economy. Within the operational realm, key choices include the selection of policy instruments, the specific markets in which the central bank participates, and the size and structure of the central bank's balance sheet. These topics are of great importance to the Federal Reserve. As noted in the minutes of last month's Federal Open Market Committee (FOMC) meeting, we are studying many issues related to policy implementation, research which ultimately will inform the FOMC's views on how to most effectively conduct monetary policy in the years ahead. I expect that the work discussed at this conference will make valuable contributions to the understanding of many of these important issues.

My focus today will be the policy tools that are needed to ensure that we have a resilient monetary policy framework. In particular, I will focus on whether our existing tools are adequate to respond to future economic downturns. As I will argue, one lesson from the crisis is that our pre-crisis toolkit was inadequate to address the range of economic circumstances that we faced. Looking ahead, we will likely need to retain many of the monetary policy tools that were developed to promote recovery from the crisis. In addition, policymakers inside and outside the Fed may wish at some point to consider additional options to secure a strong and resilient economy. But before I turn to these longer-run issues, I would like to offer a few remarks on the near-term outlook for the U.S. economy and the potential implications for monetary policy.

The option which will *not* be considered is, of course, the one encompassing the contention that the bigger and more active the central banks are, the less 'strong and resilient' the economy becomes as a result

Current Economic Situation and Outlook

U.S. economic activity continues to expand, led by solid growth in household spending. But business investment remains soft and subdued foreign demand and the appreciation of the dollar since mid-2014 continue to restrain exports. While economic growth has not been rapid, it has been sufficient to generate further improvement in the labour market. Smoothing through the monthly ups and downs, job gains averaged 190,000 per month over the past three months. Although the unemployment rate has remained fairly steady this year, near 5 percent, broader measures of labour utilization have improved. Inflation has continued to run below the FOMC's objective of 2 percent, reflecting in part the transitory effects of earlier declines in energy and import prices.

Looking ahead, the FOMC expects moderate growth in real gross domestic product (GDP), additional strengthening in the labour market, and inflation rising to 2 percent over the next few years. Based on this economic outlook, the FOMC continues to anticipate that gradual increases in the federal funds rate will be appropriate over time to achieve and sustain employment and inflation near our statutory objectives. Indeed, in light of the continued solid performance of the labour market and our outlook for economic activity and inflation, I believe the case for an increase in the federal funds rate has strengthened in recent months. Of course, our decisions always depend on the degree to which incoming data continues to confirm the Committee's outlook.

'If, but, maybe. There's that all important "data" caveat, rearing its ugly head again. For a small coterie of individuals who presume to substitute our narrowly determined judgements of how you untold millions of borrows and lenders should interact with one another, we can be awfully shy about defending the basis for that arrogation, don't you think?'

And, as ever, the economic outlook is uncertain, and so monetary policy is not on a preset course. Our ability to predict how the federal funds rate will evolve over time is quite limited because monetary policy will need to respond to whatever disturbances may buffet the economy. In addition, the level of short-term interest rates consistent with the dual mandate varies over time in response to shifts in underlying economic conditions that are often evident only in hindsight. For these reasons, the range of reasonably likely outcomes for the federal funds rate is quite wide--a point illustrated by figure 1 in your handout. The line in the centre is the median path for the federal funds rate based on the FOMC's Summary of Economic Projections in June. The shaded region, which is based on the historical accuracy of private and government forecasters, shows a 70 percent probability that the federal funds rate will be between 0 and 3-1/4 percent at the end of next year and between 0 and 4-1/2 percent at the end of 2018. The reason for the wide range is that the economy is frequently buffeted by shocks and thus rarely evolves as predicted. When shocks occur and the economic outlook changes, monetary policy needs to adjust. What we do know, however, is that we want a policy toolkit that will allow us to respond to a wide range of possible conditions.

'Shocks'! What a cop-out it is to talk of 'shocks' in the manner a primitive tribesman would use when explaining that a thunderbolt is due, not to the build-up of static electricity on the ice-crystals caught in a convective updraft, but rather to the unexpiated offence given by some impious wretch to an irascible but wholly invisible sky-god. Can there be a more nearly total exercise in futility than to waffle on about 'forecasts' and 'models' and 'ranges' and then to say the error bars are larger than the variables because of the prognosticator's irreducible ignorance of how the world works?

And where does our dear Madame Chair suppose such 'shocks' originate? For a body such as the Fed, which purports to be in the business of saving us naughty little children from burning our fingers too badly, there can be no more important - perhaps no more existential – issue than that of finding out just *who* it is who furnishes the matches with which we are so dangerously prone to play. Might it occur to her that the Vestas have her institution's fingerprints all over them?

The Pre-Crisis Toolkit

Prior to the financial crisis, the Federal Reserve's monetary policy toolkit was simple but effective in the circumstances that then prevailed. Our main tool consisted of open market operations to manage the amount of reserve balances available to the banking sector. These operations, in turn, influenced the interest rate in the federal funds market, where banks experiencing reserve shortfalls could borrow from banks with excess reserves. Before the onset of the crisis, the volume of reserves was generally small--only about $45 billion or so. Thus, even small open market operations could have a significant effect on the federal funds rate. Changes in the federal funds rate would then be transmitted to other short-term interest rates, affecting longer-term interest rates and overall financial conditions and hence inflation and economic activity. This simple, light-touch system allowed the Federal Reserve to operate with a relatively small balance sheet--less than $1 trillion before the crisis--the size of which was largely determined by the need to supply enough U.S. currency to meet demand.

More question begging. Why *were* banks able to support $7.7 trillion's worth of M2 liabilities and

$11.1 trillion in total assets on such a scanty reserve basis on the eve of the crisis? Because the Fed had spent much of the previous decade-and-a-half degrading the role of reserves, largely in order to assuage the cupidity of the very banks over whom it was supposed to be exerting control.

This was not so much a 'light-touch' system as a 'light the blue touch-paper' one.

The global financial crisis revealed two main shortcomings of this simple toolkit. The first was an inability to control the federal funds rate once reserves were no longer relatively scarce. Starting in late 2007, faced with acute financial market distress, the Federal Reserve created programs to keep credit flowing to households and businesses. The loans extended under those programs helped stabilize the financial system. But the additional reserves created by these programs, if left unchecked, would have pushed down the federal funds rate, driving it well below the FOMC's target. To prevent such an outcome, the Federal Reserve took several steps to offset (or sterilize) the effect of its liquidity and credit operations on reserves. By the fall of 2008, however, the reserve effects of our liquidity and credit programs threatened to become too large to sterilize via asset sales and other existing tools. Without sufficient sterilization capacity, the quantity of reserves increased to a point that the Federal Reserve had difficulty maintaining effective control over the federal funds rate.

Of course, by the end of 2008, stabilizing the federal funds rate at a level materially above zero was not an immediate concern because the economy clearly needed very low short-term interest rates. Faced with a steep rise in unemployment and declining inflation, the FOMC lowered its target for the federal funds rate to near zero, a reduction of roughly 5 percentage points over the previous year and a half. Nonetheless, a variety of policy benchmarks would, at least in hindsight, have called for pushing the federal funds rate well below zero during the economic downturn. That doing so was impossible highlights the second serious limitation of our pre-crisis policy toolkit: its inability to generate substantially more accommodation than could be provided by a near-zero federal funds rate.

Our Expanded Toolkit

To address the challenges posed by the financial crisis and the subsequent severe recession and slow recovery, the Federal Reserve significantly expanded its monetary policy toolkit. In 2006, the Congress had approved plans to allow the Fed, beginning in 2011, to pay interest on banks' reserve balances. In the fall of 2008, the Congress moved up the effective date of this authority to October 2008. That authority was essential. Paying interest on reserve balances enables the Fed to break the strong link between the quantity of reserves and the level of the federal funds rate and, in turn, allows the Federal Reserve to control short-term interest rates when reserves are plentiful. In particular, once economic conditions warrant a higher level for market interest rates, the Federal Reserve could raise the interest rate paid on excess reserves--the IOER rate. A higher IOER rate encourages banks to raise the interest rates they charge, putting upward pressure on market interest rates regardless of the level of reserves in the banking sector.

Well – er - no, actually. Even if we accept the Fed 's gross violation of Bagehot's scheme to provide only a costly and targeted relief, it could have reduced the ensuing superfluity much more directly by raising reserve *requirements* in the good, old-fashioned way, even if the necessary ratios would then have looked vertiginously high to modern eyes.

It might also have noted that foreign banks had traditionally held very little in the way of reserves against their Eurodollar liabilities (that early form of regulatory arbitrage, indeed being the genesis for the development offshore market in all its trillion dollar glory). Thus, on the very eve of the catastrophe, ROW branches in the US could scrape up less than $1 *billion* (sic) between them in balances at the Fed as part of a measly $64bln in overall cash – a sum which represented barely 3.0% of total assets (and that after netting out various unspecified interbank commitments in the official numbers).

However, by the time the succeeding waves of upset had crashed across their foredecks, these former Dreadnoughts had unwound $320bln in carry-trade lending to the fleet in home waters; called back

$145bln of monies previously placed with counterparties in the US; and taken in almost $1/2-a-trillion in deposits from their newly-alarmed head offices, simultaneously shifting their own outlays towards the safety of the Fed to the tune of $1.1 trillion at the QIV 2014 peak, 'cash' reserves by then accounted for over 40% of total assets, almost all of it nestling safely, if metaphorically, in the vaults of the NY Fed.

Given this unprecedented clamour for a prudential back-stop on the part of a constituency which had classically avoided all such encumbrance, roughly two-fifths of the reserves the Fed was supposedly so worried about injecting in an uncontrolled fashion into the system were being hungrily taken up – ***fully of their own accord*** **- by a group of institutions who had suddenly realized their merits and who were therefore actively absorbing a significant part of the overall degree of surplus.**

But, like most of our latter-day Masters (and Mistresses) of the Universe, dear Janet is an academic, not a banker, so we wouldn't expect her to fully grasp the processes at work in the messy world which lies outside the dependable reckoning of her beloved DSGE calculus, now would we?

While adjusting the IOER rate is an effective way to move market interest rates when reserves are plentiful, federal funds have generally traded below this rate. This relative softness of the federal funds rate reflects, in part, the fact that only depository institutions can earn the IOER rate. To put a more effective floor under short-term interest rates, the Federal Reserve created supplementary tools to be used as needed. For instance, the overnight reverse repurchase agreement (ON RRP) facility is available to a variety of counterparties, including eligible money market funds, government-sponsored enterprises, broker-dealers, and depository institutions. Through it, eligible counterparties may invest funds overnight with the Federal Reserve at a rate determined by the FOMC. Similar to the payment of IOER, the ON RRP facility discourages participating institutions from lending at a rate substantially below that offered by the Fed.

Our current toolkit proved effective last December. In an environment of superabundant reserves, the FOMC raised the effective federal funds rate--that is, the weighted average rate on federal funds transactions among participants in that market--by the desired amount, and we have since maintained the federal funds rate in its target range.

Two other major additions to the Fed's toolkit were large-scale asset purchases and increasingly explicit forward guidance. Both were used to provide additional monetary policy accommodation after short-term interest rates fell close to zero. Our purchases of Treasury and mortgage-related securities in the open market pushed down longer-term borrowing rates for millions of American families and businesses. Extended forward rate guidance--announcing that we intended to keep short-term interest rates lower for longer than might have otherwise been expected--also put significant downward pressure on longer-term borrowing rates, as did guidance regarding the size and scope of our asset purchases.

And pushed down longer-term savings rates for millions of American families and businesses, too, among them the more prudent, the more future-oriented, and many of those least able to adapt to the change in circumstances by dint of being near or indeed past, retirement. Here, we touch upon an issue which is becoming increasingly more vexed as this long nightmare of central bank extremism continues: namely, the vast redistributive effects which are taking place without any attempt at gathering the necessary social or political consent for their imposition.

Indeed, to the extent that such concerns have even been acknowledged, certain members of the Cult have arrogantly dismissed them. Andrew Haldane of the Bank of England, for example, snorted at criticism of the recent easing it enacted by saying, ***de haut en bas*****:**

'In public policy… it is rarely possible to please everyone all the time. Understandably, some savers are feeling short-changed. Although I have enormous sympathy for their plight, the decision to ease monetary policy was, for me, not a difficult one.'

No. Not for you, Andy, since you happily benefit from the Bank's own, extraordinarily generous, almost fully-funded, non-contributory, defined-benefit pension scheme which, if I read the annual report aright (and like you, I too sometimes find myself *'not being able to make the remotest sense of pensions'*, so I may well be in error), locks in a proportion of your 2015 salary of £180,285 (plus benefits) and gives you a 1/50 per annum accrual thenceforward (almost twice the rate of any new employees in your office), with your entitlements also being scaled up in line with the pleasingly higher RPI inflation gauge of 3.3% p.a., not the 2.0% CPI one with which many lesser mortals have to rub along.

Nice work if you can get it!

Meanwhile, Haldane's colleague at the ECB, Benoît Coeuré, stung by a rare outbreak of public dissent on the part of the German political class last spring, insisted on the absolute primacy of his worldview by appealing to a supposedly core tenet of the European Union which masquerades under the title of 'monetary dominance' – and, in so doing, essentially gave a middle-finger salute to anyone who would presume to rein him and his unelected côterie in a little.

'People are not just savers,' **he declared,** *'they are also employees, taxpayers and borrowers, as such benefiting from the low level of interest rates.'* **To which we might simply reverse the ordering of the subjects of the sentence and affirm that they are not 'just' employers, etc., but savers, too, and insist that it is the fundamental purpose behind Coeuré's sanctified, if simplistic, 'mandate' to ensure sufficient monetary neutrality that they may each conduct their voluntary dealings with the other free of all undue influence emanating from him and his.**

Naturally, his boss, the ineffable Mario Draghi, took it to the next level the following day, telling a meeting of the ADB in Frankfurt with breathtaking impudence that savers only had themselves to blame for setting aside too much money in the first place and that by *'…holding market rates below the real rate of return… It might seem at first glance that this policy [of the ECB] is tantamount to penalising savers in favour of borrowers. But in the medium-term, expansionary policy is actually very much to the benefit of savers…'* **Yeah, and I have a Bridge of Sighs to sell you.**

In light of the slowness of the economic recovery, some have questioned the effectiveness of asset purchases and extended forward rate guidance. But this criticism fails to consider the unusual headwinds the economy faced after the crisis. Those headwinds included substantial household and business deleveraging, unfavourable demand shocks from abroad, a period of contractionary fiscal policy, and unusually tight credit, especially for housing. Studies have found that our asset purchases and extended forward rate guidance put appreciable downward pressure on long-term interest rates and, as a result, helped spur growth in demand for goods and services, lower the unemployment rate, and prevent inflation from falling further below our 2 percent objective.

What 'studies' have *not* examined – principally because counterfactuals are inherently unable to be addressed by blunt empiricism – is whether that same accursed 'slowness' is itself a result of the Fed's blunt-force efforts to frustrate economic restructuring and whether, had it merely limited itself to avoiding an unwarranted number of dominoes

falling prey to what Hayek would have called a 'secondary deflation' in the immediate aftermath of the Lehman collapse, demand for goods and services, as well as for the labour with which to make them, would by now be *greater* than they are.

Nor have they pondered the question of whether a fall in the 'inflation' rate (i.e., of the pace of change in one among many of the Fed's artificial price baskets) might have been not only less distortionary – by allowing the market to more accurately signal relative degrees of resource scarcity - but actual a welcome fillip in its own right, by dint of its positive impact on people's purchasing power.

Two of the Fed's most important new tools--our authority to pay interest on excess reserves and our asset purchases--interacted importantly. Without IOER authority, the Federal Reserve would have been reluctant to buy as many assets as it did because of the longer-run implications for controlling the stance of monetary policy. While we were buying assets aggressively to help bring the U.S. economy out of a severe recession, we also had to keep in mind whether and how we would be able to remove monetary policy accommodation when appropriate. That issue was particularly relevant because we fund our asset purchases through the creation of reserves, and those additional reserves would have made it ever more difficult for the pre-crisis toolkit to raise short-term interest rates when needed.

Oh, yes! I am sure that was at the very *forefront* of their thoughts, right at the moment the first joyous realization was dawning that the crisis would afford them a near limitless, Sorcerer's Apprentice opportunity to explore way out to the wildest reaches of their wrong-headed theoretical framework. Besides, as we noted above, they can easily control reserve use by upping reserve requirements instead. After all the hullabaloo about what supposedly went wrong in 1937, have they forgotten that this option also lay neglected in the bottom of their 'toolbox'?

The FOMC considered removing accommodation by first reducing our asset holdings (including through asset sales) and raising the federal funds rate only after our balance sheet had contracted substantially. But we decided against this approach because our ability to predict the effects of changes in the balance sheet on the economy is less than that associated with changes in the federal funds rate. Excessive inflationary pressures could arise if assets were sold too slowly. Conversely, financial markets and the economy could potentially be destabilized if assets were sold too aggressively. Indeed, the so-called taper tantrum of 2013 illustrates the difficulty of predicting financial market reactions to announcements about the balance sheet. Given the uncertainty and potential costs associated with large-scale asset sales, the FOMC instead decided to begin removing monetary policy accommodation primarily by adjusting short-term interest rates rather than by actively managing its asset holdings. That strategy--raising short-term interest rates once the recovery was sufficiently advanced while maintaining a relatively large balance sheet and plentiful bank reserves--depended on our ability to pay interest on excess reserves.

This one really is a peach! What Madame Chair is here trying to disguise is that the 'so-called taper tantrum' of 2013 was so unexpected in its violence that it threw all the ivory tower pontificators into a fit of complete conniptions. Aah! The wisdom of the Central Planners at work!

Where Do We Go from Here?

What does the future hold for the Fed's toolkit? For starters, our ability to use interest on reserves is likely to play a key role for years to come. In part, this reflects the outlook for our balance sheet over the next few years. As the FOMC has noted in its recent statements, at some point after the process of raising the federal funds rate is well under way, we will cease or phase out reinvesting repayments of principal from our securities holdings. Once we stop reinvestment, it should take several years for our asset holdings--and the bank reserves used to finance them--to passively decline to a more normal level. But even after the volume of reserves falls substantially, IOER will still be important as a contingency tool, because we may need to purchase assets during future recessions to supplement conventional interest rate reductions. Forecasts now show the federal funds rate settling at about 3 percent in the longer run. In contrast, the federal funds rate averaged more than 7 percent between 1965 and 2000. Thus, we expect to have less scope for interest rate cuts than we have had historically.

In part, current expectations for a low future federal funds rate reflect the FOMC's success in stabilizing inflation at around 2 percent--a rate much lower than rates that prevailed during the 1970s and 1980s. Another key factor is the marked decline over the past decade, both here and abroad, in the long-run neutral real rate of interest--that is, the inflation-adjusted short-term interest rate consistent with keeping output at its potential on average over time. Several developments could have contributed to this apparent decline, including slower growth in the working-age populations of many countries, smaller productivity gains in the advanced economies, a decreased propensity to spend in the wake of the financial crises around the world since the late 1990s, and perhaps a paucity of attractive capital projects worldwide. Although these factors may help explain why bond yields have fallen to such low levels here and abroad, our understanding of the forces driving long-run trends in interest rates is nevertheless limited, and thus all predictions in this area are highly uncertain.

Loose translation: 'I have no idea either why growth has slowed. I fail to question the orthodoxy which insists on natural rates being lower in a slower growing and hence presumably poorer society but here is a *pot-pourri* of unsubstantiated, hand-waving explanations as advanced by some of my fellow theoreticians.'

'As for our limited understanding of the forces driving long-term interest rates – well, neither I, nor Signore Draghi, Kuroda-san or Mr. Carney have been able to secure the installation of mirrors in our respective bathrooms.'

Would an average federal funds rate of about 3 percent impair the Fed's ability to fight recessions? Based on the FOMC's behaviour in past recessions, one might think that such a low interest rate could substantially impair policy effectiveness. As shown in the first column of the table in the handout, during the past nine recessions, the FOMC cut the federal funds rate by amounts ranging from about 3 percentage points to more than 10 percentage points. On average, the FOMC reduced rates by about 5-1/2 percentage points, which seems to suggest that the FOMC would face a shortfall of about 2-1/2 percentage points for dealing with an average-sized recession. But this simple comparison exaggerates the limitations on policy created by the zero lower bound. As shown in the second column, the federal funds rate at the start of the past seven recessions was appreciably above the level consistent with the economy operating at potential in the longer run. In most cases, this tighter-than-normal stance of policy before the recession appears to have reflected some combination of initially higher-than-normal labour utilization and elevated inflation pressures. As a result, a large portion of the rate cuts that subsequently occurred during these recessions represented the undoing of the earlier tight stance of monetary policy. Of course, this situation could occur again in the future. But if it did, the federal funds rate at the onset of the recession would be well above its normal level, and the FOMC would be able to cut short-term interest rates by substantially more than 3 percentage points.

Phew!

What this whole garbled exposition seems to be saying is: 'In the past, in attempting the folly of steering the ebb and flow of the uncountable economic transactions daily conducted between the 300 million adults in our fief, we have typically encouraged matters to rush on ahead at either or both of an unsustainable pace and an incompatible mix.'

'Then, once we have become alarmed enough to pull back on the throttle, we have so upset the balance of thrust and drag that far from achieving the mythical 'soft landing' we have succeeded in stalling the aircraft outright. As a result, instead of a little judicious trimming of flaps and stick, we have had to throw all the cargo overboard, break out the parachutes, and send out a plaintive Mayday to anyone within hailing distance.'

'But, as the charts show with the benefit of crystal-

clear, back-fitted hindsight, we were always way too high going into the recession, so half the average, cumulative 5 ½ percent of rate reductions we then made were not really cuts at all, but merely the restoration of more appropriate settings. Ergo the *remaining* half which were cuts proper – and which is all we are likely to have to play with in future – will be more than enough to do the job properly next time, *assuming we do not repeat the errors we have made on every one of the seven previous occasions* as here tabulated for your inspection.'

A recent paper takes a different approach to assessing the FOMC's ability to respond to future recessions by using simulations of the FRB/US model. This analysis begins by asking how the economy would respond to a set of highly adverse shocks if policymakers followed a fairly aggressive policy rule, hypothetically assuming that they can cut the federal funds rate without limit. It then imposes the zero lower bound and asks whether some combination of forward guidance and asset purchases would be sufficient to generate economic conditions at least as good as those that occur under the hypothetical unconstrained policy. In general, the study concludes that, even if the average level of the federal funds rate in the future is only 3 percent, these new tools should be sufficient unless the recession were to be unusually severe and persistent.

Figure 2 in your handout illustrates this point. It shows simulated paths for interest rates, the unemployment rate, and inflation under three different monetary policy responses--the aggressive rule in the absence of the zero lower bound constraint, the constrained aggressive rule, and the constrained aggressive rule combined with $2 trillion in asset purchases and guidance that the federal funds rate will depart from the rule by staying lower for longer. As the blue dashed line shows, the federal funds rate would fall far below zero if policy were unconstrained, thereby causing long-term interest rates to fall sharply. But despite the lower bound, asset purchases and forward guidance can push long-term interest rates even lower on average than in the unconstrained case (especially when adjusted for inflation) by reducing term premiums and increasing the downward pressure on the expected average value of future short-term interest rates. Thus, the use of such tools could result in even better outcomes for unemployment and inflation on average.

Those inclined to a mischievous outlook could deduce from this that the Fed typically makes a $2 trillion error of over-tightening late in the boom and then requires an additional $2.4 trillion of emergency relief (effected via the more traditional route of cutting the Funds rate) in order to mop up its after-effects.

Essentially, this argues that that the very same FRB/US model which Mme Yellen's minions have relied upon to make these estimates is the very same one which routinely leaves the Fed $4.4 trillion shy of the mark at the turning point – or, say, by around 25% of national GDP.

Not bad for government work!

Of course, this analysis could be too optimistic. For one, the FRB/US simulations may overstate the effectiveness of forward guidance and asset purchases, particularly in an environment where long-term interest rates are also likely to be unusually low. In addition, policymakers could have less ability to cut short-term interest rates in the future than the simulations assume. By some calculations, the real neutral rate is currently close to zero, and it could remain at this low level if we were to continue to see slow productivity growth and high global saving. If so, then the average level of the nominal federal funds rate down the road might turn out to be only 2 percent, implying that asset purchases and forward guidance might have to be pushed to extremes to compensate. Moreover, relying too heavily on these nontraditional tools could have unintended consequences. For example, if future policymakers responded to a severe recession by announcing their intention to keep the federal funds rate near zero for a very long time after the economy had substantially recovered and followed through on that guidance, then they might inadvertently encourage excessive risk-taking and so undermine financial stability.

Somewhere in here, if you read it closely, is the merest hint of an admission that the perpetration of all

this violence on the serious business of capital allocation - not just of the flashy, yours-mine kind practised by us self-obsessed show-offs in the financial markets but of the sort engaged in by businessmen, householders, and individuals as an implicit part of their daily routine - might just come with a batch of unwanted side-effects.

Here, Janet is flirting dangerously with a confession that the Fed can indeed blow bubbles of the kind which several of her august predecessors have either vehemently denied can ever take form or, once having done so, can be recognised ahead of their awful denouement. In fact, reading that last paragraph again - one which neatly summarises the course of FRB policy as practiced during these past 7 years of ongoing recovery - one might almost imagine one could hear the faintest cry of '*mea culpa*' being uttered.

Finally, the simulation analysis certainly overstates the FOMC's current ability to respond to a recession, given that there is little scope to cut the federal funds rate at the moment. But that does not mean that the Federal Reserve would be unable to provide appreciable accommodation should the ongoing expansion falter in the near term. In addition to taking the federal funds rate back down to nearly zero, the FOMC could resume asset purchases and announce its intention to keep the federal funds rate at this level until conditions had improved markedly--although with long-term interest rates already quite low, the net stimulus that would result might be somewhat reduced.

'Notwithstanding the collateral damage to which I have just alluded and despite the fact that the desired outcomes may be even more elusive than they are at present, we stand ready to pursue a course of Einsteinian insanity, so proving that there's nothing so dumb which the Bank of Japan can do that we at the Fed can't do dumber.'

Despite these caveats, I expect that forward guidance and asset purchases will remain important components of the Fed's policy toolkit. In addition, it is critical that the Federal Reserve and other supervisory agencies continue to do all they can to ensure a strong and resilient financial system. That said, these tools are not a panacea, and future policymakers could find that they are not adequate to deal with deep and prolonged economic downturns. For these reasons, policymakers and society more broadly may want to explore additional options for helping to foster a strong economy.

On the monetary policy side, future policymakers might choose to consider some additional tools that have been employed by other central banks, though adding them to our toolkit would require a very careful weighing of costs and benefits and, in some cases, could require legislation. For example, future policymakers may wish to explore the possibility of purchasing a broader range of assets. Beyond that, some observers have suggested raising the FOMC's 2 percent inflation objective or implementing policy through alternative monetary policy frameworks, such as price-level or nominal GDP targeting. I should stress, however, that the FOMC is not actively considering these additional tools and policy frameworks, although they are important subjects for research.

'Once again, I have no clear ideas of my own but, ever since we blew the lid off Pandora's Box with a sizeable charge of Semtex, there has been a great profusion of wild suggestions from various species of monetary cranks, one far beyond the wearisome level which has existed throughout the ages. '

'However, the main difference today is not so much the prevalence of the would-be philosopher-kings espousing such nostrums and panaceas. It is rather that, far from dismissing them for the delusions and deceits they are, we now stand ready to pay serious attention to each and everyone one them. We do this because we are devoid of both common sense and common decency when it comes to our indulgence in an intense and sustained jiggery-pokery with the nation's medium of exchange and with its citizens'

contractual transmission of means and ends through the passage of time.'

Beyond monetary policy, fiscal policy has traditionally played an important role in dealing with severe economic downturns. A wide range of possible fiscal policy tools and approaches could enhance the cyclical stability of the economy. For example, steps could be taken to increase the effectiveness of the automatic stabilizers, and some economists have proposed that greater fiscal support could be usefully provided to state and local governments during recessions. As always, it would be important to ensure that any fiscal policy changes did not compromise long-run fiscal sustainability.

'You will have noticed that several of my colleagues have lately taken to calling for a more directly Keynesian approach of naked pump-priming. Craftily, some of them - along with their carefully-briefed, 'embedded' pets in the sphere of journalism - have combined such demands with a discursion on the failings of us central bankers.'

'In this way, the ploy has been to try to enlist the undoubted popular outrage which exists at the gross inequity we have been fostering to the cause of handing power directly to interventionist politicians.'

'Of course, rather than openly invoke the full New Deal Peronism of boondoggle concrete pouring, our friends at the IMF, for example, have taken to making an innocent sounding plea for a greater use of "fiscal space" - i.e., for more deficit spending - on the part of those governments which have not already impugned their credibility and exhausted their lenders' capacity to accommodate them further in their distribution of what only superficially seems to be a welcome largesse.'

'You will doubtless also be aware that, one step further along that Superhighway of Good Intentions which doubles as a six-lane Road to Serfdom, one or two of the more swivel-eyed members of our Cult have come up with the idea of combining the two forms of radicalism in the form of what they call "helicopter money".'

This is a doubly disingenuous phrase. Firstly in that it pretends to be something fashionably new, whereas the issue of money to cover naked governmental excess goes way back beyond the Venezuelas and Zimbabwes of today, via multiple Latin American basket cases, through last century's finance of the horrors of total war, past Lincoln's greenbacks and Davis's grey ones, to the French Revolutionary *assignats* and the American rebellion's infamous Continentals of 'Not Worth a ...' fame.

Secondly, it is misleading because it immediately brings to mind Milton Friedman's 1969 thought experiment regarding mass monetary injection (a one-off, proportionate or random one, at that, as well as one which did *not* favour the utilization of real resources by any one actor, much less by Leviathan itself). Thus, it sub-consciously adds the imprimatur of a man who was broadly against *étatisme* and generally in favour of individual freedom and so helps suppress the misgivings of those who might otherwise be politically disinclined to support such an overtly Rooseveltian programme.

Moreover, irony abounds in that, when writing the paper in question, Friedman was trying to argue that it was *money* that mattered the most and that fiscal or wages & incomes policy should be accordingly de-emphasised, in complete contrast to what is slyly being promulgated in his name today. Edward Bernays himself could not have been more artful.

Finally, and most ambitiously, as a society we should explore ways to raise productivity growth. Stronger productivity growth would tend to raise the average level of interest rates and therefore would provide the Federal Reserve with greater scope to ease monetary policy in the event of a recession. But more importantly, stronger productivity growth would enhance Americans' living standards. Though outside the narrow field of monetary policy, many possibilities in this arena are worth considering, including improving our educational system and investing more in worker training; promoting capital investment and research spending, both private and public; and looking for ways to reduce regulatory burdens while protecting important economic, financial, and social goals.

'So, having rambled on this long without saying anything particularly coherent, much less cogent, let me finish, in time honoured fashion, with a touch of Tooth Fairy whimsy in which I will namecheck a number of things I see as ideologically desirable, even if they lie "*outside the narrow field*" of my competence. The appeal to authority - even to an entirely unrelated authority - is of course the bane of the rolling news era, replete as the work of its lazy correspondents is with the worship of "experts" and prone as they are to such overworked tropes as "scientists say…", but despite this I'm sure you'll forgive me a few right-on *obiter dicta* with which to close. It all makes for good copy.'

Conclusion

Although fiscal policies and structural reforms can play an important role in strengthening the U.S. economy, my primary message today is that I expect monetary policy will continue to play a vital part in promoting a stable and healthy economy. New policy tools, which helped the Federal Reserve respond to the financial crisis and Great Recession, are likely to remain useful in dealing with future downturns. Additional tools may be needed and will be the subject of research and debate. But even if average interest rates remain lower than in the past, I believe that monetary policy will, under most conditions, be able to respond effectively.

'In conclusion, let me say - well, not very much at all, really. Rates will go up - one day - *if* "uncertainty" permits, if no country anywhere in the world is in trouble, if the Jets win the Superbowl, and if all the raindrops are lemon-drops and gum-drops.'

'And then, at some point, they may go down again. And if they haven't gone up enough first for them to go down enough later - even though we have absolutely no idea just what constitutes "enough", whether in the upswing or the down - we'll definitely try something whacky, involving lots and lots of zeroes, just like we have been doing for most of the past decade.'

'Who knows? It might even work the next time!'

'Now, let me pass you over to Stan, *eminence grise* of the Cult, who will probably explain all this far more succinctly than I seem to have been able to do.'

Janet Yellen,

Jackson Hole,

August 26th 2016

Translation: Babelfish

Gloss: Sean Corrigan

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