The Effects of Ultra Low Interest Rates on Banks and the Economy

Background notes for remarks made in the closing panel[1]

by

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[1] A two day conference on "The effects of ultra low interest rates on banks and the economy" took place at Imperial College Business School. The final panel was chaired by Charles Goodhart. Other panelists were Jose Manuel Campa, Nicholas Veron and Martin Wolf.

"There is always a well-known solution to every human problem -

neat, plausible and wrong"

H.L. Menken

Introduction

As the Economic Adviser at the Bank for international Settlements, I expressed concern well before the crisis of 2008 about the effects of ultra low interest rates in the advanced market economies (AMEs). My concerns have only deepened in light of post- crisis developments. The aggressive monetary policies followed since 2009 seem to rest upon the simple premise that "more of the same" will ensure the strong, sustainable and inclusive growth sought by the G20. In fact, such low rates might actually prove counterproductive. Two broad themes surfaced at this conference, both of which cast doubt on the premise that "more of the same" will suffice[2].

First, an assessment of the effects of monetary policy on banks and the economy is not simple but **complicated.** When monetary easing is used to resist an economic downturn, the paper presented at this conference by Stehn and Radde (2019) showed that the reaction of banks depends on their initial level of capital, which effects both their rate setting decisions and the willingness of depositors to withdraw deposits as the deposit rate is lowered. Similarly, the paper by Martinez-Miera (2019) showed that the overall effect on credit expansion was dependent on the degree of competitiveness in the banking industry as well as the capacity of non-banks to provide substitutes for bank credit. Turning to monetary tightening in the face of excessive credit expansion, Barlevy (2019) noted that it could be effective or non-effective depending on how it was done. In short, drawing simple conclusions is simply not appropriate.

[2] There was no discussion of the broader question of whether CPI "price stability" is a necessary, much less sufficient, condition to ensure achievement of the G 20 goals. While this is simply assumed by central banks, there is a rich pre-War literature advocating deflation as the optimal policy response in the face of rising levels of labour productivity. See Selgin (1997). An important empirical observation is that actual inflation has failed to hit inflation targets in virtually all AME's over the last decade, without any sign of an emerging deflationary spiral. This is consistent with broader empirical studies indicating that CPI deflations are not generally associated with output losses. See Atkenson and Kehoe (2004) and Borio et al (2015).

Second, and a particularly important complication, a number of papers suggested that the **effectiveness** of monetary easing in stimulating aggregate demand might well be non-linear. Indeed, in the end, it might even have the opposite effect to that desired. Most of the attention at this conference focussed on how lower rates squeeze bank lending margins and eventually the supply of credit[3] . However, I want to suggest that the problem is much more fundamental, and it depends on the reaction of borrowers as much as lenders. There would seem to be a fundamental intertemporal inconsistency involved in the repeated use of monetary easing in AMEs to stimulate demand. Initially, lower policy rates encourage private spending (households and corporates) to be brought forward in time, with purchases being financed by debt accumulation. Over time, however, as tomorrow becomes today, the weight of the debt burden accumulates and the effectiveness of further monetary easing declines. Moreover, there are other plausible reasons to doubt the effectiveness of monetary easing in stimulating aggregate demand. As Keynes (1961, p.173) remarked in the General Theory; "if, however, we are tempted to assert that money is the drink that stimulates the system to activity, we must remind ourselves that there may be several slips between the cup and the lip".

In addition, ultra low interest rates in AMEs can have a multitude of other, **undesired side effects,** not least on financial stability in the AMEs, on potential growth in those economies and on the stability of emerging market economies (EMEs). Admittedly, none of these concerns seem to trouble those who rely on prevalent Neoclassical macroeconomic models (most central banks), nor the newly popular school of Modern Monetary Theory[4]. Yet, such concerns have surfaced repeatedly in the history of economic thought. They are central to the work of Minsky (2008) who reminded us that "stability breeds instability". Moreover, they resonate with the work of Hayek (1975) who emphasized the importance of "malinvestments" and "complexity" when considering the setting of monetary policy. At the very least, such considerations should foster greater

[3] For example see Brunnermeier and Koby (2018) on "the reversal interest rate". Initially, lower policy rates lower bond yields and provide capital gains to banks but, as this wears off, bank capital is threatened by lower lending margins.

[4] This because the kinds of variables or considerations that might capture such concerns (e.g. debt, bankruptcy and a developed financial sector) are not included in the models.

humility among policymakers and temper their willingness to adopt ever more experimental policies.

In my comments, I will focus first on the effectiveness and side effects of ultra low but positive, nominal interest rates. Then I will consider some of the implications of negative policy rates. Finally, I will briefly assess some alternative policies to further monetary easing should a potential economic downturn materialize.

The Effects of Positive but Ultra Low Rates

a) Their effectiveness in stimulating aggregate demand?

As noted above, the biggest issue is an intertemporal inconsistency associated with the rising levels of global debt. In practice, the effectiveness of policy today reduces the likelihood of its effectiveness in the future, a feedback process once characterized as "headwinds" by Allen Greenspan. Far from declining in the aftermath of the crisis that began in 2008, the ratio of global debt (households, corporates and governments) to global GDP at the end of 2018 was (according to the BIS) 40 percentage points higher than in 2007. In effect, the "headwinds" have grown to gale force.

In the AMEs, it is a fact that the post-crisis recovery has been the weakest of all recoveries in the post War period. Moreover, in every year since the crisis (with one exception), the growth rate of GNP projected for the next year by the IMF and OECD has significantly overestimated the actual outturn. Forecasts for inflation have been similarly overestimated. Investment levels, which conventional models generally assume will be responsive to monetary stimulus, have been particularly weak. As for consumption, the household saving rate in Europe now stands at 13%, a five year high. In the US, it has been trending slowly but steadily upward since 2009. In the EMEs, growth has been relatively more vigorous but is increasingly showing signs of weakness as debt levels ratchet higher.

In addition to the "headwinds" of debt, a number of arguments support the view that monetary easing might be less effective than many suppose. One possibility. is that ever more experimental policies raise levels of unease among both households and corporations. This induces them to "hunker down" and constrain spending rather than to spend more. Such a possibility is clearly consistent with

the Keynesian invocation of "animal spirits" that are driven by psychological propensities.

Nor is it at all clear that ultra low rates should induce more **consumer** spending. If consumers have a predefined goal for wealth accumulation, to ensure a comfortable retirement, then a lower rate of accumulation implies they must save more not less[5]. Similarly, ultra low rates lower the disposable income of creditors (say older people living off investments) and raise the disposable income of debtors. If the former group has a higher marginal propensity to consume than the latter, aggregate consumption might fall[6]. Finally, the argument that lower rates increase "wealth", and therefore induce more spending, seems to suffer from a fundamental analytical flaw. Lower rates provide accounting gains, but they do not create "wealth" if wealth is appropriately defined as the capacity to have a higher standard of living in the future[7]. For example, higher house prices constitute an increase in "wealth" for homeowners only if you ignore the higher (implicit) cost of living in a house in the future[8].

There are similar arguments to support the view that **capital investment** might also fail to respond to ultra low rates. To the extent that future consumption is expected to be held back by the "headwinds" of debt, investment to meet demand might also be expected to be weak[9]. Closely related, company pension schemes (defined benefits) are hurt by low rates and this can be a contingent liability weakening future cash flow and investment. Further, there is growing evidence that low rates encourage mergers and acquisitions and levels of corporate concentration. Absent an adequate degree of competition, there is no need to invest to strengthen one's competitive position. Finally, Smithers (2019) and Acharya (2019b) both emphasize how low rates encourage corporate managements to cut investment and to borrow in order to raise cash to finance share buybacks. These raise share prices and the value of share options owned by

[5] For an early argument of this sort, see Bailey (1962). This tendency will be reinforced if there is also uncertainty as to whether pension obligations will be honoured.

[6] Consistent with this hypothesis, household savings in the US rose from around $500 billion in 2008 to $1.5 trillion in 2019.

[7] See Merton (2006) and White (2006)

[8] In any event, the "wealth" provided by higher asset prices accrues in large part to richer segments of society that might be expected to have a relatively low marginal propensity to consume.

[9] Since the Fed began lowering rates in early 2019, the growth rates of shipments of core capital goods and also of non-residential business investment have continued to decelerate.

management, to their advantage. In contrast, the longer run interests of the corporation are not well served if the stock of productive capital does not expand.

Many of the papers at this conference focussed on how ultra low rates might affect the behaviour of banks. As noted above, these effects are not easy to predict[10]. One important issue is how initial capital levels affect lending decisions as (if) margins shrink. Acharya (2019a) argues that when initial capital levels are low ("weak" banks), banks tend to "evergreen" old loans thus creating "zombie" companies. Preoccupied with managing these legacy assets, they also cut back on making new, risky loans. He concludes that the recapitalisation of banks is essential if the "lending channel" of monetary easing is to work effectively.

Complementary to this hypothesis, banks with high levels of capital ("strong" banks) tend to lend more (higher volumes offset lower margins) and respond positively to stronger demand for credit at lower rates. Thus, virtually every country that retained a strong banking system in the post crisis period (Canada, New Zealand, Australia, the Nordics and others) now has record high ratios of mortgage debt to household income as well as record high house prices. However, for reasons discussed below, concerns have been raised in all these countries that these developments might be the source of future instability.

Moreover, it should be noted that not all the empirical evidence supports the proposition that capital ratios and lending are inversely correlated. Banks in Europe are generally thought of as "weak", and might therefore have been expected to curt back on lending as monetary easing further squeezed their profit margins. However, a recent report from the European Banking Authority[11] suggests the opposite by noting that European banks have been aggressively investing in commercial real estate and loans to small business. This could of course be a form of "gambling for resurrection", which also implies potential problems going forward. At the same time, there has also been a very significant increase in European corporate borrowing through bond markets, just within

[10] The still more specific question of how negative policy rates might affect banks' behaviour is considered separately below.

[11] See the description by Binham (2019).

investment grade and often covenant-lite[12]. This also suggests that ultra low rates might have contributed to imprudent borrowing as well as lending.

b) **The unintended side effects of ultra low rates?**

The first side effect to consider is the possibility that ultra low rates might threaten the **stability of the financial sector**. If margins are being squeezed, as most evidence seems to indicate, the business model of many institutions could become threatened. Pension funds and insurance companies are most at risk since they have long liabilities, which rise as rates fall, and are already facing problems arising from changing demographics. "Funding ratios" of pension funds are falling virtually everywhere, with the decline at US State and Local Pension funds being particularly severe[13]. As described above, the effect on banks is likely to be substantial, if less severe. Already threatened by the nascent Fin Tech industry, employment at banks has declined sharply in recent years[14]. Further, the ratio of market value to book value for European and Japanese banks is at record lows. A related concern is that lower profits at banks (especially in Japan and Europe) will constrain needed investments in technology, not least to counter cyber threats.

Not surprisingly, both pension funds and insurance companies have sharply expanded the use of alternative financial instruments in the "search for yield", with the most underfunded doing so most aggressively. Similarly, in recent years, Japanese regional banks have invested heavily in risky Collateralized Loan Obligations issued in dollars. The most recent Global Financial Stability Report of the IMF (2019) documents how pension funds, insurance companies and asset managers have taken on riskier and less liquid assets. It then goes on to speculate about the possible economic impact should some of these risks materialize. Most alarmingly, IMF simulations suggest that a recession half as severe as 2009 would result in $19 trillion of corporate debt issued by companies whose debt service requirements exceeded their shrunken profits. The knock-on effects on financial institutions that have purchased such assets could be significant. As well, the IMF

[12] van Steenis at this conference noted that market based financing in Europe had risen from 16 % of the total (pre crisis) to 27%. In part, this was due to the credit ratings of banks having fallen so far that direct access by corporations to markets was a cheaper option.

[13] The ratio declined rom 102.7 percent in 2000 to 72.8 percent in 2018 in spite of (likely) unrepeatable capital gains on both bonds and equities.

[14] Recent estimates indicate the loss of 60000 jobs in European banking since the crisis began.

worries that a combination of low yields and tighter financial regulation is also pushing investments into unregulated sectors.

Low policy rates (and other unconventional monetary measures) have also contributed to higher prices for financial assets. There are now $17 trillion of negative yielding sovereign bonds, while corporate spreads (over sovereigns) are exceptionally low, especially for bonds just above or below investment grade. The unusually high price of US equities and the low value of the Vix have also attracted considerable attention.

The fact that equity prices have continued to rise (indicating expectations of high growth?) even as bond rates have fallen (indicating expectations of low growth?) testifies to the overwhelming influence of central bank liquidity[15]. Investors have been buying low or even negative yielding sovereign debt in anticipation of further rate declines with associated capital gains[16]. In effect, investors have been betting on being able to sell these bonds to some "greater fool", perhaps even the central banks. Similarly, the willingness to buy equities, even when equity prices appear high by traditional metrics[17], indicates a belief that they might rise even higher. The question remaining is; what happens when this overt speculation stops or even goes into reverse? The scope for disorderly outcomes could be substantial[18].

Concerns about disorderly market outcomes, and in turn the stability of the financial sector, have also increased as signs of market malfunctioning have risen. Since the onslaught of the crisis, waves of Risk/On-Risk/Off behaviour have been driven by changes in central bank policies. This implies that the gains from diversification and value investing have both been lost. Liquidity seems to have already declined in many markets, with concerns rising about prospective

[15] Historically, Treasury yields and equity prices have had a positive correlation, not a negative one. Similarly, Treasury yields and corporate spreads have historically had a negative correlation as stronger growth leads to higher Treasury yields and reduced expectations of corporate failures. This correlation has also turned positive as central bank liquidity has supported all prices.

[16] As yields fall, the capital gains (in percentage terms) associated with a given change in basis points increases.

[17] In early January 2020, the Shiller PE ratio (CAPE) was around 31. This was almost double the historical median ratio of just less than 16.

[18] At some point, the "greater fool" argument must lose its allure. As bond rates fall below historical norms, even becoming negative, the appropriateness of standard portfolio benchmarks (a 60/40 split between equities and bonds) becomes ever more questionable. These benchmarks assume a negative correlation between equity prices and bond prices, which assumption becomes ever more improbable as bond rates fall to zero and even below zero.

illiquidity in corporate debt markets (especially for currently rated BBB securities) should they be subject to a downgrade. Moreover, the process of "price discovery" has atrophied; in Japan, whole days go by without private sector trades in government bonds. Further, recurrent "flash crashes" and enduring market anomalies[19] also indicate that markets are not functioning as they should. The Fed's loss of control over the US repo rate in September 2019, and the ad hoc measures taken since to avoid similar developments, strongly suggests that some combination of ultra low rates and changes in financial regulation[20] have had unintended consequences.

Finally, the search for yield has driven many asset management companies into more illiquid investments, while they still offer same day redemptions to clients. Should these redemptions rise, "fire sales" might then become both more common and more brutal. The expansion of ETF's and the growing use of algorithmic and high-speed trading adds to the uncertainty about future market functioning and the possibility of disorderly market developments. Questions might also be raised as to whether pension funds and insurance companies would be able to play their normal stabilizing role (buying on the dips) when they too have fewer liquid assets on hand.

Another question has to do with the unintended effects of ultra low rates on the **supply side** of the economy: the level and growth rate of potential. It is well known[21] that "busts" after a financial/credit "boom" tend to be deep and long lasting. Indeed, Cerra and Saxena (2008) suggest the losses are never fully recovered. While "bust" periods seem inherently disinflationary, questions remain as to the relative importance of demand and supply side factors in explaining this outcome.

In recent years, there have been a number on investigations into this process. BIS research[22] documents how low productivity growth sectors (in

[19] Not least, the theorem of covered interest parity has been consistently violated since 2008. This implies that those seeking to obtain US dollars through the swap market in the future might well find themselves disappointed. This raises in turn the question of whether the Fed would come to the rescue in the future as they did in 2008 and 2009.

[20] Attention has increasingly focussed on the attempts of systemically important US banks (G-SIBs) to manage their balance sheets at quarter and year ends to reduce future regulatory capital requirements.

[21] Reinhart and Reinhart (2010)

[22] Borio et al (2015). Also Hofmann (2019).

construction, retail and banking) are encouraged to expand during the boom. Further, companies in these sectors receive "evergreen" loans from their banks which sustain them as "zombie" companies during the bust. Banks do this because low interest rates reduce their financing costs, and because they have doubts about their own solvency (or concerns about market reactions) should they instead classify these loans as non-performing. These practices have also been documented by the OECD (WP1) and others. They increase disinflationary pressures in the short run, since excess capacity is maintained, but they also lower productivity growth rates over time. Acharya (2019a) and White (2016) have made the further point that the resulting near term disinflationary pressures might trigger even more monetary easing. If this further facilitated evergreening, then a downward economic spiral of both demand and supply could eventually result.

Since the crisis, it appears that ultra low interest rates (and other aspects of monetary easing) have had other negative effects on productive capacity as well. Easy financing has diverted real resources towards "unicorns", many of which seem destined never to make an adequate rate of return. The negative market reactions to recent IPOs at WeWork, Lyft and Uber indicate a growing recognition of this fact[23]. Moreover, as such firms subsidize their products, in search of market share and eventual monopoly, they also contribute to disinflation and (potentially) still easier monetary policy. Finally, as noted above, ultra low rates favour increased industrial concentration and the exercise of industrial power. The purchase of innovative new companies by incumbents seems sure to lower innovation over time.

A third set of worrying side effects of ultra low interest rates in AMEs is the spillover to **emerging market economies (EMEs).** The increase in global debt ratios since 2008 is almost wholly due to an expansion in debt in EMEs. The overall EME debt ratio rose from 110 percent in 2008Q3 to 192 percent in 2019Q1. Chinese household debt (as a % of GDP) has doubled since 2012 to 60 percent, surpassing the 50 percent in Europe. Moreover, the IMF (2019) has recently said that 40 percent of low-income countries are now either "in distress" or at "high risk" of debt distress. To put this another way, the debt ratio of the

[23] Many other firms of long standing have yet to make profits (Netflix) or have only just begun to do so.

low-income countries has now risen back to the level seen prior to the most recent episode of debt forgiveness.

Since cross border flows to EMEs are only a small part of total cross border flows, marginal changes in AMEs can have big effects on EMEs[24]. Relatively easy money in AMEs led to capital inflows to EMEs almost continuously from 2004 to 2014, interrupted only by the crisis itself, though they also ebbed and flowed in response to the waves of Risk/On and Risk/Off behaviour. In spite of increased recourse to capital flow management (increasingly accepted by the IMF) and growing use of macroprudential instruments, there was upward pressure on EME exchange rates prior to 2015. That pressure was strongly resisted by FX intervention (raising bank reserves in domestic currency) and easier monetary policy than otherwise. Domestic credit expansion rose sharply, funded by both domestic and foreign sources, and the EMEs started to show many of the unintended consequences seen in the AMEs and described above.

Not least, significant threats to financial stability have arisen. The migration of domestic lending to non banks ("shadow banking") in both China and India is now a source of major concern. The McKinsey Global Institute has recently documented how risky corporate lending has exploded, with interest coverage of less than 1 1/2 for 37% of Chinese loans, and for 43% and 32% of Indian and Indonesian loans respectively[25]. Property developers and SOEs (often concentrated in oil and gas extraction and mining) are prominent borrowers, even though their internal rates of return have been falling[26]. Finally, much of the EME corporate debt is denominated in dollars which leaves them vulnerable to counterparty risk (as the US dollar rises) as well as liquidity risk if maturing loans cannot be easily rolled over in dollars[27].

In short, whereas in 2009 EMEs were part of the global solution to the global crisis, today they are part of the problem. The IMF (2019) and UNCTAD

[24] At this conference, Cavallino (2019) also provided evidence in support of the existence of "spillovers".
[25] Commenting on the problems of Indian telecom firms, the Economist (2019) recently commented "If either firm (Bharti Airtel and Vodaphone) collapsed, India's fragile banks would be stuck with a Ghats-worth of non-performing loans".
[26] This problem could worsen as climate change mitigation "strands" many assets.
[27] When EME currencies were rising, it seemed to make sense to borrow in dollars since these labilities were declining in terms of domestic currency. However, this judgment implicitly assumed that the appreciation of their currencies would continue. Since 2015 the opposite has happened for most EME currencies.

(2019) seem to agree that "push me" factors (low yields) in the AMEs were largely responsible for these unwelcome developments.

Finally, but briefly, **three other side effects** stand out. First, ultra low rates have distributional effects with political implications that go far beyond their economic implications. In particular, they raise the value of financial and real assets that belong disproportionately to the already wealthy. It is an empirical issue whether the gains in employment of the less well off make this distributional side effect moot[28]. Second, central banks policies have crossed the line into fiscal policy (through quantitative easing) and into regulatory policy (through macroprudential interventions). This will threaten central bank "independence" going forward, as will the certainty of central banks being blamed should another serious downturn materialize. Third, and perhaps most important, ultra low rates and other monetary interventions have encouraged governments to believe that the economic situation is under control, and that governments can also continue with "business as usual". This is particularly dangerous since the underlying problem is now one of excessive debt at the global level. This is akin to an insolvency problem that only governments, not central banks, can deal with.

c) Ultra low rates and the "exit" problem

The positive effectiveness of monetary policy in stimulating demand declines with time. In contrast, the importance of the negative side effects rises with time. At some point, the latter exceed the former and a central bank might well feel that it should reverse a policy that is doing more harm than good. In late 2019, perhaps reflecting this kind of thinking, the Swedish Riksbank announced that it would raise its negative rates to zero. Unfortunately, there is a complication. One cannot simply ignore all of the implications of the original policy stance. In particular, the build up of debt encouraged by easy money leads directly to a "debt trap"[29]. As central bankers become increasingly aware of the need to renormalize monetary policy, they become increasingly fearful that doing

[28] If the effectiveness of monetary easing declines over time, then there is no positive offset to the negative distributional implications.

[29] For a fuller list of the various factors inhibiting a "renormalisation" of interest rates, see The Group of Thirty (2015) pp43-44, for which I held the pen.

so will trigger the crisis they wish to avoid. Central bankers should recognize that dealing with this problem is the number one challenge they face today.

How then can we explain the recent decisions of the Federal Reserve and the European Central Bank to ease monetary policy further rather than to tighten it carefully? One possible explanation is that it is a last, desperate attempt to put off into the future a crisis that they know is building up under the surface. In contrast, and much more likely, it could be that both actions have been driven by the persistent (if limited) undershooting of inflation targets and a persistent underestimating of the undesirable side effects of their own policies[30]. Whatever the motivation, the side effects of ultra low rates are now being still further encouraged.

The Effects of Negative Interest Rates

One possibility is that negative rates affect the banks and the economy similarly to the way that successively lower, positive interest rates do. In this case, all of the above analysis still applies[31]. Negative rates are simply an extension of the "more of the same" policies that central banks have been following for many years now. However, another possibility is that there is something special about negative interest rates. They could result in a "phase shift" (as water turns to ice) where the effects of policy become strikingly different.

Logically, it is possible that negative policy rates become **more** effective and have fewer unintended consequences. Smets (2019) argues in support of the first proposition. He notes that the imposition of negative rates on bank reserves proved to the market that negative rates were "possible" and that this triggered the sharp downward movement in longer term rates in the eurozone. As far as I know, no one has suggested that the unintended consequences of monetary easing might be reduced below the zero bound.

[30] In his autobiography, Paul Volcker (2019) seems to agree with this latter interpretation and in so doing expresses serious personal reservations about the current conduct of monetary policy. On the massive policy response to only slight shortfalls in the CPI from target, he asks "How did central bankers fall into the trap of assigning such weight to tiny changes in a single statistic with all of its inherent weakness (p224)?" And on unintended consequences, he concludes "Ironically, the "easy money" striving for a "little inflation" as a means of forestalling deflation, could, in the end, be what brings it about (p.227)."

[31] Using the analytic framework of Koby and Brunnermeir (2019), the "reversal interest rate" could be either negative or positive. There is nothing magic about zero.

It seems more likely that negative rates are **less** effective and have more unintended consequences. In fact, most of the literature seems to recognize this first possibility. A common assertion has been that negative policy rates squeeze bank lending margins since banks are reluctant to lower deposit rates below zero. Indeed, it has been noted that negative rates might actually lead to higher lending rates as banks sought to restore margins[32]. Somewhat short of this assertion, Egerston et al (2017) and Egerston and Summers (2019) provide evidence from Sweden that "suggests diminishing returns on interest rate cuts at negative rates."

While this evidence was subsequently questioned by the Riksbank itself, its recent decision to raise negative policy rates back to zero is more consistent with another view; namely, that negative rates might become increasingly ineffective and could have undesirable side effects. The Riksbank has in fact been worried for some time about rising house prices and record high levels of household debt. It is also notable that the Swedish decision came at a time when Swedish unemployment had risen, was expected to rise further, and when the household saving rate had already reached a local high.

A fundamental empirical question is whether banks are in fact reluctant to lower deposit rates below zero. One concern they might have is that depositors will withdraw cash and use the services of custodians if banks pass on negative policy rates. A recent study for the ECB by Altavilla et al (2019) says that European banks have passed on lower rates, and that neither corps nor households have increased cash withdrawals. Moreover, the study contends that corporations affected by negative rates have actually increased investment as intended. However, an important caveat is raised in the conditional conclusion they draw, that "when banks are sound, the NIRP can provide stimulus to the real economy". Similarly, the Stehn and Radde paper (2019) provided evidence that weaker banks in Europe were less likely to reduce loan rates in response to lower policy rates.

[32] In the immediate aftermath of the Swiss National Bank charging a negative rate on bank reserves, Credit Suisse raised mortgage rates. Rates on credit cards have also been rising in the US. Looking further back in time, Keynes (1961, p.208) was well aware of the need for margins to cover the "intermediate costs of bringing the borrower and the ultimate lender together". He concludes " the rate of interest which the typical borrower has to pay….may be incapable of being brought … below a certain minimum figure".

Moreover, should withdrawals become a problem, countermeasures might be put in place. Agarwal and Kimball (2019) argue that "administratively small actions by the central bank" could help in "enabling deeply negative rates". However, others[33] have suggested that it might in fact be necessary to withdraw all notes from circulation, or at least high denomination notes. Still others suggest, as did Gessel in the pre War period, that the introduction of "stamped currency" that lost some value each period might be the answer. Keynes (1981 p357) also observed that "The idea behind stamped currency is sound" but then added "There are many difficulties which Gessel did not face." In this, he was referring to the possibility of substitution into possible near money, a possibility which has grown much larger today given modern technology.

As for the possibility that the unintended consequences of negative rates might rise in a non-linear way, there has been little serious discussion beyond a vague sense of uneasiness[34]. One source of concern has been the recognition that most pricing models (like Black-Scholes) assume a positive, riskless rate and that negative rates usher in a totally uncertain environment. A focus for more practical action, in both Japan and the Eurozone, has been devising methods to impose negative rates on bank reserves at the central bank that minimize the negative effects on bank profits and on credit extension in turn. However, a puzzle remains. If bank profits do not fall, where is the incentive to cut deposit rates below zero and thus stimulate spending?

A recent publication by the Swiss Banking Association (2019) suggests that negative rates send the message that "crisis" has now become a "permanent condition". This invites further consideration of the possible unintended consequences arising from such a change in perception. Moreover, the report adds that negative rates are no longer needed to keep down the Swiss franc, since it has fallen a lot in recent years, and that countries with big current account

[33] See Rogoff (2016)

[34] For example, Jamie Dimon has called negative rates "irrational" and has said "I would not buy debt at below zero". See Noonan (2019). As well, Junius (2019) notes a political complication. In many countries (especially in central Europe) saving and debt accumulation are moral issues. The sense that central banks are encouraging "bad" behaviour could lead to calls for more democratic accountability and less central bank "independence". Similar sentiments were raised in the UK by Walter Bagehot, late in the 18th century, when he said "John Bull can stand anything, except two percent".

surpluses should in any event welcome a stronger currency. Such reflections raise a much broader question of international relevance.

Are negative rates in fact being increasingly used by AME central banks to depreciate their currencies, or to prevent them from rising? Do we have an undisclosed "currency war" that could exacerbate the negative effects of ongoing "trade wars"? It does seem hard to justify unprecedented monetary easing solely in terms of what have been only decimal point deviations of inflation from targets. And, if AME central banks have effectively changed the objective of monetary policy, what might be the eventual implications for inflation and the survival of the current, dollar based, international financial system[35]. At the moment, however, policymakers seem to have little appetite to discuss such fundamental issues.

Alternative Policies to Ultra Low Interest Rates?

Given that ultra low interest rates are a two-edged sword, what alternative policies might be suggested in the event of another economic downturn? It has become increasingly fashionable[36] to suggest that **fiscal expansion** should be used more vigorously. In recent years, both the OECD and the IMF have suggested coordinated fiscal expansion by countries having fiscal "room for maneuver", with the expansion focussed on investments (infrastructure, education and skills training) likely to have positive rates of return. Somewhat in contrast, others have suggested that the fiscal expansion should take the form of government cheques sent directly to households to spend. Both schools of thought seem to favour a continuation of ultra low interest rates, thus seeming to imply that they see fiscal expansion as a complement to easy money rather than a substitute[37].

In current circumstances, the views of the IMF and the OECD concerning near term stimulus deserve support. However, there must be important caveats reflecting longer term considerations. Fiscal expansion will support growth and tax revenues, but might still raise sovereign debt ratios going forward. These

[35] For some reflections on this see White (2019).
[36] For example, see Blanchard and Summers (2019)
[37] Modern Monetary Theory contends that there is no limit to fiscal expansion, financed by the central bank, other than that implied by rising inflation. Thus, they deny the existence of all the undesired side effects emphasized above.

ratios are already very high in many countries[38] and will be pushed higher (perhaps much higher) by the need to mitigate and to adapt to climate change. Unfavourable demographics, together with climate change, could also imply a secular slowing of potential growth and eventually upward pressure on inflation[39]. Together with the need to avoid the cumulating side effects of ultra low interest rates, these macroeconomic forces all suggest that interest rates and debt servicing requirements must eventually rise, and perhaps sharply. To reduce the likelihood that this will lead to an eventual fiscal crisis[40], governments must commit themselves up front to pursuing medium term fiscal targets vigorously once the economy is firmly in expansionary mode again. Markets would welcome the reassurance that governments have both the capacity and the will to head off fiscal crises.

Both public sector and private sector debt ratios are at uncomfortably high levels in many countries. With growth likely to be impeded by the headwinds of debt and demographics, it would be unwise to assume that we can simply grow out of any associated problems. Higher inflation might also be a solution, but it would be imprudent to suppose that this might not easily get out of control. Moreover, generating more inflation through ultra low interest rates only contributes to the undesired side effects referred to above.

If these alternative solutions to unserviceable debt requirements are not available, much more reliance must be put on **debt restructuring.** Disorderly debt defaults, without the cooperation of creditors, involve much greater costs than orderly defaults in which creditors and debtors work together. Unfortunately, recent work by the OECD (2013), the IMF (2016) and the Group of Thirty (2018) makes it clear that the laws and judicial procedures for restructuring debt continue to be highly unsatisfactory. This applies to private non-financial debt (households and corporations) in many countries and still more to private

[38] Miron (2015), using the inter temporal accounting framework suggested by Larry Kotlikoff, provides evidence that all the large sovereigns are effectively bankrupt and by a large margin. Legislated promises to spend (on and off balance sheet) significantly exceed the revenues likely to be generated by current tax legislation.
[39] See White (2008), Morgan Stanley Research (2015) and Juselius and Takats (2018) for discussion of the demographics issue. Goodhart (2014) makes the link with interest rates most explicitly: "The almost inevitable conclusion is that real rates of interest will reverse from their present decline, and go back up". The basic logic is that aggregate supply seems likely to fall more than aggregate demand.
[40] Sargent and Wallace (1981) provide the theory for how this process works and Bernholz (2006) provides numerous historical examples.

financial debt (especially banks that are too big to fail). Above all, it applies to sovereign debts where there are no agreed criteria for the need to restructure, nor any international treaties to force action. Dealing with these problems is a challenge that governments should start to deal with now. It is a dangerous delusion to suppose that central banks can somehow mitigate this need for action by governments.

Bibliography

1. Acharya V (2019a) “Creating zombies and disinflation – a cul de sac for accommodative monetary policy” Presentation at the Indian Institute of Technology, Bombay, 20 October.
2. Acharya V (2019b) “Monetary easing, leveraged payouts and lack of investment” Presentation at Imperial College London, 12-13 December.
3. Agarwal R and M S Kimbal (2019) “Enabling deep negative interest rates to fight recessions: a guide” IMF Working Paper 84, Washington DC, April.
4. Altavilla C, L Burlon, M Giannetti and S Holton (2019) “The impact of negative interest rates on banks and firms” Vox, 8 November.
5. Atkeson A and P Kehoe (2004) “Deflation and depression: is there an empirical link?” American Economic Review, 94(2), pp 99-103
6. Bailey M J (1962) “National income and the price level” McGraw Hill, London.
7. Barlevy G (2019) “A theoretical model of leaning against the wind” Presentation at Imperial College London, 12-13 December 2019.
8. Bernholz P (2006) “Monetary regimes and history: economic and political relationships” MPG Books.
9. Binham C (2019) “European Banking Authority highlights bleak outlook for banks” Financial Times, 29 November.

10. Blanchard O and L S Summers (2019) “Evolution or revolution: an afterword” Vox, 13 May.
11. Borio C, E Kharroubi, C Upper and F Zampollli (2015) “Labour reallocation and productivity dynamics: financial causes, real consequences” BIS Working Papers No 534, Basel.
12. Borio C, M Erdem, A Filardo and B Hoffman (2015) “The costs of deflation: an historical perspective” BIS Quarterly Review, Basel, March.
13. Cavallino P (2019) “The open economy ELB: Contractionary monetary easing and the trileema” Presentation at Imperial College London, 12-13 December.
14. Cerra V and S C Saxena (2008) “Growth dynamics: the myth of economic recovery” American Economic Review, Vol 98 (1), pp 439-457.
15. Eggerston G B, R E Jeulrud and E G Wold (2017) “Are negative interest rates expansionary?” Mimeo, October.
16. Eggerston G B and L H Summers (2019) “Negative interest rates and the bank lending channel” Vox, 24 January.
17. Goodhart C A E (2014) “How aging populations will affect interest rates” World Economic Forum and VoxEU, 4 November.
18. Group of Thirty (2015) “Fundamentals of Central Banking: Lessons from the crisis” Washington DC, October.
19. Group of Thirty (2018) “Managing the next financial crisis” Washington DC, September.
20. Hofmann B and Borio C (2019) The influence of monetary policy on bank profitability” Presentation at Imperial College London, 12-13 December.
21. International Monetary Fund (2019) “Global Financial Stability Report” October, Washington DC.
22. Juselius M and E Takats (2018) “The enduring link between demography and inflation” BIS Working Papers No. 722, 7 May.
23. Keynes J M (1961) “The general theory of employment, interest and money” Macmillan and Company, London.
24. Koby Y and M Brunnermeir (2019) “The reversal interest rate” Presentation at Imperial College London 12-13 December 2019.
25. Hayek F A (1975) “Full employment at any price?” Occasional Paper 45, The Institute of Economic Affairs, London.

26. International Monetary Fund (2016) “A strategy for resolving Europe’s problem loans” Staff Discussion Note, Washington DC.
27. Martinez-Miera D (2019) “Interest rates, market power and financial stability” Presentation at Imperial College London, 12-13 December2019.
28. Merton R (2006) “Observations on innovation in pension funds management in the impending future” Presentation at the 2005 NCREIF conference
29. Minsky H P (2008) “Stabilizing an unstable economy” McGraw Hill, New York.
30. Miron J (2015) “US fiscal imbalance” The Cato Institute, Washington DC, December.
31. Morgan Stanley Research (2015) “Could demographics reverse three multi-decade trends?” Global Issues, 15 September.
32. Noonan L (2019) “Jamie Dimon calls negative rates irrational” Financial Times, 18 October.
33. OECD (2013) “Debt and macroeconomic stability” Economics Department Policy Notes, 16 January.
34. Reinhart C M and V R Reinhart (2010) “After the fall” In Macroeconomic Challenges: the Decade Ahead, Federal Reserve Bank of Kansas City.
35. Rogoff K (2016) “The curse of cash” Princeton University Press, Princeton NJ.
36. Sargent T J and N Wallace (1981) “Some unpleasant monetarist arithmetic” Federal Reserve bank of Minneapolis Quarterly Review, Fall, pp1-17
37. Selgin G (1997)”Less than zero: The case for a falling price level in a growing economy” IEA Hobart Paper No 132, London.
38. Smets F (2019) “On the effectiveness of a negative interest rate policy” Presentation at Imperial College London, 12-13 December.
39. Smithers A (2019) “Productivity and the bonus culture” Oxford University Press, Oxford.
40. Stehn H and S Radde (2019) “How much could the ECB cut?” Presentation at Imperial College London, 12-13 December 2019.
41. Swiss Banking Association (2019) “Negative interest rates: from emergency measure to the new normal – and back?” Zurich, October.
42. The Economist (2019) “So much rests on so few making so little” December 14-20, p 57-58.

43. UNCTAD (2018) “External debt sustainability and development: report of the Secretary-General” Geneva, 16 July.
44. White W (2006) “Measured wealth, real wealth and the illusion of saving” Irving Fisher Committee Bulletin No 26, August.
45. White W (2008) “Globalisation and the determinants of domestic inflation” BIS Working Papers No. 250, Basel, March.
46. White W (2016) “Ultra-easy money: digging the hole deeper?” Business Economics Vol 51, Issue 4, October. pp188-202.
47. White W (2019) “Are fears of a global currency war justified?” The Market: NZZ, 5 November.