MONETARY POLICY NORMALS, FUTURE AND PAST

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The paper looks at the 'new normal' in so many of the world's central banks, and specifically the UK. It examines the position of the monetary policy framework, instrument settings, the underlying models, unconventional policy measures, real interest rates, and the interface with macroprudential policy. It explores both the advantages and challenges involved in any move to return towards pre-crisis arrangements, and offers suggestions for possible ways in which current policy dilemmas might be resolved.

Keywords: regulations for banks; interest rate normalisation

JEL codes: E52, E58, G21.

1. Introduction: the old normal

The financial crisis destroyed many of the assumptions on which pre-crisis monetary policy was based. This article tries to identify some of them and to set out some ideas about how the 'new normal' in monetary policy may differ from the old one.

Perhaps the most important feature of the old normal in monetary policy was the conviction that price stability is an unalloyed good, and that it can be pursued without prejudice to other desirable macroeconomic objectives. It was accepted that temporary unexpected inflation could produce temporary increases in output and employment, but these benefits were only temporary. They could jeopardise the anchoring of inflationary expectations, and thereby even weaken achievable future levels of output and employment.

This conviction was embodied in decisions made by many countries, including the United Kingdom, to grant some degree of autonomy in monetary policy to their central banks, subject to their pursuing statutory price stability objectives which often took the form of inflation targets of about 2 per cent per annum. 'Autonomy' meant in practice the right to determine the level of short-term interest rates without needing the approval of the government. Exchange rates had to float, otherwise the inflation target might be unachievable. You cannot have two targets if you have only one instrument.

Accordingly, for a period during the 'great moderation', central banking was, for some, reduced to the problem of how to choose a path of short-term interest rates that would keep the rate of inflation as close to the target as possible. Great efforts were made to construct models which would assist central banks in their inflation targeting endeavours, and while the going was good, economists came to have increasing confidence in the models' utility.

2. The financial crisis and the end of the old normal

The financial crisis and the global recession which ensued discredited the old normal, in several ways.

First, it became clear that short-term (nominal) interest rates alone were not enough to keep inflation on target, because they could hardly be cut below zero. Steep cuts were needed by early 2009, when GDP plunged sharply. But the zero bound, together with the crumbling of real interest rates, left far too little room for the expansionary policy required. So short-term interest rates had to be and were supplemented with other devices. These fell into two categories.

Quantitative easing (QE) involved large-scale asset purchases by central banks. Different central banks

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bought different kinds of assets: the Fed, the Bank of Japan, the ECB and the Bank of England bought government securities; the Swiss National Bank bought foreign exchange; the Fed and the ECB bought mortgage-backed securities, or took them as collateral for loans; and the ECB bought, or took as collateral, a wide range of other assets as well. Substitution between assets implied that all assets would soon appreciate to some degree. QE purchases of bonds pushed bond yields down; QE support of mortgage-backed securities supported construction and those financing it; and in the Euro Area, the ECB's liberal asset purchases have contained the fragmentation of the Euro Area's financial markets which has resulted from the financial weakness of the governments and banks of some of the southern member countries. Another way of viewing QE was that it lowered interest yields on one-year bonds, for example, which were still high enough to be cut. If the current policy rate was locked near zero, QE here would substitute a longer-lasting cut in short-term interest rates for the deeper current period cut that was unavailable. Some fiscal theories have suggested that government bond purchases could actually be disinflationary.[1] Evidence suggests that QE did lift GDP at the critical period somewhat, but that it was most effective when first tried, or announced as a surprise.[2]

Forward guidance (FG), which pre-dates the financial crisis and the ensuing period of very low interest rates, is another technique for influencing bond yields. It is open-mouth policy rather than the open-market policy of QE: the central bank merely expresses its opinion on the likely time path for short-term interest rates, or specific conditions that could alter it. In the United States, for example, the Fed has recently used both QE and FG as policy weapons. The Bank of England has also experimented with both. FG, unlike QE, does not expose the central bank (or the public authorities) to financial risk; it is intended to signal intentions and reduce the problem of multiple equilibria;[3] announcement of the intention to make "smaller for longer" policy rate cuts might be less disruptive than achieving this via QE. But it gives hostages to fortune: it exposes financial market participants to financial losses, and the central bank to reputational risk, if the central bank does not do what it said it intended to do; and if the FG path is close to what the market appears to predict, why reveal it, and threaten instability if the market and the central bank just mirror each other's views?[4]

Second, with their unfortunate idiosyncrasies and limitations discussed in some detail below, the models that central banks had been using failed to forecast the crisis. They also found it very hard to grapple with how their macroeconomies evolved in the disturbingly unfamiliar environment after it. The problem was to uncover what those changes were, what they meant for the transmission mechanism, and how long they would persist.

Third, the financial crisis was contained in the United States, the Euro Area and the UK by governments bailing out banks which would otherwise have failed. The acknowledgement that they were too big to fail created very serious moral hazard, and the rules of banking therefore had to be changed. There has been an avalanche of new bank regulation, for example more stringent minimum capital requirements, new minimum liquidity requirements, strict limits on proprietary trading, and forced separation of retail operations.

Re-regulation is having profound effects on the financial system. Not all of them were foreseen or intended. For example, some financial markets have become less liquid because banks' capacity to act as market-makers has been impaired by new regulations; and international banking is waning as the United States and other jurisdictions require foreign banks to establish holding companies, with separate capital, to own banking operations on their territory. And there has been a long scramble for liquidity – by banks, which need to satisfy new liquidity requirements; by central banks, many of which were rescued only by the Fed's swap lines in 2008 from seeing their local commercial banks unable to meet their dollar liabilities, and which have wanted to augment their own reserves; by corporations, which used to rely on commercial banks as backstop liquidity providers but can no longer do so because the new liquidity requirements make the service prohibitively expensive; and by financial market participants, who face increased demands for high-quality collateral from their trading counterparties and service providers.

The scramble for liquidity has seriously retarded the post-crisis recovery, and central banks could and should have done more to alleviate it. The continuing dearth of liquidity reflects the sudden snapping of trust in late 2008 and the rush for self-insurance: banks ceased to trust many of their borrowers; customers and governments, which were in practice the ultimate guarantors of large banks, stopped trusting their banks; and banks lost trust in each other. Trust is like a tree. It may take decades to grow. But it can be felled in minutes.

Other unforeseen effects of re-regulation may emerge as new regulations come into effect, and their consequences slowly unfold. Some of the functions which banks are having to give up will, in time, be performed by other

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institutions, while others may be abandoned, or reduced in scale. Yet the financial system through which monetary policy affects the economy is already palpably different from the pre-crisis one.

Fourth, the experience of the financial crisis has convinced policymakers that they need a new policy weapon to maintain financial stability. Macroprudential policy aims to curtail market developments which might lead to financial instability. It is symmetrical: it is intended not only to damp down financial booms but to limit the depth of slumps.[5] But it is still an infant. Its objectives are not precisely specified and its relationship with monetary policy has yet to become clear. On occasions, the instruments will clash.

Fifth, the post-crisis financial environment has seen bond yields which have been persistently low, in both nominal and real terms, even by the standards of the Great Depression and after. Even now, after some recovery, 40-year gilt yields are a little over 1.5 per cent; at its nadir in the 1930s the yield of Consols was 2.7 per cent and it got down to 2.6 per cent in the summer of 1946. The recent decline in bond yields began in the mid-1980s, as inflation dropped. OECD area real interest rates jumped for a while once it was seen, around 1990–1, that formerly isolated and socialist economies, with their scarce capital and abundant labour, would trade much more with the West. But interest rates soon resumed their downward path, dropping most steeply after the financial crisis.

Several factors appear to have depressed bond yields. Falling productivity growth in OECD countries, declining tax rates on capital income, the bulge of baby boomers approaching retirement, rapid rises in life expectation and the amplified demand for high quality liquid assets resulting from new regulation must all have played some part. Defined benefit pension funds, forced by regulation to hedge their liabilities, regardless of cost, have to buy bonds at any price. QE itself – and the crisis-induced elevation of risk premia which QE was designed to counteract – will have contributed. Some economists have emphasised the global consequences of a big savings–investment mismatch in China, as well as aggregate demand-centred stories about secular stagnation. Much technological progress now depends mainly on exploiting new information technology, and prices of equipment embodying it fall fast. Those tempted to commit the fallacy of unicausality may recall that Hicks once denounced the "sham dispute" between those who argued that interest rates matched flows of saving with investment, and those who claimed that interest rates were governed by stocks, such as capital and money.

Falling productivity growth calls for further comment. The evidence for it is the coincidence of slower output growth with faster employment growth. However, the measurement of output has become increasingly difficult. Economic growth in rich countries turns increasingly on quality of output, rather than quantity: it has become a matter of 'better and better', not 'more and more'. Quality is much harder to measure than quantity. The treatment by statisticians of new products in the consumer price index and in the measurement of real GDP is unavoidably arbitrary, and over a long period, measured inflation, and measured real growth, depends very heavily on the conventions that they follow. Moreover, and particularly since the financial crisis, there has been an irresistible demand for more oversight of financial transactions of all kinds, and indeed for more monitoring of other services, such as medical care, schools, and telecommunications. Part of 'better and better' is 'more and more closely monitored'. Monitoring creates jobs; it adds to welfare if it gives consumers reassurance about the quality of what they buy; but it adds next to nothing to recorded output.

Whatever the forces that combined to cut bond yields, two phenomena stand out. First, the effects of changes in policy rates depend somewhat on their initial level. Cuts in rates from already very low levels have some of the same expansionary effects as cuts from higher levels: for example, when unexpected, they cause the exchange rate to depreciate, and asset prices to jump. However, they also make banks less profitable still, because banks cannot easily charge customers negative interest rates for deposits, so that the supply of credit is constrained. Banks depend on lending out deposits. How can they survive in the long run if there is no incentive to place deposits? And falling interest rates increase further the already large deficits in defined-benefit pension schemes, imposing accounting losses on the sponsoring companies, pre-empting their cash flow to make good the deficits, and inhibiting spending on investment and other current activities. Second, house prices have continued to be remarkably strong, and demand for houses as an asset to rent has been particularly robust. This should not be surprising, bearing in mind the lowness of bond yields and annuity rates, and the collapse of public trust in financial intermediaries. For many people, houses have replaced financial assets as stores of value.

Finally, in the United Kingdom, the decision to leave the European Union has cast a new uncertainty over the country's future patterns of trading and production, and over its foreign policy and security arrangements. It will not be resolved quickly.

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3. What might have to change?

Monetary policy objectives

Amid the turmoil, it is not surprising that there have been many proposals to change the objectives of monetary policy. Not many people have gone so far as to recommend the abandonment of price stability as an objective, but some economists have proposed increasing inflation targets from 2 per cent to, say, 4 per cent.[6] The attraction of the proposal is that a higher normal level of inflation would make it easier for central banks to achieve negative real interest rates so as to combat recession when necessary. This suggestion has eloquent critics as well,[7] with whom we concur.

The proper aim of monetary policy was persuasively defined by Alan Greenspan as being to achieve a rate of inflation low enough that it was not a material factor in the decision-making of businesses and households. Inflation targets were set at around 2 per cent, rather than zero, because it was recognised that the measurement of inflation, and hence of real output, is imprecise, and that published price indexes slightly overstate inflation; a rate of 2 per cent was thought to meet Greenspan's criterion.[8] There are two main objections to increasing the target to, say, 4 per cent:

- A 4 per cent target would probably not meet Greenspan's criterion. Households and businesses would have to worry about inflation as a matter of routine. A large part of the benefit of reducing inflation, hard-won in the 1980s and 1990s, would be lost.

- Could central banks get inflation up to 4 per cent and keep it there in present circumstances? Britain's current, modest inflation surge is a once-only reaction to sterling's post-referendum depreciation. Elsewhere in the OECD, inflation is a bit below 2 per cent, despite many years of ultra-easy monetary policy. If the target were to be raised to 4 per cent, presumably central banks would maintain ultra-easy policy for longer, but would nevertheless have to create the confident expectation, first that the rate of inflation would increase, and second that it would not be allowed to increase durably above 4 per cent. Considering how Japan, for example, has struggled for 25 years to raise inflation with minimal success, this would be, to put it euphemistically, a challenging task.

More negative real interest rates might have been useful in the past few years, and a higher initial level of inflationary expectations would have made them easier to attain. But that convenience, had it been achievable, would not have warranted the subversion of monetary policy from its main long-run purpose.

Because measuring output growth and inflation has become problematic, it follows that adhering to an inflation target, however faithfully, does not guarantee the stability of the value of money, in any meaningful sense, over a long period. Even a price level target – in which overshoots and undershoots of the target in any year have to be made good later – would suffer from the same defect. In that light, there is a case for targeting nominal incomes rather than inflation. Adopting a nominal income target would mean admitting, implicitly, that inflation and real growth cannot be reliably measured, except over short periods, and asserting that a nominal income target offers a better long-term promise about the value of money. Sheedy (2014) has advanced a further reason for a nominal GDP growth target, based on its potentially superior insurance properties when compared with inflation targeting. This said, the case for considering a switch to it, in what we hope will be calmer conditions in the future, carries more appeal than doing so now, in a post-crisis period of low confidence in monetary policy.

Living with other kinds of macroeconomic policy

One of many challenges faced by policy makers and supervisors charged with preserving financial stability is this: they are blamed when crises erupt, and may face redundancy for crying wolf when they don't. Thus far, macroprudential policy has so far been largely concerned with augmenting minimum capital requirements for banks, in line with proposals from the Financial Stability Board and the Basel Committee on Banking Supervision.[9] Future policies will likely affect the activities of financial companies other than banks. Whether implemented or mooted, re-regulation has caused banks to curtail some activities, abandon others, and above all contract their balance sheets. In the United States, the 848 pages of the 2010 Dodd-Frank Act (up from 75, as Haldane and Madouros, 2012, note, for Glass-Steagall in 1933) have enjoined many such changes. Other financial companies are already filling some of the gaps – for example peer-to-peer lenders are providing credit – and other gaps are likely to be filled by non-banks in the future. Those financial companies too, if they grow large enough, or become a possible source of systemic risk in other ways, will become of interest to macroprudential regulators.[10]

Overheating in real estate markets in the US and much of Europe lay at the heart of the Global Financial Crisis (Sinclair, 2017). So in the UK, and elsewhere,[11] macroprudential regulators now concern themselves

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with the prices of assets, notably houses, though the extent of their responsibility is still somewhat imprecise. If they judge that house prices are rising unsustainably, they may choose, for example, to take, or recommend, regulatory action to restrain mortgage loan size relative to value or income, or mortgage duration. These matters are best handled at national level, since dwellings, unlike equities and bonds, are largely non-traded assets.

Macroprudential policy (MPP) actions can have macroeconomic effects and thus bear on the judgements made in formulating monetary policy (MP). Likewise, MP judgements can have macroprudential effects. Credit aggregates, for instance, are central both to MPP analysis and to MP transmission. So it might make sense for decisions about monetary and macroprudential policies to be made jointly. In the United Kingdom, that would mean merging the Monetary Policy and Financial Policy Committees of the Bank of England, or at least having them make decisions in joint meetings. When MP and MPP need to pull in opposite directions, which will happen now and then, the best answer may be to increase the dosage of both – and not to do nothing.

Regulatory decisions made about a single large bank, or about a group of smaller banks, might have macroeconomic consequences, and the microprudential regulators – the Prudential Regulatory Authority and the Financial Conduct Authority – need adequate means of communication with macro policymakers.

Monetary policy will also have to be co-ordinated with public debt management as regards the unwinding of QE, and the issues are discussed in a note in this issue (Allen 2017).

The advent of minimum liquidity requirements has created a large and inelastic demand from banks for high-quality government securities, which has been augmented by a similarly inelastic demand arising from the collateral requirements of clearing houses and other providers of credit. There is a risk that in the event of some financial disturbance, the demand could surge to the point at which a shortage of high-quality government securities caused serious financial disruption. Central banks and governments need to be alert to this risk.[12]

Monetary policy instruments

In the United Kingdom, the banking system has yet to fully stabilise after the crisis. The banks have not regained their former profitability. It is not clear what range of services they will provide to their customers in the future. Short-term interest rates are not the only policy weapon at central banks' disposal, and central banks have to deal with the legacy of large asset holdings built up during the crisis.

It would be a precondition for further use of balance sheet policies that the gilts bought in the QE programme were removed from the Bank of England's balance sheet, and Allen (2017) describes how that could be done. Having tidied up its balance sheet, the Bank would be able to use eligibility policy – that is, the specification of the kinds of assets it would be willing to purchase – as a monetary and macroprudential policy weapon.[13]

Specifically, the Bank could use eligibility policy for two purposes:

- In emergencies, to provide liquidity in situations where the flow of credit from the banking system had been temporarily interrupted.

- As a weapon of macroprudential policy, to encourage the banks to acquire high-quality liquid assets from their commercial customers by being willing to buy them or take them as collateral for loans. It would help enormously if high-quality liquid commercial assets were treated as Level 1 liquid assets for the purposes of the Basel 3 Liquidity Coverage Ratio.

Coordinating monetary policy, on which the Bank of England has statutory autonomy, with other policies on which it lacks such autonomy, raises issues about which decisions are the Bank's responsibility, and which are not. Clarity is essential to avoid the risk of paralysis. Decisions on short-term interest rates should surely remain in the Bank's bailiwick; key decisions on public debt management, including the unwinding of QE, should lie with the Treasury, as Allen (2017) argues; and decisions requiring legislation, including fiscal policy, must remain in the hands of the government. Coordination calls for discussion among policy agencies before actions are taken, and willingness on the part of each policy agency to take account of the reactions of the others before committing itself to particular actions.

One issue that merits consideration, once use of the policy rate revives, is whether the standard monetary policy 'dosage', a 25 basis point change, needs to be rethought. Modern theory takes this rate to be perfectly divisible, and to be expected to change, if at all, in often very little, easily predicted steps. When expectations of future policy changes are anticipated, small staggered doses may be shown to be more powerful than infrequent big ones. But

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this is one of many lessons from DSGE models, whose character, strengths and weaknesses we consider next.

Models

Doctors need to understand how the body works. A decent economic model outlines how the economy works. Inflation targeters must have models. The key is to keep inflation expectations broadly on track, and reasonably close to the inflation target. That turns on credibility. Keeping actual inflation close to target helps. But what matters more is that agents should believe that the monetary authority will react appropriately to the various unpredictable shocks that can occur. That is where models come in. Inflation targeters simply cannot do good monetary policy blind.

The most popular model currently employed by central banks and economists is DSGE (dynamic stochastic general equilibrium). DSGE is a family of models, evolving and expanding. It elicits controversy. It rests on four principles: intertemporal optimising (IO); rational expectations (RE); price sluggishness (PS); and a monetary authority that obeys a Taylor Rule (TR). The TR involves setting a (perfectly divisible) nominal policy rate to minimise some combination of present and future deviations from a target inflation rate and what output would have been without PS. IO prescribes the way households amend their consumption plans in the light of what they expect current real interest rates to be. RE, despite its odd features, reflects humility on the economist's part: her portrayal of how the economy actually works cannot deviate from the way that agents in her model think it works. So the household has come of age. Stochastic shocks cannot be known ahead. But the household knows just as much about everything else as the economist and the central banker.

Most standard DSGE models, though not all, ignore key realities about banks. Financial markets are assumed perfect, and frictionless. Credit is unrationed. Bank deposits and credit play no role. Banks transmit the policy rate, in full and at once, to households. Everyone can borrow or lend at that rate. Nobody defaults.

In the US, some proponents will defend this as a pardonable simplification in a country that has nearly 10,000 banks. To its critics, as to some current DSGE model-builders, that is silly. For them, financial frictions cry out for incorporation. Several newer versions of DSGE models do this.[14]

IO does not let people err. It relies on exponential discounting. And it cannot (easily) handle diversity across individuals. Yet individuals' mistakes may balance out on the average, as might diversity between them. As with other features of DSGE models, there is (as yet) no single, obvious alternative that works. Yet there are many questions about the distributive impact of monetary and financial policies, on which DSGE models (as yet) say next to nothing. How the incomes and well-being of different age cohorts, income groups, and regions are affected by policy really matter. What DSGE models may imply has to be balanced by wider considerations. Agent-based modelling (ABM) is now an anarchic infant. But it might one day mature into a useful contributor. And it might enable us to handle more challenging differences, such as in impatience, intergenerational altruism, and risk attitudes, as well as coping with well-attested psychological idiosyncrasies in certain people, such as present-bias.

PS is an incontrovertible fact. It matters, because this is what allows the monetary authority to influence the real economy – for a while. But to make the analysis tractable, DSGE models give the firm only a modest (though equal, known and constant) chance at any date of being allowed to alter the price of its product. This particular 'Calvo pricing' device means it has (partial) freedom to set its price. So it cannot be a perfect competitor. Instead, we have monopolistic competition, borrowed from Dixit and Stiglitz (1977), as in many modern theories of trade, unemployment and growth. So the way standard DSGE models treat banks is not just antiquated and unrealistic, but anomalous. But more plausible alternatives to Calvo pricing, such as menu costs, and contracts, are mathematically trickier – and harder to square with RE. Moreover, our world's full medley of imperfectly competitive banks, default risks, interest rate spreads and credit limits, has yet to fit neatly into any comprehensive model to confront data, and explore policy choices.

Models cannot map reality. Compromises are needed, and the best available compromises now need not be the same as they were before the crisis. DSGE sticks very close indeed to a long-term equilibrium. Curved relationships between variables are forced into straight lines to yield solutions. Shocks obey strict laws and fade over time. Differences among products, or, alas, household types are usually banished. Critics may complain. Yet many view all these simplifications as a reasonable, indeed inescapable, first step. We know the premises are micro-founded; we know what they are; we can apply the resulting models to data, and, increasingly, employ Bayesian techniques to let the data narrow down the values of certain key parameters (at the risk, though,

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of ignoring breaks, which definitely do occur). DSGE is a valuable though highly imperfect edifice, always being patched up and extended. Policymakers should never obey recommendations derived from it without question. Nor, in fact, do they.

Forecasts from DSGE models have proved poor recently; the economic and financial world has changed; so decision makers may attach less significance to models than they did before the crisis. They will rely more on intuition, or, to put it another way, on a range of models that they have either written down, on paper or in computer code, or just dreamt up in their heads. They will have to judge which model(s) to use in each situation. Public explanation will doubtless become harder. But if your seas are stormy and uncharted, you don't sack the pilot. Top quality data, and flexible and efficient steering mechanisms, are more essential than ever.

4. Monetary and fiscal policy

Monetary policy is never to be judged on its own. Since 2010, the UK has combined policies of easy money and gradual fiscal consolidation. Employment has grown fast, but output less so. So labour productivity has disappointed. The government's budget deficit has fallen back in proportion to GDP, but its debt to GDP ratio has grown, if more slowly. This policy mix appears to have helped to keep sterling competitive, and housing-related markets buoyant.

But is it now time to consider some switch towards higher policy rates and some fiscal relaxation? Policy rates are rising in the US. Real interest rates are at or close to record lows. So socially profitable public investment projects could rarely have looked more attractive. The UK's future financial stability depends on preventing house prices from rising too far, and keeping banks safe and reasonably profitable. A gentle nudge towards somewhat higher policy interest rates would help to do both these things. A rise in interest rates might have a serious effect on the finances of some households, the likely scale of which is hard to gauge; that, however is a reason for moving sooner rather than later so that the increases in interest rates can be shallower and more protracted. And it would expose the poor quality of some bank loans, but again, that would have to happen sooner or later; and the sooner it happens, the quicker the inevitable reallocation of economic resources.

The old models said that raising policy rates could only dampen inflation for a while. Some powerful recent scholarship questions that,[15] and the jury is out. Furthermore, any adverse effects on employment could be countered by some fiscal relaxation, and specifically by undertaking more profitable, tax-yielding capital projects; in that case, the ratio of the government's debt net of assets to GDP could eventually drop. But deciding which projects to undertake, and how to conduct them, has often proved hazardous, in both outcome and timing. Lags make public investment a poor fine-tuner. Undertaking projects which yield too little extra tax would push up the debt to GDP ratio. With the outlook for GDP growth so uncertain, that might even make market participants start to question the sustainability of the national debt.

Two particular examples of win-win policy, from fiscal, social welfare, monetary and macroprudential standpoints, involve the gradual removal of two major distortions. The anti-equity, pro-leverage bias in corporation tax, which allows deduction of interest payments from taxable income, but not dividend payments, is a global menace to financial stability. And the exemption from income tax of imputed rent for owner-occupied housing is illogical and damaging. These distortions aggravate risks of financial crises, increase inequality within and across generations, and misallocate aggregate capital. Steps towards their phased removal would replenish the coffers of government in a world of increasingly mobile labour and capital; in time, furnish some additional resources for major government spending needs; and perhaps allow for reductions in other taxes. The overriding need to avoid a banking crisis means that these changes could happen only gradually. Yet, with slowly elevated interest rates, both monetary and macroprudential policymakers could begin to work with greater freedom and confidence.

5. Conclusion

The blissful world of the 'Great Moderation' might return. But for now it has gone. We do not yet fully understand its fast-changing successor. Monetary policy needs to be guided by principles, above all the principle that Hippocrates' oath nearly stated – "do no harm".

One feature of the new world is clear: the public has lost faith in banks, and to some extent in other financial institutions as well. There is much more to lose if its faith is not in some degree restored. That should perhaps be a guiding principle of monetary policy. Rebuilding trust means maintaining the value of money: price stability has to remain monetary policy's main aim, and to protect it, fiscal policy cannot be unconstrained. The giant apparatus of regulation that has been assembled since the crisis needs to be regularly examined and adjusted, so as to ensure that it does precisely what it is intended to do – and no more.

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NOTES

1 See, for example, the seminal paper by Sargent and Wallace (1981), and related arguments given by Cochrane (2011, 2017), Sinclair and Ellis (2012), Schmitt-Grohe and Uribe (2014, 2017).
2 For evidence, see Breedon *et al.* (2012), Goodhart and Ashworth (2012) and Joyce *et al.* (2012).
3 This issue is explored powerfully by Cochrane (2011), and later by Del Negro and Sims (2015).
4 Morris and Shin (2002) show that central banks' provision of information can sometimes be damaging to social welfare, by creating a two-way mirror with market participants' and their own expectations based on flawed perceptions.
5 For a literature review, see Galati and Moessner (2012).
6 Ball (2014) argues for this.
7 Numerous arguments against are propounded by McCallum (2011).
8 The recorded rate of inflation depends on the treatment by official statisticians of new products (when after their introduction are they incorporated into the index?) and of quality improvements (how are they valued?). Such issues appear on the surface to be matters of arcane detail, but in the long run they have a profound impact on recorded inflation.
9 Miles *et al.* (2012) give a cogent analysis that justifies much higher capital ratios, or, equivalently, lower leverage ceilings. If banks issue debt convertible into equity, their loss-absorbing capacity in times of trouble would be enhanced and the need for additional capital less pressing. Brownlees and Engle (2017) are concerned that the accountant's definition of capital, which underlies the Basel rules, needs to be replaced by a forward-looking, market definition of capital, and use it to quantify different firms' contributions to systemic risk.
10 Barwell (2017) discusses what he calls "perimeter creep" – the continuing need for financial regulators to enlarge their scope beyond the institutions they can monitor and control.
11 The European Systemic Risk Board (2017) gives a comprehensive analysis of the most recent MPP actions throughout the EU; and Chadha's (2017) analysis of what he calls "the new art of central banking" provides a rich account of the thinking behind them and other recent innovations.
12 Allen and Moessner (2012).
13 It may be noted that the Bank of England used eligibility policy extensively before the First World War led to the flooding of the London money market with Treasury bills. See for example Sayers (1976, ch. 4a).
14 Bernanke *et al.* (1999) is an early example. Others include Curdia and Woodford (2010) and Gertler and Kiyotaki (2010).
15 Cochrane (2017) and Schmitt-Grohe and Uribe (2017), for example. Sims (2013) presents an account of the interactions between monetary and fiscal policy that underlie these arguments.

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