

BUILDING ON INCOMPLETE FOUNDATIONS: FINANCIAL STABILITY POLICY SINCE THE CRASH

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Economists understand that a fit for purpose policy regime requires a reliable general equilibrium model of the system in question and a well specified description of the objectives that the policymaker is trying to pursue. The current financial stability regime has neither and without these critical foundations the regime is fundamentally fragile and incomplete. There is no anchor on the conduct of policy, an absence in genuine accountability and, as a result, reputational risks for policy institutions.

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I. Introduction

A great deal of good work has been done to restore financial stability since the crash: new policy institutions have emerged, deploying innovative policy levers; financial institutions are more resilient; the supply of financial services has improved. However, there has been precious little progress on the design of the financial stability policy regime. The fundamental foundations of an economic policy regime have not been put in place. The combination of no target to aim for and no reliable model of the system you are trying to regulate makes for increased risk of policy errors and rules out genuine accountability. The rest of this article is organised as follows: Section 2 introduces the concept of financial stability and the congregation of the broad church of financial stability policy; Section 3 offers a review of what has been done, in terms of institution building, instrument design and interventions; Section 4 focuses on the missing foundations of the policy regime and Section 5 concludes.

2. Defining financial stability and financial stability policy

An essential starting point for any discussion of financial stability policy has to be a fit-for-policy-purpose definition of financial stability itself. Unfortunately, that is easier said than done: there is no consensus in the academic or policy literatures. Nor is the membership of the set

of policy regimes that have a direct interest in aspects of financial stability policy entirely uncontroversial.

2.1 Financial stability

When pressed to provide an iron-clad definition of financial stability (or *FS* for short) and instability most economists often retreat to a position best articulated by a variant on Justice Potter Stewart's famous line:

“I shall not today attempt further to define the kinds of *outcome* I understand to be embraced within that shorthand description; and perhaps I could never succeed in intelligibly doing so. But I know it when I see it.”

Now that formal FS policy regimes are being put in place there is an appreciation that a ‘know it when I see it’ definition is insufficient. The literature suggests a range of different definitions of what financial stability means (Allen and Wood, 2006), which can be crudely categorised as either narrow or broad and which imply different visions of the scope of FS policy.

Narrow definitions of financial stability focus on the resilience of key financial institutions or the sector as a whole, but that just begs the obvious questions: what defines a resilient financial institution or system, and,

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what is the appropriate set of institutions and markets for assessing resilience?

Once upon a time the question of resilience would have been framed purely in terms of a pass/fail test of solvency of the banks. However, the crisis has underlined how still solvent institutions can take privately rational defensive actions in a stressed environment that could prove counterproductive at the aggregate level – for example, aggressively tightening credit conditions to deleverage their balance sheet, and the importance of non-bank financial institutions and the shadow banking system.

The post-crisis remit of FS policy institutions have been (re-)drawn in to reflect the perspective of the social planner. The acid test of resilience is now understood to be whether the system is capable of providing core financial services to the real economy in all states of nature (we shall return to the question of what constitutes core financial services later in this article). Eric Rosengren's (2011) definition is as good as any here:

“my definition of financial instability has three key elements: problems in the financial system, impairment of intermediation (or the supply of it), and a substantial impact on the real economy.”

Although that language implies that financial stability and instability are discrete concepts, they are clearly continuous. We can identify variation in the extent of financial instability both within and across different episodes of financial stress – for example, between the opening phase of the crisis in August 2007 and the nadir in October 2008, and also between, say, the severity of the global financial crisis of 2007/8 and the small banks crisis of the early 1990s. Equally, outside of those infrequent moments of crisis we can think about the latent threat to the future resilience of the system which varies through time. Academics and policymakers have coined a phrase for that latent threat – systemic risk – but attempts to define let alone quantify the risk of future instability are still in their infancy.¹

Broader descriptions of financial stability and the implicit remit of policymakers envision a more ambitious agenda once the resilience of the system has been secured. Financial stability is only a means to an end: the social planner cares about the level, inequality and stability of the living standards of the population, and financial stability policy should be evaluated on that basis (Barwell, 2013).

From a cyclical perspective, the financial stability agenda could encompass macroeconomic concerns such as

smoothing credit flows, debt stocks or even risk premia (see Aikman, Haldane and Nelson, 2010; Constâncio, 2014a). In the limit, one can imagine a future steady state in which an ambitious macroeconomic policy regime stabilises asset prices in a pincer movement, with monetary policy pinning down the risk-free yield curve via forward guidance and FS policy pinning down risk premia or spreads (Barwell, 2017a). The microeconomic dimension of financial stability should not be neglected here: the terms on which low income individuals and small businesses and start-ups can get access to financial services may not be apparent in the aggregate numbers on which any macro assessment of ‘provision’ is made, but any cyclical increase in rationing for either group would be of interest to the social planner on equity and efficiency grounds respectively.

From a structural perspective, the financial stability agenda could be re-cast to include progress towards a more efficient and equitable provision of financial services to the real economy, or as one distinguished academic put it, to “envision new ways to rechannel financial creativity to benefit society as a whole” (Shiller, 2012). This is not a straw man definition; in the years before the crisis the Bank of England emphasised an extremely broad definition of financial stability that focuses on the role played by frictions in the financial sector – including missing markets – in preventing the first best allocation of risk and resources (Haldane *et al.*, 2004):

“Financial stability can be thought to be, on the one hand, about enabling individuals to smooth consumption across time (for example, by saving or borrowing) or across states of nature (for example, through insurance contracts); and, on the other hand, about the efficient financing of investment projects with saved resources. At root, it is about the saving-investment nexus. So financial instability could be defined as any deviation from the optimal saving-investment plan of an economy that is due to imperfections in the financial sector.”

2.2 Financial stability policy regimes

Financial stability policy is a broad and oftentimes confusing church which includes a number of distinct policy regimes so a brief word on the terminology used in the policy debate is also appropriate here.

Practitioners distinguish between microprudential and macroprudential policy according to the perspective of the policymaker concerned with the resilience of the system, where, following a hugely influential

contribution by Crockett (2000), the former is based on a bottom up, ‘one institution at a time’ approach, which treats behaviour of other agents and outcomes at the system level as exogenously given,² and the latter is based on a top down, systemic perspective where behaviour and outcomes are endogenously determined. As we will go on to discuss, this straw man definition of microprudential supervision and regulation is no longer valid (and arguably never was as a description of what supervisory authorities could do – for example, via Pillar 2 surcharges) but the terminology has stuck.

Beyond these prudential regimes we should also include other aspects of public policy which should be thought of as FS policy regimes, at least under the broad definition, since their primary objective is to influence the provision of financial services, or more grandiosely the ‘saving investment nexus’. The following regimes and interventions all tick that box:

- any decision taken in the international arena which influences the rulebook that domestic supervisors work with;
- the supervision and regulation of any core part of markets infrastructure – typically by the central bank;
- any decision taken by the resolution authority concerning the method of recovery or resolution for a failing institution;
- the provision of liquidity insurance by the central bank to the banking system (and to non-bank financial institutions too in the post-crisis era) including as lender of last resort;
- the injection of liquidity into systemically important capital markets by the central bank acting as market maker of last resort;
- the purchase of systemically important securities by the central bank acting as the risk taker of last resort;
- any intervention designed to encourage the supply of core financial services by financial intermediaries;
- any intervention by the conduct authority which influences the terms on which financial services are provided, for example through the mortgage market review;
- any intervention by the competition authority which influences either the terms on which services are provided or the profitability of financial institutions (which is the first line of defence against losses); and
- any intervention by the fiscal authority which influences the acquisition of financial assets or liabilities, for example through the tax treatment of interest payments on debt or the provision of credit guarantees.

The key point to note here is that there is no single policy regime which has been assigned responsibility for delivering the over-arching umbrella definition of financial stability – although the Governor of the Bank of England comes mighty close as the one policymaker to rule them all. Instead, responsibility for financial stability has been divided up between numerous policy regimes, which have intermediate objectives which speak to the broad goal of financial stability.

3. Institutions, instruments, interventions and interactions

A lot has happened in a short space of time in the world of UK FS policy since the crash. In this section, we review the key developments in these areas and some of the questions raised.

3.1 Institutions – all your FS eggs in the Old Lady’s basket

On the institutional front there were two key changes in the aftermath of the financial crisis. First, the microprudential authority in the United Kingdom, the Financial Services Authority, was abolished and its responsibilities were shared between two new institutions (with self-explanatory names): the Prudential Regulation Authority (PRA), which had a brief spell as a subsidiary of the Bank of England and has now been subsumed within the Bank, and the Financial Conduct Authority (FCA). Second, a new macroprudential policy institution was created, the Financial Policy Committee (FPC), based at the Bank of England.

The meme that the FPC is the only macroprudential show in town in the United Kingdom is mistaken. Earlier on we drew the traditional academic distinction between micro- and macro-prudential regulation but argued that this delineation no longer holds in practice. Not only does the new *microprudential* supervisor, the PRA, have a clear intention to use a forward-looking judgement-driven approach to assess risks (as opposed to box ticking) and to draw on methodological and policy tools which are similar to those available to the FPC (stress testing and Pillar 2 capital charges respectively) but it also has a remit which has deliberately been written with a decidedly *macro* flavour, as Bailey (2013) notes:

“the emphasis on economic well-being as an ultimate goal aligns the supervision of banks and insurers more closely to the field of macroeconomic policy. This is in line with the definition of financial stability in terms of the continuity of supply of critical financial

services which are important to the functioning of the economy. Four services stand out here: the protection of savings; the provision of payment services including access to funds; credit extension; and risk transfer.”

Moreover, the FPC is prohibited from making policy recommendations regarding a specific institution and, given that the UK banking sector is reasonably concentrated, being dominated by a small number of systemically important banks, that restriction suggests that the PRA has a major *macro* role in the conduct of UK financial stability policy.

Many macroeconomists may be surprised to find a conduct regulator like the FCA included on a list of relevant *macroprudential* policymakers. However, interventions such as the Mortgage Market Review could have a material impact on the tail of the system loss distribution by moderating the incidence of financial distress in the household sector and the losses on bank balance sheets in the bust – as the origination of NINJA (no income, no job and no assets) loans in the recent US mortgage boom reminds us. As for the macroeconomics of misconduct, the literature emphasises the central role of ‘fraud and swindles’ in fuelling the boom in the financial cycle, as Kindleberger (1978) observes:

“The implosion of an asset price bubble always leads to the discovery of fraud and swindles The supply of corruption increases in a pro-cyclical way much like the supply of credit ... In the absence of more credit, the fraud sprouts from the woodwork like mushrooms in a soggy forest ... Much of the fraudulent behavior is illegal, but some hovers on the borderline between what is legal and what is not.”

Indeed, one could reasonably argue that behavioural flaws – departures from the textbook treatment of rational, optimising agents – are *the* key ‘friction’ that contributes to financial crises.

The new institutional arrangements place a lot of power in the hands of the Bank of England. Alongside the high profile responsibility for micro- and macro-prudential supervision and regulation, the Old Lady is the home to the resolution authority, the supervisor of core markets infrastructure and the provider of liquidity insurance to systemically important financial institutions. The Governors of the Bank of England are key actors in their own right, not only given their role as pivotal members of the two policy committees, the FPC and PRC (the Prudential Regulation Committee, the decision-making body of the PRA), but also through their key role in

determining whether and how the Bank of England’s balance sheet is deployed.

There are two clear advantages to this ‘single peak’ structure that concentrates so much power at the Bank. First, housing these different policy regimes within one institution facilitates the flow of information and analysis between them, increasing the chances that the staff and policymakers can ‘join up the dots’, potentially improving the conduct of policy. Second, concentrating power in the hands of one institution and to a large extent one small set of policymakers facilitates greater coordination of policy across these disciplines, which could prove important when decisions in one arena could potentially complicate the pursuit of other policy goals.

On the other hand, the single peak model is asking an awful lot from one institution and that small set of policymakers, who are asked to juggle multiple policy briefs which demand different skill-sets (Bailey, 2011; Forbes, 2017). The threat posed by Groupthink (where one narrative or paradigm dominates thinking within a policy institution, to the exclusion of alternative explanations of the facts, potentially leading to policy errors) increases when multiple policy disciplines are housed in one institution. Moreover, there is a concern that in the event of a future financial crisis the Bank of England might not be able to perform its critical crisis-management functions because of potential reputational damage following its perceived failure to prevent that crisis arising. Finally, there is at least a risk that one or other of the Bank’s many policy remits will come to dominate the others, or potential tensions between the objectives of these two regimes will be suppressed.

3.2 Instruments

The financial crisis was a powerful wake up call for some that it was unwise to rely on one instrument – the short-term policy rate – to simultaneously achieve monetary and financial stability, which prompted renewed interest in the literature on FS policy instruments. Old lessons from Tinbergen (1952) and Mundell (1962) were re-learned, about the need for a sufficient number of policy instruments to match policy objectives and an appropriate assignment of policy tools (see Fahr and Fell, 2017, for an excellent treatment in the context of FS policy).

The FS instrument assignment problem is formidable in practice. As discussed earlier, there are a number of FS policy regimes with distinct intermediate policy objectives that collectively speak to the over-arching goal of financial stability. Moreover, that over-arching

goal – any deviation from the optimal savings investment plan – is so broad that is difficult to imagine that there ever could be a single FS policy instrument which could be relied upon to achieve that goal in all states of nature. The issue then is about the *set of instruments* that the FS policy community should have at its collective disposal.

Economists have a clear idea about what makes for a good policy instrument. First, it has to be *effective*, in that a change in the instrument has to have a sizeable and speedy impact on the object of interest. Second, it has to be *reliable*, in that the transmission mechanism has to be stable and reasonably certain. Third, it has to be *cost effective*, in that use of the instrument involves minimal distortions or undesirable side-effects.

In theory these criteria suggest a clear sequencing: policy instruments should only be selected once policymakers have a clear idea about their objectives and a keen understanding of the system they are trying to regulate and in particular the impact of those instruments upon that system. In practice, there has been a rush to select instruments, driven by the pressure to be seen to act and the desire to capitalise on what might prove to be transient public and political support for intervention.

The big questions over instrument selection lie at the *macro* end of the spectrum of FS policy: it is much clearer how micro supervisors and regulators of the banks or the payments system should go about their business. The possible *macro* FS toolkit – in the loosest possible sense – includes:

- *Macroprudential piggy-back*: the default assumption at the outset of the macroprudential adventure was that the macroprudential authority could piggy-back on top of the microprudential regime, through control over capital and liquidity surcharges that sit on top of timeless microprudential requirements.
- *Fiscal instruments*: rather than using regulatory surcharges which have an uncertain impact on the cost-benefit analysis of private agents, the macroprudential authority could use genuine fiscal instruments – taxes, subsidies and guarantees – which should have a more predictable impact on behaviour.
- *Prohibition*: following the analysis set out in Weitzman (1974), the authorities could prohibit certain activities, securities or market structures to limit the quantity of systemic risk pollution in the system rather than seeking to change polluting behaviour via the price mechanism.
- *Borrower-based limits*: measures which constrain the build-up of financial imbalances by limiting the

provision of core financial services to customers based on their characteristics.

- *Haircut policy*: constraints on leverage within the system by limiting the proportion of the value of an asset that can be used as collateral to support a secured loan – particularly within the shadow banking system – to slow a critical positive feedback mechanism in which credit flows and asset price inflation feed off each other. Those constraints could be varied across the cycle to reflect the policymaker's assessment of the sign and size of pricing anomalies and could also be applied to the central bank's refinancing operations.
- *Perimeter creep*: if the policymaker believes that core financial services are being provided beyond the regulatory perimeter by the shadow banking system (perhaps as a form of regulatory arbitrage) and their supply would be fragile in certain states of nature then it might make sense to move the perimeter and regulate those activities rather than allow risks to fester beyond the focus of the regulatory community.
- *Central bank balance sheet*: the classic instrument of crisis management, where the central bank can issue outside money and reshape the asset holdings of the private sector via long-term refinancing operations or outright purchases, allowing the central bank to act as a provider of liquidity to the market and in extremis act as lender of last resort, market maker of last resort and even risk taker of last resort.
- *Voice*: the policymaker aims to correct the beliefs of private sector agents which are contributing to potentially destabilising behaviour, ranging from warnings that the good times cannot last forever when disaster myopia sets in, to nudges to encourage prudent behaviour, to specific warnings about the risks embedded in complex securities.
- *Find and fix the friction*: if the objective of policy is to reduce the frequency and severity of socially inefficient crises which are the product of market failures and policy failures then common sense suggests that the optimal policy response might be to seek out those frictions and where possible eliminate them (subject to the standard concern about the theory of the second best, which suggests 'piecemeal' FS policy interventions could prove counterproductive; see Lipsey and Lancaster, 1956).

A critical judgement when it comes to instrument selection is whether the policymaker wishes to change behaviour or simply build resilience against the threats posed by those behaviours. Macroeconomists brought up on the traditions of monetary and fiscal policy take it for granted that policy interventions bite, and can therefore change behaviour. However, we cannot make the same

assumption in the financial stability sphere. Consider the example of an increase in regulatory capital buffers: there is no guarantee that a marginal change in those buffers will have any impact on the system. Regulated institutions may choose to operate above the regulatory requirement, to avoid the constraints on behaviour that falling below implies or to avoid the higher cost of capital that the market may impose on banks in close proximity to the regulatory floor in certain states of nature, and even if the buffer bites, those institutions will have numerous ways to adjust their balance sheet to raise the ratio of capital to risk weighted assets (Barwell, 2017a). Moreover, under certain (arguably extreme) assumptions (that broadly correspond to the assumption of perfect capital markets) mandated changes in the liability structure of banks are irrelevant to the overall cost of capital and in particular on the terms on which they will provide services to the real economy. To fix ideas, imagine that the FS policymaker wishes to constrain the origination of high risk loans: liquidity surcharges, taxes and borrower-based limits might prove far more effective than an increase in sectoral capital requirements. However, if all she cares about is building loss absorbing capacity within the system then she could do a lot worse than raise capital buffers.

So much for the theoretical toolkit, the lead macroprudential authority in the United Kingdom – the FPC – has two key powers: the power to make recommendations and the power to issue directions over a set of policy levers. The recommendations will typically be sent either to the PRA and the FCA, who are obliged to respond on a ‘comply or explain’ basis, or to the Treasury, in a request for additional policy instruments, but in theory the FPC can recommend almost anything to anyone. The set of instruments over which the FPC has the power of direction has increased in time, and now covers: sectoral capital requirements; leverage ratio tools; and borrower-based limits on residential mortgage lending including buy-to-let lending. Finally, the FPC is the designated authority in the United Kingdom with responsibility for setting the counter-cyclical buffer. However, the FPC does not have the power of direction over one of the key policy instruments during a crisis – the Bank of England balance sheet – and it is interesting to note that it was not directly involved in one of the key macroprudential interventions during this period: the FLS.

3.3 Interventions

We pick up the story of financial stability policy in this paper in 2010 (for a discussion of the emergency measures that were deployed *during* the crisis see Barwell, 2017a).

A great deal has been done since then under the broad umbrella of FS policy by various institutions and for various reasons: table 1 gives a flavour of the diverse range of interventions.

There have been a series of important decisions concerning various structural aspects of the steady state FS policy regime, from the appropriate requirements on the quantity and quality of bank capital, to the structure of the UK banking system, to the design of the liquidity insurance facilities at the central bank. There have also been examples of cyclical interventions, where policymakers have responded to events *and in both directions* – that is both to ease and tighten the terms on which financial services were provided.

There is an unfortunate habit of categorising policy interventions according to the institution that takes a particular decision: so macroprudential policy is what the FPC does; fiscal policy is what the Treasury does, and so on. That taxonomy is unhelpful when it comes to FS policy. Consider the following examples:

- the Help to Buy scheme is treated in some quarters as a stealth fiscal stimulus but the motivation for the scheme fits squarely with the Haldane *et al.* (2004) concept of addressing “imperfections in the financial sector” that lead to a “deviation from the optimal saving-investment plan of an economy”.
- the Funding for Lending Scheme is even described by the Bank of England as unconventional monetary policy and is widely perceived as such – perhaps because the FPC was not directly involved in the design of the FLS. However, it is a classic macroprudential (FS) operation: the scheme was designed to support the flow of lending to the real economy by addressing a perceived market failure in bank funding markets, and unlike the European Central Bank’s TLTRO there was no attempt to influence the monetary stance (the expected future path of the policy rate).
- the decision to influence the share of high loan to income (LTI) loans in new mortgage lending was taken by the FPC and *is* widely perceived as a classic financial stability intervention designed to head-off a potential threat to the banking system from future losses on high risk loans. However, the intervention was seemingly more motivated by the pursuit of economic stability – to avoid a sharp slowdown in aggregate demand in a future recession that might arise if over-indebted households are forced to re-trench. To be clear, this intervention can still qualify as FS policy – but it appears to lie on the outer edge of the FPC’s remit.

Table 1. A smörgåsbord of key FS policy intervention

Intervention	Institution	Motivation
Accelerate transition to Basel III standards	FPC	To provide adequate insurance against the material risk of capital further losses – in particular with respect to developments in the Euro Area – subject to the constraint that the capital build was not implemented in a way that would hinder lending to the real economy.
Brexit contingency planning	FPC, PRA and FCA	To assess the plans that regulated firms have put in place to operate in a range of possible outcomes from the Brexit negotiations and to examine the potential disruption to financial services and the implications for the UK economy through trade and financial linkages.
Calibrating steady state capital requirements	FPC	To achieve the desired trade-off between the resilience of the financial sector and the Government's wider economic objectives.
Changes to the counter-cyclical capital buffer (CCyB)	FPC	To protect the resilience of the banking system by raising and lowering the buffer to reflect the changing environment.
Cyber resilience	FPC	To improve and test resilience against cyber attacks by requiring institutions to adopt individual cyber resilience action plans.
Fair and Effective Markets Review	HM Treasury, Bank of England, FCA	To restore confidence in wholesale markets by improving conduct.
Funding for Lending Scheme (FLS)	HM Treasury and Bank of England	To encourage banks and building societies to increase their lending to the UK real economy through access to cheap funding.
Help to Buy (HtB)	HM Treasury	To improve access to mortgage finance for those seeking to get on the property ladder, via equity loans and mortgage guarantees.
Loan to Income (LTI) caps	FPC	To prevent an increase in over-indebtedness in the household sector and the risk of a sharp slowdown in activity in a future downturn.
Mortgage Market Review (MMR)	FCA (initially FSA) with a recommendation by the FPC on calibration	To prevent the origination of risky loans by requiring a credible assessment of affordability that allows for the possibility that interest rates could rise.
Reforms to Sterling Monetary Framework (SMF)	Bank of England	To increase the resilience of the banking system to funding shocks by increasing the availability and flexibility of liquidity insurance.
Review of bank capital	FPC and FSA	To increase the resilience of the banks through a supervisory assessment of capital adequacy focused on asset valuations, future conduct charges and internal risk weights.
Ring fencing	ICB but, translated into legislation by the Government with PRA responsible for implementation	To protect the provision of core financial services to the UK real economy by placing the supply of those services within separate well-capitalised legal entities that are prohibited from performing certain activities.

It is difficult to assess the effectiveness of many if not most of these interventions. It is impossible to judge the merits of structural reforms designed to reduce the frequency and severity of low probability high severity tail events at this juncture; we may need decades and perhaps centuries of data to draw sound conclusions. More broadly, it is hard to assess success or failure without a clear, quantitative description of the objective. However, it is worth making a generic observation about the assessment of the cyclical FS policy interventions.

Over time UK policymakers became increasingly concerned about the anaemic recovery in activity and that problems on the supply side in credit markets were potentially to blame. Those concerns would ultimately lead to the launch of the Funding for Lending Scheme (FLS), an ingenious *macroprudential* policy innovation which provided incentives for the UK banks to lend more than they otherwise would have done through access to cheap term funding (Churm *et al.*, 2012).

Unfortunately, there was no sharp rebound in lending in the months after the scheme was launched. However, it does not follow that the FLS was badly designed or failed. What we have here is the analogue of the price puzzle in monetary policy, in which inflation appears to rise following a monetary tightening (Eichenbaum, 1992). *The credit puzzle of macroprudential policy*, in which lending is anaemic after policymakers take steps to ease credit conditions, has the same intuitive explanation: FS policymakers intervene to support lending precisely when they expect a sharp tightening in credit conditions (Barwell, 2017a). Successful interventions make a bad situation better but it is unreasonable to expect policymakers to make a bad situation good in a short space of time.

3.4 Interactions

The conduct of FS policy will inevitably have implications for decisions taken in other policy arenas, and vice versa. Where the cyclical aspects of FS policy are concerned the ‘overlap’ is most likely to arise with monetary policy. The interaction with monetary policy at any given point in time will depend on the particular shocks hitting the system or, crudely speaking, whether the business cycle and financial cycles are synchronised or not.

If the economy is hit by a positive demand shock – that is, an unanticipated transitory increase in income and spending – then both cyclical regimes should be expected to work in tandem, leaning against a common cyclical driver of spending, credit flows and asset prices. In contrast, if the economy is hit by a positive supply shock – good news on the level of productivity – then we might expect to see monetary and macroprudential policy working in opposite directions. The stance of monetary policy will likely be eased in order to drive aggregate demand towards the new (higher) level of supply, and in the process it will tend to inflate asset prices. In contrast, the stance of macroprudential policy might be tightened by a forward-looking policymaker seeking to discourage an over-exuberant expansion in credit and acceleration in asset prices in response to good news on permanent income and lower risk-free rates. Indeed, students of Kindleberger (1978) and Minsky (1986) might argue that a positive supply shock is precisely the sort of disturbance that is likely ultimately to lead to an unsustainable build-up of credit and a crisis.

Our post-crisis observations on the interaction between financial stability policy and the other policy regimes have been dominated by an extended period of depressed economic activity which necessitated a loose monetary stance despite inflation over-shooting the target for

much of the period. A clear distinction must be made here between the different strands of FS policy.

The stance of prudential policy during this period mirrored the approach taken to fiscal policy – namely, policymakers ushered in a prolonged period of balance sheet repair which indirectly weighed on aggregate demand. The transition to the new Basel standards is the most important factor here, but we could also include other policy interventions such as the Mortgage Market Review or the caps on high Loan to Income ratio mortgages as weighing on activity at the margin, via a selective tightening in retail credit conditions (Forbes, 2017). Prudential *tightening* weakens the case for monetary *tightening*. Put another way – in the terminology of central bankers who had to respond to the collateral damage to demand (Yellen, 2012) – prudential policy was just one more ‘headwind’ buffeting the economy.

On the other hand, the macro aspects of the FS agenda were more ‘tailwind’ than ‘headwind’. As we noted above, policymakers became increasingly concerned that the anaemic supply of credit was restraining the recovery in activity. They had two choices: inject more monetary stimulus to compensate for the fact that the monetary transmission mechanism was impaired; or, try to fix the transmission mechanism – in much the same way that if you are dealing with a leaky hosepipe you either have to send more water down the pipe to compensate for the leaks, or you have to fix the leaks. The latter – the attempts to fix the transmission of monetary stimulus through the banking system – are a classic example of macroprudential policy, although they are often not referred to in that way. The European Central Bank refers to its numerous attempts to fix the leaky pipe in a fragmented currency union as non-standard monetary measures (Cœuré, 2013). But irrespective of what you call them, macroprudential *easing* weakens the case for additional monetary *easing*.

It is also worthwhile thinking about the impact of decisions in the monetary policy realm on the goals of financial stability. One of the surprising features of the post-crisis period was the surprisingly low level of insolvencies, given the shock to incomes, which in part reflects the very low level of interest rates during this period, thanks to the large cuts in Bank Rate at the start of the crisis (Broadbent, 2012). Of course, Quantitative Easing (QE) was the primary tool of monetary policy once Bank Rate had hit the effective lower bound, and although the Bank of England was sceptical about the transmission of QE through the banking sector (Dale,

2010), there are in fact a number of channels through which large-scale asset purchases might have increased the value of the banks' asset portfolios and reduced their cost of wholesale funding (Barwell, 2017b). Crudely put, if – as the MPC believes – QE has a positive impact on the level of activity and the value of a broad range of sterling asset then it is difficult to see how QE will not have had a positive impact on the net worth of leveraged institutions which have large credit exposures to the UK economy and hold large portfolios of those financial assets. Both QE and the cuts in Bank Rate should have helped the process of balance sheet repair in the banking system, which would have indirectly eased credit conditions in retail markets. Similar arguments can be made in the real economy. Credit frictions are central to the macroeconomic narrative of the post-crisis period so if loose monetary policy boosted asset prices then it helped to ease that fundamental constraint, both directly where secured lending is concerned and indirectly by boosting the net worth of financial intermediaries and potential borrowers in the real economy.

Finally, we should acknowledge the possibility that the post-crisis policy mix could potentially explain at least part of the post-crash weakness in productivity. With both fiscal and prudential FS policy focused on balance sheet repair, the onus was on monetary policy to keep interest rates very low to support demand in the face of these headwinds. Low interest rates helped to suppress the rise in financial distress during the post-crisis period which would normally be viewed as a positive outcome from a public policy perspective. However, it is possible that the 'loose monetary/tight fiscal and prudential policy' mix contributed to the productivity puzzle by enabling unproductive over-indebted companies to survive who might otherwise have entered into insolvency and released resources to be more productively employed elsewhere within the economy. The Bank was cognisant of this risk but concluded that forbearance to small and medium sized companies could account for only a small proportion of the weakness in aggregate productivity (Arrowsmith *et al.*, 2013).

4. A policy regime without proper foundations

With the blur of institutional reforms and policy interventions it is all too easy to lose sight of the fact that the foundations of financial stability policy are almost entirely absent. There was little option but to act first and think later in the immediate aftermath of the crisis, but at some point these foundations need to be put in place. It is no exaggeration to say there is no anchor

on the conduct of policy, a significant risk of policy errors and no hope of genuine accountability until these foundations are put in place.

4.1 A fit-for-purpose economic policy regime

The conduct of monetary policy may not be flawless but it does provide a useful template of what a fit-for-purpose policy regime looks like. Policymakers habitually rely on judgement when they set monetary policy rather than slavishly follow the output of any one 'true' model or rule. However, those judgements are made within the context of a clearly articulated model-based framework. In other words, central bankers follow a scientific *approach* which itself can be crudely approximated by the stylised treatment of the monetary policy rule embedded in macroeconomic models.

At the core of that stylised treatment are the same two fundamental building blocks that economists use to explain behaviour in any setting: a description of the policymaker's preferences (in this case, referred to as the loss function) and the constraints under which she operates (in this case, a macroeconomic model, or ideally models), where the former should ideally reflect the latter (Walsh, 2005). In the case of monetary policy there will always be disagreements about the appropriate model (with the crisis triggering a resurgence of interest in models which incorporate a rigorous treatment of credit flows, debt stocks and asset prices) but fortunately there is broad agreement about the loss function, but even small differences of opinion on the precise parameterisation have the potential to cause confusion (Blinder, 1997):

“Most academic economists begin and end their formal thinking about the goals of monetary policy by positing a periodic loss function that weights the squared deviations of unemployment and inflation from their target values during my time on the committee, I viewed the lack of consensus on the ultimate targets for unemployment and inflation as a severe handicap to rational policymaking. How can you know what to do if you do not even know where you want to go?”

When it comes to FS policy these foundations are absent. There is no model and there is no loss function. This may not appear to be a problem to the general public or market practitioners but macroeconomists ought to be deeply concerned about these glaring omissions. Without a reliable model of the system it is hard to predict the likely outcome of policy interventions. Without an objective yardstick to evaluate outcomes then you cannot be sure you have satisfied the Hippocratic Oath

of economic policy (first do no harm), let alone achieved the best possible outcome.

4.2 Missing model

Starting first with the issue of the missing model, to be precise there is no *reliable general equilibrium model of the system which adequately describes the features that FS policymakers are interested in* – that is: the irreducible set of key frictions that collectively cause deviations from that optimal savings investment plan; the multiplicity of relevant institutions, markets, and transactions in which the drama of the micro and macro consequences of financial instability unfolds; and the transmission of key policy instruments.

To be clear, there are models which introduce frictions and describe interesting features of financial instability but there is no model which has a rich enough treatment of behaviour and coverage of the system to allow serious policy analysis. The problem here is that FS policymakers need to relax many of the assumptions that macroeconomists traditionally make to simplify the problem and make their models tractable (rational, optimising representative agents operating in a stylised economy). Debt and defaults, credit and contracts, intermediaries and information asymmetries, bubbles and rule of thumb behaviour are not common features of the workhorse monetary policy model but they are critical features of a fit for purpose FS policy model. Certainly, embedding an optimising representative bank in an otherwise standard macroeconomic model is not sufficient.

There is one specific feature of the missing model problem that is worthy of further comment. Most FS policymakers believe that there *is* a long-run trade-off between the resilience of the financial system and the social planner's goals of efficiency and equity and that should constrain the pursuit of ever higher regulatory capital requirements and buffers or an ever narrower, simpler banking system. The location and slope of that trade-off will reflect the deep structural parameters of the missing model and is central to the calibration of the optimal FS policy regime. Unfortunately, our understanding of that trade-off is primitive at best, and that raises fundamental questions about whether policymakers are striking the right balance between resilience and the wider goals of public policy. It seems reasonable to conclude that the efficiency (potential supply)–resilience trade-off is non-linear in the sense that, at least up to a point, the negative indirect impact of increased resilience on productivity outside of a crisis is dominated by the positive impact of reducing

the frequency and severity of hysteresis and super hysteresis effects on the supply side that occur during a crisis. But beyond some point the trade-off turns and, in any case, problems could easily arise on the inequality front as progress is made towards a more resilient financial system, with increased rationing for those at the bottom of the income distribution, before a material drag on trend growth emerges.³ Unfortunately, without a reliable model of the system it is impossible to locate this trade-off and the appropriate resting point of the regime.

4.3 Missing loss function

Turning to the loss function it is remarkable how little discussion there has been in the literature of this essential ingredient in any policy regime (Fahr and Fell, 2017, being an honourable exception). Writing down the loss function begins with a high-level description of what the policymaker is trying to achieve, which should reflect the goals of the social planner – although recall that in reality we have a community of FS policymakers with intermediate objectives who would not share the same loss function.

We noted earlier the spectrum of alternative definitions of financial stability, from a narrow focus on the safety and soundness of banks to an extremely broad focus on outcomes in the real economy that do not have a direct bearing on the probability of a future banking crisis. Hopefully, it should be clear that these high-level mission statements do not imply observationally equivalent policy regimes.

To fix ideas, consider the FS policy interest in one of the key sectors of the economy: the property market. The narrower remits require policymakers to protect the banking sector from boom and bust in the housing market: to lean against any slippage in mortgage lending standards and to make sure there is enough loss absorbing capacity within the system in order that any spike in write-offs in a future downturn doesn't lead to a crisis, or push the system close enough to a crisis to trigger a credit crunch. The broader remits require policymakers to protect the housing market from the banks, and prompt interventions *even when there is no plausible threat to the resilience of the banking system and potentially for a variety of different reasons*:

- to lean against the origination of high-risk loans that are likely to lead to financial distress at the micro-level but without any material macroeconomic implications (an intervention motivated by the social planner's interest in *equity*);

- to lean against the over-accumulation of mortgage debt that might ultimately lead to a deeper downturn in aggregate demand in a future recession (an intervention motivated by the social planner's interest in *stability*); and
 - to lean against the misallocation of resources that can arise during a boom in the property market (an intervention motivated by the social planner's interest in *efficiency*).
- What is the relative importance attached to the losses associated with deviations from the different targets of policy?
 - How will the social planner's interest in efficiency and equity be articulated in the loss function if at all – for example, will the level of potential supply feature, and with what weight?

4.4 Implications for the conduct of policy

These interventions all sit comfortably under the umbrella of dealing with 'deviation from the optimal saving-investment plan of an economy' that have their root in financial imperfections. They also happen to imply different policy interventions with different tools.

Writing down the high-level mission statement is only the beginning. It simply tells us what the policymaker cares about. We need to translate those preferences into an operational quantitative description of the policymaker's objectives – a loss function – which identifies the objects of interest and the appropriate targets of FS policy and the costs associated with deviations from those targets. In just the same way that the current generation of central bankers demand a clear description of the inflation target and the costs associated with deviations of inflation and activity or unemployment from the target and their sustainable levels rather than a vague requirement to achieve price stability, FS policymakers should demand clarity over the following basic questions:

- What is the optimal or target frequency of systemic financial crises?
- Which institutions or sets of institutions and markets are deemed systemically important?
- What is the set of core financial services whose supply needs to be protected?
- What constitutes the ideal or target provision of those services – is it simply about avoiding a credit crunch or does the social planner have more ambitious goals: to engineer a natural⁴ provision of those services?
- To what extent are distributional considerations – the variation in provision and rationing across the population – relevant in the analysis of the provision of services?
- To what extent does the loss associated with cyclical and structural imperfections that drive deviations from the optimal savings investment plan *but do not directly threaten the resilience of the system or the adequate supply of core services* fall within the scope of policy?
- How do the losses associated with deviations from the targets vary according to the sign and size of the deviation?

The reader may protest that it is impossible to give coherent answers to these questions about the loss function given our current state of knowledge (i.e., the lack of a model): we just don't know what we should be doing; we only know that systemic crises carry huge costs. It is true that this knowledge can get you so far, in just the same way that the knowledge that hyperinflations are extremely costly can provide a valuable signpost in monetary policy. We *may* have already implemented the key policy conclusions from re-learning that painful lesson; the question is: where next? The knowledge that financial crises are costly is an insufficient foundation for a fit-for-purpose policy regime. To repeat Blinder's observation: *How can you know what to do if you do not even know where you want to go?*

The absence of the model and the loss function has clear implications for the conduct of policy. It is often claimed that the cyclical components of FS policy should follow a 'constrained discretion' approach as a defence against inaction bias and lobbying by the financial sector (BoE, 2009; Knot, 2014). Under constrained discretion policy is not dictated by some hard and fast rule, but policymakers are constrained by a clear and transparent policy framework leading to rule-like behaviour (Bernanke and Mishkin, 1997). However, that does not seem to be a realistic option with FS policy: it is hard to see how there can be rule-like behaviour if there is no rule, and there can be no defensible rule when there is no model and no loss function to guide its calibration. The cyclical dimension of FS policy is a pure discretion regime.

The absence of the model and the loss function is also critical when it comes to the accountability of the FS policy regime. Genuine accountability requires a shared understanding between policymakers and their external stakeholders – market participants, politicians and the general public – about the objectives of policy and what can be achieved with the tools at policymakers' disposal. There can be no serious scrutiny of policy decisions if there is no consensus around: a clear, quantitative description of what policymakers are supposed to achieve; or, around how policy interventions influence

Confidence and core services

In this box we discuss in more detail two of the key questions that must inform the calibration of the FS policy regime: how safe does the social planner need the financial system to be, and what services does she care about.

The confidence level

The biggest single decision the social planner has to take when designing the FS policy regime is the desired frequency of systemic crises. A direct parallel can be drawn here with the Basel framework where, for a given estimate of the distribution of possible losses on a bank's portfolios, banks were supposed to have sufficient capital, provisions and revenue to be able to absorb expected and unexpected losses over a one-year horizon with a target probability referred to as the confidence level, which was set at 99.9 per cent. In other words, losses were expected to overwhelm those resources with a probability of 1 in 1,000.

Where FS policy is concerned the focus is on the distribution of losses across the entire system, allowing for behavioural responses that might amplify stress in response to shocks (including privately rational but socially destructive defensive actions, such as fire-sales of assets, as well as default cascades). The relevant outcome here is any state of the world in which loss absorbing capacity within the system is depleted to the point that provision of core financial services is compromised. To be clear, that point of financial instability does not require that the entire banking system has been driven to the point of insolvency – indeed, the provision of core financial services is likely to tighten well before we reach this point. The appropriate confidence level is one minus the socially optimal probability of that event occurring, given the social costs incurred in draws from the extreme tail of the system loss distribution.

The knee jerk response here is to assume that the desired probability of an event like the 2008 crash must be zero but as with building defences against natural disasters the macroeconomic costs attached to maintaining a no crisis regime are thought to be prohibitively high. Unlike in monetary policy most policymakers believe that there is a trade-off between financial stability and the ultimate goals of the social planner, and so a corner solution of perfect resilience is unlikely to be optimal. The costs and benefits of increased resilience must be weighed carefully in the balance.

The aspect of this critical design question that receives less attention is the inter-dependence with the monetary and fiscal framework. Confidence has collapsed in the pre-crisis consensus that counter-cyclical adjustments in the stance of monetary and fiscal policy can cushion the hit to demand in the immediate aftermath of a financial crisis. Moreover, a much increased stock of government debt and likely lower equilibrium real interest rates (leaving policy rates closer to the lower bound) create further headaches for the FS policymaker: there is even less scope to 'mop up' after a crisis than there was before. The FS policy regime should be calibrated accordingly: if you cannot mop up afterwards, best to avoid a crisis in the first place which points in the direction of taking out greater insurance against future crises via more capital in the system and/or more ambitious structural reforms. By the same token, if the inflation target were raised or the public debt burden was reduced through fiscal consolidation to create more monetary and fiscal space that could be used in a crisis then there would be an argument for less insurance against crises within the FS regime.

The provision of core financial services

The acid test of resilience is that the system must be sufficiently well capitalised so as to be able to provide certain key financial services to the real economy in all states of nature. The definition of that set of core financial services and the minimum level of provision – both an aggregate level and in terms of the variation in provision across customers – is critical to the conduct of policy.

If policymakers are content that the system provides only a narrow set of services (taking deposits, originating loans) on reasonable terms to most households and companies then the counter-arguments to radical structural reforms to create much smaller, simpler, narrower banks or to much higher levels of capital requirements are much less persuasive.

If on the other hand, one believes that there is some value to the more complex businesses in which, say, investment banks engage – if policymakers are not prepared to write off, say, market making, derivative markets, underwriting and so on as 'socially useless' – or policymakers see some value in the function of the shadow banking sector or if one takes seriously the agenda of eliminating financial market imperfections and confronting the missing markets problem in pursuit of the Shiller agenda, then one might have to accept that the system may need to become even larger and even more complex than it currently is.

Likewise, if a structural tightening in credit conditions for those who are only marginally attached to formal credit markets is considered a breach of financial stability – if the social planner's concerns about inequality are reflected in the objectives of FS policy – then policymakers will have to tread carefully in their search for a more resilient financial system. As Caprio (2013) observes:

“the argument that finance is big enough might be very appealing to those who already have access to the financial system ... I am averse to measures that can reduce financial access to broader groups of society”.

It also follows that the more markets the policymaker is interested in, and the more granular her focus, the larger and more precise her toolkit must be.

the system; or, what constitutes the ‘best practice’ response in any given situation. To make matters worse, there is no reliable information on the current state of financial stability – what the current situation is – which further complicates the process of holding policymakers to account. The only real form of accountability is crude *ex post* accountability: if something goes wrong people will conclude that mistakes must have been made.

4.5 The remit of the current regime

The FS policy regimes that have either been updated or innovated since the crisis lack a fully articulated remit of the kind described above. We shall focus here on the Financial Policy Committee, but the points apply more broadly.

To be clear, the Chancellor regularly provides direction to the FPC on its remit, setting out the Committee’s key objectives. The FPC is instructed to “protect and enhance the stability of the financial system of the United Kingdom” through “the identification of, monitoring of, and taking of action to remove or reduce systemic risks with a view to protecting and enhancing the resilience of the UK financial system”. There is a clear instruction not to behave like ‘resilience nutters’; the FPC is reminded to support “the economic policy of Her Majesty’s Government, including its objectives for growth and employment” and the FPC is reminded that it is neither required nor authorised “to exercise its functions in a way that would in its opinion be likely to have a significant adverse effect on the capacity of the financial sector to contribute to the growth of the UK economy in the medium or long term”.

The problem with this remit should be immediately obvious: there is no direction on the tolerance for systemic risk and the frequency and severity of crisis, and there is no quantification of what constitutes a significant adverse effect. When you combine this uncertainty about the objectives of the regime, the uncertainty about the structural trade-off between resilience on the one hand and the efficiency and inequality objectives of the social planner on the other, and the uncertainty about the instrument set – the positive impact of FS policy tools on reducing systemic risks and the negative impact on the Government’s wider objectives – it is simply remarkable that the Governor of the FPC can forge a consensus among the members over what to do, but the record shows that the FPC is able to take decisions.

We can infer something about what the Committee believes its objectives to be from what it says and what it does. The Executive Director for Financial Stability Strategy and

Risk set out his interpretation of what macroprudential policy is for in a recent speech (Brazier, 2017):

“So the job of macroprudential policy is to protect the real economy from the financial system, by protecting the financial system from the real economy. It is to ensure the system has the capacity to absorb bad economic news, so it doesn’t unduly amplify it.”

Leaving to one side the lack of precision (who is being protected in the real economy? how much protection?), the problem with this elegant soundbite is that it is a touch ambiguous. The first statement hints at a very broad definition of financial stability which might encompass confronting the imbalances in real economy that are cultivated by imperfections in the financial sector *even once any threat to the resilience objective has been contained*. However, the later statements qualify the first, and increasingly suggest a more circumspect approach where the remit of policy is limited to safeguarding the resilience of the financial system in order to avoid credit crunches, *and once the risks to bank balance sheets are contained there is no case for interventions to address issues in the real economy*. But that interpretation raises interesting questions about one of the FPC’s signature interventions – the cap on high loan-to-income mortgages – which appears to have been primarily motivated by concerns about *economic stability*, as opposed to any fear of an immediate threat to the resilience of the UK banks from write-offs on those loans (BoE, 2014):

“the Committee assessed that there was the potential for a large adverse impact on aggregate demand from household indebtedness, with this risk more marked in relation to borrowers with higher levels of indebtedness. The Committee judged that the size of that impact on aggregate demand was sufficient to warrant intervening now in the mortgage market, given current conditions and the potential upside risks to the FPC’s central view”.

The fundamental question therefore remains unanswered: *is the FPC done once it has secured the resilience of the financial system or does its remit extend beyond that to dealing with the consequences of financial frictions above and beyond their implications for resilience?*

It is perfectly understandable that these basic questions were not tackled at the outset of the macroprudential adventure but, as the Vice President of the European Central Bank observes, it is increasingly high time that attention turns to securing the analytical foundations of this key FS policy regime (Constâncio, 2014b):

“Many policies in history have been developed through trial and error. It is rare that a perfect theory or academic paradigm is established before at the time when a new policy needs to be used for the first time. But it is important that once the policy community has realised that a new policy is indispensable and starts ‘field experiments’, the analytical foundations are developed in parallel”.

5. Conclusions

A great deal has been done to restore financial stability and the system is surely in better shape than it was after the near-death experience of late 2008. New policy institutions have emerged, new policy instruments have been deployed, structural changes are being introduced. However, progress on putting in place the economic foundations of the new financial stability policy regime has lagged behind. There is no fit for policy purpose model of the system and no adequate description of the objectives of policymakers. As a result, there is no anchor on the conduct of policy and in the absence of genuine accountability. To begin with it was a case of all hands to the pump but the case for starting work on completing those foundations becomes ever more compelling now that – in the words of the ECB Vice President – the policy community has realised that FS policy is indispensable and has started field experiments. To be clear, this is not a homework assignment that the bureaucrats in the policy institutions (the central bankers and supervisors) can complete on their own. Democratically elected politicians must ultimately be responsible for the design of the regime – or “Politicians Must Bless the Resilience Standard” as Paul Tucker neatly put it.

Many of the decisions over the design of the FS policy regime have already been taken. International standards on going concern and gone concern capital have largely been agreed. A structural review of the banking system has taken place. The Bank of England has reached a conclusion on the appropriate quantity and quality of capital in the system and the role of passive and active components within the regime. These conclusions should not be viewed as set in stone.

Consider, for example, the Bank of England’s calibration of the steady state capital requirements that was based on comparison of the costs (via the drag on trend growth) and benefits (via the reduced frequency and severity of crises) of an incremental increase in capital requirements (Brooke *et al.*, 2015). That approach is perfectly valid, but it is important to keep in mind that

this calculation was based on an inevitably limited understanding of system dynamics, some arguably optimistic assumptions on how the regime will work in good times (counter-cyclical FS policy) and in bad times (the resolution regime) and holding other key design choices about the overall policy regime fixed – the height of the ring fence, the position of the regulatory perimeter but also the level of the inflation target and the anticipated path of government debt which together determine the scope for monetary and fiscal mopping up after a future crisis. There are two potential pitfalls with this approach. First, this constrained optimisation is unlikely to deliver the first best solution: it would be better to think about the calibration given alternative design choices in other areas. Second, there is a strong case for taking a robust approach to the calibration problem – that is, the one which performs best (least worst) across a range of model specifications and assumptions about how well parts of the regulatory regime will work under stress.

The fundamental problem remains that our collective understanding of the key economic questions that should drive these design questions is still in its infancy. The case for periodic reviews of the structure and scope of the FS regime in light of new evidence is surely overwhelming. To be fair, the Bank of England acknowledges this point (Brazier, 2017):

“The principles I have outlined aim to provide a little more clarity; to begin to fill in the ‘how to’ guide for macropru. And I hope you will respond to my call to arms for your research to aid the development of that guide, because we are a very long way from the last word. We are not even at the first words of the last chapter. How to: macropru, is at best reaching the last words of its first chapter”.

It is certainly possible that a significant increase in the quantity of going concern and gone concern capital in the system or a more radical approach to structural reforms could be welfare enhancing. One could even make the argument for a *prudential escalator*: a default assumption that the requirements will be incrementally tightened after periodic reviews unless evidence comes to light during those reviews establishing significant social costs, in terms of lost equity or efficiency, in the pursuit of additional resilience. But until we have a reliable model of the system and description of the policymaker’s objectives it is hard to know when society should step off that escalator.

NOTES

- 1 The literature distinguishes between cross-sectional and times series drivers of systemic risk – that is, between changes in the structural features of the financial system and variation in the extent of financial imbalances within the system or the wider economy (e.g., Caruana, 2010; Gai, Haldane and Kapadia, 2011). However, in reality the structural features of the system (such as concentration and connectivity) will also vary across the financial cycle.
- 2 In some stylised treatments the microprudential regime is even treated as an acyclical regulatory floor.
- 3 In theory, these concerns over equity could be recast in terms of a hit to efficiency on account of the welfare loss associated with the distortionary taxes and welfare benefits that are required to compensate those affected by increased rationing (Barwell, 2013).
- 4 The analogue of the concept of a natural level of output or unemployment that is familiar to central bankers and that should be distinguished from the first best outcome that would emerge in the perfectly competitive benchmark economy. In other words, policymakers might seek to stabilise the provision of credit around its sustainable level.

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