PRELIMINARY AND INCOMPLETE: COMMENTS WELCOME

Objectives and Challenges of Macroprudential Policy*

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Abstract

The establishment of the UK Financial Policy Committee is a landmark development in macroprudential oversight. However, its purview may be overly narrow. Macroprudential policy ought to be concerned with the overall efficiency of the financial system. Macroprudential policymakers should have a role as much concerned with providing authoritative, public advice on areas of policy relevant to aggregate financial efficiency as with imposing additional restrictions on bank lending. Issues of independence and transparency loom large under the current regime as well as with some suggestions we make.

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1. Objectives and Challenges of Macroprudential Policy

As a result of the 2007/8 financial crisis, many policymakers would now argue financial regulation and macroeconomic policy are joint policy problems. In practice, that has led to few, if any, substantive changes to monetary and fiscal policy rules. It *has* led to many changes in the financial supervisory architecture and a macroprudential perspective may become a key component in economic policy.

The UK has been at the forefront of developments. Along with the global move towards increased capital and liquidity requirements for banks and other financial intermediaries, the enactment of the Vickers Commission proposals and the reorganization of the Bank of England, in particular the establishment of the Financial Policy Committee (FPC), have been amongst the most striking institutional developments anywhere. The FPC, whose statutory responsibility is to aid the Bank in enhancing the stability of the UK financial system, has also requested and been granted powers to limit aggregate bank exposure to the property market. In addition to these, there have also been many significant changes to microprudential regulations.

The main point of this paper is to argue that an optimal macroprudential framework ought to concern itself with issues somewhat wider than countercyclical capital buffers, leverage ratios and the like. We suggest that not only is the intersection between microprudential and macroprudential measures larger than typically acknowledged, macroprudential oversight ought to have in its purview to assess the efficiency of the financial system and its constituent parts and recommend action. Macroprudential regulators should be actively engaged in a wide range of policy areas such as corporate governance, competition and tax policy. The significance of these areas for macroprudential policy follows directly

from a concern for financial efficiency since the larger are the wedges of inefficiency, the more damaging negative shocks to and from the financial system are likely to be.

To be clear, we are not proposing that the FPC takes on huge extra responsibilities, devises lots more rules, much less becomes an 'omni-regulator'! Rather, our hope is the opposite, that by helping to identify and address key areas of inefficiency in the financial system fewer ad hoc policy adjustments may be required. However, clearly any extension of the FPC's sphere of influence (along with the Bank's) has implications for accountability. Consequently, it is necessary to consider the joint design of macroprudential institutions and macroprudential policies, something largely overlooked in academic and policy discussions.

The argument in more detail The conventional view of financial regulation is that microprudential regulators try to induce efficient behaviour of regulated institutions, whilst macroprudential regulation knocks out any systemic externality leaving monetary policy unencumbered by financial frictions. We suggest that the issue is somewhat more complicated.

Macroprudential policy confronts various types of externalities emerging from the financial sector. In this paper we focus principally on four, not all of which have received equal amounts of attention in the literature. First, there are the balance sheet or fire-sale type externalities emphasized by Bernanke, Gertler and Gilchrist (1999) and Kiyotaki and Moore (1997). Next, there are the monetary transmission/aggregate demand externalities highlighted by Friedman and Schwartz (1963) and Farhi and Werning (2013). Third, there are bailout externalities associated with the too-big-to-fail problem analyzed, for example, in Haldane (2012). And finally, there are herding externalities studied in Duncan (2015a). We argue that time-varying capital requirements or lending restrictions

centred on banks–for some the defining characteristic of macroprudential policy–are at best insufficient in addressing the impact of these and other externalities. That is because these externalities, not all of them concentrated in the more regulated areas of the financial sector, interact with one another and with microprudential and other regulations blurring boundaries.

For instance, whilst experience suggests balance sheet recessions are costly even if monetary policy is unconstrained by the zero lower bound (ZLB), the effects of these externalities are seriously compounded when the monetary transmission mechanism is compromised (Friedman and Schwartz (1963), Farhi and Werning (2013) and Schmitt-Grohe and Uribe (2012)). And although some monetary policy innovations (such as QE/Forward Guidance/removal of the ZLB) ameliorate these aggregate demand externalities, other measures are likely required. However, such measures, including deposit insurance and central bank/taxpayer assistance (for example, in the form of emergency liquidity and insurance, and bailouts), come with serious incentive costs exacerbating the too-big-too-fail (TBTF) problem and herding effects. Moreover, these too-big-too-fail and herding effects are in turn likely to feed back and exacerbate the fire-sale externality. There are also important linkages to these externalities from the tax system, for example discouraging equity finance and promoting investment in property, and from other micro- and macro-prudential measures such as DTI/LTV ratio limits.

Similarly, the TBTF problem may be addressed via microprudential measures, including the resolution regime. However, as large banks are likely to become vulnerable during periods when other institutions and markets are also stressed, the TBTF problem is of central importance to macro policymakers. We argue that neither is it clear that recent regulatory measures solve the TBTF problem nor that breaking up banks is preferable. If 'smaller' financial institutions' asset profiles are highly correlated, they too pose a collective systemic risk as well as

being a higher regulatory burden.

To take another example, perhaps the choice of nominal regime can help address some of these problems. A number of authors have suggested that a switch from inflation targeting to nominal income targeting may be beneficial, especially in periods of financial stress. On the one hand, there may well be more risk sharing in downturns as inflation erodes the real value of debt (see e.g., Koenig (2011) and Sheedy (2014)), however it can also lead to herding effects in asset allocation, worsening balance-sheet/fire-sale externalities and a too-correlated-to-fail problem (Duncan, 2015a). In a related vein, some economists have argued that policymakers should seek ways for financial contracts to better share systemic risk. We argue, however, that systemic risk markets may be in effect open or closed– it is actually hard to know–but in any case, recent results from the literature suggest that their value may be limited: they may actually exacerbate balance sheet/fire-sale externalities.

In short, the overlap between macroprudential concerns and microprudential regulation is large, complex and evolving.

Further complications of macroprudential policy In addition to the complications just noted, we suggest that macroprudential policy faces three important challenges: First, macroprudential interventions typically have important distributional consequences. Second, it is difficult to determine the success or failure of macroprudential policy interventions in reasonable time. Third, it may be difficult to communicate the motivation for some macroprudential policy interventions.

These challenges combine to give rise to concerns over how best to design the institution of the macroprudential regulator. What instruments should they be assigned? What targets should they be set? To what extent should they be able

to deploy their instruments unilaterally? What kind of oversight mechanisms can be imposed to ensure their effectiveness and legitimacy? Sensible answers to these questions must trade off the potential financial stability and efficiency benefits of different macroprudential policy interventions with political realities.[1] We conclude the paper with a set of tentative recommendations on how the FPC might evolve in its role as the macroprudential regulator. Perhaps our key suggestion is that the FPC be given wider obligations to assess the efficiency, as well as enhancing the stability, of the financial system. Such a role could entail providing authoritative advice on potentially a number of areas of public and private policy, such as the tax system, corporate governance, pay structures and accounting practices.

The next section of the paper provides a definition and brief summary of the standard view of macroprudential policy. The paper then turns to the current UK framework and what we label as the premises underlying it. Following that, we selectively survey the literature on 'financial frictions' and identify what we think are some key policy issues. We break that assessment into various subjects such as TBTF (too big to fail), monetary policy, tax policy, pay and incentives facing bankers and shareholders, the role of systemic risk insurance and the legitimacy of the macroprudential authority. We conclude with some tentative recommendations on policies and institutions that may help develop a more rounded and effective macroprudential regime.

[1]Dixit (1998) makes the case more generally that the technical problem of determining optimal policy interventions should not be separated from the political problem of institutional design.

2. A brief overview of macroprudential policy

A large part of the justification for *micro*-prudential policies is widely, though not universally, agreed upon: If the costs of bank failure are passed on to taxpayers through deposit insurance or likely bailouts, and the benefits of bank risk taking enjoyed by bank managers (and shareholders), then banks will have an incentive to take on excessive leverage and risk.[2]

Within the United Kingdom, microprudential regulation is developed and implemented by the Prudential Regulation Authority (PRA). The principles underlying microprudential regulation have been updated recently by the Basel Committee on Banking Supervision (BCBS) of the Bank for International Settlements (BIS). These "Core Principles", considered "universally applicable", are divided into two sets (BIS, 2012, page 9). The first set comprise, in broad terms, the duties, functions and powers of supervisors, whilst the second focus on prudential regulations and requirements for banks.

The Core Principles consciously do not include a specific stand-alone Core Principle on macroprudential issues although regulators and banks are encouraged to take the macro environment into account. They recognize that macro risks, including those that may flow from macroeconomic policy and indeed macroprudential regulation, are present and assert that "(S)ound macroeconomic policies (mainly fiscal and monetary policies) are the foundation of a stable financial system."

2.1. Motivation for macroprudential policies

On the other hand, IMF analysis argues: "Financial stability need not...emerge as a natural by-product of an appropriate macroeconomic policy mix. Rather,

[2]That point has been made many times, recently, and perhaps most forcefully, by Admati and Hellwig (2013).

achieving the objective of financial stability requires dedicated macroprudential policies."(IMF, 2013, page 5)

The concerns of macroprudential policy are perhaps slightly more difficult to define and identify. Essentially, macroprudential policies are concerned with the actions of many institutions/lenders/borrowers who individually may be acting prudently, but whose actions in concert may be imposing costs on others and compromising the effectiveness of monetary and fiscal policy. For example the IMF (2013, page 6) states that "The rationale for macroprudential intervention rests on the presence of three sets of systemic externalities. These arise through: (i) the tendency of the financial system to amplify adverse aggregate shocks; (ii) macro-financial feedback mechanisms that result in an overexposure to such adverse aggregate shocks; and (iii) linkages within the financial system that increase the vulnerability of the system to idiosyncratic or aggregate shocks."[3]

There is an important difference in the concerns that motivate macroprudential and microprudential regulations. Microprudential regulation aims to internalize the direct cost to taxpayers associated with implicit or explicit guarantees of financial institutions' liabilities whereas macroprudential regulation aims to internalize externalities that emerge through the price system, amplifying financial sector volatility, even when there are no direct taxpayer funds at stake. Nevertheless, in practice the instruments of macroprudential management are largely familiar:

> "Macroprudential policy uses primarily prudential tools to achieve its objectives. This can include countercyclical capital buffers and provisions, sectoral capital requirements, measures to contain liquidity

[3]Broadly speaking the IMF's first two externalities map into our first two externalities. The third externality here is reflected in our third and fourth externalities. We found it useful to distinguish between TBTF and herding when thinking about financial linkages and aggregate vulnerability as more policy effort has been directed at the TBTF problem as we discuss below.

and foreign exchange (FX) mismatches, and caps on loan-to-value (LTV) and debt-to-income (DTI) ratios. Macroprudential policy can also seek to affect the design of products offered to borrowers in retail markets, and the functioning and institutional underpinnings of wholesale markets. It can finally seek to use tools that are traditionally associated with other policy fields, such as monetary (e.g., reserves requirements), fiscal (e.g., levies imposed on wholesale funding) and competition policy (e.g., takeover policies)" (IMF, 2013, pages 7-8).

However, neither in the academic literature nor amongst policymakers is there a widely agreed position on the proper scope, tools and objectives of macroprudential policies nor of their coordination across countries (see e.g., the discussion in Cunliffe, 2015). That said, the idea that macroprudential policies address externalities that compromise in particular monetary policy appears to be more widely accepted. This is reflected in recent developments in the UK.

2.2. Premises of UK Macroprudential Oversight

In addition to the capital and liquidity requirements of Basel III[4], the most significant developments in macroprudential policy in the UK since the crisis have been:

1. The dominant role that the central bank, the Bank of England, is accorded in micro and macroprudential oversight;

2. Related to the first development, but distinct, is the establishment of a macroprudential authority (the FPC) with statutory responsibilities and

[4]As implemented through Capital Requirements Directive IV.

powers (e.g., to advise on capital requirements and the ability to issue directions to the PRA and the FCA to amend microprudential regulations);

3. The enactment of the Vickers Commission proposals for ring-fencing if retail banks. (2019 for full implementation).

However, as noted above, nothing has changed in terms of monetary and fiscal rules. We suggest that these developments are based on the following five premises (P1.-P5.):

P1. Macropru, operating via micropru, should work to reduce the likelihood and severity[5] of crises. Macropru is about making sure financial frictions do not interfere with the normal operation of monetary policy.

P2. There is little or no need for an inflation-targeting monetary authority to take account of financial factors; financial frictions are largely invariant to the nominal regime.

The gist of Premises 1 and 2 is that the *systematic* component of monetary policy ought not to be part of macroprudential policy.

P3. There is no need for fiscal policymakers/politicians/tax policy to have a systematic role in setting macroprudential policy. Specifically, time-varying taxes are unnecessary.

P4. Some banks, in part due to "hidden" subsidies, had become too big to fail (TBTF). Ending universal banking, increased capital requirements and overhauled recovery and resolution are the key to ending TBTF.

[5]Reducing severity has two aspects. The first is to formulate rules ex ante that boost the resilience of the financial system to a given shocks. The second is having the ability to act speedily, effectively and with requisite powers once a crisis has struck.

P5. Macroprudential regulation should be applied to entities, rather than activities. In particular, the primary focus of regulation should be banks.

Premises 1.–5. may be used to justify a dominant role for the central bank in the formulation of macroprudential regulation and crisis management: Any factors that might disrupt the conduct of monetary policy could be seen to compromise the independence of the central bank. It may then be argued that any influence upon those factors should be exercised and coordinated by the central bank itself.

We are not claiming that these premises, as set out, represent the stated policies of the relevant UK authorities, however we believe they reflect much current official and academic thinking on these issues. We detail some of that thinking presently.

How secure are these premises? In the rest of the paper we try to answer that question drawing on both the academic literature and recent policy developments. That assessment is also a convenient framework for developing our core arguments in favour of widening the focus of the FPC and macroprudential policy in general.

3. Monetary policy

Creating the FPC inside the Bank of England[6] reflects a perceived tight link between monetary policy and financial stability, as well as the historical responsibilities of central banks to ensure financial stability in addition to meeting inflation and employment stability targets. Our discussion of that link starts by considering the centrality of stability in the monetary transmission mechanism in motivating the role of macroprudential policy, before turning to the question of how the FPC should respond to technical innovations in the practise of monetary

[6]Formally, the FPC is a statutory sub-committee of the Court of the Bank of England. That makes it different to the MPC which is a committee of The Bank. It is not clear to us that this legal distinction is material although there has been some discussion about this.

policy. Finally, we review the literature on the interaction between monetary policy *targets* and financial stability.

3.1. The scope of macroprudential policy: more than just monetary stability

P1. Macropru, operating via micropru, should work to reduce the likelihood and severity of crises. Macropru is about making sure financial frictions do not interfere with the normal operation of monetary policy.[7] Macroprudential policy is, from this perspective, any prudential rule or regulation that is intended to permit monetary (and fiscal) policy to operate as 'normal'. As noted policymakers have been reluctant to change monetary and fiscal frameworks following the crisis preferring instead to change the way they supervise the financial sector, in particular the banking sector. That perspective actually has a long history.

Friedman and Schwartz (1963) and Friedman (1982, 1994) argue forcefully that the Fed's policy failures following the Crash of 1929 in the US allowed the Great Depression to persist long after it should have ended. That was because by not ending bank runs, something he argued it lacked the will to do, the Fed made it impossible for the money supply to grow, a sine qua non in his view for stable nominal income growth. The establishment of the FDIC in 1933 was said

[7]For example, Tucker et al. (2013, Page 193) notes that: "The crisis has underlined the importance of financial stability as a precondition for monetary stability and broader economic health and prosperity." Or again, drawing on early work on macroprudential regulation developed by Andrew Crockett, Claudio Borio and others at the BIS, Cunliffe (2015) states "Macroprudential authorities like the FPC use many of the same instruments as microprudential regulators such as bank capital standards. And in the very final resort, monetary policy may need to be used to counter financial stability risk." Finally, whilst discussing the possibly destabilizing asset allocation decisions in the asset management industry, Haldane (2014) argues that ".. a natural first line of defence against such swings is so-called macro-prudential policy." (page 13). It is worth noting that he makes this point whilst discussing Stein's argument that monetary policy may have a comparative advantage in such situations.

by Friedman (1994) to be "the most important structural change in our monetary institutions since at least 1914".[8] Friedman argued that the FDIC ended bank runs, allowed the money supply to start growing and returned the economy to a stable growth path.

Significantly, Friedman argued that the FDIC notwithstanding, banks' shareholders would ensure that banks did not become too risky, apparently rejecting the risk of moral hazard.[9] Of course, not everyone would agree with Friedman's version of events but the essential point for present purposes is that an additional regulation, deposit protection, was proposed to ensure monetary stability. In other words, the establishment of the FDIC was a form of macroprudential regulation, although clearly such labels were not then employed. Farhi and Werning (2013) is a modern restatement of that perspective, in some respects. They argue that macroprudential restrictions may be necessary in order to ensure that, following adverse shocks, the Bank Rate never hits the ZLB and monetary policy is compromised in its ability to support economic activity.

But Friedman's argument seemed to be incomplete along a number of dimensions. First, deposit insurance entails a moral hazard problem and that, in turn, can have systemic implications (Kareken and Wallace, 1978). Second, not every country followed the US example and instituted (de jure) deposit protection: for many countries it took a long time after the US lead (in the UK it was finally

[8]Friedman seems to be referring to the founding of the Fed which was signed into law on December 23 1913. He and Schwartz (1963) wrote: "...we regard federal deposit insurance as so important a change in our banking structure and as contributing so greatly to monetary stability – in practice far more than the establishment of the Federal Reserve System."

[9]Shareholders' incentives to monitor banks and enforce prudent managerial behavior was, Friedman later argued (in *Money Mischief*, 1994), destroyed by the Fed: The inflation of the 1970s, largely, he argued, the fault of the Fed, wiped out shareholder net worth (as the real cost of funds outstripped revenue on loans). After that, the FDIC became, Friedman conceded, a source of financial instability. His solution was to recommend abolishing the Fed and restrict banks to holding 100% reserves. Rockoff (2010) is a very interesting comparison of Adam Smith's and Milton Friedman's views of the banking firm.

introduced in 1979 as part of incorporating European legislation on the UK statute book). Nevertheless traditional bank runs were not a serious problem, actually any kind of problem at all, for a large part of the post war period in either the UK or US[10]. That said, in the UK and elsewhere there were periodic banking difficulties, some of them serious[11], and there was a clear trend internationally towards developing micro-prudential regulation.

Following the experience of the Great Depression, Friedman was right to focus on the importance of maintaining the stability of the banking sector in order to keep the monetary transmission mechanism intact. In response to the Great Recession, Farhi and Werning (2013) are correct to focus on avoiding zero lower bound episodes, with the zero lower bound playing a major role in amplifying the Great Recession (see Hall (2011) and Christiano, Eichenbaum, and Trabandt (2015)). In sum, it is clear that an important role of macroprudential policy *is* to maintain the effectiveness of monetary policy.

In this vein, there has been much progress made since the onset of the crisis on restoring the effectiveness of monetary policy in the face of the zero lower bound and also any weaknesses in the banking sector transmission channels. But if financial instability is arising through exploitation of deposit subsidies, herding, irrational exuberance, rational bubbles, poor contract design, tax distortions, balance sheet amplification or collateral fire sales, then even optimal monetary policy with 'perfect' transmission will not restore constrained efficient allocation of investment or employment outcomes. The scope of macroprudential policy could justifiably include wider concerns for financial sector efficiency over and above maintenance of the monetary transmission channel.

[10]Northern Rock was the first retail bank run in the UK in 150 years.

[11]Perhaps most notable in the UK is the secondary banking crisis in the early 1970s.

3.2. The interaction with the practise of monetary policy

As discussed in the previous section, the economic costs of financial sector volatility are influenced by the stability of the monetary transmission mechanism. If bank failure or the zero lower bound on interest rates disrupt the monetary transmission mechanism, central banks will struggle to manage the money supply. Unable to meet their targets for inflation and employment, financial sector volatility and collateral amplification externalities will result in larger recessions through aggregate demand externalities.

In recent years there has been a number of innovations in the *practise* of monetary policy, which are intended to boost the potency of monetary policy in periods of financial stress. These innovations include Forward Guidance, Quantitative Easing and the use of interest rate corridors on reserve balances.[12] These measures have all been implemented by the Bank of England. Some authors, notably Buiter (2009), Kimball[13] and Rogoff (2014), have also suggested that the use of paper currency should be eliminated or severely curtailed in order to allow central banks the freedom to set policy interest rates below zero percent when necessary.

By strengthening the monetary transmission mechanism, these innovations to the practise of monetary policy directly affect the costs of financial sector exuberance and balance sheet amplification. They change the trade-offs faced by the macroprudential regulator, and the optimal scope of macroprudential policies.[14] Some macroprudential policies that might have been considered

[12]This includes paying interest on reserves, which can reduce the potential costs of Quantitative Easing as it allows the Central Bank to retain control over short term policy interest rates even when there is a large supply of reserves (Woodford, 2001).

[13]See `http://blog.supplysideliberal.com/post/62693219358/how-and-why-to-eliminate-the-zero-lower-bound-a` for a discussion and links to related blog posts and articles. Accessed September 2015.

[14]To take an example, in the analysis of Farhi and Werning (2013) and Schmitt-Grohe and

desirable in the presence of a binding zero lower bound on interest rates would not be considered desirable if innovations can be made to eliminate this constraint on monetary policy. In our view, hosting the FPC within the Bank of England will make coordination between the practise of monetary policy and macroprudential policy more effective, resulting in better management of the trade-offs that exist with any of these policies.

3.3. Monetary policy targets

P2. There is little or no need for an inflation-targeting monetary authority to take account of financial factors; financial frictions are largely invariant to the nominal regime. There has been a popular view amongst policymakers and economists that monetary policy ought not to react to financial market variables such as risk premia or some measure of financial disequilibrium. That reflected a sense that identifying financial market 'bubbles' was either impossible and/or unnecessary; impossible as policymakers could not and should not second-guess the market and unnecessary since other variables such as inflation, the money supply or perhaps the output gap would convey more reliable information about the equilibrium level of activity and also because monetary policy was more than up to the job of clearing up after any bubble had burst[15]. More specifically, for inflation targeting central banks, the success of the regime as an anchor for medium-term inflation expectations, appears to have persuaded many policymakers not to abandon inflation targeting, or even adjust the inflation target, despite some trenchant criticism and policy proposals, e.g., de Grauwe (2008), Blanchard et al. (2010) and Ball (2013). Moreover,

Uribe (2012), macroprudential policy is motivated as a method of dampening the effects of aggregate demand externalities when monetary policy is constrained by fixed nominal exchange rates or the zero lower bound on interest rates. Removal of these constraints removes any motivation for macroprudential policy.

[15]See, for example, Blinder and Reis (2005).

mainstream macro-finance models appeared to indicate that there was little cause for concern.[16]

Such findings as these contrast with the papers of Sheedy (2014) and Koenig (2011), who present models where systemic risk markets are closed, and investment projects are funded by debt contracts that are fixed in nominal terms. This is undesirable, because it means that leveraged debtors' marginal utilities vary more dramatically over the business cycle than creditors' marginal utilities. If given the chance, both debtors and creditors would wish to write debt contracts that were contingent on business cycle variables, allowing more efficient sharing of business cycle risks. The implementation a nominal GDP target results in inflation rates that vary over the business cycle—higher in downturns and lower in booms. High inflation during downturns reduces the real value of debts, transferring real wealth from creditors to debtors. These transfers replicate the missing payments that would have occurred were debt contracts contingent on systemic risks.

Duncan (2015a) provides a critique of the use of monetary policy to replicate "missing" insurance payments by presenting a series of models where entrepreneurs and managers can choose how closely their project choices are correlated with the business cycle. When this choice is private information, the moral hazard problem is directly linked to aggregate risks. When factor payments to labour or capital, or manager compensation contracts are written in nominal terms, nominal GDP targeting tend to encourage the herding of project choices

[16]For example, Gilchrist and Leahy (2002) employing the Bernanke, Gertler, and Gilchrist (1999) model found that there was little to be gained in terms of stabilising the economy by conditioning the policy rate on financial variables. More recent analyses come to somewhat similar conclusions. Cúrdia and Woodford (2009), using a very different theoretical set up, is more nuanced than Gilchrist and Leahy in its conclusions but does not come down strongly in favour of monetary policy reacting to financial variables. That is partly because of our ignorance of the role of financial variables in the transmssion mechanism of monetary policy and partly due to the role that macroprudential policy ought *ultimately* to play (as emphasized by Woodford, 2012, page 22). More generally, Woodford (2013) argues that financial wedges do not dent the case for flexible forecast-based inflation targeting.

across firms, resulting in increased business cycle volatility and decreased national income in expectation. The intuition behind this result is that nominal GDP targeting limits inflation during boom times, increasing the real value of nominal factor payments. It becomes particularly costly to suffer business failure during boom times, when bad project outcomes are exacerbated by high real factor payments. If possible, entrepreneurs and managers prefer to succeed when others are succeeding, and fail when others are failing, taking advantage of the implicit bailout associated with high inflation during downturns.

The problems, then, with Premise 2 include the fact that in practice financial imbalances can build up during periods of general macroeconomic stability (Faust and Leeper, 2015). Moreover, frictions, shocks and inefficiencies are all intimately related. Policymakers ought to identify and focus on the underlying wedge of inefficiency not just the symptoms (say, 'too much lending'). Finally, benchmark macro-finance models, discussed in more detail in Section 7, typically assume financial frictions are separable from the fundamental determinants of inflation. There is little reason to believe that. However, as yet we still have much to learn as to the qualitative and quantitative relationship between nominal regimes and financial market wedges. This is an area where much research is required.

4. Tax policy

There are good reasons why firms and households primarily use debt contracts to finance their activities rather than more risk sharing contracts such as equity. Importantly, debt contracts tend to allocate risk with control, dampening the potential for moral hazard.[17] But at the same time, the widespread use of debt finance risks exacerbating balance sheet externalities that amplify business cycles,

[17]In Section 7 we describe some of the theory behind the widespsread use of debt contracts in finance.

and is crucial to the links between the financial sector and the real economy.

In addition to responding to problems of moral hazard, the decision between debt finance and equity finance also responds to the regulatory and tax treatment of these contracts. In most modern economies, the tax treatment of equity finance is disadvantageous relative to debt finance. While the use of debt pre-dates the tax advantage currently awarded to debt, this tax advantage surely encourages the use of debt finance and amplifies the effects of financial volatility on the real economy.

Within the UK, in addition to the differential tax treatment of debt and equity issued by corporate firms, a potentially worrying development is the UK Government's recent reduction in the bank levy, a tax on banks' debt liabilities, and coincident introduction of the bank profit surcharge, a new tax imposed on bank profits.[18] This tax change further tilts incentives towards debt finance, and against equity finance and may discourage new entrants into the banking sector, none of which obviously appears to constitute enhancing the stability of the financial sector.

Encouraging debt finance through the tax system directly opposes the efforts of the PRA and the FPC to reduce systemic risk, leverage and the implicit taxpayer subsidy of banks. The differential tax treatment of debt and equity should be addressed, and we would suggest that as the body responsible for financial stability, the FPC could have an important role in assessing and communicating the potential risks to financial stability that may result from penalizing risk sharing through the tax system. It may also be worth noting that in addition to encouraging financial instability, the favourable tax treatment of debt finance actually penalizes regulatory compliance—increasing any potential gains from lobbying, regulatory capture or misreporting.

[18]See `http://www.bbc.co.uk/news/business-33444127` Accessed August 2015.

In the wake of the crisis, officials have made public statements about the negative impact of differential tax treatment of equity and debt for financial stability. Two notable examples are Haldane (2011) and Kocherlakota (2011). But both of these speeches carry the usual disclaimer that the views expressed are not necessarily those of the Bank of England and Federal Reserve respectively. Given the FPC's responsibility for financial stability, it is our view that the FPC should be given an explicit role to review the effects of current and any proposed tax policies on financial stability, and that the results of these reviews should be made public.

P3. There is little or no need for fiscal policy/tax policy to have a macroprudential role. Arguments have been made that coordination, expertise and information sharing are all facilitated by having much of the supervisory function located in one institution. Moreover, politicians do not wish to be seen to be meddling overly in regulation and, politically, there may be some cover when crises occur in having other authorities in charge. Together, these arguments help make the case for the lead role of the Bank.[19]

However, the distance between fiscal policy–and politicians–and regulatory policy is rather limited in practice. First, the Chancellor retains much influence over the tone of regulation via the power of appointment of key individuals.[20] Second, the Chancellor writes each year to the FPC setting out its priorities. In the past some central bankers have voiced concerns that vesting central banks with regulatory responsibility could compromise independence.[21] Whilst there

[19]The official case is set out more fully by the Chancellor of the Excehquer, George Osborne, in the course of his his Royal Economic Society Lecture in 2015.

[20]For example, Martin Wheatley of the Financial Conduct Authority recently resigned after being told by the Chancellor that his contract would not be renewed. According to some reports he fell from political favour in part because of an over-zelous approach to regulation.

[21]For example, ex-Bundesbank chief Axel Weber, who currently chairs Swiss group UBS,

appear to be few commentators concerned that the Bank's independence has been compromised (indeed one hears the opposite criticism), there may be a risk, under the current arrangements, of the FPC's remit extending in ways that may not be optimal. For example, on 8 July of this year the Chancellor wrote to the FPC noting that the program of reform of the banking system "is close to finalisation" stating that

> "....I would like the Committee to consider how, subject to its primary objective to protect and enhance the stability of the UK's financial system, its actions might affect competition and innovation, and their impact on the international competitiveness of the UK financial system."

It is not clear to us quite what this means but it is at least open to the interpretation that subtle changes in the FPC's objectives are happening. More generally, the statutory aims of the Bank and the FPC are vague and there are no clear medium term objectives. Third, the tax system has many points of contact with the financial system and financial stability. For example, as noted, there is the role of the tax system discouraging equity in preference to debt in corporate financial policy. Many economists have pointed to the part that property lending played in the recent and in previous financial crises. No doubt many supply and demand side factors are in operation but the role of land and housing tax undoubtedly plays a part as do enduring planning issues.[22]. There is,

said he "flatly refused" to take on a regulatory remit when he was head of the bank due to concerns over independence. http://www.theguardian.com/business/2013/mar/31/bank-of-england-powerful-central-bank

[22]The current tax treatment in the UK of income and capital gains creates a bias against the rental market in favour of owner-occupation. Moreover, many analysts have proposed shifting to a land value tax in part to address the costs of land lying undeveloped for long periods of time. How the existing tax system interacts with current and proposed financial regulation on property lending is an important, and under-researched topic. See also Muellbauer (2012).

most obviously, the taxation of banks in particular the bank levy and the bank corporation surcharge tax. And, of course, there is the impact of future expected bailouts.

Some economists have also suggested that the tax system ought to play a more explicit role in macroprudential policy. For example Jeanne and Korinek (2010, 2014) argue that there is a limit to the effectiveness of macroprudential regulation focussed largely on banks and that shifting the policy focus onto the taxation of borrowers may be more efficient. Farhi and Werning (2013) call for a potentially sophisticated structure and sequence of taxes. See also Correia et al. (2013) showing the isomorphism between coordinated taxes on labour and consumption and negative nominal rates. These and other examples all imply a possibly important role for fiscal policy at the level of individual taxes and in terms of overall fiscal capacity.

Many of the problems associated with financial crises including collateral fire sales and the amplification of shocks through balance sheet effects (contingent on moral hazard/adverse selection to make balance sheets matter) are not explicitly monetary in nature. The LOLR function/QE might help tackle fire sales, and monetary policy will likely affect balance sheet amplification given the importance of the mismatch between 'real' cash flows and fixed nominal assets/liabilities. But, in simple incomplete markets models of these phenomena, money is not fundamental and the interaction of these issues with monetary policy seems to be of lesser importance than the role of regulatory and tax policy interventions in internalising the social cost of financial volatility.

So, the problem with Premise 3 is that fiscal policy already connects to issues of financial stability at many points, but does so in an uncoordinated way which is prone to political pressures. In addition, a number of financial frictions are not monetary in nature and may be better addressed through mechanisms that are

not necessarily in the power or purview of the Bank. Moreover, as a number of analysts have argued, political preferences also influence the likelihood of bailouts. We discuss these issues further in Section 5.

4.1. Real time coordination with tax policy

The FPC has recently been granted the powers to impose restrictions on mortgage lending. Specifically, these restrictions would limit the loan-to-value (LTV) and/or debt-to-income (DTI) ratios of new mortgage loans.[23] These restrictions are intended to dampen the growth of high risk mortgage loans, but they come at the cost of preventing many families from purchasing their first home.

This enabling act follows the introduction of the UK Government's Help to Buy equity loan programme, which involves the government taking a risk-sharing stake in high LTV mortgage loans, and the Help to Buy individual savings account programme, which provides favourable tax treatment for households saving towards a mortgage deposit.[24]

It is not clear that there has been an intention to coordinate these two interventions, although it is interesting to note that a similar (still possibly unintended) coordination of tax and regulatory policies has occurred in New Zealand, where the recent tightening of LTV ratio limits coincided with the relaxation of rules governing the use of tax shielded savings toward mortgage deposits.[25] Whether or not coordination was intended in these specific cases, it is

[23] http://www.legislation.gov.uk/uksi/2015/909/pdfs/uksi_20150909_en.pdf

[24] Details are available at
https://www.gov.uk/affordable-home-ownership-schemes/help-to-buy-equity-loans
for the Help to Buy equity loans and
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/413899/Help_to_Buy_ISA_Guidance.pdf
for the Help to Buy individual savings account scheme. Accessed 21 August 2015.

[25] See http://www.stuff.co.nz/business/industries/68502913/Reserve-Banks-new-loan-restrictions-for-Auckland-property-investors
and http://www.stuff.co.nz/business/71371470/

worth outlining some of the costs and benefits of coordination of macroprudential policies with tax policy interventions.

The main benefit associated with coordination of macroprudential policy with tax policy is that it is possible (in theory) to design the combined intervention to be distribution-neutral. The regulatory interventions described above, restricting lending primarily to first home buyers, has clear distributional consequences against these households, and the tax interventions described above dampen the costs of these restrictions suffered by these first home buyers, reducing the distributional effects of the policy.

Offsetting the distributional consequences of macroprudential policy could be desirable if these conflict with the wider aims of the Government. But it also suppresses legitimacy concerns that could arise from policy interventions that clearly harm particular groups of households. The media and the public currently appear to be tolerant of macroprudential regulation, but this could quickly change if these regulations appear to punish or favour specific groups, and in particular when memories of the global financial crisis fade.

One reason to think that the public's tolerance of these types of intervention might fade in future is that the relevant externality is difficult to communicate. In the case of LTV and DTI limits, these are restrictions on loans where any potential future losses are shared between the borrower and lender (assuming microprudential regulation has internalized bank deposit insurance subsidies). It is not necessarily going to be easy to explain how collateralized lending can be associated with constrained inefficiency as a result of the effects of fluctuations in house prices on the borrowing constraints of property owners. These inefficiencies driven by pecuniary externalities are likely to be more difficult to communicate to the public than the motivations for other regulatory interventions. Implementing

`first-home-buyers-applying-for-government-grants-doubles` (Accessed August 2015)

policies that prevent young families from moving into their first home while reducing the value of properties owned by retirees are not always going to be welcomed.

There are, however, also reasons to be concerned about the coordination of temporary macroprudential policies with targeted subsidies. In practise, it can be very difficult to design policy bundles that have the desired distributional and efficiency consequences. In the case of Help to Buy equity loans, there is a clear moral hazard problem. The risk sharing involved means that if the property is sold before the home equity loan is repaid, increases or decreases in the sale price are shared with the Government. There are likely to be situations when value enhancing repairs or improvements are foregone by current owners who know they will pay the full cost of these improvements but will share the benefits with the Government.

Another concern is raised by Dixit (2003). Subsidy-based interventions in incomplete markets settings motivated by the work of Greenwald and Stiglitz (1986) can be self-defeating if they are funded by taxation applied to margins that are already distorted. For example, subsidizing household deposits through the Help to Buy equity loans may indeed reduce household leverage and benefit financial stability, but this policy has been introduced while adjustments to the bank levy have resulted in greater taxes on bank equity. That policy encourages high leverage and amplifies systemic risk.

Actual or perceived coordination with tax policy also risks the independence of the regulator. For instance, if the regulator is believed to have acquiesced to political demands trust amongst the population could quickly plummet and the regulator might quickly find itself in a highly politicized position.

A further risk is that for political reasons, the subsidy interventions might not be lifted when the macroprudential restrictions are lifted. That could mean that

the lifting of restrictions would still have distributional consequences, as would the re-imposition of restrictions in future. The upshot might be that a possibly poorly designed subsidy intervention could remain in place indefinitely.

In our view, the costs associated with the coordination of time-varying macroprudential policy interventions with tax policy may well be greater than the associated benefits. We suggest that in the case of mortgage LTV and DTI restrictions, the FPC should seek to use permanent, rather than temporary restrictions. This would reduce the costs of seeking future changes to these restrictions, which we think could expose the FPC to future political challenges whilst doing little to enhance financial stability. The motivation for these policies is to ensure that lending standards are do not loosen excessively during boom times (FPC, 2014b), when these regulatory restrictions are likely to be binding. During downturns, market lending standards are tight (e.g., Bassett et al., 2014), and regulatory restrictions are unlikely to bind. Relaxing regulatory lending standards during these periods would likely have little impact on lending behaviour.

5. Too big to fail

TBTF has been a dominant theme since the crisis unfolded in 2007, although it has been an issue for many years. The policy consensus that appears to have emerged is that systemically important institutions should be discouraged but nevertheless allowed to exist as long as they can be "resolved"[26]. Specifically, the policy response to TBTF has been multi-pronged via (proposed) increases in capital and liquidity requirements via Basel III (CRDIV), Global Systemically Important Bank (GSIB) capital surcharges, Pillar 2 increases and resolution-related capital buffers. The role that Pillar III will play is not entirely clear and is, in any case,

[26]It appears that the Bank, as resolution authority, will decide when the regulated firm's resoltion plan is adequate.

bound up with how credible the authorities' commitment is to end bailout. In addition to these, in the UK there has also been structural reform (following the Vickers ring-fencing proposals). Some politicians and regulators appear to believe we are now close to solving the TBTF problem and that reforms to resolution have been key to this (Cunliffe, 2014)[27,28].

The progress on agreed resolution procedures does indeed appear impressive in so short a period of time. The proposed resolution procedures essentially entail major reforms to bankruptcy procedures of banks and have been agreed across countries to a specification set out by the Financial Stability Board (FSB), an international group of finance ministries and central banks that makes broad recommendations to member states on issues relating to systemic risk. Banking groups will draw up and implement plans that show how they will recover from difficulties or be resolved in the event that recovery is infeasible as determined by the national Resolution Authority (the Bank of England in the case of the UK). At that point, equity holders may be wiped out, followed by debt holders of various stripes (excluding, amongst others, insured depositors) until losses are accounted for. The remaining debt holders may now be the proud new owners of a bank. The required amount of Gone Concern Loss Absorbing Capacity (GLAC)—the debt that may be bailed in upon resolution—is one of the issues still to be decided.[29] Importantly, the resolution needs to be done in such a way as to not compromise the key functions of the bank or the rest of the financial system.

[27]Cunliffe notes that "Some key...[reforms]...remain to be agreed. Particularly important here are the remaining reforms on resolution that, when taken together with what has already been achieved, will mean that we will finally be able to say with confidence that no bank is too big to fail." Page 10.

[28]Others earlier have expressed doubts. See Haldane (2012).

[29]More generally, GLAC refers to long term debt that is subordinated to deposits, secured debt and other senior liabilities. This includes Contingent-Convertible bonds (Co-cos) which convert into equity in response to triggers relating to equity ratios. The term "Gone" might be slightly confusing as the main priority of the new bank resolution infrastructure is to keep banks "Going" as they recapitalise through the restructuring of any GLAC liabilities.

Thus progress seems to have been made: there is more and better capital and liquidity in the banking sector; GSIBs have been identified and will be supervised more stringently; a roadmap, agreed across countries, has been approved on how to resolve these banks in case of trouble. But has the TBTF problem really been solved?

The majority of substantive changes in these regulations are intended specifically to make banks safer. Other things constant, that may be so. But, other things are not constant. The banking sector across many jurisdictions has become more concentrated since the financial crisis, partly as a result of bank bailouts. Governments and central banks were observed to have bailed out more than just banks and guarantee liabilities much wider than those covered by deposit protection schemes. Many of the risks realised during the financial crisis were in any case not directly related to the regulated banking sector. And as a result of changes in prudential rules many of the risks that were 'contained' within the regulated banking sector may migrate to less regulated areas of the financial system.[30]

In addition, if a large bank needs to be resolved, experience suggests that it will not be alone and a number of other institutions are likely to be in trouble simultaneously. The question is, during such a period when liquidity and solvency difficulties become indistinct, will the Resolution Authority—The Bank—really be able to conclude that recovery is not feasible across a number of (doubtless interlinked) institutions and markets and hence that they should

[30]It is difficult to find direct evidence that this is so at the moment. One piece of anecdotal, and indirect, evidence may be this: According to recent research, Wright (2015), pay at investment banking firms has decreased markedly since the financial crisis. Compensation cost per employee at global investment banks fell 25 per cent from 2006 to 2014. In aggregate, pay has fallen from roughly half of revenues at investment banks in the five years before the crisis to about 40 per cent since. On the other hand, average compensation cost per employee at global asset managers rose 22 per cent. These trends have coincided with anecdotal evidence of staff leaving investment banking for the asset management industry.

each be resolved and indeed can be resolved such that there is no disruption to the rest of the financial system? Will the political climate permit losing a major bank or two when other countries may be supporting their major institutions? Might not a case—political or not—then likely be made that any attempt at resolution is unnecessary, impracticable and in any case dangerous in terms of wider financial stability? Will the legal process of resolution across countries operate smoothly?[31] The new resolution regime may simply boil down to a state-contingent commitment finally to break up banks in likely turbulent economic times during febrile financial market conditions. But how fundamentally different is that to the situation before the recent crisis? Have much have these reforms changed the incentives facing shareholders and debt-holders in any bank? If banks need to be broken up in difficult times then one might wish to argue they ought to be broken up now.[32]

There are arguments that breaking up banks into smaller units may neither be desirable nor feasible. Damjanovic, Damjanovic, and Nolan (2013) outline a macro-banking model whereby a trade-off exists between larger universal banks which lend more, crash relatively infrequently but at greater cost to the taxpayer, versus a smaller, less risky and less profitable banking sector (split between retail and investment banks) that lends less, crashes more frequently but at less cost to the taxpayer. The welfare judgement turns on a complicated set of trade-offs involving the relative magnitude of general or systemic-type financial shocks and

[31]There are some indications that complications could well arise. http://corpgov.law.harvard.edu/2015/09/06/england-and-germany-limit-bank-resolution-obligations/

[32]In the US the Fed's future discretion to intervene appears curtailed: indeed, some argue that state bailouts are prohibited under Title II of Dodd-Frank. Whether such a commitment will endure during a systemic crisis is an open question, of course. And Calomiris and Haber (2014, p. 278) argue that Dodd-Frank simply codifies when intervention will occur: ex ante it appears stringent but ex post there is enough wiggle-room in the legislation such that, in their opinion, it ultimately exacerbates the TBTF problem.

pre-existing distortions in the economy. If the economy is quite distorted (and hence has a low 'natural rate of output'), and financial shocks are not too large, then universal banks may be preferable as they offset low average output. On the other hand, the banking sector can be too big when dominated by universal banks. It is difficult to judge which version of the model is more realistic.

Some have argued that returns to scale in banking are larger than traditional analyses suggest (although it is hard to control for implicit bail out subsidies). Banks themselves tend to argue that size and universality brings benefits in terms of risk-smoothing and economies of scope. Others (e.g., Basu and Dixit, 2014) have pointed out that breaking banks up may be costly and futile from a regulatory point of view as it is difficult to levy penalties on small competitive banks with limited liability. If lots of smaller banks adopted correlated investment strategies and were less profitable than a smaller number of bigger banks, then it could well be that financial crisis would be harder to deal with than under the status quo (Chari and Phelan, 2014, Duncan, 2015a and Farhi and Tirole, 2012 present models of the interaction between financial sector herding and stabilization policies). Finally, it has been argued that the existence of big banks is ultimately a political decision; they may be seen as 'national champions' individually or collectively and as a good source of tax revenue in tranquil times. On this view, TBTF will end when politicians decide it will end. The existence of big banks and their political influence is documented in a recent book[33] through history and across various countries.

It is difficult to know if we have really solved the TBTF problem. We are sceptical. It seems that progress is being made. But the banking sector remains concentrated, as do other segments of the financial sector[34]. Moreover, even

[33]Calomiris and Haber (2014)

[34]Notably asset management about which less is known but concern is present. http://financialresearch.gov/reports/files/ofr_asset_management_and_financial_stability.pdf, See

if banks were broken up correlated risk strategies could still entail a collective TBTF problem. Perhaps a more fruitful approach is to define ex ante how the authorities will act ex post, having bailed out an institution. Whilst shareholders are typically wiped out, one notes that few bank executives have suffered as a result of their institutions receiving taxpayers money. In particular, and as a result, remuneration schemes internal to banks did not attenuate the moral hazard problem. Nolan, Sakellaris, and Tsoukalas (2015) argue that it seems unlikely that the authorities could ever commit not to bailout some institutions in at least some circumstances. They therefore suggest that one way to reduce the moral hazard risk is to ensure that there is commitment to penalize senior management and shareholders in the event of a bailout. Such a proposal is clearly both complex and controversial and would go much further than the current proposals on the table.

We suggest that it is prudent to assume that the TBTF (or the too correlated to fail) problem has not been solved. It may be wise for regulators to consider what mechanisms and penalties they might commit to now that would reduce the likelihood of future bailouts. Such mechanisms should, of course, be publicly known.

6. Governance concerns

Concern over the structure (and size) of banker compensation packages appears to be well justified. A widespread view is that senior bankers have been willing to exploit previously held trust or reputation for short term gains in the years preceding and in the wake of the Great Recession. In a business where the gains from trust are high, its erosion surely carries significant costs for the economy

Chapter 3: http://www.imf.org/external/pubs/ft/gfsr/2015/01/pdf/text.pdf.

going forward.[35]

It is unsurprising, therefore, that regulators have expressed concern about bankers' compensation contracts and any incentives contained therein to bring forward profits at the expense of long term profitability. But, these concerns should be shared by shareholders. Ideally, shareholders and regulators would agree completely on the design of bank compensation contracts, the extent to which rewards should respond to bank share performance as well as other metrics, and the extent to which these rewards are sensitive to short versus long term bank performance.

Sharp disagreement over the design of compensation contracts is likely to be a reflection of poor bank regulation failing to internalize the costs of bank failure, encouraging shareholders through their director proxies to design compensation contracts in such a way as to encourage excessive risk taking, safe in the knowledge that potential losses will be partly or fully absorbed by the taxpayer. To the extent that this is the case, any regulations targeting banker compensation structures are likely to be subverted. Bonuses will be replaced by "allowances".

But the picture might be more complicated. A firm that is sufficiently capitalised to withstand risks in the near term may still face serious risk of default or dilution in the longer term, and this risk could have the effect of increasing the effective discount rate of shareholders, making them more focused on short term profits at the expense of long term rewards they are not certain of enjoying.

It is also possible that the alignment of bank shareholder incentives with the interests of the broader economy will not ensure efficient bank actions if shareholder governance structures are weak. That could be a reflection of

[35]Examples of disreputable actions span both the retail and wholesale businesses of UK banks, including (but not limited to) the mis-selling of payment protection insurance and interest rate derivative contracts to retail and commercial customers, as well as the manipulation of LIBOR benchmark interest rates and foreign exchange rates.

inefficient financial structures, or the result of broader problems with current corporate governance regulations, the effects of which are likely to be amplified in the financial sector where risks can be well hidden.

Banks' financial structures are influenced greatly by (microprudential) regulators rather than solely by market forces and competition. It may be the case that leverage and liquidity requirements that are just sufficient to ensure bank solvency throughout the credit cycle or 'stress test' are not consistent with the optimal financial structures that would best align the incentives of shareholders with the broader economy, and also allow shareholders effectively to pass on these incentives to directors and executives. In any case, it is clearly disturbing to see how much damage has been inflicted on bank reputations in the UK in recent years, and it is important to consider what if any effect the regulatory environment has on the incentives for bank shareholders to build their own firms' reputations for the long run.

7. Systemic risk insurance

Debt contracts are widely regarded as useful for managing individual risks, as in the theories of private information and costly ex post monitoring (Townsend (1979) Gale and Hellwig (1985)).[36], or where there are 'incomplete contracts' as in (Hart and Moore (1988)). A more difficult question is why debts appear fixed in terms of aggregate or systemic risks. Systemic risks are by nature observable to all, so there is no obvious information asymmetry to prevent contracts from including

[36]Border and Sobel (1987) and Mookherjee and Png (1989) have shown that this motivation for debt contracts can be weakened if the lender can commit to stochastic monitoring regimes, in which case an equity-like contract provides an efficient tradeoff between risk sharing and monitoring costs. Krasa and Villamil (2000) show that without commitment, standard debt contracts are restored as optimal and Duncan and Nolan (2014) show that when audit signals only provide noisy signals of true revenue, then the value of stochastic monitoring schemes is severely reduced and standard debt contracts can indeed be optimal.

some business cycle risk sharing. Moreover, some would argue that this would afford great benefits. Mian and Sufi (2015) and Shiller (2008) have argued that greater risk sharing should be built into mortgage contracts through built in risk sharing and house price derivative contracts respectively. Carlstrom, Fuerst, and Paustian (2014), Krishnamurthy (2003) and Nikolov (2014) show that introducing systemic risk sharing into firms' external financing contracts could effectively eliminate the financial accelerator and collateral amplification mechanisms that drive business cycles in the models of Bernanke et al. (1999) and Kiyotaki and Moore (1997) respectively. Cochrane (2014) and Goodhart (1988, Ch. 7) have suggested that bank deposits could feasibly be replaced by equity-like contracts while still providing useful payment services. If certain systemic risks could be reflected in private contracts, or if monetary policy could mimic the effects of such trade, that may well seem desirable. Although this debate are far from settled, we suggest that the weight of evidence does not support the hypothesis that there are large gains available from the promotion of greater business cycle risk sharing in loan contracts, or from the attempted replication of business cycle risk sharing through tax or monetary policy.[37] Our caution reflects three concerns.

Our first concern is a practical one. Systemic risk insurance contracts are likely to be complicated. Households and firms might struggle appropriately to define contracts in terms of clearly observable metrics such as inflation rates, GDP values or housing-related variables. This problem is also raised by Allen and Gale (2001, Ch. 14), who suggest that it is more likely that these sophisticated contracts could be provided by financial intermediaries (likely banks), who can design contracts tailor made for households and firms, rather than decentralised markets. Recent experiences of banks selling sophisticated products to households and firms have

[37]Section 3.3 provides a discussion of recent work by Sheedy (2014) and Koenig (2011) who have suggested that monetary policy could be used to replicate missing systemic risk insurance markets.

not been encouraging. Banks in the United Kingdom have been found to have mislead their customers when selling payment protection insurance and interest rate swap products.[38] British banks have also been found to have manipulated benchmark interest rates and foreign exchange rates, which are used to determine payments in financial products designed to hedge against macroeconomic risks.[39] It is clear that the record of banks providing sophisticated products to insure customers against a wider range of risks has not been good in recent years. Hopefully, in the future, banks' regard for their reputations will prevent them from mis-selling sophisticated products, or manipulating underlying benchmarks that determine repayments, but in the meantime there is reason to be skeptical that the markets for these products can work effectively.

Second, it is not clear that markets for systemic risk insurance are currently closed. Consider the market for real estate. While many households have a large exposure to the general level of house prices, there is little trade in markets in derivative contracts or mortgage contracts that would provide insurance against fluctuations in house prices. For this reason, systemic risk insurance markets appear at first glance to be closed. Mian and Sufi (2015) and Shiller (2008) have argued that the status quo is inefficient, and that mortgage contracts should include a component that fluctuates in response to the general level of house prices, to provide some insurance against these fluctuations. Whilst these authors have described a demand for insurance against house price fluctuations, our view is that they have not convincingly described the sources of supply for this insurance. Reconsidering the 2008 financial crisis, it is not clear which agents in the economy

[38] See http://www.theguardian.com/business/2011/may/05/how-ppi-scandal-unfolded and http://www.telegraph.co.uk/finance/newsbysector/banksandfinance/11546767/Interest-rate-swap-dispute-heads-for-the-courts.html Accessed August 2015.

[39] See http://www.bbc.co.uk/news/business-19199683 and http://www.telegraph.co.uk/finance/newsbysector/banksandfinance/11617811/QandA-Why-are-the-banks-being-fined-for-foreign-exchange-rigging.html Accessed August 2015

were under-exposed to house prices, who would have wanted ex ante to increase their exposure to the housing market but were prevented from doing so as a result of incomplete markets.[40] In sum, it may be the case that the reason we see little trade in these contracts is that there is little opportunity for mutual gains from trade.

In addition, it may be the case that exposure to systemic risks such as house price fluctuations can be managed with simpler contracts and arrangements. It is not the case that individual households' exposure to house price fluctuations is out of their control. Certainly the active market for private buy-to-let housing suggests that households do have access to increase or decrease their exposure to house price volatility.[41]

Our third concern rests on the possible aggregate welfare gains available from increased systemic risk insurance, even if individual agents would desire richer contracts allowing them to hedge systemic risks. Mian and Sufi (2015) argue that the aggregate welfare losses from a lack of provision of house price insurance through mortgage contracts are amplified by aggregate demand externalities. According to Mian and Sufi (2015), systemic risk insurance through risk sharing mortgage contracts would have resulted in transfers to agents with high marginal propensities to consume at the onset of the crisis, dampening the decrease in aggregate demand. But Farhi and Werning (2013) show that competitive systemic

[40] One could make the case that banks and firms appear to have taken on *too much* exposure to real estate prices in the run-up to the crisis, in effect selling too much insurance against downturns in property values through derivative securities contingent on mortgage repayments and property values.

[41] A recent report by mortgage lender Paragon suggests that there are almost 2 million private landlords in the UK. To a certain extent, a buy-to-let landlord is an agent who is willing to bear increased risk of house price fluctuations, and that becoming a private landlord would offer them risks and rewards that would be similar to those available from selling systemic risk insurance against house price fluctuations on sophisticated derivative markets. http://www.paragon-group.co.uk/file_source/Files/MAIN/pdf/Press%20Releases/2014/18%20Years%20of%20BTL.pdf Accessed August 2015.

risk insurance does not necessarily internalize aggregate demand externalities.

Carlstrom, Fuerst, and Paustian (2014), Krishnamurthy (2003) and Nikolov (2014) show that in the models of Bernanke, Gertler, and Gilchrist (1999) and Kiyotaki and Moore (1997) respectively, that systemic risk markets can greatly improve outcomes. In these models, entrepreneurs and firms borrow from the household sector in order to undertake productive projects. Borrowing is limited by private information and collateral constraints respectively, and private information about individual entrepreneurs' risks restricts external finance contracts to debt-like contracts, as opposed to equity which would provide more risk sharing. What these authors show is that if systemic risk markets are open, equilibrium insurance payments flow towards firms and entrepreneurs in downturns, countering the balance sheet amplification externalities that amplify business cycles in these models.[42] But Duncan and Nolan (2015) show that generalization of the financial accelerator and collateral amplification models to broader specifications of preferences and contracts can easily overturn this result. If firm insiders or entrepreneurs are risk averse, high but risky returns to insider wealth available during downturns are heavily discounted. This reduces entrepreneurs' demand for insurance ex ante. In equilibrium, this limits the extent to which the invisible hand acts to counter the balance sheet externalities that emerge through the individual specific financial friction.

Furthermore, the portfolios of securities held by households in the model described by Duncan and Nolan (2015) tend to be very stable in value even though sophisticated securities contingent on a wide range of systemic risks are available. This suggests that widespread use of safe assets including non-contingent bank deposits, and the existence of balance sheet amplification and

[42]It is notable that these transfers are from the household sector to firms and banks during downturns, essentially the opposite direction to the insurance flows that Mian and Sufi (2015) and Shiller (2008) predict would occur if real estate risk markets were open.

financial accelerator externalities is consistent with complete markets for systemic risk insurance.[43] That being said, this competitive equilibrium is constrained inefficient in the model of Duncan and Nolan (2015), as the market prices for systemic risk insurance do not internalize the financial accelerator externalities.

What this result points to is a more general prediction that emerges from the literature that when individual specific risks are private information, efficient market arrangements can involve the apparent closing of loan and systemic risk insurance markets. Duncan (2015b) presents a simple model where restrictions on systemic risk insurance and lending relax incentive compatibility constraints related to individual specific risks.[44] Duncan (2015a), discussed earlier in Section 3.3, considers a different type of private information. In that model, firms privately choose whether to herd their projects with their peers, or to branch out into niche projects that provide greater returns and diversification to their investors and to wage-earners. The existence of this herding externality means that transfers contingent on systemic risk have important implications for the prevalence of herding in equilibrium. Optimal allocations of systemic risk must take this externality into account. Kilenthong and Townsend (2014) provides a general discussion of optimal market mechanisms in settings with private information or collateral constraints. In some situations, optimal mechanisms can involve some form of exclusion from systemic risk markets, or fees imposed on trades in these

[43]See also Allen and Gale (2004) who present a model with private liquidity risks as well as systemic risks. They show that intermediaries who themselves trade in sophisticated systemic risk contracts but who issue relatively simple deposit contracts can support constrained efficient allocations.

[44]Starting from equilibrium allocations under decentralised trade in one period loans and systemic risk securities, bringing forward the consumption of low reporting agents and reducing their exposure to systemic risk deters misreporting by agents who enjoy good luck and place a high value on access to systemic risk markets where they can sell insurance against recessions. By relaxing the truth-telling constraint relating to idiosyncratic risks, this perturbation (which requires closing markets for systemic risk) allows increased insurance against idiosyncratic shocks.

markets.

To summarise, our three concerns about the prospects of policies aimed at encouraging systemic risk sharing are that (1) trade in these markets would require very sophisticated contracts that are unlikely to work well in practise; (2) these sophisticated markets might already be well replicated by simpler arrangements currently in place; and (3) increased trade in systemic risk markets is not always and everywhere a good thing, and certainly cannot be expected to dampen balance sheet, herding and aggregate demand externalities that are unlikely to be internalized through the prices of systemic risk insurance. The picture that emerges from consideration of these issues is that there is much we do not know about systemic risk sharing in practise. Our tentative conclusion is that there does not appear to be low-hanging fruit for macroprudential policy intervention in this area.

8. An effective and legitimate macroprudential authority

Ideally, the macroprudential regulator would be an omnipotent, omniscient and benevolent dictator. In practise, omniscience is limited by the environment, and the remaining two are determined by the political process. The extent to which the macroprudential regulator can act quickly and unilaterally with their instruments (dictatorship) is sustained by the regulator's legitimacy, which must be protected by limiting the powers of the regulator (removing their omnipotence) and assigning the regulator with clear intermediate policy targets. These intermediate policy targets must be consistent with the wider policy goals, ensuring the stability and efficiency of the financial system. But these policy targets must also be objectively verifiable in reasonable time, such that the public can effectively monitor the current regulator. In practise, it is likely that these intermediate targets will differ markedly from what we would consider consistent with broader efficiency

concerns. That is, they will not coincide perfectly with a broad mandate for benevolence.

Macroprudential policy poses some unique and challenging problems for institutional design. Taking these problems seriously will be an important determinant of the legitimacy of macroprudential regulators, and in generating support for macroprudential regulator required to implement improvements in policy to promote the stability and efficiency of the financial system.

We argue that the political problem of legitimacy is inseparable from the technical problem of optimal policy.

Limited information

However, at the moment, policymakers and economists have not arrived at a consensus over what the relevant Greenwald-Stiglitz (1986) policy problems are for macroprudential regulators. There is also no consensus over the likelihood of crises or volatility of leverage and credit spreads that would prevail in an efficiently working economy.

A related problem is that economists have not reached consensus over reliable objective measures of financial sector risk that could be used to design intermediate targets for regulators against which their effectiveness can be determined in reasonable time. We have little doubt that the current FPC is doing a good job, but we do not really have an objective way to tell whether or not that is true.

This marks a clear distinction between macroprudential policy and other areas of regulation or policy delegated to independent authorities. In the case of monetary policy, there is broad consensus that inflation targeting is reasonably consistent with efficient aggregate demand management, and we can and do judge the effectiveness of the Bank of England by the extent to which inflation

outcomes are consistent with the inflation target. In the case of utility regulation, benchmarking regulated prices against peer countries is one of a number of straightforward ways an outside observer can check the performance of the regulator. But it is more difficult to arrive at objective ways to monitor the performance of the macroprudential regulator.

Legitimacy, instruments and targets

The fact that we have not arrived at clear and objective targets for macroprudential regulators means that any arrangement seen as legitimate will need to be one with restricted powers.

That is problematic. Unlike in the case of monetary policy, where there is a consensus that the Bank of England policy rate is a necessary and sufficient instrument in normal times, macroprudential policy in theory could employ many instruments.

While the FPC appears to have permission to comment broadly on all policy areas including tax policy, there seems to be a reluctance to make public statements concerning the implications of current tax policies for financial stability. Specific examples include the bank levy, and the tax treatment of equity relative to debt finance which both have the effect of discouraging equity finance and increasing financial sector leverage. This example highlights the lack of instruments that the FPC has access to in practise.

Illegitimacy concerns could be amplified if regulators are seen to have close links to the financial sector and at the same time propose regulations or tax changes that are perceived to likely worsen the distribution of wealth and/or income.

In sum, it is hard to find a parallel to macroprudential policy in terms of the powers that are delegated, the difficulties in communicating how policies are likely

to meet objectives, and the difficulties in determining even ex post whether or not the regulator has achieved their goals of ensuring financial stability.

9. International Coordination

We conclude with a short comment on international coordination of macroprudential policy. As indicated above, there have been substantive areas of coordination on regulatory policy in the past few years as policymakers reacted to the fallout from the financial crisis. Notable examples are Basel III and the formulation of the CCB across countries, recovery and resolution and the wider agenda (covering more than just banks) pursued by the FSB at the behest of the G20. However, the outlook for macroprudential regulators coordinating actions in a time-varying way (reacting, say, to deterioration in the conjunctural outlook), or reacting to some of the issues raised herein (bankers pay, shareholders' incentives, and so on) is much less certain. That is for two reasons.

First, in practice, there seems to be substantial differences in approach emerging surrounding the formation, role and powers of the macroprudential policymaker. For example, in the United Kingdom the Bank of England, through its Financial Policy Committee, has the power to advise and direct banks and other regulators.

In the US, on the other hand, the Financial Stability and Oversight Council (FSOC) is responsible for analysing and identifying macroprudential risks. It is chaired by the Treasury Secretary and brings together the key domestic regulators[45]. There are concerns as to whether such a diverse body is able to

[45]The Board includes: the Secretary of the Treasury, who is also Chairperson of the Council, the Chairman of the Fed, the Comptroller of the Currency, the Director of the Bureau of Consumer Financial Protection (CFPB), the Chairman of the Securities and Exchange Commission (SEC), the Chairperson of the Federal Deposit Insurance Corporation, the Chairperson of the Commodity Futures Trading Commission (CFTC), the Director of the Federal Housing Finance Agency, the Chairman of the National Credit Union Administration

act, or whether it has enough powers to be effective. Indeed, the extent of its powers have been questioned by some (e.g., Tucker, 2014)[46] whilst others have complained that its powers may be excessive[47]. Significantly, the Fed retains the responsibility for supervising systemically important financial institutions.

In Europe (both EU and Euro area), the situation seems more complicated still. Like the US FSOC, the European Systemic Risk Board is charged with assessing macroprudential risks and issuing warnings and advice (EU wide). However, the ESRB has no formal powers of direction whilst the ECB's powers are focussed in microprudential supervision (for the Euro area). Macroprudential oversight remains with individual countries. It is unclear whether a Euro-area, or an EU-wide, macroprudential policy exists, or could be brought into existence in the near future. No doubt these differing approaches have advantages and disadvantages and time will tell which model will come to dominate

Second, as noted above (Cunliffe) there is still no real consensus concerning the conduct and tools of macroprudential policies. For example, different countries appear to be moving at different speeds on issues such as capital surcharges for globally systemically important institutions. Whilst the Bank of England has recently threatened to slap capital surcharges on badly run banks we are not aware of similar threats elsewhere. Again, the UK and the US seem to be more keen, in principle, than the EU in addressing risks associated with universal banking in as much as the Vickers proposals and the Volcker Rule have progressed more

(NCUA); and an independent member with insurance expertise who is a Presidential appointee. In addition to these, there are numerous non-voting representatives of various financial bodies.

[46]Whilst, the Board has some powers to recommend polcies and can require firms to be broken up or supervised on a consolidated basis, Tucker (2014) notes, "Its authority is disputed even by some domestic regulators, whose agencies do not themselves have an explicit objective of preserving financial stability." (page 62)

[47]That debate may be academic: Although not talking specifically about the role of the FSOC, Daniel Tarullo (2015) of the Board of Governors notes: "[But] as a realistic matter, the role of time-varying macroprudential tools is probably limited for the immediate future."

promptly into law.

10. Discussion and conclusions

Since the financial crisis policymakers have made substantial progress in clarifying the policy framework and designing policies. However, we have argued that they risk being too narrowly conceived, focusing largely on making sure monetary policy is the last line of defence in heading off financial pressures. We argue that these policies have a limited ability to enhance the efficiency of the financial system and indeed may decrease it. The desirability of widening the purview of macroprudential policy analysis and having an appropriate institutional framework should not be taken to imply that we are seeking to add ever more complexity to financial regulation: The danger surely exists of constructing a rulebook of no slight complexity and little enduring value. So, we conclude with a series of recommendations that emerge from our analysis. We have split these into a set of institutional recommendations concerning the design of the FPC, and a set of policy recommendations concerning the actions of the FPC. Our overarching view of the role of the FPC is as an independent body charged with assessing the efficiency and stability of the financial sector and informing publicly all aspects of policy that affect that efficiency and stability.

10.1. Institutional recommendations

1. Macroprudential policy is about more than ensuring the effectiveness of monetary policy in crisis periods. Macroprudential policy has a wider concern for the efficiency and stability of the financial sector. Therefore, in addition to its responsibility to enhance financial stability, the FPC should be made responsible for assessing the efficiency of the financial sector in the UK.

2. That financial efficiency assessment should generate policy recommendations for other areas of public policy. For example, the FPC should be required to comment on any area of policy (public or private) which may damage efficiency or exacerbate financial stability (e.g., tax policies that increase leverage, housing, planning or land use policies, the incentive structure of private sector pay, distortions in accessing bank or equity finance for SMEs, etc.).

3. Policymakers should design a set of intermediate targets against which the FPC can be judged. These intermediate targets are likely to be updated as time passes. More research needs to be done to clarify how the assessment of financial efficiency and the goals of the macroprudential regulator can be linked to clear objective targets.

4. Preventive macroprudential policy interventions designed at ensuring the effectiveness of monetary policy in crisis periods should be coordinated with efforts by the Bank of England to design responses to periods of reduced effectiveness of standard monetary policy tools.

5. The FPC should seek to distance itself, where possible, from political decisions. The coordination between macroprudential regulations and tax interventions aimed at alleviating the distributional consequences of certain policies may be desirable in certain circumstances, but carries significant costs in terms of independence, unintended consequences of poor policy design and increased complexity of the tax code.

6. Monetary policy regimes (for example inflation, nominal GDP or broad money growth targeting) have consequences for financial stability and consequently should be scrutinized by the macroprudential regulator

particularly as to their effectiveness in crisis periods.

7. The composition of the FPC should take into account concerns that the FPC is responsible for decisions that have consequences for the distributions of wealth and income. Additional expertise on tax, accounting, law, corporate governance and other areas may be required.

8. The current 'comply or explain' powers held by the FPC probably strike a useful compromise by removing the ability for the FPC to act unilaterally while allowing it to comment on a wide range of policy areas. These powers should be used assertively to intervene authoritatively in, and generate, important policy debates.

9. The FPC should regularly review the risks in being able effectively to cooperate with other national regulators, especially in crisis times but also on other areas of financial market efficiency.

10.2. Policy recommendations

10. We have not, in all likelihood, ended TBTF. The FPC should review the design of possible future bailouts with the aim of designing penalties which are time consistent and encourage key executives and groups (such as shareholders) to internalize appropriately the moral hazard risks.

11. The FPC should consider the effect of balance sheet regulations as well as the wider corporate governance environment on the governance of banks.

12. The FPC should assess and advise Government appropriately on the extent to which leverage is encouraged through the differential tax treatment of debt and equity and the bank levy.

13. The FPC should seek to minimise the use of time-varying restrictions. Permanent policy interventions are probably favourable to temporary interventions. For example, if the value of relaxing LVR or DTI restrictions in future is limited, it may be better to set permanent restrictions. Rules that change less often, help private agents plan and reduce the risk of the FPC being seen to be open to political manipulation.

14. The FPC should take care to determine whether specific regulations should be imposed at the level of entities (for example banks) or activities (for example mortgage lending).

15. It is unlikely that there is considerable scope for increased sharing of business cycle risk within mortgage or debt contracts. Nevertheless, this is another area where much useful research could be done.

16. The FPC should periodically review the appropriateness of the inflation targeting regime from a macroprudential perspective. For the time being, there appears no conclusive evidence that a change in monetary policy targets would have a strongly beneficial impact on financial stability and efficiency.

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