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Debiasing Macroprudential Policy: Part 1

An Evidence-based Approach and the Precautionary Principle

A Keller*

“It's tough to make predictions, especially about the future” Yogi Berra.

Evidence-based policy refers to “a process that, to the fullest extent possible, transparently uses rigorous and tested evidence in the design, implementation, and refinement of policy to meet designated policy objectives”.¹ The rationale behind the idea is intuitive. Where a decision-making process is based on robust evidence it will bring better quality decisions. Accordingly, the term is often used in policymakers’ communications to explain and perhaps legitimise their policy decisions. Blair’s Labour government, for instance, supported the approach of ‘what counts is what works’, pledging that –

“We will improve our use of evidence and research so that we understand better the problems we are trying to address. We must make more use of pilot schemes to encourage innovations and test whether they work. We will ensure that all policies and programmes are clearly specified and evaluated, and that the lessons of success and failure are communicated and acted upon.”²

The aim of this paper is to explore the need, the nature and the potential challenges and limitations of exercising an evidence-based approach in macroprudential policymaking. Macroprudential perspective focuses on the financial system as a whole, as distinct from individual financial institutions. It is aimed at limiting the likelihood of failure and

* Lecturer in Law, King’s College London. I would like to thank my colleagues, Professor Eva Lomnicka and Prof Michael Schillig for their comments. The usual disclaimers apply.

¹ Australian Government Productivity Commission, *Strengthening Evidence-based Policy in the Australian Federation, Roundtable Proceedings Vol 2 Background Paper* (Canberra, 17-18 August 2009) available at <www.pc.gov.au/research/supporting/strengthening-evidence/roundtable-proceedings-volume2.pdf> accessed 10 June 2018. This definition reflects the need to implement an evidence-based approach throughout the full policy cycle (mandate, analysis and use of powers and evaluation and accountability).

² Cabinet Office White Paper *Modernising Government* (London, 1999). Though there may be a gap between aspiration and practice, see J Rutter, ‘Evidence and Evaluation in Policy Making A Problem of Supply or Demand?’ (2012) Institute for Government available at <www.instituteforgovernment.org.uk> accessed 25 May 2018. The rhetoric of an evidence-based policy is not unique to the UK. See, for instance, K Rudd, Address to heads of agencies and members of the senior executive services, Great Hall, Parliament House, Canberra, 30 April 2008 available at <http://www.pm.gov.au/media/Speech/2008/speech_0226.cfm> accessed 10 June 2018.

corresponding costs of a significant portion of the financial system, often referred to as preventing or mitigating systemic risks. Macroprudential supervision emphasises, therefore, that actions that may seem reasonable or even desirable from the perspective of individual financial institutions may weaken system-wide stability and be unwelcome from a macroprudential perspective.³ This tension can be attributed to the fact that risks taken by individual financial institutions may be ultimately borne by the system as a whole, i.e. they create externalities.⁴ These externalities can range from those related to fire sales to those related to interconnectedness in the financial system arising from various sources, such as interbank market exposure or feedback from the real economy.

Following the 2007-2009 financial crisis, the adoption of legal frameworks for the conduct of macroprudential policy around the globe was done in somewhat a hasty fashion, often borrowing from existing mechanisms applied in other policy areas, in particular, monetary policy and financial supervision. This paper takes a step back and attempts to critically look at this relatively new policy area⁵ through an evidence-based lens. The exercise exposes the potential biases in the selection and use of evidence in the macroprudential sphere and in turn, allows for the emergence and development of tailored legal and institutional mechanisms to ameliorate these biases.

The paper explores three questions: What are the justifications for an evidence-based approach in macroprudential policy-making? What are the challenges and limitations of this approach? What are the legal and institutional mechanisms that could mitigate these deficiencies?

To address these questions, the paper draws on public policy literature and in particular, it interacts with more recent scholarship on the politics of evidence which promotes the good governance of evidence.⁶

Following this introduction, the paper is structured in three parts. Section 1 explores the nature of an evidence-based approach in the sphere of macroprudential policymaking and

³ M Brunnermeier and others, 'The Fundamental Principles of Financial Regulation' [2009] Geneva Report on the World Economy 11, 6 naming this phenomenon 'fallacy of composition'.

⁴ *ibid*, 20; G De Nicolò, G Favara and L Ratnovski, 'Externalities and Macroprudential Policy' [2012] IMF Staff Discussion Note 5.

⁵ The first appearance of the term macro-prudential in an international context dates back to 1979 see P Clement, 'The Term 'Macroprudential': Origins and Evolution' (2010) Bank of International Settlement Quarterly Review, 59.

See also A Crockett, 'Marrying the Micro- and Macro-prudential Dimensions of Financial Stability' (11th International Conference of Banking Supervisors, Basel, September 2000).

⁶ For instance, J Parkhurst, *The Politics of Evidence: From Evidence-based Policy to the Good Governance of Evidence* (Routledge Studies in Governance and Public Policies, 2017).

analyses the strong justifications supporting this approach. Section 2 highlights the challenges and limitations that an evidence-based approach may entail in the context of macroprudential policymaking. In particular, it explores the unique biases prevalent in choosing and analysing evidence for macroprudential regulation and supervision purposes. Section 2 concludes with an analysis of emerging scholarship that borrows the precautionary principle from environmental law and applies it to macroprudential policy decision making. This scholarship suggests that there are situations in which in order to meet their designated policy objective(s), macroprudential supervisors will have to make a policy decision and use their powers even in the absence of rigorous and tested evidence. The paper challenges this emerging scholarship; lays out the difficulties in operationalising the precautionary principle in macroprudential policymaking and assesses alternative concepts. Section 3 suggests institutional and legal ways to address the identified challenges of an evidence-based approach. More specifically, it promotes diversity as a key tool in debiasing macroprudential decision making. The nature of diversity, its key dimensions and formulations in the sphere of macroprudential policy will be further explored in the continuation article, ‘Debiasing Macroprudential Policy: Part 2’. With good governance safeguards in place, an evidence-based policy approach can and should be used as a rhetorical and practical policymaking tool to legitimise policy decisions and enhance their effectiveness.

In this paper, evidence for macroprudential purposes is taken in its broadest sense to include all sources of data collected for the purposes of monitoring the build-up of systemic risks to financial stability. This includes evidence collected from various sources ranging from financial institutions, supervisors, private registries or repositories as well as market intelligence. As long as the data is “fit for purpose”, i.e. it is gathered with the aim of achieving the mandate of the relevant macroprudential supervisor and/or regulator, it will be considered evidence for the purposes of this paper. Evidence refers to pre-existing evidence which informs the policy decision and post-policy action (or the lack thereof) which evaluates the effectiveness of the instruments used and whether they meet the policy objective(s). The quality of that evidence, the way it is chosen, analysed and assessed are vital components of evidence-based policymaking and should form part of the legal and

institutional framework of macroprudential supervision. Generally, high-quality data (or good evidence) is taken to be comprehensive but not excessive, comparable, timely and accurate.⁷

1. Justifications for an evidence-based approach in macroprudential policy-making

The roots of an evidence-based approach can be traced back to medicine in the early 1990s.⁸ Gradually, it expanded to many other non-technical fields, notably public policy.⁹ However, the role of evidence in public policy is fundamentally different from disciplines of technical problem-solving given the fluid nature (as opposed to a matter of fact) of the subject matter. Nick Black, a professor of Health Services Research observed that – “...research has only a limited role because governance policies are driven by ideology, value judgments, financial stringency, economic theory, political expediency, and intellectual fashion.”¹⁰ This observation applies, to some extent, to macroprudential regulation and supervision. It is trite knowledge that macroprudential policymaking entails a careful balancing act between financial stability and economic growth, potential trade-offs with other long-established policy areas¹¹ and as we shall see, may involve decisions with a visible and immediate distributional effect. Acknowledging these potential trade-offs, competing considerations and the somewhat amorphous objective(s) of macroprudential policy does not, however, mean that relying on evidence is bound to fail.¹² On the contrary, there are very strong justifications for

⁷ For a detailed discussion on quality features of data collected for macroprudential purposes. See A Keller, ‘Collecting Data: How will the ESRB Overcome the First Hurdle Towards Effective Macroprudential Supervision?’ (2013) 24(4) *European Business Law Review*, 487-535.

⁸ The term was coined by GH Guyatt, ‘Evidence-Based Medicine’ (1991) *American College of Physicians Journal Club*, though it appears that its roots go much further back: see R Smith and D Rennie, ‘Evidence Based Medicine: An Oral History’ (2014) *BMJ*, 348 available at <www.bmj.com/content/348/bmj.g> accessed 25 May 2018; For an overview of an evidence-based policy see also S Nutley, H Davies and I Walter, ‘Past, Present, and Possible Futures of Evidence-based Policy’ in G Argyrous (ed), *Evidence for Policy and Decision Making: A Practical Guide* (University of New South Wales Press, Sydney, 2009) 1, 3.

⁹ n 2; In macroprudential policy making see, for instance, Sharon Connery (Deputy Governor Central Bank of Ireland), *Macro-prudential Policy Making: Where is the Evidence?* (Joint Banco de Portugal - European Central Bank Conference on Macro-prudential Policymaking, 17 November 2017).

¹⁰ N Black, ‘Evidence Based Policy: Proceed with Care’ (2001) *BMJ* 323 available at <www.bmj.com/content/323/7307/275> accessed 25 May 2018.

¹¹ International Monetary Fund, ‘Key Aspects of Macroprudential Policy’ June 2013 available at <www.imf.org/external/np/pp/eng/2013/061013b.pdf> accessed 19 April 2018, 24; A Clark and A Large, *Macroprudential Policy: Addressing the Things We Don’t Know* (2011) *Group of Thirty Occasional Papers* 83, 19. However, empirical research on the specificities of these interactions and trade-offs is still lagging behind.

¹² H Rittel and M Webber, ‘Dilemmas in a General Theory of Planning’ (1973) 4(2) *Policy Sciences* 155 contended that in public policy the search for scientific bases is bound to fail because of the nature of the problem (“wicked problem”) which is characterised by its ‘intractability’ (i.e. appeals to evidence are unable to provide policy resolution). Whilst macroprudential policy making involves complex choices as to a public good (financial stability), it is a technical-empirical policy area that does not fit within the intractability nature. It cannot be said to present a problem that necessitates “a political judgment for resolution” (Rittel and Webber, p 160). On the contrary, macroprudential supervisors should be independent and isolated from political and industry pressure to achieve their goal. Moreover, acknowledging conflicts and trades offs does not make evidence irrelevant. See Parkhurst, *The Politics of Evidence* (n 6), pp 9 and 58; J Parkhurst, ‘Appeals to

establishing an evidence-based approach in macroprudential policymaking and using it as a key rhetoric tool when communicating decisions to the relevant stakeholders and the public at large. First, an evidence-based approach can enhance the legitimacy and accountability of macroprudential supervisors and second, it can serve as a strong counterbalance to their inherent inaction bias.

1.1 Evidence-based approach as a mechanism to enhance legitimacy and accountability

The construction of a macroprudential framework commonly relies on systemic risk, as the leading index used to indicate the build-up of financial instability.¹³ To be differentiated from monetary policy, the field of macroprudential policy lacks a symmetrical and precise target. In other words, it is impossible (at least at this stage) to define it in terms of - no less than X and no more than Y failures.¹⁴ In the absence of a clear benchmark, the task of holding macroprudential supervisors accountable becomes a very challenging one. Simply put, a financial crisis equals financial instability and signifies the failure of the macroprudential supervisor in achieving its mission. The opposite, however, cannot be said. The absence of a crisis does not necessarily equate to an effective macroprudential policymaking. The crisis may be waiting around the corner or it may take time to approach the tipping point.¹⁵ Currently, there is still confusion about what types of risks are truly systemic and there does not seem to be a commonly accepted definition of systemic risks or a comprehensive and conclusive list of ‘red flags’ to identify it.¹⁶ Indeed, the European Systemic Risk Board (ESRB) Vice-Chair correctly observed that ‘systemic risk can mean almost anything (or

Evidence for the Resolution of Wicked Problems: The Origins and Mechanisms of Evidentiary Bias’ (2016) 49(4) Policy Sciences 373.

¹³ P Angelini and others, ‘Macroprudential, Microprudential and Monetary Policy: Conflicts, Complementarities and Trade-offs’ [2012] Bank of Italy Occasional Papers 140.

¹⁴ L Garicano and R Lastra, ‘Towards a New Architecture for Financial Stability: Seven Principles’ (2010) LSE Centre for Economic Performance Discussion Paper 990. Martin Taylor, an external member of the FPC observed in a Questionnaire for Treasury Select Committee (21 March 2018) that – “Compared with our colleagues on the MPC (Monetary Policy Committee- my addition), who can have a lively debate backed up with hard data about whether some variable should be 0.1 higher or lower, we are dealing with very rough judgements, where probabilities are imprecise”.

¹⁵ C Borio, ‘Towards a Macroprudential Framework for Financial Supervision and Regulation’ (2003) BIS Working Paper 128 suggested that ‘Indicators of risk perceptions tend to decline during the upswing and, in some cases, to be lowest close to the peak of the financial cycle. But this is precisely the point where, with hindsight at least, we can tell that risk was greatest...’.

¹⁶ L Schwarcz, ‘Systemic Risk’ (2008) Duke Law School Legal Studies Paper No. 163; P Smaga, ‘The Concept of Systemic Risk’ (August 2014) Systemic Risk Centre Special Paper No 5; P Hansen, ‘Challenges in Identifying and Measuring Systemic Risk’ (2012) NBER Working Paper No. 18505; J Caruana, ‘Measuring Systemic Risk’ in A Dmober and O Lucius *Stability of the Financial System Illusion or Feasible Concept?* (Edward Elgar, 2013), 216.

nothing), depending on whom you ask'.¹⁷ Macroprudential policy decision making is, therefore, conducted in a fuzzy environment¹⁸ and leaves a wide scope of discretion to macroprudential supervisors.¹⁹ Furthermore, macroprudential tools can have a distributional effect and thus subject macroprudential supervisors to political pressure. For instance, imposing and adjusting Loan-to-Value (LTV) caps²⁰ may reduce access to finance for often younger and economically weak segments of the society and exclude potential first-time home-buyers from the property market.²¹ Politicians are particularly keen to support these segments of the electorate and accordingly, the risk of pressure on macroprudential supervisors not to inhibit beneficial homeownership democratisation may increase.²² Finally, the implementation of macroprudential instruments is likely to take place during an upswing when the danger to financial stability is least apparent, thereby rendering the decision to implement them very unpopular and may result in macroprudential supervisors facing political and market resistance.²³

In this environment, evidence could be used as a mechanism to ameliorate or even 'neutralise' potential political pressure and lobbying from the financial industry.²⁴ In other words, framing macroprudential supervision and/or regulation as an evidence-based policy

¹⁷ S Cecchetti, 'Measuring Systemic Risk' in S Gerlac, E Gnan and J Ulbrich (eds) *The ESRB at 1* (SUERF-The European Money and Finance Forum, Vienna, December 2012), 25.

¹⁸ G Schultz and J Taylor, 'A conversation about Key Conclusions' in K Scott, G Shultz, J Taylor (eds) *Ending Governments Bailouts as We Know Them* (Hoover Press, 2010), 285 refer to systemic risk as a "fuzzy concept. The term fuzzy is borrowed from the regional studies discipline and 'posits an entity, phenomenon or process which possesses two or more alternative meanings and thus cannot be reliably identified or applied by different readers or scholars'. A Markusen, 'Fuzzy Concepts, Scanty Evidence, Policy Distance: The Case for Rigour and Policy Relevance in Critical Regional Studies' (1999) 33(9) *Regional Studies* 869, 870.

¹⁹ Still, their discretion is constrained by their mandate, decision-making processes and accountability mechanisms. Similar to the 'constrained discretion' which was coined in the context of monetary policy inflation-targeting by B Bernanke and F Mishkin, 'Inflation Targeting: A New Framework for Monetary Policy' (1997) NEBR Working Paper No 5893.

²⁰ LTV is the ratio of the loan value to the underlying collateral (property) value and a cap on it ensures that if the borrower defaults, the collateral value is sufficient to cover the loan.

²¹ The Turner Review: A regulatory Response to the Global Banking Crisis (2009), 110; C Goodhart, 'The Macro-prudential Authority: Powers, Scope and Accountability' (2011) 2 *OECD Journal Financial Market Trends*, 17.

²² A Keller "The Possible Distributional Effect of the Loan-to-value Ratio and Its Use as a Macro-prudential Tool by the European Systemic Risk Board" (2013) 28(7) *JIBLR* 266

²³ Often described as 'taking the punch bowl just as the party gets going', a famous phrase of Jr W McChesney Address before the NY Group of the Investment Bankers Association of America' (NY, 19 October 1955), 12.

²⁴ In public policy see G Banks, Evidence-based Policy Making: What is it? How Do We Get it? (Australian National University Public Lecture Series, Canberra, 4 February 2009).

But see evidence of one of the external members of the FPC who suggested that in the UK, there is no pressure for a light touch regulation, despite what one might expect as a potential result of Brexit: Written Evidence submitted by Donald Khan in Response to questionnaire from Treasury Committee, 21 March 2018 available at <<http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/treasury-committee/reappointment-of-donald-kohn-to-the-financial-policy-committee/written/81464.pdf>> accessed 10 June 2018.

can enhance both the legitimacy and accountability of macroprudential supervisors.²⁵ It can enhance legitimacy – since the public and other stakeholders are well informed about the justifications to the policy decision making²⁶ and it can enhance accountability – since it provides a benchmark against which the macroprudential supervisor’s performance can be assessed. However, the use of the term evidence-based policy purely as a rhetorical device²⁷ is not sufficient in promoting good governance. Part 3 of this paper suggests that evidence-based rhetoric should be accompanied by solid independence, accountability, transparency and diversity arrangements.

1.2 An evidence-based approach as a counterbalance to macroprudential supervisors’ inherent inaction bias

It is widely acknowledged that macroprudential supervisors are subject to an inherent inaction bias.²⁸ The causes of this inherent bias are varied and can be attributed to the unique nature of the policy, its tools and the environment in which it operates. First, as discussed in section 1.1, macroprudential decisions often involve tangible and potentially large short-term costs²⁹ whilst their intangible benefits can only be appreciated in the long-term. The potential unpopularity of macroprudential policy decisions results in increased risk of political pressure and lobbying from the financial industry to avoid or delay the implementation of the tools or at least tune down their intensity.³⁰ Second, the empirical analysis of the effectiveness of

²⁵ See, for instance, the OECD Public Governance Reviews: Estonia and Finland 2015, 113. “Across the OECD, good governance practice suggests that policy should be based on sound evidence derived from rigorous analysis of the available facts on the issue that the policy is supposed to address”.

²⁶ F Scharpf, *Governing in Europe: Effective and Democratic?* (OUP, 1999); V Schmidt, ‘Democracy and Legitimacy in the European Union Revisited: Input, Output and ‘Throughput’’ (2013) 61(1) *Political Studies* 2. The most compatible model of legitimacy to macroprudential policy sphere is throughput legitimacy which focuses on the quality of the governance processes and is judged in terms of efficacy, accountability and transparency of those processes along with their inclusiveness and openness to consultation with the people. A Keller, ‘Independence, Accountability and Transparency – Are the Conventional Accountability Mechanisms Suitable for the European Systemic Risk Board?’ (2017) 5 *International Company and Commercial Law Review* 178.

²⁷ M Hammersley, ‘Is the Evidence-based Practice Movement Doing More Good than Harm?’ (2005) 1(1) *Evidence and Policy* 85, 94-95 strongly opposed an evidence-based approach referring to it as a rhetorical ploy which can “serve as an ideological device that closes down discussion about the relative weight that should be given to different educational goals”. With good governance, however, this use can be avoided.

²⁸ This is acknowledged by macroprudential supervisors themselves. ESRB, ‘The ESRB Handbook on Operationalising Macro-prudential Policy in the Banking Sector’ (Working Group chaired by A Houben, De Nederlandsche Bank) available at <www.esrb.europa.eu/pub/pdf/other/140303_flagship_report.pdf> accessed 19 April 2018, p 4.

²⁹ For instance, while a Countercyclical buffer is primarily aimed at countering the cyclical phases of financial markets to ensure financial stability, it might have an unintended impact of reduced flow of credit to the economy by more than is warranted. ESRB (2014) (n 28).

³⁰ This was the case in Israel, J Greenberg, ‘Housing Protests Galvanize Young Israelis’ *The Washington Post* (26 July 2011) <http://articles.washingtonpost.com/2011-07-26/world/35236637_1_rothschild-boulevard-tent-city-tent-camp> accessed 20 June 2018; In Norway see SP Chun, *Macroprudential Lessons for the Bank of*

macroprudential tools and their interaction with other macroprudential tools, other policy tools and the real economy is still in its infancy. It is, therefore, highly difficult, if not impossible, to calibrate pre-defined triggers for the implementation of macroprudential tools.³¹ In the absence of a rule-based framework for the implementation of the tools, the discretion of macroprudential supervisors is wide and correspondingly, the potential for inaction bias is exacerbated. Third, macroprudential supervisors are often required to achieve multiple objectives, with financial stability as a primary objective in priority to sustaining economic growth.³² These objectives are not always aligned, at least in the short-medium term, and trade-offs can easily emerge³³ potentially inducing inaction bias.³⁴ Fourth, the global nature of financial markets and the potential systemic risk spillovers across borders, exacerbate inaction bias at the national and global level,³⁵ particularly in the absence of reciprocity arrangements and coordination mechanisms. Finally, macroprudential supervisors are no different from other institutions that are driven by humans and are subject to the more general behavioural phenomenon of disaster myopia. This bias leads to the systematic

England *Telegraph* (21 June 2014) available at <www.telegraph.co.uk/finance/bank-of-england/10917303/Macroprudential-lessons-for-the-Bank-of-England.html> accessed 10 June 2018.

³¹ I Agur and S Sharma, 'Rules, Discretion and Macro-prudential Policy' (2013) IMF Working Paper 65; D Bonfim and N Monteiro, 'The Implementation of Countercyclical Capital Buffer: Rules v Discretion' Banque De Portugal Financial Stability Report 2013 observed that "it is unfeasible to find an indicator (or set of indicators) that perfectly signals when to activate and deactivate the buffer in all countries and in all possible periods." The normative question of whether macroprudential decision making should be rule-based is outside the scope of this paper. See discussion in C Goodhart, 'The Macroprudential Authority: Powers, Scope and Accountability (2011) 2 OECD Journal: Financial Market Trends.

Interestingly, however, recent research suggests that, in fact, the need of macroprudential supervisors to learn about the relatively untested tools speak to more active policymaking. See S Bahaj and A Foulis 'Macroprudential Policy under Uncertainty' Bank of England Working Paper No 584.

³² The FPC's mandate includes the requirement to sustain economic growth as a secondary objective to financial stability; European Systemic Risk Board Recommendation of 22 December 2011 on the Macro-prudential Mandate of National Authorities, ESRB/20211/3, Recommendation A; Art 123 of the Dodd-Frank Act 2010 requires that the Financial Stability Oversight Council conducts a study every five years on the impact on long-term growth of potential regulatory actions that are intended to reduce systemic risk.

³³ FPC's Formal Response on the 26 June 2013 to the Remit and Recommendations set out by HM Treasury on the 30 April 2013 regarding the Responsibility of the FPC in relation to Support for the Government's Economic Policy and matters to which the it should have regard in Exercising its Functions'. See also A Popov and F Smets, 'On the Tradeoff between Growth and Stability: The Role of Financial Markets' VoxEU (November 2011).

³⁴ For a discussion of the need to redraft the FPC mandate to make it less restrictive see Joint Committee Draft Financial Services Bill: Session 2010-12 Report, HL Paper 236 HC 1447, para 371. In a multitask environment an agent's attention may be focused on the task that is easier to measure resulting in inaction regarding the other task(s). See B Holmstrom and P Milgrom, 'Multitask Principal-Agent Analyses: Incentive Contracts, Asset Ownership and Job Design' (1991) 7 *Journal of Law Economics and Organization* 24; B Holmstrom and P Milgrom, 'The Firm as an Incentive System' (1994) 84(4) *American Economic Review* 972.

³⁵ J Vinals and E Nier, 'Collective Action Problems in Macroprudential Policy and the Need for International Coordination' (2014) *Banque de France Financial Stability Review*, issue 18, pp 39-46.

tendency to underestimate the probability of rare events with very large potential effects.³⁶ The disaster myopia is associated with two heuristics (simplifying processes or rules of thumb) that are prevalent in decision making under uncertainty. The first, the availability heuristic, was formulated by Tversky and Kahneman (1973) who suggested that “a person is said to employ the availability heuristic whenever he estimates frequency or probability by the ease with which instances or associations could be brought to mind.”³⁷ The second, the threshold heuristic, suggests that when a probability reaches some critically low level, it is treated as if it were zero.³⁸ Combined together, these heuristics, though formulated in the cognitive psychology, apply to economic agents³⁹, financial institutions⁴⁰ and macroprudential supervisors and/or regulators.⁴¹ Indeed, the difficulty in making an unbiased judgment in macroprudential policymaking and going against the natural perception that ‘this time is different’⁴² is a real challenge rather than a theoretical one. It is reflected in the evidence of one member of the Financial Policy Committee (FPC)⁴³: “... perhaps most dangerous, the lapse of time since the crisis makes it harder to maintain the necessary vigilance.”⁴⁴

In an environment where inaction bias is heightened, an evidence-based approach can constitute a counterweight to inaction bias and tip the balance to action in order to prevent or mitigate systemic risks to financial stability. This can be thought of in terms of ‘comply or explain’. Where evidence exists and points to the need to act, there will be a need for the macroprudential supervisors to be transparent and explain the reasons for inaction and in turn, be accountable if that inaction does not meet their objective(s). In contrast, where decision

³⁶ J Guttentag and R Herring, ‘Disaster Myopia in International Banking’ in *Essays in International Finance* No 164 (Princeton University, 1986), 3.

³⁷ A Tversky and D Kahneman, ‘Availability: A Heuristic for Judging Frequency and Probability’ (1973) 5(2) *Cognitive Psychology* 207, 208.

³⁸ HA Simon, ‘Rationality as Process and as Product of Thoughts’ (1978) 68 *American Economic Review* 1.

³⁹ Guttentag and Herring (n 36).

⁴⁰ AG Haldane, ‘Why Banks Failed the Stress Tests’ (Marcus-Evans Conference on Stress-Testing, 9-10 February 2009).

⁴¹ AG Haldane, ‘Central Bank Psychology Leadership: Stress and Hubris Conference hosted by the Royal Society of Medicine, London 17 November 2014 discusses other potential biases in policymaking.

⁴² On this recurrent syndrome in the history of crises see C Reinhart and K Rogoff, *This Time is Different: Eight Centuries of Financial Folly* (Princeton Press, 2011)

⁴³ The objective of the FPC is to identify, monitor and take action to remove or reduce systemic risks with a view to protecting and enhancing the resilience of the UK financial system. Bank of England Act 1998, s 9C.

⁴⁴ Questionnaire for Treasury Select Committee, Martin Taylor, External member of the FPC, 21 March 2018 available at <www.bankofengland.co.uk/-/media/boe/files/about/people/martin-taylor/martin-taylor-questionnaire-2018.pdf> accessed 25 May 2018. Empirical evidence suggests that financial cycles last on average between 16 to 20 years, see M Drehmann and others, ‘Characterising the Financial Cycle: Don’t Lose Sight of the Medium Term!’ (2012) BIS Working Paper No 380.

making is not based on good evidence⁴⁵ (and as we shall see, supported by good governance), inaction bias is likely to prevail, and no clear benchmark will be available to hold macroprudential supervisors accountable.

2. Challenges of an evidence-based approach in macroprudential policymaking

This part of the paper explores the challenges and limitations of conducting an evidence-based macroprudential policy. It exposes the potential biases which could emerge throughout the macroprudential supervisory cycle: beginning with the collection of evidence; the analysis of the evidence to form a policy decision; the collection of evidence to evaluate the impact of the policy decisions and the effectiveness of the implemented tools in achieving the macroprudential supervisor's objective(s). In each stage of the macroprudential policymaking, supervisors are subject to biases, some are general biases inherent in human behaviour and in particular in a committee setting and some may be unique or more prominent in the context of macroprudential supervision.

2.1 Issue bias: choosing which evidence to collect

The choice of evidence and its source clearly influence decisions and can in itself be regarded as a value-based exercise.⁴⁶ Issue bias can arise through practices that routinely privilege the choice of a particular type of evidence or the way it is analysed. Nancy Krieger, who was a social epidemiologist, has famously noted that 'if you don't ask, you don't know, and if you don't know, you can't act'.⁴⁷ This observation applies to the macroprudential supervisors' decision making in full force. As discussed in Part 1, systemic risk is a multi-faceted concept: it is cross-jurisdictional, exogenous and/or endogenous and is not restricted to specific sectors, entities, practices or products. Therefore, sources of financial instability go beyond traditional banking intermediation and evidence collected for macroprudential purposes should be first and foremost comprehensive and cast the net wide.⁴⁸ Unfortunately and despite global initiatives to close data gaps beyond the banking sector, macroprudential supervisors acknowledge that so far, their efforts have concentrated on the banking sector and

⁴⁵ See note 7 on what will be considered good evidence for macroprudential purposes.

⁴⁶ H Douglas, 'Politics and Science: Untangling Values, Ideologies and Reasons' (2015) 658(1) ANNALS of the American Academy of Political and Social Science 296.

⁴⁷ N Krieger, 'The Making of Public Health Data: Paradigms, Politics and Policy' (1992) 13(4) Journal Public Health Policy 412, 412.

⁴⁸ On other vital data qualities for macroprudential purposes see A Keller, 'Collecting Data: How will the ESRB Overcome the First Hurdle Towards Effective Macroprudential Supervision?' (2013) 24(4) European Business Law Review 487.

that there is still an urgent need to expand the scope of their data collection beyond that sector.⁴⁹

It may be that this issue bias reflects the key role that central banks play in the governance of macroprudential supervisors⁵⁰ (and hence an inherent groupthink) or results from the perception which prevailed following the 2007-2009 financial crisis that banking (and mainly banking) is a source of systemic risk.⁵¹ Either way, the tendency of macroprudential supervisors to collect data on the banking sector may shift the priority and attention of their decisions to the banking sector compared to other sectors such as insurance or the shadow banking sectors as well as systemically important infrastructures such as Central Counterparties.⁵² Indeed, recent evidence on the global use of macroprudential tools suggests that to date, most of the implemented instruments are bank-focused.⁵³ The move towards a more market-based financial system underscores the urgency of addressing this issue bias in macroprudential policymaking.⁵⁴

⁴⁹ IMF, 'What are the Data Needs?' (2017) Working Paper Financial Stability Analysis No 153. Since the 2007-2009 global financial crisis there has been intensified effort to close data gaps for macroprudential purposes, FSB-IMF, "The Financial Crisis and Information Gaps" 2009; IMF and FSB, 'The Financial Crisis and Information Gaps – Sixth Implementation Progress Report of the G20 Data Gaps Initiative' 2015. The ESRB publishes the "EU Shadow Banking Monitor" which presents an overview of developments in the European shadow banking system to identify risks to financial stability.

⁵⁰ M Goldby and A Keller, 'Oversight of Systemically Relevant Insurance Practices within the EU: The Role of Macroprudential Supervision in *Systemic Risk and the Future of Insurance Regulation* (Routledge, 1st ed, 2015).

⁵¹ In the EU, the focus on the banking sector may be a result of the experience from the Eurozone crisis beginning in 2012 and the evident doom-loop between the banking sector and sovereign debt. See R Baldwin and F Giavazzi, 'The Eurozone Crisis: A Consensus View of the Causes and Few Possible Solutions' September 2015 VoxEU.org.

⁵² In a recent strategy paper, the ESRB highlighted the need to monitor and develop new macroprudential tools, to address risks beyond the banking sector, for example risks stemming from asset managers and funds, financial market infrastructures, insurers and hedge funds. ESRB, Strategy Paper Beyond Banking, July 2016 available at <www.esrb.europa.eu/pub/pdf/reports/20160718_strategy_paper_beyond_banking.en.pdf> accessed 25 May 2018. The Financial Stability Board (FSB) has recently observed that – "Although progress is being made, more work is needed to monitor and respond to potential shadow banking risks. An FSB peer review concluded that FSB jurisdictions should establish a systematic process for assessing shadow banking risks, and ensure that any non-bank financial entities or activities that could pose material financial stability risks are brought within the regulatory perimeter; address identified gaps in the availability of data to assess financial stability risks, taking into account the potential materiality of those risks; and remove impediments to cooperation and information-sharing between authorities, including on a cross-border basis", FSB, Implementation and Effects of the G20 Financial Regulatory Reforms: 3rd Annual Report, 3 July 2017, 16.

⁵³ K Jayaram and B Gadanez, 'Macroprudential Policy Frameworks, Instruments and Indicators: A Review' 2016 in Bank for International Settlements (ed.), *Combining Micro and Macro Data for Financial Stability Analysis*, volume 41, 13.

Although mandates of macroprudential supervisors expand beyond the banking sector. See, for instance, article 3 of Regulation (EU) No 1092/2010 of 24 November 2010 on European Union Macro-prudential Oversight of the Financial System and establishing a European Systemic Risk Board OJ L331/1; S 9C of the BEA 1998.

⁵⁴ On the progress made so far see Vítor Constâncio, Macroprudential Stress-tests and Tools for the Non-bank Sector (ESRB Annual Conference Frankfurt am Main, 22 September 2017).

See also J Cunliffe, Market-based Finance: a Macroprudential View (Asset Management Derivatives Forum, Dana Point, California, 9 February 2017).

2.2 Using evidence: The danger of ‘It worked there, it will work here’

Other biases can emerge at the implementation stage of macroprudential instruments and the evaluation of their effectiveness. In macroprudential policymaking, there is no “one-size fits all” approach. Therefore, “it worked there” does not necessarily equate to – “it works here”.⁵⁵ A country’s features and circumstances, such as the structure of its banking and non-banking sector, homeownership, monetary policy, the phase of the financial cycle or the business cycle and other political economy considerations, will all have an impact on the effectiveness of the macroprudential tools in preventing or mitigating systemic risks.⁵⁶ The effectiveness of these tools also often depends on their reciprocal implementation across borders.⁵⁷

The evaluation of the effectiveness of macroprudential tools suffers from several limitations. It is difficult to isolate the effect of a macroprudential tool from the effect of other macroprudential tools or from the effect of tools utilised by other policies given that policy tools are often used in conjunction.⁵⁸ In addition, the common use of a dummy (binary approach) to assess the effectiveness of macroprudential tools does not account for the magnitude of the tools and/or fine-tuning of the tools that may follow the implementation stage and therefore, may not accurately reflect their effectiveness.⁵⁹ It is, therefore, essential that macroprudential supervisors are wary of the difficulty in transposing evidence on macroprudential tools based on experience in other jurisdictions without a careful assessment of local conditions and their impact on the suitability of the tools, their effectiveness and any potential negative spillovers to other policy areas.

⁵⁵ J Hardie and N Cartwright, *Evidence-based Policy: A Practical Guide to Doing it Better* (OUP, 2012), pp 7-8.

⁵⁶ International Monetary Fund, ‘Macro-prudential Policy; What Instruments and How to Use them? Lessons from Country Experiences’ (2011) IMF Working Papers 11/238.

⁵⁷ Exposure-based measures in particular require reciprocity to ensure their effectiveness. ESRB, *A Review of Macroprudential Policy in the EU in 2016*, April 2017, pp 54-55 explains that “The high prevalence of cross-border lending in the EU means that some of the exposures held and thereby risks taken by foreign banks may fall outside the scope of national macroprudential measures. Measures taken by Member States generally apply to domestic banks and subsidiaries of foreign banks, but not to the branches of foreign banks or to services that are provided directly across borders. As a result, depending on the domicile of the financial services provider, a different set of (macro)prudential requirements may be applicable to the same risk exposure in one country. This regulatory loophole may lead to unintended consequences, i.e. leakages and regulatory arbitrage with the potential to undermine the effectiveness of the national macroprudential measure as well as external effects on other Member States. To mitigate these unintended consequences, reciprocity is required for exposure-based measures...”

⁵⁸ G Galati and R Moessner, ‘What Do We Know About the Effects of Macroprudential Policy?’ (March 2017) LSE *Economica*, 13.

⁵⁹ Ursula Vogel Deutsche Bundesbank, Presentation at the Joint ECB and Banco de Portugal Conference on ‘The Use of Narrative Information in Assessing the Effectiveness of Macroprudential Policies’ Lisbon, 17 November 2017.

2.3 Selection and analysis of evidence: Groupthink

The theory of groupthink was first developed by the social psychologist Irving Janis in the early 70s. Groupthink refers to the mode of thinking that persons engage in when concurrence-seeking becomes so dominant in a cohesive ingroup that it tends to override realistic appraisal of alternative courses of action.⁶⁰ In other words, groupthink is the tendency among homogeneous, cohesive groups to consider issues only within a certain paradigm and not challenge its basic premises.⁶¹ Similar to market bubbles and manias or the behaviour of financial firms, regulators and supervisors can often act “colour-blind in a sea of red flags”.⁶² Benbaou observed that “In the aftermath of corporate and public-sector disasters, it often emerges that participants fell prey to a collective form of willful blindness and overconfidence: mounting warning signals were systematically cast aside or met with denial, evidence avoided or selectively reinterpreted, dissenters shunned.”⁶³

Macroprudential supervisors are no exception. Most macroprudential legal frameworks give central banks a key role, either in the form of central banks having a macroprudential policy mandate or as dominant voting members in an independent and separate macroprudential committee or board.⁶⁴ Having central banks on board has clear advantages, primarily, utilising their technical expertise, enhancing information flow and coordination between macroprudential and monetary policy setters.⁶⁵ It allows for a relatively new policy area to benefit from the long-established and hard-won independence and credibility of central banks. Notwithstanding these considerations, excessive insularity may increase the tendency for groupthink in the macroprudential decision-making process.⁶⁶ Voicing this

⁶⁰ I L Janis, ‘Groupthink’ (1971) *Psychology Today Magazine* 84; See also I L Janis, *Groupthink: Psychological Studies of Policy Decisions and Fiascos* (Boston, Massachusetts: Houghton Mifflin, 2nd ed, 1982). A Sibert, ‘Central Banking by Committee’ (2006) De Nederlandsche Bank Working Paper 91 identified the following factors as leading to groupthink: Insulation from outsiders; Lack of diversity in viewpoints and leaders actively advocating solutions.

⁶¹ IMF, *IMF Performance in the Run-Up to the Financial and Economic Crisis* (2011) IMF Surveillance in 2004–07 (2011) Evaluation Report, 17.

⁶² The expression is borrowed from F Norris, “Color-Blind Merrill in a Sea of Red Flags” (New York Times, 16 May 2008).

⁶³ R Benbaou, ‘Groupthink: Collective Delusions in Organisations and Markets’ (2013) 80 *Review of Economic Studies* (2013) 80, 429.

⁶⁴ ME Rochelle and N Liang, ‘New Financial Stability Governance Structures and Central Banks’, August 2017 Hutchins Center on Fiscal and Monetary Policy at Brookings Working Paper 32.

⁶⁵ The High-Level Group on Financial Supervision in the EU chaired by J de Larosière Report, Brussels, 25 February 2009, paras 174-178.

See also S Mckphilmey, ‘Integrating Macro-prudential Policy: Central Banks as the ‘Third force’ in EU Financial Reform’ (2016) 39(3) *West European Politics* 526.

⁶⁶ W Buijer highlighted other potential problems with assigning a leading role to the ECB in the governance of the ESRB such as potential conflict of interests between the monetary and macroprudential supervision role and undermining the independence of the ECB. W Buijer, ‘The Proposed European Systemic Risk Board is

concern, the Financial Stability Board has warned that in the UK centralising supervisory and systemic roles within the Bank of England increases the potential of creating a groupthink mentality.⁶⁷ Similarly, a recent independent review of the cultural change in UK financial regulators suggested that more needs to be done to prevent groupthink.⁶⁸

Whilst the UK Parliament was cognisant of groupthink and put in place mechanisms to depolarise and diversify the deliberations within the FPC, it remains a strong force that is hard to overcome. As one of the external members of the FPC, self-reflective comments suggest that– “the trouble is the more time you stay there (i.e. Bank of England, my addition), the more you become imbued in its atmosphere and tend to agree with it...”.⁶⁹ As we shall see in the continuation article, the inclusion of external members in macroprudential committees is a necessary but not sufficient antidote to groupthink. Other factors, such as the decision-making rule (consensus or vote), the nature and the transparency of the deliberation,⁷⁰ also have an impact on the degree of groupthink and should be carefully considered when designing the governance of macroprudential supervisors.

2.4 What to do when there is no evidence? Should the precautionary principle be a guiding principle in the macroprudential supervision sphere?

Given that systemic risk analysis is in its infancy, evidence may simply not be out there. It may be that it is outside of the regulatory perimeter and evidence is not being collected (in other words, there is an issue bias) or it may be that there are signs for a build-up of systemic risk but there is no evidence of its magnitude or the tools that should be implemented to address it.⁷¹ By and large, macroprudential policy can be viewed as being in the stage of

Overweight by Central Banks’ *Willem Buiter’s Mavercon* (28 October 2009) <<http://blogs.ft.com>> accessed 20 May 2018.

⁶⁷ FSB, Peer-Review of the UK (September 2013) available at <www.fsb.org/wp-content/uploads/r_130910.pdf> accessed 25 May 2018, on p 18.

For a reply to the concerns of groupthink within the FPC see M Taylor, The Committee of Public Safety (Institute of International Monetary Research, 7 November 2017).

⁶⁸ A Spicer and others, ‘Cultural Change in the FCA, PRA and Bank of England Practising What We Preach?’ Report of New City Agency and Cass Business (October 2016) available at <http://newcityagenda.co.uk/wp-content/uploads/2016/10/NCA-Cultural-change-in-regulators-report_embargoed.pdf> accessed 25 May 2018.

⁶⁹ M Taylor in the Treasury Select Committee Hearing on 18 April 2018, at approximately 16:18 minutes into the hearing.

⁷⁰ J Barabas ‘How Deliberation Affects Policy Opinions’ (2004) 98(4) *American Political Science Review* 687, 699 explains that ‘Deliberation is an enlightened and open-minded search for consensus amid diverse participants.’ These procedural requirements of open-mindedness and diversity of deliberation differentiate it from ordinary discussion.

⁷¹ For instance, the FSB Thematic Review on the Implementation of the FSB Policy Framework for Shadow Banking Entities (May 2016) available at <www.fsb.org/wp-content/uploads/Shadow-banking-peer-review.pdf> accessed 25 May 2018 identified data limitation as well as unavailability of policy tools with the aim of assessing and responding to potential shadow banking risks posed by non-bank financial entities.

“learning by doing”⁷² or evidence-in-the-making, often conducted by trial and error.⁷³ This may clearly inhibit the quality of the decision-making process of macroprudential supervisors and in particular, the timeliness and the effectiveness of their decisions and policy tools. Acknowledging these limitations, officials at the Bank of England have recently suggested that macroprudential supervisors should apply the precautionary principle in their decision-making process.⁷⁴ But could (and should) the precautionary principle be used as a panacea for the absence of sufficient evidence for macroprudential purposes?

The precautionary principle was initially utilised in environmental law and subsequently in other disciplines⁷⁵ to address the need to act where rigorous and tested evidence is absent. It is defined in the Principles of the United Nations Environment Program, as follows: “Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation”.⁷⁶ A similar principle is enshrined in Article 191(2) of the Treaty on the Functioning of the EU⁷⁷ and the UK has implemented a precautionary approach, as early as 1990, in setting its environmental policies.⁷⁸

Since the 2007-2009 financial crisis, there is a growing body of literature on the application of theories, which were developed in relation to ecosystems, as a useful framework for designing and developing financial regulation and in particular,

⁷² D Aikman and others, ‘Rethinking Financial Stability’ (2018) Bank of England Staff Working Paper No. 712 available at <www.bankofengland.co.uk/-/media/boe/files/working-paper/2018/rethinking-financial-stability.pdf> accessed 25 May 2018.

⁷³ A Haldane and R May, ‘Systemic Risk in the Banking Ecosystems’ (2011) 469 *Nature* 351; A Baker, ‘Political Economy and the Paradoxes of Macroprudential Regulation’ (2017) Sheffield Political Economy Research Institute Paper No 40, 4.

⁷⁴ A Foulis and S Bahaj, ‘Uncertainty is No excuse for Not Using Macroprudential Tools’ (2016) BankUnderground available at <<https://bankunderground.co.uk/2016/01/29/uncertainty-is-no-excuse-for-not-using-macroprudential-tools/>> accessed 25 May 2018; S Bahaj and A Foulis, ‘Macroprudential Policy under Uncertainty’ (January 2016) Bank of England Working Paper No 584 though the latter does not refer to the precautionary principle.

See also I Webb, D Baumslag and R Read, ‘How Should Regulators Deal with the Uncertainty? Insights from the Precautionary Principle’ (2017) BankUnderground available at <<https://bankunderground.co.uk/2017/01/27/how-should-regulators-deal-with-uncertainty-insights-from-the-precautionary-principle/>> accessed 25 May 2018.

The proposal to apply the precautionary principle in financial stability regulation is not new. See ST Omarova, ‘License to Deal: Mandatory Approval of Complex Financial Products’, available at <<http://ssrn.com/abstract=1996755>> accessed 10 June 2018, p 21; HJ Hellen, ‘A New Philosophy For Financial Stability Regulation’ (2013) 45 *Loyola University Chicago Law Journal* 173 also advocates the use of precautionary principle in financial stability regulation.

⁷⁵ Nicolas de Sadeleer, *Environmental Principles from Political Slogans to Legal Rules* (OUP, 2002), 93.

⁷⁶ United Nations Environment Program, Declaration of the Rio Conference on Environment and Development June 1992, Principle 15.

⁷⁷ Of 26 October 2012 OJ C 326.

⁷⁸ This Common Inheritance: Britain’s Environmental Strategy, Her Majesty’s Government Cm 1200 (London Sept. 1990).

macroprudential policy.⁷⁹ Financial systems and environmental systems share some commonalities and face similar challenges. Both are complex systems which are potentially exposed to shocks with low probability but high impact.⁸⁰ Furthermore, financial systems and environmental systems are adaptive and evolving.⁸¹ The complexity and the evolving nature of financial markets make them inherently difficult to predict, as was evident in the securitisation breakdown during the 2007-2009 financial crisis:

“...complexity obscures the past and the present and makes the future harder to predict. Particularly where evolution is accelerating, and new complexities are emerging, it gets easier and easier to make mistakes. In many ways, the breakdown in the securitization process was due to the fact that it was rapidly evolving – becoming more complex, etiolated and very opaque. Few market practitioners and fewer regulators understood it from stem to stern soon enough to do anything about it.”⁸²

In such an uncertain environment, the precautionary principle can alleviate the inherent inaction bias of macroprudential supervisors. But is the precautionary principle at odds with the strong rationales discussed in Part 1, which clearly support an evidence-based approach in that sphere?⁸³ Could its application jeopardise the ability of market participants to take risks so very vital for the effective operation of financial markets?

Taleb and Read, two scholars from the NYU School of Engineering and School of Philosophy, explore the nuances of the precautionary principle and sketch out its boundaries.⁸⁴ They draw a distinction between decisions with a risk of harm which does not warrant the precautionary principle and decisions with a risk of total ruin which does warrant

⁷⁹ AG Haldane and RM May, ‘Systemic Risk in Banking Ecosystems’ (2011) 469 *Nature* 351; C Taylor, *Evolution and Macro-Prudential Regulation* (American Enterprise Institute, Washington DC, 2011); National Research Council. 2007. *New Directions for Understanding Systemic Risk: A Report on a Conference Cosponsored by the Federal Reserve Bank of New York and the National Academy of Sciences* (The National Academies Press, Washington DC, 2007).

⁸⁰ S Battiston and others, ‘Complexity Theory and Financial Regulation’ (2016) 351(6275) *Science* 818-819; D Awrey, ‘Complexity, Innovation and the Regulation of Modern Financial Markets’ (2011) University of Oxford Legal Research Paper No. 49, 38.

On exposure to catastrophic and irreversible shocks and how environmental regulation addresses these risks via the precautionary principle see C Sunstein, ‘Irreversible and Catastrophic’ (2005-2006) 91 *Cornell Law Review* 841, 842.

⁸¹ Given that both systems operate in a changing and resource-constrained environment. Taylor (n 77), 6.

⁸² Taylor (n 79), p 15; See also S L Schwarcz, ‘Regulating Complexity in Financial Markets’ (2009) 87(2) *Washington University Law Review* 211.

⁸³ Although the precautionary principle may be a barrier to evidence-based policy-making, this is not always the case. Under certain circumstances, it can be enabling by encouraging policy makers to engage with the evidence. M Monaghan, Mark, R Pawson and K Wicker, ‘The Precautionary Principle and Evidence-Based Policy’ (2012) 8(2) *Evidence and Policy* 171.

⁸⁴ N Taleb, R Read and others, ‘The Precautionary Principle (with Application to the Genetic Modification of Organisms)’ (2014) NYU School of Engineering Working Paper Series.

the precautionary principle.⁸⁵ A *ruin problem* is defined as one where outcomes of risks have a non-zero probability of resulting in unrecoverable losses. Taleb and Read argue that when assessing the existence of a ruin problem, the focus should be on the aggregate, not at the level of single individuals, and on global systemic, not idiosyncratic, harm. The key test to define a system which achieves ruin is, therefore, that the system cannot recover. In their paper, Taleb and Read further distinguish between the precautionary and the evidentiary approach. They suggest that “In an evidentiary approach to risk (relying on evidence-based methods), the existence of a risk or harm occurs when we experience that risk or harm. In the case of ruin, by the time evidence comes it will, by definition, be too late to avoid it. Nothing in the past may predict one fatal event...”.⁸⁶ Accordingly, they conclude that an evidence-based approach simply does not work on ruin events.

But can we borrow these distinctions to macroprudential policymaking and suggest that macroprudential supervisors reduce reliance on evidence where there is a risk of a ruin event (or more accurately, when their inaction may lead to the materialisation of a ruin event)?

It is suggested here that the application of the precautionary principle meets several limitations and challenges⁸⁷ in the sphere of macroprudential policy.

First, in the domain of macroprudential policy, we deal, in the first place, with rare events with the potential to result in high costs to society if they materialise. This is the essence of systemic risks and indeed the essence of policymaking in this area. Therefore, applying the precautionary principle in the macroprudential decision-making process is too crude⁸⁸ and could result in a slippery slope where policy actions, to a large extent, are not fully supported by evidence. It will introduce another layer of complexity to an already complex policy area and decision-making process, as indicated in Part 1. Furthermore, it is doubtful whether the right balance between, on the one hand, innovation in financial markets and its associated benefits and on the other hand, prevention or mitigation of systemic risks can be achieved via the application of the precautionary principle. In practical terms, the

⁸⁵ This corresponds with the definition of the precautionary principle in the Rio Declaration (n 74).

⁸⁶ Taleb and Read (n 84), pp 3-4.

⁸⁷ In other areas, the principle is far from being immune to criticism. For instance, in the environmental and public health fields see BF Cross, ‘Paradoxical Perils of the Precautionary Principle’, (1993) 53 *Washington and Lee Law Review* 851; GE Marchant, ‘From General Policy to Legal Rule: Aspirations and Limitations of the Precautionary Principle’ (2013) 111 *Environmental Health Perspectives* 1799 who emphasise, in particular, the ambiguity of the principle.

⁸⁸ CR Sunstein, ‘Beyond the Precautionary Principle’ (2003) 151 *University of Pennsylvania Law Review* 1003, 1055.

precautionary principle may unduly stifle innovation and result in unwarranted costs to the real economy.⁸⁹

Second, there is a cost to a false alarm or being overly cautious. If macroprudential supervisors do indeed act upon the precautionary principle and persistently produce false alarms⁹⁰ their credibility could be severely undermined and consequently, the effectiveness of their future policy decisions weakened. Given that the powers of macroprudential supervisors are often based on soft law, the effectiveness of their policy decisions heavily depends on their reputation and credibility.⁹¹

Finally, and most importantly, embedding the precautionary principle in the macroprudential policy decision-making process will require supervisors to distinguish between a ruin event and a non-ruin event. It is very difficult, however, to articulate what a ruin event means when it is framed in terms of financial stability. The scholars at the Bank of England did not go far enough to operationalise the precautionary principle in macroprudential policymaking and left the standard for invoking it ambiguous.

Furthermore, an assessment of the guidance, which was established in other disciplines for invoking the precautionary principle, suggests that ruin as a distinguishing factor may not be suitable when taking macroprudential policy decisions. Scholarship on the precautionary principle presents several formulations ranging from a strong form which creates a presumption that regulatory intervention is needed where a private activity poses serious risks to important public interest (or take no action unless you are certain that it will do no harm) to the weaker version which places the burden on risk creators to overcome a

⁸⁹ But J Crotty and G Epstein, 'A Financial Precautionary Principle: New Rules for Financial Products Safety' (July 2009) Wall Street Watch Working Paper No 1, p 4 suggest that financial innovation is often designed "to avoid taxes, evade financial regulations and redistribute income from stakeholders or customers to groups within the financial commodity chain" whilst there is little evidence on their positive impact on economic growth or development. In contrast, see RE Litan, 'In Defense of Much, But Not All, Financial Innovation' (2010) Brookings Institution Research Paper 16 demonstrates that, in fact, there are more- good financial innovations than bad ones.

⁹⁰ In the absence of a clear guidance to apply it. On the difficulty in balancing the trade-off between false-positives (missing crises) and false-negative (being overly cautious) see D Bonfim and N Monteiro, 'The Implementation of Countercyclical Buffer: Rules versus Discretion' (November 2013) Banco de Portugal Financial Stability Report, pp 87-110.

For example, given the relatively long lags in the implementation and impact of the Countercyclical Buffer it should be activated relatively early in the financial cycle. This, in turn, increases the possibility of false alarms, and thus macroprudential supervisors may set it at low level to mitigate the potential false alarm. Setting the level of the Countercyclical buffer too low, however, may have a detrimental effect on its effectiveness. See A Houben, R Nijskens and M Teunissen, 'Putting Macroprudential Policy to Work' (2014) 12(7) DeNederlandscheBank Occasional Studies 27 available at <https://www.dnb.nl/binaries/os7_tcm46-313965.pdf> accessed 10 June 2018.

⁹¹ E Ferran and K Alexander, 'Can Soft Law Bodies be Effective? The Special Case of the European Systemic Risk Board' (2011) 37(6) European Law Review 751.

default response by proving that the risks are acceptable and reasonable.⁹² Other versions differ in the level of uncertainty that is needed to warrant intervention by the regulator and the tools used where uncertainty exists.⁹³

To begin with, it is doubtful whether these formulations are suitable for macroprudential supervision. For instance, how could the weaker form of the precautionary principle be applied, and the burden of evidence discharged when the private activity which may result in a build-up of systemic risk is not confined to a particular product or market? Moreover, given that financial stability depends on so many factors, endogenous and exogenous, it will be very difficult and costly, if not impossible, for risk creators to demonstrate that their activities or products do not create systemic risks to financial stability.

Similarly, the strong formulation of the precautionary principle is not well suited to the macroprudential sphere. It would jeopardise one of the important characteristics of financial markets - their adaptability.⁹⁴ Financial systems are adaptive since they derive not only from economic factors but also from social ones. They are dynamic, learn from experience, adjust and evolve their response over time.⁹⁵ Taking a hyper-cautious approach to regulation and supervision would stifle financial markets and will inhibit their adaptability. Putting this adaptability at risk may, in turn, make financial systems more structurally and functionally rigid and prone to contagion. Going back to Taleb and Read's distinguishing factor of a ruin event, a fundamental change in the structure of financial markets, taking place as part of their adaptability process, could be considered irreversible and be classified as ruin event but is still warranted and will result in beneficial economic growth. Indeed, the use of the precautionary principle in the public policy domain as an appropriate guide was challenged as follows: "General application of the "trial without error" strong PP

⁹² Or says that lack of full certainty is not a justification for preventing an action that might be harmful. J Morris, *Defining the Precautionary Principle* in J Morris ed *Rethinking Risk and the Precautionary Principle* (Butterworth-Heinemann, Oxford, 2000).

⁹³ N Sachs, 'Rescuing the Strong Precautionary Principle From its Critics' (2011) *University Illinois Law Review* 1285, 1295; RB Stewart, *Environmental Regulatory Decision Making Under Uncertainty* in *Research in Law and Economics* (Timothy Swanson ed., 2002) identifies four versions of the precautionary principle.

⁹⁴ The capacity to leave a path that may have proven successful in the past in favour of a new trajectory. S Dawley, A Pike and J Tomaney, 'Towards the Resilient Region?: Policy Activism and Peripheral Region Development' (2010) *Spatial Economics Research Centre Discussion Paper* 53.

⁹⁵ On the economy as an adaptive complex system see, for instance, JH Holland, 'The Global Economy as an Adaptive Process' in PW Anderson, KJ Arrow and D Pines (eds), *The Economy as an Evolving Complex System* (Addison-Wesley, 1988); CH Hommes, 'Financial Markets as Nonlinear Adaptive Evolutionary Systems' (2001) *1(1) Quantitative Finance* 149.

More recently, AW Lo constructs the Adaptive Market Hypothesis based on the insight that operation of investors and financial markets is more like biology than physics and suggest that they follow biological laws where the key is adaptive behaviours in a shifting environment. A W Lo, *Adaptive Markets Financial Evolution at the Speed of Thought* (Princeton University Press, 2017), pp 3 and 8.

(precautionary principle, my addition) may prevent people from making some mistakes, but it also prevents them learning from those mistakes and from overcoming the mistakes of the past”.⁹⁶

It is, therefore, suggested that introducing the precautionary principle to the decision-making process of macroprudential supervisors would be a dangerous move. Instead, to address rare and potentially ruin events with a catastrophic impact, macroprudential supervisors should focus, alongside prevention and mitigation of systemic risk, on building the resilience of the financial system.⁹⁷ Resilience preserves the ability of the financial system to adapt when faced with shocks in a way that maintains its core functionality (“bounce forward”),⁹⁸ rather than merely quickly re-bouncing to its previous state. Bouncing forward will also enhance the ability of the financial system to withstand or cope with future shocks.⁹⁹

In practice, resilience is already being used as a target to guide macroprudential policy decisions. One of the FPC’s external member observed that: “...whilst, I’m content that the FPC should take account of its indicators and its forecasts, it must always provide for resilience and capital strength that takes account of the reality of unpredictable events.”¹⁰⁰ Countercyclical capital buffer (CCyB) is an instructive example of a macroprudential tool with a stated objective of increasing the resilience of the financial system. It is designed to build-up in “good times” during the boom phase and to be released during the bust when financial conditions tighten. In its policy statement on the approach to setting CCyB, the FPC explained how it corresponds with the evolving nature of financial markets – “...judgement plays a material role in all FPC decisions and policy is not mechanically tied to any specific set of indicators...The FPC will update this list of indicators over time as it learns from

⁹⁶ Morris (n 92), 10.

⁹⁷ The political scientist, Aaron Wildavsky, rejected the precautionary principle and argued in favour of resilience as a guiding principle – “Conservatism in regulation would be appropriate if there were a limited area of uncertainty that needed to be bounded...When there is an ocean of ignorance... there is no way of hedging, because we do not know where we are... When, then, would be an appropriate strategy for ignorance, for not knowing probabilities of harm? The answer lies in what ecologists call resilience, whereby robust species adapt to and surmount newly arising adversities...” A Wildavsky *But Is It True?: A Citizen’s Guide to Environmental Health and Safety Issues* (Harvard University Press, 1995); More recently, GE Marchant and YA Steven, ‘Resilience: A New Tool in the Risk Governance Toolbox for Emerging Technologies’ (2017) 51(1) UC Davis Law Review 233 support resilience over the precautionary principle in governance of emerging technologies.

⁹⁸ i.e. continue to assess, price, allocate, and manage financial risks while facilitating the performance of an economy. GJ Schinasi, “Defining Financial Stability” (2004) IMF Working Paper 187, p.6

⁹⁹ Alternatively, a resilient financial system would possess the ability to withstand the impact of the shock or will have a reduced probability of a shock (“shock absorption” aspect). A Keller, ‘The Mandate of the European Systemic Risk Board and Resilience as an Essential Component: Part 2’ (2015) 31(2) JIBLR 65.

¹⁰⁰ R Sharp, Financial stability in an Unpredictable World (Nottingham Trent University, 12 October 2015) available at <<https://www.bankofengland.co.uk/-/media/boe/files/speech/2015/financial-stability-in-an-unpredictable-world.pdf>> accessed 10 June 2018.

experience, as the financial system evolves, as data availability and quality improve, and as new research is undertaken...”¹⁰¹

This ‘trial and error’ phase is a clear limitation of an evidence-based approach. The answer, however, should not be found in introducing the precautionary principle into the macroprudential decision-making process. Rather, alongside monitoring financial markets to identify systemic risks macroprudential supervisors should be guided by building up the resilience financial systems whilst maintaining their adaptability intact.

Part 3 –independence, accountability, transparency and diversity

To counter the biases identified in part 2 and mitigate their effect, it is suggested that the governance of macroprudential policy supervisors should be based on four building blocks: independence, accountability, transparency and diversity.

To begin with, the traditional trilogy of concepts, independence, accountability and transparency, have long been recognised as key pillars in the institutional framework of financial supervision and monetary policy and there is a broad consensus on their necessity as prerequisites for good governance.¹⁰² The basic rationale for delegating authority for monetary policy to an independent agency¹⁰³ equally applies to macroprudential supervision. Similar to interest rate policy, elected officials may be tempted to distort macroprudential supervision for short-term electoral gain.¹⁰⁴ This temptation is all the greater in the macroprudential sphere in light of the potential unpopularity and distributional effect of the policy decisions, as discussed in Part 1. Accountability, in turn, is vital for legitimising the independence of an unelected agency to which powers have been delegated.¹⁰⁵ As an independent supervisor, to varying degrees, the macroprudential supervisor needs this legitimacy as well. Furthermore, the case for transparency in macroprudential supervision is very strong.¹⁰⁶ Transparency is an essential component for ensuring the accountability of the

¹⁰¹ The FPC’s Approach to Setting the Countercyclical Capital Buffer, Policy Statement, April 2016.

¹⁰² BS Bernanke, ‘Central Bank Independence, Transparency, and Accountability’ (Institute for Monetary and Economic Studies International Conference, Bank of Japan, Tokyo, Japan, 25 May, 2010); D. Masciandaro, P. Rosaria and M. Quintyn, ‘The Economic Crisis: Did Financial Supervision Matter?’ (2011) IMF Working Paper 261, p.6 referring also to integrity as a prerequisite for good governance.

¹⁰³ M Quintyn and MW Taylor, ‘Regulatory and Supervisory Independence and Financial Stability’ (2002) IMF Working Paper 46.

¹⁰⁴ JM Buchanan and RE Wagner, *Democracy in Deficit the Political Legacy of Lord Keynes* (New York: Academic Press, 1977).

¹⁰⁵ For a similar justification in monetary policy see ECB, ‘Accountability of the ECB’ ECB Monthly Bulletin (November 2002).

¹⁰⁶ C Freedman, ‘The Value of Transparency in Conducting Monetary Policy’ (2002) 84 Federal Reserve Bank of Saint Louis Review 84, 155; A Blinder and others, ‘How Do Central Bank Talk?’ Geneva Report on the World Economy 3 (Geneva: International Center for Monetary and Banking Studies, 2001).

macroprudential supervisor to the political fora and to the general public. Information regarding the conduct of the macroprudential supervisor and its policy decisions is crucial for the assessment of its performance and can enhance the legitimacy of its policy decisions.¹⁰⁷ Transparency can also be used as a signalling tool, assist in shaping the future behaviour of financial markets and potentially prevent those risks from materialising.¹⁰⁸

Together, independence, accountability and transparency can attenuate or even inoculate the biases discussed in part 2. For instance, there is evidence to suggest that accountability can reduce some groupthink tendencies, lead to more active participation in decision-making and a critical attitude towards group decisions.¹⁰⁹ Independence, accountability and transparency can also counteract the tendency of macroprudential supervisors towards inaction bias and encourage a proactive approach to policy in which reasons for taking actions as well as reasons for *not* taking actions must be justified.¹¹⁰

In addition to these deeply rooted principles, it is suggested that diversity should also form an integral part of the governance of macroprudential supervisors as a key tool to debias macroprudential decision making and reinforce its evidence-based approach. Where decisions concern complex and ambiguous problems, their quality can be improved through genuine deliberation, expression of contrary views, consideration of multiple perspectives and evaluation of alternative views.¹¹¹

The continuation article therefore, will delve deeper into the concept of diversity and explore its nature and key dimensions within the macroprudential policy institutional setting and decision-making process. It will draw on the burgeoning scholarship on group decision

¹⁰⁷ Group of Thirty Report, *Enhancing Financial Stability and Resilience, Macroprudential Policy, Tools and Systems for the Future* (October 2010), p.61.

¹⁰⁸ D Kohn, 'Enhancing Financial Stability: The Role of Transparency' (Financial Markets Group, London School of Economics, 6 September 2011).

See also F Liedorp, R Mosch, C van der Crujssen and J de Haan, 'Transparency of Banking Supervisors' (2013) 61(2) *IMF Economic Review* 310; A Burgi-Schmelz and others, 'Enhancing Information on Financial Stability', *Proceedings of the IFC Conference on Initiatives to Address Data Gaps revealed by the Financial Crisis*, Basel (25–26 August 2010).

¹⁰⁹ MBR Kroon, P Hart, D van Kreveld, 'Managing Group Decision Processes: Individual versus Collective Accountability and Groupthink' (1991) 2(2) *International Journal of Conflict Management* 91.

¹¹⁰ J de Haan and Sander Oosterloo, 'Transparency and Accountability of Central Banks in their Role of Financial Stability Supervisor in OECD Countries' (2006) 22 *European Journal of Law and Economics* 255.

¹¹¹ LR Hoffman, E Harburg and N Maier, 'Differences and Disagreement as Factors in Creative Group Problem Solving' (1962) 64 *Journal of Abnormal and Social Psychology* 206; HC Triandis, ER Hall and RB Ewen, 'Member Homogeneity and Dyadic Creativity' (1965) 18 *Human Relations* 33; C Nemeth, 'Differential Contributions of Majority and Minority Influence' (1986) 93 *Psychological Review* 23.

J Barabas 'How Deliberation Affects Policy Opinions' (2004) 98(4) *American Political Science Review* 687, 699 explains that "Deliberation is an enlightened and open-minded search for consensus amid diverse participants." These procedural requirements of open-mindedness and diversity of deliberation differentiate it from ordinary discussion.

making, *inter alia*, in the Organisational Behaviour discipline. In particular, a key stream in the behavioural strategy field highlights the importance of diverse groups in reducing cognitive biases by fostering information sharing and introducing new perspectives in the decision-making process.¹¹² The continuation article, ‘Debiasing Macroprudential Policy: Part 2’, will suggest that in order to deliver meaningful diversity that encourages genuine deliberation in macroprudential decision-making, a nuanced and non-monolithic approach is needed. This means going beyond the heterogeneous composition of the macroprudential authority and considering a variety of factors such as the decision-rule, the facilitative rather than autocratic role of the chair and the transparency of dissenting viewpoints. By taking this approach, diversity can dissipate inherent biases in the macroprudential decision-making process and in particular, guard against groupthink.

Conclusion

Taking an evidence-based approach to inform macroprudential policy decisions appears to be the most natural and intuitive approach to an effective macroprudential supervision. This approach, however, is fraught with complexity and inherent biases, such as issue bias, inaction bias and groupthink. The paper suggests that where comprehensive and timely evidence is absent, the precautionary principle may not be the most suitable mechanism, and perhaps even a dangerous one, to guide macroprudential policy decisions. Rather, the existing rhetoric, often used by macroprudential supervisors, of resilience could serve the same purpose and fit in well with the nature and features of the macroprudential sphere.

Acknowledging the limitations and challenges in taking an evidence-based approach in the macroprudential decision-making exposes the need for good governance of evidence. This can be achieved through independence and solid accountability and transparency arrangements. The article further argues that diversity should be a complementary building block in the governance of macroprudential supervisors. External members coming from different jurisdictions and backgrounds can assist in challenging existing paradigms, debiasing inherent biases and ultimately enhancing the effectiveness of macroprudential

¹¹² RP Larrick, Debiasing in *DJ Koehler and N Harvey* (Eds.), *Blackwell Handbook of Judgment and Decision Making* (Oxford: Blackwell Publishing, 2004);

For a recent overview of behavioural strategy studies see P Meissner and W Torsten, ‘The effect of Cognitive Diversity on the Illusion of Control Bias in Strategic Decisions: An experimental Investigation’ (2017) 35 *European Management Journal* 430.

policymaking.¹¹³ Diversity may challenge the risk that technocrats, captured in a constrained frame of conceptions, may fail to identify in-time the build-up of systemic risks.

¹¹³Interestingly, diversity in macroprudential sphere could expand beyond governance and can also relate to the range of instruments implemented by macroprudential supervisors. This is consistent with Brainard's seminal work that suggests that under uncertainty policymakers should use, cautiously all available tools. Brainard, 'Uncertainty and the Effectiveness of Policy' (1967) 57 *American Economic Review Papers and Proceedings* 411. See also, more recently, BIS, *Moving Forward with Macroprudential Frameworks*, Annual Economic Report (June 2018).