

Product Intervention as a Macroprudential Tool: the Case of Catastrophe Bonds
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Abstract

One effect of the financial crisis of 2007-2009 was to jump-start a focus on macroprudential supervision, a supervisory approach which adopts a birds' eye view in assessing and addressing systemic threats to financial stability. Because threats to the financial system may derive not just from the financial reach and exposure of large systemically relevant corporations, but also from broader financial activity leading to the design of innovative financial products and from their prevalence and distribution in the financial markets, we float the hypothesis that product intervention powers may in future be useful to financial supervisors attempting to address systemic risk deriving from financial innovation and growth. We test this hypothesis by using the catastrophe bond markets, as a case study.

Extreme climate-related events are increasing in magnitude and frequency as a result of climate change, and consequent losses are likewise increasing. The need to transfer these risks is leading to an increase in demand for insurance, but the demand is beginning to exceed the capacity of traditional insurance and reinsurance. This has given rise to growth in a type of beneficial financial innovation – the creation of instruments the function of which is to transfer these risks to the capital markets. The prevalence of catastrophe bonds in the financial markets is therefore growing, with the number of issues increasing steadily year on year and on the back of this, a number of cat-linked derivatives are beginning to be traded in the markets. This paper argues that a number of features of the design and distribution of these financial instruments may in future render them systemically relevant, particularly in view of the potential for significant common exposures to develop, which, should widespread and significant losses occur, may engender panic in the financial markets.

This paper poses the question, in view of the potential systemic relevance of these insurance-linked securities and derivatives, as well as their distribution, could it be that the right way to address these risks is through the exercise of product intervention powers rather than by other regulatory means? And if yes, to what extent can such powers, deriving from UK and EU law, be exercised for the achievement of macroprudential goals? More broadly, it asks - what lessons can be learnt from analysis of the cat bonds markets on product intervention as a macroprudential tool to prevent or mitigate the build-up of systemic risk to financial stability?

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A. Introduction

One effect of the financial crisis of 2007-2009 was to jump-start a focus on macroprudential supervision, a supervisory approach which adopts a bird's-eye view in assessing and addressing systemic threats to financial stability.¹ While a major task following the crisis was to end “too-big-to-fail”,² threats to the financial system may derive not just from the financial reach and exposure of large systemically relevant corporations, but also from broader financial activity leading to the design of innovative financial products and from their prevalence and distribution in the financial markets. Thus, the massive increase in securitization activity leading to the issuance of mortgage- and asset-backed securities between 2000 and 2007 was a significant driver of the systemic problems which followed.³

In this article, we float the hypothesis that product-focused supervisory tools, termed product intervention powers, developed in Europe following the financial crisis, permit a supervisor to impose restrictions on the design, use, terms, or marketing of financial products, may in future be useful to financial supervisors attempting to address systemic risk deriving from financial innovation and growth. We test this hypothesis by using the catastrophe bond (or “cat bond”) markets, as a case study. We explore the reasons for which these markets may expand rapidly in the future, how they might become a source of systemic risk, and how product intervention powers may serve in the hands of regulators to address these risks in an efficient and timely manner.

Why cat bonds? Extreme climate-related events are increasing in magnitude and frequency as a result of climate change,⁴ and consequent losses, including the costs of recovery, repair and reinstatement after such events, are likewise increasing. The desire to transfer these risks is leading to an increase in demand for insurance, but the demand is beginning to exceed the capacity of traditional insurance and reinsurance. This has given rise to growth in a type of

¹ M Brunnermeier and others, *The Fundamental Principles of Financial Regulation*, Geneva Report on the World Economy 11, International Center for Monetary and Banking Studies and Centre for Economic Policy Research, June 2009, available electronically at <https://www.princeton.edu/~markus/research/papers/Geneval1.pdf> (accessed 20.08.2018); Bank of England Discussion Paper, ‘The Role of Macro-prudential Policy’ [2009] available electronically at <https://www.bankofengland.co.uk/-/media/boe/files/paper/2009/the-role-of-macroprudential-policy.pdf> (accessed 20.08.2018); Group of Thirty (G30), ‘Enhancing Financial Stability and Resilience, Macroprudential policy, Tools and Systems for the Future, October 2010 available electronically at http://group30.org/images/uploads/publications/G30_EnhancingFinancialStabilityResilience.pdf accessed (20.08.2018); K French and others, *The Squam Lake Report: Fixing the Financial System* (PUP, 2010), 34-44; S Hanson, A Kashyap and J Stein, ‘A Macroprudential Approach to Financial Regulation’ (2011) 25 *J of Economic Perspectives* 3; D Schoemaker and P Wierst, ‘Macroprudential Policy: The Need for a Coherent Policy Framework’ [2011] Duisenberg School of Finance Policy Paper 13 available electronically at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1876595 (accessed 20.08.2018).

² A Wilmarth, ‘The Dodd-Frank Act: A Flawed and Inadequate Response to the Too-Big-To-Fail Problem’, (2011) 89 *Oregon Law Review*, 951-1057.

³ See for instance, E Tymoigne, ‘Securitization, Deregulation, Economic Stability, and Financial Crisis, Part II: Deregulation, the Financial Crisis, and Policy Implications’ Working Paper No. 573.2 The Levy Economics Institute of Bard College California State University, Fresno August 2009 and J C Stein, ‘Securitization, Shadow Banking, and Financial Fragility’ (2010) 139 (4) *Daedalus* 41-51 available electronically at <https://scholar.harvard.edu/stein/publications/securitization-shadow-banking-and-financial-fragility> (accessed 20.08.2018).

⁴ See R Russell, ‘Climate change and extreme weather: Science is proving the link’, *Deutsche Welle*, 11th April 2018, available electronically at <https://www.dw.com/en/climate-change-and-extreme-weather-science-is-proving-the-link/a-43323706> (accessed 10.08.2018). See also Carbon Brief, ‘Mapped: How Climate Change Affects Extreme Weather Around the World’, *Attribution*, 16th July 2017, available electronically at <https://www.carbonbrief.org/mapped-how-climate-change-affects-extreme-weather-around-the-world> (accessed 10.08.2018), which maps multiple academic studies attributing extreme weather to climate change.

beneficial financial innovation – the creation of instruments the function of which is to transfer these risks to the capital markets. The prevalence of catastrophe bonds, a type of insurance-linked security, in the financial markets is therefore growing, with the number of issues increasing steadily year on year. Their popularity with investors is due, among other things, to the relatively high yield these financial instruments offer, to their low correlation with other asset classes and to their growing commoditization (through the use of risk-modelling and parametric indices). Further innovations leading to derivative products are also being proposed⁵ and it is also possible to issue cat-linked futures, swaps and options. If these instruments are used for speculation, rather than for the genuine transfer of risk, this innovation may eventually develop the potential to multiply exponentially the financial impact of catastrophic events.

Indeed, a number of features of the design and distribution of these financial instruments may in future render them systemically relevant, particularly in view of the potential for significant common exposures to develop, which, should widespread and significant losses occur, may engender panic in the financial markets.

Due to the fact that cat bonds to date remain a relatively niche product, they have not so far featured in any systemically significant market activity. However, investor reactions to the Alberta Wildfires of 2016⁶ and to the Harvey⁷ and Irma⁸ Hurricanes in August and September 2017 can give an indication of the kind of impact which more widespread holdings and extensive exposures could have, especially should a “black swan”⁹ natural catastrophe occur. In particular, even before Hurricane Irma struck Florida, ‘[t]he Swiss Re catastrophe bond price return index suffered its biggest drop since at least 2002, tumbling 16 per cent ... from the previous week.’¹⁰

This paper poses the question, in view of the potential systemic relevance of the product itself and its distribution, could it be that the right way to address these risks is through the exercise of product intervention powers rather than by other regulatory means? And if yes, to what extent can these powers be exercised for this purpose in the UK? More broadly, it asks – what lessons does an analysis of the cat bonds market offer regarding the role of product intervention as a macroprudential tool to prevent or mitigate the build-up of systemic risk to financial stability?

The rest of the article is in four sections. Section B gives an overview of insurance-linked securities (ILS) and cat-bonds as products of securitisation activity, including an explanation of the structure and triggers of the latter. It also discusses the features in the design and distribution of cat bonds that may potentially make them systemically significant in the future, and therefore of interest to macroprudential supervisors, who, we argue, fail to monitor trends and developments in this market at their peril. Section C explains product intervention powers and

⁵ See for example the proposal for contingent convertible catastrophe bonds (CoCoCat) in K Burnecki, M N Giuricich and Z Palmowski, ‘Valuation of contingent convertible catastrophe bonds - the case for equity conversion’, Cornell University Library, arXiv:1804.07997v1 [q-fin.PR], 21st Apr 2018, available electronically at <https://arxiv.org/abs/1804.07997v1> (accessed 20.08.2018).

⁶ Artemis, *Fort McMurray wildfire insurance loss up slightly to C\$4.7bn: PCS*, 17th August 2016 available electronically at <http://www.artemis.bm/blog/2016/08/17/fort-mcmurray-wildfire-insurance-loss-up-slightly-to-c4-7bn-pcs/> (accessed 09.09.2017) and Artemis, *ILS fund & sidecar losses likely ahead of plan in 2016: Panelists*, available electronically at <http://www.artemis.bm/blog/2016/07/08/ils-fund-sidecar-losses-likely-ahead-of-plan-in-2016-panelists/> (accessed 09.09.2017).

⁷ Artemis, *Cat bond market drops on Harvey, close shave for Fonden 2017 deal?*, 28th August 2017, available electronically at <http://www.artemis.bm/blog/2017/08/28/cat-bond-market-drops-on-harvey-close-shave-for-fonden-multicat-deal/> (accessed 29.08.2017). See esp. reference to ‘an investor offloading their stake in these bonds in case of a loss.’

⁸ See S Platt and N Bullock, ‘Investors in Catastrophe Bonds flee Irma Fury’, *Financial Times*, 8th September 2017.

⁹ See N N Taleb, *The Black Swan: The Impact of the Highly Improbable* (Penguin, 2008).

¹⁰ Platt and Bullock (n 8).

the reasons why they may be a good option for addressing systemic risks deriving from trends in the design and distribution of cat bonds. Section D evaluates the product intervention powers at the disposal of the UK financial regulatory authorities under current law and assesses the extent to which these powers may be used for macroprudential purposes. Section E concludes.

While adopting cat bonds as a financial product case study and focussing mainly on the powers currently available to the UK regulator for evaluative purposes, this article has wider implications. By giving an example of products which may at present be non-systemic but which have the potential to become so in future, and analysing how new regulatory powers may be harnessed to address emerging dangerous trends as they are identified, it points to wider implications for macroprudential supervision. In particular, it represents a case-study of how macroprudential supervisors may be innovative in achieving their mandates.

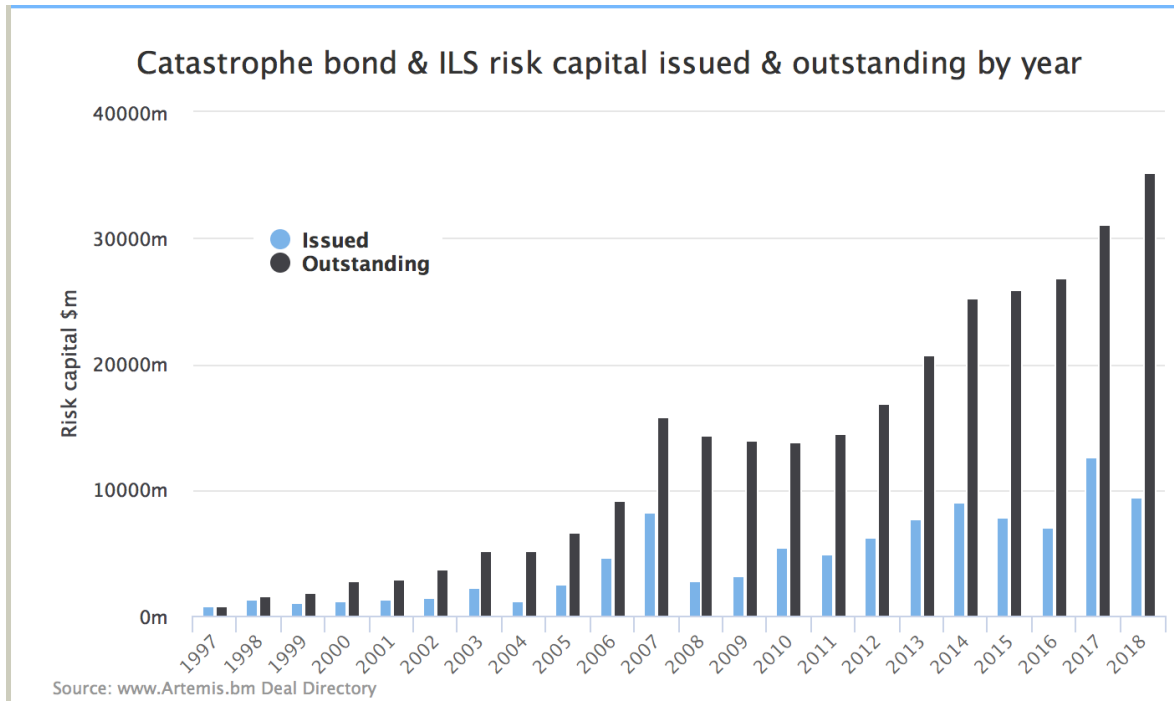
B. Background

B.1 Insurance-linked securities and cat bonds

Insurance-Linked Securities (ILS) are an alternative to traditional reinsurance, a device for alternative risk transfer (ART). In traditional reinsurance, an underwriter of reinsurance agrees to pay specified types and amounts of underwriting loss incurred by an insurer in return for a premium, resulting in the insurer “laying off” risk to the reinsurer. The reinsurance contract may be facultative in that it covers an individual risk exposure or a treaty, which covers multiple risk exposure. By contrast, when ILS are issued, risk originating in the insurance market is transferred to the capital markets. ART products are typically collateralized by the capital from investors. Typical investors in such products are hedge funds and pension funds. ILS are rated for risk of default by Credit Rating Agencies. They pay periodic coupons to investors which consist of a risk-free return plus a spread that depends on the risk of default and market conditions at time of issue. The principal is at risk following a trigger event. A semi-liquid secondary market exists facilitated by specialist broker-dealers. A large proportion of the ILS market consists of cat bonds, but there are other types mainly linked to life risk (including embedded value securitization, extreme mortality securitization, life settlements securitization, longevity swaps and reserve funding securitization). Very recently there have been suggestions that cyber-risk will be securitized in the future, and there is much hype around the possibilities that this presents.¹¹ The current size of the ILS market is small but growing steadily as may be seen from figure 1 below.

¹¹ See Artemis, *Capital markets a natural fit for cyber risks, as evidenced by WannaCry*, 18th May 2017, available electronically at <http://www.artemis.bm/blog/2017/05/18/capital-markets-a-natural-fit-for-cyber-risks-as-evidenced-by-wannacry/> (accessed 09.09.2017); R Amaral, *Cyber Risks and ILS*, Risk & Insurance, 15th October 2016, available electronically at <http://riskandinsurance.com/cyber-risks-ils/> (accessed 09.09.2017); BNY Mellon, *Insurance Linked Securities: Cyber Risk, Insurers and the Capital Markets*, White Paper, April 2016, available electronically at <https://www.bnymellon.com/emea/en/our-thinking/insurance-linked-securities-cyber-risk-and-the-capital-markets.jsp> (accessed 09.09.2017).

Figure 1
 Issued/Outstanding ILS Q2 2018¹²



Source: Artemis

B.1.1 Cat bond structures

Catastrophe bonds (or “cat bonds”) are a popular type of ILS and a means for insurers to transfer the risk of property losses caused by natural catastrophes. A cat bond is issued by a sponsor, usually an insurer wishing to transfer risks that exceed its carrying capacity. Figure 2 below gives a visual representation of a typical cat bond structure.¹³

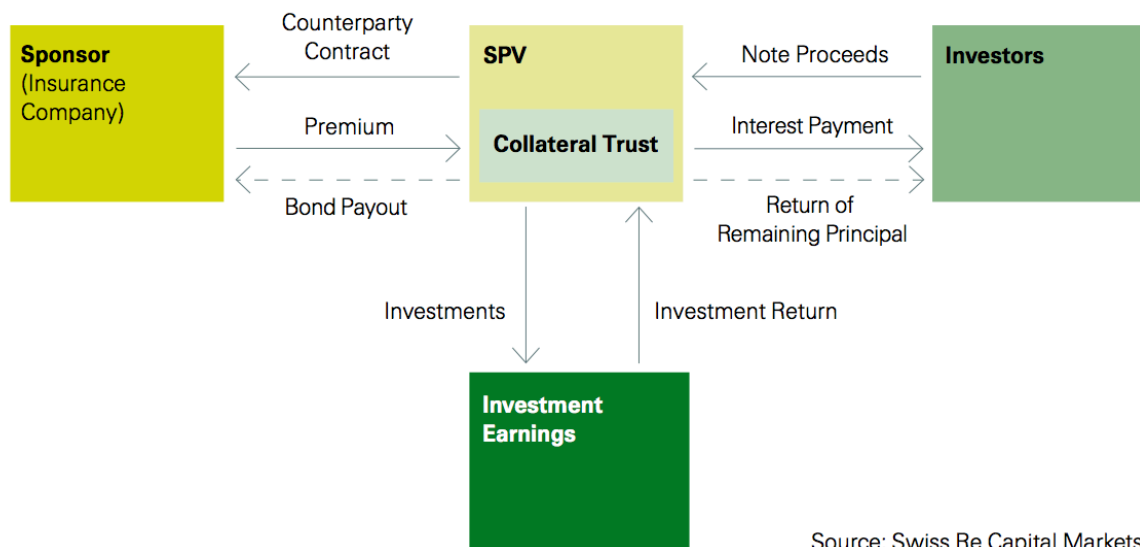
In a cat bond, premiums are transferred by the sponsor to the Special Purpose Vehicle (SPV) to which the risk is also being transferred contractually. The SPV issues the bonds and receives the capital from the bond-buying investors.¹⁴ This capital is held in a collateral trust, and invested in (typically triple A-rated, low-risk) securities. The coupon paid to investors derives from the premium paid by the sponsor to the SPV as well as the returns from these securities.

¹² Artemis, *Catastrophe Bond and ILS issued and outstanding by year*, available electronically at http://www.artemis.bm/deal_directory/cat_bonds_ils_issued_outstanding.html (accessed 02.07.2018).

¹³ See also G Etherington and D Kendall, ‘What are the Risks of Insurance Linked Securities?’ (November 2013) *Zeitschrift fuer Versicherungswesen* 689-690.

¹⁴ Risk Management Solutions, *Cat Bonds Demystified: RMS Guide to the Asset Class* (2012) available electronically at http://forms2.rms.com/rs/729-DJX-565/images/cm_cat_bonds_demystified.pdf (accessed 20.07.2016).

Figure 2
Typical cat bond structure¹⁵



Source: Swiss Re Capital Markets

The bonds typically mature in three years and pay a quarterly coupon to investors.¹⁶ The principal is repaid to the investors in full upon maturity if no triggering event occurs. If a triggering event occurs on the other hand, the principal will be forfeited in part or in full and returns will be reduced or will cease entirely for the remaining period until maturity.¹⁷ Thus investors assume two risks peculiar to this type of investment: the first is the insured risk that has been transferred to them via the cat bond. The second is the credit risk of the collateralised account. The contractual terms governing the bond must therefore provide protection in the form of clear constraints on the way in which the capital may be invested by the SPV.¹⁸

B.1.2 Cat bond triggers

There are three main types of trigger around which cat bonds tend to be designed: indemnity, industry loss and parametric. Where the indemnity type is used, the trigger is the actual loss by

¹⁵ Swiss Re, *The Fundamentals of Insurance-Linked Securities*, 6th September 2011, available electronically at http://www.swissre.com/library/archive/ILS_The_fundamentals_of_insurancelinked_securities.html (accessed 17.08.2018), 7.

¹⁶ Risk Management Solutions (n 14), 2 and 6.

¹⁷ Risk Management Solutions (n 14), 2.

¹⁸ Cat bonds predating the 2008-9 financial crisis made use of a total return swap (TRS) counterparty, usually an investment bank. See Organisation for Economic Co-operation and Development (OECD), *Policy Issues in Insurance: Risk Awareness, Capital Markets and Catastrophic Risks* (OECD Publishing, 12 August 2011), 108: 'A TRS converts the interest earned on the collateral investments to a LIBOR or EURIBOR basis, and the swap counterparty assumes the credit risk and the liquidations/spread risk of the underlying assets.... [T]he swap counterparty guarantees both the LIBOR or EURIBOR based interest rate and the full return of the principal. Thus, principal defaults would occur only if both the counterparty and the collateral defaulted.' 'During the last quarter of 2008 ... a number of CAT bonds were directly affected by the global crisis due to the loss of their [TRS] counterparty as a result of the failure of Lehman Brothers.' (Ibid.) In contrast with the pre-crisis cat bonds 'most recent deals impose strict prudential rules on how the collateral is invested, feature daily mark-to-market accounting on the collateral accounts and "top-up" requirements in the event that asset values fall before par.' (Ibid, 108). See also Etherington and Kendall (n 13), 690.

the insurer as a result of the occurrence of the insured peril (i.e. a specified catastrophic event, in a specified geographic region for a specified line of business). This type of bond is the closest in nature to traditional reinsurance, providing full protection to the sponsor, but requires an extensive and carefully conceived contractual framework, particularly as regards loss definitions. From the point of view of investors, information regarding the risk they are actually assuming will not be easily accessible – it is likely to be unfeasible for them to inform themselves fully about every policy the risk covered by which is being transferred or to judge the quality of the sponsor’s underwriting decisions. In addition, once the trigger occurs, settlement of claims by the insurer (which determines the loss to be indemnified) is likely to take considerable time, necessitating an extension of the bond beyond maturity, which can be detrimental to insurers. Finally, this type of cat bond creates the risk of moral hazard on the part of the insurer, who may take payout decisions carelessly, as the cost of the payout will ultimately be passed on to the cat-bond investor.

In an industry-loss triggered bond, the investors forfeit the principal on the basis of losses experienced by the insurance industry as a whole following the occurrence of the insured peril. The loss is established by reference to the total loss experienced by the industry following a natural catastrophe. This type of bond structure therefore assumes that the sponsor’s portfolio is in line with those of the industry in general. If the bond is triggered the sponsor recovers a percentage of total industry losses. While published estimates of industry losses are available at an early stage,¹⁹ (meaning that investors have more clarity as to the consequences for their investment when a catastrophe occurs), it can still take considerable time for the official loss to be released, leading to comparable potential for delay as for an indemnity cat bond.

In a parametric cat bond structure, triggers consist of the physical characteristics of a catastrophic event, e.g. an earthquake of a certain magnitude or higher within a certain geographical area. In order to determine whether a parametric bond has been triggered by a catastrophic event or not, the parameters of the event are entered into an index formula. The bond is triggered if the resulting index value is above the pre-defined trigger level threshold. It is exhausted if the value is above the exhaustion threshold.²⁰ Underlying indices may be ‘transparently and objectively measured, available at low cost and ... highly correlated with exposures to be transferred.’²¹ They are prepared by third parties and are not open to manipulation by the contract parties. The structuring of parametric bonds can also make use of probabilistic catastrophe loss models. In a parametric bond the consequences of a catastrophe for investors are determinable immediately after the occurrence of a catastrophe. Recent reports also suggest that in the future parametric cat bonds can be designed as “smart contracts” using blockchain (or distributed ledger) technology to accelerate, simplify and reduce the costs of payment and settlement between insurers and investors.²² On the flip side, the insurer might not obtain coverage for its full exposure as compensation does not depend upon the insurer’s actual loss. This type of bond

¹⁹ According to Risk Management Solutions (n 14), 5, ‘In the U.S. and Europe, the main accepted providers of insurance industry loss estimates are Property Claims Services (PCS) and PERILS, respectively. Both firms undertake to provide estimates of the total loss experienced by the insurance industry after a major catastrophe.’ ‘... first industry loss estimates from modelling companies are usually available within a couple of weeks after the event.’ (Ibid.)

²⁰ Risk Management Solutions (n 14), 5.

²¹ S Chantararat, K Pannangpetch, N Puttanapong, P Rakwatin and T Tanompongphandh, *Index-based Risk Financing and Development of Natural Disaster Insurance Programs in Developing Countries* July 2012, available electronically at https://arefiles.ucdavis.edu/uploads/filer_public/2014/03/27/eria_paper_july2012.pdf (accessed 20.07.2016), 3. See also OECD (n 18), 143.

²² See J Gould ‘Allianz expects blockchain tech to expedite cat bond deals’ *Insurance Journal* 15th June 2016, available electronically at <http://www.insurancejournal.com/news/international/2016/06/15/416971.htm> (accessed 15.09.2016).

therefore is not designed to “indemnify” in the pure sense of the word, and correlation must be carefully assessed.

B.2 Cat Bonds and Systemic Risk

The issuance of cat bonds is an innovative way of packaging and distributing risk and as such they are a type of financial innovation, which generally involves the emergence of novel financial instruments, new financial services and new forms of organisation in financial intermediation.²³ Financial innovation holds the promise of improving efficiency in financial markets thus increasing overall economic welfare.²⁴ It often allows for better risk sharing and accordingly, has the potential to enhance financial stability. More specifically, cat bonds broaden the dispersion of risk across different financial intermediaries and improve risk allocation to capital markets that are more willing and able to bear it. Nevertheless, with the emergence of innovative financial products comes also the potential for new risks to financial stability to build up. As the growing exposure of capital markets to cat bonds may have important implications for systemic risk, in a paper published in 2015 we argued that cat bonds and ILS more generally should be subject to macroprudential oversight or surveillance.²⁵

The macroprudential perspective focuses on the financial system as a whole as distinct from individual institutions and its objective is to limit the costs to the economy from financial distress.²⁶ In other words, it is aimed at limiting the likelihood of failure and corresponding costs to a significant portion of the financial system, often referred to as limiting systemic risk. 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.²⁷ 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.²⁸

The potential for these externalities to arise is evident in the context of catastrophe bonds where the risk originating in the insurance market is transferred to capital markets. Whilst cat bonds are important products that enable insurers to manage their risk more efficiently, the potential negative externalities would be borne by the financial system as a whole and ultimately could have a negative impact on the real economy. These externalities could emerge in the form of enhanced interconnectedness between the insurance sector, capital markets and other financial and sovereign entities, leading to the possibility of contagion where a trigger event materialises

²³ O Issing, ‘Opening Remarks’ (ECB Risk Measurement and Systemic Risk Fourth Joint Central Bank Research Conference, 8-9 November 2005), 14.

²⁴ R Ferguson, ‘Financial Regulation: Seeking the Middle Way’ (ECB Risk Measurement and Systemic Risk, Fourth Joint Central Bank Research Conference, 8-9 November 2005), 51.

²⁵ M Goldby and A Keller, ‘Oversight of systemically relevant insurance practices within the EU: the role of macroprudential supervision’ Chapter 6 in A Georgosouli and M Goldby (eds), *Systemic Risk and the Future of Insurance Regulation* (Informa, 2015), 71-72. See also OECD (n 18), 155 [9.1.c. and 9.1.d.].

²⁶ Report of the High Level Group on Financial Supervision in the EU Chaired by Jacques De Larosière, 25 February 2009 available electronically at http://ec.europa.eu/internal_market/finances/docs/de_larosiere_report_en.pdf (accessed 14.09.2017) (hereinafter De Larosière Report), [147]; S Hanson, A Kashyap and J Stein, ‘A Macroprudential Approach to Financial Regulation’ (2011) 25 *Journal of Economic Perspectives*, 3; D Schoenmaker and P Weirts, ‘Macroprudential Policy: The Need for a Coherent Policy Framework’ [2011] Duisenberg School of Finance Policy Paper, 13.

²⁷ Brunnermeier et al. (n 1), 6 naming this phenomenon ‘fallacy of composition’.

²⁸ Brunnermeier et al. (n 1), 20; G De Nicolo, G Favara, R Larnovski, *Externalities and Macroprudential Policy*, IMF Staff Discussion Note SDN/12/05, 7th June 2012, available electronically at <https://www.imf.org/external/pubs/ft/sdn/2012/sdn1205.pdf> (accessed 14.09.2017).

or an SPV defaults. The externalities could also emerge through the market channel, for example if, following a trigger event which affects the value of the bonds, fire sales occur with a sudden price drop in the secondary market. This could in itself result in disruption in the market or significant losses.

Macroprudential supervisors may find themselves between the hammer and the anvil. On the one hand, they would want to encourage financial innovation that increases social welfare and economic growth and avoid overregulation that would stifle financial activity. On the other hand, given the potential systemic risk implications of innovative financial products, the macroprudential supervisor may want to impose limitation on the design and use of these products. But is the cat bonds market considered a systemically important market?

The IMF/BIS/FSB report submitted to the G20 Finance Ministers and Central Bank Governors in October 2009 sets out three key criteria for assessing the systemic importance of financial institutions and financial markets and instruments: size, interconnectedness and substitutability.²⁹ The report defines systemic risk as a risk of disruption to financial services that is (i) caused by an impairment of all or parts of the financial system and (ii) has the potential to have serious negative consequences for the real economy.³⁰ The size criterion refers to the volume of financial services provided by the individual component of the financial system, substitutability refers to the extent to which other components of the system can provide the same services in the event of a failure and interconnectedness refers to the linkages with other components of the system.

Assessing the systemic importance of markets presents more conceptual challenges than those presented by the assessment in relation to individual institutions.³¹ On the one hand, the systemic importance of a market derives to an extent from that of the institutions that participate in it. On the other hand, the size of a market as a whole is a determinant of potential economic costs in the event of its malfunction. In addition, if the function of a stressed market cannot be replicated by other mechanisms, the economic impact of its failure can be significant. Finally, interconnectedness refers to markets' interdependence on each other as well as on institutions.

The IMF/BIS/FSB report suggests that an assessment based on these three criteria should be complemented with reference to financial vulnerabilities and the capacity of the institutional framework to deal with financial failures. Complexity is listed as a potential source of vulnerability and should be taken into account in the assessment of the systemic importance of cat bonds. In particular, where complexity in the context of cat bonds is associated with lack of transparency, it could bring about difficulties in understanding the exposures involved and the potential magnification of information asymmetries in the case of a systemic event.³²

The question arises, to what extent do these criteria apply to cat bonds? A comprehensive analysis of the systemic importance of cat bonds requires both assessment of quantitative

²⁹ International Monetary Fund (IMF), Bank of International Settlements (BIS) and Financial Stability Board (FSB), *Guidance to Assess the Systemic Importance of Financial Institutions, Markets and Instruments: Initial Considerations*, Report to the G-20 Finance Ministers and Central Bank Governors, October 2009, available electronically at <https://www.imf.org/external/np/g20/pdf/100109.pdf> (accessed 14.09.2017) (hereinafter IMF/BIS/FSB 2009 Report).

³⁰ IMF/BIS/FSB 2009 Report (n 29), 2.

³¹ IMF/BIS/FSB 2009 Report (n 29), 3

³² IMF/BIS/FSB 2009 Report (n 23),13. See also European Insurance and Occupational Pensions Authority (EIOPA) *Financial Stability Report*, December 2014, available electronically at <https://eiopa.europa.eu/financial-stability-crisis-prevention/financial-stability/financial-stability-reports/financial-stability-report-december-2014> (accessed 10.09.2017) (hereinafter EIOPA FSR 2014), 28.

indicators and qualitative judgments and is outside the scope of this paper. Nevertheless, several initial observations can be made here with respect to how the systemic risk criteria apply to cat bonds.

B.2.1 Size

The size of the cat bonds market is growing (see figure 1) and is expected to grow further in coming years. This is due to a number of factors.³³ Cat bonds tend to offer a relatively high yield (although yields have recently been declining due to demand exceeding supply³⁴) at a time when interest rates are generally depressed (although these have been showing some signs of recovery³⁵). High yields have made cat bonds attractive to investors. The yields are high to compensate for the risk of non-repayment of part or all of the principal and the novelty for investors of taking insurance risk, as well as because of the comparatively higher premiums paid for traditional property cat reinsurance. Thus, key investors in cat bonds are pension funds that have been increasing in recent years their allocations to ILS in general and cat bonds in particular,³⁶ as a result, amongst other things, of the pressure they are experiencing to improve returns.³⁷ Another attractive feature of cat bonds is that they have low correlations with other asset classes,³⁸ although the extent to which this is true will depend on how the relevant collateral trust funds are invested.³⁹ Additionally, cat bonds are becoming more standardised and investors

³³ See International Association of Insurance Supervisors (IAIS), *Global Insurance Market Report*, January 2016 available electronically at www.iaisweb.org/file/58465/2015-global (accessed 01.08.2017) (hereinafter GIMAR 2016), 25.

³⁴ Artemis, *Q2 2017 Catastrophe Bond and ILS Market Report*, available electronically at http://www.artemis.bm/artemis_ils_market_reports/downloads/q2_2017_cat_bond_ils_market_report.pdf (accessed 20.08.2018) (hereinafter Artemis Q2 2017 Report), 11-13.

³⁵ See Bank of England, *Inflation Report*, August 2017 available electronically at <http://www.bankofengland.co.uk/publications/Documents/inflationreport/2017/aug.pdf> (accessed 29.08.2017), Charts 1.7 and 1.8.

³⁶ Artemis, 'More Pension Funds Invest in ILS as Alternatives Allocations Rise: Mercer', 7th June 2017, available electronically at <http://www.artemis.bm/blog/2017/06/07/more-pension-funds-invest-in-ils-as-alternatives-allocations-rise-merc/> (accessed 01.09.2017); On excessive search for yield see OECD, *Pension Markets in Focus*, 2015 available electronically at <http://www.oecd.org/daf/fin/private-pensions/Pension-Markets-in-Focus-2015.pdf> (accessed 14.09.2017).

³⁷ 'Pension funds may also give rise to systemic risks in the U.S. financial system. While many funds are shifting towards defined contribution, defined benefit plans still remain almost half of the industry, and about 20 percent of multi-employer pension funds are underfunded. Pressure to improve returns could spur undue risk taking, whether via direct credit exposure or through securities lending and cash reinvestment. As noted in the 2015 FSOC Annual Report, the transfer of pension risk to the insurance industry, through "longevity swaps" and other insurance products, increases the interconnectedness of the system.' International Monetary Fund (IMF), *United States, Financial Sector Assessment Program and Financial System Stability Assessment*, Country Report no. 15/170, July 2015, available electronically at <http://www.imf.org/external/pubs/ft/scr/2015/cr15170.pdf?hootPostID=0ae3d0cd6b3a481fb2805b7ab5%2083a3ad> (accessed 01.09.2017).

³⁸ See OECD (n 18), 138. See also J Dizard, 'Cat Bonds Look Pretty Good after a Few Drinks', *ft.com Opinion*, 5th August 2016.

³⁹ See M Savas, *Cat Bonds – Correlation to Traditional Asset Classes*, Entropics Asset Management, 18 December 2016, available electronically at <http://en.entropics.se/blog/cat-bonds-correlation-traditional-asset-classes/> (accessed 29.08.2017):

'The Lehman Brother[s] collapse during the 2008 financial crisis had ... a negative impact on cat bonds, as the collateral of four cat bonds was invested in the bank. The nominal value of these bonds decreased and the index dropped -3.1% following the crash. The equity and bond indices fell in the same period about -30% and the hedge fund index dropped -18.2%.

'Following these events, we saw structural changes to cat bonds in order to minimise the counter party credit risk. As a result of the Lehman crash, the collateral is now almost exclusively invested in government bonds with a high credit rating, minimising correlation to traditional asset classes.'

are becoming more familiar and ‘comfortable’ with them.⁴⁰

The growth in demand for cat bonds means that the size of the market for these products is also growing. Artemis reports that issuance of cat bonds and ILS reached USD 9.761 billion, making it the most active year ever recorded.⁴¹ In the US, issuance of cat bonds during the second quarter of 2017 stood at a new record of USD 6.38 billion. When added to the Quarter 1, the total issuance in the first half of 2017 stood at USD 8.55 billion.⁴²

The end of 2017 also saw the first cat bond issue in the UK.⁴³ Despite these figures being a tiny fraction of the total debt outstanding on the worldwide bond market, it is fair to say that this trend is worth monitoring as there is a clear movement towards greater activity in the cat bond market. The growth of the mortgage-backed securities market can be taken as an illustration of how a securities market can expand rapidly from modest beginnings without real systemic implications to become a behemoth that can, in combination with other factors, bring an entire financial system to a halt, having radical effects on the real economy. The market expanded relatively gradually through the 1990s reaching USD 1 trillion in 2001, but quadrupling in size over just two years between 2001 and 2003, when it reached USD 4 trillion.⁴⁴

B.2.2 Interconnectedness

Cat bonds transfer insurance risks to non-insurance firms (i.e. to the capital markets). This in turn increases the interconnectedness between the sectors and their susceptibility to common shocks.⁴⁵ It can be argued that the interconnectedness of cat bonds market is increasing given the expanding perimeter of both issuers and investors of cat bonds in financial markets. First, cat bonds are not just issued by insurers such as Lloyd’s of London syndicates⁴⁶ but also increasingly

Cat bonds could therefore have a correlation with government bonds, and a sovereign debt crisis could be significant to their performance.

⁴⁰ On the impact of cat bonds being a novelty product see V Bantwal and H Kunreuther, ‘A Cat Bond Premium Puzzle?’ (2000) 1(1) *Journal of Psychology and Financial Markets* 76.

⁴¹ Artemis Q2 2017 Report (n 34), 3.

⁴² Aon Benfield, Insurance-Linked Securities, Q2 2017 Update available electronically at http://thoughtleadership.aonbenfield.com/documents/040817_aon_securities_ils_q2_update.pdf (accessed 14.09.2017) (hereinafter Aon Benfield Q2 2017 Report). According to Artemis, May 2017 was the most active month in the cat bond market’s history, with over USD 3.6 billion of new risk capital issued and almost USD 500 million of maturities, with another USD 1.33 billion maturing in the first week or so of June. See ‘New Cat Bond Issuance Continues to Stimulate Secondary Trades in May 2017’, 19th June 2017, available electronically at <http://www.artemis.bm/blog/2017/06/19/new-cat-bond-issuance-continues-to-stimulate-secondary-trades-in-may-2017/> (accessed 14.09.2017). See also L Scism and A Das, ‘Catastrophe Bonds Shake Up Insurance Industry’, *The Wall Street Journal*, 7th August 2017: “...there are \$72 billion of cat bonds and similar investments outstanding. The total is equivalent to 12% of the \$565 billion in capital in the reinsurance business. The volume of cat bonds and related investments is widely expected to double in the next several years...”

⁴³ Reuters, ‘Insurer Neon launches first UK catastrophe bond vehicle’, Reuters 3rd January 2018, available electronically at <https://www.reuters.com/article/insurance-neon-ils/insurer-neon-launches-first-uk-catastrophe-bond-vehicle-idUSL8N1OY167> (accessed 11.01.2018).

⁴⁴ For an account see N Fligstein and A Goldstein, ‘The Transformation of Mortgage Finance and the Industrial Roots of the Mortgage Meltdown’ Department of Sociology, University of California Berkley, October 2012, available electronically at <http://sociology.berkeley.edu/sites/default/files/faculty/fligstein/The%20Transformation%20of%20Mortgage%20Finance2.pdf> (accessed 10.08.2018), esp. 20-21.

⁴⁵ European Systemic Risk Board (ESRB), *Report on Systemic Risks the EU in Insurance Sector*, December 2015, available electronically at <https://www.esrb.europa.eu/pub/pdf/other/2015-12-16-esrb-report-systemic-risks-EU-insurance-sector.en.pdf> (accessed 01.09.2017), Annex 4: Systemic Risks of Reinsurers.

⁴⁶ Artemis, ‘Buffalo Re cat bond launched at \$125m for ICAT syndicate at Lloyd’s’, 22nd February 2017, available

are being sponsored by states and public entities, as they can represent a cheaper option than insuring through traditional means.⁴⁷ In 2009⁴⁸ the World Bank launched a programme designed to make this form of risk transfer accessible to developing countries and emerging economies,⁴⁹ despite the technical complexity of the product and the expenses involved. This program, called MultiCat, consists of ‘a catastrophe bond issuance platform that allows governments to use a standard framework to buy insurance on affordable terms through the capital markets,’⁵⁰ whereby the World Bank acts as arranger for the transaction, assisting with technical aspects, and providing off-the-shelf documentation. Another interesting, and more recent, initiative is Global Parametrics ‘a parametric risk transfer provider backed by a third-party capitalised risk fund... [which] aims to focus its products on areas that can help to reduce the protection gap and help to address under- insurance of poor, and vulnerable people in developing countries.’⁵¹ Recently, the World Bank has issued cat bonds to Mexico giving it financial protection of USD 360m (GBP 275m) against losses from natural disasters.⁵²

There is a risk that such schemes, encouraging the insuring of catastrophe risks in emerging economies and developing countries, as well as an increasing prevalence of schemes to make catastrophe risk insurance more widely accessible also in developed nations (see for example cat bonds issued by US public entities such as the California Earthquake Authority and the New York Metropolitan Transportation Authority⁵³), coupled with the high demand for cat bonds among investors,⁵⁴ may lead to a higher likelihood that the insurance industry will eventually adopt an “originate-to-distribute” approach to insuring these risks.⁵⁵ It is also worth noting that recent reports suggest that non-insurers have started to sponsor cat bonds.⁵⁶ This emphasises the

electronically at <http://www.artemis.bm/blog/2017/02/22/buffalo-re-cat-bond-launched-at-125m-for-icat-syndicate-at-lloyds/> (accessed 01.09.2017).

⁴⁷ See OECD (n 18), 139-141. See also The World Bank Treasury, *Product Note: MultiCat Program*, 9 July 2013, available electronically at http://treasury.worldbank.org/web/documents/MultiCat_ProductNote.July2013docx.pdf, (accessed 10.09.2017), 1. For information on how such a cat bond would be structured see Mexico case study: The World Bank Treasury, *Case Study: Insuring against Natural Disaster Risk in Mexico*, undated, available electronically at http://treasury.worldbank.org/bdm/pdf/Case_Study/Mexico_MultiCatBond_2015.pdf (accessed 10.09.2017), 2.

⁴⁸ See World Bank, ‘World Bank launches “MULTICAT PROGRAM”’, *Press Releases*, 16th October 2009, available electronically at <http://treasury.worldbank.org/cmd/htm/MULTICAT-PROGRAM.html> (accessed 10.09.2017).

⁴⁹ See World Bank, *Protecting Development Resources*, available electronically at http://treasury.worldbank.org/bdm/htm/risk_financing.html (accessed 20.07.2016).

⁵⁰ World Bank, *MultiCat Programme*, Product Note, Updated 26th April 2011, available electronically at http://treasury.worldbank.org/bdm/pdf/MultiCat_ProductNote.pdf (accessed 14.09.2017), 1.

⁵¹ Artemis, ‘Global Parametrics to Bring Third-party Capital to Disaster Risk Transfer’, 13th June 2016, available electronically at <http://www.artemis.bm/blog/2016/06/13/global-parametrics-to-bring-third-party-capital-to-disaster-risk-transfer/> (accessed 20.07.2016).

⁵² S Christie, ‘The world’s largest ever “catastrophe bond” issued to Mexico’, *Telegraph*, 8th August 2017, available electronically at <http://www.telegraph.co.uk/business/2017/08/08/worlds-largest-ever-catastrophe-bond-issued-mexico/> (accessed 14.09.2017).

⁵³ H Black, ‘Could Catastrophe Bonds Boost your Nest Egg? The High Risk Funds that Offer up to 8% Income a Year, but can Pay Much Less’, *This is Money*, 6th June 2017, available electronically at <http://www.thisismoney.co.uk/money/investing/article-4578146/Could-TORNADO-bonds-boost-nest-egg.html> (accessed 14.09.2017). See also Aon Benfield Q2 2017 Report (n 42), according to which six different public entities came to market during the Q2 period, with a total of USD 2.2 billion of catastrophe bond issuances.

⁵⁴ See Dizard (n 38).

⁵⁵ But see OECD (n 18), 107 and 108-[14]: ‘while in the context of [mortgage-backed securities (MBS)], the originator of a mortgage loan can completely remove itself from the risk equation, an insurance/reinsurance company issuing ILS remains directly liable vis-à-vis the policyholder/primary insurer. This ... may avoid distorted incentives of the type that contributed to the sub-prime lending crisis in the United States.’ See also *ibid*, 115. It is uncertain what impact government policies in this field will have on this.

⁵⁶ See HSBC Global Research ‘Operational Risk Catastrophe Bonds: The New Kid on the Block’, *Flashnote*, 22nd April 2016 available electronically at <https://www.research.hsbc.com/R/10/sKgRB7vDSPKT> (accessed

interconnectivity that may be created by the issue and distribution of these products.

In 2015, the European Systemic Risk Board noted that:

‘insurance-linked securities, for instance catastrophe bonds, transfer insurance risks to investors. This broadens the scope for risk transferral, but it also creates additional links between (re)insurers and financial markets. This might make the reinsurance market more vulnerable to investors’ procyclical behaviour. For instance, the ongoing search for yield in the current environment attracts investors in catastrophe bonds, which in turn drives down the price of risks insured (even though the risks themselves may not have changed materially)’.⁵⁷

Similarly, EIOPA observed in its 2014 Financial Stability Report that:

‘The increased issuance of e.g. catastrophe bonds also creates links between reinsurers and financial markets. It may also result in some degree of opacity where it is not entirely clear who holds the risk. This makes the reinsurance market vulnerable to investors’ procyclical behaviour as well.’⁵⁸

Furthermore, investors in cat bonds include catastrophe funds, mutual funds, reinsurers hedge funds and institutional investors, including insurers, thus increasing the linkages with the insurance sector.⁵⁹ Thus, catastrophe bonds create unique interconnectedness between on the one hand insurers, reinsurers, public entities or countries and on the other, capital markets.

It is worth noting that, at the time of writing, it appears that cat bonds are treated favourably for Solvency II⁶⁰ purposes,⁶¹ which might encourage investment in these instruments by insurers, leading to a situation where relevant risks may be transferred off insurers’ balance sheets only to find their way back onto them in a different form. It is reported that ‘[m]any institutional investors are already successfully including ILS in their portfolios, either through outsourcing to dedicated funds or investing directly.’⁶² While it is not clear what proportion of institutional investors’ portfolios is constituted of cat bonds and other ILS, in view of the fact that insurers are among the largest institutional investors, this trend may mean that in spite of transferring (and therefore divesting themselves of) catastrophe risk,⁶³ insurers may become re-exposed to that same risk by the indirect route of investing in cat bonds. Additionally, it is worth noting that in January 2016 the IAIS reported that in their search for yield, insurers are diversifying their investments, and are investing in alternative instruments including private equity and hedge

10.09.2017).

⁵⁷ ESRB (n 45), 19-20.

⁵⁸ EIOPA FSR 2014 (n 32), 29.

⁵⁹ Aon Benfield 2016 Report, *Insurance-Linked Securities Alternative Markets Find Growth Through Innovation* available electronically at <http://thoughtleadership.aonbenfield.com/pages/Home.aspx?ReportCategory=Insurance-Linked%20Securities> (accessed 10.08.2018).

⁶⁰ Council Directive 2009/138/EC of 25 November 2009 on the Taking-up and Pursuit of the Business of Insurance and Reinsurance (Solvency II) (recast) OJ L 335/1 (hereinafter, Solvency II Directive).

⁶¹ See Artemis, ‘Cat bonds an attractive investment for EU insurers in a Solvency II world,’ 3rd March 2017 available electronically at <http://www.artemis.bm/blog/2017/03/03/cat-bonds-an-attractive-asset-for-eu-insurers-in-a-solvency-ii-world/> (accessed 10.09.2017).

⁶² Risk Management Solutions (n 14), 1.

⁶³ See 2013 study by Weiss et. al. which found that insurers decrease their contribution to systemic risk through issuing cat bonds: G N F Weiss, D Bostandzic, F Iressberger, ‘Catastrophe Bonds and Systemic Risk’ Discussion Paper 30/2013, Technische Universität Dortmund, Fakultät Statistik, available electronically at https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2313160 (accessed 10.08.2018), 4.

funds,⁶⁴ which in turn may have ILS and cat bonds as part of their portfolios. This situation is reminiscent of reinsurer retrocession to other reinsurers, which may lead to severe interconnectedness among reinsurers, and which led to the high-profile Lloyd's of London failure in the 1980s.⁶⁵

Finally, financial market risk and insurance underwriting risks are not always uncorrelated. Various types of events could conceivably trigger instability simultaneously in financial markets and insurance markets.⁶⁶ For instance, a global pandemic could not only have a devastating impact on catastrophe risk but could also trigger panic in capital markets.

B.2.3 Substitutability

Catastrophe reinsurance can be regarded as a substitute for catastrophe bonds and vice versa.⁶⁷ The increase of significant loss events since the 1990s and the growing demand for natural catastrophe insurance prompted insurers to explore alternative ways to alleviate those risks. The increase in the potential losses that may be caused by natural catastrophes as a result of the effects of climate change and global warming,⁶⁸ however, may mean that it may not be possible for the traditional reinsurance market to absorb catastrophe risks and that recourse to the capital markets is the only way in which these risks may be appropriately insured against. Therefore the extent to which the cat bond market is substitutable is uncertain.

B.2.4 Complexity and Opaqueness

Cat bond issues are gradually moving from being highly customised and tailor-made transactions to becoming more commoditised, especially parametric cat bonds,⁶⁹ with contract terms becoming more standardised.⁷⁰ Whilst standardization decreases opacity, it also makes cat bonds more accessible, and coupled with their attractive features, will facilitate a situation where the volume and distribution of these instruments in the capital markets continues to increase. In these circumstances, it becomes essential to monitor for poor structuring which, in view of the fact that these instruments are inherently high risk, can lead to systemic consequences if a catastrophe leads to widespread negative returns for investors.⁷¹ It is also worth mentioning that as

⁶⁴ GIMAR 2016 (n 33), 22.

⁶⁵ See European Systemic Risk Board, *Report on Systemic risks in the EU Insurance Sector, December 2015*, Annex 4, Systemic Risks of Reinsurers, available electronically at https://www.esrb.europa.eu/pub/pdf/other/2015-12-16-esrb_report_systemic_risks_EU_insurance_sector.en.pdf (accessed 20.08.2017), [27]-[30], esp. [29].

⁶⁶ D Schwarcz and S Schwarcz, 'Regulating Systemic Risk in Insurance' (2014) 81 *University of Chicago Law Review* 1569, 1607.

⁶⁷ M Nell and A Richter 'Catastrophe Index-Linked Securities and Reinsurance as Substitutes' Working Paper Series: Finance and Accounting, No. 56, Goethe University Frankfurt am Main, Department of Finance, August 2000, available electronically at <https://www.econstor.eu/handle/10419/76942> (accessed 14.09.2017).

⁶⁸ See Aon Benfield, *2016 Global Climate and Catastrophe Report*, January 2017, available electronically at <http://thoughtleadership.aonbenfield.com/Documents/20170117-ab-if-annual-climate-catastrophe-report.pdf> (accessed 20.08.2017).

⁶⁹ See OECD (n 18), 117: 'The proliferation of index-based securitized instruments likely contributed to increased liquidity and trading of securitized instruments prior to the crisis.... Research has shown that the issuance and trading of index-based products grew rapidly due to the increased acceptance of indexes.... These indexes are subject to transparent rules and helped to standardize CDS structures.'

⁷⁰ For a discussion of the impact of standardization in securitization see OECD (n 18), 118.

⁷¹ See Risk Management Solutions (n 14), 8: 'Although cat bonds are inherently risky, making it possible for the notional amount to be quickly exhausted once the triggering event occurred, they have historically offered excellent returns. The market performed well even in years with multiple cat event occurrences—there has not been a single

standardisation of cat bonds increases, a secondary (derivative) market may also become more established. This involves instruments such as catastrophe collateralised risk obligations (CROs) and cat-linked derivatives, including futures, swaps and options.⁷²

The occurrence of these developments is highly reliant on modelling of risks and standardisation of cat-bond products and their derivatives. Good modelling in turn depends on making the right assumptions⁷³ and using high quality information, which may be scarce, particularly for regions where property insurance against catastrophe risks is relatively new. This may well have implications in terms of risk-pricing. As noted by Jarzabkowski et al.:

‘... models do not predict or value the risk, but rather provide the basis for coordination of pricing efforts alongside other knowledgeable practices within the market. Specifically, ... marketization is enacted within the practical understandings of “technicalizing” deals through calculative devices such as models. However ... the inadequacy of the models is tempered by importing deep professional knowledge into the calculation of unpredictable risk. Such “contextualizing” includes evoking knowledge of the physical properties of the risk, knowledge of the client, and knowledge of the market cycle.... [But] bundling risk is weighting the appraisal of deals further towards technicalizing and a dependence on models.’⁷⁴

Another danger that may emerge from the commoditisation process could derive from a changing perception of catastrophe risks from being unpredictable and volatile to risks that can be analysed and measured accurately through sophisticated calculative devices.⁷⁵ Indeed, the type of risk cat bonds are designed to transfer of its nature carries a large element of uncertainty and unpredictability.⁷⁶ This means that the past is not a reliable indicator of the future, and therefore that it is no mean feat to model for this risk.⁷⁷ Below are two graphs that show respectively worldwide natural catastrophes (Figure 3) and worldwide natural catastrophe losses (Figure 4) from 1980 to 2016. They show that while the number of catastrophes has been increasing more or less steadily, the size of losses incurred has varied considerably. Losses of course depend on the extent to which property in areas affected by natural disasters has been insured. Thus, a natural catastrophe occurring in the United States where the insuring of property is widespread is likely to give rise to far greater losses overall than one occurring in the developing world, where it is a relatively rare practice to take out such insurance. Should the practice of taking out property insurance become more widespread in emerging economies and developing countries, however, this would change.

12-month period to date where cat bonds incurred a negative return. Interestingly, historical experience suggests that one key to success in this asset class is the avoidance of a small number of poorly structured bonds.’

⁷² See OECD (n 18), 125-126 and 149-150.

⁷³ See S Perrakis and A Boloorforoosh, ‘Catastrophe futures and reinsurance contracts: An incomplete markets approach’, (2018) 38 *Journal of Futures Markets* 104, 122, arguing that the long-held Merton assumption that ‘the rare event risk is fully diversifiable’ and that ‘a unique risk-adjusted distribution of the CAT event can be extracted from other traded financial instruments indexed on the event distribution’ is rejected by recent empirical evidence.

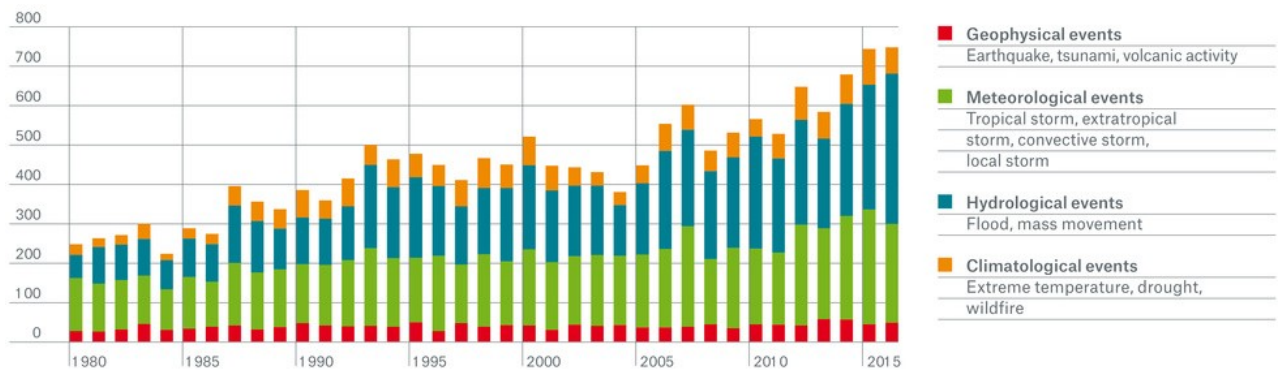
⁷⁴ P Jarzabkowski, R Bednarek and P Spee, *Making a Market for Acts of God: The practice of risk-trading in the global reinsurance industry* (OUP, 2015), 174-5.

⁷⁵ Jarzabkowski et al. (n 74), 176.

⁷⁶ OECD (n 18), 111.

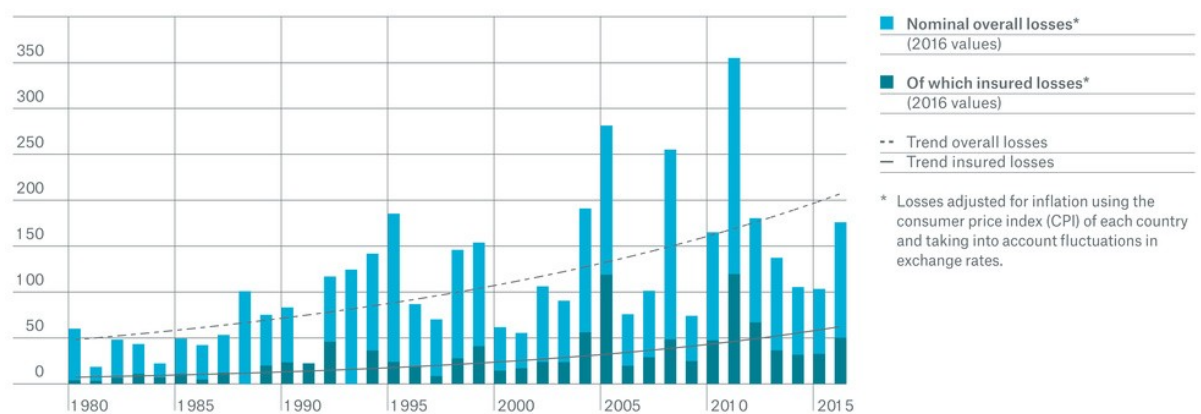
⁷⁷ Dizard (n 38): ‘The problem for the buyers, if not for US east coast residents, is that there have been far fewer severe weather events than commonly accepted actuarial models predicted in the years since the 2008 global financial crisis.’

Figure 3
Number of worldwide natural catastrophes occurring from 1980 to 2016⁷⁸



Source: © 2017 Munich Re, Geo Risks Research, NatCatSERVICE. As of March 2017.

Figure 4
Worldwide natural catastrophe losses occurring between 1980 and 2016⁷⁹



Source: © 2017 Munich Re, Geo Risks Research, NatCatSERVICE. As of March 2017.

Additionally, if cat-linked derivative products take catastrophe bond issues as their reference point, but the party purchasing protection were not actually exposed to the catastrophic event and were only using the derivative for speculation, financial exposure to the catastrophic event would be created where before there was none,⁸⁰ and the impact of any underlying unsound modelling and risk-mispricing would multiply exponentially.

Because of the hazards that can derive from the bundling of risks that securitisation makes possible, Jarzabkowski et al. liken emerging developments in this field to the processes (involving asset- and mortgage-backed securities and collateralised debt obligations) leading up

⁷⁸ World Natural Catastrophes, 1980–2016 (number of events), available electronically at <https://www.munichre.com/topics-online/en/2017/topics-geo/overview-natural-catastrophe-2016> (accessed 10.09.2017).

⁷⁹ World Natural Catastrophe Losses, 1980–2016 (overall and insured losses) <https://www.munichre.com/topics-online/en/2017/topics-geo/overview-natural-catastrophe-2016> (accessed 10.09.2017).

⁸⁰ Compare the use of credit-default swaps in the run-up to the financial crisis, discussed in Schwarcz and Schwarcz (n 66), 1585.

to the 2008-2009 financial crisis.⁸¹ While this contention may be controversial,⁸² it is fair to say that regulators, particularly macroprudential regulators, who ignore these developments, might well be doing so at their peril, particularly in view of the consequences arising as a result of over-reliance on risk models in the recent financial crisis.⁸³

Lack of transparency may also be a key factor in increasing the complexity of cat bonds.⁸⁴ Market intelligence suggests that the price transparency of ILS has been declining: ‘Fewer “pricing sheets” are being generated and some of the ones that are produced quote quite wide markets.’⁸⁵

These preliminary assessments indicate that supervisors should keep an eye on the development and use of cat bonds, as, while the market is not yet systemically relevant, there is certainly the potential for it to expand rapidly. History shows that state intervention can create or enhance the conditions leading to rapid expansion of markets by encouraging certain activities. A prime example is the effect on the US mortgage market of Federal policies of the 1990s.⁸⁶ Interestingly, in the UK the trend seems to be towards encouraging an increased use of ILS, and this trend appears to espouse a “light regulation” policy. The stated aim of the UK Government, through the implementation of the Risk Transformation Regulations 2017 (RTR) and the Risk Transformation (Tax) Regulations 2017 (RTR Tax), is to make London a centre for insurance-linked securitizations.⁸⁷ This securitization activity and the resultant financial products are subject to regulation and supervision by the Financial Conduct Authority (FCA), the UK’s Conduct of Business financial supervisor and by the Prudential Regulation Authority (PRA), the UK’s prudential financial supervisor.⁸⁸ The regulatory framework is based on the possibility of

⁸¹ Jarzabkowski et al. (n 74), 179: ‘MacKenzie’s work uncovered that the calculative practices used to evaluate CDOs shifted the basis for understanding risk from those professionals who were experienced in the potential sub-prime mortgage default. As CDOs become more remote and abstracted from their underlying assets, they were evaluated by a different group of actors who did not understand the underlying risk, while the models that they used vastly underestimated the probability for default across an entire market...’

⁸² This contention produced a backlash. See A Gray, ‘Catastrophe Bond Pioneer Hits Back at Book’, *Financial Times*, 3rd May 2015.

⁸³ E F Gerding, ‘Code, Crash and Open Source: The Outsourcing of Financial Regulation to Risk Models and the Global Financial Crisis’, (2009) 84 *Washington Law Review*, 127-198.

⁸⁴ Clear Path Analysis, *Insurance Linked Securities for Institutional Investors 2017: An Evolving Asset Class Poised for Growth*, May 2017 available electronically at <https://www.clearpathanalysis.com/reports/insurance-linked-securities-institutional-investors-2017> (accessed 17.08.2017), 14: ‘We are not asking reinsurance companies to publicly release their business critical information, since we understand the sensitivity of that. But transparency helps to increase management and board confidence on the investor side. Additionally, we believe that the primary insurer is well served to understand who finally reinsures its risk.’

⁸⁵ Lane Financial LLC Annual Review and Commentary, Q2 2016 to Q1 2017 By MN Lane and R Beckwith, 31 March 2017 available electronically at <http://www.lanefinancialllc.com/images/stories/Publications/2017-03-31%20Annual%20Review%20-%20Four%20Quarters%20Q2%202016%20to%20Q1%202017> (accessed 10.09.2017).

⁸⁶ Fligstein and Goldstein (n 44), 19-22. A Keller, ‘The Possible Distributional Effects 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, 267.

⁸⁷ Insurance Risk Transformation is defined in Reg 13A of the Financial Services and Markets Act 2000 (Regulated Activities) Order 2001 (SI 2001/544). Recently, first cat bonds have been issued under the new RTR regime: Artemis (June 2018) available electronically at <http://www.artemis.bm/blog/2018/06/04/gc-securities-cites-strong-investor-support-for-first-uk-cat-bond-from-scor/> (accessed 10.06.2018) See also Foreword of the HM Treasury, Regulations Implementing a New Regulatory and Tax Framework for Insurance- Linked Securities: Consultation, November 2016.

⁸⁸ R 7 RTR; PRA Policy Statement 26/17 ‘Authorisation and supervision of insurance special purpose vehicles’ November 2017 available electronically at <https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/policy-statement/2017/ps2617.pdf> (accessed 9.06.2018). The Scope of Permission (SOP) defines the boundaries within which the ISPV may carry on the regulated activity of insurance risk transformation. PRA Supervisory Statement SS8/17, ‘Authorisation and supervision of insurance special purpose vehicles’ December 2017 available at <https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/supervisory-statement/2017/ss817update.pdf> (accessed 10.06.18), paras 2.13-2.18. Whilst the PRA leads the authorisation, the

using insurance special purpose vehicles (ISPVs) set up as protected cell companies (PCCs) to facilitate ILS issuances. The protected cell structure is designed to permit multiple issuances of cat bonds to be made by the same ISPV (making it a multi-arrangement ISPV (mISPV)), while keeping such issuances adequately protected in terms of default risk through effective segregation of deals within the mISPV.

When the proposals for legislation permitting these structures were first floated the PRA expected to have the power to pre-approve the assumption of a new risk and the issue of new ILS (effected by the creation of new segregated cells within the PCC). However in the final version of the regulations, while the PRA will be able to specify the kinds of risk transfer deals into which the mISPV is permitted to enter at the time of granting it authorisation to provide financial services, the PRA will not have the power to pre-approve the assumption of new risk by an already authorised mISPV. Rather the mISPV must notify the PRA within a period of 5 working days from the risk being assumed.⁸⁹ Care should be taken to ensure that these notifications are such as to provide the information required to assess the cumulative impact in systemic terms of cat bond issuances and to gauge whether macroprudential intervention is necessary.⁹⁰

It is also worth noting that the EU Securitisation Regulation⁹¹ does not apply to catastrophe risk securitisations as it contemplates only securitised credit risk and not any other type of risk.⁹² This being the case, it should be considered whether a risk-retention requirement as well as requirements on simplicity, standardization and transparency should be otherwise imposed on catastrophe risk securitisations effected in the UK.

It is suggested here that a box-ticking approach via a strict application of the criteria for assessing systemic importance should be avoided. Decisions made by regulators and supervisors should be based on qualitative assessment that feeds from market intelligence as complement to numeric application of the test. This suggestion is in line with a recent report which reviewed the culture of the FCA, PRA and the Bank of England.⁹³ The Report identified a ‘deep seated culture of box-ticking’ and suggested that ‘unless we change the culture of regulators we will be sleep walking into the next financial crisis.’⁹⁴

FCA’s consent is required before granting approval. In giving its consent, the FCA is required to ensure, according to s 55B FSMA, that the applicant satisfies and continues to satisfy the Threshold Conditions (COND 2.3-2.7 FCA Handbook). FCA Statement ‘Authorising and supervising insurance special purpose vehicles’ December 2017, available electronically at <https://www.fca.org.uk/publication/policy/statement-authorising-and-supervising-insurance-special-purpose-vehicles.pdf> (accessed 9.06.2018). By doing so, the PRA would be circumscribing the mISPV’s Part 4A Permission of FSMA (i.e. authorisation to provide financial services).

⁸⁹ R 60(1)-(2) RTR. According to R 60(3) RTR Rules made under s 137G FSMA may specify the form of notification, information to be provided and the form in which it is to be provided.

⁹⁰ It is essential to monitor carefully the relationship, not just legal but also economic, between the ISPV or mISPV and its sponsor or the risk-transferring entity. See discussion in WW Bratton and JM Levitin, ‘A transactional Genealogy of Scandal: From Michael Milken, to Enron, to Goldman Sachs’ (2013) 8 *Southern California Law Review* 783, giving several examples of how Special Purpose Entities were able to escape regulation by funneling inter-firm connections through contracts, rather than equity ownership.

⁹¹ Regulation (EU) 2017/2402 of 12 December 2017 laying down common rules on securitisation and creating a European framework for simple, transparent and standardised securitisation OJ L 347/35 (hereinafter “Securitisation Regulation”). The date of application is 1 January 2019.

⁹² See Securitisation Regulation (n 91), Article 2 (1).

⁹³ New City Agenda, *Cultural change in the FCA, PRA and Bank of England: Practising what they Preach?*, 29th August 2016 available electronically at http://newcityagenda.co.uk/wpcontent/uploads/2016/10/NCA-Cultural-change-in-regulators-report_embargoed.pdf (accessed 14.09.2017).

⁹⁴ New City Agenda (n 93), 6.

C Product Intervention Powers

In view of the potential for cat bonds to generate systemic risk depending on trends and practices surrounding their structure, their sale and their distribution in the financial markets, it is very important that supervisors should have the possibility to intervene speedily and decisively should this potential start to materialise. Under this heading we shall be discussing the merits of using product intervention powers such to this end when compared with other options for regulatory intervention. Subsequently, under Heading D of this paper we shall assess the extent to which product intervention powers available to UK supervisors can be harnessed for this purpose.

C.1 What are Product Intervention Powers?

Product intervention imposes restrictions on the offering, distributing, terms or features, and/or marketing of financial products. Product Intervention began to be considered seriously as a regulatory option in the aftermath of the 2008-9 financial crisis,⁹⁵ which eventually led to various product intervention powers being introduced in recent years at UK and EU level. In the EU these powers were introduced as a “second generation” or “legacy” effect of the reform to the EU financial regulatory architecture following the crisis, and are an example of regulatory innovation.⁹⁶ They are a symptom of a changed approach to financial innovation, which, post-crisis, tends to be viewed with more suspicion.⁹⁷ In 2011, the then Financial Services Authority (FSA) defined Product Intervention as ‘[r]egulatory interventions focused on products, including greater supervisory focus earlier in the value chain and of ongoing product governance, rules targeting product features, rules limiting sales of products and setting down specific conditions of sale.’⁹⁸

Product Intervention is still in its infancy and conceptually its boundaries and objectives remain hazy. As shall be seen under Heading D, in its Financial Services and Markets Act 2000 (FSMA) manifestation, product intervention is tied to conduct of business objectives, assigned to the FCA, currently including consumer protection,⁹⁹ and competition, and is not connected with financial stability and the need to monitor and minimize systemic risk.

For instance, in August 2014 the FCA issued temporary product intervention rules introducing restrictions on the distribution of contingent convertible instruments (CoCos) to retail

⁹⁵ See N Moloney, ‘The legacy effects of the financial crisis on regulatory design in the EU’, Chapter 2 in E Ferran, *The Regulatory Aftermath of the Global Financial Crisis* (CUP, 2012), 111-202.

⁹⁶ Moloney (n 95), 112; 115-117.

⁹⁷ Moloney (n 95), 136-137 and 186-201.

⁹⁸ Financial Services Authority (FSA), *Product Intervention*, Discussion Paper DP11/1, January 2011, 6.

⁹⁹ Consumer protection also appears to be the primary goal of product intervention in the United States. Indeed product intervention powers under Dodd-Frank were conferred upon the Consumer Financial Protection Bureau. See Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111-203, 124 Stat. 1376, § 1031 (a)-(b) (2010). See also discussion in V Di Lorenzo, ‘Barriers to Market Discipline: a Comparative Study of Regulatory Reforms (2012) 29 *Ariz. J. Int’l & Comp. L.* 517. However it should be noted that one of the two financial stability regulators in the US – the Financial Stability Oversight Council (FSOC) – intersects with product intervention regulation in a number of ways: In the consumer lending context, the Consumer Financial Protection Bureau (CFPB) is the market conduct regulator and has ample product intervention powers. The Director of the Bureau is a voting member of FSOC and the Bureau in the course of the Director’s FSOC duties has undertaken analyses of consumer financial products for systemic risk. FSOC can also overrule any product intervention rules by the Bureau that jeopardize financial stability. For a discussion of the availability and use of countercyclical tools in the US regulatory landscape see P A McCoy, ‘Countercyclical Regulation and its Challenges’ (2016) 47 *Arizona State Law Journal* 1181, esp. 1195-1196 and 1208-1218, in particular the “ability to repay” rule introduced by Dodd-Frank which is implemented by the CFPB.

investors.¹⁰⁰ In relation to retail investors, the product intervention rules generally did not permit firms to sell, promote or intermediate transactions in CoCos that would result in ordinary retail investors investing in CoCos. On the other hand, under EU law, the power may be exercised in furtherance of the financial stability objective.

It seems that product intervention was initially conceived as a way of protecting consumer investors from the risks associated with both poor design of and poor distribution practices (e.g. mis-selling) relating to financial products (particularly innovative ones). Even though disclosure and anti-fraud rules should in theory provide the discipline required for the market to differentiate between well-designed and distributed products and ones which carry these risks, a number of factors, including lack of familiarity with new products, the volume and complexity of information disclosed, cognitive and behavioural biases and misaligned incentives,¹⁰¹ may mean that the market is not equipped to identify and address these failings. In theory product intervention might do much to address them, but it should be borne in mind that as a new and untested regulatory tool, its use may have ‘unexpected effects’¹⁰² and that, while maintaining an open mind as to its potential, it has been argued that it is prudent to remain realistic about what product intervention can do,¹⁰³ particularly when one bears in mind that the regulator needs to tread a fine line between supporting innovation and investor choice and intervening where such innovation poses wider risks that it is within the regulator’s mandate to address.¹⁰⁴ Not only would regulators need to assess when there is a potential for the cat-bond market to become systemic, requiring preventive action, but they would also need to assess what type of product intervention is needed to prevent or mitigate this risk appropriately. In addition, regulators will need to conduct a balancing exercise between two opposing aims. On the one hand, the need to control the build-up of systemic risk and on the other hand, the need to ensure that intervention does not depresses the market more than is warranted and ultimately does not inhibit economic growth.¹⁰⁵ Regulators’ inaction bias may well mean that the latter concerns may be given more weight than the former, inhibiting the use of product intervention as a macroprudential tool, however we argue that it is incumbent on regulators to overcome such inaction bias,¹⁰⁶ and that they should not hesitate to intervene in a robust manner when such intervention can be justified on data-driven analysis of the relevant product market and similar past regulatory interventions (either in the UK or elsewhere).

C.2 Why product intervention to regulate cat bonds?

As explained under Heading B.2, it is possible that a number and variety of factors and circumstances may conspire to increase exponentially the volume of cat bond issues and their

¹⁰⁰ FCA, *Restrictions in relation to the Retail Distribution of Contingent Convertible Instruments*, August 2014, available electronically at <https://www.fca.org.uk/publication/tpi/restrictions-in-relation-to-the-retail-distribution-of-cocos.pdf> (accessed 01.09.2017).

¹⁰¹ See D Awrey, ‘Complexity, Innovation and the Regulation of Modern Financial Markets’ (2012) 2 *Harvard Business Law Review*, 235-294, esp. 262-267.

¹⁰² Moloney (n 95), 196.

¹⁰³ Moloney (n 95), 197 argues that ‘if the new regime enmeshes the regulator in complex, detailed and resource-intensive oversight of industry product-development processes, with the attendant moral hazard and resource risk to the regulator’ this could affect adversely supervisory effectiveness.

¹⁰⁴ See Moloney (n 95), 198.

¹⁰⁵ Both the Financial Policy Committee and the European Systemic Risk Board have these opposing objectives in their mandates. On the complexities and the challenges these bring, see A Keller, ‘The Mandate of the European Systemic Risk Board and Resilience as an Essential Component: Part 1’ (2015) 31(1) *Journal of International Banking Law and Regulation*, 13.

¹⁰⁶ See discussion in Keller (n 105).

prevalence in the financial markets over the coming years. If low interest rates persist, their comparatively high yields are likely to continue to be perceived as attractive. If demand for these instruments should continue to rise, an originate-to-distribute approach might start to prevail among issuers that could lead to a less careful pricing of risk.¹⁰⁷ Widespread common exposures to a single catastrophe can multiply many times the impact such an event would have on the financial markets, causing widespread financial panic and instability. For this reason, we argued in 2015 that constant and careful monitoring of ILS activities in general, and cat bond activities in particular, was essential to the performance of the macroprudential supervisor's role.¹⁰⁸ In line with this, the potential systemic significance of ILS has not escaped the notice of the Financial Policy Committee (FPC).¹⁰⁹

The next question then relates to the means/ tools for taking action to address and mitigate failures that come to light as a result of the macroprudential monitoring. If the design or distribution practices relating to a particular financial innovation causes concern to the macroprudential supervisor, such supervisor needs to have the means to address them. If the systemic concerns are prompted not by the solvency or liquidity of any individual financial institution but by a market-wide trend or practice in relation to the design or distribution of financial products, it is submitted that the most efficient way of addressing such concerns would be to take action in relation to such trends or practices, rather than to attempt to address the potential impact on individual institutions through microprudential supervisory action targeting those institutions.¹¹⁰ Product intervention powers are particularly well suited to intervening to address such systemic risks. As shall be seen under Heading D below, supervisors can make rules targeting specific problematic features of the product's design or problematic practices surrounding its distribution. These interventions can create rules that apply indefinitely or can be designed as temporary measures, as the circumstances require. Thus, with one well-considered and appropriately targeted brush stroke the supervisor can correct trends and practices that, if allowed to carry on unchecked, could result in a build-up of systemic risk. Targeting design and distribution with precision, as would be possible if appropriate product intervention powers were wielded at a macro level, might make better sense for the achievement of financial stability than, for example, attempting to address high demand by simply changing a product's status as an admitted asset for solvency purposes, which could lead to fire sales. The type of product intervention would vary in accordance with the source of risk. For instance, if the risk emanated from the opacity of the product, macroprudential supervisors could intervene in the design of cat bonds and require certain information to be included; if the risk originated in modelling of the product the supervisor could introduce product intervention rules in relation to the standards of pricing and/ or impose entry requirements for entities that conduct the

¹⁰⁷ There are indications that even now supply is failing to meet demand. See Clear Path Analysis, *Insurance Linked Securities for Institutional Investors 2017: An Evolving Asset Class Poised for Growth*, May 2017 available electronically from <https://www.clearpathanalysis.com/reports/insurance-linked-securities-institutional-investors-2017> (accessed 17.08.2017), 14. See also Artemis,

'More risk required to enable greater allocations to ILS, finds report', Artemis, 23rd May 2017 available electronically at <http://www.artemis.bm/blog/2017/05/23/more-risk-required-to-enable-greater-allocations-to-ils-finds-report/> (accessed 10.09.2017).

¹⁰⁸ Goldby and Keller (n 25), 71-72.

¹⁰⁹ See A French, M Vital and D Minot, 'Insurance and Financial Stability', [2015] *Q3 Bank of England Quarterly Bulletin*, 242, 252.

¹¹⁰ In this vein, see also S T Omarova, 'License to Deal: Mandatory Approval of Complex Financial Products' (2012-13) 90 *Wash. U. L. Rev.* 63, 66: 'if we cannot effectively regulate and control systemic risk associated with the increasing complexity in financial markets, we need to reduce and control the overall level of complexity in the system. Because much of that risk-generating complexity is a result of strategic efforts of financial intermediaries that structure, market, and deal in complex financial instruments, the most radical and direct method of reducing systemic risk is to insert regulatory controls at the point of product development, before the risk is introduced into the financial system.'

modelling; if the risk were connected to the distribution of the product the supervisor can require that cat bonds be sold only in specific market places or that they be purchased only by certain types of entities.

Therefore, a strong link may be perceived between the attainment of macroprudential objectives and product intervention powers, a link which suggests that the macroprudential supervisor should have a strong involvement in the product intervention process, whether in order to direct the powers towards the achievement of financial stability goals, or whether to monitor the impact where such powers are exercised to achieve conduct-of-business goals. Where the exercise of product intervention powers rests on a conduct-of-business supervisor therefore, the interaction between such supervisor and the agency charged with macroprudential oversight is crucial. It is submitted also that the conferment of product intervention powers exclusively on a conduct-of-business regulator to be exercised solely for the attainment of consumer protection objectives can be problematic: in view of the potential for systemic risk to build up gradually over time, a product may be systemically relevant without necessarily being detrimental to individual investors. If in spite of being conferred to attain consumer-protection goals, the power is exercised in furtherance of financial stability objectives, such exercise may be challenged as *ultra vires*. In light of this, it is submitted that product intervention can and should be legislatively designed as a tool not merely to achieve consumer protection objectives but also to further macroprudential goals.

In the next part, we will be analysing how UK and EU law respectively have approached the design of product intervention powers. This analysis is intended to evaluate the principles and regulatory objectives that informed the legal framework establishing the powers, to assess the extent to and the ease with which these powers may be used for macroprudential purposes under current law and to gauge whether their use for such purposes may give rise to conflicts.

D. Product Intervention Powers that may be exercised in the UK

In this section, we shall analyse product intervention powers that may be exercised in the UK. We shall start by examining powers deriving from UK law. In section D.1.1 we will discuss the product intervention powers of the PRA and the FCA as assigned in the FSMA (as amended by the Financial Services Act 2012) and whether these powers could be utilised for macroprudential purposes. In section D.1.2 we will outline the powers assigned in the Bank of England Act 1998 to the FPC and whether these could assist in triggering, where necessary, product intervention for macroprudential purposes in the UK. We conclude that the use of product intervention powers in pursuit of financial stability under UK law is not straightforward and requires action by the Treasury (possibly on the advice of the FPC) as well as a consultation process before it may be exercised.

Section D.2 then deals with product intervention powers deriving from EU law. These sources are varied and range from the founding Regulations of the European Supervisory Authorities ('the ESAs Regulations')¹¹¹ to product-specific pieces of legislation. We shall examine each one

¹¹¹ Council Regulation (EU) 1093/2010 of 14 November 2010 Establishing a European Supervisory Authority (European Banking Authority), amending Decision No 716/2009/EC and repealing Commission decision 2009/78/EC [2010] OJ L 331/12 (the 'EBA Regulation'); Council Regulation (EU) 1094/2010 of 24 November 2010 Establishing a European Supervisory Authority (European Insurance and Occupational Pensions Authority), amending Decision No 716/2009/EC and repealing Commission decision 2009/79/EC [2010] OJ L 331/48 (the 'EIOPA Regulation'); Council Regulation (EU) 1095/2010 of 24 November 2010 Establishing a European Supervisory Authority (European Securities and Markets Authority), amending Decision No 716/2009/EC and

of these legal sources and the respective intervention powers they assign to the ESAs or to the national competent authorities (NCAs) of the member states, focusing in particular on NCAs in the UK. In the process, we shall also consider the extent to which these powers may be used to address systemic risk arising from ILSs such as cat-bonds. We shall see that the legal framework for product intervention in the EU is complex, patchy and at times even contradictory. Nevertheless, we conclude that EU law may provide NCAs in the UK with tools for product intervention where financial stability concerns arise which go beyond those provided by domestic law, and which may be relevant to addressing any systemic risk originating in the cat bonds market. The exercise of these powers will depend on the fulfilment of various conditions and requirements, as detailed in this section.

D.1 Product intervention powers conferred by UK law

D.1.1 The Financial Services and Markets Act 2000 (FSMA)

Section 137D of FSMA empowers the FCA with rule-making powers of product intervention. Section 137D(2) provides that the product intervention rules made by the FCA may prohibit authorised persons from (a) entering into specified agreements with any person or specified person; (b) entering into specified agreements with any person or specified person unless requirements specified in the rules have been satisfied; (c) doing anything that would or might result in the entering into of specified agreements by persons or specified persons, or the holding by them of a beneficial or other kind of economic interest in specified agreements; (d) doing anything within paragraph (c) unless requirements specified in the rules have been satisfied.¹¹²

‘Specified agreements’ are those meeting the description specified in general rules made by the FCA.¹¹³ Rules made by the FCA may range from

‘requiring certain product features to be included, excluded, or changed, requiring amendments to promotional materials, to imposing restrictions on sales or marketing of the product or, in more serious cases, a ban on sales or marketing of a product in relation to all or some types of customer.’¹¹⁴

If contravened, the rules may provide for a relevant agreement or obligation to be unenforceable, for money or other property to be recovered or for compensation to be paid.¹¹⁵

The product intervention powers can be exercised when it is necessary or expedient for the purpose of advancing the FCA’s consumer protection objective or its competition objective.¹¹⁶

repealing Commission Decision 2009/77/EC [2010] OJ L331/84 (the ‘ESMA Regulation’).

The EBA Regulation, the EIOPA Regulation and the ESMA Regulation are together referred to as the ‘ESAs Regulations’

¹¹² According to section 137D(6) of FSMA the requirements that may be specified under subsection (2)(b) or (d) include in particular, requirements as to the terms and conditions that are to be, or are not to be, included in specified or other agreements, and requirements limiting invitations or inducements to enter into specified or other agreements to those made to specified persons.

¹¹³ Section 137D(3) of the FSMA. General rules of the FCA are made in accordance with s 137A of FSMA. ‘Specified persons’ are those meeting the description specified in rules by the FCA.

¹¹⁴ FSA, ‘The FCA’s Use of Temporary Product Intervention Rules’ (March 2013) PS13/3 available electronically at <https://www.fca.org.uk/publication/policy/fsa-ps13-03.pdf> (accessed 14.09.2017), 31.

¹¹⁵ Section 137D(7) of FSMA.

¹¹⁶ Section 137D(1)(a) of FSMA.

These operational objectives advance the FCA's strategic objective, i.e. to ensure that the relevant markets function well.¹¹⁷ The consumer protection objective is aimed at securing an appropriate degree of protection for consumers¹¹⁸ whilst the competition objective is aimed at promoting effective competition in the interests of consumers.¹¹⁹

In addition, if the Treasury makes an order for these powers to apply, they may also be used to advance the integrity objective.¹²⁰ This operational objective is defined as protecting and enhancing the integrity of the UK financial system. The "integrity" of the UK financial system includes, inter alia, its soundness, stability and resilience and the orderly operation of the financial markets¹²¹ and therefore, could potentially provide a basis for product intervention based on financial stability concerns. The FCA explains that in order to enhance market integrity it seeks, inter alia, to ensure that 'firms' business models, activities, controls and behaviour maintain trust in the integrity of markets and do not create or allow market abuse, systemic risk or financial crime.'¹²² The choice of the term "systemic risk" as a key indicator of market integrity clearly opens the door for product intervention to be used where macroprudential concerns arise.

But what was the logic behind limiting the use of product intervention powers for the purpose of protecting and enhancing the integrity of the UK financial system? The government noted in its consultation that the FCA product intervention power is unlikely to be appropriate in relation to the protection of professional or wholesale customers. This position was strongly supported by respondents and ultimately led to the exclusion of the use of these powers to advance the integrity objective. Nevertheless, recognising that there may be circumstances in which it may be necessary to make product intervention rules for market integrity reasons, the FSMA provided the Treasury with an order-making power to extend the power to cover the FCA's integrity objective.

Interestingly, the Treasury Report 'A New Approach to Financial Regulation: A Blueprint for Reform' suggests that '[i]n line with its general powers, the Financial Policy Committee (FPC) will be able to advise the Treasury on the exercise of this order-making power'.¹²³ As will be discussed under heading D.1.2 below, the FPC's primary objective 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. Where such concerns necessitate the initiation of the Treasury order-making power, the FPC would be able to advise that product intervention powers be used for the purpose of preserving or enhancing market integrity.

To date, the Treasury has not exercised this power and no intention to do so has been expressed. Moreover, given that these powers could have significant impact on firms, consumers and the market, safeguards have been put in place. The exercise of product intervention powers for the

¹¹⁷ Section 1B(1) and 1B(2) of FSMA.

¹¹⁸ Section 1C(1) FSMA.

¹¹⁹ Section 1E(1) FSMA.

¹²⁰ Section 137D(1)(b) of FSMA.

¹²¹ Section 1D of FSMA.

¹²² FCA, *Enhancing Market Integrity*, first published 19th April 2016, last updated 9th January 2017, available electronically at <https://www.fca.org.uk/about/enhancing-market-integrity> (accessed 14.09.2017); FCA, *The FCA's Approach to Advancing Its Objectives 2015*, December 2015, available electronically at <https://www.fca.org.uk/publication/corporate/fca-approach-advancing-objectives-2015.pdf> (accessed 14.09.2017).

¹²³ HM Treasury, *A New Approach to Financial Regulation: the Blueprint for Reform*, June 2011, CM 8083 available electronically at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/81403/consult_finreg_new_approach_blueprint.pdf (accessed 14.09.2017), 30-31.

purpose of preserving or enhancing market integrity is subject to a consultation process and cost-benefit analysis, unless delay would be 'prejudicial to the interests of consumers'.¹²⁴ Thus intervention in the absence of a consultation process is only permitted in pursuance of the consumer protection objective.

In addition to the powers conferred by s 137D, s 138M of FSMA empowers the FCA to make Temporary Product Intervention Rules (TPIR) without consultation (and without complying with other requirements under FSMA, such as conducting a cost benefit analysis)¹²⁵ where it considers that it is 'necessary or expedient' to do so to advance the consumer protection objective or the competition objective (or the integrity objective if the requisite order is made by the Treasury). TPIR are valid for a maximum of 12 months and cannot be re-made once they have expired.¹²⁶ An FCA Policy Statement explains that:

'Rules may range from requiring certain product features to be included, excluded, or changed, requiring amendments to promotional materials, to imposing restrictions on sales or marketing of the product or, in more serious cases, a ban on sales or marketing of a product in relation to all or some types of customer.'¹²⁷

It is to be noted that in making any rule, including temporary or permanent product intervention rules, the FCA is under obligation to seek to promote effective competition in the interests of consumers where doing so is compatible with its consumer protection objective (or the integrity objective).¹²⁸ Nevertheless, where promoting competition would be in conflict with the consumer protection or (if applicable) market integrity aims of a proposed product intervention rule, the consumer protection or market integrity aims will take precedence over competition considerations.¹²⁹

Thus, the primary objective of the intervention powers assigned in the FSMA appears to be the protection of investors and consumers of financial products. However, if the Treasury were to make an appropriate order these intervention powers may be used in furtherance of the FCA's integrity objective and therefore, it is submitted, to address financial stability concerns, without the FCA thereby being found to have acted *ultra vires*. It should, however, be borne in mind, that financial stability is not the FCA's primary concern nor is it likely to treat it as a priority. The Turner Review identified the FSA bias towards the consumer protection goal vis-à-vis its micro-prudential supervision as one of the failures of financial supervision in the UK in the years leading to the 2008-2009 financial crisis.¹³⁰ This bias was the *raison d'être* for breaking up the FSA and the adoption of a twin peaks structure with the FCA and the PRA as its successors. The FCA was viewed as a 'dedicated, specialist body with focused and clear statutory objectives and regulatory functions' responsible for 'regulation of conduct within the financial system-including the conduct of firms towards their retail customers, and the conduct of participants in

¹²⁴ Sections 138I and 138L of FSMA. Interests of consumer as defined in section 425A of FSMA.

¹²⁵ Section 138M(1) of FSMA.

¹²⁶ Section 138M(3) and 138M(5) of FSMA. TPIR were used for the first time on the 5th of August 2014 to introduce restrictions on the ability of authorized persons to distribute contingent convertible instruments (CoCos) to retail investors.

¹²⁷ FCA, *The FCAs' Use of Temporary Product Intervention Rules*, March 2013, PS 13/3 <https://www.fca.org.uk/publication/policy/fca-ps13-03.pdf> accessed (14.09.2017).

¹²⁸ Section 1B(4) of FSMA.

¹²⁹ FCA PS 13/3 (n 127), 25.

¹³⁰ FSA, *The Turner Review: A Regulatory Response to the Global Banking Crisis*, March 2009, available electronically at http://www.fsa.gov.uk/pubs/other/turner_review.pdf (accessed 14.09.2017) (hereinafter Turner Review), 87.

wholesale financial markets'.¹³¹

Thus, it is submitted, the FCA is unlikely to act in furtherance of financial stability unless ordered to do so by authorities pursuing financial stability objectives (including macroprudential authorities).¹³² It is the PRA that has a general objective to promote the safety and soundness of firms it regulates.¹³³ This objective is to be advanced primarily by seeking to ensure that the activity of these firms is carried on in a way which avoids any adverse effect on the stability of the UK financial system and by seeking to minimise the adverse effect that these firms' failure could be expected to have on the stability of the UK financial system.¹³⁴ The PRA, however, is not empowered with any product intervention powers by the FSMA, and, barring any exercise by the Treasury of its power to make an order prescribing a macroprudential measure conferring a discretion on the PRA,¹³⁵ the latter's ability to have an impact on product intervention where financial stability concerns arise is a negative one, i.e. it can require the FCA to refrain from exercising its intervention powers where it may threaten the stability of the UK financial system, or result in the failure of a firm the PRA regulates in a way that would adversely affect the UK financial system.¹³⁶

D.1.2 The Bank of England Act 1998 (BEA) as the source of the macroprudential powers of the FPC.

The FPC is charged with a primary objective of identifying, monitoring and taking action to remove or reduce systemic risks with a view to protecting and enhancing the resilience of the UK financial system.¹³⁷ In working with the FCA or the PRA or exercising functions in relation to either of them, the FPC is required, so far as it is possible to do so while complying with its objective, to seek to avoid exercising its functions in a way that would prejudice the advancement by the FCA of any of its operational objectives, or the advancement by the PRA of any of its objectives.¹³⁸ The FPC has the power to give directions to the PRA or the FCA requiring macroprudential measures,¹³⁹ which are measures prescribed by the Treasury by order, in accordance with s 9L of the Bank of England Act 1998 (BEA). The direction, however, cannot require PRA or FCA to do anything that they do not have the power to do but rather to direct any discretion that was conferred on them. Hence, the FPC is able to give direction to the FCA to use its product intervention powers for the integrity objective, where the Treasury has given an order for that purpose. Where the Treasury fails to provide such an order the FPC can make a recommendation to the Treasury to that effect.¹⁴⁰ As can be seen the use of product intervention powers in pursuit of financial stability under UK law is not straightforward and requires action by the Treasury (possibly on the advice of the FPC) as well

¹³¹ HM Treasury, *A New Approach to Financial Regulation: Judgement, Focus and Stability*, July 2010, Cm7874, available [electronically at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/81389/consult_financial_regulation_condoc.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/81389/consult_financial_regulation_condoc.pdf) (accessed 14.09.2017), [1.19]. At that stage of the legislative proposal, the FCA was named the Consumer Protection and Markets Authority.

¹³² See discussion under D.1.2 and D.2 below.

¹³³ Section 2(B)(2) of FSMA.

¹³⁴ Section 2B(3) of FSMA.

¹³⁵ Section 9L of the Bank of England Act 1998 (BEA), discussed under heading D.1.2.

¹³⁶ Section 3I of FSMA.

¹³⁷ Section 9C(1) BEA. Its secondary objective is to support the economic policy of the Government (s 9C(2) of BEA).

¹³⁸ Section 9F(2) of BEA.

¹³⁹ Section 9H of BEA.

¹⁴⁰ Section 9P(2)(d) of BEA.

as a consultation process before it may be exercised. This means that supervisors in the UK currently do not have the tools rapidly to intervene where sudden and acute systemic risk concerns arise. For instance, the regulator might want to intervene if a trigger catastrophic event were to take place and spur a sudden large scale fire sale¹⁴¹ of not just affected cat bonds, but also panic selling of cat bonds generally, which, as explained under heading B.2, may be detrimental to financial stability. In this situation, a useful macroprudential tool would be to impose a fire breaker for example by temporarily prohibiting the sale of affected cat bonds, pending clarity as to the actual losses consequent upon the trigger event. If regulators wanted to do this under current UK law, they would not be able to do so without first obtaining the required order from the Treasury, which is hardly conducive to prompt intervention to address an urgent market situation.

D.2 Product Intervention Powers deriving from EU law

D.2.1 The European Systemic Risk Board Regulation and the ESAs Regulations

The FCA can also exercise the FSMA product intervention powers in furtherance of guidelines, recommendations or warnings emanating from one or more of the European Supervisory Authorities (ESAs). The objective of the ESAs is to protect the public interest by contributing to the short, medium and long-term stability and effectiveness of the financial system, for the EU economy, its citizens and businesses.¹⁴² It is also part of their role to promote transparency, simplicity and fairness in the market for consumer financial products or services across the internal market.¹⁴³ Therefore, the ESAs pursue both prudential and conduct-of-business objectives in their respective sector.

To achieve these tasks the ESAs are given a wide range of powers. They have the power to adopt guidelines and recommendations addressed to NCAs or financial institutions with a view to promoting the safety and soundness of markets and convergence of regulatory practice.¹⁴⁴ According to Article 16 of the ESAs Regulations the aim of these guidelines and recommendations is to establish consistent, efficient and effective supervisory practices within the European System of Financial Supervision (ESFS), and to ensure the common, uniform and consistent application of EU law. Therefore, issuance of guidelines and recommendations for financial stability concerns will have to fall within the aim of promoting convergence within the EU.

NCAs are required to comply with the ESAs' guidelines and recommendations or in case of non-compliance explain the reasons behind their decision.¹⁴⁵ The ESAs can also issue warnings about financial activities posing a serious threat to the objectives as laid down in article 1(5) of the European Banking Authority (EBA) and European Securities and Markets Authority (ESMA) Regulations or Article 1(6) of European Insurance and Occupational Pensions Authority (EIOPA) Regulation, that includes, as detailed above, the medium and long-term

¹⁴¹ The recent price drop in cat bonds following hurricane Irma is an example for a sudden price drop which could potentially trigger a fire sale: Artemis, 'Citrus Re 2017 Cat Bond Notes Trade Down 50% on Hurricane Irma threat', 6 September 2017 available at <http://www.artemis.bm/blog/2017/09/06/citrus-re-2017-cat-bond-notes-trade-down-50-on-hurricane-irma-threat/> (accessed 8 January 2018).

¹⁴² Article 1(6) of EIOPA Regulation; Article 1(5) of the EBA Regulation and ESMA Regulation.

¹⁴³ Article 9(1) of the ESAs Regulations.

¹⁴⁴ Article 9(2) and Article 16 the ESAs Regulations.

¹⁴⁵ Article 16 of the ESAs Regulations.

stability of the financial system.¹⁴⁶ Nevertheless, the warnings issued to date by the ESAs were addressed to investors or consumers rather than NCAs, urging them to be aware of potential perils in specific investment activities and hence with the aim of consumer protection rather than in pursuit of financial stability.¹⁴⁷

As indicated under heading D.1, whilst the PRA does not have the statutory power for product intervention, the FCA may have, subject to the fulfilment of certain conditions, the authority to exercise these powers based on financial stability grounds. Where the FCA fails to do so and the relevant ESA identifies a serious threat to the stability of the financial system it may issue a warning addressed to the FPC (that, in turn, can give a direction to the FCA or advise the Treasury to use its order-making power) or directly to the FCA.

Two important points should be considered. First, the FCA's objectives refer to the financial system in the UK¹⁴⁸ whilst the ESAs' realm is the financial system in the EU. Given that the ESAs guidelines or recommendations are based on 'comply or explain' the FCA may be entitled to refuse to act in circumstances where, although beneficial at EU level, it is not beneficial to do so at UK level. Second, in contrast to the authorities in the UK, the ESAs differ according to the sector they supervise (rather than according to their functions). Therefore, determining, which is the relevant NCA in the UK for the purpose of the ESAs Regulations, may not always be straightforward. Which is the NCA will depend on the objective that the product intervention serves (broadly, financial stability or consumer protection) as well as the actual powers of the NCA. For instance, the EBA refers on its website to the PRA as well as the FCA as the NCA. If the EBA were to recommend the PRA to exercise product intervention powers to protect the stability of the market, the PRA would simply not be able to do so. It might be that the FPC would have to persuade the Treasury to make the necessary order to permit the necessary exercise of product intervention powers.

The ESAs Regulations therefore provide a mechanism to encourage NCAs to act where risks to the financial system in the EU arise. The success of such mechanism depends on the existence of the necessary powers at the national level as well as the will to cooperate with the ESA given that the latter only has power to make "soft" law (guidelines and recommendations). It will be appreciated that process described above whereby this may be achieved is a rather unwieldy one and not amenable to speedy intervention. Nevertheless, the different levels of consultation required may have their advantages in view of the necessity of striking the right balance between permitting innovation in response to demand and taking preventive action in the face of systemic risk.

In addition to instigating action by the Member States' NCAs through guidelines, recommendations or warnings, the ESAs themselves have temporary product intervention powers. According to Article 9(5) of the ESAs Regulations they may temporarily prohibit or restrict certain financial activities¹⁴⁹ that threaten the orderly functioning and integrity of

¹⁴⁶ Article 9(3) of the ESAs Regulations. The ESMA, for instance, issued in December 2011 a warning about trading in foreign exchange however in that case the aim of the warning was consumer protection rather than financial stability concern. ESMA, Trading in Foreign Exchange, Investor Warning, 5th December 2011, available electronically at https://www.esma.europa.eu/sites/default/files/library/2015/11/2011-412_1.pdf (accessed 14.09.2017).

¹⁴⁷ The ESAs have issued numerous warnings: on investments in Foreign Exchange (Forex) (December 2011), on the pitfalls of online investments (September 2012) on Contracts for Differences (CFD) (April 2013); on virtual currencies (December 2013) and on CFDs, binary options and other speculative products (July 2016).

¹⁴⁸ Article 1D of FSMA.

¹⁴⁹ The ESAs Regulations do not define 'financial activities' but paragraph 50 of the preamble of each refers to the power temporarily to prohibit activities or products.

financial markets or the stability of the whole or part of the financial system in the EU where permitted in a specific EU legislative act listed in article 1(2) of the ESAs Regulations. The legislative acts include, for instance, the second Markets in Financial Instruments Directive (MiFID II)¹⁵⁰ and Markets in Financial Instruments Regulation (MiFIR),¹⁵¹ both discussed below. The EU Regulation on key information documents for packaged retail and insurance-based investment products (PRIIPs Regulation),¹⁵² also discussed below, is not listed in the article 1(2) of the ESAs Regulations since it was enacted after the establishment of the ESAs but the list in this article includes a reference to ‘all directives, regulations, and decisions based on those acts, and of any further legally binding Union act which confers tasks on the Authority.’

Alternatively, temporary product intervention is permitted where there is an emergency situation.¹⁵³ According to article 18 of the ESAs Regulations, an emergency situation may emerge where adverse developments may seriously jeopardise the orderly functioning and integrity of financial markets or the stability of the whole or part of the financial system in the EU. In that case, the ESA, the European Commission or the European Systemic Risk Board (ESRB) can request the Council to adopt a decision addressed to the ESA, determining the existence of an emergency situation. The decision is made in consultation with the Commission and the ESRB and, where appropriate, the ESAs.

The intervention powers of the ESAs are temporary and therefore if permanent bans or prohibitions of specific products or financial activities needed to be made, they would need to be effected by NCAs. Accordingly, the ESA’s decision to use its intervention power has to be reviewed in appropriate intervals and at least every 3 months and if not renewed within that timeframe it automatically expires.¹⁵⁴ A Member State can request the relevant ESA to reconsider its decision and in that case the latter has to follow a specified procedure.¹⁵⁵

Despite the potential for intervention by the ESAs, directly or through the NCAs, it is to be noted that the realm of the ESAs is confined to the micro-prudential level. Therefore, the ultimate leading force in preventing and mitigating systemic risks to financial stability within the EU is the ESRB. The ESRB is responsible for the macroprudential oversight of the financial system within the EU in order to contribute to the prevention or mitigation of systemic risks to financial stability in the EU that arise from developments within the financial system and taking into account macroeconomic developments, so as to avoid periods of widespread financial

¹⁵⁰ Council Directive 2014/65/EU of 15 May 2014 on Markets in Financial Instruments and amending Directive 2002/92/EC and Directive 2011/61/EU OJ L 173, 12.6.2014, 349–496.

¹⁵¹ Council Regulation (EU) No 600/2014 of 15 May 2014 on Markets in Financial Instruments and amending Regulation (EU) No 648/2012 [2014] OJ L 173/84. It is envisaged that by January 2018 MiFID and MiFIR will apply within the Member States. The limited application of the powers of Article 9(5) that is currently confined to a few legislative acts was highlighted in the European Commission Review of the ESAs and it was suggested to give consideration to converting Article 9(5) into a self-standing empowerment. See European Commission, *Report from the Commission to the European Parliament and the Council on the Operation of European Supervisory Authorities (ESAs) and the European System of Financial Supervision (ESFS)*, Brussels 8th August 2014, COM (2014) 509 final, available electronically at http://eur-lex.europa.eu/resource.html?uri=cellar:52c42d53-1ef0-11e4-8c3c-01aa75ed71a1.0002.02/DOC_1&format=PDF (accessed 15.09.2017), 8.

¹⁵² Council Regulation (EU) 1286/2014 of 26 November 2014 on Key Information Documents for Packaged Retail and Insurance-based Investment Products [2014] OJ L 352/1.

¹⁵³ Article 18 of the ESAs Regulations.

¹⁵⁴ Article 9(5) of the ESAs Regulations.

¹⁵⁵ Article 9(5) of the ESAs Regulation. The procedure is set out in the second subparagraph of Article 44(1) of the ESAs Regulation.

distress.¹⁵⁶ When significant risks to the achievement of the ESRB macroprudential objective are identified, the ESRB can provide warnings and, where appropriate, issue recommendations for remedial action.¹⁵⁷ The warnings or recommendation can be addressed in particular to the EU as a whole or to one or more Member States, or to one or more of the ESAs, or to one or more of the NCAs. The ESRB warnings or recommendations are backed by a ‘comply or explain’ mechanism as set out in Article 17 of the ESRB Regulation. In addition, the ESRB can decide on a case-by-case basis to make a warning or recommendation public.¹⁵⁸

Thus, in a cat bond scenario, if the ESRB were to consider that the cat bonds market had grown sufficiently and were sufficiently interconnected to pose a real systemic threat, it might want to issue a recommendation for action to be taken. For instance, it could recommend that any models used in structuring new cat bond issues be audited by independent third parties in order to ensure that they are robust, taking into account available contextual knowledge,¹⁵⁹ and in order to have assurances from a diversity of sources as to the soundness of the risk-pricing.

The ESRB is likely therefore to be the driving force in ensuring macroprudential concerns in the EU are taken into account and acted upon. This can be achieved, inter alia, through the ESAs’ product intervention powers or through product intervention powers given at Member State level (as discussed under Heading D.1). In addition, under recent EU legislation, NCAs in the UK, including the FPC¹⁶⁰ and the PRA, and not just the FCA may be able to make use of product intervention powers for macroprudential purposes. These include the MiFIR, the PRIIPs Regulation and the Regulation on over-the-counter (OTC) Derivatives, Central Counterparties and Trade Repositories (EMIR).¹⁶¹

D.2.2 Product Intervention Powers under MiFIR

On 12 June 2014, the European Parliament and the Council adopted a new legislative package that included MiFID II and MiFIR. The legislation applies, inter alia, to investment firms and credit institutions when providing investment services and/or performing investment activities.¹⁶²

Article 2(1)(a) of MiFID II excludes from the application of MiFID II insurance undertakings or undertakings carrying out the reinsurance and retrocession activities referred to in the Solvency II Directive, when carrying out the activities referred to in that Directive. Although this would exclude the application to insurance and reinsurance undertakings of authorisation

¹⁵⁶ Article 3 of the ESRB Regulation.

¹⁵⁷ Article 16 of the ESRB Regulation.

¹⁵⁸ Article 18 of the ESRB Regulation.

¹⁵⁹ See text accompanying [n 74](#).

¹⁶⁰ As a Committee of the Bank of England, the FPC can be considered as a competent authority for certain directives and regulations. See Letter of the HM Treasury to the European Commission on the 29th of April 2013, available electronically at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/210034/Notification_of_competent_authority_to_the_EU_Commission.pdf (accessed 10.09.2017), that lists the Bank of England as a competent authority for the purposes of the EU Regulation on Over-the-counter (OTC) Derivatives, Central Counterparties and Trade Repositories.

¹⁶¹ Council Regulation (EU) No 648/2012 on OTC Derivatives, Central Counterparties and Trade Repositories (EMIR) [2012] L OJ 20/1.

¹⁶² Authorised under MiFID II and Council Directive 2013/36/EU of 26 June 2013 on Access to the Activity of Credit Institutions and the Prudential Supervision of Credit Institutions and Investment Firms [2013] OJ 176/338, respectively. Article 1(2) of MiFIR.

and operating conditions for investment firms laid down in MiFID II, it would not appear in itself to affect the scope of product intervention powers in MiFIR. However there are suggestions elsewhere that a restriction imposed by the exercise of MiFIR product intervention powers may not be addressed to an insurance undertaking.¹⁶³ Even if this is the case, such restrictions may presumably be addressed to structuring agents and/or distributors listed in the MiFID investment firms register.¹⁶⁴ Further, product intervention under MiFIR could presumably also lead to intervention in the secondary markets for cat bonds. The limitation of the power to address product intervention only to specific types of entities lies awkwardly with the purposes of product intervention, which relate to addressing issues in the design and distribution of products regardless of the class of entity that designed, sponsored or distributed them. If coverage of entities is not sufficiently comprehensive, that would immediately result in regulatory arbitrage.¹⁶⁵

The product intervention powers within the scope of MiFIR apply to financial instruments.¹⁶⁶ A financial instrument is an asset or evidence of the ownership of an asset, or a contractual agreement between two parties to receive or deliver another financial instrument. Instruments considered as financial are listed in MiFID II (Annex I).¹⁶⁷ Pursuant to Section C(1) of the Annex financial instruments include transferable securities. Article 4(1)(44) of MiFID II includes a definition of transferable securities which covers bonds.¹⁶⁸ Importantly for our purposes, it should therefore cover also catastrophe bonds.

In addition, cat-linked futures, swaps and options would be classified as “derivatives”, and would therefore also fall within the ambit of MiFIR. The definition of derivatives is common to both MiFID II and MiFIR.¹⁶⁹ Derivatives are defined in Article 2(1)(29) of MiFIR as ‘any other securities (i.e. other than transferable securities, including shares, bonds or other forms of securitised debt), giving the right to acquire or sell any such transferable securities or giving rise to a cash settlement determined by reference to transferable securities, currencies, interest rates or yields, commodities or other indices or measures.’ Annex I Section C (10) of MiFID II lists among the types of derivatives to which it is applicable, ‘options, futures, swaps, forward rate agreements and any other derivative contracts relating to climatic variables, ... that must be settled in cash or may be settled in cash at the option of one of the parties other than by reason

¹⁶³ Indeed in the Frequently Asked Questions on MiFIR Product Intervention Powers it is indicated that ‘The entities to which these powers can be applied are firms authorised under Directive 2014/65/EU (MiFID) and credit institutions (i.e. banks) authorised under Directive 2013/36/EU (CRD).’ Frequently Asked Questions on MiFIR Product Intervention Powers, available electronically at www.esma.europa.eu/policy-activities/mifid-ii-and-investor-protection/mifir-product-intervention-powers (accessed 10.09.2017).

¹⁶⁴ available electronically at <https://registers.esma.europa.eu/publication/searchMifid> (accessed 10.09.2017).

¹⁶⁵ On 12th January 2017, ESMA delivered an opinion calling for a modification of the scope of the powers of the National Competent Authorities (NCAs) and ESMA under Articles 40 and 42 of MiFIR. ESMA stated that ‘... the way the scope of the intervention powers is designed under MiFIR could create a risk of arbitrage between MiFID firms and fund management companies ... ESMA is very concerned about this risk of arbitrage because it could reduce the impact of future measures by leaving outside the scope of the restrictions entities performing similar activities or distributing funds directly, as well as creating competitive distortions.’ ESMA, *Opinion: Impact of the exclusion of fund management companies from the scope of the MiFIR Intervention Powers*, 12th January 2017, ESMA50-1215332076-23, available electronically at www.esma.europa.eu/sites/default/files/library/esma50-1215332076-23_opinion_mifir_intervention_powers.pdf (accessed 01.09.2017).

¹⁶⁶ Articles 40-42 of MiFIR.

¹⁶⁷ Commission Staff Working Document Impact Assessment accompanying the document Commission Delegated Regulation supplementing Regulation (EU) No 600/2014 of the European Parliament and of the Council with regard to Definitions, Transparency, Portfolio Compression and Supervisory Measures on Product Intervention and Positions C (2016) 2860 final, 61.

¹⁶⁸ Article 4(1)(44)(b) MiFID II.

¹⁶⁹ Article 2(1)(29) MiFIR and Article 4(49) of MiFID II.

of default or other termination event...'.¹⁷⁰

Given that cat bonds as well as cat-linked derivatives fall within the scope of MiFIR, it is useful to examine the product intervention powers conferred by MiFIR, as these can be used to regulate their design and distribution. Articles 40, 41 and 42 of MiFIR, broadly share the same wording and empower the ESMA, the EBA (with respect to structured deposits) and NCAs respectively temporarily to prohibit or restrict the marketing, distribution or sale of certain financial instruments or financial instruments with certain specified features or a type of financial activity or practice. The discretion of the EBA and ESMA is confined and requires that the following conditions are cumulatively met:

- (a) The proposed action addresses a significant investor protection concern or a threat to the orderly functioning and integrity of financial markets (or commodity markets in relation to ESMA and NCA) or to the stability of the whole or part of the financial system in the EU;¹⁷¹
- (b) The regulatory requirements under EU law that are applicable to the relevant financial instrument or activity do not address the threat;
- (c) A competent authority or competent authorities have not taken action to address the threat or the actions that have been taken do not adequately address the threat.

In addition, when taking action the ESMA or the EBA has to ensure that the action does not have a detrimental effect on the efficiency of financial markets or on investors that is disproportionate to the benefits of the action and that it does not create a risk of regulatory arbitrage.¹⁷² Before deciding to take any action, the ESMA or the EBA is required to notify competent authorities of the action it proposes.¹⁷³

Given that cat-linked derivatives, including futures, swaps and options very probably fall within the ambit of MiFIR, EMIR would also apply to such cat-bond derived instruments.¹⁷⁴ One of the key implications of this would be that certain information relating to transactions in these derivatives will be available to the entities on which MiFIR confers product intervention powers, because EMIR introduces a mandatory requirement to report certain details of derivative transactions in the EU to trade repositories.¹⁷⁵ So information on the risks inherent in derivatives markets will be centrally stored and easily accessible to the relevant competent authorities.¹⁷⁶ Under EMIR ESMA as the sole authority with the responsibility to register and exercise surveillance of trade repositories in the EU,¹⁷⁷ can ensure an unfettered access to all the relevant European authorities, including the ESRB, to the data stored in the trade

¹⁷⁰ This is reinforced by Commission Delegated Regulation Supplementing MiFID II OJ C(2016) 2398 final. See Article 8(e).

¹⁷¹ Where the conditions set out in the first subparagraph are fulfilled, EBA may impose the prohibition or restriction referred to in paragraph 1 on a precautionary basis before a structured deposit has been marketed, distributed or sold to clients. According to Article 42(2) that relates to NCA product intervention, there reference is to the stability of the whole or part of the financial system in the Union within at least one member state.

¹⁷² Articles 40(3), 41(3) and 42(3) of MiFIR. There is another condition with regard to the ESMA intervention powers to consult the public bodies competent for the oversight, administration and regulation of physical agricultural markets under Regulation (EC) No 1234/2007, where the measure relates to agricultural commodities derivatives.

¹⁷³ Articles 40(4) or 41(4) of MiFIR.

¹⁷⁴ Article 2(5) of EMIR defines 'derivative' a financial instrument as set out in points (4) to (10) of Section C of Annex I to MiFID 1 (this definition is similar to the one in MiFID 2).

¹⁷⁵ EMIR, Article 9.

¹⁷⁶ EMIR, Article 81.

¹⁷⁷ EMIR, Title VI Registration and Supervision of Trade Repositories, Chapter 1.

repositories and can act as the European contact point to deal with competent authorities of third countries trade repositories.¹⁷⁸ The information disclosed under EMIR is important for macroprudential supervision and will give authorities with product intervention powers the macro picture of how these products are being used and distributed.¹⁷⁹

With regard to the product intervention powers of the NCA, the requirements are:

- (a) either
 - (i) a financial instrument, structured deposit or activity or practice gives rise to significant investor protection concerns or poses a threat to the orderly functioning and integrity of financial markets or commodity markets or to the stability of whole or part of the financial system within at least one Member State; or
 - (ii) a derivative has a detrimental effect on the price formation mechanism in the underlying market;¹⁸⁰
- (b) existing regulatory requirements under EU law applicable to the financial instrument, structured deposit or activity or practice do not sufficiently address the risks referred to in point (a) and the issue would not be better addressed by improved supervision or enforcement of existing requirements;
- (c) the action is proportionate taking into account the nature of the risks identified, the level of sophistication of investors or market participants concerned and the likely effect of the action on investors and market participants who may hold, use or benefit from the financial instrument, structured deposit or activity or practice;
- (d) the competent authority has properly consulted competent authorities in other Member States that may be significantly affected by the action;
- (e) the action does not have a discriminatory effect on services or activities provided from another Member State; and
- (f) it has properly consulted public bodies competent for the oversight, administration and regulation of physical agricultural markets under Regulation (EC) No 1234/2007, where a financial instrument or activity or practice poses a serious threat to the orderly functioning and integrity of the physical agricultural market.

Several observations can be made with regard to these temporary product intervention powers. First, a pre-requisite for the exercise of the intervention power where it relates to the orderly functioning and integrity of financial/commodity markets or stability of the financial system is the existence of a “threat”. In contrast, where it is being exercised for investor protection purposes, there needs to be a “significant concern”. According to the ESMA, the latter requires the existence of a more intense detriment before the intervention power can be used.¹⁸¹ This reflects the priority given to financial stability as an objective.¹⁸²

¹⁷⁸ The European Data Protection Supervisor has also raised concerns regarding the vast powers entrusted with the ESMA. See also the FSA and HM Treasury, *Reforming OTC Derivatives Markets, A UK Perspective*, December 2009, http://www.fsa.gov.uk/pubs/other/reform_otc_derivatives.pdf (accessed 14.09.2017).

¹⁷⁹ Importantly, the ESMA is responsible for development of regulatory technical standards specifying the details of the information to be disclosed. EMIR, Article 81(5). This addresses the need for the information to be comparable across EU trade repositories, to make it more easily usable in the macroprudential arena.

¹⁸⁰ Where the conditions set out in the first subparagraph are fulfilled, the competent authority may impose the prohibition or restriction referred to in paragraph 1 on a precautionary basis before a financial instrument or structured deposit has been marketed, distributed or sold to clients.

¹⁸¹ ESMA, *ESMA's Technical Advice to the Commission on MiFID II and MiFIR*, Final Report, 19 December 2014, available electronically at https://www.esma.europa.eu/sites/default/files/library/2015/11/2014-1569_final_report_-_esmas_technical_advice_to_the_commission_on_mifid_ii_and_mifir.pdf (accessed 14.09.2017), 191.

¹⁸² See, for instance, Schoenmaker and Wiert, (n 1), who suggest constructing hierarchy of objectives in which the

Second, the European Commission has adopted delegated acts (following a technical advice by the EBA and the ESMA) to identify the considerations to be taken into account by the EBA, the ESMA or an NCA in determining when, such significant concern or a threat (depending on the area of intervention) exist.¹⁸³ The long list of criteria includes, for instance, the complexity of the product or activity, the potential for detrimental consequences, the type of clients involved and the degree of transparency.¹⁸⁴ The criteria seem to be mostly orientated towards the investor protection objective but some were clearly drafted with financial stability considerations in mind. For instance, whether there is a high risk of disruption to systemically important institutions; whether the instrument or activity presents risks to payment, settlement or clearing systems; or whether it may threaten investors' confidence in the financial system.

Third, according to articles 40(7) and 41(7) the intervention action adopted by the EBA or the ESMA prevails over any previous action taken by a competent authority. The EBA and the ESMA are required to notify the NCA and publish a notice on its website.¹⁸⁵

Fourth, the NCAs are subject to more onerous conditions than the EBA and the ESMA before they can use their temporary intervention powers including the requirement that the issue would not be better addressed by improved supervision or enforcement of existing requirements; that the action is proportionate; the requirement to consult with competent authorities that might be affected by their proposed intervention action and that the action does not have a discriminatory effect on services or activities provided from another Member State. Some of these conditions similarly appear in the intervention power of the NCAs under the PRIIPs Regulation and will be further explored in the following section. The NCAs need to provide at least a month's notice to the ESMA and other authorities when taking a temporary action.¹⁸⁶

Finally, the EBA and the ESMA play a facilitation and coordination role in ensuring that action taken by a NCA is justified and proportionate and that where appropriate, a consistent approach is taken by competent authorities. In practical terms, the ESMA or the EBA are required to issue an opinion on whether the prohibition or restriction is justified and proportionate and whether similar action by other competent authorities is required.¹⁸⁷ Nevertheless, where NCA has taken a measure under Article 42, the ESMA or the EBA may take any of the measures referred to in Article 40(1) and 41(1) respectively without issuing the opinion provided for in Article 43.

macroprudential concerns override the micro-prudential concerns. Similarly, see C Noyer, 'Macroprudential Policy: From Theory to Implementation' Banque de France Financial Stability Review No. 18 April 2014, 11.

¹⁸³ Article 40(8) and 42(7) of MiFIR; Commission Delegated Regulation (EU) of 25 of April 2016 supplementing Directive 2014/65/EU of the European Parliament and of the Council as regards Organisational Requirements and Operating Conditions for Investment Firms and Defined terms for the purposes of that Directive C (2016) 2398 final (hereinafter: the Delegated Regulation).

¹⁸⁴ Article 19 to 21 of the Delegated Regulation. The Delegated Regulation (recital 19) clarifies that the need to assess all criteria and factors that could be present in a specific factual situation should not prevent NCAs, ESMA and the EBA from using a temporary intervention power when only one of the factors or criteria leads to such a concern or threat.

¹⁸⁵ Articles 40 and 41(4) and (5) of MiFIR.

¹⁸⁶ Article 42(3) of MiFIR. Nevertheless, according to Article 42(3) - in exceptional cases where the competent authority deems it necessary to take urgent action under this Article in order to prevent detriment arising from the financial instruments, structured deposits, practices or activities referred to in paragraph 1, the competent authority may take action on a provisional basis with no less than 24 hours' written notice, before the measure is intended to take effect, to all other competent authorities and ESMA or, for structured deposits, EBA, provided that all the criteria in this Article are met and that, in addition, it is clearly established that a one month notification period would not adequately address the specific concern or threat. The competent authority shall not take action on a provisional basis for a period exceeding three months.

¹⁸⁷ Article 43 of the MiFIR.

The above discussion demonstrates that a UK NCA would be able to exercise product intervention powers conferred by EU rather than by UK law in furtherance of the financial stability objective, subject to the conditions stated in MiFIR. These powers should be seen as additional to those conferred by UK law, and exercisable independently of those conferred by FSMA or BEA, however the UK's decision to withdraw from the EU, depending on what is decided regarding the survival of the *acquis communautaire* in the UK, may mean that in order that these powers be preserved, UK legislative action will be necessary.

D.2.3 Data informing the exercise of product intervention powers: product governance under MiFID II

The decision to exercise product intervention powers can be a difficult one for supervisors as explained under heading C and they are likely to be reluctant to intervene in the absence of compelling evidence of the need to do so. The availability of data about relevant products is therefore key. Article 16(3) and Article 24(2) of MiFID II introduced product governance obligations for manufacturers and distributors.¹⁸⁸ Product governance is aimed at strengthening the level of investor protection across the Union and reinforcing the confidence in financial markets.¹⁸⁹ While not specifically required for the purpose of gauging systemic significance, compliance with these obligations will generate data that will be useful for macroprudential oversight and potentially, the decision whether to exercise product intervention powers. For instance, article 16(3) requires an investment firm that manufactures financial instruments to make available to any distributor all appropriate information on the financial instrument and the product approval process, including the identified target market of the financial instrument. The guidelines further specify the criteria for identification of the potential target market by manufacturers. The criteria include data on the financial situation of the target clients with a focus on the ability to bear losses as well as risk tolerance (i.e., the general attitude that target clients should have in relation to the risks of investment).¹⁹⁰ These considerations could be useful in analysing build-up of risks related to the use of a specific financial product and thus of interest to the macroprudential supervisor.

D.2.4 PRIIPs Regulation

The PRIIPs Regulation took effect on 1 January 2018. It defines packaged retail and insurance-based investment products (PRIIPs) as including both packaged retail investment products (PRIP) and insurance-based investment products.¹⁹¹ The former are defined as ‘an investment,

¹⁸⁸ Manufacturer according to Recital 15 and Article 9(1) of the MiFID II Delegated Directive is a firm that manufactures an investment product, including the creation, development, issuance or design of that product, including when advising corporate issuers on the launch of a new product; Distributer according to Recital 15 and Article 10(1) of the MiFID II Delegated Directive is a firm that offers, recommends or sells an investment product and service to a client. The obligations are further specified in Articles 9 and 10 of Commission Delegated Directive (EU) 2017/593, the MiFID II Delegated Directive

¹⁸⁹ ESMA, *Guidelines on MiFID II Product Governance Requirements*, Final Report, 2nd June 2017 available electronically at https://www.esma.europa.eu/sites/default/files/library/esma35-43-620_report_on_guidelines_on_product_governance.pdf (accessed 14.09.2017) (hereinafter ESMA 2017 PG Report), Part 3, [1].

¹⁹⁰ ESMA 2017 PG Report (n 189), Part 5.

¹⁹¹ Article 4(3) of the PRIIPs Regulation; Council Directive 2004/39/EC of 21 April 2004 on Markets in Financial Instruments, as amended, OJ L 145.

including instruments issued by special purpose vehicles¹⁹² or securitisation special purpose entities,¹⁹³ where, regardless of the legal form of the investment, the amount repayable to the retail investor is subject to fluctuations because of exposure to reference values or to the performance of one or more assets which are not directly purchased by the retail investor’;¹⁹⁴ the latter as ‘an insurance product which offers a maturity or surrender value and where that maturity or surrender value is wholly or partially exposed, directly or indirectly, to market fluctuations’.¹⁹⁵

The question whether cat bonds would classify as PRIIPs is not an easy one to answer. First of all, the FCA notes that

‘[i]dentifying whether a particular product is a PRIIP may not be straightforward as the concept of “exposure to reference values” is wide. In some cases, you will need to consider the specific terms of a product before determining whether or not it is a PRIIP.’¹⁹⁶

It is suggested that catastrophe bonds do not fall within the definition of insurance-based investment products, as, even though they are insurance-based, catastrophe bonds are not subject to market fluctuations since they are linked to a catastrophe event rather than the stock market or economic conditions. However, arguably catastrophe bonds do fall within the definition of PRIIP. First of all, it is to be noted that this definition makes reference to the definition of ‘special purpose vehicle’ found in the Solvency II Directive, which is as follows:

“[S]pecial purpose vehicle” means any undertaking, whether incorporated or not, other than an existing insurance or reinsurance undertaking, which assumes risks from insurance or reinsurance undertakings and which fully funds its exposure to such risks through the proceeds of a debt issuance or any other financing mechanism where the repayment rights of the providers of such debt or financing mechanism are subordinated to the reinsurance obligations of such an undertaking.’¹⁹⁷

As explained under Heading B, the amount repayable to the investor in a parametric cat bond depends on whether relevant catastrophes fall at or above a certain reference value on the index to which the cat bond is linked. Similarly, in an industry-loss cat bond, the amount repayable depends on the losses experienced by the insurance industry following a catastrophe (the industry losses being the reference value). Both these types of cat bond may be seen as falling under the first alternative within the definition of PRIIP. An indemnity cat bond, for its part, could fall under the second alternative within the definition, as the investors who buy cat bonds will not be a party to the underlying insurance contract (i.e. they are not directly incurring the liability, as insurers, to indemnify the assured for a covered loss).¹⁹⁸

¹⁹² as defined in Article 13 (26) of the Solvency II Directive.

¹⁹³ as defined in Article 4(1) (an) of the Directive 2011/61/EU of the European Parliament and of the Council of 8 June 2011 on Alternative Investment Fund Managers and amending Directives 2003/41/EC and 2009/65/EC and Regulations (EC) No 1060/2009 and (EU) No 1095/2010 (OJ L 174, 1.7.2011, p. 1).

¹⁹⁴ *ibid*, Article 4(1) of PRIIPs Regulation.

¹⁹⁵ *ibid*, Article 4(2) of PRIIPs Regulation.

¹⁹⁶ FCA, *PRIIPs disclosure: Key Information Documents*, First published: 3rd December 2015; Last updated: 12th May 2017, available electronically at <https://www.fca.org.uk/firms/priips-disclosure-key-information-documents> (accessed 14.09.2017).

¹⁹⁷ Article 13(26) of the Solvency II Directive.

¹⁹⁸ While it should be pointed out that in insurance-linked securities, it is the insurer’s liabilities which are securitised (and not assets), as this provision is designed to cover insurance-based investments, it is difficult to see what it could have been referring to if the word “assets” was meant to exclude securitised liabilities.

Without distinguishing between products offered to retail and institutional investors respectively Chapter III of the PRIIPs Regulation gives EIOPA and NCAs monitoring powers over PRIIPs¹⁹⁹ and product intervention powers.²⁰⁰ Article 16 of PRIIPs Regulation empowers EIOPA temporarily to prohibit or restrict in the EU: (a) the marketing, distribution or sale of certain insurance-based investment products or insurance-based investment products with certain specified features or (b) a type of financial activity or practice of an insurance or reinsurance undertaking. The conditions that need to be fulfilled are identical to the ones required of EBA and ESMA in MiFIR in order to fulfil their product intervention powers, as outlined under heading D.2.2 above. While as explained, cat bonds would not fall under the definition of “insurance-based investment products”, the issue of a PRIP is likely to be considered “a type of financial activity or practice of an insurance undertaking”, thereby qualifying to be the object of product intervention under Article 16.

Article 17 of the PRIIPs Regulation empowers NCAs to prohibit or restrict the following in or from its Member State: (a) the marketing, distribution or sale of insurance-based investment products or insurance-based investment products with certain specified features; or (b) a type of financial activity or practice of an insurance or reinsurance undertaking.

For the intervention power to be exercised five conditions must be met:

- (a) an insurance-based investment product, or activity or practice gives rise to significant investor protection concerns or poses a threat to the orderly functioning and integrity of financial markets or the stability of whole or part of the financial system within at least one Member State;²⁰¹
- (b) existing regulatory requirements under Union law applicable to the insurance-based investment product, or activity or practice do not sufficiently address the risks referred to in point (a) and the issue would not be better addressed by improved supervision or enforcement of existing requirements;
- (c) the action is proportionate taking into account the nature of the risks identified, the level of sophistication of investors or market participants concerned and the likely effect of the action on investors and market participants who may hold, use or benefit from the insurance-based investment product, or activity or practice;
- (d) The competent authority has properly consulted competent authorities in other Member States that may be significantly affected by the action; and
- (e) The action does not have a discriminatory effect on services or activities provided from another Member State.

In addition, the competent authority cannot impose a prohibition or restriction under Article 17 unless, not less than one month before the measure is intended to take effect, it has notified all other competent authorities involved and EIOPA in writing or through another medium agreed between the authorities of the details of:²⁰² the insurance-based investment product, or activity

¹⁹⁹ Article 15 of the PRIIPs Regulation.

²⁰⁰ Articles 16 and 17 of the PRIIPs Regulation.

²⁰¹ Where the conditions set out in the first subparagraph are fulfilled, the competent authority may impose the prohibition or restriction referred to in paragraph 1 on a precautionary basis before an insurance-based investment product has been marketed or sold to investors.

²⁰² Nevertheless, according to Article 17(4) ‘In exceptional cases where the competent authority deems it necessary to take urgent action under this Article in order to prevent detriment arising from the insurance-based investment products, activities or practices referred to in paragraph 1, the competent authority may take action on a provisional basis with no less than 24 hours’ written notice before the measure is intended to take effect to all other competent authorities and EIOPA, provided that all the criteria in this Article are met and that, in addition, it is clearly established that a one-month notification period would not adequately address the specific concern or threat. The

or practice to which the proposed action relates; the precise nature of the proposed prohibition or restriction and when it is intended to take effect; and the evidence upon which it has based its decision and upon which it is satisfied that each of the required conditions are met. The NCA is required to publish a notice on its website of a decision to impose a prohibition or restriction.²⁰³

EIOPA provided its Technical Advice, as requested by the Commission, on measures specifying the criteria and factors to be taken into account in determining when there is a significant investor protection concern or a threat to the orderly functioning and integrity of financial markets or to the stability of the whole or part of the financial system of the Union or to the stability of the financial system within at least one Member State.²⁰⁴ According to the Technical Advice, the criteria should include, inter alia, the complexity of the product or activity, the size of the potential problem or detriment, the types of investors involved and the degree of transparency.²⁰⁵ Under the risk to the orderly functioning and integrity of financial markets factor, the Technical Advice outlines more detailed elements to be considered, for example, whether activities or practices pose a particularly high risk to the resilience or smooth operation of markets; a product or practice or activity poses particular risks to the market or payment systems infrastructure; and it would threaten the investors' confidence in the financial system.²⁰⁶

Several observations can be made.

First, Member States are required to designate the competent authorities responsible for the supervision of the compliance with the PRIIPs Regulation.²⁰⁷ The competent authority for that purpose in the UK is the FCA.²⁰⁸ There are however differences in the powers assigned to the FCA in the FSMA and in the PRIIPs Regulation. Article 17 of the PRIIPs Regulation refers to the competent authority power to prohibit or restrict 'in or from the member states'. This means that the power assigned in the PRIIPs Regulation extends to activities of firms passporting into or from that Member State. In other words, the PRIIPs extends beyond the FCA power as assigned to it in the FSMA increasing its competence and jurisdiction. Second, similar to the facilitation and coordination role of the ESMA and EBA under MiFIR, EIOPA is required to issue an opinion, published on EIOPA website, whether it considers the action taken by the NCA to be justified and proportionate. Where a competent authority proposes to take, or takes, action contrary to an opinion adopted by EIOPA or declines to take action contrary to such an opinion, it is required to immediately publish on its website a notice fully explaining its reasons for doing so.²⁰⁹

Third, the PRIIPs Regulation appears to be mainly geared towards not financial stability concerns but rather investor protection.²¹⁰ These objectives are normally complementary, but at

competent authority shall not take action on a provisional basis for a period exceeding three months.'

²⁰³ Article 17(5) of the PRIIPs Regulation.

²⁰⁴ EIOPA, *Technical Advice on criteria and factors to be taken into account in applying product intervention powers*, 29 June 2015 available electronically at <https://eiopa.europa.eu/Publications/Opinions/Technical%20Advice%20on%20certain%20product%20intervention%20criteria%28published%29.pdf> (accessed 14.09.2017) (hereinafter EIOPA 2015 TA).

²⁰⁵ This is not the full list of criteria. EIOPA emphasises in the preamble to the Technical Advice that Criteria and factors should be non-exhaustive.

²⁰⁶ EIOPA 2015 TA (n 204), paragraphs c, e and f of section 7.

²⁰⁷ Preamble para 10. See also Article 4(8) of the PRIIPs Regulation.

²⁰⁸ See FCA, *Changes to disclosure rules in the FCA Handbook to reflect the direct application of PRIIPs Regulation*, Consultation Paper CP16/18, July 2016, available electronically at <https://www.fca.org.uk/publication/consultation/cp16-18.pdf> (accessed 14.09.2017).

²⁰⁹ Article 18 of the PRIIPs Regulation.

²¹⁰ As indicated in the Preamble of the PRIIPs Regulation, for instance at para 40 of the Preamble: 'Since the

times may conflict. For instance, the requirement to consider the level of investor sophistication could be problematic when the desire to intervene is prompted by financial stability concerns. Even sophisticated investors (who may be deemed capable of protecting themselves if appropriate disclosure has been made),²¹¹ are subject to skewed incentives, cognitive biases and herd behaviours. In other words, just because they are sophisticated it does not mean that their actions are less likely to endanger financial stability. In fact, the evidence from the 2008-2009 financial crisis would seem to suggest just the opposite.²¹²

Nevertheless, like the MiFIR, the PRIIPs Regulation may provide NCAs in the UK with tools for product intervention where financial stability concerns arise which are related to the design or distribution of cat bonds, and the same considerations arise with respect to the potential consequences of EU withdrawal as were raised above under Heading D.2.2. In view of the fact that the UK does not take a sectoral approach to financial regulation, should the decision be taken to transpose these powers into UK law as a result of EU law ceasing to apply in the UK, the respective product intervention powers conferred by PRIIPs and MiFIR could be merged and re-enacted as powers supplementary to those already conferred by FSMA and BEA.

E. Concluding Remarks

From being niche and custom-designed financial instruments cat bonds are becoming more common and commoditized as the need to turn to the capital markets to absorb catastrophe risks becomes more evident and as the popularity of these instruments increases due to the high yield they offer. A number of features of the design and distribution of these financial instruments may in future render them systemically relevant. The pricing of catastrophe risks is far from straightforward and the increasing frequency and size of weather events in recent years suggests that caution should be exercised in originating and transferring financial risks correlated to these events. Yet, in view of the popularity of these products, there is the possibility that a market of risk origination will evolve that underprices catastrophe risks, passing them on to investors who lack the ability to price them correctly. An over-reliance on models, without supplementing them with calculative practices that draw upon contextual knowledge,²¹³ can increase the “surprise factor” when a catastrophe strikes and the extent of the loss becomes evident. Also, a number of cat-linked derivatives are beginning to be traded in the markets, with the potential to multiply exponentially the financial impact of a catastrophic event. There is the potential for significant common exposures to develop, which, should widespread and significant losses occur, may engender panic in the financial markets. So while the alternative risk transfer function that cat

objectives of this Regulation, namely to enhance retail investor protection and improve retail investor confidence in PRIIPs, including where those products are sold cross-border, cannot be sufficiently achieved by the Member States but can rather, by reason of its effects, be better achieved at Union level...’

²¹¹ Though it should be noted that the 2007-2009 financial crisis suggests that even disclosure requirements did not have the desired effect: S M Davidoff and C A Hill, ‘Limits of Disclosure’ (2013) 36 *Seattle University Law Review*, 599-638. This has prompted proposals for reform to disclosure regimes: E Avgouleas, ‘The Global Financial Crisis and the Disclosure Paradigm in European Financial Regulation: The Case for Reform’ (2009) 6 *European Company and Financial Law Review*, 440-475; E F Gerding ‘Disclosure 2.0: Can Technology Solve Overload, Complexity and Other Information Failures?’ (2016) 90 *Tulane Law Review*, 1143-1180; TCW Lin, ‘A Behavioral Framework for Securities Risk’ (2011) 34 *Seattle University Law Review*, 325-378.

²¹² See e.g. Turner Review (n 130); E Avgouleas ‘Global Financial Crisis, Behavioural Finance and Financial Regulation: In Search of a New Orthodoxy’ (2009) 9 *Journal of Corporate Law Studies*, 23-60; E Beecher-Monas, ‘The Risks of Reward: The Role of Executive compensation in Financial Crisis’ (2011) 6 *Virginia Law and Business Review*, 101-144; LL Dallas, ‘Short-Termism, the Financial Crisis and Corporate Governance’ (2012) 37 *Journal of Corporation Law*, 265-364.

²¹³ See Jarzabkowski (n 74), 180-181.

bonds perform can be extremely beneficial in distributing and managing existing risks, the design and distribution of these products must be monitored with care in order to ensure that a beneficial innovation is not hijacked by a desire to speculate which poses a threat to financial stability.

Catastrophe bonds may not pose an immediate systemic risk at the time of writing but it is the build-up of systemic risk that should be monitored and mitigated by macroprudential supervisors. Avoiding box-ticking in supervisory practices is key to effective supervision. Thus, whilst the question whether cat bond markets are systemically important should take into account size, interconnectedness and substitutability, it should also consider other factors, including complexity and opacity or investor complacency as these products become more standardised and “cookie-cutter”. Product intervention could provide an effective tool in the armoury of macroprudential supervisors to address any consequent risks.

While bearing in mind that product intervention powers are new and largely untested, this paper suggests that, in view of the potential systemic relevance of the product itself and its distribution, the right way to address these risks may be through the exercise of product intervention powers rather than by other regulatory means. The paper also examines the scope and content of product intervention powers that may be exercised in the UK, both powers conferred by UK law as well as powers conferred by EU law. The examination of these powers reveals a complex and fragmented landscape of varying approaches. Product intervention powers are currently hedged around with various conditions and requirements that need to be met prior to their exercise. While these obstacles are mainly the result of an attempt to achieve a workable balance between permitting innovation in response to market demand and precluding developments that are harmful to the interests of investors and/or pose a threat to financial stability, the various hurdles which need to be overcome before a product intervention power may be exercised in furtherance of the financial stability objective may reduce regulators’ appetite to exercise these powers, especially if the justification does not involve the protection of consumers but a more vague and uncertain threat to the financial system as a whole.

Nevertheless, the availability of the powers arguably leaves open to the financial authorities an additional macroprudential tool that can be wielded in appropriate circumstances, where the better-known macroprudential tools such as capital buffers and loan-to-value ratio limits are unsuitable for the task at hand. Should the powers conferred by EU law be repealed pursuant to the UK’s withdrawal from the EU, careful consideration should be given to whether what is left is sufficient for macroprudential purposes, or whether additional powers need to be built into the UK regulatory framework.

The implications of our findings extend much beyond the systemic risk impact of cat bonds or more generally, ILS. They emphasise the need for macroprudential supervisors to have a varied array of tools and to apply them where appropriate. Macroprudential supervisors may suffer from inaction bias, particularly when expected to supervise innovative financial instruments. Of course, risk is essential to the efficient functioning of financial markets and ultimately, for economic growth. Still, where innovation threatens financial stability, this is exactly where the intervention of macroprudential supervisors is needed. We attempt to point out a way in which supervisors can be innovative and use available tools creatively to meet their financial stability objective. Whilst product intervention powers were designed primarily for investor protection, when the design, issuance, distribution and use of a product could have systemic risk implications, macroprudential supervisors could and should use this tool to address the risk.