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Dear Secretariats

BCBS, CPMI and IOSCO Consultation on the Review of Margining Practices

I have published extensively on CCP risk, initial margin models, and margin procyclicality, and thus very much welcome the opportunity to comment on the Committees' *Review of Margining Practices*. This is an important topic and the Committees should be commended for their extensive and detailed work in this area.

My comments will focus on questions 3, 4, 8 and 10 in the Committees' consultative report. I enclose a recent paper which further supports and illustrates my detailed responses below. These responses are structured in seven sections relating to:

1. The inevitability of liquidity stress caused by initial margin procyclicality;
2. The burden of margin procyclicality;
3. The uncertainty in initial margin estimates;
4. CCP governance issues;
5. The incentives towards and the effects of higher initial margin targets;
6. Policy interventions to address the risks created by initial margin;
7. Policy interventions to ensure an efficient use of CCP default funds.

My key recommendations are as follows.

Question 3: I support the Committees' proposals for further international work regarding good practices, metrics and disclosures concerning procyclicality in CCP initial margin models.

Question 4: The report does identify appropriate aspects of transparency in centrally and non-centrally cleared markets. CCPs should be required to provide all cleared accounts in each service with standard form liquidity disclosures each day, indicating the potential rise in margin if one of small number of stress events were to reoccur. CCPs should also be required to provide 'what if' tools to allow margin requirements in these services to be investigated in various scenarios.

Question 8: The report does identify appropriate proposals for further international work on the degree and nature of the responsiveness of CCP initial margin models to market stress.

The Committees should stongly consider gathering further evidence before making any global policy on the procyclicality of initial margin. Such policy should, if justified by the evidence, be based on outcomes. Thus, it might, for instance, set a limit on margin increases in identified episodes of stress for typical cleared portfolios.

Question 10: The Committee should be aware that there are strong incentives for both CCPs and clearing members to prefer higher initial margin targets e.g. 99.7% of the return distribution over the MPOR, rather than 99.5%. Higher targets are more difficult to test. They also typically require absolutely larger amounts of margin, increasing the dollar impact of procyclicality. The parties impacted most by higher margin targets are commerical end-users who typically have a relatively small say in CCP risk governance. The Committees should consider the case for setting a maximum as well as a minimum level which margin targets. An appropriate maximum would ensure that models are easily testable; it would reduce the burden of margin procyclicality; and it would ensure that default funds fulfil their intended function of providing incentives for clearing members and of protecting the CCP in an efficient way.

Please do not hesitate to contact me if I can clarify any of these suggestions further.

Yours faithfully



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1. The inevitability of liquidity stress caused by initial margin procyclicality

The use of initial margin as an early line of defense against counterparty credit risk is central to post-crisis prudential policy. The uncleared margin rules and the combination of the clearing mandate, requiring the use of CCPs in many instances, and the Principles for Financial Market Infrastructures ('PFMI'), which set minimum standards for the amounts of margin CCPs must collect on cleared accounts, together ensure that margin is a ubiquitous feature of modern financial markets.

As the Committees note, the margin required for bilateral derivatives portfolios does not vary substantially across the cycle for most portfolios. This design feature of bilateral initial margin reduces the liquidity risk created by bilateral margin requirements. CCP initial margin models, in contrast, are more procyclical: they typically demand more margin in stressed market conditions – and sometimes a lot more.² The Committees are to be commended for their investigation into this phenomenon.

Margin procyclicality matters because the threshold for the clearing mandate (and the uncleared margin rules) is set rather low: it captures a large range of derivatives market participants, many of whom are difficult to construe as systemically important.³ This policy choice means that regulators have effectively imposed whatever margin CCPs chose to require on a large number of market participants, including some relatively small entities.⁴ If these market participants wish to transfer risk using derivatives (or many other instruments), they are required to clear; clearing entails margin; and procyclical margin requirements create liquidity stress.

Moreover, given the concentration of clearing in a small number of global CCPs,⁵ market participants often have little or no choice about which CCP they use: they typically cannot opt for a CCP whose margin is 'better behaved' for their purposes.

Given all this, there is a place for mandating additional disclosures of margin procyclicality by CCPs. Such disclosures could help clearing members and clients prepare for potential margin calls.⁶ However, disclosure is not sufficient, given the magnitude of the burden created by mandatory clearing on real economy risk transfer. There is also a strong case for regulators to further examine and, if necessary, further limit the risk created by CCP margin requirements on market participants.

¹ See Committee on Payments and Market Infrastructures and International Organization of Securities Commissions, *Principles for financial market infrastructures*, 2012.

² For a further discussion of procyclicality and suggested measures for it, see Murphy, D., Vasios, M., and Vause, N., *An Investigation into the Procyclicality of Risk-Based Initial Margin Models*, Bank of England Financial Stability Paper No. 29, 2014.

³ Condat, A-L., Puce, A., and Nommels, C., *EMIR data and derivatives market policies—How EMIR data help regulators better understand the impact of policies*, Financial Conduct Authority Research Note, 2018 discusses this for bilateral margin.

⁴ This includes both clearing members – who pay CCP margin directly – and clients, the vast majority of whom have CCP margin calls passed on to them by their clearing member. For a discussion of the thresholds for mandatory clearing, see Murphy, D., *Too much, too young—improving the client clearing mandate*, Journal of Financial Market Infrastructures, Vol. 8, No. 3, 2020.

⁵ This concentration is mapped in Section C of Derivatives Assessment Team, *Incentives to centrally clear over-the-counter (OTC) derivatives*, Report, Financial Stability Board, 2018.

⁶ This disclosure could take the form of providing each cleared account with an estimate of the change in margin if one of small number of stress events, such as those of late 2008 or March 2020, were to reoccur. CCPs should also be required to provide 'what if' tools to allow margin requirements in these services to be investigated in various scenarios.

2. The burden of margin procyclicality

The burden of CCP initial margin does not fall on market participants equally. Clearing members of CCPs are often large entities which are either banks, or members of banking groups. These entities usually have access to central bank window, and/or are subject to liquidity regulation which ensures that they have substantial liquidity buffers. The burden of CCP margin calls on them is often low.

In contrast, non-financial end users are often more at risk from CCP margin variability. Their portfolios are frequently directional, as they use cleared instruments to hedge non-margined risks. CCP margin models are typically designed so that the margin required for directional portfolios is more sensitive to changes in market conditions than the margin for well-hedged portfolios, so the initial margin for non-financial end-user portfolios is often relatively sensitive to procyclical effects. Moreover, these end-users typically do not have easy access to central bank liquidity, nor to large cash or near-cash reserves. They are thus often less able to meet large margin calls than clearing members.

The costs and risks associated with CCP margin also act as a deterrent for smaller end-users who are not captured by a clearing mandate: these parties often choose not to clear.⁷

Together these stylised facts mean that margin procyclicality creates more stress for non-financial end-users than for clearing members or most financial end-users. It means that initial margin increases in clearing services with substantial risk taking by non-financial end-users are more concerning than those in clearing services where the risk is predominantly taken by large banks. The effect of margin procyclicality and current market structure is to preference intra-financial system activity over real economy activity.

3. The uncertainty in margin estimates

Consider a particular target for initial margin, such as targetting the 99.5th percentile of portfolio returns over a five day margin period of risk. It is important to note that there is no single ‘correct’ level which a margin model aims for in order to meet this target. This is because models can only be tested against a target by examining their behaviour over time, and this testing is only sufficient to *reject* some models, not to identify a correct level of margin. Even after thorough testing, we are often left with a range of initial margin models all of which pass testing, and which produce different margin requirements in particular circumstances.⁸

Two features of this variability are significant for policy purposes:

- It tends to increase in stress; and
- It increases as the target percentile for margin rises.⁹

Thus, two models which cannot be rejected by back-testing might differ in their estimates of, for instance, the 99.7th percentile of a portfolio’s return distribution during March 2020 by a large factor, even if they produced similar estimates in February 2020, or of the 99th percentile, or both.¹⁰

⁷ This issue is discussed in Sections C and E of Derivatives Assessment Team, *Incentives to centrally clear over-the-counter (OTC) derivatives*, Report, Financial Stability Board, 2018.

⁸ See section 4 in Murphy, D., *What can we expect from a good margin model? Some insights from whole distribution tests of initial margin models*, forthcoming, 2022.

⁹ See also here Danielsson, J., James, K., Valenzuela, M., Zer, I., *Model risk of risk models*. Journal of Financial Stability, Vol. 23, 2016.

4. CCP governance issues

Non-financial end users typically have a relatively small say in CCP governance. Even where they are members of CCP risk committees, they often do not have the capacity to assess the (necessarily highly technical) issues which arise in initial margin model design. Large clearing members tend to dominate in these types of discussion, and their interests are sometimes in opposition to those of their clients.

It is unlikely that this knowledge asymmetry problem can be solved by CCP governance regulation: the issue is typically *not* that CCPs are intentionally marginalising vocal, legitimate interests in discussions about the design of margin models. Rather, it is that few of the large number of non-financial end-users have the expertise to analyse how model design questions translate into liquidity drawdowns on their portfolios, and to propose alternative designs which, while still prudent, would be less stressful for them.

5. The incentives towards and the effects of higher margin targets

Both clearing members and CCPs have incentives to set margin at levels well above regulatory minima, targeting margin percentiles in excess of 99.5% for OTC derivatives or 99% for exchange traded products. This is because higher margin reduces the risk of loss¹¹ to the default fund and to CCPs' skin-in-the-game.¹² For similar reasons to the ones discussed above regarding their lack of influence over margin model procyclicality, clients are in a weak position to oppose this tendency.

Higher target margin levels have several undesirable consequences:

- A higher target creates more procyclicality: the increase in margin after the onset of a period of high market stress for a model targeting 99.8% will be larger than that for the same model targeting 99.5%.¹³
- It is harder to be confident that models targeting higher confidence intervals are accurate: backtesting has relatively little power at these elevated confidence intervals because margin breaches are so rare.¹⁴ Thus, it is hard to prove that the high levels of margin estimated by models targeting high confidence intervals are necessary.
- Higher margin reduces the effectiveness of the default fund. A \$ (or € or £) of default fund contribution mitigates more counterparty credit risk than the same unit of margin does. The higher

¹⁰ The distribution of conditional risk estimates is a useful object of study here. This distribution typically has a very fat right tail, so risk estimates for most portfolios are occasionally much higher than their mean or median level. The Committee might find it useful to examine this distribution for a range of cleared portfolio over one or more market cycles. One example of this distribution is presented in Figure 3 of Murphy, D. and Vause, N., *A cost-benefit analysis of anti-procyclicality—Analysing approaches to procyclicality reduction in CCP initial margin models*, Journal of Financial Market Infrastructures, Vol. 9, No. 4, 2021.

¹¹ This follows from a consideration of the tranching structure of the CCP default waterfall: see Murphy, D., and Nahai-Williamson, P., *Dear Prudence, won't you come out to play? Approaches to the analysis of central counterparty default fund adequacy*, Bank of England Financial Stability Paper No. 30, 2014.

¹² These incentives are blunted for CCPs where there is significant competition for clearing, as is the case for certain classes of exchange-traded derivative.

¹³ A target of 99.5% might seem close to one of 99.8%, for a fixed margin period of risk, but in high stress some margin models might require a third or half as much margin again for a given portfolio at 99.8% than they require at 99.5%.

¹⁴ See the discussion and references in section 1.3 of Murphy, D., *What can we expect from a good margin model? Some insights from whole distribution tests of initial margin models*, forthcoming, 2022.

the margin target, the smaller the amount of the tail left to be covered by the default fund, and the smaller the benefit available from mutualisation.¹⁵

The PFMI were correct in requiring mutualised resources to cover risk from a high, but easily testable confidence interval out to ‘extreme but plausible’.¹⁶ This design efficiently balances prudent risk mitigation; the incentives of CCPs, clearing members and their clients; and the costs of clearing. It should not be undermined by CCPs choosing to target unnecessarily and inefficiently high margin levels, with clearing members complicit in this choice.

6. Policy interventions to address the risks created by initial margin

The discussion in the prior sections suggests that there may well be a case for further global regulatory intervention in CCP margin model design. However, the evidence, while suggestive, is not yet compelling. Thus I support further work to examine the reactivity of different CCP margin models to changes in market conditions for a wide range of different portfolios, and the effect of this reactivity.

Three questions will be important here:

- How variable are margin estimates to changes in market conditions for different types of portfolio across different asset classes?
- How great is the burden created by that variability on the parties it falls on?
- How economically important is the activity affected?

The answers to these questions should shape any resulting policy intervention. In particular, as Nick Vause and I have suggested elsewhere,¹⁷ policy should focus on the *outcomes* of CCP margin calls, not on margin model design.¹⁸ Some CCP margin models in some services may be acceptably procyclical, prudent, and efficient without policy interventions: some may not.

7. Policy interventions to ensure an efficient use of CCP default funds

The Committees’ report has understandably focussed on margin. However, margin is not the only tool available for mitigating counterparty credit risk. For CCPs, there is also skin-in-the-game and the default fund. These resources are more efficient than margin; they create good incentives for CCPs and for clearing members; and they reduce the burden of margin on end-users.

¹⁵ See Section 2 of Murphy, D., *I’ve got you under my skin: large central counterparty financial resources and the incentives they create*, Journal of Financial Market Infrastructures, Vol. 5, No. 3, pp. 1-18, 2017 and in particular the idea of the ‘mutualization factor’ which measures how much more efficient the default fund is than initial margin in covering a given amount of counterparty credit risk.

¹⁶ See Principle 4 of the PFMI.

¹⁷ See section 4.1, Murphy, D. and Vause, N., *A cost-benefit analysis of anti-procyclicality—Analysing approaches to procyclicality reduction in CCP initial margin models*, Journal of Financial Market Infrastructures, Vol. 9, No. 4, 2021.

¹⁸ The three anti-procyclicality tools mandated in European legislation are well-known in this context: see Article 28 of Regulation (EU) No 153/2013 (known as the ‘EMIR RTS’). These requirements rightly focussed attention on the need to consider margin model procyclicality, but they constrain initial margin model design not the variability of margin outputs.

Thus, there is a balance to be struck between how much counterparty credit risk in clearing is covered by margin and how much by the default fund and skin-in-the-game. As they develop their thinking on margin, the Committees should be alert to this balance.

In particular, the Committees should note that there are incentives which tend to favour higher targets for CCP initial margin than may be necessary or efficient for the financial system as a whole. Given this, the Committees should consider the case for setting a maximum as well as a minimum level which margin targets, or otherwise requiring a meaningful degree of risk mutualization. This would help to ensure that initial margin models are readily testable; it would provide a constraint on margin procyclicality; and it would ensure that default funds fulfil their intended function of providing incentives for clearing members and of protecting the CCP without damaging real economy risk transfer.