EACH

European Association of CCP Clearing Houses

# EACH views on portfolio margining

## Additional subjects and evidence

## March 2016

## 1. Introduction

The European Association of CCP Clearing Houses (EACH) represents the interests of Central Counterparties (CCPs) in Europe since 1992. EACH currently has 20 members from 16 different European countries and is registered in the European Union Transparency Register with number 36897011311-96.

**This paper aims to complement the previous one published by EACH in July 2015[1] by providing evidence about the diverse way in which the provisions in Article 27 of the EMIR RTS 153/2013 ('the EMIR RTS')[2] have been interpreted in the EU. In the experience of EACH members, the lack of a uniform interpretation may be due to the statistical difficulties in meeting the current provisions for some risk management models like Value at Risk (VAR) models. This has in our view led to several unintended consequences which we describe below.**

In order to address this issue, EACH suggests that, in addition to the possibility to perform portfolio margining in line with the criteria included in the EMIR RTS, **the legislation also provides the possibility for portfolio margining to take place if the following criteria are met**:

- **Criteria 1** - The CCP can demonstrate that the group of financial instruments to be portfolio margined can be hedged as one portfolio of risk during a default and/or auctioned in a reasonable period of time (as applicable), consistent with the liquidation process.
- **Criteria 2** - The CCP is able to demonstrate that its margin model is sufficiently robust to prudently model the joint risk of portfolios of financial instruments. The main tool to accomplish this is back testing, including 'micro back tests', which are tests at the small portfolio level (e.g. outright positions and commonly traded spreads), in addition to tests at client or clearing member level.

## 2. Evidence of how the provisions in Article 27 of the EMIR RTS 153/2013 have been interpreted in different jurisdictions

Below we describe certain examples of how the provisions in Article 27 of the EMIR RTS 153/2013 have been applied in certain jurisdictions:

**2.1 Significantly and Reliably Correlated** (Article 27(1)) – The requirements for price risks of a particular financial instrument or set of financial instruments to be 'significantly and reliable correlated' are in our view open to interpretation. This has lead to different applications of this rule in different jurisdictions, of which we give some examples below:

- In some jurisdictions, a **minimum positive correlation** has been required in order to apply portfolio margining, regardless of the initial margin model (parametric or

[1] 'EACH views on portfolio margining' (July 2015) bit.ly/1IkhUq9
[2] http://bit.ly/21xrLzH

HVaR). Negative correlations, which could reflect a well-diversified portfolio that mixes a wide variety of investments and reduces its risk (variance) for the same expected return, are often not considered for portfolio margining.

- In certain jurisdictions CCPs have been required, for Equity (Cash or Derivatives) and Interest Rates (IRS zero curves), to prove a minimum correlation between different products/tenors of the yield curve, and a stability of the correlation in the most recent stressed period.

- In some jurisdictions, CCPs are allowed to use Principal Components Analysis applied to the most recent stressed year to justify that more than 50% of specific yield curve movements are parallel movements, thus movements of the different tenors are positively correlated.

- For Equity and Equity Derivatives, some CCPs have historically been using a minimum correlation of percentile 1% between each pair of underlyings liable to be offset, as a result of which they obtained a margin credit, capped at a maximum of 80%. In order to be fully compliant with EMIR, CCPs are required in some jurisdictions to add a daily test for the last ten years (including stress test periods). While we understand the rationale behind this requirement, we note that it limits the offsetting possibilities. In some jurisdictions, the number of offsetable pairs of products has been reduced in certain jurisdictions while this does not seem to be the case in others. This reduction has been up to 50% in some cases, which in our view limit the benefits that CCPs are able to provide to market participants.

As indicated in our July 2015 paper, the concepts of 'significant and reliable' correlations are difficult to define in a margin model. The correlation between any two underlying instruments can be made to look 'reliable' if we use a long enough window and 'unreliable' if we use a short enough window. EACH believes that even if two financial instruments have low or non-existent statistical correlation they can be safely portfolio margined, provided the other conditions set out in the introduction of this paper are met.

**2.2 'Reliability' and 'resilience' of correlations or an 'equivalent statistical parameter of dependence'** (Article 27(2)) – As indicated in our July 2015, EACH believes that the concepts of 'reliability of correlation' and 'resilience of correlation' are questionable. In our view, these terms have an ambiguous intuitive feel and are imprecise in risk management terms.

This is particularly important because, when stress events occur, correlations generally increase as they tend to track volatility. Applying the principles of Modern Portfolio Theory[3], portfolio margining encourages diversification. However, breaking up

[3] Portfolio theory is rich in academic literature and is commonly applied in the world of finance. The concept was first introduced by Harry Markowitz (1952 and 1959) and further independently refined with the Capital Asset Pricing Model (CAPM) by Jack Treynor (1961, 1962), William F. Sharpe (1964), John Lintner (1965) and Jan Mossin (1966). Risk models do apply the concepts

portfolios into separate pieces due to perceived lack of 'reliability' or 'resilience' incentivises clearing participants to ignore the benefits of diversification, such as the reduction of risk (variance) for the same expected return. **This is in our view contrary to ensuring adequate systemic risk management**, which we understand is one the key objectives behind the regulatory proposals to increase the safety of derivatives markets.

CCPs have therefore faced certain challenges when complying with this provision as for example, for the case of historical simulations based models, correlations are not explicitly modelled but are implicit in the model.

**2.3 Economic rationale** (Article 27(2)) – Demonstrating the economic rationale for a particular price relation in portfolio margining has generally proven difficult for CCPs. It is unclear to us whether it means that for each combination of products this economic rationale has to be delivered. **Even if prices are uncorrelated, this leads to diversification in a portfolio and thus reduces overall risk.** This is a strongly supported risk management principle and as such it would be unclear to us why it should not be taken into account.

**2.4 Maximum amount of margin reductions** (Article 27(4)) – EACH members have experienced difficulties in the application of the provisions that refer to the 80% maximum amount of margin reductions included in Article 27(4). It appears that different authorities have interpreted these provisions in different ways, generally assuming that the risk offset is limited to 80%, which in our opinion is not what the legislation states. In addition to the example included in July 2015 paper[4], we would like to further exemplify the potential interpretations of the provisions under Article 27(4):

- **Interpretation #1** - A common interpretation of Art 27(4) is: *Where portfolio margining covers multiple instruments, the amount of margin reductions shall be no greater than 80%*, **being the 80% referred to the initial margins calculated with no offset**.

- **Interpretation #2** - The literal wording of ESMA Article 27(4) states that 'Where portfolio margining covers multiple instruments, the amount of margin reductions shall be no greater than 80 % of the difference between the sum of the margins for each product calculated on an individual basis and the margin calculated based

from portfolio theory, but have until recently been restricted by data size and computation speed. Technological advances have enabled the broad use of SPAN-risk models (Standard Portfolio Analysis of Risk) introduced by the Chicago Mercantile Exchange in 1988, which is a portfolio margining method that using grid simulation and portfolio Value-at-Risk (VaR), which emerged as a concept in the late 1980s, cf. Jorion (2006).

[4] At a granular level, we can understand that market participants would support limiting risk offsets across completely different 'financial instruments' to 80% (like CDS versus base metals, or commodities versus rates). This interpretation of 'financial instrument' in the context of Article 27 would then be limited being a group of products that can be managed as one portfolio in a default. We are concerned that ESMA's interpretation was slightly different, allowing 80% of risks offsets across 'financial instruments', meaning that a futures contract versus a 100 delta call option on the same underlying could have at most 80% risk offset, which in our opinion limits prudent risk management. However, this has also been interpreted to mean that only 80% of risk offsets between crude oil and natural gas is allowed, so the rule is not applied consistently across CCPs.

on a combined estimation of the exposure for the combined portfolio', **being the 80% referred to the difference between margins calculated without any offset and margins calculated with the pertinent offset**.

For example consider a portfolio with two positions and the following margin requirements: Margin(A)= 60; Margin(B)= 40; Margin(A+B)= 30. Depending on the interpretation of the margin provisions, the margins called may be higher or lower as described in the table below:

| | **Interpretation #1** | **Interpretation #2** |
|---|---|---|
| **Margin reduction** | 80% > [Margin(A+B+…+n)/Margin(A)+Margin(B)+…+Margin(n))-1]*-1 | Margin Reduction ≤ 80% * { [(Margin(A) + Margin(B)+ … + Margin(n) ] - Margin(A+B+…+n) } |
| **Actual margin reduction** | 80% > [(30/(40+60)-1]*-1 = 70% -> OK | 80% > 80% * (100 - 30 ) ≤ 56 -> not OK |
| **Maximum margin reduction** | - | 56 |
| **Margin Called** | 100 - 70= 30 | 100 - 56= 44 |

Some CCPs have interpreted the provisions under Article 27(4) as if they have to do a calculation without correlations, another one with correlations and from the difference between both, 80% can be granted as margin reduction. This creates operational effort especially for customers and clearing members as they have to recreate this calculation. It is also unclear on which level this test has to be applied. Some CCPs have interpreted this to be applied on the Clearing Member (net) level but in our view there seems to be no clear definition.

**2.5 Margin floors** – In certain jurisdictions, the initial margin of each Interest Rate Swaps (IRS) portfolio has been floored at the sum of 20% as follows: Any portfolio is mimicked into five generic buckets[5] (2Yr, 5Yr, 10Yr, 20Yr and 30Yr) and for each synthetic bucket, initial margin is calculated independently. The 20% of the total sum of the different initial margins calculated for each bucket gives as a result the initial margin floor to be applied at such portfolio. While we understand the rationale behind the regulator's requirements to establish these margin floors, they could limit the offsets that would be statistically justified.

[5] In this example we understand 'buckets' as a group of IRS with similar or identical maturities.

## 3. Unintended consequences of interpretations of Art 27 of EMIR RTS 153/2013

Based on the experience of EACH members, the variety of interpretations of the provisions under Article 27 have the following consequences:

**3.1 Different applications of risk models** - The margins called may be higher or lower depending on the interpretation made by the regulators of the provisions under Article 27(4).

**3.2 Competitiveness of the European CCP clearing industry** – It appears that different interpretations of the EMIR portfolio margining provisions would allow some jurisdictions to margin in one portfolio cash and derivatives instruments belonging to the same asset class. This does not seem to be the case in all jurisdictions. This creates an unlevel playing in the authorisation of portfolio margining strategies. Appendix 1 details the reasons why EACH members believe that the interpretation of the EMIR requirements by regulators should allow CCPs to margin portfolios including cash and derivatives instruments belonging to the same asset class.

**3.3 Limitation of risk management possibilities**

**3.3.1** Portfolio margining is not applied in full but with arbitrary add-ons that are not required if looking at back testing results.

**3.3.2** For equity and equity derivatives, the number of offsetable pairs of products has been reduced in certain jurisdictions while not in others (up to 50% reduction in some cases). Looking only at pairs of correlations disregards portfolio margin systems.

**3.4 Operational burden** - This creates operational effort especially for customers and clearing members as they have to recreate this calculation.

## 4. Conclusion

EACH members welcome the efforts made by Regulators to create a solid legislative framework for CCP risk management practices in the EU. We hope that the empirical evidence provided in this paper exemplifies the statistical challenges in meeting the current portfolio margining provisions for certain risk management models and contributes to **considering potential ways for the portfolio margining provisions in EMIR to align with alternative risk management techniques like the ones used in VAR models.** In order to achieve this, EACH suggests that, in addition to the possibility to perform portfolio margining in line with the criteria currently included in the EMIR RTS, **the legislation also provides the possibility for portfolio margining to take place if the following criteria are met**:

- **Criteria 1** - The CCP can demonstrate that the group of financial instruments to be portfolio margined can be hedged as one portfolio of risk during a default and/or auctioned in a reasonable period of time (as applicable), consistent with the liquidation process.
- **Criteria 2** - The CCP is able to demonstrate that its margin model is sufficiently robust to prudently model the joint risk of portfolios of financial instruments. The main tool to accomplish this is back testing, including where appropriate 'micro back tests', which

are tests at the small portfolio level (e.g. outright positions and commonly traded spreads), in addition to tests at client or clearing member level.

## Appendix 1 – Rationale for the interpretation of the EMIR provisions to allow CCPs to margin portfolios including cash and derivatives instruments belonging to the same asset class

This appendix aims to clarify the reasons why EACH members believe that the interpretation of the EMIR requirements by regulators should allow CCPs to margin portfolios including cash (e.g. equities, government debt) and derivatives instruments belonging to the same asset class. These reasons are outlined below:

1) **No explicit prohibition**. We understand that the EMIR provisions do not exclude, restrict, ban or prohibit cash instruments (e.g. equities and/or government debt) being part of a portfolio in order to calculate an initial margin for the entire portfolio.
2) **Interpretation of the verb 'to clear'**. The various references in EMIR to *instruments that the CCP clears* could potentially lead to the conclusion that only financial instruments that are being cleared by the CCP or that are in the clearing process to accomplish delivery versus payment (like cash instruments), are eligible for portfolio margining, and as a consequence cash instruments (e.g. cash equities and government debt) already settled cannot be included in the margining algorithm as an asset to be combined with other derivatives in order to calculate the initial margin for the entire portfolio.

   In our opinion that is not the case as margining cash and derivatives instruments has been historical been a general practice. As stated above, although there is no explicit restriction to include cash instruments in the portfolio to be margined, the meaning of the verb "clear" and how it is used in the EMIR regulation could be the source of misinterpretation:

   - A derivative contract in a CCP is 'constantly cleared'. While the derivative position is maintained, the position is continuously cleared, as initial and variation margin have to be routinely performed.
   - However cash instruments, like equities or bonds, that are bought or sold go to a clearing process to accomplish delivery versus payment. While being cleared it is 'unsettled' and after it is cleared it is 'settled', meaning that 'it is no longer cleared'.
   - In our view, cash instruments are eligible to be margined regardless of whether they are being settled or unsettled. Although a cash instrument already settled does not generate any initial margin on its own and for that reason it is no longer part in the clearing process, it is still eligible for portfolio margining as part of a portfolio with derivatives instruments.
   - An account holder of a portfolio combining the derivatives position in an account at the CCP (either a member's or individual client account) and cash instruments already settled and duly pledged to the CCP in an account at the Central Securities Depository, would conform one single portfolio whereby margining can take place to reduce the initial margin of the derivative. It should be stressed in this case the cash instrument is not treated as collateral to meet the initial margin of the derivative contract but rather it is a position of the portfolio on its own right.

3) **Consistency with capital requirement regulation**:
   a. **Scope** - We understand that for capital requirement purposes, the risk offset between cash and derivatives products is recognised (keeping both positions, cash instruments and derivatives open). We therefore believe it would be consistent to adopt the same recognition for portfolio margin across cash instruments and derivatives.

   b. **Clearing process** – In our view, Article 329 of Regulation (EU) 575/2013 already explicitly recognises risk offset for capital requirement across a wide range of financial instruments without the need to be in a clearing process:

   *Options and warrants on interest rates, debt instruments, equities, equity indices, financial futures, swaps and foreign currencies shall be treated as if they were positions equal in value to the amount of the underlying instrument to which the option refers, multiplied by its delta for the purposes of this Chapter. The latter positions may be netted off against any offsetting positions in the identical underlying securities or derivatives. The delta used shall be that of the exchange concerned. For OTC-options, or where delta is not available from the exchange concerned, the institution may calculate delta itself using an appropriate model, subject to permission by the competent authorities. Permission shall be granted if the model appropriately estimates the rate of change of the option's or warrant's value with respect to small changes in the market price of the underlying.*

4) **The equivalence of swaps with on-balance-sheet instruments**. Taking into account that swap positions, both cleared and uncleared, are by far the largest across all asset classes, it is of paramount importance the specific recognition of Article 330 of Regulation (EU) 575/2013 with regard the equivalence of derivatives and cash instruments for netting purposes:

   *Swaps shall be treated for interest-rate risk purposes on the same basis as on-balance-sheet instruments. Thus, an interest- rate swap under which an institution receives floating-rate interest and pays fixed-rate interest shall be treated as equivalent to a long position in a floating-rate instrument of maturity equivalent to the period until the next interest fixing and a short position in a fixed-rate instrument with the same maturity as the swap itself.*

5) **Specific recognition of ESMA of time required to liquidate cash instruments.**
   ESMA's Discussion Paper 2015/1295 'Review of Article 26 of RTS No 153/2013 with respect to client accounts' states the following on page 10 point 23 *'(…) the next question is whether different treatments should be applied between financial instruments belonging to the category "other than OTC derivatives" (including ETDs, cash instruments, etc.)'.*

   For the purpose of liquidating a cash instrument it is irrelevant whether the instrument is on a clearing process to be settled or the instrument is already settled. A cash instrument already settled is not in a clearing process but, if pledged, it is part of a portfolio with two positions: a cash instrument and a derivative.

6) **Historical perspective**. Portfolio margining for portfolios combining cash and derivatives instruments, has been in existence well before the EMIR legislation was approved.

   CCPs clearing options generally take into account the intrinsic value of long options in order to offset the risk of short options. For example, with the underlying stock at EUR10, a short call with strike of EUR8 will have a margin of EUR2 plus; when combined in one portfolio with a long call with strike of EUR6 the reduction in the margin is EUR4, giving a net "negative margin" of EUR2.

   In the example above we run a portfolio margining of two derivatives in the same underlying. Preventing to have a portfolio combined of the underlying stock and the short call is simply not admitting that the underlying stock is equivalent to a long option with strike of zero EUR.

- END -