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**EACH Note - EMIR 2.2 Article 49: Review of  
Model and Parameters**

June 2020

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## Executive Summary

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As independent risk managers, CCPs contribute to safer, more efficient and transparent global financial markets. Cognizant of their relevance for financial stability, CCPs continuously work to ensure their risk management frameworks are robust and up-to-date. In particular, CCPs implement and maintain dedicated model risk frameworks to govern the lifecycle of the models and methodologies used to assess risk. Under the newly published amendments to EMIR, i.e. EMIR 2.2, important alterations to the way CCPs manage their models and parameters are being introduced under Article 49.

While praising the additional transparency for the review of models and parameters brought by EMIR 2.2, **EACH Members suggest that the following developments be considered when defining the new regulatory technical standards for significant model changes and implementing the new requirement for ESMA to validate significant model changes:**

- **EACH recommends that the proportionality of the new requirements be considered.** If thresholds for model changes become too tight, implying that any change is deemed significant, the incentives for CCPs to enhance the robustness of their risk systems is reduced. Similarly, additional and detrimental regulatory arbitrages could be introduced when compared with CCPs in other jurisdictions.
- **EACH suggests developing guidance to instruct CCPs how the validation process will be implemented.** This includes guidance, for instance, on timelines, required documentation and testing, success criteria, approval process, and remediation actions. The current reduced clarity on requirements for the application pack can lead to multiple re-submissions and limited transparency towards clearing members and other stakeholders.

## 1. Background

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On 12<sup>th</sup> December 2019, amendments to the European Market Infrastructure Regulations (EMIR), also referred as “EMIR 2.2”, were published in the Official Journal of the European Union.<sup>1</sup> These amendments introduced a number of important alterations to EMIR.

One key area for the CCP risk management framework that was modified by EMIR 2.2 is the governance of models and parameters. The legal text for these is mainly contained in EMIR Article 49 and Regulatory Technical Standards (RTS) 153/2013 Article 47.<sup>2</sup> Amongst other aspects, the amendments enlarged the governance for significant model changes and new model applications, requiring ESMA to validate proposals from CCPs in addition to the local NCA.<sup>3</sup> Moreover, EMIR 2.2 also introduced the need for ESMA to develop regulatory standards to define significant changes to a CCP risk framework.

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<sup>1</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32019R2099>

<sup>2</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0153&from=EN>

<sup>3</sup> EMIR Article 49, RTS Article 47, focuses on models, their methodologies and the liquidity risk management framework (LRMF) used to quantify, aggregate, and manage its risks. The discussion of this paper is centred in models, however similar arguments presented here are applicable to other methodologies and LRMF considered in the assessment of risk by the CCP.

As amendments to EMIR Article 49 unfold, and new legal requirements are being developed, it is important that regulators consider the effects these may have on the ability of CCPs to manage risk efficiently.

**The objective of this paper is to describe the view of EACH Members on the indicators that may be used to assess whether a model change is significant in line with EMIR Article 49, and also on the necessary guidance for the newly established validation processes.**

In addition to this background section, the paper is organised as follows: Section 2 reviews EMIR Article 49, highlighting proposed amendments. Section 3 discusses a few considerations for the definition of significant model changes. Section 4 analyses the validation guidelines. Section 5 concludes.

## 2. EMIR Article 49

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EMIR Article 49 establishes that a CCP shall obtain independent validation, shall inform its regulators of the results of the tests performed and shall obtain their validation before adopting any significant change to the models and parameters. **The requirement implies two distinct stages in dealing with a model change.** First, there is the need to determine whether the alteration is significant or not. Secondly, if deemed significant, to define the requirements and criteria to successfully pass the validations from the independent parties and regulators. **Each one of these stages is discussed in the following sections, together with a description of amendments brought by EMIR 2.2.**

### 2.1 Significant changes

The original publication in 2012 of EMIR, and related Regulatory Technical Standards, did not contain any guidance on how to define a significant model change. Therefore, following the introduction of EMIR, many CCPs enhanced their internal model governance frameworks with the definition of “significance”. This enabled them to continue to manage model risks, while harmonising the language with the new regulation.

In 2016, to fulfil some of the regulatory gaps, ESMA published an opinion on how to identify a significant model change.<sup>4</sup> In particular, ESMA suggested a non-exhaustive list of qualitative and quantitative indicators to be considered by the competent authorities when determining whether a change to a CCP’s models and parameters ought to be considered as significant for the purposes of Article 49. Importantly, however, ESMA emphasised that the identification of an indicator does not lead to an automatic application of Article 49.

**The combination of the internal governance of CCPs and the interpretation of the ESMA indicators by NCAs has shaped to this moment when a significant change should be triggered.**

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<sup>4</sup> See ESMA (2016) for details: [https://www.esma.europa.eu/sites/default/files/library/2016-1574\\_-\\_opinion\\_on\\_significant\\_changes\\_for\\_ccps.pdf](https://www.esma.europa.eu/sites/default/files/library/2016-1574_-_opinion_on_significant_changes_for_ccps.pdf)

## 2.2 Validation processes

**The classification of a model change as significant automatically leads to two validation processes: one conducted by an independent party and another one conducted by the respective NCA.** Each one of these validations is subject to different governance procedures. These encompass, for instance, distinct requirements related to: timelines, documentation, testing, success criteria, approval process, and remediation actions.

**Aiming at avoiding duplication of efforts, CCPs have tried to harmonise requirements from these validations.** However, even though some overlap may exist, typically regulators have distinct requirements to those of independent validators. For instance, when timelines for these different validations are taken into account, the distinctions are noticeable. In particular, NCAs usually have more rigid validation schedules, implying that not only a limited number of applications can be processed each year, but also in pre-defined slots established by regulators. Yet, validations from regulators may take up to 1 year, while those performed by independent parties typically do not exceed 2 months.

## 2.3 The amendments from EMIR 2.2

As presented previously, EMIR 2.2 has introduced changes to both stages of the treatment of a model change. In particular:

- **Significant changes** - under EMIR 2.2 ESMA shall, after consulting EBA, other relevant competent authorities and the members of the ESCB, develop draft regulatory technical standards specifying the conditions under which changes to the models and parameters are significant. ESMA shall submit those draft regulatory technical standards to the European Commission by 2 January 2021;
- **Validation process** - EMIR 2.2 introduces more explicit guidelines around the timeline for regulators to validate significant model changes. It also requires that, in addition to the NCA, ESMA should perform another validation (See Appendix for details).

## 3. Significant changes

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**Having the appropriate level of governance around the model lifecycle (i.e. development, maintenance, change, and retirement) is an integral part of a robust risk management framework.** Amongst other factors, it is via this governance that an important risk faced by CCPs is managed, i.e. the model risk. **However, if the model governance framework becomes too hierarchical and complex, undesirable consequences may emerge.** For instance, while model risk can be limited under restrictive governance arrangements, other risks such as market and liquidity risk may become prominent given the slow reaction of CCPs to evolving market conditions.

**This section focuses on discussing some of the key considerations that a well-structured model governance framework should entail.**

### 3.1 Active risk management

CCPs have long been a feature of the financial markets. As a result of the positive role played during the crisis in containing contagion and the subsequent post-crisis regulatory reforms,

they have assumed a larger role. Recognising their increased systemic importance, regulators enhanced the standards governing these infrastructures. **The ability to timely respond to emerging extreme conditions, i.e. active risk management, now features in regulatory standards for a number of different jurisdictions.** For instance, in EMIR, the requirement for CCPs to have the capacity to adapt its risk assessments quickly to incorporate new or emerging risks appears in several places. **However, as explained previously, significant changes to model or parameters are laborious procedures that may take substantial amounts of time.** If crises demand CCPs to respond promptly, consideration should be given to the negative constraints the Article 49 requirements may create.

## 3.2 Incentives

The long and complex process of significant changes is created not only by the stringent application requirements, but also by the fact that regulators typically do not process multiple requests from CCPs at the same time. Specifically, regulators allocate to CCPs only a limited number of slot assessments per year. If CCPs have more planned changes than their allocated slots, they have to prioritise and postpone to the next year-cycle. This mechanism disincentivise CCPs to maintain their risk models up-to-date and to incorporate the most recent methodological developments. **As such, contrary to the intended outcome, the increased level of governance brought by Article 49 may be inadvertently creating more model risk.**

## 3.3 Regulatory arbitrage

Regulators have been increasingly aware of the regulatory arbitrage that have emerged across the legal requirements for different jurisdictions. In a recent report published by the ESRB on procyclicality of margins and haircuts, the entity notes that these different requirements may be impairing the global level playing field to the detriment of EU CCPs.<sup>5</sup> The case of model governance is no different. **In the US, changes to models that lead to alterations in CCP rules or stated policies need to be filed with the SEC and CFTC. However, for instance, under SEC Rule 19(b)(3)(A), this can be an immediate effectiveness filing. Similarly, for CFTC the standard filing under Rule 40.6 only takes up to ten business days.**

## 3.4 Scope of the significance definition

### 3.4.1 Model-specific considerations

Models can be broadly defined as “a quantitative method, system, or approach that applies statistical, economic, financial, or mathematical theories, techniques, and assumptions to process input data into quantitative estimates”.<sup>6</sup> Defined as such, models are formed by the following components: i) inputs; ii) parameters; iii) processing kernel; and iv) outputs. **As new indicators for significant model changes are being written, it is important that these consider the following:**

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<sup>5</sup> See ESRB (2020) for details

[https://www.esrb.europa.eu/pub/pdf/reports/esrb.report\\_200109\\_mitigating\\_procyclicality\\_margins\\_haircuts~0f3e9f9e48.en.pdf?e108a05978107a829583637d81f4dbf9](https://www.esrb.europa.eu/pub/pdf/reports/esrb.report_200109_mitigating_procyclicality_margins_haircuts~0f3e9f9e48.en.pdf?e108a05978107a829583637d81f4dbf9)

<sup>6</sup> See OCC (2011) for details <https://www.occ.treas.gov/news-issuances/bulletins/2011/bulletin-2011-12a.pdf>

### *Model inputs*

**Inputs are an important part of the functioning and use of models.** Inputs vary per type of model and are typically related to data on financial contracts (e.g. price, volatility, returns, etc.). For instance, in option pricing models the volatility is a key input. Similarly, in default fund models or stress testing, extreme but plausible scenarios deliver the necessary input for sizing, allocation and review.<sup>7</sup> Notably, however, inputs expand beyond price-related information. For example, the economic sector classification of the underlying assets of a contract can be an input for wrong-way risk and cross-margining models. **In either case, model inputs have different governance processes than those applied to models, and as such should not be classified as significant when they change.**

### *Model parameters*

**Parameters are also an integral part of models and model usage. It is through their calibration and recalibration that CCPs adjust the models to the changes in the market environment.** The inability of CCPs to quickly adjust to prevailing market conditions can lead to increased risk. If CCPs cannot adjust the models to promptly take into account volatility in the market, or consider additional and emerging risks as part of sizing default funds and clearing capital sizing, suboptimal risk management practices may follow. While the calibration and recalibration of parameters can have impact in model risks, it is important to emphasize that they represent business-as-usual processes of CCPs. The governance of parameter updates is well embedded in the risk management framework of CCPs, with the involvement of different departments, senior management and board.

**For the reasons above, it is relevant that the new indicators do not classify parameter alterations as significant model changes or model changes per se.<sup>8</sup>** Those relate rather either to market data updates for the already approved model or to adjustments of the already approved stress testing frameworks to capture additional risks. An example of such a model parameters adjustment that should not represent a significant change is the case of CCPs that use SPAN-like models which have margin parameters that change daily. Other examples of model parameter adjustment not representing a significant change would be the case of CCPs having margin buffers for APC reasons that are also recalibrated daily.

**In implementing the above, EACH recommends that the existing model risk governance of CCPs should be leveraged upon.** In this process, as models are developed and validated, parameters that undergo periodic changes are identified, together with their frequency and the process for controlling the model risk embedded on these (e.g. as it happens with the CCPs' APC frameworks). This approach would allow CCPs to alter parameters without triggering the significant change procedures. Therefore, improving the ability of CCPs to manage risk in a more effective manner while being subject to the adequate supervisory scrutiny.

### *Model processing kernel*

**Processing kernels are the core part of models.** It is through them that inputs are transformed into risk metrics, and assumptions about the behavior of financial markets are

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<sup>7</sup> New, modification, or retirement of stress scenarios should not be subject to Article 49 if done according to an approved methodology or stress testing framework. In line with EMIR, CCPs are required to add new scenarios promptly (see RTS Article 51), and triggering a significant change would also contravene the original objective of the regulation.

converted into mathematical formulations. For instance, in the historical filtered simulation model the processing kernel may encompass the devolatilization and revolatilization of returns, the calculation of the simulated portfolio returns, the definition of the statistical quantiles, and the assessment of the final risk metrics. Changes to the specification and implementation of these kernels may have a significant impact in the levels of model risk. **As such, new guidance on significant model changes should only be targeted at the processing kernel of models.**

#### *Model outputs*

Outputs are the materialization of the input transformation performed by models. Typically, these outputs are broadcasted via report files and database connections. As an illustration, haircuts derived from collateral-related models are used not only to check if margin requirements are being met, but are also consumed by senior management, board and CCP participants to assess the overall risk of pledged assets. Similarly to inputs and parameters, outputs are auxiliary components of a model. **Therefore, alterations to outputs should not be considered as indicators for a significant model change.**

### **3.4.2 Other general considerations**

#### *Prescription vs guidelines*

**CCPs typically operate under different business models, and no single risk management and model governance framework is uniquely applicable across all of them.** This implies that CCPs work with different definitions of models, materiality and model lifecycles. For instance, one CCP may classify the whole methodology for initial margin calculation as a single model, while another may establish that each individual component represents a different model (e.g. risk factor construction, interpolation, pricing, return calculation, etc.). Naturally, the definition of a significant model change in both cases is not unique, and any prescriptive rule that tries to normalise them may create inefficiencies. Based on the above, **it is important that the new indicators accommodate the heterogeneous model governances of CCPs through the use of guidelines, as opposed to prescription.**

#### *Quantitative vs qualitative*

**Qualitative indicators of a significant change are preferable to quantitative ones.** To this end, the structure already used in other areas of the CCP risk management framework (e.g. operational risk governance) could be leveraged on. For instance, grading scales (high, medium, and low) for indicators such as the level of model risk, impact of a change, dependency, amongst others could be used as criteria. In the case quantitative indicators are to be introduced, it is important that these are defined in relative terms (%), but floors are established in an absolute basis (\$). Similarly, metrics should be always defined at the CCP level, and not at lower level categorizations (i.e. clearing member, asset class, contract, etc.). Finally, **if regulators are concerned with low levels of requirements, changes leading to more conservative charges should not trigger Article 49.**

#### *ESMA opinion and indicators of significant changes*

The ESMA opinion on “Common indicators for new products and services under Article 15 and for significant changes under Article 49”<sup>9</sup>, published in 2016, tried to harmonise the

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<sup>9</sup> <https://www.esma.europa.eu/sites/default/files/library/2016-1574 - opinion on significant changes for ccps 1.pdf>



interpretation of definition of 'significant change' which was unclear following the original publication of EMIR. **When guidance on Article 49 are considered (see paragraph 15), EACH notes that prescribed indicators do not reflect best practices in model risk management in all cases.** For instance, as discussed above, paragraph 15.IV.c and 15.IV.d focus on relative changes for particular underlying or resources for particular members, and do not take materiality aspects into consideration. Moreover, there is no guidance if one or more indicators need to be triggered for a change to be classified as significant. **Therefore, EACH recommends that the existing ESMA opinion is reconsidered in line with the suggestions included in this paper based on the experience of CCPs over the last years.**

#### *'Other risk control mechanisms' in EMIR Article 49*

EMIR Article 49 notes that '*A CCP shall regularly review the models and parameters adopted to calculate its margin requirements, default fund contributions, collateral requirements and other risk control mechanisms*'. To ensure that the review under Article 49 focuses on risk matters, we suggest that it should be made clear that Article 49 should be limited to margin model, stress model (i.e. default fund contributions), collateral requirements and model for managing liquidity risk from cleared transactions. **Other aspects such as eventual staff related risks or IT risks should not be included under Article 49.**

## 4. Submission guidelines and validation process

The classification of a model change as significant triggers the need for the execution of a validation by an independent party and the respective NCAs, as presented previously. The amendments introduced by EMIR 2.2 require ESMA to perform a validation as well. In addition to the considerations related to the size of the work and time incurred already discussed, there are also other features associated with the coordination across the different layers of the process that need to be taken into account. This section discusses these features, emphasizing that additional guidance is required to ensure coordination and efficient execution.

### 4.1 Validation Criteria

The ability to execute any validation exercise relies on the existence of transparent guidance on how the several components pertaining to it will be implemented. One of these components is the validation criteria. In particular, **there needs to be a clear understanding of the criteria against which the model, or its change, will be assessed.** Such criteria should encompass not only the items to be reviewed, but the fail/pass thresholds. It also should provide guidance on whether issues identified during the validation process are expected to be solved or addressed before the implementation of the model change, or they can be dealt with at later stages. Currently such a framework is not clear for the validations performed by regulators. Therefore, it would be beneficial guidance on the expected validation criteria.

### 4.2 Application

For a validation to be performed, an application pack needs to be assembled by CCPs. This typically includes documentation, regulatory self-assessment, operation self-assessment, policy and procedures changes, testing results, amongst many other items. **To avoid creating**

**unnecessary material and duplicative work, it is essential that the requirements for the application pack from NCAs and ESMA be made available and be harmonised.** The clear definition of such requirements should also define when an application pack is deemed complete. Currently, and as per EMIR 2.2 amendments, the timeline for the regulatory validations only starts when ESMA and the NCAs confirm that the application is complete. Past experience shows that this is another reason for prolonged timelines, as confirmations can take up to 6 months.

### 4.3 Validation cycles

As highlighted above, NCAs typically operate validation cycles. This means that each year only one or two significant model changes can be processed by them. Now that ESMA will also be a part of the validation process, **it is important that the cycles of ESMA and NCAs be aligned.** If an NCA can execute the validation in a particular time of the year but ESMA cannot, this would further add to the prolonged timelines and complexity of the validation process. Consequently, **we strongly suggest that the NCAs and ESMA be coordinated taking into account the above validation cycles considerations, and guidance be shared as to how applications will be handled by them.**

## 5. Conclusion

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EACH Members welcome the consideration given by authorities to the need to differentiate significant and non-significant changes under Article 49 of EMIR. This paper has provided suggestions based on CCPs' experience about what should, from our point of view, be considered a significant change under EMIR Article 49. It has also provided some proposals to make the process for submitting, validating and approving a significant change more efficient.

EACH believes that implementing these suggestions and proposals would improve the ability of CCPs to manage risk in a more effective manner while being subject to the adequate supervisory scrutiny.

## Appendix

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Attribute	EMIR (2012)	EMIR 2.2 (Jan/2020)
<b>Submission</b>	NCA	NCA and ESMA
<b>Timeline governance</b>	Proxied to Article 15	Article 49
<b>Total estimated time (Phase 1 to 3)</b>	6+ months	90 working days
<b>Phase 1 (application assessment)</b>	30 working days	Not specified
<b>Phase 2 (model validation)</b>	4 months	50 working days
<b>Phase 3 (college approval)</b>	30 calendar days	30 working days

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