



26 October 2020

Alp Eroglu  
International Organization of Securities Commissions (IOSCO)  
Calle Oquendo 12  
28006 Madrid  
Spain

By email: [consultation-01-2020@iosco.org](mailto:consultation-01-2020@iosco.org).

Dear Mr Eroglu

**Re: IOSCO consultation on the Use of Artificial Intelligence and Machine Learning by Market Intermediaries and Asset Managers**

The Australian Financial Markets Association (AFMA) welcomes the opportunity to provide comment to IOSCO on the proposed measures that reflect expected conduct standards by market intermediaries and asset managers using Artificial Intelligence (AI) and Machine Learning (ML). AFMA's membership includes a wide range of global and domestic financial market participants that employ highly sophisticated technology, including AI and ML in their market practices. We welcome guiding principles for the use of AI and ML that promote market efficiency.

Financial regulation of AI and ML should aim to find the appropriate balance between the benefits of AI and ML and any associated risks. The complex nature of AI and ML create challenges for policy makers efforts to understand their benefits, implications and risks. AFMA supports the view that while specific guidance for AI and ML may be appropriate in some circumstances, this should be done only where necessary and where possible AI and ML should fit into existing policy frameworks.

We find the level of analysis in the paper in general to be insufficient for the specificity of the recommendations made. While the overall direction of the recommendations is, at a high-level, mostly satisfactory, further refinement is certainly needed, and this will require a far greater depth of analysis to be undertaken.

We also find significant definitional issues, an overly ambitious scope in terms of the field of AI and ML applications the paper attempts to cover, and a lack of first principles analysis. In place of a first principles analysis in many places a survey approach has been used that reflects prevailing majority views. There can be no confidence that an optimal policy program is to be found through this method.

AFMA is of the view that the recommendations, particularly those based on surveys, currently do not have sufficient certainty to be the basis for recommendations for national regulators. We therefore recommend that the recommendations are rescoped and scaled back to match the depth of analysis or that further analysis is undertaken. We suggest IOSCO review the appropriateness of the survey approach to policy development more generally.

Please find AFMA's public Comment on the use of artificial intelligence and machine learning by market intermediaries and asset managers. Please contact Nikita Dhanraj either on +61 2 9776 7994 or by email [ndhanraj@afma.com.au](mailto:ndhanraj@afma.com.au) if further clarification or elaboration is desired.

Yours sincerely

A handwritten signature in black ink that reads "Damian Jeffree". The signature is written in a cursive, flowing style.

Damian Jeffree

**Senior Director of Policy**

## Responses to consultation questions

### Question 1: Do you agree with the proposed definition of AI and ML?

We understand IOSCO proposes to define AI as a combination of mass data, sufficient computing resources and machine learning.

AFMA queries the definition of AI as proposed by IOSCO as not aligned with more typical definitions focussing instead on some typical elements that contribute to the creation of AI. It is also perhaps too closely tied into ‘big data’ versions of AI through the term ‘mass data’ and this may not accurately reflect the range of AI systems possible, including many that do not rely on ‘big data’.

We suggest IOSCO uses a more standard definition of AI, these typically link the creation of human-like intelligence to machines. Intelligence can be further broken down if preferred<sup>1</sup>. One example of such a standard definition is from the Cambridge textbook *Artificial Intelligence* (2<sup>nd</sup> Ed), which states: AI is the field that studies the synthesis and analysis of computational agents that act intelligently<sup>2</sup>. We also consider as unnecessary the commentary on the likelihood or otherwise of strong artificial intelligence.

We understand IOSCO proposes to define ML as a method of designing a sequence of actions to solve a problem, which optimise automatically through experience –with or without human intervention. We do not consider the commentary under the subheading where an alternate candidate for a definition might be read.

AFMA agrees that ML is a subset of AI, however we query the unorthodox definition of ML proposed. Defining ML in terms of a ‘method of designing a sequence of actions to solve a problem’ appears to be inconsistent with prevailing practice. We suggest using a more standard definition such as that used in *Foundations of Machine Learning*: “computational methods using experience to improve performance or to make accurate predictions”<sup>3</sup>. This points to another concern with IOSCO’s proposed definition. Where human intervention is used to improve outcomes, this human intervention is not, by definition, machine learning. The definition proposed could include human intervention as ‘machine learning’ which again would be at odds with standard practice. Note that this is not to say that a particular system may not use elements of machine learning and human optimisation.

We note also in relation to the discussion on “categories of ML algorithms” that this discussion may also not be sufficiently refined to align with standard usage in the field. For example, ‘Deep Learning’ is not an algorithm but an approach, technique or method to problem solving within machine learning, it may be implemented via many different algorithms.

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<sup>1</sup> IOSCO may wish to consider the definition proposed by the American Psychological Association’s Taskforce on Intelligence.

<sup>2</sup> <https://artint.info/2e/html/ArtInt2e.Ch1.S1.html>

<sup>3</sup> *Foundations of Machine Learning*, Mehryar Mohri, Afshin Rostamizadeh, and Ameet Talwalkar MIT Press, Second Edition, 2018, p. 1.

*Question 2: Do you see any risks or challenges around AI and ML which are not mentioned in the report?*

AFMA finds IOSCO's consideration of risks and challenges around AI and ML to have identified some of the main categories of risks and challenges relating to AI and ML.

*Question 3: Do you agree that the guidance set out in Chapter 6 of the Consultation Report is appropriate to address the potential risks associated with the general use of AI and ML by market intermediaries and asset managers? If not, please provide details.*

Chapter 6 of the consultation report outlines the main proposed measures as guidance for regulators to design regulatory frameworks to supervise market intermediaries and asset managers that utilise AI and ML.

As a broad comment we observe that the attempt to formulate measures for AI and ML in whatever context they are used by financial firms is overly ambitious. The use of AI and ML in the HR context will drive a very distinct group of issues to its use in trading. We strongly suggest refining the scope of application of the measures to particular contexts.

We also note as a thematic response that the depth of analysis is insufficient to form many of the proposed measures. These analyses would benefit from the consideration of first principles rather than relying on surveys and a general discussion.

*Measure 1: Regulators should consider requiring firms to have designated senior management responsible for the oversight of the development, testing, deployment, monitoring and controls of AI and ML. This includes requiring firms to have a documented internal governance framework, with clear lines of accountability. Senior Management should designate an appropriately senior individual (or groups of individuals), with the relevant skill set and knowledge to sign off on initial deployment and substantial updates of the technology.*

This Measure largely proposes to require fitting AI and ML into standard existing frameworks, which is reasonably uncontroversial although the support for it from Chapter 4 appears limited to an observation that "most firms" supported this approach.

AFMA would suggest a first-principles analysis of why AI and ML might be different to existing practices and algorithms, and what this might suggest as appropriate differences for their supervision. Technical differences within AI and ML systems such as whether the learning is continuing to change behaviour while the algorithm is trading in real-time or whether changes in behaviour are only made after off-line testing has taken place, could mean that it is appropriate to govern certain systems (those that do not update real-time) in the same way as existing systems.

The suggested requirement to have senior individual(s) to have the relevant skill set and knowledge (presumably about AI and ML) sign off on deployments and updates is overly prescriptive. Firms may legitimately choose to structure themselves without AI and ML subject matter experts in senior positions. The firm as a whole by harnessing these skills in more junior employees could still have robust sign off and upgrade processes. This is typical practice in many areas of specialist expertise.

*Measure 2: Regulators should require firms to adequately test and monitor the algorithms to validate the results of an AI and ML technique on a continuous basis. The testing should be conducted in an environment that is segregated from the live environment prior to deployment to ensure that AI and ML:(a) behave as expected in stressed and unstressed market conditions;(b) operate in a way that complies with regulatory obligations.*

Measure 2 largely replicates existing standard requirements to adequately test and monitor systems to comply with regulatory obligations and behave as expected in normal and stressed markets and to conduct testing in a separate testing environment. This is uncontroversial.

However, while we support the need to monitor AI and ML systems on a continuous basis as appropriate and consistent with existing practice, we query whether AI and ML systems categorically require continuous testing. For example, it may not be necessary to continuously test AI and ML systems that are used to parameterize trading systems as these systems may not be subject to continuous change.

The more general point about the need to monitor some types of ML and AI systems to ensure they operate within their expected envelope is likely valid. But before regulatory guidance could be issued on this point more work is needed to further develop from first principles for which of these systems it is appropriate.

*Measure 3: Regulators should require firms to have the adequate skills, expertise and experience to develop, test, deploy, monitor and oversee the controls over the AI and ML that the firm utilises. Compliance and risk management functions should be able to understand and challenge the algorithms that are produced and conduct due diligence on any third-party provider, including on the level of knowledge, expertise and experience present.*

AFMA notes the regulatory incompatibility with innovation in the requirement to have expertise and experience in emerging technologies. This requirement is appropriate for mature technologies but creates an unreasonable barrier for emerging technologies.

The paper states:

The lack of adequate internal skills, knowledge, expertise and experience to maintain and oversee AI and ML may lead to difficulties in updating the model or over-reliance on external parties.

A mere risk of over-reliance should not create a requirement for firms to in-source all monitoring and supervisory functions. There are many reasons why outsourcing these functions may lead to more optimal outcomes.

More significantly this argument that firms should be able to monitor and supervise the operation of AI and ML systems does not imply that “Regulators should require firms to have the adequate skills, expertise and experience to develop, test, deploy, monitor and oversee the controls over the AI and ML that the firm utilises.”

It simply does not follow that even if firms should insource monitoring and supervisory functions that they should be required to insource the development, testing and deployment of the controls used in relation to AI and ML tools as suggested by the first sentence of Measure 3. Firms should be free to rely on externally developed tools for the control and monitoring of AI and ML applications. There is no reason to assume internally developed controls will be superior to those developed by third parties. In many cases third party tools are likely to be more effective.

The suggestion that firms should be required to have compliance personnel with a programming background as suggested in the discussion paper may not be sufficiently well considered. Compliance and risk management personnel are typically not subject matter experts in any of the areas in which they operate. Partnerships with subject matter experts are typically the way firms address the challenges of compliance being implemented across a wide range of subject areas (e.g. trading, information security, finance, system development). Measure 3 translates this discussion to a requirement for compliance and risk to “understand” the algorithms. Similarly, this requirement for compliance and risk generalists to understand cutting edge AI and ML technology needs to be appropriately calibrated as it would not be appropriate to require any deep level of understanding.

In relation to the proposed requirements around due diligence of third-party providers market forces have a role to play here and for suppliers of successful software requiring an assessment of the providers internal skills may be an overly prescriptive and redundant requirement.

*Measure 4: Regulators should require firms to understand their reliance and manage their relationship with third party providers, including monitoring their performance and conducting oversight. To ensure adequate accountability, firms should have a clear service level agreement and contract in place clarifying the scope of the outsourced functions and the responsibility of the service provider. This agreement should contain clear performance indicators and should also clearly determine sanctions for poor performance.*

Management of third-party risks is appropriate for AI and ML as it is for many other aspects of financial firms. The case for differential treatment of these risks in relation to AI and ML has yet to be made in the discussion included in the paper. The prescriptive requirements in relation to contractual arrangements do not appear to factor in market forces which in market economies are the most significant factor in ensuring appropriate outcomes for service arrangements.

AFMA agrees there is no reason that AI and ML systems should be excluded from the standard third-party considerations.

*Measure 5: Regulators should consider what level of disclosure of the use of AI and ML is required by firms, including:(a) Regulators should consider requiring firms to disclose meaningful information to customers and clients around their use of AI and ML that impact client outcomes. (b) Regulators should consider what type of*

*information they may require from firms using AI and ML to ensure they can have appropriate oversight of those firms.*

We query the broad-brush approach to transparency and explainability in the use of AI and ML. For example, it may not be appropriate to require algorithms to be “explainable” to market counterparties as suggested in the discussion paper.

In relation to disclosures by firms to their clients and customers there is no apparent market failure which is being addressed. There will be costs and additional risks introduced by a general requirement to disclose but there is no potential benefit yet provided to offset these costs. Disclosure to clients and customers creates a strong risk of exposure of information to competitors and counterparties. This discourages and penalises firms that invest in development of these systems.

While transparency and explainability are generic issues within the context of AI and ML whether they are appropriate for a particular implementation of AI needs careful consideration and public discussion. Proceeding on the basis that calibration of the level of transparency and appropriate explainability is sufficient, could be in error, the question of whether they are appropriate at all must first be answered.

In relation to (b) firms will have key intellectual property in AI and ML systems that should not be open to review by regulatory staff who may at some point work for a competitor. This clause appears to suggest that regulators should determine what they ‘may require’. A better-informed debate would place limits on what could at the limit be reasonably asked of firms.

*Measure 6: Regulators should consider requiring firms to have appropriate controls in place to ensure that the data that the performance of the AI and ML is dependent on is of sufficient quality to prevent biases and sufficiently broad for a well-founded application of AI and ML.*

We caution against generalising about the quality of data required by AI and ML systems. Contrary to the discussion in the paper many systems are specifically designed for noisy data and are designed to not be adversely affected by it.

In relation to AI and ML trading engines the performance of these algorithms is not an appropriate target for regulatory intervention. Commercial forces will ensure that factors that influence AI and ML performance are addressed.

The issue of biases is a potential risk in HR systems, but recommendations should be targeted at these systems rather than at all AI and ML systems.

*Question 4: Do you disclose information to customers / clients on the use of AI and ML? If yes, please indicate what kind of information is disclosed.*

AFMA is an industry body. Please refer to our comments in relation to Measure 5 in answer to Question 3.

*Question 5: What factors do you need to take into account when considering the appropriate level of information that should be disclosed to clients (including prospective clients) and other relevant stakeholders around the firm's use of AI and ML algorithms?*

AFMA is a trade association.

*Question 6: How do you consider and apply proportionality to your systems and controls over the use of AI and ML?*

AFMA is a trade association.