



Final Report on Post Trade Risk Reduction Services: Sound Practices for Consideration

FINAL REPORT

The Board of the
International Organization of Securities Commissions

Copies of publications are available from
The International Organization of Securities Commissions website

iosco.org

© International Organization of Securities Commissions 2022.
All rights reserved. Brief excerpts may be reproduced or translated
provided the source is stated.

Foreword

The Board of the International Organization of Securities Commissions (IOSCO) has published this Final Report with the aim to finalise IOSCO's recommendations on sound practices and guidance to help IOSCO members and regulated entities consider potential risks and address challenges related to Post Trade Risk Reduction Services.

Table of Contents

Executive Summary	6
Chapter 1 – Introduction and Background	8
1.1. Background	8
1.2. IOSCO members’ survey	9
1.3. Service providers and users’ roundtables	9
1.3.1. Users’ roundtable	10
1.3.2. Service providers’ roundtables	10
1.4. Key findings	10
Chapter 2 – Defining Post Trade Risk Reduction Services	11
2.1. Portfolio compression	11
2.2. Counterparty risk optimisation	12
2.3. General characteristics of PTRRS	12
2.4. Participation by the buy-side and the sell-side	13
2.5. Asset classes and the frequency of the runs	14
2.6. PTRRS are expected to evolve in tandem with regulatory changes	14
2.7. Regulatory data on PTRRS	14
Chapter 3 – Current State of Play and Benefits and Risks	15
3.1. Applicable legal framework	15
3.1.1. Europe	15
3.1.2. Switzerland	16
3.1.3. United Kingdom	16
3.1.4. United States	16
3.1.5. Asia-Pacific	17
3.2. Benefits and potential risks associated with current PTRRS	18
3.2.1. Benefits	18
3.2.2. Regulatory Views of Benefits	18
3.2.3. Potential risks and challenges	19
Chapter 4 – Areas for Consideration	20
4.1. Algorithm governance and function	20
4.2. Participant protection	20
4.3. Market concentration and potential barriers to entry	21
4.3.1. Market concentration and network effects	21
4.3.2. Potential impacts of limited number of service providers	21
4.3.3. Limited number of runs	22
4.3.4. Change of PTRRS provider in case of a major service provider failure	22
4.4. Other potential barriers to utilising PTRRS	22
4.5. Due diligence	23
4.6. Uncertainty of legal contracts	23
4.7. Data protection	24
4.8. Operational risk and resilience	24
4.9. Standardization of file formats	25
4.10. Change in counterparty risk	25

Chapter 5 – Sound practices and considerations regarding PTRRS providers and users	27
5.1. Transparency, governance, comprehensibility and fairness of the algorithm	27
5.2. Operational risk	28
5.3. Data integrity and security and regulatory data	28
5.4. Legal certainty	29
5.5. Considerations of potential counterparty risk by IOSCO members and PTRRS users	29
5.6. Market concentration and competition	30
5.7. Standardization and predictability of runs and file formats	31
Chapter 6 – Conclusions	32
Chapter 7 – Summary of Feedback and IOSCO responses	33
Consultation Questions for Post Trade Risk Reduction Services	34

Executive Summary

Post Trade Risk Reduction Services (PTRRS) are provided by third party service providers to market participants in order to assist them in reducing operational and counterparty credit risks associated with outstanding over-the-counter (OTC) derivatives trades. PTRRS are increasingly being used by market participants to increase efficiency in the way they manage their OTC derivatives trades. For purposes of this Final Report, PTRRS covers notably *portfolio compression* and *counterparty risk optimisation* (also called “rebalancing”).¹

PTRRS offerings have evolved over the recent years with counterparty risk optimisation emerging more recently. Despite the increasing use and the evolving nature of PTRRS, there remains a limited number of firms that offer PTRRS globally. This is mainly because the efficiency of such services is dependent on scale and existing networks (i.e., more participants in an exercise could lead to greater efficiency), and therefore new entrants face challenges in building a network of participants.

PTRRS provide certain clear benefits, including reduction of risk and improved efficiency. Among other things PTRRS may help:

- Provide an opportunity for OTC derivatives counterparties to reinvest released capital while they reduce the gross outstanding value of contracts;
- Reduce counterparty risk without changing market exposure risk;
- Diminish operational risk by reducing transaction count, as there are fewer trades to maintain, process and settle; and
- potentially reduce systemic risk and enhance overall financial market stability, by reducing operational risk for individual market participants.

However, despite all the benefits, the offering and increased use of PTRRS may also present challenges for OTC market participants and merit further consideration from a risk perspective. This may include risks in terms of control and governance around the algorithms, fair treatment of participants, data protection, legal certainty, and operational resilience. Such risks may be exacerbated by the concentration of service offerings in a handful of firms and the substantial increase in the volume of contracts that are exposed to PTRRS warrants consideration.

Given the sheer volumes of derivatives contracts that are exposed to portfolio compression and counterparty risk optimisation services and the possible material impact of these services on the overall amount of Initial Margin (IM) posted as a result of the use of these services, IOSCO believes these services deserve attention from regulators, with better global coordination.

¹ While portfolio compression and risk optimisation share characteristics and attributes, they also differ in a number of important ways, including with respect to the regulations and policy mandates that apply to them. This report notes some of these differences but also groups them together under the umbrella of PTRRS with respect to the common risks and challenges they may raise for market participants and the potential mitigants or measures to address them.

Except to a certain extent in a couple of jurisdictions, authorities do not directly regulate risk reduction service providers. Rather, in most jurisdictions, responsibility to perform appropriate due diligence, risk assessment and contingency planning remains with the entities that use PTRRS. This approach is similar to the approach taken for certain services where entities may engage external service providers to provide, for example, technology or application providers.

Part of IOSCO's work in this area involves obtaining a better understanding of the important role PTRRS, and their providers, play within the global derivatives market.

IOSCO published a Consultation Report on 26 January 2024 identifying potential policy considerations and risks associated with using and offering of PTRRS and proposing potential sound practices in this area. The Consultation Period closed on 1 April 2024. IOSCO received 5 responses to the Consultation Report from industry associations (1), PTRRS service providers (2), exchange operator (1) and financial market infrastructure operator (1). Non-confidential responses are publicly available on IOSCO's website. A summary of the consultation feedback and IOSCO's responses are included in Annex 1.

This Final Report highlights potential policy considerations and risks associated with using and offering of PTRRS and presents sound practices in this area as guidance to IOSCO members and regulated users of PTRRS to determine whether additional measures should be considered based on the scope of activities being offered in the respective jurisdictions.

Chapter 1 – Introduction and Background

1.1. Background

The 2007–08 global financial crisis exposed regulatory gaps, opacity and systemic risks in the OTC derivatives markets. In 2009, at their Pittsburgh summit, the G20 Leaders announced a reform programme to strengthen the resilience of the OTC derivatives markets. This was followed by the implementation of the OTC derivatives reforms in G-20 and other countries with the purpose to improve transparency, mitigate systemic risk, and protect against market abuse in the derivatives markets.

In 2015, IOSCO published the Risk Mitigation Standards (the Standards)², setting out standards aimed at mitigating risk in the non-centrally cleared OTC derivatives markets. The Standards included “compression,” “trade confirmation,” “portfolio reconciliation,” “trading relationship documentation,” “valuation,” and “dispute resolution”.

In addition, IOSCO and the Basel Committee on Banking Supervision (BCBS) published the *Margin Requirements for Non-Centrally Cleared Derivatives* (Margin Requirements) as a framework establishing minimum standards on initial and variation margin (IM and VM) for non-centrally cleared OTC derivatives.³

At the time the Standards were published, the only PTRRS widely available in the market were portfolio compression services. Since then, similar services have been developed, including counterparty risk optimisation services. Based on IOSCO members’ survey and industry engagement, currently portfolios are being hedged or rebalanced through just a few third-party PTRRS providers. While recognizing the greater efficiency and other benefits PTRRS provide, some of which were highlighted above, IOSCO aims to highlight the current state and potential impacts of PTRRS on market integrity, competition and participant protection.

These potential impacts may increase as the level of reliance on PTRRS increases: more specifically, risks in terms of control and governance around the algorithms, fair treatment of participants, data protection, legal certainty, and operational resilience.

To address these potential risks, in December 2021, the IOSCO Board approved a project specification proposed by Committee 7 on Derivatives (C7) to assess the risks associated with the increased use of PTRRS and concentration of PTRRS providers, particularly in the areas of portfolio compression and counterparty risk optimisation.

Against this background, this report draws attention to various challenges and potential risks that may arise from these services and their providers, and provides guidance on how they could be mitigated in practice. The Final Report assesses the overall landscape and

² IOSCO Report on Risk Mitigation Standards for Non-centrally Cleared OTC Derivatives, January 2015.

³ BCBS and IOSCO, Margin Requirements for Non-Centrally Cleared Derivatives (Published in March 2015 – Updated in April 2020), available at: [FRO3/2020 Margin requirements for non-centrally cleared derivatives \(iosco.org\)](https://www.fro3.org/2020/Margin_requirements_for_non-centrally_cleared_derivatives_(iosco.org))

the challenges and potential risks associated with the increased use of, and concentration of, third-party PTRRS.

To fulfil its mandate, IOSCO conducted a comprehensive survey of its members and hosted a series of roundtables with PTRRS users and providers, with the objectives of:

- Mapping out the role of PTRRS and their providers in OTC derivatives markets;
- Assessing whether there are any risks associated with PTRRS in the derivatives markets; and
- Assessing whether there are existing mitigants against those risks.

The Final Report:

- Provides an overview of the work conducted by IOSCO to date in relation to PTRRS, including the parameters of the C7 mandate that forms the basis of this Report;
- Defines what services are considered PTRRS for the purposes of this Report and provides an overview of the firms offering PTRRS so far;
- Provides a summary of how PTRRS are used by market participants, including their benefits, market participants' due diligence, and possible barriers to using PTRRS;
- Provides general findings on the potential challenges and risks and areas for policy consideration relating to PTRRS;
- Recommends sound practices to mitigate the challenges and risks identified during the consultation in light of the potential policy considerations and risks identified; and
- Provides a summary of the public feedback received during the consultation process, along with IOSCO's responses.

1.2. IOSCO members' survey

IOSCO circulated a comprehensive regulatory survey to its members to understand the global state of play of PTRRS and how these services are used in respective members' jurisdictions as well as the regulatory oversight, if any, on the PTRRS providers. The survey aimed to help IOSCO in gaining a better understanding of possible risks associated with market participants' use of PTRRS and applicable regulatory frameworks, including the jurisdictions that either regulate or have the statutory ability to regulate PTRRS providers.

1.3. Service providers and users' roundtables

As part of IOSCO's fact-finding exercise, IOSCO conducted a series of roundtables with the industry, which included a session with a representative group of PTRRS users and a series of bilateral meetings with major PTRRS providers.

1.3.1. Users' roundtable

The users' roundtable was held with a selection of both sell-side and buy-side firms as well as central counterparties (CCPs) that provided feedback on the various uses of PTRRS and the benefits and potential risks they saw in using these services. In particular, PTRRS users explained how the services have evolved over time in terms of sophistication; the risks that PTRRS are designed to reduce; the general market environment; and the challenges that they face in using such services.

1.3.2. Service providers' roundtables

The PTRRS providers' roundtables offered IOSCO an opportunity to understand the services PTRRS providers offer; the type of products that the services are offered for; the benefits PTRRS providers bring to their clients; as well as the recent evolution in service offerings.

IOSCO obtained feedback from PTRRS providers on issues such as governance of the algorithms, scheduling of PTRRS exercises, operational risk management, data integrity and data confidentiality.

1.4. Key findings

IOSCO's key findings can be summarised as the following:

- **PTRRS offers important benefits:** These include post-trade operational efficiencies, reduction in counterparty risk and, potentially, an overall reduction in systemic risk.
- **PTRRS may pose a number of challenges and risks:** There are a number of potential challenges and risks associated with PTRRS, including those relating to market concentration of service providers, and a lack of transparency regarding the algorithms used by providers, and limited due diligence conducted by users of PTRRS.
- **Limited data, direct regulatory oversight globally:** Survey results and the responses from the roundtables indicate that while PTRRS are widely used in many jurisdictions, there is very limited data received by regulatory authorities, in addition to either limited or no direct regulatory oversight of PTRRS.

Chapter 2 – Defining Post Trade Risk Reduction Services

At the time the Standards were published, the only PTRRS widely available in the market were compression services for uncleared OTC derivatives. Since then, other PTRRS have been developed, such as, counterparty risk optimisation and basis risk mitigation. These services have generally been used by major banks.

The market, however, is evolving and growing as third-party service providers expand with new market participants, asset classes (from interest rates to FX and commodities), service offerings (compression to more sophisticated risk optimisation services) and, types of risks (notional amount reduction to counterparty risk reduction).⁴ Based on IOSCO members' experience, the two main PTRRS currently offered continue to be portfolio compression and counterparty risk optimisation. We acknowledge that PTRRS providers are adding new services regularly, such as basis risk mitigation services, which are bulk risk mitigation services designed to review a portfolio and apply optimisation algorithms to identify risk-reducing opportunities for PTRRS users and generate market neutral outputs with the purpose of reducing fixing or strike risk.⁵ This report nevertheless focuses on these two types of PTRRS but may also be informative with respect to other types of existing PTRRS, such as basis risk mitigation and other PTRRS that may be developed in the future.

2.1. Portfolio compression

The objective of portfolio compression services is to reduce the number of trades between counterparties, the total notional amount of trades between them and the number of counterparties in a portfolio. Portfolio compression aims to replace, terminate or amend unnecessary or duplicative OTC derivatives transactions at their mark-to-market valuation, resulting in a reduced number of trades with a reduced total notional amount.⁶ The reduction in the number of trades and notional amount may in turn lower operational risks and costs.

Compression can be performed bilaterally, where two parties may cancel offsetting contracts in their respective portfolios, or multilaterally, where a group of participants may replace, terminate or amend offsetting contracts with each other within agreed parameters. Portfolio compression is primarily performed by third party providers; however, it can also be performed by a CCP on a smaller scale.

⁴ ESMA consultation on post trade risk reduction services with regards to the clearing obligation highlights that “[b]etween January 2016 to October 2019, LCH has compressed approx. 13 million trades with a total notional of \$2.4 quadrillion. In 2018, SwapClear compressed the equivalent of 72% of the total notional it cleared. The effects of compression on outstanding notional increased only by \$17 trillion while producing combined reductions in notional of over 1\$ quadrillion.”.

⁵ Fixing risk is a second order risk within interest rate derivative portfolios resulting from the structure of the instruments held in the client's portfolios and a mismatch of exposures over time.

⁶ See, e.g., SEC Release No. 34-64796 (July 1, 2011).

Typically, counterparties submit their portfolio such that compression service providers run an algorithm to identify the relevant trades and replace, terminate or amend the transactions (with no or minimal change in market risk, in the form of pre-agreed tolerances). All participants must agree to the proposed terminations and new trades for the run to be successful.

Compression services may allow market participants to optimise their leverage ratio by lowering their gross notional exposure, and to lower their operational risk (and costs) by reducing their overall number of trades.

In terms of products, the most common type of derivatives trades submitted for portfolio compression services include interest rates, FX, equities and cross currency. The frequency of compression cycles varies depending on the PTRRS provider and the product type, with runs occurring on a weekly to a monthly basis.

2.2. Counterparty risk optimisation

Similar to portfolio compression services, counterparty risk optimisation aims to help market participants reduce their counterparty risk without changing their market exposure risk. However, in contrast to compression services, counterparty risk optimisation does not seek to reduce the number of overall trades or gross notional, but instead, may generate additional trades for the purpose of reducing the overall counterparty risk associated with a counterparty's existing portfolio. This is accomplished by redistributing market risk among participating counterparties (but leaving each counterparty with an unchanged level of market risk overall) in order to minimize counterparty risk.

Counterparty risk optimisation services identify offsetting trades to reduce counterparty risk, even as more trades may be entered into by the counterparties in order to achieve risk redistribution. This in turn may help minimize the amount of IM that market participants must post given the lower exposure to counterparties.

Typically, counterparties submit their portfolio (which may comprise centrally cleared or non-centrally cleared OTC derivatives transactions) such that counterparty risk optimisation service providers run an algorithm to generate a proposal that suggests new transactions which, if entered into, will reduce the outstanding counterparty risk exposures of participating counterparties (within pre-agreed tolerances set by the counterparties). All participants must agree to the proposed new transactions for the run to be successful.

2.3. General characteristics of PTRRS

The following are the general characteristics of PTRRS, and specifically portfolio compression and counterparty risk reduction:

- **Risk reduction:** PTRRS do not serve as a vehicle for taking new market positions or adding risk. For example, the purpose of portfolio compression is the reduction of gross notional exposure, which may lead to reduced operational, counterparty and/or systemic risk.
- **Market risk neutral:** PTRRS are designed not to change the directional market risk of the portfolios concerned.

- **Non-price forming:** While they may involve a new legal transaction (rather than a trade at prevailing market price or bid-ask offer), in order to achieve the identified risk reduction result, participants are not able to post competitive bids and offers, no price negotiation takes place and market risk neutrality means transactions are recorded away from market prices.
- **Single multilateral compound transaction:** The risk reduction cycles are binding on an “all or nothing” basis across all participants, and the transaction components are executed as a single compound bulk legal transaction.
- **Use of third parties:** Market participants employ third party service providers to perform PTRRS as these services could not generally be performed by any individual market participant itself on a standalone basis.
- **Use of an algorithm:** Both portfolio compression and counterparty risk optimisation are operated using a bilateral or multilateral algorithm, whereby firms who participate in a run submit their trades and the algorithm calculates the optimal reduction in notional amounts/number of trades or counterparty risk/IM while the market risk remains unchanged. As part of their services in relation to counterparty risk optimisation, third-party providers typically run proprietary algorithms to identify trades containing inefficient elements and/or generate new/off-setting trades, within pre-determined parameters agreed by the participants.

2.4. Participation by the buy-side and the sell-side

Based on the feedback from members’ survey, many IOSCO members are aware of financial institutions in their respective jurisdictions using PTRRS. However, the information in relation to how PTRRS are used, and the types of entities that utilise them, varies by jurisdiction.

Both responses to the members’ survey and the industry engagement showcased that PTRRS are mostly used by sell-side firms. Very few (larger) buy-side firms use these services. Sell-side firms that have large non-directional portfolios tend to benefit from the use of PTRRS while smaller buy-side firms that have small directional portfolios may choose to not onboard with PTRRS providers due to the limited benefits of PTRRS on their portfolios.

Feedback from PTRRS providers supported that buy-side firm participation in PTRRS exercises was limited in comparison to sell-side firms. That said, the number of buy-side firms who may wish to use these services may increase in the future, as these firms come into the scope of the IM requirements, which in turn may increase the need to utilise these services. PTRRS users identified the need for increased buy-side firm participation, as this would increase the efficiency of risk reduction exercises.

IOSCO members also observed that the effectiveness of these services increases correspondingly with the type of counterparties and number of trades submitted into the risk reduction exercises.

2.5. Asset classes and the frequency of the runs

For portfolio compression services, PTRRS providers highlighted that the main asset classes for which they offer this service are interest rates, FX, equities and cross currency. The frequency of the compression runs vary depending on the asset class and can range from one to two times a week to one to two times a month.

In relation to counterparty risk optimisation services, PTRRS users also highlighted that the main asset classes covered are interest rates, FX, equities and cross currency. The frequency in which risk optimisation services are performed again varies dependent on the asset class. This ranges from weekly to monthly runs, and more frequently in some cases.

2.6. PTRRS are expected to evolve in tandem with regulatory changes

PTRRS providers highlighted that they do not believe that the sector has plateaued in terms of market evolution. The need for PTRRS is predominantly driven by regulation as well as the clients' needs. As the new regulations regarding capital come into effect (such as SA-CCR⁷), the expected increased demand for PTRRS will require PTRRS providers to continue enhancing the services they offer, whether that is offering new products or extending their services to more clients such as buy-side firms.

2.7. Regulatory data on PTRRS

Responses to the members survey highlighted that regulatory authorities receive very limited regulatory data on PTRRS.

Certain derivatives reporting regimes require very high-level data reporting on whether a derivatives trade is the result of a compression exercise. Moreover, for those regimes, the available data in relation to PTRRS is received indirectly from trade repositories as a result of derivative transaction reporting requirements (e.g., under the European market infrastructure regulation (EMIR)) or on an aggregated basis from the service providers.

However, more granular details on PTRRS is generally lacking, such as data on which transactions are included in the same compression run/cycle or the amount of IM lowered as a result. In addition, there is currently no agreed definition covering all PTRRS and no data that would identify trades relating to, for example, counterparty risk optimisation services.

⁷ BCBS – The standardised approach for measuring counterparty credit risk exposures (SA-CCR).

Chapter 3 – Current State of Play and Benefits and Risks

3.1. Applicable legal framework

While PTRRS and its providers are present in many jurisdictions, the legal frameworks differ. Jurisdictions such as the UK, US, Japan, and Australia have regulatory regimes that may partially or wholly cover PTRRS and their providers, whereas other jurisdictions have no or limited direct regulatory oversight. Some compression firms are regulated in a small number of jurisdictions (e.g., for “arranging” in Sweden or “making arrangements in view of a transaction in investment” in the UK).

3.1.1. Europe

The current EU regulatory framework includes two references to PTRRS, one in Markets Financial Instruments Regulation (MiFIR)⁸ (which sets out a definition of “portfolio compression” and some exemptions for certain transactions resulting from PTRRS) and one in EMIR implementing⁹ rules on risk mitigation techniques (which require to have in place procedures to analyse the possibility to conduct a compression exercise and to be able to provide a valid explanation for concluding that the compression is not appropriate)¹⁰ but there is no legal definition for PTRRS as a whole. In addition, the European Securities and Markets Authority (ESMA) has published a final report in November 2020¹¹ regarding the opportunity to exempt from the clearing obligation the trades resulting from PTRRS. The current text of the EMIR review¹², expected to enter into force before the end of 2024, provides for such exemption under certain conditions, which include some requirements regarding PTRRS exercises and PTRRS providers. Consistently, the new EMIR text assigns

⁸ In the previous version of Regulation (EU) No 600/2014 of the European Parliament and of the Council of 15 May 2014 (MiFIR), the exemption was covering only transactions resulting from portfolio compression exercises. Following the review of the Regulation, entered into force on 28 of March of 2024, the exemption was extended to all transactions resulting from PTRRS.

⁹ Commission Delegated Regulation (EU) No 149/2013 of 19 December 2012 supplementing Regulation (EU) No 648/2012.

¹⁰ Article 14 of Commission Delegated Regulation No 149/2013 requires financial counterparties and non-financial counterparties with 500 or more OTC derivative contracts outstanding with a counterparty which are not centrally cleared to have in place procedures to regularly, and at least twice a year, analyse the possibility to conduct a portfolio compression exercise in order to reduce their counterparty credit risk and engage in such a portfolio compression exercise. The provision in addition requires financial counterparties and non-financial counterparties to ensure that they are able to provide a reasonable and valid explanation to the relevant competent authority for concluding that a portfolio compression exercise is not appropriate.

¹¹ ESMA Report of 10 November 2020 “In 2018, SwapClear compressed the equivalent of 72% of the total notional it cleared. The effects of compression on outstanding notional increased only by \$17 trillion while producing combined reductions in notional of over 1\$ quadrillion”.

¹² Available at: https://www.europarl.europa.eu/doceo/document/TA-9-2024-0348_EN.pdf

supervisory powers with respect to PTRRS providers to the national competent authorities, in the context of the clearing obligation exemption, and assigns the mandate to produce implementing rules on the matter to ESMA.

3.1.2. Switzerland

Swiss derivatives law contains a duty for a counterparty to perform portfolio compression where this is appropriate to mitigate counterparty risk and provided they have 500 or more non-centrally cleared OTC derivatives transactions outstanding, but there is no legal definition for PTRRS as a whole. FINMA considers PTRRS as outsourcing services and has the ability to exercise its powers with regard to PTRRS used by financial institutions as set out in its Circular on Outsourcing. In particular, counterparties are required to ensure through the outsourcing agreement that PTRRS can be audited by the counterparty itself, its supervisory audit company and by FINMA.

3.1.3. United Kingdom

Where firms are authorized, the FCA has authority to oversee their conduct and to ensure that they meet the FCA's regulatory principles, including the authority to oversee activities, such as the provision of PTRRS, that might not on their own require that firm to become authorized.

3.1.4. United States

Securities and Exchange Commission

The Securities and Exchange Commission adopted rules that directly regulate portfolio compression for security-based swaps (SBS). Pursuant to Securities Exchange Act Rule 15Fi-4, each regulated SBS entity¹³ is required to establish, maintain, and follow written policies and procedures for periodically engaging in both bilateral and multilateral portfolio compression exercises, in each case when appropriate, with each counterparty that is also a regulated SBS entity. To the extent a regulated SBS entity transacts with a counterparty that is not a regulated SBS entity, the regulated SBS entity's policies and procedures shall provide for engaging in portfolio compression exercises when appropriate and to the extent requested by the non-regulated SBS entity counterparty.

Additionally, a regulated SBS entity's policies and procedures should be tailored to the specific risks and operations of the entity and shall address, among other things, the evaluation of portfolio compression exercises that are initiated, offered, or sponsored by any third party.

Providers of portfolio compression services may fall within the definition of a "clearing agency" under the Securities Exchange Act. In addition, entities that utilize PTRRS, such as broker-dealers and regulated SBS entities, are subject to recordkeeping, documentation, confirmation, financial responsibility and other requirements that may apply when such entities engage in PTRRS. In addition, determining whether a PTRRS provider is subject to

¹³ In this context, a "regulated SBS entity" is a security-based swap dealer or a major security-based swap participant, each as defined under the Securities Exchange Act and SEC regulations.

registration with, or directly regulated by, the SEC requires a facts and circumstances analysis.

Commodity Futures Trading Commission

The Commodity Futures Trading Commission (CFTC) adopted rules that directly regulate portfolio compression for swaps, as defined in the Commodity Exchange Act and CFTC rules. Pursuant to CFTC rule 23.503 (17 CFR 23.503), each swap dealer and major swap participant registered with the CFTC is required to establish, maintain, and follow written policies and procedures for periodically engaging in both bilateral and multilateral portfolio compression exercises, in each case when appropriate, with each counterparty that is also a swap dealer or major swap participant. To the extent a swap dealer or major swap participant transacts with a counterparty that is not swap dealer or major swap participant, the swap dealer or major swap participant's policies and procedures must provide for engaging in portfolio compression exercises when appropriate and only to the extent requested by the non-regulated entity counterparty.

Additionally, a swap dealer or major swap participant's policies and procedures should be tailored to the specific risks and operations of the entity and must address the evaluation of portfolio compression exercises that are initiated, offered, or sponsored by any third party.

The CFTC does not regulate third-parties that provide the PTRSS described in this report, though certain activities that such third-parties may engage in may require registration with the CFTC, such as swap execution facility registration. CFTC rules also provide that registered derivatives clearing organizations (DCOs) shall make portfolio compression exercises available, on a regular and voluntary basis, for its clearing members that clear swaps, to the extent that such exercises have been developed by third parties and are appropriate for the swaps that the DCO offers for clearing.

3.1.5. Asia-Pacific

Australia

The Australian Securities and Investment Commission (ASIC) currently indirectly regulates PTRRS providers as facilities that have been exempted from the markets licensing provisions in accordance with Chapter 7 of the Corporations Act. ASIC can indirectly (but does not currently) regulate PTRRS providers by including conditions in the Exemption Notices that the PTRRS providers are granted. ASIC does not have a regulatory framework designed specifically for PTRRS providers and there are no regulations that are proposed, under consideration, or planned to directly regulate the PTRRS providers.

Hong Kong

The Securities and Futures Commission (SFC) carried out a market consultation in 2017 on refinements to the licensing regime for OTC derivative regulatory regime. While there are provisions in the Securities and Futures Ordinance dealing with licensing, the licensing regime has not been implemented. Amongst other issues, the SFC consulted the market to carve out the provision of multilateral portfolio compression services from both "dealing in OTC derivative products" and "advising on OTC derivative products".

Japan

The Japanese Financial Services Agency (JFSA) currently does not have a direct regime for PTRRS and PTRRS providers. However, the financial instruments clearing organization could provide PTRRS with an approval from JFSA in advance. In this case, JFSA would supervise PTRRS.

Singapore

In Singapore, users of PTRRS are mostly banks which are licensed and regulated by Monetary Authority of Singapore (MAS), and subject to ongoing supervision and requirements to establish a comprehensive risk management framework and adopt practices set out in the MAS risk management guidelines. These include risk management that involve the use of third-party services such as PTRRS. MAS does not directly regulate PTRRS activity itself, except in the case of FMI services as a central counter party.

3.2. Benefits and potential risks associated with current PTRRS

3.2.1. Benefits

For *compression services*, market participants may benefit from a reduction in the overall number of trades which in turn mitigates possible operational and settlement risks. Smaller portfolios eliminate the need for market participants to manage unnecessary and duplicative positions within a portfolio. Compression services also aim to reduce notional amounts (although not in all cases), which can help support lower capital charges for firms, and, in turn, may free up capital for other costs and increase liquidity.

For *counterparty risk optimisation services*, the main benefit is to reduce counterparty credit risk. In doing so, firms may benefit from lower IM calls to be posted bilaterally or at a CCP, and a more beneficial calculation of risk weighted assets (RWA) that are used to determine the minimum amount of capital that they must hold.

New requirements such as the SA-CCR (the Basel Committee's formulation for its Standardised Approach for measuring exposure at default for counterparty credit risk) may lead to an increase in the use of risk optimisation services to help lower the capital required as part of this suite of requirements.

PTRRS users have similarly identified the core benefits of PTRRS as the ability to compress notional amounts to reduce capital requirements; optimisation of margin requirements through reduction of counterparty credit risk; a reduction in the total number of transactions to reduce legal and operational risk; and, ultimately, a reduction in systemic risk.

3.2.2. Regulatory Views of Benefits

In general, IOSCO members acknowledge the benefits and generally support the use of PTRRS. In the case of portfolio compression, the Standards provided that "covered entities" should establish and implement policies and procedures to regularly assess and, to the

extent appropriate, engage in portfolio compression.¹⁴ Moreover, requirements are in place in a large number of jurisdictions to promote the use portfolio compression. In line with the industry view, according to IOSCO members, the main benefit of these services is to mitigate the operational and counterparty credit risk associated with OTC derivatives. This not only benefits PTRRS users, but also the regulatory agenda as, ultimately, these services may contribute to reducing overall systemic risk.¹⁵

3.2.3. Potential risks and challenges

IOSCO members' feedback has identified that there may be risks associated with the use of PTRRS providers, including the trades resulting from PTRRS potentially triggering new clearing and margin requirements. IOSCO members also highlighted risks such as market concentration; the low level of competition among PTRRS providers and potential barriers to entry for new PTRRS providers; governance and fairness of the PTRRS algorithms; data integrity and legal risks associated with the creation of new trades.

Users also mentioned potential limitation on choices/options in general and in particular for servicing of smaller/one-directional portfolios; issues surrounding the scheduling of PTRRS exercises; and divergence around onboarding processes and filing formats. These risks and challenges are further discussed in Chapter 4.

Furthermore, the roundtable discussion with users on their due diligence process when choosing a PTRRS provider highlighted the limited due diligence that is being conducted, despite the potential risks that have been identified. Users displayed low interest in how the proprietary algorithms are designed, despite their limited ability to judge the effectiveness of the services and instead focuses on the outcomes generated by the algorithm. The general consensus among users was that further due diligence would not be productive, as the outcome is what is most important. For example, one user specifically indicated that "achieving a good outcome is difficult to achieve and predict" as it relates to the fairness of the algorithm, given the limited due diligence that they conduct.

Therefore, while risk optimisation may reduce counterparty risk, given how the proprietary algorithms are used to minimize IM, thereby allowing for increased leverage, without reviewing the proprietary algorithms, it's difficult to determine whether these services have an impact on reducing other types of risks including systemic risks. Without visibility of the algorithm, it is also difficult to determine whether the outcomes generated by the algorithm have the potential to introduce other types of risks as a result of the new trades and reduced IM which arises from the risk optimisation exercise.

Users and PTRRS providers also discussed competition in this space and the potential impact on innovation, pricing, and the quality of service received. Finally, users discussed how they saw these services evolving in the future, and how to mitigate certain risks and improve the conditions for users to change PTRRS providers in case of an insolvency of a major service provider in a highly concentrated market.

¹⁴ The Standards, at 6.

¹⁵ The Standards discussed additional benefits of compression. The Standards at 13-14.

Chapter 4 – Areas for Consideration

While there are a number of identifiable benefits to PTRRS, the increased use and development of PTRRS pose several categories of risk. Following consultation with PTRRS users and providers, IOSCO has identified the following areas for further consideration based on the risks identified in the survey, roundtables and Consultation Report.

4.1. Algorithm governance and function

PTRRS rely on algorithms designed and managed by the PTRRS providers. The output of the algorithms is validated against a series of embedded checks to ensure that the offsetting new trades do not add any risks on the participants and are all within the prescribed tolerances. These checks are crucial to verify the algorithm outputs and ensure that the resulting trades remain non-price forming and market-risk neutral.

The algorithms are proprietary and not disclosed to participants or regulators. The controls and governance around the algorithms may differ between providers. Portfolio compression services typically give the participants the ability and time (several hours) to check and accept the proposed trades. Legal execution of the trades happens once all required user consents have been received.

During roundtable discussions with PTRRS users, firms stated it was difficult to determine whether algorithms are unbiased and that there is a lack of in-depth understanding around how the algorithm functions, as user firms did not have any visibility of the design of the algorithm or the algorithm itself. Users also noted that they were given a very short timeframe to conduct checks of proposals generated by the algorithm, which was challenging for them.

During roundtable discussions with PTRRS providers, they indicated that the design of their algorithms was conducted in-house. There was no manual intervention done by providers or users in relation to processes related to the algorithms, with the main objective of the algorithms being to provide the maximum possible benefit to the participants. PTRRS providers indicated that a “fairness function” was included in the algorithm, which would try to move all users in the fairest way to maximum reduction in either notional amounts or IM, depending on the primary objective of the PTRRS exercise, compression or optimisation. PTRRS providers presented IOSCO members with a high-level overview of how the outcomes were achieved, but the overview did not provide members a detailed understanding of how fairness goals were achieved. Functionally, the algorithms work as a “black box” where PTRRS users and regulators are unable to fully understand how the output of the algorithm is generated.

4.2. Participant protection

IOSCO members survey responses indicate that there are no regulatory frameworks established in any jurisdictions that directly govern the development and testing of algorithms used by PTRRS providers. A possible risk associated with improper controls or

governance of the algorithm produced by PTRRS providers is that the algorithm may not adequately ensure that all markets participants are treated fairly. This report does not propose any specific regulatory interventions by IOSCO members but suggests that they should continue to monitor and observe emerging risks and recommends sound practices for PTRRS providers and users.

In certain jurisdictions, such as the UK, PTRRS providers that are authorized institutions are subject to conflicts of interest requirements which prevent the interests of one client being put ahead of the interests of another to the financial advantage of the provider. However, a lack of appropriate controls and governance of the algorithms may lead to a risk of not all market participants being treated fairly, even if unintentionally. During roundtable discussions, PTRRS users raised this as a potential concern particularly for smaller firms, noting that supervision or regulation of the algorithms would provide comfort to smaller firms when onboarding with PTRRS providers. At present, the level of transparency that PTRRS users have in relation to the high-level functioning and outcomes produced by the algorithms is limited. We consider that these should be explainable at the point of onboarding.

IOSCO has not concluded that users have insufficient control and look-through on individual runs, however, there does appear to be an information gap on the general high-level functioning of the algorithms.

4.3. Market concentration and potential barriers to entry

4.3.1. Market concentration and network effects

To date, despite the increasing use of PTRRS by market participants and evolution of the services provided, there are still only a small number of firms who offer these services globally. Most smaller users (typically buy-side firms) use just one PTRRS provider. However, larger banks tend to use more than one provider for resiliency reasons, as well as to access slightly different networks/services from different providers and pricing. This provides those PTRRS users with a wider range of outcomes, as they are exposed to different algorithms and participants, and provides a means for them to compare the efficiency of competitor services.

The primary reason for the limited number of PTRRS providers appears to be that providers need to have a sufficiently large number of users in order to facilitate efficient PTRRS. The importance of network effects was noted by PTRRS providers as a key issue impacting competition. IOSCO recognises that, per respondent feedback, there might be benefits to concentration, particularly in regard to network effects. However, as with other markets exhibiting high levels of concentration, it is important for regulators to observe any potentially adverse effects of concentration that may need to be mitigated. Separately, we note that these services themselves are reliant on other major players such as CCPs that control the relevant margin models. We note that IOSCO is looking at the transparency of CCP margin models as an area that may have risks requiring mitigation.

4.3.2. Potential impacts of limited number of service providers

Despite the benefits of PTRRS, the limited number of PTRRS providers means potentially higher costs for users which, in certain cases, could potentially prevent market participants from obtaining PTRRS, as the few providers could use their discretion as to who they

onboard. Therefore, user firms may not receive the most appropriate and cost beneficial service for their portfolios. This may also have broader implications if a PTRRS service provider fails to operate effectively or if its services are disrupted. This could result in a significant disruption to market participants that rely on a limited number of PTRRS providers. This also has implications for jurisdictions which mandate the use of portfolio compression.

Lastly, the small number of PTRRS providers could potentially impact the depth of due diligence that users perform due to their limited choices. The limited number of PTRRS providers may also limit incentives for innovation and development of more efficient PTRRS exercises. However, PTRRS providers have claimed that, despite their limited number, there is still competition between the providers that promotes the continued development of innovative solutions.

4.3.3. Limited number of runs

The limited number and intervals of calendar slots¹⁶ available for PTRRS exercises presents an additional challenge from a scheduling perspective for any new PTRRS provider. While some PTRRS users have the capacity to prepare and participate in multiple runs per month, some may only be able to handle one run per month. This limits the number of potential participants for additional runs, and with the already limited slots to schedule runs, there may not be enough participants available for a new provider to schedule PTRRS exercises.

4.3.4. Change of PTRRS provider in case of a major service provider failure

While PTRRS providers indicated that in the event of a failure of a single service provider, it would be relatively easy for PTRRS users to switch between providers due to low onboarding barriers, PTRRS users identified divergence in file formats between PTRRS providers as a potential hurdle to onboarding to a new provider. More specifically, users indicated that when switching to a new PTRRS provider, they would need to modify and test their existing processes in order to utilise the new file formats for providing inbound information to the PTRRS providers.

4.4. Other potential barriers to utilising PTRRS

Market participants highlighted regulatory requirements as one of the main potential barriers to utilising PTRRS. Market participants mentioned that they might be discouraged from submitting certain legacy OTC derivative trades to compression or other PTRRS that generates new trades as the resulting trades may trigger new clearing requirements in certain jurisdictions under the current framework¹⁷.

Additionally, smaller entities may not consider using PTRRS at all due to the size and nature of their portfolio (i.e., small number of directional positions), as there are likely to be a limited

¹⁶ Post-trade risk reduction exercises (called “runs”) take place intra-day/over-night according to pre-published schedules.

¹⁷ EMIR 3 in the EU, expected by end of 2024, provides a specific exemption to the clearing obligation for transactions resulting from PTRRS (see paragraph 3.1).

number of potential offsetting trades, which limits the utility of PTRRS. For these firms, the limited utility of PTRRS may not justify the cost of the services. Smaller entities also identified the costs of onboarding with PTRRS providers and conducting the necessary due diligence as a barrier to utilising PTRRS.

4.5. Due diligence

Users of PTRRS conduct due diligence on PTRRS providers, most of which are not subject to any direct regulatory oversight (other than CCPs), but may be subject to indirect oversight through certain activities or through regulated users. Roundtable discussions with users highlighted that user due diligence mainly relates to the costs and efficiency of the outcomes generated by the algorithms of the PTRRS provider.

However, users are concerned with a number of additional risks, such as access, fairness, and data privacy issues. Users commented it is unclear what processes providers have in place to address these concerns.

A potential measure to address the risks identified by PTRRS users is enhancing user due diligence processes and controls (e.g., testing the outcomes of proposals generated by PTRRS), which may be more difficult for smaller users. In addition, the ability of a firm to conduct additional due diligence is potentially impacted by the limited choices of PTRRS providers and the limited competition between them. IOSCO is aware that the report published by the Financial Stability Board in December 2023 on Enhancing Third-Party Risk Management can provide a thorough toolkit in that regard which is reflected in some jurisdictions' regimes.¹⁸

4.6. Uncertainty of legal contracts

As PTRRS often involves the simultaneous entry into force of new trades and the termination of others, legal certainty around the effectiveness and timing of confirmation of the new trades is important. Disclosure and controls around the point at which old trades are terminated and new trades become legally binding, as well as the creation and/or execution of the relevant legal documentation, are important for market participants and for market integrity, including for accurate reporting of derivatives trades under international trade reporting requirements.

PTRRS providers set their own policies with respect to whether users can choose to execute only a subset of the recommended transactions or must execute all or none of the recommended transactions. PTRRS users indicated that the robustness of the legal frameworks and the set of agreements provided by the PTRRS provider would form part of their due diligence processes. These include requirements relating to trading relationship documentation, the timely confirmation of trades, and to ensure procedures are in place to perform portfolio reconciliation, which help to mitigate these risks.

¹⁸ [Final report on enhancing third-party risk management and oversight – a toolkit for financial institutions and financial authorities – Financial Stability Board \(fsb.org\)](#)

4.7. Data protection

PTRRS providers receive a significant amount of commercially sensitive data on the portfolios of their clients. Therefore, robust data management and safekeeping were identified as being particularly important.

During roundtable discussions with PTRRS users, other concerns were raised around cyber risk and the handling of information held by a PTRRS provider, notably in the event of a wind-down of the PTRRS provider and the secure handling and integrity of private trade data it holds.

Most jurisdictions have indicated that there are no regulations that directly address data held by PTRRS providers, in part because they are largely unregulated. However, in some jurisdictions, there are regulations relating to the data management process that cover or partially cover PTRRS providers, for example (noting that that these examples are not intended to be exhaustive):

- In Japan, PTRRS providers are unregulated, but there are guidelines that provide a general supervisory approach for CCPs, including when CCPs provide PTRRS; and
- In Brazil, general rules concerning data protection would apply.

Whilst more general data protection regulations may apply to PTRRS providers, the lack of regulation specific to PTRRS providers may result in gaps in data management and protection requirements applicable to PTRRS providers.

4.8. Operational risk and resilience

An outage or technical problem at a PTRRS provider could result in the cancellation or postponement of a compression cycle. An outage could, in extreme circumstances, possibly affect trading or the availability of capital or credit for PTRRS users, as well as their operational resilience. The limited number of providers in many asset classes could potentially limit the ability of PTRRS users to quickly respond to a provider outage.

The response to the IOSCO survey identified that there are no specific regulations in relation to the technological and operational resilience of PTRRS providers.

The IOSCO survey responses also highlighted that operational risk, such as service outages, can be mitigated by appropriate due diligence, onboarding and monitoring, as well as reliance on multiple redundant or overlapping services. Further, the survey responses highlighted that PTRRS providers' consideration of existing guidelines and principles in relation to outsourcing and management of operational risk should help achieve adequate levels of operational resilience.

PTRRS users raised a potential concern in relation to the possibility for one participant to pull out of a portfolio compression run resulting in cancellation of the run for all other participants, where the offsetting trades resulting from a compression run must be entered into by all agreed participants. PTRRS providers indicated that the likelihood of this occurring was remote and that there should be very few reasons for the cancellation of a PTRRS exercise, with the cause typically being a technical issue encountered by a PTRRS user or market volatility. In the event of a cancellation, PTRRS providers indicated that they could attempt a re-run of the PTRRS exercise later in the day. There are also additional

safeguards preventing the cancellation of a live PTRRS exercise, including testing via a “dry run” prior to the live PTRRS exercise and the removal of participants that have encountered issues during the dry run.

PTRRS users raised another concern regarding the stability of operational processes of PTRRS providers. In particular, any changes to their operational processes would impose a burden on the PTRRS users as they would then need to modify their systems and processes for submitting information. PTRRS users indicated that the most common change in operational processes that would result in additional operational risk was changes in the file format for submission of transaction information to the PTRRS provider.

4.9. Standardization of file formats

Finally, PTRRS providers highlighted the need for standardisation of file formats and data collection and concerns about the future of the sector in terms of product development and increased participation.

Due to growth in new product offerings and processes, users are concerned that there is an increased risk of operational issues on the users’ side given frequent changes by PTRRS providers to the file format in which PTRRS users submit information to PTRRS providers. PTRRS users suggested that the use of a standardised file format across all PTRRS providers (for example, utilising ISDA’s Common Risk Interchange Format¹⁹) would reduce operational risk, support comparability between PTRRS providers and lower barriers of entry to new vendors.

4.10. Change in counterparty risk

PTRRS introduce different exposures between market participants for OTC derivatives. As a result of participating in a counterparty risk optimisation run, a market participant may have reduced its overall risk to its counterparties, such that it results in lower IM. However, it is possible that within its portfolio it may have increased exposure to one counterparty or introduced a new exposure. The overall maximum exposure per counterparty and the name of an acceptable counterparty form part of the parameters set by each participant before participating in a counterparty risk optimisation run. The composition within those parameters can change over time.

PTRRS users of both compression and optimisation services indicated that a reduction in either the gross notional amounts or margin posted in a portfolio to conform with regulatory requirements may not necessarily reduce market risk, counterparty risk and thus the real economic risk. A user noted that regulatory requirements (e.g., capital requirements) create an incentive in the market to modify portfolios in a way that may not reduce real economic risk or counterparty risk.

There are also circumstances in which portfolio compression can be harmful in the event of a default by a counterparty that would not have defaulted in the non-compressed network, as the losses are now spread differently, and some counterparties might be hit by larger losses in the compressed network. Whilst portfolio compression cannot cause any

¹⁹ [A Standard for Risk Data – International Swaps and Derivatives Association \(isda.org\)](https://www.isda.org/standards/risk-data)

fundamental defaults, it can change the exposure of counterparty risk in the event of a participant's default in the portfolio compression exercise.²⁰

As noted above, while these services may result in a reduction of systemic risk, counterparty risk optimisation, when omitting external factors, has the capacity to increase counterparty risk. For example, in a financial system consisting of a few major market participants and many smaller market participants, generally, notional exposures between smaller market participants are low and notional exposures between major market participants are high due partly to the relatively higher credit quality, product offering, and repayment capacity of larger market participants.

If a counterparty risk redistribution occurs without consideration of any external factors (e.g., size, credit quality), the post-redistribution notional exposure may then show relatively larger notional exposures between minor market participants and relatively smaller notional exposures between major market participants. All else held equal, counterparty risk redistribution that ignores external factors may result in larger counterparty exposures to relatively higher-risk counterparties, ultimately resulting in higher counterparty risk.

²⁰ Veraart, L. A. M. (2022). When does portfolio compression reduce systemic risk? *Mathematical Finance*. <https://doi.org/10.1111/mafi.12346>

Chapter 5 – Sound practices and considerations regarding PTRRS providers and users

The evolving nature of PTRRS and their increasing use presents a number of potential challenges and risks suggesting further analysis and consideration of potential mitigants and responses are warranted. The potential risks and challenges include:

- A general lack of direct regulatory oversight of PTRRS providers;
- The lack of transparency and governance around the algorithms used by PTRRS providers;
- The limited due diligence by PTRRS users on the services they use;
- The lack of standards around data integrity and the security of non-public information PTRRS providers hold;
- The concentration of PTRRS offerings in a handful of firms and various implications of limited competition, such as limitations on access to the market and services, as well as the impact on innovation, costs and service quality; and
- Other issues such as legal certainty, standardization of file formats, limited session runs, as well as whether the changing portfolio composition results in changing risk profiles for firms.

Despite the obvious benefits of PTRRS, the use of these services may impact the calculation of certain regulatory requirements, such as IM (in the case of counterparty risk optimisation), as well as firm level risk management and, in extreme circumstances, may have broader risk implications.

In light of this, IOSCO at this time, recommends the following to improve and complement existing market practices. Where appropriate regulators, service providers and service users should consider these practices based on the scope of activities.

5.1. Transparency, governance, comprehensibility and fairness of the algorithm

As part of reasonable due diligence PTRRS users should aim to have a basic, understanding of the design of the proprietary risk reduction algorithm(s) used by the service provider. PTRRS providers should aim to ensure that, without revealing any intellectual property, there should be appropriate, high-level transparency around the algorithm used and proper controls and governance around it, including regarding the use of Artificial Intelligence (AI) and Machine Learning (ML).

Users should aim to ensure that the overall outcome generated by the algorithm is both explainable to and understandable by PTRRS users.

Users should aim to ensure the resulting trades from PTRRS remain market-risk neutral within the tolerances set by the users and the output of the algorithm should be validated against a series of embedded checks. The PTRRS users should not be able to

pick the resulting trades from PTRRS: they shall accept all or none of the resulting trades.

EXPLANATORY TEXT

Analysis by IOSCO members have shown that the generation of offsetting trades relies on the algorithms designed by the PTRRS provider. The algorithm is proprietary to the provider and not disclosed to participants or regulators. Improper control or governance of a proprietary algorithm used in PTRRS generates the risk that an algorithm may operate improperly or have undesirable effects, such as creating new unintended risks to participants or not be market risk neutral. An algorithm design may also fail to ensure that it does not run to the benefit of certain participants over others to the detriment of fairness. If a fairness function is represented to be used in the algorithm, the fairness function should be explainable to the users and be verifiable by an external source/entity/regulator. PTRRS providers should also determine the appropriate level of transparency in the use of AI and ML.

PTRRS users should consider whether their due diligence of PTRRS providers takes into account the non-binding guidance in Measures 1, 2, 3, and 5 of the IOSCO Report on The Use of Artificial Intelligence and Machine Learning and relevant guidance from the IOSCO Outsourcing Principles.²¹

5.2. Operational risk

As a sound practice to mitigate potential operational risks, PTRRS users should seek to ensure via their due diligence and risk management practices that PTRRS service providers have established back-up measures and processes in case of a provider outage or during a wind-down.

EXPLANATORY TEXT

An outage or technical issue at the service provider could result in the cancellation or postponement of the cycle. This type of event in turn could raise other risks that should be mitigated or reduced. In this regard, an outage could possibly affect trading or the availability of capital or credit at the user firms, as well as their operational resilience.

In order to address potential operational risks, relevant guidance from the IOSCO Outsourcing Principles should be considered.²²

5.3. Data integrity and security and regulatory data

As a sound practice, PTRRS users should aim to ensure via their due diligence that established systems and procedures are in place for robust data management and safekeeping of commercially sensitive data on the portfolio of the clients.

²¹ IOSCO report “The use of artificial intelligence and machine learning by market intermediaries and asset managers” September, 2021 (IOSCO AI Guidance) and [IOSCO Principles on Outsourcing](#), 2021.

²² [IOSCO Principles on Outsourcing](#), 2021.

EXPLANATORY TEXT

PTRRS providers receive a significant amount of commercially sensitive data on portfolios of market participants. Therefore, their security and the integrity of their data management systems are important to help ensure safekeeping and preserving their integrity. To address these risks, the IOSCO Outsourcing Principles (including Principles 1, 3 and 4) and CPMI-IOSCO Cyber Guidance should be considered.

5.4. Legal certainty

As a sound practice, PTRRS users should seek to ensure that there is proper disclosure and controls around PTRRS documentation to ensure legal certainty around the timing of execution and confirmation of new trades, and the legal documentation with the PTRRS provider, such that the process and contractual terms of the service are clear and unambiguous, in compliance with regulatory requirements, including trade reporting.

EXPLANATORY TEXT

As PTRRS often involve the entry into force of new trades (and sometimes the termination of others), legal certainty around the effectiveness and timing of the new trades is important. Disclosure and controls around the point at which the old trades are terminated and the new trades become legally binding, as well as relevant legal documentation, is important for market participants and for the integrity of the market. PTRRS users should consider whether the use of PTRRS services are consistent with Standard 2 and 3 of the IOSCO Risk Mitigation Standards for Non-centrally Cleared OTC Derivatives Report and relevant guidance from the IOSCO Outsourcing Principles.²³

5.5. Considerations of potential counterparty risk by IOSCO members and PTRRS users

PTRRS users should continue to monitor their portfolios to confirm that counterparty risk is reduced following a counterparty risk optimisation/rebalancing exercise. PTRRS users should analyse whether participating in a risk mitigation run may have increased exposures to particular counterparties (even though the new transactions should have reduced a user's overall gross notional exposure or basis risk and resulted in lower IM).

EXPLANATORY TEXT

Counterparty risk

The rapid evolution of PTRRS has prompted regulatory attention, as risk reduction service providers are designing and offering ever more sophisticated algorithms and innovative services.

²³ "Risk Mitigation Standards for Non-centrally Cleared OTC Derivatives," January 28, 2015 and [IOSCO Principles on Outsourcing](#), 2021.

Although not an issue for centrally cleared transactions, PTRRS, and in particular, risk optimisation, introduce different exposures between participants that are parties to non-cleared OTC derivatives. By participating in a run, a market participant may have reduced its overall risk to its counterparties, such that it results in a lower IM. However, within its portfolio it may have increased exposure to one counterparty or introduced a new one. The overall maximum exposure per counterparty and the name of acceptable counterparties are part of the parameters that each participant sets before participating in a risk reduction run. That being said, the composition within those parameters can change over time.

In this context:

- the incentives created for maintaining bilateral exposures; and
- in general, the assessment of whether the use of these PTRRS creates a market structure that favours greater preference for holding bilateral exposures rather than CCP exposures;

could be examined by IOSCO members.

5.6. Market concentration and competition

IOSCO members should observe carefully:

- The implications of market concentration among PTRRS providers and whether market concentration results in any potential risks to PTRRS users;
- The level of competition among providers and if a low level of competition is having negative impacts on innovation, pricing and quality of services, with the objective to ensure the service provision is the most cost beneficial service to the PTRRS users; and
- The onboarding procedure and access to PTRRS is fair, particularly in the case of smaller firms.

In addition, in the event of insolvency of a major PTRRS provider, change of PTRRS providers should be achievable to facilitate a transfer to another service provider.

EXPLANATORY TEXT

To date, IOSCO members are aware of a limited number of firms who offer PTRRS worldwide. Only some of them are authorised firms regulated by IOSCO members because of their other activities such as arranging financial transactions. The limited number of service providers could be due to the inherent nature of trade compression or counterparty risk optimisation services, which requires a large network to provide efficiently scaled services. The more market participants connecting to a unique central service provider, the more efficient the compression or risk optimisation run will be. Nevertheless, there may be concerns that concentration of providers can lead to higher costs for users and market participants who wish to benefit from PTRRS. This could possibly limit some market participants from accessing these services, as providers are able to use their discretion as to who they onboard as clients or customers. In extreme circumstances, this concentration could impact PTRRS users' access to PTRRS services if a service provider fails or faces a disruption of its services.

5.7. Standardization and predictability of runs and file formats

Where appropriate, PTRRS users should consider requesting PTRRS providers standardize their file formats and data collection practices. Changes in file format to submit transactions to the PTRRS provider should be limited to the extent possible. Users should consider requesting from their PTRRS provider predictable and transparent scheduling and running of the exercises.

EXPLANATORY TEXT

Given the time-sensitivity and operationally cumbersome nature of PTRRS runs, a high level of predictability of runs and continuity in file formats – to the extent possible and feasible – would benefit both users and providers. Further standardisation of the process could help improve efficiency. Additionally, the divergence in file formats between PTRRS providers is a potential hurdle to onboarding to an alternative provider in case of a systemic failure of a major service provider. We note that product innovation or changes in regulatory regimes may require changes in the file format and data collection practices.

Chapter 6 – Conclusions

Recent years have seen PTRRS evolve, expanding from the use of the initial offering of compression services to newer services such as counterparty risk optimisation and basis risk mitigation services. It is possible that new or other services with same or similar characteristics may become available in the future.

PTRRS continue to be used by a large number of participants to mitigate the operational and counterparty credit risks associated with OTC derivative transactions, resulting in a mitigation of certain systemic risks. Given the unregulated nature of the sector, the question remains as to whether other types of risks are being introduced into the system, including any systemic risk.

Importantly, there continues to be a limited number of firms who offer these services and PTRRS are still predominantly used by larger sell side firms. Whilst there is increased interest from buy-side firms to utilise PTRRS offerings, buy-side participation remains limited.

The evolving nature of these services, the increasing role of PTRRS and of their providers in the derivatives eco-system, as well as the impact of PTRRS on the level/use of collateral and the calculation of regulatory requirements such as IM, has garnered attention from regulators. This in turn leads to IOSCO considering whether further policy work is needed.

This Final Report has provided a summary of the initial work completed by IOSCO and details the potential challenges or risks identified in the course of this work and areas for policy consideration. It also sets out some sound practices for consideration by IOSCO members and PTRRS users, taking into account the feedback received during the consultation period.

Chapter 7 – Summary of Feedback and IOSCO responses

On 26 January 2024, IOSCO consulted on a set of 7 sound practices and considerations regarding PTRRS providers. The feedback period closed on 1 April 2024, with a total of 5 responses received from a range of stakeholder falling into these broad categories:

1. Industry association (1)
2. Post trade risk reduction service provider (2)
3. Exchange operator (1)
4. Financial market infrastructure operator (1)

The IOSCO Board is grateful for the responses and took them into consideration when preparing the Final Report for Post Trade Risk Reduction Services (Final Report). The rest of this chapter summarizes the replies received on the consultation questions.

Consultation Questions for Post Trade Risk Reduction Services

IOSCO requested feedback on 17 questions, which are listed below:

1. Are there any other PTRRS that should be taken into consideration for potential future analysis aside from *portfolio compression* and *counterparty risk optimisation services*? Please provide details.
2. Are there risks specific to either *portfolio compression* or *counterparty risk optimisation* that are not applicable to PTRRS generally? Please provide details.
3. Do you agree that there is a risk that proposals generated by the algorithm may not adequately ensure all participants receive the same treatment? Are you concerned that users and authorities are not able to review the algorithms or processes related to the creation and maintenance of the algorithms? Please provide details and examples where possible.
4. Are there any mitigants that can be put in place to avoid potential risks associated with the governance of the algorithm by PTRRS providers? Please provide details and examples where possible.
5. Do you believe there are challenges or risks associated with having a limited number of PTRRS providers as described above? Have you experienced any impediments associated with the limited number of PTRRS? Please provide details, including the nature of the impediment, its frequency and qualitative nature (material, non-material, negligible).
6. Are there any measures that can be put in place to address the challenges or risks associated with a limited number of PTRRS providers? Please provide details.
7. What due diligence checks do you conduct when onboarding with a PTRRS provider? Do you believe there is a need for additional due diligence before onboarding? Why or why not? If yes, please elaborate on the particular areas that require additional due diligence and any impediments to performing this due diligence you have experienced, in particular as it relates to portfolio compression services.
8. Are there measures for fostering more robust PTRRS user due diligence of providers? Is there a role for policy makers in facilitating more robust due diligence? Please provide details.
9. Do you believe that there is a risk of legal uncertainty relating to contracts as a result of using PTRRS? Please provide details.
10. Do you believe there are potential risks associated with data protection and PTRRS as described above? Please provide details.
11. Do you agree there are potential operational and resilience risks as described above? Please provide details.
12. Do you agree there are potential risks relating to a change in counterparty risk as described above? Please provide details.
13. Do you agree that there may be challenges associated with portability between CCPs of transactions resulting from PTRRS as described above? Please provide details.
14. Should PTRRS providers adopt a standardised file format and/or method of data collection? Please provide details.

15. Do you agree with the risks or challenges around PTRRS identified in the report?
16. Do you see any risks or challenges around PTRRS not mentioned in the report?
17. Do you agree that the draft guidance (i.e. the sound practices and explanatory text) set out in Chapter 5 of the Consultation Report is appropriate to address the potential risks or challenges associated with the general use of PTRRS? If not, please provide details. Please also elaborate if there are missing issues.

The feedback received can be summarised in 12 categories:

1. Regulatory data on PTRRS

Summary of feedback

There were 2 respondents to this category. The respondents noted that portfolio compression and counterparty risk optimisation are the two PTRRS that are explicitly covered in the consultation. They highlighted that basis risk mitigations services, such as Reset are only mentioned in footnote 14 of the consultation and in an erroneous context, as Basis Risk Mitigation services are a separate type of PTRRS which address ‘basis risk’ not ‘counterparty risk’.

One respondent stated that it is unclear when reading the report whether IOSCO has deliberately excluded basis risk mitigation services from its analysis since they do not meet the definition of counterparty risk optimisation or whether this was an accidental omission. The respondent would welcome the specific inclusion of basis risk mitigation services as a separate category.

The respondents stressed that PTRRS are being developed and improved continuously, and it should be expected that demand for new types of PTRRS will arise. Although the PTRRS definition needs to be specific enough to give regulators comfort, it needs to be principles-based to allow for further development and improvement of PTRRS over time. One respondent stated that the criteria referred to in the consultation report are met by the three types of PTRRS commonly in use today: multilateral compression, counterparty risk mitigation and basis risk mitigation.

The respondents are not aware of any risk specific to portfolio compression or counterparty risk optimisation that are not applicable to PTRRS generally. The respondents stress portfolio compression, counterparty risk optimisation, and basis risk mitigation services address different risk exposures and have different characteristics and should be treated accordingly.

IOSCO’s response

IOSCO acknowledges that PTRRS are adding new services regularly – for example, we note that PTRRS providers also provide basis risk mitigation services. We have included a reference to basis risk mitigation.

The report was changed to add clarifying language.

2. Participant protection

Summary of feedback

There were 3 respondents to this category. Two respondents strongly suggested that “same treatment” for participants was not the right aspiration for PTRRS algorithms. This is because

the algorithms optimise the best aggregate outcome based upon the input portfolios supplied by participating firms, which have different optimisation goals. They are unlikely to give firms equal savings due to the specificities of their respective portfolios and the specific constraints each participant may set. Both respondents do not think there could be a quantifiable way to determine that an optimisation run outcome is perfectly fair to all participants and believe treating all participants equally would lead to suboptimal outcomes for all participants in the aggregate.

All respondents rejected the need for regulatory intervention and did not believe greater scrutiny from authorities was required. This is because the failure of PTRRS does not have the same credit or systemic risk implications as other market infrastructure. One respondent further elaborates that algorithms used by PTRRS providers are not generating automated instructions or executable actions that occur and create risk without any other intervention or human scrutiny. The proposal generated by the algorithm only becomes legally binding if accepted by all participants. They further state that while operational errors do sometimes occur in the optimisation run process, because a PTRRS service is not dealing with especially time-sensitive market price-forming activity, participants are able to resolve such errors without incident.

All respondents believed PTRRS users have sufficient control and opportunity to influence the process. PTRRS users are already given the opportunity to conduct checks of proposals generated by the algorithm before they need to agree to the population of terminations and administrative new transactions. Users of PTRRS have checks in place for all PTRRS exercises to ensure that reducing risk in one place does not increase it elsewhere, except for within small, predefined tolerances. Participants have available to them knowledge of their own existing positions, who the other participants in an optimisation run are, and a general sense of what benefit would have been expected from an optimisation run proposal.

One participant stressed that users of PTRRS must have no input or power over the algorithm on an individual basis. Allowing individual users to have input on the set up of the algorithm could have a negative impact on the results as they could set parameters to avoid parts of the algorithm that would not suit them on a specific run, which would be detrimental to the overall risk reduction purpose.

One respondent supported increased transparency on the PTRRS algorithm as PTRRS users should have sufficient information and aim to have a basic understanding of the design of the proprietary risk reduction algorithm used by the service provider.

Two respondents gave examples of transparency available to users of PTRRS including:

- The dates that PTRRS exercises are scheduled for, what type and what currency.
- What optimisation objectives are being targeted in the PTRRS exercise.
- Information about the available tolerances that are taken into account in the algorithm.
- Information on the product types used for the administrative output transactions.
- Information about the available constraints in the algorithm.
- Information on whether different fee levels negotiated by PTRRS participants have an impact on the outcome of the algorithm.

Respondents did not identify any concern with the governance of the algorithm by PTRRS providers.

IOSCO's response

IOSCO has clarified that the recommendation of appropriate transparency around the algorithm used relates to high-level transparency and that the overall methodology and outcomes of algorithms should be explainable at point of onboarding. IOSCO has clarified that its proposals are not seeking transparency over individual runs.

IOSCO agrees that users may have sufficient control and look-through on individual runs, but that there is an information gap on the general high-level functioning of the algorithm.

IOSCO has changed wording in section 4.2 from “algorithm may not adequately ensure that all market participants are treated the same” to “algorithm may not adequately ensure that all markets participants are treated fairly”.

IOSCO has clarified that we are not encouraging IOSCO members to regulate PTRRS, but we are encouraging them to consider these issues and intervene only if they deem appropriate.

The report was changed to reflect respondent feedback.

3. Market concentration and barriers to entry

Summary of feedback

There were 3 respondents to this category. Two respondents highlighted that there were benefits to the concentration among PTRRS providers and that the entrance of more providers may not be beneficial. One respondent stated that concentration of PTRRS providers typically leads to a higher number of participants in each risk reduction exercise, increasing efficiency. One respondent highlighted a potential risk of having more providers, stressing that there is a greater chance of the optimisation run network becoming more fragmented since each service provider seeks to develop a unique and differentiated network, which may split the core network into disparate pieces. They also highlighted that with three providers offering optimisation runs in an asset class on a regular weekly and monthly basis, calendars are already full and the resources available and needed for participants to effectively engage with all these runs are strained.

Neither respondent sees any evidence of the market being uncompetitive and both stressed that there is no sign that market concentration is limiting innovation. One respondent stressed that there are multiple service providers offering competing services in each major asset class, with competition based on price, quality of service, operational efficiency, sophistication of algorithms, and innovation. Another respondent indicated that its members did not report that concentration resulted in difficulty in onboarding PTRRS or disproportionate costs.

One respondent supported the proposal under section 5.7, that, where appropriate, users could consider requesting providers to standardise the file format and data collection practices. They did not believe there was a role for authorities in this regard. The respondent

also supported the proposals in section 5.6 for IOSCO members to observe the level of concentration and competition among PTRRS providers and fair access to PTRRS.

Both respondents did not observe any challenges or risks associated with the limited number of PTRRS providers that need to be addressed. Both respondents cited efficiency as a primary reason for this, as concentration increases the efficiency of each run due to the strong network effects. They also noted that risk is reduced if more users participate in any given PTRRS exercise and because of this, a larger list of smaller PTRRS providers would not be efficient for the market as a whole.

A respondent that is a PTRRS provider is of the view that the market already has in place extensive measures and practices to address this issue. The respondent notes that in their experience, their participants have dedicated groups that focus on these issues in an intensive and comprehensive manner. They regularly engage with their participants to provide extensive information regarding their policies, procedures, and practices in areas such as business continuity, data protection and information security, testing and other risk management practices. In certain cases, participants will provide them with standards they expect them to adhere to in those areas and request evidence they are doing so.

Both respondents noted that they support the principle of open access to data to enable a level playing field for PTRRS providers. One respondent notes that this is particularly important for CCP margin models. They affirm that PTRRS providers should be able to get the same access to CCP margin models or CCP margin simulators too facilitate their PTRRS exercise modelling. This is important for both compression and counterparty risk optimisation.

IOSCO's response

IOSCO has made clarifications to the report acknowledging the benefits of concentration in terms of the network effects raised by respondents. However, whilst concentration does have benefits, we consider it is important to acknowledge the potential risks from a competition perspective, in terms of a limited number of providers. We have also made a minor edit to refer to the transparency of CCP margin models issue raised by respondents.

The report was changed to reflect respondent feedback.

4. Due diligence

Summary of feedback

There were 2 respondents to this category. Both respondents asserted that users of PTRRS conduct thorough due diligence covering all relevant areas (financial risk, operational risk, reputational risk, cyber risk as well as standard financial crime/KYC checks etc.) before onboarding to PTRRS providers. Further to this, third-party risk management follows well-established principles, governance, and processes within financial institutions. Both note the report published by the Financial Stability Board in December 2023 on Enhancing Third-Party Risk Management and Oversight provides a thorough toolkit to financial institutions in that regard. They highlight that the FSB's recommendations are reflected in some jurisdictions' regimes, such as under the EU Digital Operational Resilience Act, and the proposed critical third-party regime in the UK.

Both respondents believe it is appropriate that PTRRS users mainly focus their due diligence on the efficiency of the outcome generated by the PTRRS algorithms. They note that smaller PTRRS users will have more limited resources to devote to due diligence and therefore any requirement should be proportionate.

Neither of the respondents see a role for policymakers in facilitating more robust due diligence of PTRRS providers. Both note participants using PTRRS are sophisticated users and are very capable of, and already do extensive due diligence on, PTRRS providers through their normal third-party risk management. One respondent further notes the report published by the FSB in December 2023 noting that third-party risk management follows well-established principles governance and processes within financial institutions.

IOSCO's response

IOSCO has inserted a reference in the report to the FSB report on enhancing third-party risk management.

The report was changed to reflect respondent feedback.

5. Uncertainty of legal contracts

Summary of feedback

There were 3 respondents to this category. All respondents agreed that legal certainty around the effectiveness and timing of new trades is important. However, respondents view that PTRRS users already assess the robustness of the legal framework and of the agreements provided by the PTRRS provider as part of their due diligence processes. Respondents noted that IOSCO's sound practice recommendation was current market practice and supported this recommendation.

IOSCO's response

IOSCO considers that no change to the report is needed based on respondent feedback.

No change.

6. Data protection

Summary of feedback

There were 3 respondents to this category. Respondents agreed with the description of the risks associated with data protection and noted that users already assess the robustness of PTRRS providers systems and procedures, so the IOSCO recommendation is already current market practice.

IOSCO's response

IOSCO considers that no change to the report is needed based on respondent feedback.

No change.

7. Change in counterparty risk

Summary of feedback

There were 4 respondents to this category. Two respondents did not agree that counterparty risk optimisation/rebalancing has the potential to increase counterparty risk, noting that reducing collateral balances will minimise collateral risks and lead to a more stable market environment. A respondent that is a PTRRS service provider noted that while counterparty risk redistribution will change a participant's counterparty credit risk profile, participants are aware of this risk and consider and manage this risk.

One respondent that is a financial market infrastructure operator noted that the interconnectedness of participants could increase systemic risk.

IOSCO's response

IOSCO has made clarifying edits to the report based on respondent feedback.

The report was changed to add clarifying language.

8. Operational Resilience

Summary of feedback

There were 3 respondents to this category. Two respondents agreed with the description of operational and resilience risks. These respondents disagreed that PTRRS are critical shared services and formed the view that an outage at a PTRRS provider is very unlikely to have a material market impact since PTRRS exercises are not run daily and participants can wait for the next round of PTRRS exercises.

A respondent that is a PTRRS provider noted that during its 25 years of operation, it has not encountered an outage that has resulted in a run being postponed nor cancelled. Another respondent that is a PTRRS provider supported standardisation of file formats to reduce operational and resiliency risks.

A respondent supported PTRRS providers having back-up measures and processes in the event of an outage or wind-down. This respondent also supported allowing plain vanilla interest rate swaps to be used in counterparty risk optimisation exercises instead of swaptions.

IOSCO's response

IOSCO is not making any commentary around PTRRS providers as being critical service providers, in relation to the FSB Guidance on Identification of Critical Functions and Critical Shared Services.

The report was changed to add clarifying language.

9. Portability of transactions

Summary of feedback

There were 2 respondents to this category. Both respondents noted that there is no portability of transactions between CCPs and that the process of porting is independent of whether these transactions were resulting from a PTRRS exercise.

IOSCO's response:

IOSCO removed this section of the report.

The report was changed to reflect respondent feedback.

10. Standardisation of file formats and data collection methods

Summary of feedback

There were 2 respondents to this category. Both respondents supported the standardisation of file formats and data collection methods, as it would assist in reducing operational resilience risks and the resource burdens on participants in dealing with multiple PTRRS providers and when introducing new products. Both respondents did not believe there was a role for regulatory authorities in driving standardisation, noting that the greatest chance of success would come from an industry working group developing a best practice standard.

However, a PTRRS provider respondent to another category noted that there is little to no benefit in standardisation of the file format for data collection, as standardisation would not materially facilitate the switch from one provider to another and that the likelihood of switching PTRRS providers in an outage is low. This respondent noted that if standardisation were to occur it should be done in a manner which does not prevent PTRRS providers from amending the file format, where necessary, to innovate.

IOSCO's response

IOSCO considers that the standardisation of file format and data collection practices should not prevent PTRRS providers from amending these, where necessary, for innovation or changes in regulatory obligations.

The report was changed to reflect respondent feedback.

11. Risks and challenges around PTRRS

Summary of feedback

There were 3 respondents to this category. All respondents broadly agreed with the risks and challenges identified in the report. Two respondents do not see a role for policy makers in facilitating more robust due diligence of PTRRS providers given that users of the services are sophisticated and perform extensive due diligence as part of their normal third-party risk management.

Two respondents disagreed with IOSCO's observation regarding the potential of PTRRS to increase counterparty risk (question 12) and the risks associated with market concentration (question 5) and outages (question 11).

One respondent disagreed with IOSCO's proposal on standardised file formats in section 5.7 on the ground that it is unnecessary, it could hamper innovation, and lead to increase costs and risk. This respondent also supports the principle of open access to data to enable a level playing field for PTRRS providers, particularly in relation to CCP margin models or CCP margin simulators.

IOSCO's response

IOSCO had made changes to the report to reflect respondent feedback disagreeing with the potential of PTRRS to increase counterparty risk, risks associated with market concentration and outages.

The report was changed to reflect respondent feedback.

12. Feedback on guidance

Summary of feedback

There were 2 respondents to this category. Both respondents did not identify additional risks or challenges. One respondent supported the principle of open access to data to enable a level playing field for PTRRS providers, in terms of access to CCP margin models or CCP margin simulators, for the purposes of facilitating modelling for PTRRS exercises.

IOSCO's response

IOSCO referenced in the report the ongoing IOSCO work on transparency of CCP margin models or CCP margin simulators.

The report was changed to reflect respondent feedback.