Market Structure Partners

THE BANKING ASSOCIATION SOUTH AFRICA

Report on Central Counterparty Clearing Models for BASA

ANALYSIS AND REPORT CONDUCTED ON BEHALF OF BASA BY MARKET STRUCTURE PARTNERS

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This Study was commissioned by
The Banking Association of South Africa (BASA)
and undertaken by Market Structure Partners

BASA advances the interests of the industry with its regulators, legislators and stakeholders, to make banking sustainable, profitable and better able contribute to the social and economic development and transformation of the country.

Market Structure Partners is an independent consulting firm specialising in global capital markets' structure. It aims to deliver real benefit to society by providing valuable, non-biased, strategic advice and consultancy services with the utmost integrity to help enhance and develop capital market structures.

The team undertaking this work is entirely made up of experienced industry practitioners who have broad geographic, asset class and cross-functional knowledge.

IMPORTANT DISCLAIMER

EXECUTIVE SUMMARY

This Study was undertaken on behalf of the Banking Association of South Africa (**BASA**). It analyses the central counterparty (**CCP**) clearing model that is currently used in South Africa's financial markets and compares it with the leading clearing models used in major international financial markets. The Study draws a number of conclusions and recommends changes that would improve the existing South African clearing arrangements and some related aspects of market structure, as well as better position the market to expand centralised clearing to other instruments and asset classes. The Study is composed of 8 chapters as follows:

- Study Background and Approach
- Generic Elements of the CCP Model Relevant to this Study
- Overview of Relevant South African Financial Market Structure Characteristics
- Stakeholder Feedback on the Current South African Market Clearing Model
- Comparing Relevant International Market Structure with South Africa
- Comparing International Clearing Models and Best Practices with South Africa
- Conclusions
- Recommendations for the South African Clearing Model

A. STUDY BACKGROUND AND APPROACH

The South African regulators, the Financial Sector Conduct Authority (**FSCA**) and the South African Reserve Bank Prudential Authority (**PA**), have jointly set out a regulatory road map **to evolve the current clearing model to adopt the G20 recommendations,** including the clearing of OTC derivatives. Currently, JSE Clear is the only CCP licensed in South Africa. It only clears listed derivatives (futures and options) but is also considering adding bonds and equities to central clearing.

Clearing members (**CMs**) of JSE Clear are all represented by the Banking Association of South Africa (**BASA**) and have **some concerns about the clarity of their role and legal and contractual relationship,** particularly in relation to their obligations in the event of a client's default and their freedom to manage such an event under the current JSE rules. They believe their concerns with the current model should be addressed before the market evolves further to ensure that the clearing model is **robust** and does **not increase systemic risk.**

The objective of the Study was therefore to assess South Africa's current clearing model, compare it to leading clearing models in international financial markets (Australia, Canada, Europe, UK and USA) and recommend enhancements that would benefit the South African market.

The Study was conducted in three Phases:

- **Research and analysis** of the South African market, using publicly available documentation; including a review of the relevant regulations and JSE Clear rules as well as **one-to-one interviews** with CMs and other relevant market stakeholders to assess current market practices and concerns.
- Using the output from Phase 1 as a frame of reference, conducted research into the **best practice and evolving trends in leading international markets.**
- **Compared** the South African market against the results of the international research, **drawing conclusions** and **making recommendations.**

B. GENERIC ELEMENTS OF THE CCP MODEL RELEVANT TO THIS STUDY

A CCP helps to underpin the **stability** of financial markets by acting as the single counterparty to all transactions allowing it to **manage the collateralisation of exposures centrally**, thereby **removing the bilateral credit risk** that otherwise exists between buyers and sellers. This arrangement can provide other benefits including **high levels of automation, collateral optimisation, post-trade anonymity, position management (e.g. exercise/expiry) and reporting**, together with **settlement netting of physical securities**, which reduces the number of transactions that participants have to settle, so **reducing errors, fails and trade processing** costs.

CCPs originally evolved to clear instruments traded by members of **regulated markets** (exchanges or authorised trading venues), which required CCP clearing to manage risk over the duration of contracts, some of which can be long term, and, also to provide counterparty assurance when automatic matching of trades was introduced. Such instruments included listed derivatives and cash bonds and equities. (The terms *futures*, *exchange-traded derivatives* (***ETDs***) and *listed derivatives* are all used interchangeably).

A CCP that is controlled by an exchange and clears only business related to transactions on that exchange, is considered to operate within a **vertical model**. A CCP that offers clearing services for the same instruments that are traded on multiple, non-affiliated exchanges, is considered to operate a **horizontal model**.

After the Financial Crisis in 2008, the G20 countries committed to a series of reforms intended to strengthen capital markets, **mitigate risk and increase client protection**. This included an **increase in the capital requirements** associated with holding uncleared positions in financial instruments and the **mandated use of a CCP for clearing of certain categories of bilaterally traded over-the-counter (OTC)** derivatives, e.g. interest rate swaps (**IRS**). This significantly expanded the number of market participants who needed access to clearing services.

All participants in markets which are subject to clearing must either be a clearing member (**CM**) of the CCP in order to clear their own trades or have a **clearing agreement** with a CM that clears on behalf of others. These are known in the US as Futures Commission Merchants (**FCMs**). Hereafter, all clearing members will be referred to jointly as CMs.

Management of counterparty risk is critical as a CCP is exposed to the risk of default by its CMs and, in turn, the CMs are exposed to the risk of default by their clients. Poor handling of the latter can lead to the former. CCPs thus manage risk through various lines of defence which include:

- Initial and ongoing assessment of the suitability of their CMs (e.g. credit rating resources, balance sheet strength etc.)
- Accurate and continuous **calculation of market risk** and associated initial and variation margin obligations across products and CMs
- **Collection of the eligible collateral** that CMs must deposit with the CCP to cover the margin obligations on their cleared positions
- A **default fund** that every CM must contribute to
- Putting part of the CCP's **own capital at risk**
- Establishing and **testing** effective technical and operational procedures to support the management of a CM default including **porting (transferring) of client positions** to a viable alternative CM
- Some CCPs also have **insurance** policies and **rights of replenishment** against solvent CMs in the event that the pre-funded resources are inadequate.

Of particular importance are the CMs' **obligations** towards the CCP in the event of a client default. The CCP's rules, its agreement with its CMs and the nature of the defaulting client's account structure need to support the CM's **freedom to act** as they deem necessary to close down the client's positions in a timely manner that also minimises risk and losses.

B1. Clearing Relationship Contractual Model

The contractual model which determines the obligations between the CCP and its CMs, and between the CM and its clients are generally referred to as either a '**principal**' or an '**agency**' model.

There are legal and contractual differences between the two models that result in **the same economic obligations in relation to the management of cleared positions** for an agent and a principal. Furthermore, under both models, the CM is always responsible for the positions it holds with the CCP and, similarly, the day-to-day operations, position and account management, risk measurement, and collateralisation are performed largely in the same way.

The important differentiator is that a CM acting as **principal** has to hold **both sides (client and CCP) of its positions on its balance sheet**, but, if acting as an **agent, holds only one position (CCP)**. However, in the event of a client default, a CM operating under a principal model or an agency model automatically assumes its client's positions and associated obligations towards the CCP. A model that conveys this obligation on the agent (**CM**), whereby the agent is contractually and automatically switched to take on a principal role at the point of a client default, is sometimes referred to as a 'del credere' agency model.

B2. Segregation of Collateral and Positions

Regulators usually require CMs to **fully segregate** their client's positions and associated collateral from their own assets. CCPs enable this by providing at least one of **two types of client account structure:** either an Omnibus Segregated Account (**OSA**) and/or an Individually Segregated Account (**ISA**). If there is a choice, the CM's client can elect its preferred option. Under both models, the client remains the legal owner of its positions but there are key differences:

- Under an OSA, the CCP holds the CM's clients' positions and collateral in **a single pool**. If the CCP margins on a net basis, then **efficiencies can be passed** to the CM and its clients. The CM maintains real-time position and collateral records at a client-by-client level to manage their individual client counterparty risks and, in the event of their own default, support the porting of clients' positions and associated collateral. OSAs can lead to the **sharing of default risk** and associated proportional losses among clients should another client and the CM default contemporaneously (generally called 'fellow customer risk').

- Under an ISA, there is **no pooling of collateral** and so **no sharing of risk**. There is also **no sharing of efficiencies** between clients. Positions and collateral held at the CCP are recorded against the ownership of the particular end client (albeit managed by the CM on a day-to-day basis). ISAs readily provide the CCP, as well as the CM, with an accurate real-time record of the positions and collateral at a client-by-client level making it much **easier to identify the client's assets**, collateralise them, **unwind them in the event of their default**, or **port their collateral and positions** in the event of the CM's own default.

C. OVERVIEW OF RELEVANT SOUTH AFRICAN FINANCIAL MARKET STRUCTURE CHARACTERISTICS

- Current financial market regulations and the prevailing legislation[1] for Financial Market Infrastructures in South Africa (**SA**) set out the basis for **segregated clearing** but does **not mandate any type of account structure or specify an agency or principal** clearing model.
- There is **one dominant exchange**, the Johannesburg Stock Exchange (**JSE**), which offers trading of equities, listed derivatives and bonds. The JSE is a **listed company** on its own exchange and is a **for-profit** organisation.
- **JSE Clear** is the only CCP operating in the market. It has only recently obtained its licence to operate as an independent clearing house and is a **wholly-owned subsidiary of the JSE**. It **only clears listed derivatives** traded on its own exchange and therefore operates a **vertical clearing** model.
- JSE Clear only offers an **ISA** account structure and only accepts **domestic cash** currency (**ZAR**) as collateral.
- JSE Clear operates an **agency** model under which it **determines** if a CM's client is in default and, if so, **determines the transfer value** of a defaulting client's portfolio with the obligations falling to the client's CM/Trading member (**TM**), to trade out of the client's positions and assume any losses.
- Equities and bonds are not cleared but the JSE also owns and operates **a back-office accounting system:** Broker Dealer Accounting (**BDA**). This provides some risk mitigation elements for the equity market because all participants must use it and all records are accessible in one place. The JSE **charges** for the service.
- JSE Clear has **7 members** in total. This includes **5 major SA clearing banks** and two international banks. No international firms offer third-party client clearing services in South Africa.
- There is **some competition in equity trading** from new exchanges, from the OTC market and from a large Contracts for Difference (**CFD**) market. Equities and listed derivatives are **electronically-traded,** and the advance of technology and competition is encouraging HFT participation. Most **bond trading is conducted in the OTC** market.
- OTC derivatives are not centrally-cleared domestically but many participants clear their OTC interest rate swap business **directly or indirectly** in London through the London Clearing House (**LCH**).

D. STAKEHOLDER FEEDBACK ON THE CURRENT SOUTH AFRICAN MARKET CLEARING MODEL

There is a **clear consensus** amongst JSE Clear's **CMs** on a number of issues that impact them and their end clients. CMs are of a view that:

- They are operating under **a poorly defined del credere model,** rather than a pure agency model, and **require clarity** in relation to their obligations towards the CCP and their clients in the event of a client default.
- In any event, they are best placed **to manage a client default** and should do so without JSE Clear's involvement, which only **delays the CM's risk mitigation** activities.
- JSE Clear's determination of the **transfer value of a defaulted client's** portfolio crystalises the value at a price that may or **may not be accurate.** This could increase losses experienced by the CM when closing down positions. In some circumstances, it would be better to offset positions against the client's collateral already posted and return residual collateral when the process is completed.

- The client's listed positions may well be **offsetting positions** generated on other exchanges and/or the OTC market which cannot be seen by JSE Clear. Instead, the CMs prefer to **fully control** the unwinding process using its own TM and other brokers.
- There is unfair **asymmetry** in the treatment of, and rights to, the collateral of a defaulted client, with the CM having to accept all losses but pay out all profits associated with closing out the client positions, despite having no control of the close-out pricing.
- The model, as it currently operates, **precludes** TMs and CMs from **netting** all exposures against a defaulted client, and precludes CMs from providing (and consequently clients benefitting from) a formal collateral transformation service.
- **Acceptable** forms of **collateral** at JSE Clear should be **expanded**.

Other stakeholders who are not CMs of JSE Clear but interact directly or indirectly with both the JSE and JSE Clear for different services, had varied, and generally **less, knowledge of the details** of the clearing process but, together with the CMs, also raised broader issues:

- **Preparing in advance for the portability** of positions and collateral in the event of CM default is problematic due to constraints that prevent clients from having two CM relationships.
- Participants believe there are **not sufficient economies of scale** to support another CCP for listed derivatives nor equities in South Africa. This gives rise to two issues. First, general concerns about the **leverage that JSE Clear** has in the market, and second, the constraints on competition in equity and bond trading if other exchanges are not able to access JSE Clear should it begin to clear these securities.
- The mandated use of the BDA system which appears effective in managing risk but incurs cost, which for some, is **unnecessary**. It is also seen as **ageing** technology.
- The **absence of any pre-trade risk** controls in electronic, order driven markets.
- Settlement **netting** for cash equities is **not optimised via BDA nor within Strate.**
- Market participants are aware that FSCA's **regulatory roadmap will materially impact** all areas of South African financial markets over the next few years, which is considered to present **opportunities as well as risks**.

Whilst no market participant initially raised it as a concern, MSP observed that CMs in South Africa have typically used their parent banking entity to join the CCP. This is unusual in international markets. Most organisations house their clearing memberships in subsidiary entities to isolate the parent entity from the risk of a CCP insolvency.

E. COMPARING RELEVANT INTERNATIONAL MARKET STRUCTURE WITH SOUTH AFRICA

To provide some context to the clearing models under investigation and address some of the broader issues raised by participants, the market characteristics in relation to the main asset classes in each of the major international markets researched for this Study were considered.

All the markets, including South Africa, **exhibit many similarities** with respect to the development of financial legislation that sets out the requirements for: market infrastructures; the oversight model of those infrastructures, which includes central bank and financial regulator coordination for CCP oversight; their overall product coverage; the nature of their participants; and the evolution of the market structure with electronic order book trading on regulated, listed markets, together with a significant amount of all asset classes being traded OTC.

Key differences or points of note are:

- **Cash Equity and Bond Markets**
  - Listed cash **equities** and a significant number of **bonds** are cleared through a **CCP** in all other major markets, and participants are benefitting from the efficiencies associated with this. South Africa is the only market examined where there is no clearing of either asset class, and where the only leading equity exchange runs a back-office, equities-related accounting system for participants.
  - In all other equity markets, incumbent exchanges now face **significant competition in trading.** This has been **facilitated** by the use of CCPs, as well as the application of **horizontal clearing** models, **competition** in clearing or **Fair Access Provisions**.
    - In the US, there is a **single, member-owned, not-for-profit** CCP clearing all equities and bonds and, similarly, a CCP owned by multiple exchanges to facilitate the clearing of options. Both offer horizontal clearing for multiple trading venues.
    - In Europe, there has been significant success in the use of voluntary CCP interoperability, allowing customers a choice of where to clear and CCPs to compete to clear for multiple trading venues.
    - In Australia and Canada, Fair Access Provisions have been created to enable access to the single domestic equity CCPs, which are owned by the incumbent exchange groups.
- **Listed and OTC Derivative Markets**
  - There is no material competition in trading and clearing of listed derivatives in any market.
    - The EU is the only market to try and address competition in derivatives through an **Open Access Regime,** which, subject to certain criteria being met, requires exchanges to provide trade feeds and offer clearing services to other exchanges and CCPs in its regulations. However, it is politically unpopular and CCPs argue that it gives rise to inherent risk, so it has yet to prove successful.
- **Equivalence**
  - **All markets, except South Africa have already introduced the concept of equivalence** whereby a clearing house in one jurisdiction can offer its services in a foreign jurisdiction with the regulator of that jurisdiction relying on the 'home regulator's' supervision of the CCP.
  - Equivalence is predicated on broad **commonality of regulatory regimes** and standards of supervision. If the CCP is considered systemically important, it may have to apply for full recognition or undergo additional monitoring by the Central Bank in the foreign market where it operates. The bilateral nature of OTC trading and the existence of equivalence has helped to create competition for the clearing of OTC derivatives.
- **Numbers of Clearing Members**
  - Most CCPs in international markets have **attracted significant numbers** of domestic and international CMs across every cleared asset class. JSE Clear has only 7 members in total.
- **Algorithmic and Electronic Trading**
  - Algorithmic trading accounts for a significant proportion of trading in all listed markets but is at lower levels in South Africa. All markets except South Africa have enshrined **pre-trade risk control** requirements for participants in their rules and regulations.

F. COMPARING INTERNATIONAL CLEARING MODELS AND BEST PRACTICES WITH SOUTH AFRICA

Each market has to accommodate its own domestic legislation, tax treatment and insolvency laws. However, as part of the G20 reforms introduced in **2012,** the **Principles for Financial Market Infrastructures** (**PFMIs**), which included central clearing, were created. Currently, each market has already created or amended regulations to meet these Principles as well as mandating the clearing of certain OTC derivative instruments, except South Africa. **Alignment with the PFMIs** has resulted in major markets exhibiting many similarities.

Key differences with South Africa or points to note are:

- CMs are generally fully segregated legal entities from their parent with their own capitalised balance sheet.
- Both agency and principal relationship models are used internationally. The only country where a particular model is prescribed is the US where **CCPs are required to operate under an agency model as this** is a better fit for US participants under US insolvency, tax and capital regimes. The vast majority of markets in Europe, UK, Australia and Canada currently operate under a principal model. Under both models, the CM's **counterparty risk obligations** towards the CCP when its client defaults and the operational components comprising its service to its clients, are largely the same. However:
    - When the US market moved to clear OTC contracts under its agency model, market participants sought and obtained legal clarity that in the event of a client default, they are contractually committed to automatically switch to **act in a principal capacity.**
    - In certain jurisdictions, the CM's capital obligations can be higher under a principal model. This will become **a material issue for Europe** when mandated pension fund clearing of OTC trades is introduced in mid-2023. **Participants** are now **looking to introduce an agency model** to avoid the balance sheet impact this would otherwise cause.
    - All markets, other than South Africa, have **evolved initially with an OSA** style model and have more latterly introduced the choice of an ISA model, at least for derivatives markets, for their clients in response to G20 reforms. CCPs and CMs are required to **make disclosures** about their operational models and potential risks to customers of different account structures.
- **All CCPs leave the management of a client default to the client's CM** and usually do not hold detailed information on the client's positions, especially where clients elect for an **OSA**. Even if a client has an ISA, there is no active management of these accounts by the CCP unless a CM default occurs.
- All CCPs/exchanges allow their clients/trading members to **use more than one CM**, indeed backup plans are encouraged by regulators (some restrictions may apply to ensure firms are not hiding large exposures) to improve portability in the event of a default.
- All CCPs consider cash (domestic and other major currencies), and high-quality debt instruments, to be eligible collateral.
- All CCPs look to **port the defaulting CM's clients'** derivatives positions and collateral to one or more CMs before closing out any remaining positions in the market. Most CCPs must test default processes and have at a minimum, made some initial, informal contingency plans about which CMs a defaulting CM's positions could be ported to.

G. CONCLUSIONS

An **attractive clearing** model that retains, and potentially **increases**, the number of domestic and international trading and clearing members is necessary for **growth** in South Africa. Given the similarities between the South African market and other international markets in terms of market development, types of participants and trading activity, it seems reasonable to expect the South African market and clearing model to be broadly **aligned** with international peers.

However, this Study has revealed several differences. Some of these highlight areas where improvements could be made to **enhance competition, innovation and risk management**. Some are more **fundamental** and without addressing these concerns, unnecessary risks exist and JSE Clear or the South African market **may struggle to be PFMI compliant** with the G20 reforms.

The greatest concerns are related to the current clearing model as follows:

- The **concentration risk** in the market resulting from having only 7 CMs, and the fact that they are not segregated and separately funded from their parent entities.
- The issues highlighted in this report in relation to JSE Clear's process for **managing a client default**, the perceived lack of clarity in relation to CM's obligations in this regard in **its rules** and the associated **asymmetry** that arises in terms of risk and reward for CMs.

Other differences that do not give rise to the same level of concern but should be considered because addressing these will either benefit the attractiveness of the current clearing model or help prepare for future changes are as follows:

- JSE Clear's **ability to efficiently manage a CM default** has fortunately not yet been **tested.** However**,** it is not apparent the extent to which JSE Clear, the JSE and its respective participants have regularly tested the systems, operations and procedures that would be used to manage such an event.
- The CCP's mandated use of ISAs and **no offering of OSAs** to CMs. Other CCPs that may seek recognition in the SA market are not precluded, under the current SA regulations, from offering OSAs.
- ZAR cash currently being the JSE Clear's **only acceptable form of collateral**, though it is understood that the list of eligible collateral is being expanded.

The differences in the broader market structure that could be addressed to bring the SA market on a par with its peers are:

- The limited involvement of algorithmic trading to date, which is now growing as it has done in other markets and, in the **absence of pre-trade risk** controls may increase the risk of a TM/CM default and/or a 'flash crash' scenario to the SA market.
- The current **lack of fair access** regulation/guidelines to support the growth of competing cash equity trading venues through fair and equal access to the BDA accounting system or an equity CCP (when introduced).
- The **lack of central clearing of equities and bonds**, which in line with other markets could de-risk the market, bring efficiencies for participants and help facilitate trading venue competition.

H. RECOMMENDATIONS

MSP recommends that CMs collaborate with their regulators and their CCP to effect the following changes to the current clearing model:

- **CMs be provided with full control and responsibility for the management of the default of a client.** CMs already have the appropriate books and records to manage this without CCP involvement, but JSE Clear will need to amend its rules and formal disclosures and repapering of CM/client agreements could be required.
- **Clarity be provided within the CCP's rules in relation to the CMs' obligations towards the CCP in relation to the default of one of its clients**. This will provide the necessary certainty to CMs and avoid potential conflicts.
- **Fully explore portability and comprehensive testing of a CM default.** The CCP and regulators should encourage and enable end clients to have backup CM arrangements in place. Testing of systems and operations for a CM default scenario should be undertaken by all stakeholders annually.
- **Retain the agency model**. The international trend is towards the use of agency models, and this readily supports the clearing of securities and OTC markets.
- **Retain the ISA structure and do not expand to an OSA model**. Whilst other markets offer both ISAs and OSAs, the trend is increasingly towards ISAs which improve portability and arguably provide greater client protection.

More broadly in relation to the future clearing model and market structure enhancements, MSP recommends that CMs and other market participants explore the following:

- CMs examine the pros and cons of **housing their CCP membership in a subsidiary** entity that ringfences clearing related risk from their parent.
- The **inclusion of equities, bonds and OTC instruments into the CCP model** with careful consideration of the opportunities and risks that may arise, and the impact of the operational, risk, financial and contractual changes required in relation to each asset class.
- **A fully segregated default fund for OTC derivatives** in the event that they are cleared through JSE Clear, as the likely size, risk profile and longer dated nature of the positions cleared would suggest the market's interests would be best served by compartmentalising the associated default risk. However, it raises further capital requirements for banks.
- **The possible introduction of an OSA model for other newly cleared asset** classes. International CCPs seeking (under equivalence) to clear securities and/or OTC derivatives in SA are likely to want to offer OSAs to their CMs. They offer both models elsewhere and OSAs are suitable and widely used models for clearing such instruments.
- A **Code of Conduct** in relation to fair and open access to BDA and, ultimately, a CCP for cash equities and bonds should be established to support competing equity and bond trading venues.
- **Pre-trade risk controls** should be introduced to counter the increasing risks inherent in algorithmic trading.

1. STUDY BACKGROUND AND APPROACH

This Chapter explains the background to the Study, the entities involved and the approach that was undertaken.

1.1. STUDY BACKGROUND

Current financial market regulations and prevailing legislation[1] in South Africa (**SA**) support a Central Counterparty (**CCP**) clearing model for listed derivative contracts, which are the only instruments that are currently centrally cleared in SA. These regulations and the rules of JSE Clear, the only CCP currently operating in South Africa, define, amongst other things, how clearing members (**CMs**) operate in relation to the services they provide their clients, how they collateralise the margin requirements of the CCP, how client's assets are segregated, and, in particular, how a client or CM default is managed.

The South African CMs of JSE Clear, the only CCP currently operating in South Africa, are all represented by the Banking Association of South Africa (**BASA**). The CMs are fully supportive of ensuring effective risk management and providing segregation/protection to their clients. However, they have material concerns with the current clearing model in relation to their obligations towards the CCP in the event of a client's default, and their ability to manage such an event. The CMs are given to understand that they provide their clearing services to their clients under an agency model, but one in which they assume the role of a principal in the event of a client default yet do not have the autonomy they require to best manage such an event. They are further concerned as to the imbalance of risk versus reward presented by the asymmetry of returns associated in managing such an event, and the potential ultimate parental impairment should such a default exhaust the CCP's waterfall protections.

The South African regulators (The Financial Sector Conduct Authority (**FSCA**) and The South African Reserve Bank Prudential Authority (**PA**)) have recently[2] responded to the work of the G20 Taskforce aiming to strengthen financial markets in the wake of the 2008 Financial Crisis and set out a joint roadmap for the future of clearing. This roadmap considers the expansion of the clearing model to new asset classes (bonds and equities) and certain instruments traded on the OTC market. The roadmap also considers the possibility of competition in the CCP space with international CCPs, through equivalence, being allowed to operate in SA (perhaps operating a different clearing model to JSE Clear).

BASA's CMs consider this the opportune time to consider the optimal clearing model for SA going forward and invited Market Structure Partners (**MSP**) to review the SA market model, compare this with major international markets, and with due consideration to the potential benefits and impact on the market, advise on any changes that should be made. The CMs were open to the possibility of introducing a principal clearing model instead of, or alongside, the current agency clearing model.

The findings, conclusions and recommendations made in this report, in respect of listed derivatives and other listed and OTC asset classes, are made with due consideration to the current SA CCP clearing model and those that operate in major international financial markets.

1.2. BASA AND MARKET STRUCTURE PARTNERS (MSP)

This Study has been commissioned by The Clearing Members Committee of the Banking Association of South Africa (**BASA**). BASA advances the interests of the industry with its

[1] https://www.gov.za/sites/default/files/gcis_document/201409/36121a.pdf

[2] February 2022, https://www.resbank.co.za/en/home/publications/publication-detail-pages/prudential-authority/pa-public-awareness/Communication/2022/Joint-Roadmap-for-the-development-of-a-regulatory-framework-for-Central-Clearing-in-SA

regulators, legislators and stakeholders, to make banking sustainable, profitable and better able contribute to the social and economic development and transformation of the country.

BASA is governed by a board of directors and comprises 36 bank members, several of whom operate internationally. (https://www.banking.org.za/)

Market Structure Partners (**MSP**), which has undertaken this Study, is a strategic advisory and consulting firm, specialising in global capital markets infrastructure. All our consultants have first-hand international experience working at and consulting for market infrastructure organisations as well as at banks and brokers and have broad experience working with international regulators. (https://marketstructure.co.uk)

1.3. STUDY APPROACH AND METHODOLOGY

The first Phase of the project took place during August and September 2022. The main market stakeholders to be consulted in SA were identified together with BASA and two trade associations: The Association for Savings and Investment South Africa (**ASISA**), representing investment/asset managers and life insurance companies; and The South African Institute of Stockbrokers (**SAIS**), which was also approached to encourage broad participation.

Stakeholder firms were invited to participate in one-to-one interviews. A detailed questionnaire (see Appendix 2) was created as the basis for the clearing member interviews and circulated prior to the meetings.

A total of 17 interviews were held (see participants in Appendix 1), which included the main infrastructure providers (JSE Clear, Strate and A2X) and all the clearing banks. It also included a small number of asset managers and stockbrokers as well as an interview with representatives from SAIS. However, interest from non-clearing firms to participate was limited as they stated that they had less knowledge of the clearing rules or felt that they were less directly impacted.

Whilst the main focus of the Study is on the current agency clearing model which solely clears listed derivatives, MSP's consultation with the market and at the request of BASA, also sought the views of different types of stakeholders across the market on the clearing of cash securities (equities and bonds), competition and the likelihood of OTC activity moving to a cleared environment. Non-clearing members (**NCMs**)/other market stakeholders had more views on this broader set of issues than they did on the detailed clearing processes.

Statistics such as the market share of retail versus institutional, domestic versus foreign participation, number of participants in different markets etc., were sought to back up anecdotal reports. However, official statistics about the SA market do not appear to be widely available.

A second Phase used the feedback from the SA stakeholders to form a frame of reference and detailed questionnaire (see Appendix 5) for research and analysis of leading international markets: The US, Europe including the UK, Canada and Australia (findings are detailed in Appendices 6, 7, 8 and 9 respectively).

The final Phase drew conclusions from the Phase 2 work and used this as the basis for recommendations for the South African market.

2. EXPLANATION OF GENERIC ELEMENTS OF CLEARING MODELS RELEVANT TO THIS STUDY

This Chapter explains some of the generic terminology used in clearing that is relevant to this Study and helps to provide context for the discussion about South African and international clearing models in the following Chapters.

2.1. THE ROLE OF A CCP

A central counterparty (**CCP**), or clearing house, is a financial institution that supports the stability of a market by acting as the single counterparty to all transactions and managing risk centrally.

CCPs evolved as markets became more electronic and many participants were coming together to match orders centrally. This required automatic, instantaneous and often anonymous interaction between all buyers and sellers in a market (multi-laterally) without having to consider the individual credit risk of each participant. Essentially, CCPs become the single counterparty to both sides of a trade through a process known as novation (or equivalent). Each bilateral trade between two counterparties is replaced with a pair of symmetric trades between each counterparty's CM and the CCP, the CCP then becomes counterparty to both sides of every trade.

In doing so, CCPs ensure that they always have equal and opposite positions to avoid market risk, which is known as having a *matched book*. However, to manage their subsequent counterparty risk exposure to their CMs, CCPs measure that risk and require collateral based on their open positions to cover their market risk from each CM. This is particularly important when contracts are long term in nature. In addition to this collateral, the CCP establishes additional layers of protection against losses that exceed a defaulting CM's available collateral. Such protection includes a **default fund** comprising assets collected from all CMs that it can drawdown together with using its own capital that it has set aside. As such, the CCP guarantees the terms of the trade and resulting positions to the buyer and the seller.

The role of the **CCP** and its relationship with its CMs allows all buyers and sellers to transact in markets, directly as a trading member (**TM**) or indirectly as an end client, **without worrying about the individual credit risk of their trade counterparty.** All buyers and sellers must either be a clearing member (**CM**) of the CCP or have a clearing agreement with a CM to clear on their behalf.

2.2. THE MARKETS SERVED BY A CCP

The use of CCPs is becoming increasingly prevalent across the globe. Their importance and the effectiveness of their default management arrangements were highlighted through the Financial Crisis in 2008, during which they demonstrated their ability to manage multiple large CM defaults and underpin the stability of the markets which they serve. At the time, they mainly cleared instruments traded on regulated markets (exchanges or authorised trading venues), including derivatives, cash bonds and equities. The terms *futures*, *exchange-traded derivatives (**ETDs**)* and *listed derivatives* are all used interchangeably in this report.

After the Crisis, the G20 countries committed to reforms that focused on improving financial stability and risk mitigation by mandating the use of CCPs to centrally clear a defined universe of bilaterally traded, over-the-counter (**OTC**) derivatives (e.g. interest rate swaps), whilst also imposing far larger capital requirements on financial institutions holding positions in uncleared OTC instruments.

The clearing of OTC markets has expanded CCPs' instrument coverage and led to a material increase in the value of trades/positions centrally cleared, and a larger and broader universe of sell-side and buy-side participants needing to establish clearing arrangements with CMs.

2.3. KEY FUNCTIONS OF A CCP

The key functions provided by a CCP include:

- **Trade validation and registration**: For trades executed on order book; on-exchange, off order book; and OTC.
- **Position management**: All validated trades are assigned in real-time to the identified CM's relevant account where they can add to or net down against existing open interest. Exchanges/CCPs also provide functionality that enable CMs to 'give-up'[3] trades to other CMs. CCPs will also adjust positions (e.g. in equities pre-settlement and equity derivatives) to account for corporate actions. CCPs together with their CMs also manage the expiry and exercise of derivative contracts.
- **Counterparty risk management**: Continuous, real-time risk measurement of participants' positions with intra-day and end-of-day margin calls. CCPs margin members' positions at an account level and often provide margin offsets between positions in highly correlated instruments. Such portfolio-margining helps reduce the value of required margin, so releasing capital to the market. The provision to CMs of the account structures they require to segregate client positions from other clients and the CM itself. Regular reporting to members of their positions.
- **Management of a member default**: CCPs are responsible for porting (transferring) positions and collateral to other CMs from, and/or unwinding the positions held by, a defaulting CM. They commonly adopt a waterfall model which draws down collateral in stages to offset any losses realised by the CCP in winding down the positions of the defaulting member. It is vital that the CCP contributes to maintaining an orderly market and having pre-funded resources in place is standard practice. Some CCPs also have insurance policies and rights of replenishment against solvent CMs in the event that the pre-funded resources are inadequate.
- **Settlement**: In the case of equities and bonds; multi-lateral netting of settlement obligations at a client level (netting can in some cases be performed by the central securities depository (**CSD**)), the management of settlement fails (e.g. buying-in) and the shaping of settlement size, all of which can help bring efficiencies to users.

2.4. CLEARING MEMBERS (CMs)

Financial institutions can become clearing members of a CCP if they meet certain suitability criteria (e.g. balance sheet, risk management processes) as set by the CCP. They then have the ability to clear trades in listed and/or OTC traded derivative and security instruments through the CCP. CMs are typically large banks, broker-dealers, or other financial institutions authorised and regulated to perform their role of ensuring that the trades they clear through the CCP are managed and settled in a timely and accurate manner. CMs are required to meet certain financial and operational requirements related to their capital/credit, collateral, operational systems and expertise and risk management practices.

A CCP provides its services to one or more regulated venues (e.g. exchanges) in respect of their listed instruments and, in many cases, to financial institutions directly in respect of OTC traded instruments. In order to centrally clear their exchange trades, all trading members (**TMs**) of the exchange, end clients using TMs as a broker, and all OTC trade counterparties wishing to clear their OTC trades, must have an appropriate clearing agreement in place with a CM of the CCP.

[3] Where three parties are involved: Broker A executes the trade on behalf of a client but gives up the trade to Broker B so that the transaction is recorded between Broker B and the client.

Often the client's chosen TM and CM are part of the same organisation. CMs choose to provide their services in some or all of the listed and/or OTC instruments that they are authorised to clear.

2.5. HOW CCPS MANAGE RISK

CCPs make sure they themselves have no market risk by ensuring they have equal and opposite positions across all of the trades to which they are counterparty. The CCP seeks to maintain its 'matched book' through a range of events (e.g. CM default and associated porting of positions and collateral), rules that allow it to not go on risk (e.g. if technical problems affect trade receipt), and the validation of OTC trades prior to going on risk.

A key component of counterparty risk management is the measurement of market risk and daily and intra-day collateralisation of associated margin requirements:

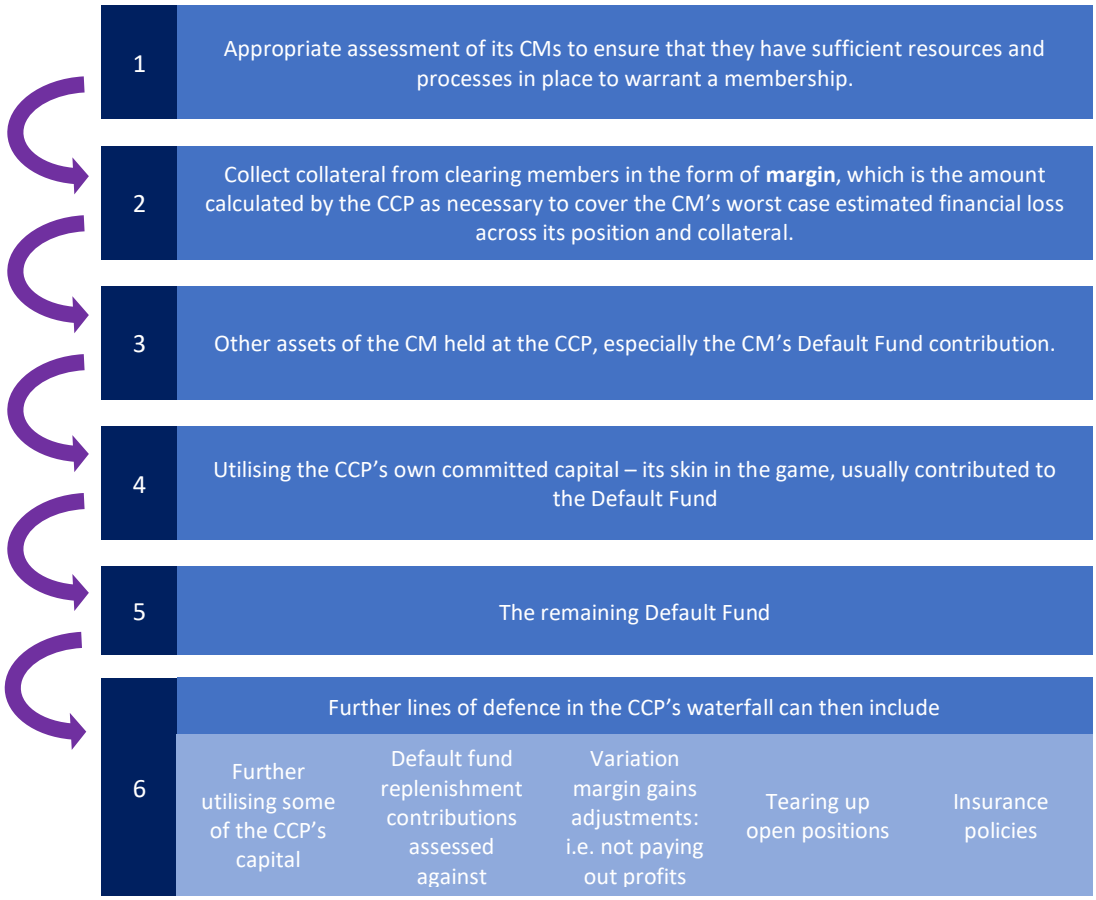
- **Initial margin** (**IM)** obligations represent the CCP's measurement of the instrument's price risk using appropriate statistical algorithms and historic price data, which is stress tested through various scenarios. IM is determined at an instrument level and is the same for all CMs, and its value set to meet the possible losses incurred by position holders under extreme market movements. IM can be calculated at a gross or net position level depending on the client account structure being used (see below) and whether the CCP offers margin offsets between correlated positions held in the account. The latter reduces the amount of capital required to meet margin obligations with the CCP.
- **Variation margin** (**VM**) represent the net profit or loss in the account resulting from price movements. VM is calculated continuously and at the end of each day (or sometimes at points within the day), profits and losses are collected/paid in the currency of the underlying instruments from/to the CM's respective accounts.
- **Collateral** is any asset the CCP considers eligible to meet margin obligations. This always includes cash in the underlying currency of the contract and often other liquid, easily priced and not too volatile instruments e.g. other cash currencies, government bonds, equities. CCPs use additional stress tests to determine and apply haircuts to the value of non-cash collateral and apply concentration limits on the value of individual instruments.

Margin requirements are calculated on a gross or net basis. **Gross margining** occurs at the highest level, where the CM must pass to the CCP enough margin to cover the sum of the separate margin requirements for each underlying client. Under **net margining**, the CCP can calculate required margin based on the net exposure in a CM's omnibus account, synthetically offsetting one client's long with another's short (for risk quantification purposes only). In this case the CCP requires the CM to submit enough margin to cover the 'netted risk' amount only.

Furthermore, the CCP itself may provide margin offsets between positions in highly correlated instruments (e.g. index future against index options, or between long and short positions in different durations of the same underlying contract, e.g. calendar spreads). The benefits of such margin reduction are passed to the CM and generally passed onto the client.

The most important risk a CCP has to manage is the financial impact associated with the default of one or more of its CMs. To do this, a CCP has several lines of defence. In general CCPs have aligned upon a broadly common default waterfall:

Figure 1: Common CCP Waterfall and Lines of Defence



2.6. MANAGEMENT OF A CLEARING MEMBER DEFAULT

A CM default can have serious ramifications and potentially undermine the stability of a market. Speedy resolution is therefore very important. As soon as the CM is declared to be in default, the CCP, exchange and CM will take measures to communicate this fact to other members and the regulators (who will share this with other regulators) and ensure that any pending market order on behalf of the CM and its clients are removed from the order books. The CCP immediately assumes the positions of a defaulting clearing member and follows its rules and pre-defined procedures in order to minimise disruption to its members and the market.

One of the most critical areas of concern is ensuring that there are adequate insolvency protections for end-users upon a CM's default, including providing adequate legal protection of end-user margin and associated positions cleared through the CCP, and the ability to move such positions and related margin to another clearing member if the end-user's original clearing member defaults: this is often referred to as **portability.**

As a key part of its default management process, the CCP will look to liquidate or transfer (port) the defaulting member's clients' derivatives positions and collateral to non-defaulting members who have the capacity to accept the defaulter's clients. In some circumstances the CCP may require prior approval from its regulator or liquidator. CCPs clearing securities do not tend to port the CM's positions in securities (equities and bonds) as these generally settle in the relevant CSD within the next 48 hours.

To minimise overall risks the CCP will limit the porting time period (often to one or two days) before trading out of any remaining positions. Once completed the CM's final profit/loss can be confirmed with any residual capital being returned to the client or its administator, or in the event of a shortfall, this can be made up by utilising the lines of defence in the CCP's default waterfall.

Throughout the entire process, the CCP will endeavour to regain its matched book status.

2.7. ACCOUNT SEGREGATION AND PORTABILITY

Segregation is a process where CMs segregate the assets and positions they hold on behalf of clients from their own assets and liabilities through account structures provided by the CCPs and other banks and custodians.

The most basic segregation is where a CM maintains a single **Omnibus Account Structure** (**OSA**) for all clients and the most sophisticated is an **Individually Segregated Account Structure** (**ISA**) for each underlying client. Under both structures the client remains the legal owner of its positions with its CM. The difference between the two account structures is that:

Figure 2: High-Level Comparison of Account Structures

	OSA	ISA
Client collateral	Client collateral is pooled, and market risk is measured in aggregate across the CM's clients.	No shared risk between clients of the same CM as there is no pooling of collateral.
Efficiencies	If margining is allowed on a net basis, then CMs should hold excess client funds which are not delivered to a CCP in other accounts (at banks, custodians etc) that are managed explicitly for the benefit of those clients.	Margining must occur at the client level. As a result, some broader cross-client position netting efficiencies may be lost. Where an individual client's positions in specified and correlated instruments are offset for margin calculation purposes by the CCP, these are passed on to the client by the CM.
Record keeping	The CM should maintain real-time position and collateral records at a client-by-client level. As well as being important for everyday management of client collateral, access to these records is very important in the event of a CM default to support porting of client positions.	The CM should maintain real-time position and collateral records at a client-by-client level, the CCP will also have an accurate real-time record of positions and collateral at a client-by-client level.
Ease of porting and risk in the event of a default	Clients should get the full value of their collateral back but because it has been pooled, they may not get back exactly the same composition of collateral as they put in. There is a further risk that in the event of the contemporaneous default of the CM and one or more of its clients (with positions that liquidate to a deficit) that the pool will not have adequate assets to make clients whole.	Porting the defaulting CM's client's positions and collateral to another CM more straightforward, because the CCP has the immediate client level transparency it requires.

A clearing member that only clears its own proprietary activity operates under the same rules and regulations but, without end clients, is not subject to the client position/collateral segregation requirements.

2.8. THE DIFFERENCE BETWEEN THE PRINCIPAL AND AGENCY CLEARING RELATIONSHIPS

Central counterparty clearing in financial markets operates under what are termed as either an agency or a principal clearing model. Under both models, the obligations on the participants are the same; the CCP seeks to guarantee performance to the end client in the event that the client's CM defaults, and the CM guarantees the performance of its client to the CCP in the event its client defaults.

However, while the models have significant similarities and impose the same financial obligations on the CCP, the CM and the end client, there are some fundamental points of difference between them.

Figure 3: Comparison of Principal and Agency Relationship Models

	Principal Model	Agency Model
Driver	• Based largely on contractual relationships among the parties that determine how clearing is effected, margin is protected, and portability is achieved. • Under a principal clearing model, the back-to-back principal relationship between the CCP and its CM is mirrored by the relationship between the CM and its clients. Each party acts as principal with respect to each trade.	• Driven more by statutory and regulatory legal requirements governing the clearing process, which are then complemented or implemented by the rules of the CCP and to a lesser extent by the agreements governing the relationship between the CM and the customer.
Relationship In the Event of a CM or client default	• **CM Default**: The CM – CCP principal relationship becomes an agency relationship upon the default of the CM in order that the CCP can port and unwind the defaulting CM's clients' positions. • **Client Default**: In the event of a client default the CM remains principal to the defaulting client's positions. • The CM is fully accountable to the CCP and ringfenced from an end client default, but client assets are protected from a CM default.	• **CM Default**: The CM – CCP agency relationship is maintained upon the default of the CM in order that the CCP can port and unwind the defaulting CM's clients' positions. • **Client Default**: In the event of a client default the CM immediately and automatically becomes principal to the defaulting client's positions. An agency model that requires the CM to switch to being a principal to its defaulting client's obligations is often described as a del credere model. • The CM is fully accountable to the CCP in respect of an end client default whilst client assets are protected through full segregation from a CM default.
Obligations	• The CCP seeks to guarantee performance to the end client in the event that the client's CM defaults, and the CM guarantees the performance of its client to the CCP in the event its client defaults.	
Documentation	There are separate agreements in place between the CCP and CM, and the CM and its client, but not between the CCP and the client, that refer to the CCP's rules and capture relevant regulations and legislation, and that detail the various parties' obligations.	

Post-default netting and portability	• The principal model relies on a series of contractual arrangements and security interests as well as the relevant CCP rules. • CM relinquishes ownership of client positions at CCP upon its own default thus allowing portability.	• The agency model, at least in the US, relies on a statutory and regulatory regime that, in the event of a CM default, is only anecdotally interested in the contractual relationships between the parties and is very much designed to facilitate portability. • Other agency models allow end clients to bypass a defaulted CM entirely and take direct control of their positions and collateral in order to effect portability.
Collateral arrangements and balance sheet treatment	• Collateral arrangements, (including what qualifies as eligible collateral and how such collateral is held and segregated), is largely determined by the CCP's rules with due reference to prevailing securities law and regulations. • The CM can determine what it is prepared to accept as collateral from a client but can only use CCP eligible collateral to margin positions. • The CM has to reflect both sides of its positions (CM to CCP and CM to client) on its balance sheet.	• Collateral arrangements, (including what qualifies as eligible collateral and how such collateral is held and segregated), is largely determined by the CCP's rules with due reference to prevailing securities law and regulations. • The CM can determine what it is prepared to accept as collateral from a client but can only use CCP eligible collateral to margin positions. • The CM only has to reflect the CM to CCP leg on its balance sheet.

Notwithstanding that clients' positions and collateral must be segregated from their CM's under both models, the client's choice (if available) of using an ISA or OSA model, and of an OSA model resulting in it sharing the risk of a fellow client default, is not a function of operating under an agency or principal model.

The nature of the principal/agency clearing relationship will also impact the documentation used and capacity in which collateral is delivered to the CCP.

2.9. KEY BENEFITS PROVIDED BY A CCP

Market participants are drawn to the cleared market in recognition of the following benefits:

a) The positive impact a CCP can have on an exchange's volumes and bid/offer spreads because credit risk is reduced, and multiple parties can more easily compete for flow.

b) Minimising counterparty risk by multi-laterally netting all their cleared stock/contract-related specific risk with the highest quality credit counterparty (the CCP), so potentially increasing individual firm's trading capacity.

c) Managing the risks and impact associated with the failure of a trading counterparty (or their client) or a clearing member, in relation to the counterparty's positions and security trades pending settlement.

d) Post-trade anonymity protects price and position information.

e) The high levels of automation and netting brought by the centralised service provides participants with efficient straight-through processing and scalability within their own systems, so helping to make their environments insensitive to volume.

f) With respect to cash equities: improving settlement finality by reducing the number of failed settlements, simplifying and standardising their management through a single counterparty, and reducing associated costs (e.g. stock borrowing requirements).

g) Reducing settlement costs, and the capital required, by up to 98% through multi-lateral netting of settlement obligations*.

* As counterparty to every trade the CCP is able to net its settlement obligation per unique instrument/ISIN (International Securities Identification Number) per day to a single settlement instruction against each of the counterparties against whom it settles against. This required information is usually provided by the CM within the static data used to support post-trade processing. Such netting can be done across trades executed on different venues as well as include OTC trades.

Such benefits are available to all exchanges following the CCP model.

2.10. OWNERSHIP MODELS OF CCPS

The vast majority of CCPs are owned by an exchange and to a great extent only clear trades executed on that exchange or are reported to that exchange. This is referred to as a vertical model, or 'silo'. This is particularly the case in listed derivatives where competition is largely non-existent, and OTC derivatives where there is limited competition. In certain markets, equity CCPs do compete for trade flow from a number of exchanges, under what is referred to as the horizontal model, whereas in the US there is a single securities CCP that is a user-owned and governed, not-for-profit utility.

The long potential life of cleared derivative positions (sometimes exceeding 30 years) results in the exchange and the CCP having a more symbiotic relationship than for instruments where clearing and or settlement happen relatively quickly post-execution (e.g. equities). As a result, listed derivative exchanges, in recent years, have viewed control of clearing as more critical to their own success than equities exchanges which, in some cases, have been more accepting of using third-party CCPs. This direct ownership combined with preventing access to the CCP (i.e. the vertical model) makes it hard, if not impossible, for another exchange or CCP to compete for the same listed derivative business as there is little incentive for an exchange that has a successful listed derivative product to allow another exchange to clear or trades its products.

In securities markets where physical settlement occurs and positions are held over a short period of time (usually a matter of days), CCPs are connected to exchanges to receive the trade feed and to Central Securities Depositories (**CSDs**) to ensure that final settlement occurs. Of importance is the fact that whilst cash equity trades do not need to be cleared, they all need to be settled regardless of where they were traded or whether they were traded on a regulated market or OTC. As such, owners of a CSD cannot prevent access to it, even from competing venues or CCPs.

The horizontal, or 'hub-and-spoke', model in which the CCP may be separately owned from any single exchange allows multiple exchanges to use its a single clearing service and benefit from existing clearing infrastructure, cross-exchange settlement netting and extended portfolio margining. This serves to facilitate competition and create a homogenous clearing cost regardless of where a trade occurs. In all cases, the CCP will need to be a settlement participant, directly or indirectly, in the relevant CSDs.

3. OVERVIEW OF RELEVANT SOUTH AFRICAN FINANCIAL MARKET STRUCTURE CHARACTERISTICS

This Chapter summarises the high-level characteristics of the South African market across the different asset classes in order to provide context to the stakeholder feedback about the market discussed in Chapter 4.

3.1. LEGISLATION

All market infrastructures (including exchanges, CCPs and CSDs) are governed by the same law: the Financial Markets Act (2012).[4] This Act aims to:[5]

- Ensure that the South African financial markets are fair, efficient and transparent
- Increase confidence in the South African markets
- Promote the protection of regulated persons, clients and investors
- Reduce systemic risk
- Promote the international and domestic competitiveness of South African financial markets and of securities services in the Republic.

With particular regard to this Study, it is noted that the legislation directs exchanges to ensure that their authorised users must segregate funds and securities.[6] It also stipulates that clearing houses (**CCPs**) must provide[7] for the segregation and portability of funds and securities held as collateral, and that clearing members (**CMs**) must notify the clearing house as soon as it (the CM) begins an insolvency proceeding or a proceeding is commenced against it.

3.2. MARKET INFRASTRUCTURE

3.2.1. Exchanges

The market is dominated by one main exchange for equities and listed derivatives, the Johannesburg Stock Exchange (**JSE**), a publicly listed company. The JSE is understood to have approximately 75 trading members operating in its cash equities market with a subset of these active in listed derivatives.

There have been limited attempts to create competition in cash equities, the most notable being the alternative fully-regulated exchange, A2X, which currently has approximately 3% market share of the equities that are available for trading on its platform.[8]

[4] Act No 19: Financial Market Act, 2012, https://www.gov.za/sites/default/files/gcis_document/201409/36121a.pdf

[5] Act No 19: Financial Market Act, 2012, Article 2

[6] Act No 19: Financial Market Act, 2012, Articles 21 & 21

[7] Financial Market Act, 2012, Article 50 (z) and (aa) respectively

[8] Measured by A2X as a % of total cross market continuous trade in its universe of securities (71)

3.2.2. Central Counterparty (CCP)

There is one clearing house, JSE Clear, which currently only has authority to clear listed derivatives.

JSE Clear is a wholly owned subsidiary of the JSE. It began as an associated clearing house as defined in the Financial Markets Act (**FMA**),[9] which meant that it operated under the JSE's rules,[10] governance and group balance sheet. It has recently[11] been granted a licence to operate as an "Independent Clearing House and Central Counterparty" by the FSCA, in agreement with the PA and the South African Reserve Bank (**SARB**). As an independent CCP, JSE Clear operates under its own rules, has its own fully capitalised balance sheet and is governed by an independent Board of Directors, albeit remaining a wholly owned subsidiary of the JSE. This potentially gives it greater freedom to offer its services across other asset classes and to other venues. JSE Clear would need to extend its licence in order to clear cash securities and OTC trades (trades entered into off of a regulated venue).

Cash equities, bonds and OTC products are not centrally cleared. It should, however, be noted, that the JSE operates the JSE Clearing and Settlement Division which performs a similar risk mitigation role to that of a clearing house by providing settlement assurance for the JSE's and A2X's equities markets. This is enabled through a combination of knowing what collateral is held by JSE trading members and the transparency of their pending settlements provided by a back-office accounting system, Broker Dealer Accounting (**BDA**), which is provided by the JSE at a cost and mandated for use by all equity market participants.

3.2.3. Central Securities Depository (CSD)

Strate is South Africa's principal central securities depository and central collateral platform. It provides for the safekeeping of the legal, digital record of securities ownership, associated settlement and asset services, and facilitates the reuse of securities.

Strate performs a form of settlement netting for the equity markets within BDA.

Strate is owned jointly by the JSE and the custodian banks.

3.3. OWNERSHIP/GOVERNANCE OF DOMESTIC MARKET INFRASTRUCTURES

Figure 4: Ownership/Governance of South Africa's Domestic Market Infrastructures

		OWNERSHIP STRUCTURE	PRODUCTS TRADED/CLEARED OR RECORDS HELD	NO. OF MEMBERS
Exchanges	**JSE**	Publicly listed	• Cash Equities • Listed Derivatives • Bonds	~75 ~ (Subset of Cash Equity members) 9 Primary Dealers
	A2X	Privately owned by a mixture of funds, individuals and banks.	• Cash Equities	7

[9] https://www.gov.za/sites/default/files/gcis_document/201409/36121a.pdf

[10] https://www.jse.co.za/sites/default/files/media/documents/jse-clear/208%20-%20JSEClearRules17052021%20-%20FINAL_SecCol%20Removed.pdf

[11] 1 September 2022, https://www.jse.co.za/news/news/jse-clear-granted-independent-clearing-house-central-counterparty-licence

		OWNERSHIP STRUCTURE	PRODUCTS TRADED/CLEARED OR RECORDS HELD	NO. OF MEMBERS
	ZARX	*Withdrawn from the market*		
	Cape Town Stock Exchange (previously 4AX)	Privately owned by a number of investors led by Imvelo Ventures	• Equities (focused on SMEs/ growth companies) • Bonds	4
CCP	**JSE Clear**	100% owned by JSE	• Listed Derivatives	7
CSD	**Strate**	JSE (44.5%) Minority shareholders: • ABSA Bank (12.679%) • FirstRand Bank Ltd (12.679%) • Nedcor (14.996%) • Standard Bank (14.996%) • Citibank (0.103%)	• Equities • Bonds • Derivatives • Money markets • Participatory Notes in collective investment schemes (exchange-traded funds).	

Source: Company websites or provided directly by the company

3.4. TRADABLE PRODUCTS AND TRADING

The JSE lists equities and standardised futures and options contracts (**F&O**) covering multiple asset classes under its rules. Its members trade all these products on a central limit electronic order book (**CLOB**) and in electronic auctions on a system provided by the London Stock Exchange (**LSE**). The JSE also makes government bonds available for trading on the MTS electronic trading platform, also provided by the LSE. A2X also lists a subset of JSE listed equities which trade on a CLOB. A2X must seek the individual permission of each listed company before it can admit that company's shares to trading.

As is common practice amongst global exchanges, JSE protects the IP in its listed derivatives by owning the IP in the contract specifications, in order to prevent competition in its listed derivative products from other venues and the over-the-counter (**OTC**) market. The JSE's "Can-Do"[12] facility allows its TMs to trade listed derivatives away from the central limit order book when they need to trade, e.g. 'large-in-size' and multi-legged strategies. The "Can-Do" facility, through appropriate rules/services/licences, provides for the on-exchange registration of such trades and the subsequent clearing of such trades.

The mandatory use of the BDA system in cash equities means that all equity trades must be recorded through the system regardless of whether they are traded on the JSE or A2X's CLOB, or as a large block in an OTC transaction. This extension of the brokers' use of BDA to record A2X's trades is a recent development that is hoped to improve competition by flattening the post-trade costs and so making it easier to assess 'best-execution'. Trades not done on a CLOB must be reported to the JSE where they flow into BDA and, as such, all equity trades are termed 'on-exchange' regardless of whether they are executed on the CLOB.

Bonds are not generally traded on-exchange due to the dominance of resident market makers, the concentration of liquidity in the first few days of trading and the extensive variety of instruments. MTS was introduced by the JSE in 2018 and is perhaps the only platform that presents any liquidity to the market, however, the anonymity attached to an uncleared market means that there remains some counterparty risk and this deters some participants.

[12] JSE Can-Do products, also referred to as Structured Products, are non- standard, derivative products that are customisable for clients' specific requirements.

There is notably no trading of individual stock options on the derivatives market although there are high levels of activity in OTC single stock derivatives, predominantly CFDs.

Liquidity on the JSE's order books is limited to the front month contracts of its ZAR money market future, equity index contracts and equities. Trading in other contracts is pre-negotiated with liquidity/capital being extended to clients by banks and agents, often via market makers. Even the majority of cash equity trading appears to be conducted OTC in CFDs, with any necessary hedging being conducted on-exchange either on a Delta One or net basis.

3.5. MARKET PARTICIPANTS

Direct market participants on the JSE and A2X are known as Trading Members (**TM**). TMs comprise banks, proprietary trading firms and brokers/agents. The number of TMs at the JSE total approximately 75 for equities and a subset of these for listed derivatives. A2X has 7 members all of whom also belong to the JSE. Indirect market participants/end-users are institutional asset owners/managers, corporates, non-member banks and broker-dealers all of whom may be located in South Africa or overseas and access the market via a TM. Retail investors are also included in this category and are anecdotally only active in equity markets. A TM can only use a single CM to clear any particular listed derivative and they must have a clearing agreement in place. The reason for limiting TMs to a single CM relationship appears to be due to a risk management and/or system restriction at JSE Clear.

Market makers and high frequency trading firms (**HFTs**) are not prevalent in listed derivatives and the JSE does not offer liquidity provider programs in any asset class although fees are understood to reduce at the margin through volume bands. HFTs are understood to be active, mostly indirectly, through JSE's TMs in cash equities and index derivatives. According to interviewed participants, HFTs may account for possibly as much as 40% of direct on-exchange cash equity trading with little apparent high frequency trading in rates, commodities or FX trading) in index derivates and indirectly-traded cash equities. A2X provides liquidity incentives in the form or passive and aggressive fee models, and also a jump-ball (an incentive to encourage trading by offering an equity stake to those that post-liquidity).

End clients, including domestic and international firms, trade indirectly via JSE's and A2X's trading members. International end clients have a choice of trading cross-listed SA equities, American depositary receipts (**ADRs**) and global depository receipts (**GDRs**) off-shore. International firms trading ZAR interest rate swaps do so bilaterally with local market participants and clear such trades at LCH in London, with their SA counterparty hedging as required on JSE. LCH's membership requirements results in SA counterparties clearing at LCH either directly or indirectly.

Market participants that also directly clear for themselves and/or others through their association with a clearing house are known as clearing members (**CMs**). At JSE Clear there are seven CMs in total, five of which are clearing their own proprietary activity as well as on behalf of other organisations and 2 of which are self-clearing only. All CMs must have an agreement in place with a trading member (**TM**) which can be of the same parent bank entity as the CM (which enables CMs to solely self-clear). This is the case in all such current arrangements with JSE Clear's CMs.

Under the current clearing model, the nature of the role of CM in the SA market, appears to be shaped by its relationship with its TM. Whilst the CM is the ultimate guarantor of a client's ability to meet its collateral obligations, its TM takes on this obligation in the first instance if a client defaults (see Chapter 4). Furthermore, where the CM is part of their parent bank entity (i.e. not a separate corporate entity), JSE Clear's ultimate recourse to fulfil failures of a client, TM or CM to meet margin obligations arising from a default, falls to the CM's parent bank under Rule 10.2.18 (JSE Clear Rules dated Nov 2021).

As such, under a client default scenario, TMs are the direct legal counterpart to JSE Clear for all novated positions, even if they were not involved in the original trades that formed these

positions, and they are responsible for performing to the CCP. The guarantor function of the CM is only enacted upon the default of one (or more) of the TMs which it clears.

The current number of trading members and clearing members is understood to be fairly stable.

3.6. COMPETITION

Competition for trading equities in SA is limited to A2X or synthetically through CFDs, which are traded OTC. Net positions in CFDs are understood to be hedged via trading the underlying securities on JSE. Other competing venues included ZarX, which has now withdrawn from the market, and the Cape Town Stock Exchange (formerly 4AX), which was relaunched in October 2021, trading bonds and equities with a focus on small to medium sized companies.

There is no competition for the trading of exchange listed derivatives. This appears highly unlikely to change whilst the JSE controls both the IP in its contracts and the CCP clearing all associated trades.

Whilst cash equities are traded on A2X, its ability to compete is restricted by having to obtain approval from each company to make their shares available for trading and, until recently, the inability of brokers to utilise BDA to manage their A2X related post-trade requirements.

3.7. CCP OPERATIONS

JSE Clear operates an agency clearing model with its CMs and has the right to determine if a CM's client is in default. In the event that it determines a default, it interposes itself between the CM and the CM's client to instruct the process and notably decides the transfer value of a defaulting client's portfolio. In the event of a loss, it expects the CM to act as a guarantor to the CCP for its client's positions and compensate the CCP for any shortfall.

JSE Clear only offers an ISA account structure.

JSE Clear operates under a single default fund (**DF**) due to the concentration of risk across only seven clearing members who all actively clear most, if not all, asset classes traded that are available for central clearing. Other CCPs, with exposure to far greater values of risk and with larger and more diverse membership, operate under multiple DFs in order to compartmentalise the risk attributable to certain asset classes. This is something JSE Clear will undoubtably analyse should clearing be extended to equites, bonds and the OTC market.

JSE Clear's assets are included in the drawdown process resident within its waterfall structure in the same way that many international CCPs are now commonly part of their own waterfall/default management structures. Whilst JSE Clear's CMs remain part of their parent bank, they are potentially obligated to fund any remaining shortfall once all resident layers of protections have been exhausted (post-waterfall) as JSE Clear can look through to the CM's parent bank.

JSE Clear's measurement of risk and initial margin (**IM**) is conducted using recognised international stress test methodologies and standard portfolio analysis of risk (**SPAN**) or value at risk (**VaR**) algorithms to determine initial margin, depending on asset class. Margin offsets are provided across the same assets with different durations (e.g. along short-term interest rate curve) but there are minimal cross-asset class offsets even against highly correlated instruments (e.g. STIRs v bond futures). CMs can decide for themselves whether they apply the same margin rates or higher margin rates to their clients.

Collateral to cover DF, IM and variation margin (**VM**) is currently all ZAR cash with the expected inclusion later this year of ZAR bonds. Any extension of the list of eligible collateral will take into consideration the liquidity, pricing and volatility of the asset class, and apply haircuts. VM is always covered with cash.

4. STAKEHOLDER FEEDBACK ON THE CURRENT SOUTH AFRICAN MARKET CLEARING MODEL

This Chapter details the feedback from the South African market participants about the domestic clearing model.

4.1. CCP CLEARING MODEL

There is consensus amongst the CMs as to what they believe are the inherent weaknesses in JSE Clear's current clearing model for listed derivatives, which are discussed in more detail below, namely:

- JSE Clear's involvement in determining a client is in default and then the transfer valuation of a defaulted client's portfolio.
- Asymmetry in the treatment of, and rights to, the collateral of a defaulted client.
- Legal and contractual clarity of the CMs obligations under the agency model, particularly in relation towards the CCP in respect of a defaulting client.
- The agency model, as it currently operates, precludes TMs and CMs from netting all exposures against a defaulted client.
- The segregation model, as it currently operates, precludes CMs from providing (and consequently clients benefitting from) collateral transformation services.
- Acceptable forms of collateral at JSE Clear.

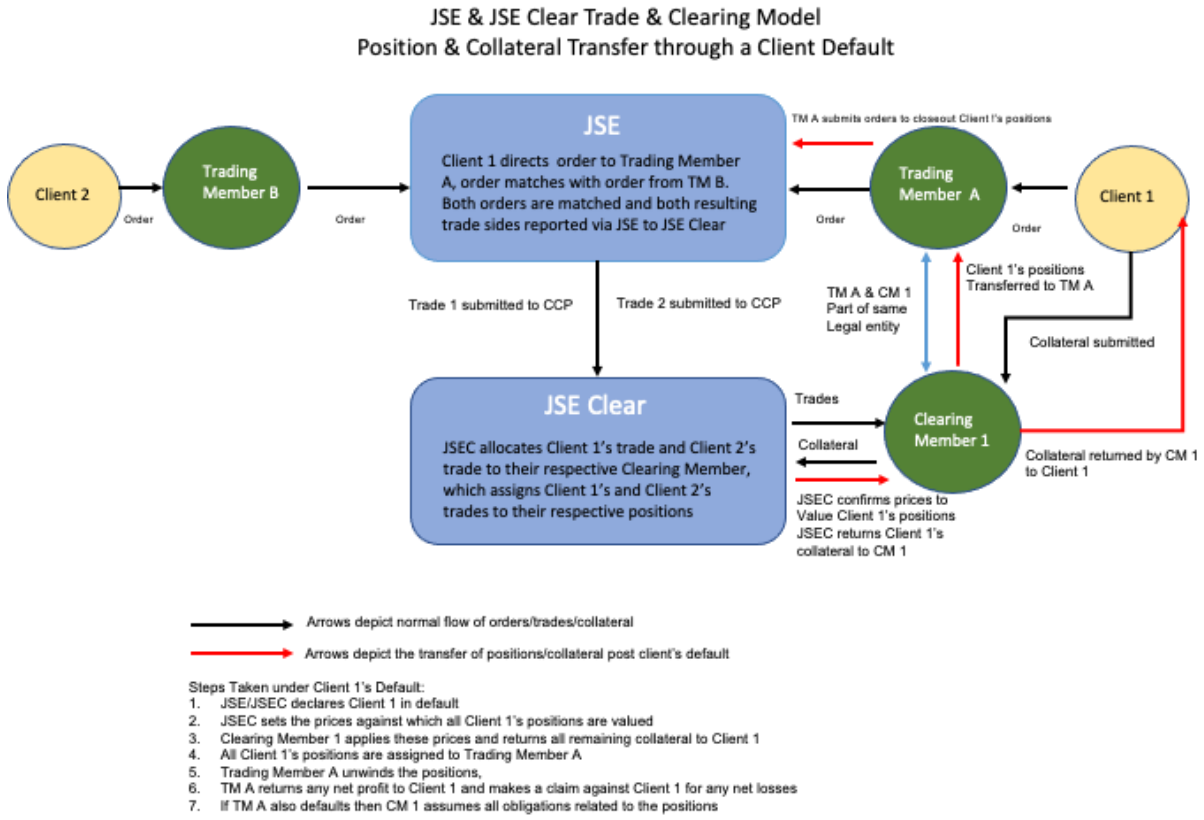
These issues (as identified) were compounded by a lack of clarity within JSE Clear's rulebook. MSP's understanding of the default process, as described by JSE Clear and participants, is given in the diagram (Figure 5) below. Participants believed that a del credere model was being applied but were unsure of their legal position. This also presents some uncertainty as to whether VAT should be applied to fees/commissions.

Other feedback included concerns around:

- Portability of positions and collateral in the event of TM/CM default.
- Questions on the agency model which present uncertainty to some as to whether VAT should be applied to fees/commissions because the role of principal (at the time of a client default only) versus agent is unclear.
- Competitive constraints inherent in the current model.
- The absence of any pre-trade risk controls in the electronic markets.
- Settlement netting for cash equities is not optimised.

The knowledge of participants who are not directly involved as clearing members and their ability to comment on these issues varied. They also raise broader concerns.

Figure 5: JSE & JSE Clear Trade & Clearing Model. Position & Collateral Transfer through a Client Default



4.1.1. JSE Clear's Determination of the Transfer Value of a Defaulted Client's Portfolio

The process surrounding the response to the default of a client with cleared positions (see diagram above) is governed by JSE Clear. In such a circumstance JSE Clear:

1. Determines and confirms an event of default has occurred.
2. Determines a final valuation of that client's positions by prescribing a price to each line of open interest, and
3. Instructs the transfer of those positions (at that price) to the proprietary account of the CM's associated TM.
4. On transfer, the CM passes any remaining collateral back to the defaulting client's administrator.
5. Upon receipt of the transferred positions, the TM can begin to unwind the positions in the market.

However, for the CM this presents some issues. Specifically, JSE Clear's final valuation of the defaulting client's positions determines how much of the client's margin remains available to the CM, which may turn out to be less than the true cost of unwinding the client's positions.

By crystalising the value of defaulting client's portfolio and requiring the CM to return collateral prior to unwinding the client's positions, JSE Clear creates an environment in which the profit/loss of the subsequent trading out of the client's positions by the TM is measured. However, with all the client's collateral, IM and VM having been returned to the defaulting client, the TM/CM has no client collateral remaining to offset against any losses realised through the trade out from the CCP's valuation. In other markets, where CMs are left to

manage their own client defaults, all the client's collateral remains with the CM until its positions are closed out, with any losses/profits incurred/made, the difference between the trade out price and the earlier collateralised price then being combined with the client's resident collateral and returned to the client.

Furthermore, the time taken for JSE Clear to determine and confirm a default event can be significant and any delay in unwinding positions exposes the TM/CM to market risk. JSE Clear's primary remit is risk management, and it will use prevailing market prices and pricing algorithms to determine transfer prices. However, as it is not active in the market on a minute-by-minute basis, it may not be best placed to determine such prices, particularly in less liquid lines.

It should also be noted here that it is perfectly feasible that a client has an OTC position with a CM that has been hedged with a listed derivative. Similarly, a client could hold hedges that are themselves listed on a foreign market (e.g. index future vs. underlying stock futures). The valuation used by JSE Clear could be very different to the valuation used to unwind the underlying OTC position or the foreign listed position. This results in real (and unnecessary) market risk to the TM/CM, which, in extremis, could impair the CM and unnecessarily create systemic risks for the market more generally.

Furthermore, under the current model, should a CM be proactive and act in respect of a defaulting client's market orders or positions held at the CCP, it would breach JSE Clear's rules and expose itself to legal action and associated liabilities. Arguably the CM is in the best position to assess the inherent impact of its client's default and to act accordingly. Furthermore, the CMs own trading and treasury desks are well placed, perhaps better than CCP's, to trade out the client's positions.

4.1.2. Asymmetry in the Treatment of, and Rights to, the Collateral of a Defaulted Client

Upon the default of a client, positions are transferred to the proprietary account of the associated TM/CM at a valuation determined by JSE Clear. This valuation is used to determine a final margin movement between JSE Clear and the defaulted client (via the TM/CM). The CM then returns any residual collateral to the administrator of the defaulted client.

There appears to be two areas of asymmetry in the manner in which the client receives returned collateral. First, if the transfer prices applied to the client's positions results in any net profit, this profit is added to the collateral already held and returned to the client. However, if the transfer prices result in a net loss against the client's previously collateralised position, then the TM/CM are liable.

Second, if the transfer prices (regardless of accuracy) versus the traded prices achieved by the TM results in a net profit, this must be returned to the administrator of the defaulted client. Inversely, if the TM's activities result in a net deficit in the client account, the TM/CM needs to absorb this deficit with their only recourse being to make a legal claim against the client's estate. CMs believe that, if this approach is to be maintained, in such a scenario any net profits (resulting from initial mark-to-market using the prescribed prices or from subsequent unwinding of positions) should be available to offset their losses.

4.1.3. TMs and CMs Precluded from Netting All Exposures Against a Defaulted Client

Currently, TMs/CMs trade extensively with clients across domestic and foreign-cleared derivatives, uncleared or OTC derivatives, cash instruments and other asset classes. The agency model operated by JSE Clear prescribes the timing of actions and prices used in managing a client default, which means that a TM/CM cannot view its exposure to a single counterparty's overall positions holistically and manage these accordingly, but rather must margin the JSE

cleared portfolio independently from other exposures to that client. This, by definition, is a less efficient way for the TM/CM to risk manage their exposures to the client and consequently constrains activity in the market.

4.1.4. Segregation Model Precludes CMs from Providing (and Clients Benefitting from) Collateral Transformation services

The current agency model at JSE Clear requires that all collateral is in the form of ZAR cash only. Many clients hold other high-quality, liquid assets that are fundamental to their portfolio. It would be very beneficial to all market participants if TMs/CMs could receive high-quality assets from clients and fund the client margin call (IM only) with different securities that are acceptable to the CCP. This would allow an equity asset manager to collateralise with cash alternatives such as equities or a macro fund with a basket of bonds for example, rather than having to keep large amounts of cash within their investment portfolio.

There are many factors to consider within this area, primarily; legal ownership of collateral posted to JSE Clear (is it the client's asset?), rehypothecation rights of the CM and portability of collateral associated with client positions in the event of CM default.

4.1.5. Acceptable Forms of Collateral at JSE Clear

At present only ZAR cash is accepted by JSE Clear as collateral for funding DF contributions and initial and variation margin. It is understood that CMs can accept non-ZAR cash collateral from their clients, and in offering this service, manage the operational impact of transforming such collateral to ZAR cash.

It is understood that ZAR bonds will be included as eligible collateral later this year for initial margin and possibly default fund contributions. Variation margin will remain ZAR cash only, which is standard practice across the industry.

Lodging ZAR bonds as collateral, now by the client to the CM, or later to the CCP by the CM, appears to be a relatively straightforward and transparent exercise involving the movement of assets between accounts in Strate. However, depending on client behaviour it can be operationally intensive: frequent deliveries and withdrawals including substitutions can make providing this process unappealing for a CM. CMs could likely provide a more appropriate (and tailored) solution to clients if the JSE Clear rules allowed them greater flexibility both in terms of acceptable instruments and legal structure surrounding ownership of collateral (as detailed above).

CMs would, in general, like to see the list of eligible collateral extended further to provide greater flexibility, in particular to include cash equities and collective investment schemes, with appropriate haircuts. Whilst such options exist at some other CCPs, the extent to which they are used is limited given the operational overheads and haircuts that apply.

4.1.6. Transparency of End Client Positions and Status

Under the prevailing agency model in which client positions and collateral are segregated, it is understood that JSE Clear has a real-time view of all clients' positions in listed instruments. The point at which JSE Clear becomes aware of a potential, or actual, default of an end client is less clear. A failure to meet a margin call does not, in most circumstances, mean that the client is or is about to default. More often than not, operational, technical or very short-term liquidity issues are the cause, and the CM's relationship with its client resolves these matters to the CCP's satisfaction.

In any event the CM will have real-time transparency of all its clients' positions in listed instruments (and OTC positions), be aware of any market orders, and have first-hand

knowledge of any potential issues, arguably placing them in the best position to manage matters accordingly. The CCP can also take comfort in knowing that the interests of the CM (under the current agency model they are counterparty to all their clients' positions) are fully aligned with the CCP's in minimising losses and avoiding broader/systemic risks.

It is also worth noting that the end client, the ultimate beneficiary of the positions held, may not be the CM's direct client but that client's own client. MSP's analysis of other major markets will show that other CCPs, operating under both principal and agency clearing models, leave the management of a defaulting client's positions entirely to its CM.

4.1.7. Porting of Defaulting Entities Positions and Transactions

The ability to port a client's assets, and more so a defaulting CM's client's positions, needs to be supported under the CCP's rules. An agency model (and there are several variations of such) is generally intended to support the porting of defaulting client's or CM's positions and collateral. However, the inability of a client to have two CMs active in the same asset class with JSE Clear means that porting collateral and positions in the event of a CM default would be, at best, a slow process (possibly taking weeks). This time delay makes porting extremely unlikely.

4.1.8. Pre-Trade Risk Checks

Although not strictly related to clearing models, stakeholders raised some concerns about the absence of pre-trade risk checks in the South African market.

Pre-trade risk controls are used in many markets by TMs and CMs to limit the value of individual orders entering each entity's system or to limit the value of a client's particular or overall positions. The sophistication of such features (e.g. trade level, position level, real-time adjustments) varies between participants and exchanges but is available across all asset classes that are traded electronically and can be applied differently to individual clients. Such controls are designed to prevent 'fat finger' orders, concentration risk and the overall size of a client's positions. The technology used is generally made available for use by the exchange to its members and clearing members who can in real-time set, at a client account level, limits related to the value of orders and size of positions. If such limits are breached, then the client's order would be prevented from being sent to the order book.

According to interviewees, TMs in SA trading the cash equity market perform pre-trade checks on certain (non-institutional) clients to ensure sufficient cash or shares are resident to support the order. Institutional clients are not generally checked in the same way, and a broker cannot be certain as to its client's intra-day open interest in listed derivatives (as a client can use more than one broker to execute trades and have these given up during that day to the client's CM). The increasing prevalence of HFT activity (~40%) in the equity markets and the absence of pre-trade risk checks is believed to expose the overall market to significant risk.

4.2. OWNERSHIP/GOVERNANCE

All market participants interviewed (except JSE-owned entities) raised concerns about the JSE's 100% ownership of the newly independent CCP and questioned what "independent" means in the context of JSE Clear remaining a 100% owned subsidiary of JSE. The broad implications are:

- CMs felt this gave them less ability to help determine and design the optimal rules and technology solution for the current and any future market, particularly if systems or rules must be changed at a cost to the JSE.
- Stakeholders raised the issue that JSE's 100% ownership of JSE Clear, and the forced use of JSE's Broker Dealer Accounting (**BDA**) system to process equity trades, inhibits

potential competition and creates unnecessary frictional costs to help competitors get off the ground.

  - All stakeholders are extremely supportive of competition in trading, but many acknowledged that it was hard to bear the current costs involved to actively to support new venues.
  - BDA is perceived to be an outdated and universally disliked system though some participants wanted to point out that it plays a valuable role in the market that cannot easily be dismantled.

- Most participants feel that the SA markets are not large enough to justify an additional CCP for listed derivatives or cash equities and cited some detailed exercises have been undertaken in the past to consider this.

4.3. COMPETITION

4.3.1. Competition in the Equity Market

A2X's ability to compete with the incumbent JSE is restricted by two key elements: first, it must obtain approval from each company to make their shares available for trading (unlike the European MTF model and equivalent US model); and second, under the JSE's rules, all brokers must use the JSE-owned back-office BDA system to process all equity trades. The latter situation has changed recently, such that brokers can now utilise BDA to process their A2X trades. This is an important development that will hopefully over time, and to universal agreement, support users' best execution requirements by equalising post-trade costs.

However, any venue that wishes to compete either in current or new products in competition with JSE must share its plans with JSE Clear, which is not in their minds "independent" from the JSE. Nor is it clear that the JSE is likely to incentivise JSE Clear to support competing business models. JSE Clear's lack of independent ownership remains a hurdle for the creation of real competition.

The largest SA companies are also cross-listed on international exchanges and traded as ADRs in the US and GDRs in London, Singapore and Luxembourg. Liquidity in these lines is reasonable and enables international participants to utilise familiar infrastructure and existing contractual arrangements.

If the cash equity market ends up being centrally cleared (see below), then the SA market may also want to consider the efficacy and benefits of the centralised clearing of CFD business.

4.3.2. Competition in Listed Derivatives

The value of a listed derivatives franchise lies predominately in its open interest, as this provides a measure of utility as well as the obstacle that would need to be overcome by any competitor that may seek to enter the market. As a result, owning and controlling the use that is made of the CCP has been an important feature of most major markets over the last twenty years. Even regulations that have sought to facilitate competition, notably Europe's proposals for open access, have been frustrated by the exchanges' control of their CCPs, inhibiting them from supporting competing venues. This has been most evident in Europe where ICE and Eurex have dominated the clearing of exchange listed, rate-related derivative products at the short and long end of the Euro yield curve respectively, and whose owners have effectively prevented competition from challenging these businesses.

The most successful example of a user-owned and controlled CCP is arguably the Options Clearing Corporation (**OCC**). By owning the IP in the equity option contract specifications traded on multiple options markets in the US, OCC clears all these markets thus supporting competition and providing efficiencies through fungibility of contracts to the venues and their

users. Over the last few years OCC's user owners have sold down their stakes to the exchanges, perhaps as result of the investment now needed into OCC's technology/clearing platform.

4.4. EXPANSION OF CCP SERVICES TO CASH EQUITIES AND BONDS

There are mixed views across all the stakeholders as to whether cash equities and/or cash bonds should be cleared and in what order of priority.

Some participants favour the clearing of equities because:

- The majority of equity markets around the world are now cleared.
- A CCP would remove the need to use BDA, which is seen to be an unnecessary system for some brokers who can handle their own back-office accounting and it is seen as ageing technology.
- As counterpart to every trade netting compression of settlement obligations including across exchanges and the OTC market would be possible.

The STP benefits inherent in a cleared model (e.g. shaping and partial settlement, and reporting and trade reconciliation) would streamline operational processes and enhance competition between trading venues. The extent to which the CCP's counterparty risk management is seen as a benefit depends on the settlement window, margin rates applied and any impact on the default fund arrangements at JSE Clear.

Participants unsure of the benefits of a CCP-cleared equity market are concerned about the impact on smaller to medium-sized brokers. Those servicing both 'controlled' and 'un-controlled'[13] clients would want to establish suitable liquidity arrangements to meet the associated CCP margin calls, whilst the extra costs associated with clearing fees and CCP fees will again be new to the end users. A related concern is that the collateral requirements resident within a cleared market may strengthen the position of the larger banks at the expense of smaller to medium-sized brokers. Analysing a cleared market's influence on competition should be part of any business case analysis. Such concerns have been overcome in other markets, but these generally exhibit greater trading volume so delivering material post-trade risk, operational and settlement efficiencies.

A key dynamic in any decision to clear the equity market is likely to be the relationship then between JSE, JSE Clear and competing venues. A decision to clear equities could result in JSE being mandated by the regulator to offer JSE Clear's services to other venues on fair, reasonable and non-discriminatory (**FRAND**) terms. In the interests of best-execution for clients and competition, venues may present compelling reasons why they would be unable to use JSE Clear whilst controlled by JSE. This could lead to an amended governance structure for JSE Clear and broader oversight and control over equity clearing to satisfy competing exchanges' concerns, e.g. pricing of clearing and the prioritisation of service developments.

The clearing of cash bonds presents different dynamics as they do not utilise the BDA system, are traded less frequently but often in large size. One argument in favour of clearing bonds is that activity on the electronic trading platform, MTS, could increase if the order book were cleared. The current anonymous central limit order book operated by MTS means trade counterparties need to accept bilateral risk to unidentified counterparts which may be constrain activity. A big problem with clearing bonds is the sheer breadth and frequency of issuance so making it very difficult for the exchange and its CCP to ensure up to date coverage, whilst omitting segments of the market would leave the market bifurcated.

[13] A controlled client is one where the broker validates that the client has the cash or securities to execute the order prior to submitting the order to the market. An uncontrolled client does not undergo a validation process. A broker determines whether a client is controlled or un-controlled.

Participants are collectively of the view that the SA markets are not large enough to justify an additional CCP for listed derivatives or, if cleared, cash equities. As such the expansion of JSE Clear's services presents the most realistic outcome, albeit one with genuine concerns over the impartiality of JSE Clear and the ceding of more control and influence to JSE.

4.5. CLEARING OF OTC TRADES

Following the Financial Crisis of 2008, resulting from the failure to suitably collateralise counterparty exposure to a range of instruments (many of which were difficult to price precisely), regulators across the world collaborated to introduce regulations to mitigate against, if not outright prevent, a repeat. This resulted in BASEL III liquidity and capital adequacy requirements and the mandatory clearing (or penal margin requirements) of OTC activity in a range of products. The CFTC's rules now require certain classes of credit default swaps and interest rate swaps to be cleared by derivative clearing organisations (**DCOs**) registered with the Commission. Whilst in Europe, the European Market Infrastructure Regulation (**EMIR**) includes the obligation to centrally clear certain classes of OTC derivative contracts through CCPs. For non-centrally cleared OTC derivative contracts, EMIR imposes further risk mitigation requirements.

As a member of the G20 and with the roadmap already outlined by the FSCA, the clearing of OTC instruments in SA looks to be inevitable within the next few years and participants are anticipating change.

A clear distinction needs to be made between OTC trades that are considered to arise on-exchange but off-book, and OTC trades that remain off-exchange. The former is generally considered to comprise large or structured strategy (multi-legged) trades in underlying listed instruments that are presented to the exchange for validation, which then flow through to the CCP as fungible contracts that form positions alongside those traded on the exchange's order books. The latter are bespoke/tailor-made contracts in which the underlying exposure and/or duration differ from listed instruments. These are negotiated between counterparties and could be submitted to a CCP for clearing, as is the case today for ZAR interest rate swaps cleared at LCH. The CCP takes on the important element of pricing such positions on an ongoing basis and collateralising these positions accordingly. LCH's SwapClear and RepoClear services are prime examples, as are the various Credit Default Swap (**CDS**) services provides by the likes of ICE Clear and LCH's CDSClear.

Independent pricing, risk management and the transposition of bilateral to multi-lateral positions are all important benefits of OTC clearing to market participants and their clients.

Of importance to the SA market is to ensure that should the regulators mandate clearing of the OTC ZAR interest rate swaps, that they remain able to clear such swaps with international CCPs like LCH. Furthermore, whatever clearing model JSE Clear deploys has to be able to support the clearing of listed and non-listed instruments.

5. COMPARISON OF RELEVANT INTERNATIONAL MARKET STRUCTURE WITH SOUTH AFRICA

In order to provide some context to the markets and clearing models reviewed and discussed in the next Chapter, as well as to provide some background to the broader issues raised by participants, this Chapter briefly summarises the main market structure characteristics of the international markets (US, Europe, the UK, Canada and Australia) reviewed for this report and compares them with those of the South African Market. (Details for each market are given in the Appendices (US: Appendix 6; Europe and the UK: Appendix 7; Canada: Appendix 8; Australia: Appendix 9).

Please note the key for South Africa comparisons through the Study is as follows:

Green: No Concerns		
Strong similarities	Mostly similar	No similarities but being addressed
Red: Level of Concern		
SA is an outlier, and the risk is significant	SA is an outlier, and the risk is medium	

5.1. LEGISLATION & OVERSIGHT

Generally, each national market has single cornerstone legislation for financial markets and a single regulator, working in tandem, where applicable, with its domestic central bank, dealing with the authorisation and oversight of exchanges and CCPs in their jurisdiction.

However, the size of the market or region does give rise to some variations:

- Firstly, in the US there are two different pieces of legislation; one in relation to securities (including equities and equity options), and the other in relation to commodity futures. Each empowers a different regulator. The former empowers the Securities and Exchange Commission (**SEC**), the latter empowers the Commodity Futures Trading Commission (**CFTC**).
- Secondly in Europe, the relevant financial markets laws have developed as a single over-arching piece of regulation, which is then implemented by each market and overseen by the domestic regulator, known as the National Competent Authority (**NCA**). There is also a pan-European regulator, the European Securities Markets Authority (**ESMA**), which works with the NCAs across Member States to foster supervisory convergence. It also works with other pan-European supervisory authorities such as the European Banking Authority (**EBA**).
- Finally in Canada, where there are 13 provincial and territorial governments and, to achieve a harmonized approach, the regulators across the provinces work under an umbrella organization; the Canadian Securities Administrators (**CSA**). The CSA establishes an agreed statement of rules known as *National Instruments* and these are adopted and implemented by law in each of these provinces and territories. Each province or territory may also have its own additional laws and oversight agencies.

SOUTH AFRICA COMPARISON	SA also has similar cornerstone legislation that sets out requirements for market infrastructures including CCPs. The Central Bank and FCSA co-operate on CCP oversight.	

5.2. CASH EQUITY & BOND MARKETS

5.2.1. Exchanges

All equity markets have traditionally been dominated by one national incumbent exchange except in the US where two exchanges, NYSE and NASDAQ, had a stronghold on different aspects of the market for an extended period. However, multiple venues now compete for equity trading flow in all markets except Australia where there is limited competition, mainly only from one other trading venue. However, it is gaining meaningful market share.

SOUTH AFRICA COMPARISON	SA has a dominant equities exchange with nascent competition from other venues which have yet to gain meaningful market share.	

5.2.2. CCPs

Equities and some bonds that are traded on-exchange are cleared through CCPs in all markets reviewed. This has facilitated the above-mentioned competition between equity exchanges and alternative trading venues. The fact that it has been easier to create competition in equity markets means that the need to solve access to CCPs has had greater urgency. Clearing is undertaken through a combination of vertical and horizontal models but, where vertical models are in place, fair access rules have made it easier for competing exchanges to access the incumbent CCP.

Horizontal Industry-Owned Model

In the US, equity market (and bond) clearing is performed by the Depository Trust and Clearing Corporation (**DTTC**), a not-for-profit, industry-owned utility. This means that all venues feed trades to the same CCP and the cost of clearing is homogenous, regardless of the venue chosen for trading. The users also have control over the cost of clearing. The US equity option markets also use a single CCP, OCC, which is owned jointly by the participating exchanges.

Fair Access Provisions

In Canadian and Australian equity markets, multiple trading venues have no choice to date but to link to the single CCP run by the competing incumbent exchange. This gives rise to some competition and fair access issues, which are being managed through a code of practice or fair access clauses established by the regulators. The Australian market has developed a code of conduct for equity CCPs to enable competition at a trading level which includes user input into governance, transparent and non-discriminatory pricing and access and the protection of confidential information of users. Canadian regulation stipulates more broadly that a clearing agent (which includes CCPs) cannot unreasonably prohibit, condition or limit access by a person or company to the services offered by the clearing agency, which could be applicable to both equities and other asset classes. The cost of clearing is the same regardless of where the transaction occurs as there is only one CCP, but it is run on a for-profit basis.

A Combination of Vertical and Voluntary Models

In most European equity markets the CCP function has traditionally been performed within a vertical silo in which the CCP is a wholly owned subsidiary of the incumbent exchange where the equities are listed. However, the clearing of equities has evolved as markets have become more pan-European rather than dedicated to a national market, and a broader combination of vertical and horizontal models now exist.

When competition first arose in equity markets, tension was created as the new trading venues needed access to the CCPs run by the incumbent exchanges with which they were competing. Initially, a voluntary code of conduct was created to ensure that the CCPs gave access to the

new platforms, but ultimately, sufficient competition in clearing was created by new CCPs and a voluntary system of interoperability (described below) was developed. Not all incumbent CCPs have chosen to interoperate with other CCPs, and some have remained vertical models only. Each CCP may charge differently for its clearing services. This gives rise to different costs depending on where both trading and clearing takes place.

Interoperability for Equity Markets

CCP interoperability, is the term given to the model in which one or more exchanges offer participants the choice of clearing their trades through one or more CCPs. The model is designed to drive competition at both exchange and CCP level. It has been very successful in the trading and clearing of European cash equities where 'open interest' is very short-dated, and the settlement obligations reside between the CM and the participants prior to settlement and then in the domestic CSD.

The very nature of the interoperable model requires the exchange to direct trades at a customer account level to the client's selected CCP. As such, the interoperable CCPs become counterparties to each other when a trade is executed between two firms clearing through different CCPs. This inflates the number of actual net settlements and imposes collateral obligations on the CCPs themselves (thereby acting like 'Super' CMs). Whilst the individual CCPs can draft their own rules and operational procedures, set their own margin levels and their own fees, the model also requires considerable collaboration between the exchanges and CCPs to ensure harmonisation where necessary (e.g. operational hours, settlement finality/fails management) and to avoid conflicts between the CCPs' rulebooks.

The number of clearing participants is large across in each cash market reviewed.

SOUTH AFRICA COMPARISON	1) SA has no central clearing of equities or bonds. JSE is the only exchange that provides a back-office accounting system for equity markets.	●
	2) As it has no CCP, there has been no move to create fair access provisions to the CCP, but fair access could also be created for BDA.	◑
	3) SA market participants do not get the same level of post-trade efficiencies as their peers in other markets.	◑

5.3. LISTED DERIVATIVE MARKETS

5.3.1 Exchanges

Outside of the US, all markets have one dominant, domestic listed derivatives market, which is usually operated under the same exchange group that operates the equities market. In the US, the (non-equity option) listed derivatives exchanges have developed separately from the equities exchanges, and there are two dominant exchange groups, CME and ICE. These two exchanges now operate internationally in all the markets reviewed but none of these listed derivative exchanges compete with each other, except in so far as they might offer lookalike products.

5.3.2 Clearing & CCPs

The clearing of listed derivative markets is undertaken in vertical silos by the respective exchange where the product is listed and traded, and the clearing house is 100% owned and

controlled by the parent exchange group. This has caused tension when other trading platforms or CCPs wish to try and compete for the same flow.

CCP interoperability for derivatives has always been resisted by the main CCPs, whose owners, for various reasons, do not want to support a competitive environment. Whilst there are no IP issues preventing an exchange from "admitting to trading" contracts that mirror another exchange's (with the exception of index-based derivatives), the perceived difficulty in moving open interest to a new CCP has in all cases failed to attract the necessary support of sufficient market participants to achieve any material or even medium-term success. Over time several exchanges have tried, e.g.: LIFFE to regain the Bund/Bobl/Schatz; Eurex to attract Euribor; Rainbow (a consortium of the largest clearing brokers) to attract Eurex and LIFFE business; and TOM (the Dutch exchange targeted Euronext's Dutch equity derivatives).

Apart from not wanting to have contention for their markets, the issues associated with clearing longer duration derivative (leveraged) instruments across multiple CCPs does present significant risk and operational issues that would need to be overcome, e.g. margin calculations, default management, options exercise, settlement pricing and physical delivery.

In Europe, LIFFE/LCH lost the Bund contract to Deutsche Terminbörse (now Eurex) for a variety of reasons: post-monetary union LIFFE's multi-bond derivatives franchise in Italian, Swiss, French, German, Spanish and UK bonds being reduced to EU, Swiss and GBP denominated instruments; the German authorities changing the tax treatment of repos; UK regulators seeking to support screen trading; the escalating cost of LIFFE's members' floor teams; and, perhaps most importantly of all, the main industry participants wanting to avoid one exchange (LIFFE) from monopolising trading across the whole Euro rate curve. German government bonds traded predominately in the front month contracts and open interest was traded out on LIFFE and opened on the DTB over a period of 6 to 12 months.

Open interest has also been transferred directly from one CCP to another in situations where an exchange has established its own CCP and chosen to redirect its trade flow and move open interest. The most recent examples of which are in London where the LME, LIFFE and the CME (having bought the IPE) migrated open interest away from LCH to their own respective CCPs.

SOUTH AFRICA COMPARISON	All listed derivatives in SA trade and clear on JSE markets.	

5.3.3. Competition and Fair Access

The EU is the only jurisdiction that has tried to address competition in derivatives trading and clearing with an open access regime enshrined in the law aimed at creating competition. Under those provisions, trading venues and CCPs may only deny access where the operational risk and complexity arising from granting access would cause undue risk and trading venues and CCPs are expected to put in place processes to assess any open access requests against such risks. However, there has been continuing resistance to this and no successful examples of open access have arisen. Policymakers are now considering repealing the open access regime.

SOUTH AFRICA COMPARISON	SA has one dominant exchange for listed derivatives and no open access provisions.	

5.3.4. Number of Clearing Participants

Each international listed derivative CCP has attracted a significant number of domestic and international members. Australia is the closest market in comparison of scale with South Africa and has 16 members.

SOUTH AFRICA COMPARISON	The SA market has a very concentrated number of CMs, and it needs to attract further international participants to help grow the market.	

5.4. ALGORITHMIC TRADING AND PRE-TRADE RISK CONTROLS IN ELECTRONIC LISTED MARKETS

Algorithmic trading now accounts for a significant part of trading in all reviewed listed markets, including equities, options and listed derivatives. Algorithmic market makers access markets directly as members or, often outside of their home markets, indirectly through local members.

The impact of misleading or erroneous information on fast moving, large volume, electronic markets was highlighted by a high-profile "flash crash" in the US in 2010. Following this, regulators in all the markets reviewed, addressed the risks by creating regulation to ensure that market participants have appropriate risk controls and filters to mitigate market disruptions and anomalies.

SOUTH AFRICA COMPARISON	No legislation or regulation is in place that requires pre-trade risk controls, nor are these provided to TMs or CMs, the exchange or CCP.	

5.5. OTC DERIVATIVES

All markets reviewed now have mandated clearing of certain interest rate and credit default swaps (**IRS** and **CDS**) (see section 6.3 for more information about mandated clearing of OTC derivatives). Generally, the incumbent exchange/s in each market is/are offering a service for the clearing of these derivatives and competing with other international incumbent exchanges that have also started operating in each jurisdiction. As such, there is significant competition between international CCPs (CME, ICE, LCH and Eurex) for the clearing of OTC trades, especially interest rate swaps and some credit default swaps.

Competition is supported by the fact that the banks, who originate most of such trades, essentially control the trade flow and hence have the ability, together with their clients, to determine where they clear such business.

Competition on an international basis has been facilitated by the concept of equivalence (see Section 5.6 below).

Each international OTC derivative CCP has attracted a significant a large number of domestic and international members.

SOUTH AFRICA COMPARISON	SA does not yet have mandated clearing of OTC derivatives. With only one CCP, there would be no competition if these instruments cleared domestically.	

5.6. CCP EQUIVALENCE

As described above, CCPs operate under the regulations and laws prevailing in their jurisdiction of operation. These laws and regulations collectively provide the basis on which CCPs define their rules.

All markets in this Study have a concept of equivalence where a CCP in one jurisdiction can offer its services in one or more foreign jurisdictions and be exempted from recognition in the foreign market jurisdiction, as long as it is subject to a regime considered comparable to that of the other market. A CCP wishing to provide its services in, or to clients resident in, one or more foreign jurisdictions will remain primarily regulated by its National Competent Authority (**NCA**) and will look to obtain further regulatory approvals to operate elsewhere. However, if it is deemed to be systemically important in the foreign market then it may be required to apply for full recognition and be subject to the regulations of overseas jurisdictions where it has been authorised to provide clearing services.

Different jurisdictions recognise and approve (or do not object to) the use of an international CCP using different approaches. For example, the EU's EMIR regulations include recognition and equivalence provisions, whilst the US regulators vet and approve overseas markets (and associated CCPs) under their Designated Contract Market/Derivatives Clearing Organisation (**DCM**/**DCO**) regimes.

The best examples of this are in the EU where CCPs are regulated by their domestic NCA but must conform with EMIR regulations/standards and accept further oversight by ESMA, and in the US where international CCPs need to obtain CFTC and/or SEC approval to provide their services to US customers.

As a result, international CCPs work closely with multiple regulators to ensure compliance and influence future developments. Regulators generally seek to be pragmatic and accepting of a CCP's need to operate in accordance with its own jurisdictional legislation and bankruptcy/insolvency laws. It is noted that in Australia, the operation of a UK-based CCP for OTC derivative clearing has created some bilateral credit risk for market participants because it is not open during the entire working day. The Australian Central Bank has requested changes to the operating hours.

All CMs enter into a clearing services agreement (or equivalent) with its CCP and are bound by the CCP's rules. End clients enter into a clearing agreement with their CM that often incorporates certain provisions specified for inclusion by the CCP but does not result in a contract between the client and the CCP. CMs' clients can be, and often are, incorporated and/or operate in a different jurisdiction to the CCP.

SOUTH AFRICA COMPARISON	SA does not have the concept of equivalence but is preparing to introduce it.	

Figure 6: Summary Comparison of Key Factors in International Markets with South Africa

	US	UK/Europe	Canada	Australia	South Africa
Equity Trading	• Two major exchange groups. • Broad competition from other trading venues.	• National incumbent exchanges dominate their own domestic markets. • Broad pan-European competition from other trading venues.	• National incumbent domestic exchange has large market share. • Broad competition from other trading venues.	• National incumbent domestic exchange has large market share. • Limited competition - one other trading venue but gaining market share.	• National incumbent domestic exchange dominates the market. • Limited competition.
Equities Cleared through a CCP	✓	✓	✓	✓	✗
Equity Clearing Model	• **Single** CCP for equity options and cash equities, the latter run as an industry-owned utility.	• **Combination** of horizontal and vertical models with voluntary inter-operability • All CCPs run for profit.	• **Single CCP** run by national exchange group as a for-profit entity. • Clears for all trading venues.	• **Single** CCP run by national exchange group as a for-profit entity. • Clears for all trading venues.	n/a
Fair Access Provisions/Code of Conduct for Access to Equity CCPs	✓	✓	✓	✓	✗ (For BDA)
Listed Derivative Trading and Clearing	• Two major for-profit exchange groups for listed derivatives: CME and ICE. • Each exchange runs a vertical model for trading and clearing.	• National incumbent exchanges dominate certain markets, e.g. Eurex. Other international exchanges dominate other products e.g. ICE. • Each exchange runs a vertical model for trading and clearing.	• Dominated by a single national incumbent: TMX Group. • Run in a vertical model for trading and clearing.	• Dominated by a single national incumbent: ASX. • Run in a vertical model for trading and clearing.	• Dominated by a single national Incumbent: JSE. • Run in a vertical model for trading and clearing.

		US	UK/Europe	Canada	Australia	South Africa
OTC Derivative Clearing		• Competition between the major US derivative exchange groups, CME and ICE, as well as LCH Ltd SwapClear.	• Competition between national exchange groups (mainly Eurex), ICE and LCH Ltd SwapClear.	• Competition between CDCC ICE and LCH Ltd SwapClear.	• Competition between ASX (Futures), ICE and LCH Ltd SwapClear.	• N/A
Number of Clearing Members	**Cash Equities /Bonds /Options***	• DTCC/NSCC: 168 • OCC: 186	• Cboe Clearing Europe (FKA EuroCCP): 14 • LCH Ltd: 32 • LCH SA: 49 (equities)/ 86 (Bonds)	• CDCC: 28 (Options) • CDCC: 19 Fixed Income	• ASX Clear (Equities): 36 • ASX Clear (Options): 26	• N/A
	Listed Derivatives*	• CME: 67 • ICE Clear: 33	• Eurex Clearing: 31 DCMs and 45 GCMs • ICE Clear: 70 •	• CDCC: 28 (Futures)	• ASX Clear (Futures): 16	• JSEClear: 7
	OTC Derivatives (Interest Rate/Credit Default Swaps)*	• CME: 28 • LCH: 59 • ICE: 29	• LCH Ltd (SwapClear): 59	• LCH Ltd: 59	• ASX Clear (Futures):8	• N/A
Exchange Group Ownership		Publicly listed	Publicly listed	Publicly listed	Publicly listed	Publicly listed
Equivalence		✓	✓	✓	✓	✗
Pre-Trade Risk Controls Required		✓	✓	✓	✓	✗

**Source: CCP websites*

6. COMPARISON OF INTERNATIONAL CLEARING MODELS AND BEST PRACTICES WITH SOUTH AFRICA

This Chapter discusses the evolution of clearing in the US, EU, UK, Canada and Australia since the crisis. It introduces the G20 Principles for Financial Market Infrastructures and compares the models that have developed for exchange-traded and OTC transactions at the major CCPs in each jurisdiction with that of South Africa.

6.1. INTRODUCTION

Over time, and particularly since the 2008 financial market crash, all international CCPs analysed have enhanced their operations, risk and collateral management systems, rules, and processes to meet the increasing demands of domestic and international regulators. These have focused on minimising the impact of the default of any CM on its clients, the market on which it operates and the broader financial system.

This Study focused on the national/regional legislation and operations and rule books of the largest CCPs operating in each jurisdiction. (See full market details in the Appendices. US: Appendix 6; Europe and the UK: Appendix 7; Canada: Appendix 8; Australia: Appendix 9).

Whilst not commoditised, there are now many similarities between the clearing services provided by CCPs across differing jurisdictions and asset classes, e.g. the provision and nature of individually segregated accounts (**ISA**) and omnibus segregated accounts (**OSA**) (the latter being akin to the legally segregated operationally comingled (**LSOC**) account regime in the US). Indeed, the UK and European markets are expected to evolve towards the US agency clearing model particularly in relation to the clearing of OTC trades.

Whilst domestic legislation and regulations largely determine the CCP's segregation and default management model and their underlying rules, the sophistication of their clearing technology, customer demands and commercial factors can also influence the clearing model's functional requirements.

All international CCP clearing models impose an ongoing obligation on the CM to meet all margin calls with failure to do so potentially leading to the CM being declared in default. CMs meet this requirement by calculating and calling collateral from their clients at least to the value of their back-to-back obligation to the CCP, regardless of whether the CM's clients are operating under an individual or omnibus segregated account model.

6.2. THE INTRODUCTION OF THE G20 PFMIS

Immediately following the 2008 Financial Crisis, the global derivatives industry was subject to scrutiny from regulators that led to several changes in CCP clearing models. Such changes sought to reduce systemic risks whilst protecting clients through position/collateral segregation and ensuring effective portability arrangements. Perhaps most importantly, given the factors that led to the crash and the underlying size of the respective markets, regulators moved to ensure greater trade and position transparency and reporting, and the central counterparty clearing of certain standardised OTC derivatives.

As a result, the G20 committed to centrally clear standardised OTC derivatives by 2012. This led the Committee on Payment and Settlement Systems (**CPSS**) and the Technical Committee of the International Organization of Securities Commissions (**IOSCO**) to review and update an

agreed broad set of Principles[14] that should be followed by Financial Market Infrastructures (**FMIs**); to increase the soundness of CCPs and ensure that markets continue to operate smoothly in times of stress.

FMIs include central counterparties, alongside other market infrastructures such as exchanges and central depositories. A subset of the standards that a CCP should have in place that are relevant to the core subject matter of this report are provided below.

Figure 7: Brief Explanation of the PMFIs Relevant to CCPs And This Report

Principle (P)	Brief Explanation of the Requirement
Legal Basis (P1)	• A well-founded, clear, transparent, and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions.
Governance (P2)	• Governance arrangements that are clear and transparent, promote the safety and efficiency of the FMI, and support the stability of the broader financial system, other relevant public interest considerations, and the objectives of relevant stakeholders.
Framework for the Comprehensive Management of Risks (P3)	• A sound risk-management framework for comprehensively managing legal, credit, liquidity, operational, and other risks.
Credit and Liquidity Risk Management (P4)	• Effective measurement, monitoring, and management of its credit exposures to participants. • Sufficient financial resources to cover its credit exposure to each participant fully with a high degree of confidence. • CCPs with a more complex risk profile or that is systemically important in multiple jurisdictions should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios.
Collateral (P5)	• Where collateral is required to manage its or its participants' credit exposure, a CCP should accept collateral with low credit, liquidity, and market risks. It should also set and enforce appropriately conservative haircuts and concentration limits.
Margin (P6)	• A CCP should cover its credit exposures to its participants for all products through an effective margin system that is risk-based and regularly reviewed.
Liquidity Risk (P7)	• Sufficient liquid resources should be maintained in all relevant currencies to effect same-day and, where appropriate, intra-day and multi-day settlement of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would generate the largest aggregate liquidity obligation for the FMI in extreme but plausible market conditions.
Participant Default Rules and Procedures (P13)	• Participant-default rules and procedures should be clearly defined to manage a participant default. These rules and procedures should be designed to ensure that the CCP can take timely action to contain losses and liquidity pressures and continue to meet its obligations.

[14] https://www.bis.org/cpmi/publ/d101a.pdf

Segregation and Portability (P14)	• A CCP should have rules and procedures that enable the segregation and portability of positions of a participant's customers and the collateral provided to the CCP with respect to those positions.
Operational Risk (P17)	• The plausible sources of operational risk, both internal and external should be identified and mitigated through the use of appropriate systems, policies, procedures, and controls. Systems should be designed to ensure a high degree of security and operational reliability and should have adequate, scalable capacity.
Access (P18)	• There should be objective, risk-based, and publicly disclosed criteria for participation, which permit fair and open access.
Tiered participation arrangements (P19)	• Material risks arising from tiered participation arrangements should be identified, monitored, and managed.
Efficiency Principle (P21)	• A CCP should be efficient and effective in meeting the requirements of its participants and the markets it serves.
Disclosure of Rules and Key Procedures (P23)	• There should be clear and comprehensive rules and procedures and should provide sufficient information to enable participants to have an accurate understanding of the risks, fees, and other material costs they incur by participating in the CCP.

6.3. INTRODUCTION OF NEW REGULATION FOR MANDATED CLEARING OF OTC DERIVATIVES

With a few exceptions, the Principles do not prescribe a specific tool or arrangement to achieve their requirements and they allow for different means to satisfy a particular Principle. They also do not opine on principal or agency models.

However, they have been incorporated into newly created legislation related to the mandated clearing of OTC derivatives in all of the countries reviewed for this report:

- Europe, which at the time included the UK, introduced the European Market Infrastructure Regulation (**EMIR**) which regulates the reporting of OTC derivative contracts to trade repositories and the clearing of standardised OTC derivative contracts through a CCP.
- The US introduced the Dodd Frank Act which enhanced the CFTC's regulatory authority by creating new rules to regulate the swaps market.
- Canada introduced two concurrent laws: National Instrument 94-1012 which mandated central clearing of certain standardised OTC derivatives; and National Instrument 94-1023, the purpose of which is to ensure that the clearing of a local customer's OTC derivatives is conducted in a manner that protects the customer's positions and collateral and improves derivatives clearing agencies' resilience to default by a clearing agent.
- Australia introduced Derivative Transaction Rules[15] (Clearing) in 2015 to create a mandatory central clearing regime in Australia for certain OTC products.

[15] https://asic.gov.au/regulatory-resources/markets/otc-derivatives/central-clearing-of-otc-derivatives/

Proprietary IRS trades between members had been cleared voluntarily through LCH SwapClear since September 1999. This service was expanded to incorporate client clearing following the crisis of 2008. Regulators achieved this by mandating clearing of certain category of products, (e.g. credit default swaps (**CDS**) and interest rate swaps (**IRS**)), and/or making the capital implications of not centrally clearing such contracts prohibitive (e.g. under Basel II and Basel III). Under EMIR for example, end clients can achieve a lower risk weighting and hence lower level of required regulatory capital (2% v 20%) if they are protected by a look through to the CCP. Relevant in the context of the insolvency of a CM and only achieved if the client has elected an ISA.

The Dodd-Frank Act imposed a range of requirements that, due to the then prevailing regime for futures (e.g. the definition of commodity contract under the US bankruptcy code and CFTC rules) and loss mutualisation across clients, presented significant difficulties in the creation of a clearing model for OTC swaps that met regulatory requirements and that was not materially out of line with that which then existed for futures. These weaknesses were addressed through amendments to the CFTC rules or by Dodd-Frank statutorily, over the next two years.

SOUTH AFRICA COMPARISON	South Africa is the only market that has not yet mandated the clearing of OTC derivatives or incorporated these principles into its legislation but is preparing to do so.	

6.4. CLEARING MEMBER SUITABILITY & LEGAL ENTITY REQUIREMENTS

In all markets reviewed, CMs must meet specified CCP suitability criteria (set at a higher level for clearing OTC trades).

SOUTH AFRICA COMPARISON	In SA CMs are not required to be, nor are they, legally separated from their parent entities. As in other markets end clients contract with their chosen brokers (TMs) and chosen CM.	

6.5. CLIENT SEGREGATION

In the cleared markets reviewed, CCPs and their CMs offer clients the ability to clear their trades and margin their resulting positions using individual segregated accounts (**ISA**), omnibus segregated accounts (**OSA**), or, in the US and akin to OSAs, legally segregated operationally comingled (**LSOC**) accounts. The client's choice to use an available ISA, OSA/LSOC is specifically carved out here as it impacts the risk exposure and collateral obligations that fall on clients, CMs and CCPs across the markets reviewed. In most jurisdictions, CMs must make disclosures to their clients about the risks and benefits of the chosen structure.

To ensure clients have a choice of account structure, the provision of ISAs has in all cases become a regulatory requirement in relation to listed instruments, alongside the choice of existing OSA/LSOC and the full segregation of client assets and positions from the client's CMs. To offer the choice, CCPs have developed their systems, operations, agreements, rules and services accordingly.

In the international markets reviewed, clients have historically chosen OSA/LSOC more so for listed business and ISAs for OTC.

The counterparty risks inherent in the OTC market are perceived to be greater than those in the listed market where the value at risk is less, and derived from more transparently liquid, standardised contracts. Furthermore, under OSA/LSOC arrangements, clients share (proportionally) in the risks associated with another client of the same CM defaulting. This

mutualisation of loss can occur in the event of a CM default **and** the default of a client in the pool whose positions liquidate to a deficit. CCPs have less immediate transparency of end client positions under an OSA/LSOC model so tend to impose greater real-time record keeping and reporting responsibilities on CMs, the lack of transparency and the netting of exposure between CCP vs CM can also increase the frequency of intra-day calls.

Under all models, collateral posted by customers must be segregated at the CM and derivative clearing organizations (**DCO**)/CCP levels from the CMs' and DCO/CCP's assets and must be treated as customer property. In summary, the US regulations in this regard stipulate that:

- All customer funds for trading on designated contract markets (**DCMs**; exchanges) must be kept apart ('segregated') from the CMs, which are known as Futures Commission Merchants' (**FCMs**) own funds, this includes cash deposits and any securities or other property deposited by such customers to margin or guarantee futures trading.
- Segregated accounts must be titled for the benefit of the FCM's customers.
- Acknowledgements must be provided that would preclude a bank or clearing house from recognising a right of offset against the account for the FCM's debts.
- Customer funds in segregation have a bankruptcy preference in the event of FCM insolvency.
- To the extent that customer funds are not sufficient to pay customer claims, the remainder of what customers are owed will participate pro-rata in the distributions to unsecured creditors of the bankrupt FCM.

The CFTC rules for cleared OTC swaps require the clearing model to provide legal segregation with operational commingling (the **LSOC model**), also referred to as the full legal segregation model. Segregation at both the FCM and DCO levels is required just like the US futures model. FCMs are required to actively prevent, and thus enforce the prohibition of, DCOs from using a swap customer's property as collateral for another swap customer's swap contracts. In respect of LCH's CDS clearing service for FCMs, each FCM can hold only one LSOC Account.

SOUTH AFRICA COMPARISON	SA's regulations stipulate full segregation of client assets from the CM's but not the use of individually segregated or omnibus client accounts. JSE Clear provides the former but not the latter, so clients have no choice.	

6.5.1 Client/CM Default under LSOC/OSA

The collateralised assets delivered by an FCM to the CCP under the LSOC model, or indeed by a CM in the OSA models used by non-US CCPs in respect of client positions, are not attributed to particular clients. Furthermore, under the LSOC model, variation margin payments are settled net and are not segregated. Accordingly, specific clients with variation margin gains participating in an account in which there is a net margin loss (across all relevant clients of the relevant FCM) do not have recourse to the CCP in respect of their gains if their CM has defaulted and are, therefore, subject to "fellow customer risk" for variation margin.

Under the UK/EU clearing model, the principal model, unlike the agency model, is similar to the traditional OTC bilateral swaps market in that the customer faces the clearing member as principal and the clearing member in turn faces the CCP as principal. This creates identical back-to-back trades, without ever establishing any relationship between the CCP and the customer.

Rather than being rules and regulations-based, the principal model is largely contractual in nature with the customer to CM contract having various links to the CM's contract with the CCP under the CCP's rules.

The portability and margin protection features that typify the agency model are achieved in the principal model through the use of a security package that, in addition to the typical posting of initial and variation margin, includes the grant of a security interest by the CM to each of its customers in its right to the return of collateral from the CCP.

The question of principal versus agency in the US is largely settled, and the other major markets appear to be moving in its direction with greater standardisation of approach being driven by; regulators' customer protection concerns, the size and strength of the US market and its participants, and regulations bringing about the mandatory pension fund clearing of OTC swaps.

The segregation principle under Article 39(2) and Article 39(3) of EMIR, requires a CCP to offer the choice between omnibus client segregation and individual client segregation, respectively. ISAs and OSAs reflect the two broad types of accounts that meet this EMIR segregation requirement.

Unless otherwise required by one of its clients, a CM could open a single OSA with a CCP for the account of all of its clients and be consistent with the requirements for omnibus client segregation under EMIR. However, under Article 39(5) of EMIR, a CM is required to offer its clients, at least, the choice between an OSA and an ISA and, in practice, an individual CM may open a number of OSAs and a number of ISAs with a single CCP.

6.5.2. Segregation of Client Positions vs House Positions

ISAs, OSAs and LSOC accounts are subject to the same segregation requirement: client positions and assets are separated from proprietary/house positions and assets and the boundary demarcating what is segregated is at the account level. Hence, positions and assets are pooled within the relevant account but ring-fenced from those held in any other account with the CCP. However, ISAs, OSAs and LSOC are subject to different client segregation arrangements.

Segregation between clients or indirect clients (entities to whom clients are providing clearing services) in respect of OSAs involves a demarcation between, on the one hand, a CM's proprietary positions and assets and, on the other hand, the positions and the assets held by the CM for the account of its clients. Multiple clients, or indirect clients to whom clients are providing clearing services (each an 'indirect client'), can be grouped together in an OSA with the CCP.

Segregation between clients in respect of ISAs, contrasts with client's OSA arrangements. Individual client segregation involves a demarcation between the positions and assets held by a CM for the account of one client from the positions and the assets held for the account of other clients, and from the CM's own positions and assets. Therefore, individual client segregation is offered on a per-client basis; no individually segregated client is exposed to, or has its assets applied in respect of, the positions of any other client or of the CM.

The account arrangements within the CCP provide for further division between accounts along product lines, meaning that omnibus client segregation and individual client segregation are offered to CMs on behalf of their clients on a per-service basis. Hence, a CM might have a particular combination of one or more OSAs and/or one or more ISAs in respect of one CCP (e.g. listed equity derivatives or IRS) and a different combination of client accounts in respect of another service. The balance of OSAs and ISAs held by a CM in respect of a particular service will, in part, be driven by characteristics of the service itself. In addition, the profile of the CM, the nature and volume of clients in question and, most importantly, the level of segregation required by those clients will also be key factors.

Figure 8: Summary Comparison of International Account Types

Asset Class and Jurisdiction	ISA Individual Segregated Account	OSA Omnibus Segregated Account	LSOC Legally Separated Operationally Co-Mingled Account
Futures & OTC (EU/UK)	• Regulatory mandate to provide it. • Client has a choice to use it. • Use of it results in **no** shared client risk. • Clients margined at a gross level.	• Regulatory mandate to provide it. • Client has choice to use it. Use of it results in **shared** client risk. • Clients margined at a gross or net level depending on asset class.	n/a
Futures & OTC (US)	• Regulatory mandate to provide it. • Client has a choice to use it. • Use of it results in **no** shared client risk. • Clients margined at a gross level.	n/a	• Regulatory mandate to provide it. • Client choice results in shared client risk. • Clients margined at a gross or net level depending on asset class.
Futures & OTC (Australia/ Canada)	• Regulatory mandate to provide it. • Client has a choice to use it. • Use of it results in **no** shared client risk. • Clients margined at a gross level.	• Regulatory mandate to provide it. • Client has choice to use it. Use of it results in **shared** client risk. Clients margined at a gross or net level depending on asset class.	n/a

SOUTH AFRICA COMPARISON	There is no regulatory mandate to provide a particular type of account structure. JSE Clear only provides ISAs, which provides the highest level of protection. The law does not preclude OSAs which could be introduced by other CCPs seeking equivalence.	

6.6. CCP RELATIONSHIPS MODELS – AGENCY VS PRINCIPAL

As explained in Chapter 1, the main difference between an agency and principal clearing model lies in the legal capacity in which the CM acts in relation to clearing with the resulting nature of the obligations that exist between the CCP, the CM and the end client being the same. Both agency and principal clearing models have functioned satisfactorily in the markets reviewed for many years and can be said to be different paths to broadly identical outcomes.

Notwithstanding that clients' positions and collateral may have to be segregated from their CMs under both models, the client's choice (if available) of using an ISA or OSA model, and of an OSA model resulting in it sharing the risk of a fellow client default, exists equally under an agency or principal model.

As a result of the G20 commitment and the Dodd-Frank Act, the only non-retail client clearing model effectively permitted in the US for OTC swaps was the futures-style agency model through an FCM with a DCO. Security-based swaps being subject to a different US clearing regime regulated by the SEC but pursuant to the Dodd-Frank Act requiring standardised security-based swaps to be cleared.

Whilst the CFTC is the only regulator to prescribe the agency model, none of the other jurisdictions reviewed in this report employ any regulation or direction as to which model, agency or principal, to use. Notwithstanding the fact that the former is legally based and the latter contractual, the decision as to which model to use is largely driven by local securities, capital adequacy and tax/insolvency legislation and as such CCPs operating in a particular jurisdiction typically use the same clearing model. Given a choice, CCPs will also consider the technical and cost implications of the model.

Indeed, whilst the two different models were initially used by different CCPs (CME, agency/futures style; LCH and ICE, principal) to clear swaps, the market evolved to the use of the agency model. The three major US CCPs (CME, ICE and LCH) initially sought to offer two divergent (traditional agency/futures style and back-to-back principal) models for OTC buyside clearing: the CME and ICE for CDS, and LCH for IRS. Buyside clearing had existed on CME since 2010 and on ICE and LCH since December 2009. LCH and ICE put forth back-to-back principal models that mimicked many of the features of the US futures agency model but relied on different facets of the US insolvency regime as compared to the US futures model.

In an agency model, the CM acts as the agent and guarantor of its customer, with the agent being the legal owner but not the counterparty. This allows the customer to face the CCP through its CM agent but with no direct contractual remedies against the CCP. These obligations on the CM did at first meet with scepticism in some markets but is now widely and largely understood. The US perhaps provides the best example of this: the CFTC's regulations and the CCP's rules, alongside prevailing bankruptcy and US common law (trust laws), combine to form the basis for the agency model and its embedded guarantees. This agency structure is particularly important in the US to ensure FCMs do not fall foul of US Reg Cap requirements nor inflate global systemically important banks' (**GSIBs**) related requirements when clearing OTC trades.

In the UK, as a recognised clearing house under the UK's Financial Services and Markets Act 2001[16], LCH adopts the principal model for client clearing whilst providing an FCM agency model to service US customers as a registered DCO.

A variety of factors determine the choice of clearing model, including where clearing services are provided from and where the clients are. For example, foreign exchanges and clearing organisations can provide access to US institutions and their clients under the CFTC's foreign board of trade rules, but if not a DCO like LCH, must demonstrate that the standards of their regulation are comparable to those of US DCMs and DCOs.

CCPs in the US and Canada (in part) operate under an agency model that automatically establishes a principal-to-principal relationship between a CM and its CCP in respect to the positions held by a CM's defaulting client. In the US and Canada, a CM or FCM acts as a trustee for its clients' positions under prevailing laws (e.g. US common law), that allows agent trustees to be the legal owner but not the counterparty. This leaves the client as the beneficial owner of the contracts, and with no contractual relationship between the CM's client and the CCP. The CM, however, whilst operating for example as an agent/trustee in the US is subject to its regulator's (the **CFTC**)[17] rules, US trust law and legislation, and guarantees its clients' performance to the CCP in the event of a client default. The CCP leaves the management of a defaulting client entirely to the affected CMs.

The Australian and the vast majority of European cleared markets operate under a principal clearing model in which there is a trading relationship between the client and CM, and this is mirrored (back-to-back) in a second trading relationship between the CM and the CCP. Under all such clearing models, the CCP leaves the management of a defaulting client entirely to the affected CMs.

[16] https://www.legislation.gov.uk/uksi/2001/995/contents/made

[17] The Commodity Futures Trading Commission is an independent agency of the US government created in 1974 that regulates the US derivatives markets, which includes futures, swaps, and certain kinds of options.

The international CCPs reviewed apply their resident clearing models to both listed and OTC traded instruments with little operational distinction between the two. The major differences being the eligibility criteria attached to being a CM of OTC trades is often higher than for clearing listed business, and OTC and listed activities are generally backed by separate and mutually exclusive default funds, even if the CMs are largely the same firms.

Apart from in the US regulators do not stipulate the use of agency or principal models, as such there is no regulation preventing a CCP from offering a choice, with such flexibility being referred to by some as a hybrid model. However, there is little evidence that CCPs have elected to provide both models. To do so would require two differing sets of rules and agreements supporting the CM and the CM's client's choice of adopting an agency or principal model. CCP and CM's systems would need to support the CM being able to decide which model it uses either at a product, or even at a per-client level, and additional costs are likely to be incurred in handling the resulting day-to-day operational complexity.

It is of paramount importance, for end customer protection, that whichever model is chosen does not conflict with local insolvency law and this may be the biggest driver of the decision as to which model is most appropriate in any given jurisdiction.

The fact that under a principal clearing model, the CM's balance sheet must reflect client positions, as well as its positions with the CCP, is now a key consideration for UK and EU CCPs. This is due to the current exemption for pension funds to clear swaps falling away in June 2023, therefore, a CM operating under a principal clearing model will incur a material impact on its balance sheet (having to reflect both sides of the trade). The Futures Industry Association (**FIA**),[18] which comprises roughly 200 members representing trading and clearing firms across 50 different countries, is currently working with European CCPs and regulators to potentially introduce an agency model for UK and European clearing to avoid the balance sheet impact that mandated pension fund clearing would have on CMs under the existing principal model.

SOUTH AFRICA COMPARISON	The use of an agency model is in line with current trends towards agency models. However, further clarity is needed with regards to the role of the CM in the event of a client default.	

6.7. RISK AND COLLATERAL MANAGEMENT

CCPs determine their preferred risk algorithms based on the category of instruments being cleared, these in the main include SPAN and VaR based algorithms combined with rigorous back-testing across multiple years of market price data, and stress testing through extreme market events to determine initial margin levels per instrument. Variation margin (the profit or loss on open positions) is calculated continuously with margin calls/payments made intra-day if market conditions require, and at the end of each trading day against a mark-to-market price which is generally determined by the CCP (for OTC) or the exchange (for listed). The CCP always has the right to set the daily settlement price, whereas expiry prices can be determined by the CCP, an exchange, index provider or third-party trade association depending on the underlying instrument.

Margin offsets are extended by some CCPs across highly correlated instruments: e.g. yield curves, futures and their underlying options and equity baskets.

International CCPs offer a range of eligible collateral that their CMs can use to fund initial margin obligations including cash in a variety of leading currencies, government debt, corporate debt and equities. Eligibility is principally determined by an asset's underlying volatility, liquidity and the availability of accurate and timely price data. CCPs apply a haircut to the value of more volatile eligible assets (e.g. equities) and include provisions to protect against

[18] The FIA is the leading global organisation for participants involved in the futures, options and centrally cleared derivatives markets. https://www.fia.org/

concentration risk in the use of individual non-cash assets. Regardless of the collateral used by the CM and how it is transferred, pledged, lodged, allocated etc. to the CCP, the CCPs have full legal title to the assets in the case of a CM default and can utilise them as it determines is necessary, subject only to laws and regulations covering client asset protection/segregation.

CMs are generally allowed to use their own risk algorithms to calculate their client's margin obligations but are mandated under the CCP's rules to call at least as much margin from the clients as the CCP does from the CM against the same positions.

SOUTH AFRICA COMPARISON	JSE Clear only accepts domestic cash but is making plans to expand the range of collateral it accepts.	

6.8. HANDLING OF A CLIENT DEFAULT

The CMs in the international markets reviewed have complete control over how they manage the default of one of their clients, whilst being clear that they retain the responsibility for performing to the CCP in respect of the defaulting client's obligations. The CCP is not involved.

Once a CM has ruled out minor liquidity, technical or operational reasons for any failure of its client to meet margin obligations, or it has been advised officially of its client's bankruptcy/insolvency, it will immediately consider its client to be in default and be in control of the process of trading out of the client's positions in the market (listed) or bilaterally (OTC). Once all positions have been closed out, the CM will pass all remaining collateral to the client or its administrator. The CM's defaulting client's positions may well have arisen from trades on multiple exchanges and OTC, and as such only the CM will have a holistic view of its client's positions and total collateral lodged with it by the client.

Client positions and collateral, related to listed and cleared OTC positions, must always be segregated from those of the CM and the CCP. In this context, clients operate under either an Individual Segregated Account (**ISA**) or an Omnibus Segregated Account (**OSA**).

SOUTH AFRICA COMPARISON	JSE Clear does not allow its members to take control of a client default. By taking control of the process the CCP creates asymmetry in terms of risk vs reward for CMs that does not exist in other markets.	

6.9. HANDLING OF A CLEARING MEMBER DEFAULT AND PORTING

All CCPs operate a 'default waterfall' structure which sets out how financial resources are utilised to cover losses resulting from a CM default. The defaulting CM's collateral is always used first to cover any collateral shortfall and prior to that of non-defaulting clearing members and the CCP itself. In order to meet client asset segregation/protection obligations, and regardless of agency/principal model, a CCP will not co-mingle the positions and assets of its clients with those of the CM. A defaulting CM's collateral held at the CCP does not include the IM and VM it has lodged with the CCP on behalf of its clients as these are segregated from the CM, but only any collateral it has lodged against its own positions and its own default fund contributions.

The default waterfall of all the international markets reviewed requires the CCP's skin in the game to be utilised prior to the non-defaulting member's contributions. The amount of skin in the game that each CCP contributes varies quite considerably in different markets.

The CM may be in good standing with a CCP but declared in default as a result of events elsewhere bringing about its insolvency. If its own margin and default fund contribution prove to be insufficient to meet its obligations, then the CCP's own risk capital can be used before the default fund contributions of other CMs (these two levels are in some cases reversed).

CCPs would resort to their respective resolution measures should there remain a shortfall after the default fund is exhausted. Such measures vary between CCPs and include elements like using a proportion of other CMs' positive variation margin, further calls on CMs to replenish the default fund, further contributions from its own balance sheet or parent, and insurance policies (which generally kick in earlier but are not widely used).

The CCP will assume the positions of a defaulting clearing member and will look to port the positions of the defaulting CM's clients to other CMs. Whether the CM's clients operate under an ISA or OSA, the CM is obliged to maintain real-time position and collateral records at a client-by-client level in order that the CCP has the transparency it requires to transfer (port) positions and associated collateral to other suitable CMs. The porting process operates equally under agency and principal models and for a limited time (one or two days), after which the CCP will trade out any remaining (un-ported) client positions, and those of the defaulting CM.

The ability of the CCP to port a defaulting CM's client positions to other viable CMs is usually tested at a contractual and operational level. CCPs interviewed are conscious of the time needed to conduct the necessary due-diligence and establish contractual arrangements with a new client, and that it will extend beyond the time-period a CCP would ordinarily allow for such activity before trading down client positions. The client's costs and economic risk associated with losing its on-risk and/or hedging positions could be severe and is something they wish to avoid. As such, many CCPs have informal backup plans and considerations about how porting might occur. Regulators also encourage clients to establish backup CM relationships, particularly those with high volume/value activity and there has been a push towards gross margining of clients to facilitate this.

Furthermore, and as a regulatory requirement, international markets conduct annual industry-wide tests that simulate potential serious market disruptive events: e.g. a major bank collapse or inability to operate primary sites/systems/networks. These co-ordinated tests involve all stakeholders, including regulators, and test primary and backup systems and the actions that should be taken to best manage such disruptive events. The successful conducting of such industry-wide business recovery and disaster recovery exercises provides important assurances to domestic and international participants and are generally conducted annually.

SOUTH AFRICA COMPARISON	JSE Clear rules and practices seem to be more focused on a CM's client default than on the possible default of a CM and no embedded practice of industry-wide simulations of a CM default.	

Figure 9: Summary of Comparison of Clearing Models Across International Markets

	US	Europe/ UK	Australia	Canada	SA
CM is generally fully segregated from Parent with its own balance sheet	✓	✓	✓	✓	✗
Number of CMs for listed derivatives	CME: 67 ICE Clear: 33	Eurex: 45 GCMs + 31 DCMs ICE Clear:70	CDCC: 28	ASX Clear (Futures): 16	JSE Clear: 7
Does the law/regulation prescribe a particular model (principal vs agency)	✓	✗	✗	✗	✗
Principal vs agency model being used	Agency with a principal relationship between CM & CCP, and defaulting client	Principal	Principal	Principal	Agency with legal clarity required
Segregation of client assets required	✓	✓	✓	✓	✓
Minimum level of client segregation provided	Omnibus	Omnibus	Omnibus	Omnibus	ISA
Is individual segregation mandated to be offered?	✓	✓	✓	✓	✗
Segregation of OTC and listed default funds	✓	✓	✓	✓	N/A
Mutualised liabilities across listed and OTC default funds	✗	✗	✗	✗	N/A
CCP required to have its own capital at risk?	✓	✓	✓	✓	✓
Is the CCP involved in a client default?	✗	✗	✗	✗	✓
Are end clients able to use more than one GCM?	✓	✓	✓	✓	✗
Eligible collateral	High quality debt +	High quality debt +	High quality debt +	High quality debt +	ZAR cash only
Do CCPs assume a defaulting CM's positions and look to port these?	✓	✓	✓	✓	✓

7. CONCLUSIONS

This Chapter draws together the conclusions arrived at from comparing the South African Market's current clearing model offered by JSE Clear with leading international markets as well as JSE Clear's alignment, and that of SA market regulation, with the G20 PFMIs. It also answers BASA's initial questions, and the stakeholder feedback received at the outset of the Study.

7.1. INTRODUCTION

An attractive clearing model that retains, and potentially increases, the number of domestic and international trading and clearing members is necessary for growth in South Africa. Given the similarities between the South African market and other international markets in terms of market development, types of participants and trading activity, it seems reasonable to expect the South African market and any available clearing model to be broadly aligned with international peers.

However, this Study has highlighted some fundamental differences in the South African clearing model, or the one operated by JSE Clear, which give rise to concerns about unnecessary risk in the market and which could prevent JSE Clear from being PFMI compliant (see MSP's assessment in Figure 12) when the market adopts the G20 reforms.

There are also a few other differences in both the JSE's clearing model and general market structure that highlight where broader improvements could be made regarding risk management and enablement of competition or where consideration should be given before the market evolves further. (See MSP's assessment in Figures 10 and 11.)

7.2. SIGNIFICANT CONCERNS

The main differences and areas of significant concerns are all related to the current clearing model:

- In relation to overall concentration risk in the market and the lack of CM separation from their parent entities.
- Counterparty risk and default management where specific changes are required at JSE Clear if SA wishes to improve risk management, create legal certainty for its CMs and follow best practice of international markets.

7.2.1. Concentration Risk and Separation of CM Clearing Entities

Of specific concern is the SA financial market's total reliance on its five major clearing banks which act as JSE Clear's only client clearing CMs. No international firms offer third-party client clearing services and only two self-clear for their group entities/affiliates/subsidiaries. This is a much smaller number of CMs than in any other market. Whilst this limited international involvement is in part due to the size of the SA market and perceived political risk, the adaption of the SA clearing model, as proposed below, and further focus on the G20 Principles could attract international participants.

The housing of exchange and CCP memberships in the primary banking entity results in a potential for this primary entity to be exposed to the risk of a CCP default. Whilst a small risk, this could have widespread repercussions, particularly in such a concentrated market.

As the SA market looks to evolve towards meeting the G20 Principles, clear additional asset classes and the larger OTC markets, it is crucially important that the SA clearing model both retains and attracts further CMs if it is to spread the associated clearing risks and help to minimise the impact of a CM default on the wider economy.

7.2.2. Counterparty Risk and Default Management

The model offered by JSE Clear has, it appears, focused on the management of a client default more so than that of a CM, when the impact of the latter could be far more significant. Changes are needed to:

a) Clarify the legal position of the CM and the CMs obligations to guarantee the performance of its defaulting client to the CCP.
b) Better support the CM's ability to manage a client default because CM's will always have the most accurate holistic view of their client's positions and are best placed to manage their client's risk.
c) Better support the CCP's ability to port end client positions in the event of a CM default.
d) Enable clients to have multiple CM providers (helpful for client risk concentration and porting).

7.3. OTHER DIFFERENCES FOR CONSIDERATION OR WHERE IMPROVEMENTS CAN BE MADE

7.3.1. Clearing Model

Some of SA's and JSE Clear's other clearing-related differences are understood to be under review, notably the introduction of clearing of securities (cash and/or bonds), the domestic clearing of OTC trades, and the inclusion of SA govt debt as eligible collateral. Such changes would represent positive steps forward as they can deliver operational efficiencies, cost savings, risk enhancements and new business opportunities, whilst increasing the attractiveness of the SA market to existing and new domestic and international participants. It should be noted that Australia has had an issue with time zone operations of recognised CCPs operating in its market.

The fact that JSE Clear operates an ISA-only model without any choice of OSAs may put it ahead of other CCPs which are evolving from the origins of OSA models and trending, with the encouragement of regulators, towards ISAs. However, if other CCPs enter the SA market offering a choice of OSAs then greater clarity will be required in the market along with some disclosures by market participants to ensure that clients understand the advantages and disadvantages of each account type.

7.3.2. Other Market Structure Related Issues

More generally, when reviewing the differences in broader market characteristics, the following conclusions were drawn:

- SA's competition in equity markets is nascent compared to other markets. The lack of a CCP and a clear code of conduct around access to JSE's BDA system and ultimately to a CCP, is a constraint to competition and innovation.
- Introduction of a CCP for cash equities and bonds would help bring more efficiencies to the market and enable more competition.

SA should expect a further increase in algorithmic trading in line with the trajectory in other markets. Without pre-trade risk controls, the risk of a 'flash crash' scenario is increasing in the market.

Key: Observed Differences and Elements of Concern		
Green: No Concerns		
● Strong similarities	◑ Mostly similar	○ No similarities but being addressed
Red: Level of Concern		
● SA is an outlier, and the risk is significant	◑ SA is an outlier, and risk is medium	

Figure 10: Summary of MSPs identification of similarities and differences and rating of concerns about JSE Clear's Clearing Model

Topic	Observed Difference and Element of Concern
Counterparty Relationship: Agency vs Principal - (legal clarity required from JSE Clear about CM's role in the event of a default)	◑
CM Lack of Legal Separation from Parent Entity - (of particular concern given the low number of CMs)	◑
Number of CMs at JSE Clear	●
Handling of A CM's Client Default by JSE Clear	●
Handling of A CM Default by JSE Clear	◑
JSE Clear Eligible Collateral - (understood that it will be expanded)	◑
Client Segregation, ISA Offered by JSE Clear - (highest level of protection but no choice for clients)	●
Mandated OTC Clearing and Implementation of PFMIs - (understood to be underway)	◑

Figure 11: Summary of MSPs identification of key similarities and differences and rating of concern /areas to be improved about SA's Market Structure

Topic	Observed Difference and Element of Concern
Pre-Trade Risk Control Regulation or Systems	●
Fair Access Provisions for Access To BDA/Future CCP	◑
Competition In Equity Markets	◑
CCP Clearing of Equity Markets - (under consideration)	◑

Topic	Observed Difference and Element of Concern
CCP Equivalence - (preparations are understood to be underway)	○
General Cornerstone Legislation and Oversight of CCPs – (will need further development as market embraces G20 Principles)	●
Derivative Exchange Vertical Clearing Model	●

7.4. JSE CLEAR AND THE SA MARKET'S ALIGNMENT WITH G20 PRINCIPLES

Ultimately, the issues described above in relation to the clearing model will have to be addressed for JSE Clear and SA regulation to fully meet the G20 PFMIs.

JSE states on its website that, *"As a member of the G-20, South Africa (and its respective FMIs), is committed to comply with the principles and provisions of the CPSS–IOSCO report, as it is an integral part of the G-20's efforts to enhance the stability and integrity of financial markets"*. It goes on to say that *"...having completed the 2018 self-assessment exercise, JSE Clear is rated as "Observed" across 18 of these principles and "Broadly Observed" in terms of the remaining 2 applicable principles. JSE Clear is thereby considered to be fully compliant with the requirements put forth by IOSCO for Central Counter Parties (CCPs)."*

During the course of the project the following observations were made by MSP when reviewing JSE Clear's current operations and SA regulation versus the G20 Principles (see Figure 12 below) and concludes that certain areas of improvement are required. Some observations are forward-looking and intended to highlight requirements that may arise when clearing securities and OTC trades and in supporting competition. Other items, such as the mandate of further disclosures by CMs to their clients, fair access provisions and pre-trade risk enhancements may require further regulation.

Figure 12: Summary of MSP's Observations of JSE Clear's Operations/Current SA Market Regulation versus G20 PFMIs (more explanatory notes are given in Appendix 10)

Principle	MSP's Observations on JSE Clear's Model
Legal Basis[1]	• JSE Clear participants say they are unsure of the legal basis under which they are operating, particularly in the event of a client default. • Current JSE Clear rules related to a client default can place the CM in an invidious position of having to choose between complying with rules or acting to minimise losses: i.e. unwinding a position before the CCP has declared an event of default.
Governance[2]	• Some concerns exist about the sort of assurances that might be given to other trading platforms that need access to BDA and may wish to connect to JSE Clear in future if equities and bonds are to be cleared.
Framework for the comprehensive management of risks[3]	• Concentration amongst a small number of CMs is concerning. • It appears that CM default at JSE Clear is untested, and more focus is given to client default.

Principle	MSP's Observations on JSE Clear's Model
	• Portability of client positions following a CM default at JSE Clear is highly unlikely to occur in the timeframes generally allowed, given clients can only use one CM and have not established backup alternative CM relationships.
Credit and liquidity risk management[4]	• JSE Clear accepting a wider range of securities will further reduce credit risk. • Arrangements that allow JSE Clear to directly draw down from/pay funds to a CM bank account will further reduce risk. • More consideration will need to be given to these aspects which will need to be adapted If equities, bonds and particularly OTC trades are to be cleared by JSE Clear.
Collateral[5]	• It is understood that JSE Clear will shortly extend its list of eligible collateral to include SA government debt.
Margin[6]	• Lack of liquidity in some markets presents difficulties in setting closing prices, and the prices attached to a defaulting client's positions by JSE Clear, under the current model. • If this model is maintained into OTC clearing by JSE Clear, rather than leaving the CM to manage its client's default, then there is greater scope for valuation anomalies, and greater risk to the impairment of the wider community.
Liquidity risk[7]	• At present all margin is met using ZAR cash, and any extension to the inclusion of government debt will necessarily consider resident liquidity. • JSE Clear should consider establishing, if it does not yet have, PPS (or similar) type arrangements that enable it to pay/collect directly into a CM's bank account.
Default Management[8]	• JSE Clear's direct involvement in an end client default is unhelpful and not replicated by any of the international CCPs reviewed. It potentially complicates and distorts the outcome and delays required actions and increases the risk of impacting a wider community of stakeholders. • CM default management appears untested, and stakeholders should plan how to handle individual defaults and multiple CM and/or end client default events occurring simultaneously.
Segregation and portability[9]	• JSE Clear currently mandates ISAs. • Backup CMs do not appear to be encouraged by regulators or JSE Clear, therefore, plans to conduct portability appear lacking. • Have such plans and the CCP's ability to port positions and collateral been assessed in regulatory-led tests or real case events? • Should JSE Clear provide the choice of an OSA, the CMs will want to pay particular attention to the 'fellow-customer-risk' element. Regulations may need to mandate disclosures by CMs.
Operational Risk[10]	• Has JSE Clear sufficiently addressed and documented the processes and procedures it would deploy in the event of a CM default/technology outages at major services (in-house and at agents)?
Access[11]	• Particularly relevant in the context of the competition issues in the cash equity market, should JSE Clear move to clearing cash equities. • Provision then to A2X/other exchanges of access to JSE Clear's services will be of fundamental importance if competition is to be facilitated.
Tiered participation arrangements[12]	• JSE Clear appears to be overstepping the mark as the local regulations make it clear that a participant is responsible for its own clients. • Lack of pre-trade risk controls has a knock-on effect from trading through to clearing and settlement and will need to be address through regulation.

Principle	MSP's Observations on JSE Clear's Model
Efficiency Principle[13]	• Does JSE Clear fully meet the needs of its participants in terms of driving efficiencies for the market versus profitability for its parent? • TMs have concerns related to the mandated use of BDA given its use is not efficient for all participants and it operates on legacy technology. It also potentially disincentivises the creation of a CCP.
Disclosure of Rules and Key Procedures[14]	• One of the main concerns expressed by CMs is the lack of clarity, and often contradictory language, presented to them in the CCP's rules.

7.5. QUESTIONS RAISED BY BASA ABOUT INTERNATIONAL MODELS

At the outset, BASA raised a number of questions in relation to the operation of international models and these are addressed in Figure 13 below. Whilst prevailing legislation and regulation result in variations in the nature of the clearing model deployed, CM obligations and operational activities are found to be very similar under agency, principal and hybrid clearing models. However, the contractual basis under which participants engage can differ under each model.

Regulators (other than in the US where the agency model is prescribed) do not stipulate the use of one clearing model over the other. However, they do mandate the provision of ISAs, in addition to OSAs, that result in some operational, risk and collateral management differences.

Figure 13: Answers to Specific Questions Raised by BASA

Focus of Clearing Model Analysis	Findings from International Markets
Workflow implications: margining and collateralisation	• Different legal or contractual arrangements between the CCP and CMs, and CMs and clients, determine the nature under which obligations arise, but do not affect margining or collateralisation. • Omnibus segregated accounts (**OSAs**) are offered under both clearing models and impose the same record keeping and reporting obligations as under an ISA on CMs, in order to provide the CCP with the information required in the case of a CM default. Whilst the same margin algorithms can be used under all models and account structures chosen, OSAs can lead to a greater number of intra-day calls made by the CCP. OSAs can reduce the value of collateral posted by the CM to the CCP, whilst CCP rules can require clients to collateralise their positions with their CM on a gross basis.
The degree of protection afforded to all parties: client, CM and CCP and the implications of default	• The risk algorithms used to calculate initial and variation margin are unaffected by model or segregation account used. Similarly, default management waterfall arrangements are the same. Under OSAs, client collateral is pooled, therefore, the risk is increased of a CM default affecting its clients, and a client default affecting other clients of the same CM, respectively.
Inclusion of listed equities and bonds clearing	• These asset classes are generally cleared through a CCP with separate IM calculation algorithms and default funds established for these asset classes. The major benefit of clearing equities lies in settlement

Focus of Clearing Model Analysis	Findings from International Markets
	efficiencies derived from settlement netting with all trades being settled against one counterparty, the CCP, that operates with enhanced shaping, partialling, timing priorities and fails management processes. The netting of settlement instructions by the CCP will materially reduce the number of settlements which, depending on the commercial model, can have a significant impact on CSD income. The clearing of bonds brings with it increased failed settlement risks given the size of some trades. Both rely on dynamic databases of eligible instruments that needs continually updating, and the need to deal with corporate actions and dividends/coupon payments. These requirements increase operational overheads for the CCP. Relevant systems, rules and operational procedures need to be developed and maintained.
All applicable capital charges depending on the model that impact CMs and clients of CMs	• Capital charges are determined at a national/regional level and result in some jurisdictions selecting the agency model over the principal model. • The agency structure is particularly important in the US to ensure FCMs do not fall foul of, or inflate, their US regulatory capital requirements nor inflate global systemically important banks' (GSIBs) related requirements when clearing OTC trades. • The size of the IRS market and the directionality of some of its largest participants (i.e. pension funds) is leading to potential changes in the EU/UK markets towards the provision of an agency model alongside their current principal model. • The biggest change in recent times has been the mandated clearing of OTC trades and/or the penal capital charges applied to uncleared OTC trades, which has driven this business to the CCPs.
Is it possible to have a hybrid model?	• Apart from the US where the CFTC mandates an agency model, CCPs have a choice as to what model they provide. There is little evidence to show that CCPs have elected to provide a hybrid of both models. To do so would require two differing sets of rules and agreements supporting the CM and the CM's client's choice of adopting an agency or principal model. CCP and CM's systems would need to support the CM being able to decide which model it uses either at a product, or even at a per-client, level resulting in day-to-day operational complexity and associated additional costs.
Under a principal or a hybrid model, what are the financial implications (balance sheet, margin, collateral, fees etc.)?	• When acting as principal, a CM has to hold both sides (client and CCP) on its balance sheet; but as an agent to its client, only one position (CCP). • With the exception of the capital charges outlined above, the type of clearing model used need not affect any other elements.
Rights, responsibilities and protection of members and market participants in each model observed	• Under different legal/contractual bases, all the clearing models result in the CCP guaranteeing the end client, and the CM guaranteeing the performance of clients to the CCP. • A client electing to use an OSA can expose itself to sharing any losses associated with another client of the same CM defaulting. • In most markets, disclosures about the risk of the account that they choose must be made.

Focus of Clearing Model Analysis	Findings from International Markets
The pros and cons of each model, including a high-level illustration of where the costs might be incurred or reduced	• There is little difference, if any, in the costs associated with providing or using one model over the other, other than possible increased capital costs to CMs under a principal model where they cannot offset on their balance sheet the back-to-back positions they have between their clients and the CCP. • The advent of mandated pension fund clearing in June 2023 will add significant value at risk to CMs balance sheets under a principal model and is a further reason why the UK/EU market is looking to include the choice of an agency model.
The appropriateness of each model to the South African market and recommendations	• The SA market appears to operate under what is labelled an agency model. Given the US market's aversion to the principal model and likely inclusion of agency models in UK/EU there appears to be no reason why the SA market should add a principal model. Furthermore, cash equites, bonds and OTC trades can all be cleared efficiently under an agency model.
Gaps or obstacles in the South African regulatory landscape, in terms of supporting the principal model	• The SA regulator does not prescribe the use of one model over the other so there may be no regulatory obstacle to the inclusion of a principal model. The extent to which a principal model would affect CMs' capital obligations would need to be examined given international precedents.

8. RECOMMENDATIONS FOR THE SOUTH AFRICAN CENTRAL COUNTERPARTY CLEARING MODEL

This Chapter makes a number of recommendations that should be implemented as soon as possible to address the core issues identified in relation to counterparty and default risk management in the listed derivative markets. It also suggests some longer-term considerations for the market as it evolves and commences clearing other instruments.

8.1. IMMEDIATE RECOMMENDATIONS

These recommendations seek to address the important risk management related changes that would de-risk the market environment to the benefit of all stakeholders. All of these recommendations will help JSE Clear to meet the G20 PFMI requirements.

Helpfully, most of these recommendations are expected to require contractual and rule-based changes rather than system/legislative changes. If the key industry participants (JSE Clear, CMs and the regulators) collaborate then these changes could be implemented quickly and with little to no impact on systems, margin obligations or day-to-day operations. These changes reflect the behaviour in other markets and combined with the additional volumes other cleared asset classes would bring, could help to retain and attract CMs.

Whilst JSE Clear's governance structure continues to see it controlled by the JSE, there is every reason to believe its new independence, with its own rule book and balance sheet, will see it continue to work closely with its members to bring about the enhancements and improvements CMs require.

Figure 14: MSP's Immediate Recommendations to BASA

Rationale/Benefits	Actions Required to Effect Change	Costs/Impact
1. CMs are provided with full control and responsibility for the management of the default of a client		
• Failure to manage a client default effectively could lead to the impairment of the CM and beyond. • The proposed change reflects the common practice in international markets. • CMs have the most accurate holistic view of client's positions and are best placed to effectively manage their defaulting client's positions in a timely manner. • Removes current adverse asymmetries created for CMs when a client defaults.	• JSE Clear removes any language in its rules related to its involvement in a client default and any link between itself and its CM's end clients. • The CM's own clearing agreements with its clients would need to clarify this element and reflect any specific provisions required by the CCP (e.g. porting related activities in the event of the CM's default). This change need not affect the relationship between a clearing member and its trading member.	• JSE Clear to review its rule book (e.g., Rules 10.1.3.2 and 10.1.3.3) and/or CM agreements, to remove its involvement in the default of a CM's client. • CMs may need to repaper clients • Full disclosures to be made to clients about risk and benefits of changes.

Rationale/Benefits	Actions Required to Effect Change	Costs/Impact
2. Retain the agency model but ensure clarity is provided that the CM is obligated to guarantee the performance of its defaulting client to the CCP		
• Although, technically feasible to run an agency or principal model under current legislation, the agency model that already operates in SA better supports CM's capital requirements, and especially its US participants. • The main issue is to provide legal certainty of the CMs role in the event of a defaulting end client. • All international markets operate with this obligation on the CM with the CM being supported by the CCP's rules not prescribing how it takes independent action to manage a defaulting client. • Such freedom becomes even more important, if not a fundamental requirement, if the SA market is to retain and attract CMs whilst moving towards the clearing of other assets classes and OTC trades.	• JSE Clear's rules need to provide absolute legal clarity on the CM's obligations in the event of the default of one of their clients. • Some minor changes should be able to achieve this requirement. • CM's client agreements, if they talk to this point at all, should not require any material change as it is only clarity being sought and not a rule change. This change should not affect the relationships between trading and clearing members.	• JSE Clear to review its rule book and/or CM agreements to ensure legal clarity and interpretations agreed with CMs. • New/amended contracts for CMs and CM clients.
3. JSE Clear to further explore portability and comprehensive annual testing of a CM default		
• Improve chances of successful portability in the event of a CM default. • Enhances the operational integrity of the market.	• JSE Clear to facilitate clients to have two CMs and SA regulators to encourage clients to have alternative CM arrangements in place. • JSE Clear to conduct an annual industry-wide test that simulates potential serious market disruptive events, e.g. a major bank collapse, in addition to or as part of its annual Business Continuity Management policy.	• Possible technical impact on JSE Clear in enabling this ability. • An impact on all stakeholders participating in such tests. • End clients would have to establish arrangements with an alternative CM and, whilst not necessarily operational, may have additional overheads if managing two CM relationships.
4. Retain the agency model		
• It appears technically feasible under current legislation for JSE Clear to devise and offer rules and agreements that provide its CMs and the CMs' clients with the choice of using an agency or principal model, under what some may term a hybrid model. • However, the agency model that already operates in SA better supports CM's capital requirements, and especially its US participants. • Given there is little difference between the two models especially in relation to CM's	• None, except JSE to provide (as described above) absolute legal clarity on the clearing model.	• None as no change required.

Rationale/Benefits	Actions Required to Effect Change	Costs/Impact
obligations and client protection, there does not appear to be a compelling business case to justify undertaking the development necessary (e.g. developing CCP's and CMs' systems to support the choice of model at a per-client level) to support both approaches.		
5. No change to the ISA model in listed derivatives model		
• Whilst international legislation ensures clients are offered a choice of either an ISA or an OSA structure, all these markets evolved with OSAs being common market practice. • The SA market has already fully embraced individual segregated account model. CMs interviewed in the first Phase of the project expressed little interest in comingling client collateral.	• Nothing immediate.	• None.

8.2. LONGER-TERM CONSIDERATIONS

In relation to some of the broader issues raised or likely to arise as the markets evolve, MSP recommends the following for consideration:

Figure 15: Recommendations for Longer-Term Considerations

Rationale/Benefits	Action Required to Effect Change	Costs/Impact
1. The inclusion of equity and bond instruments into the CCP model (with careful consideration)		
• De-risks the market for these asset classes and brings SA into line with leading international markets. • It would support competition, by removing the need to use BDA and support trading across venues under a fungible, harmonised and efficient post-trade environment. • It would increase multi-lateral trading on the MTS platform and reduce counterparty risk. • Provides significant post-trade efficiencies for participants including optimising the settlement netting process.	• Close collaboration between customers, CMs, the CPP, exchange, market data vendors, technology providers and regulators is necessary to deliver services that are fit for purpose, although there are examples across the world that the SA markets can look to for guidance. • New rules and trading procedures, further transaction reporting requirements and the development of, inter alia, optimised full multi-lateral settlement netting, settlement enhancements (e.g. partial and shaped settlement instructions),	• Introduction of CCPs in cash equity markets has been unpopular with retail and smaller brokers in other markets as it has increased explicit costs, increased client capital requirements (i.e. the need to fund margin calls) and may incentivise more off-order book trading. • Increased settlement failure fines and costs for participants associated with this. • The sheer number and variety of different securities, particularly bonds, and their ongoing issuance and expiry, requires continuous management and updating of reference data to

Rationale/Benefits	Action Required to Effect Change	Costs/Impact
	and fails management procedures will be required. • The clearing of bonds also brings with it several material matters that need to be addressed. For example, the size of bond transactions can be very large, and settlement failure is a concern that needs to be addressed by a penalty regime.	maintain the underlying database of cleared instruments.
2. The inclusion of OTC instruments into the CCP model (with careful consideration)		
• Reduces the impact of counterparty failure in the OTC markets and addresses the clearing of OTC derivatives as part of SA's G20 commitments.	• Close collaboration between customers, CMs, the CPP, exchange, market data vendors, technology providers and regulators is necessary to delivery services that are fit for purpose although there are examples across the world that the SA markets can look to for guidance. • If equivalence is granted to foreign CCPs, attention should be paid to time zone differences to ensure that local market participants have a CCP that is fully operational throughout the SA working day to avoid unwanted bilateral credit exposures. • New rules and trading procedures, further transaction reporting requirements.	• OTC clearing has some fundamental differences from other asset classes, especially in relation value, duration and complexity, that present greater inherent risk to counterparties. Furthermore, participants should expect cleared OTC positions to evolve to be far greater in value than listed. All of which result in greater operational oversight, enhanced technology and higher margin requirements and additional and larger default fund contributions.
3. A separate default fund if OTC trades are cleared through JSE Clear		
• Whilst not specifically within the remit of this report, risk management is and the likely size and nature (risk profile) of the OTC positions cleared would suggest the market's best interests would be best served by compartmentalising the associated default risk.	• To be considered in the above discussions on the further development of the clearing model.	• This would only be relevant if clearing entities become fully segregated from the parent entity. • Further capital will need to be allocated to the CM entity and the separate default fund.
4. CMs to consider pros and cons of housing CM in a separate legal entity		
• Robust risk management and greater protection to the overall financial market by protecting parent entities. • Making it clear that existing and future CMs, and their parent, can adopt their preferred approach in SA (as they do in other markets).	• JSE Clear and market stakeholders/regulators to consider amending rules if stricter eligibility requirements/guidance needs to be introduced with fully segregated clearing entities. • The change need not require JSE Clear to increase its own skin in	• JSE Clear to ensure its rule book and/or CM agreements allow for such flexibility. • Ensure that JSE Clear's rules continue to not require the CM to operate under its parent company, and if choosing to operate as a separate legal entity, ensure that the CCP cannot draw down against a CM's parent's balance sheet if

Rationale/Benefits	Action Required to Effect Change	Costs/Impact
• Highlighting the importance of this element to CMs.	the game beyond that already committed. • The decision as to whether the CM is part of the bank or established as a separate legal entity must lie with the CM otherwise its parent bank has no option other than to accept liabilities towards the CCP (e.g. under Rule 10.2.18).	the default waterfall is exhausted. • Additional bank capital may need to be committed to newly established CM entities.
5. The creation of a code of conduct/fair access provisions to BDA and an equity CCP if it is created		
• All equity market participants currently must use the BDA system owned by the JSE to record trades, which has a monopoly on the processing and accounting for the equity markets. • It is unlikely that the equity market is going to have competition for clearing in the medium term. • To help properly support new trading venues wishing to compete, a clear code of conduct is necessary to facilitate fairer and more timely access to the JSE systems.	• The market to work in collaboration to establish a code of conduct and fair access provisions. Regulators to adopt these provisions.	• This should help support competition in the market and the code could be extended to a new CCP should such be introduced.
6. Pre-trade risk management controls should be established		
• As HFT flow increases in the market and multiple trading venues compete for flow, the possibility of large orders, erroneous orders, and the rapid build-up of concentration risk leading to a 'flash crash' or impairing a CM becomes far greater. • Pre-trade risk controls and kill switches at investment firms and exchanges become more important to ensure the orderly running of the market.	• The exchange, CCP and/or the CMs, together with the regulators should establish pre-trade risk management requirements/guidelines for industry participants.	• Greatly reduce the possibility of a 'flash crash' or CM's being impaired as a result of erroneous orders/trades. • Establishing such controls will require technical build, test and implementation. CMs that already have some element of this within their environment may be less affected by any technology development led by the exchange or CCP.
7. Consider time zones of foreign CCPs if granting equivalence		
• Granting equivalence of a CCP may be more efficient for local participants and help to spread risk. However, a CCP could be operating in a different time zone which might create bilateral credit exposure at certain times of the day.	• Regulators to establish minimum local operational hours for CCPs seeking equivalence.	• CCP seeking equivalence may need to extend resourcing and technology commitments.

A1. LIST OF SOUTH AFRICAN MARKET PARTICIPANTS INTERVIEWED

The following list of firms were interviewed along the lines of the questionnaire below (depending on the nature of each firm's business) in Appendix 2.

- A2X
- ABSA
- ASISA
- Avior Capital
- Goldman Sachs
- Investec
- JSE Clear
- JP Morgan
- Momentum
- Ned Bank
- Peresec
- RMB
- RMB Morgan Stanley
- SAIS
- StanLib
- Standard Bank
- Strate

A2. QUESTIONNAIRE USED TO CONDUCT SOUTH AFRICAN PARTICIPANT INTERVIEWS

This questionnaire's main focus is on central counterparty (**CCP**) clearing in SA, as performed by JSE Clear.

The questions below are addressed to the three key categories of market participant, namely, trading members of JSE, clearing members of JSE Clear, and end users.

Where your company acts in any or all of these capacities, please consider your response in respect of these separate roles.

We do not require you to document responses to the questions below. Rather, we will arrange a call to go through these questions with you, and separately with your peers. All of your responses will be anonymized in the analysis that we present back to BASA and in our published report.

A2.1. CURRENT ACTIVITY

1) Are you a trading member, clearing member or end-user (e.g. asset/portfolio manager) of the JSE?
2) How long have you performed in this role, <1 year, 2 to 5 years, more than 5 years?
3) In what capacity do you trade directly on JSE? Proprietary, Agency/Broker, Both
4) In what capacity do you trade indirectly on JSE? Proprietary, Agency/Broker, Asset Owner, Asset Manager, other
5) Which products do you trade? Equities, Bonds, Equity derivatives, Bond derivatives, Currency derivatives, Interest Rate derivatives, Commodity derivatives?
6) Which other SA trading venues are you active on as a direct or indirect participant?
7) Do you clear all your JSE trades in a particular product/asset class through a single JSE Clear CM and, do you use different CMs for different products/asset classes?
8) Where you trade indirectly on JSE do you use more than one broker?
9) To what extent does posting collateral to cover margin obligations in a cleared market limit your participation in that product/on that market?
10) Which SA products do you trade OTC? What proportion of your OTC trades by value are with non-SA clients?
11) As a Clearing Member:
    - Do you clear Client and House trades?
    - Which products do you clear? Equities, Bonds, Equity derivatives, Bond derivatives, Currency derivatives, Interest rate derivatives, commodity derivatives?
    - Do you adopt the same initial margin algorithm as the CCP to calculate initial margin levels for your clients?
    - Do you provide portfolio margining to your clients?
    - Do you accept non-cash collateral from your clients?
    - Outline how you segregate client collateral and positions?

A2.2. RISK MANAGEMENT

12) Do you consider the CCP's risk management waterfall to be transparent, clearly understood and reasonable and, if not, how should it be structured or communicated?
13) To what extent do you think the CCP should extend portfolio margining across asset classes?
14) What other assets you would want the CCP to accept as eligible forms of collateral?
15) How would you summarise the pros and cons of the two clearing models: agency (in which all client positions and collateral are segregated); and principal in which client positions and collateral can be comingled by the CM, and the CM can share margining/collateralisation efficiencies with its clients)?
16) If the CCP allowed its CMs to offer the choice of operating under an agency or principal, which would you elect to use and why?

A2.3. OPERATIONS

17) For those involved in cash equity and bond trading, does BDA provide the functionality you need? Could you manage your middle and back-office requirements efficiently without having to use BDA?
18) For those involved in derivatives, do the systems provided by JSE and JSE Clear provide the functionality you need, e.g. trade registration, give-up/give-in, trade reconciliation, position reporting, and, if not, how should it be changed?
19) Does the client account structure provided by the CCP meet your requirements and, if not, how should it be changed?
20) Does the cash equity and bond settlement netting process performed within BDA and supported by Strate provide optimal benefit and, if not, how would you like to see this feature evolve?

A2.4. SCOPE

21) What new products or asset classes would you like to see added for trading in SA?
22) What new services, if any, would you offer if the clearing model changed or what are you currently prevented from offering? Where is demand for these services being driven from?
23) Would you want CCP clearing services to be applied to cash equities and bonds and, if so, why?
24) How would you like to see the cash equity and bond settlement netting process performed by Strate evolve?
25) Are you able to participate in OTC trading, both in derivatives and securities?

A2.5. COMMERCIAL

26) How would you rank the value you receive from the following CCP services: automation/STP, post-trade anonymity, counterparty risk management, portfolio margining, position/settlement netting?
27) Under the current agency clearing model what is the ratio of your costs between exchange, CCP and CSD related fees and charges and, do you consider this ratio to reflect the value provided?

28) As a percentage of the current agency clearing model, how much would you expect the following factors to change if operating under a principal model:
    - The value of the collateral you lodge with your CM to cover margin calls
    - The day-to-day operational impact
    - Your risk rating
    - Your use of the company's balance sheet
    - Overall market risk
    - The fees/charges you incur

A2.6. FORWARD LOOKING

A2.6.1. Regulation

29) Do you anticipate SA's market regulations to converge with those of the US/EU/UK, e.g. mandating OTC clearing, equivalence, open access?
30) What forthcoming regulations are expected to affect the SA market and what will their impact be on your day-to-day business operationally, commercially, and from a risk perspective?
31) To what extent will the changes related to any such regulations impact SA financial markets participants' ability to progress other material development projects in the next few years?
32) Notwithstanding regulatory driven changes that need to be met, what areas of development do you want the SA infrastructure providers to focus on?

A2.6.2. OTC Related

NB: OTC Trading

Trades negotiated between two counterparties who may, or may not be, acting on behalf of a third-party, forms a significant proportion of trading activity across multiple asset classes in major financial markets. CCP clearing of OTC trades moves counterparty risk from the trading counterparties to their respective CMs, making resulting positions subject to CCP rules and risk management oversight, and results in a multi-lateral environment (able to unwind OTC created positions with a different counterparty).

33) What percentage of your trading activity is executed OTC: derivatives and cash?
34) How do you anticipate this percentage changing over the next 5 years if OTC trades remain uncleared?
35) How do you anticipate this percentage changing over the next 5 years if OTC trades are cleared?
36) Which SA products do you trade OTC? What proportion of your OTC trades by value are with non-SA clients?
37) How is this proportion likely to change, and will this depend on whether the OTC market is cleared or remains uncleared?

38) How has competition in the exchange space helped or hindered the SA equity market?

39) To what extent do you consider the SA market to be sufficiently active or large enough to justify competition in the CCP and CSD space?

40) How has the nature of the on-exchange business and membership changed over the last five years e.g. more high frequency trading, new participants, new technology etc?

41) If a business case could be made, would you support the introduction of competition in the CCP space? Which of the following factors would most influence your decision as to which CCP to use:

- The clearing model available; agency or principal
- The asset classes/products cleared e.g. limit CCP competition to cash instruments (not derivatives), or the clearing scope of the CCP (one-stop shop)?
- Risk rating of the CCP
- The model's ability to increase liquidity and lower trading related costs
- Clearing related fees and charges
- Operational impact on you and/or your clients?
- Capital efficiencies

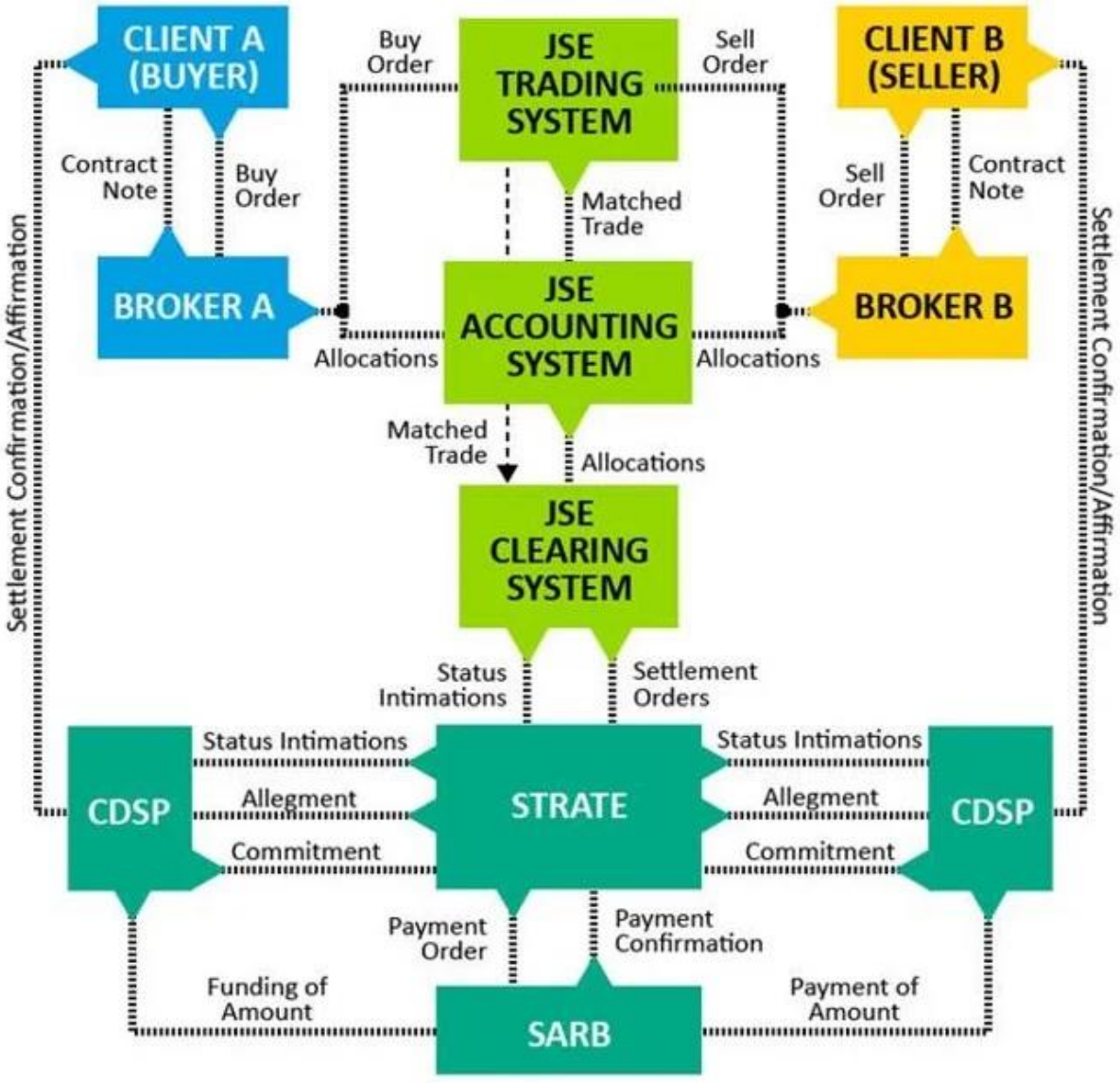
42) Do you think inter-operability should be considered for 1) cash 2) derivatives?

A3. PROCESS FLOWS

These process flows were provided to MSP by the entities involved during the course of discussion.

A3.1. JSE CASH EQUITY TRADE FLOWS

Figure 16: JSE Cash Equity Trade Flow Diagram



Source: https://www.jse.co.za/post-trade-services/clearing-settlement-operations/equities-operations

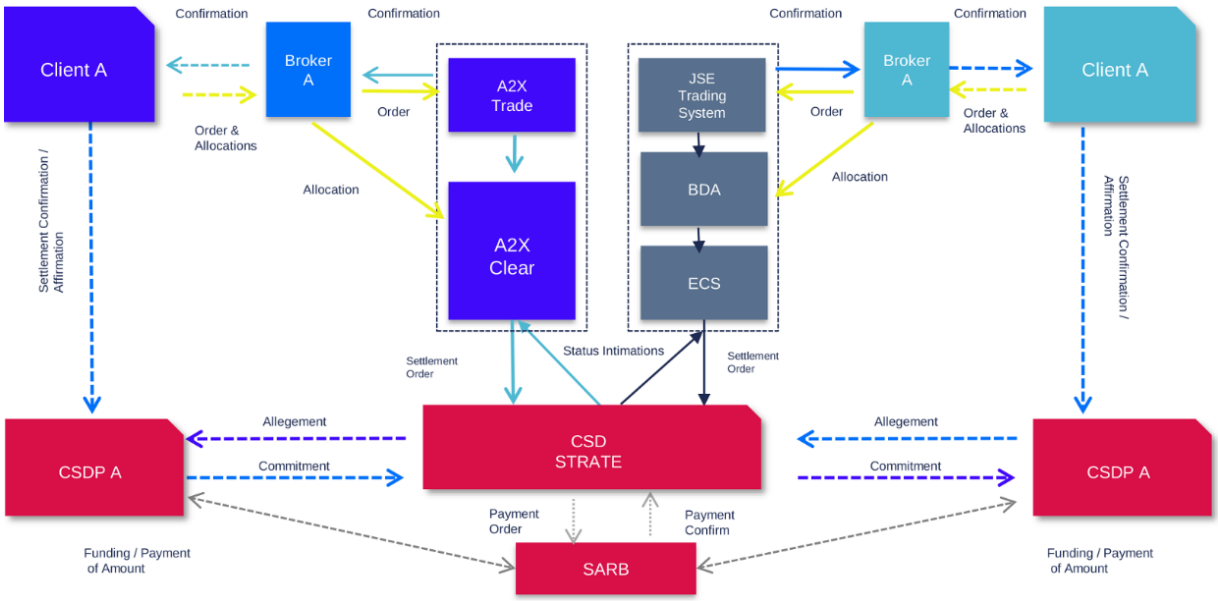
A3.2. JSE'S DESCRIPTION OF THE FUNCTIONS OF THE JSE CLEARING AND SETTLEMENT DIVISION - CASH EQUITIES MARKET

The JSE's Equity Market Services team is responsible for the management of the back-office system Broker Dealer Accounting (**BDA**) used by equity members and undertake:

1) Monitoring settlement to ensure settlement takes place as per the JSE Rules and directives for the equities market.
2) Performing securities and money lending and borrowing as lender of last resort:
   - Rolling of settlements.
   - Fails trade management procedures.
   - Rolling of trades.
3) Failed trades.
4) Compensation.
5) Inward listings for equities reporting.
6) Black Economic Empowerment (BEE) reporting.

A3.3. A2X EQUITY MARKET SERVICES

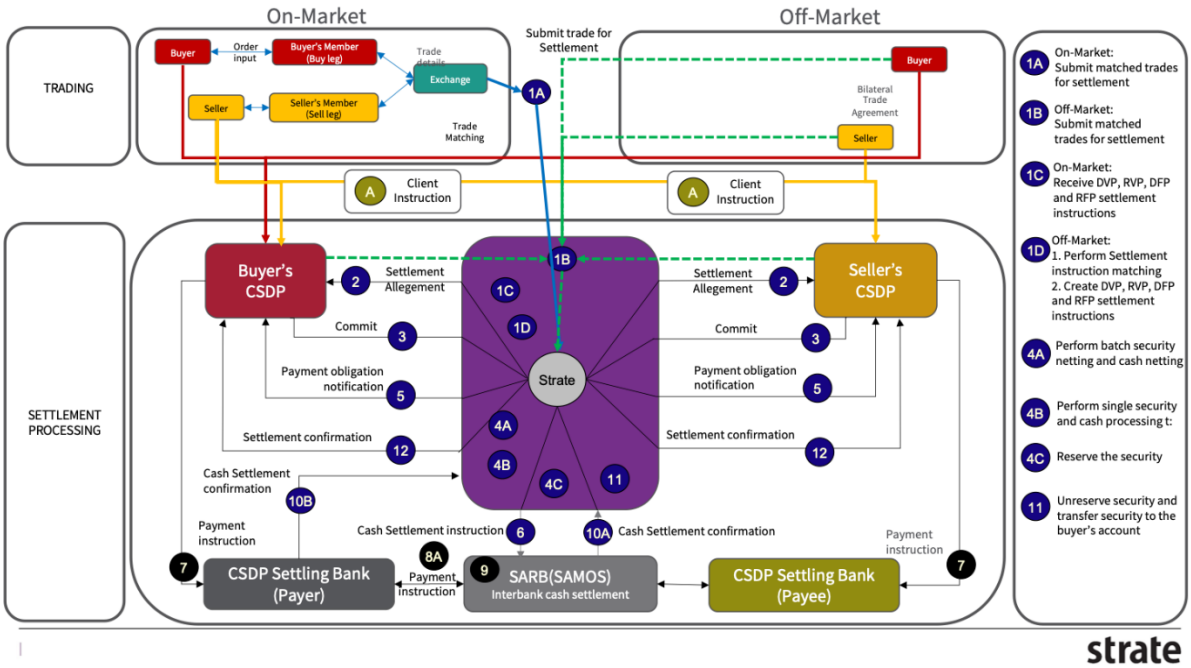
Figure 17: A2X Trade flows (Cash Equities)



Source: https://www.a2x.co.za/market-structure/

A3.4. STRATE EQUITY MARKET SERVICES

Figure 18: Strate Trade Flows



A4. LIST OF INTERNATIONAL CCPS AND THIRD PARTIES INTERVIEWED/ANALYSED

The following list of organisations were interviewed and/or analysed along the lines of the questionnaire in Appendix 2.

- Australian Securities and Investments Commission (**ASIC**) and Reserve Bank of Australia (**RBA**)
- ASX Clear & ASX Clear (Futures)
- Cboe Clearing Europe
- CDCC (TMX Group)
- CFTC
- CME
- ESMA
- FIA
- ICE Europe
- LCH Ltd
- Nasdaq Europe
- Ontario Securities Regulator (**OSC**)

A5. QUESTIONNAIRE USED TO CONDUCT INTERVIEWS IN INTERNATIONAL MARKETS

Interviews with SA market participants, particularly clearing members of JSE Clear, have highlighted that their main concerns relate to; risk and collateral management, and the contractual basis of the relationships between JSE Clear, its clearing members and end clients.

Where you provide your services across the following jurisdictions, we would welcome understanding where they may differ: USA, Canada, EU, UK, Australia.

Please comment should your answer differ between clearing cash and listed derivatives, or when clearing on-exchange or OTC transactions. Input will be gathered via teleconference.

A5.1 CCP MODEL, LEGAL BASIS AND PORTING

1) Under what regulations and underlying legislation do you provide your services?
2) What criteria does a firm need to meet in order to become a CM e.g. credit rating, balance sheet, expertise, experience, systems, other?
3) Do you operate under an agency or principal clearing model, or both depending on the jurisdiction?
4) Do any of your clearing members, under an agency model, act as del credere agents and, if so, are there any rules/laws that recognise the legal status of these agents?
5) Is the choice of model determined by you, your members, or the relevant regulator? Is this defined in the law, regulation or CCP rules?
6) Where you operate a principal model do you also offer CM's the ability to fully segregate their clients' positions, perhaps referred to as a Hybrid model?
7) Where your CM's have the option to provide full segregation or operate an omnibus account, do your systems allow the CM to elect the chosen model at a client level and does the adoption of one model over the other dominate?
8) Can you explain the legal basis upon which the parties (CCP/CM and end client) are contracted to each other, under both an agency and principal model?
9) Under an agency model is the contractual relationship between you, your clearing members and the end client determined by prevailing legislation and regulations?
10) Under a principal model is the contractual relationship between you, your clearing members and the end client determined by your rules, with due consideration to prevailing legislation and regulations?
11) Under either model do you, as the CCP, take any responsibility or activity in relation to the management of a defaulting end client, whether that end client is a trading member on the relevant exchange or a third-party client e.g. hedge fund, asset manager?
12) Are trading members and end clients able to use multiple CMs to clear positions in the same underlying contracts?
13) Please explain how clients' positions are ported when a CM defaults? Please explain if different approaches are adopted for listed and OTC positions, or under an agency or principal model.

A5.2. RISK AND COLLATERAL MANAGEMENT

A5.2.1. Risk Waterfall, Default Fund and Initial Margin

15) Please describe your default waterfall structure and confirm whether you can ultimately drawdown against the clearing member's parent's balance sheet?

16) Do you operate multiple default funds (DF) and, if so, is this a function of the value at risk, strength of correlation with other asset classes, member concentration, other?

17) Is there any mutualisation of risk across DFs?

18) What initial margin (IM) methodologies do you use and what cross product margin offsets are available?

19) Please describe the CCP's involvement in the process of resolving and end client (i.e. not a clearing member) default?

A5.2.2. Collateral Management

20) What forms of eligible collateral do you accept as funding for your DFs and IM?

21) Are your CMs able to lodge client collateral with you directly, and if so, is this achieved through rehypothecation, pledge or transfer?

22) Are your CMS able to accept any form of collateral from the clients if they lodge eligible collateral with you, whether on the client's behalf (segregated/agency model) or their own (omnibus/principal model)?

23) Has your approach to collateral management changed as a result of clearing OTC trades?

24) To what extent do your clearing members utilise any collateral flexibility that you extend to them?

A5.2.3. OTC Clearing

25) Where you clear OTC trades, how does the operational and risk management model differ from listed instruments e.g. trade validation, risk algorithms, eligible collateral, legal counterparties to the positions, porting in the event of a CM default?

26) Are there any portfolio margining synergies provided between OTC generated and exchange-traded positions?

A6. US MARKET

A6.1. GENERAL MARKET STRUCTURE OVERVIEW

A6.1.1. Legislation and Regulatory Oversight

There are two key pieces of legislation and two regulators that are relevant to the authorisation and oversight of CCPs in the US.

The Securities Exchange Act[19] empowers the Securities and Exchange Commission (**SEC**) with broad authority over all aspects of the securities industry which includes the power to register, regulate, and oversee clearing agencies as well as the various securities exchanges and brokerage firms. This covers CCPs offering services in the clearing of securities including equities and equity options.

The Commodity Exchange Act (**CEA**)[20] regulates the trading of commodity futures and establishes the statutory framework under which the Commodity Futures Trading Commission (**CFTC**) operates. The CFTC has authority to establish regulations in relation to the registration and operation of commodity futures exchanges and derivative clearing organisations (**DCOs**). This covers futures and options (e.g. interest rate, treasury, commodity, agriculture, FX, equity index).

A memorandum of understanding (**MOU**)[21] exists between the two regulators to ensure enhanced cooperation in areas of common regulatory interest.

Some CCPs are regulated by both regulators (e.g. OCC and ICE), whilst others operate under one or the other (e.g. CME and LCH (**CFTC**), NSCC (**SEC**)). The CFTC/SEC regulations form the basis of the services and rules provided by the respective CCPs. In the aftermath of the 2008 Financial Crisis, the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (**Dodd-Frank Act**)[22] enhanced the CFTC's regulatory authority by creating new rules to regulate the more than $400 trillion swaps market.

The US's Commodity Exchange Act requires all futures commission merchants (**FCMs**), and introducing brokers (**IBs**) who do not hold customer funds to register as such, unless they qualify for an exemption, e.g.:

- A firm that handles transactions only for proprietary persons (such as the firm itself, affiliates, top officers, or directors) need not register as an FCM.
- A non-US firm with only non-US customers does not have to register if it submits all trades for clearing to an FCM.

All registered FCMs and IBs are required to be members of the National Futures Association (**NFA**) and may also be members of one or more designated contract markets (commodity exchanges). The NFA and the commodity exchanges are self-regulatory organisations that are required to enforce CFTC-approved minimum financial and reporting requirements for their members.

[19] https://www.govinfo.gov/content/pkg/COMPS-1885/pdf/COMPS-1885.pdf

[20] https://www.law.cornell.edu/cfr/text/17/part-39/subpart-A

[21] https://www.cftc.gov/sites/default/files/idc/groups/public/@newsroom/documents/file/cftc-sec-mou030608.pdf

[22] https://www.sec.gov/spotlight/dodd-frank-act

A6.1.2. Pre-Trade Risk Controls

Following a high-profile 'flash crash' in 2010, which was exacerbated by extremely fast high-volume markets, the SEC put rules[23] in place to ensure that brokers or dealers with access to trading securities directly on an exchange or alternative trading system (**ATS**), including those providing sponsored or direct market access, must systematically limit the financial exposure of the broker or dealer that could arise as a result of market access, and ensure compliance with all regulatory requirements that are applicable in connection with market access. This includes well-designed required financial risk management controls and supervisory procedures that must be reasonably designed to prevent the entry of orders that exceed appropriate pre-set credit or capital thresholds, or that appear to be erroneous.

The CFTC was slower to respond but ultimately amended its Rules[24] to address the risk of electronic trading causing a market disruption on a designated contract market's (**DCM**) trading platform. The regulations include:

- The implementation of exchange rules applicable to market participants to prevent, detect, and mitigate market disruptions and system anomalies associated with electronic trading.
- The implementation of exchange-based pre-trade risk controls for all electronic orders.
- The prompt notification of the Commission by DCMs of any significant disruptions to their electronic trading platforms.

A6.1.3. Exchanges

There are three dominant exchange groups in the derivatives markets, ICE, Cboe and CME, that operate with very little competition between them as their products are not cross-listed. The equity options market is traded on multiple competing exchanges with all trades centrally cleared by OCC. There is competition in the cash equity markets with numerous exchanges and alternative trading systems competing for flow in the same instruments that are primary-listed on NYSE (part of ICE group) and NASDAQ: the two largest equity exchange groups.

A6.1.4. Clearing/Recognised CCPs

The clearing of cash equity markets is undertaken by one industry-owned, not-for-profit utility, the DTCC. This means the cost of clearing is homogenous regardless of the platform on which it is traded.

Except where OCC is active in the equity options market, the clearing of listed derivative markets is undertaken in vertical silos by the respective exchanges where the product is traded, and the clearing house is 100% owned and controlled by the parent exchange group. There is competition between CME, ICE and LCH for the clearing of OTC IRS and CDS.

Figure 19 below shows the major clearing houses in the US, who regulates and owns them and the main products that they clear.

[23] https://www.sec.gov/rules/final/2010/34-63241.pdf

[24] https://www.cftc.gov/sites/default/files/2020/07/2020-14381a.pdf

Figure 19: CCPs Operating in the US Market

CCP	Regulator	Ownership	Main Products Cleared
LCH (59 IRS clearing members in LCH Ltd)	CFTC	LSEG (publicly listed)	OTC - interest rate swaps
OCC (186 CMs)	CFTC/SEC	US exchanges but clearing member governed	Listed - equity, VIX
CME Clearing (67 CMs, 28 clearing IRS)	CFTC	CME (publicly listed)	Listed and OTC – indices, rates, CDS, FX bonds, commodities, agriculture
NSCC	SEC	DTCC (member-owned)	US Equities
ICE Clear US (33 CMs)	CFTC	ICE (publicly listed)	Listed and OTC - energy, FX, CDS

The US regulators require their CCPs to operate within the US, with international CCPs like LCH and Eurex Clearing establishing corporate entities in the US and obtaining the relevant regulatory approvals to be registered by the CFTC as a derivatives clearing organisation (**DCO**).

Under the principle of deference, the US regulators recognise overseas exchanges as meeting specified requirements and as such US persons (citizens and organisations) are allowed to trade and clear on them via an FCM.

A6.1.5. Central Depository

The main central securities depository for bond and equity settlement and asset servicing is the Depository Trust & Clearing Corporation (**DTCC**), an industry-owned and governed, not-for-profit utility.

A6.2. CLEARING MEMBER SUITABILITY

Clearing members are generally established as separate legal entities from their parent company to avoid, or at the very least, limit liabilities to the broader group. CCPs will consider a range of CM eligibility criteria including: the strength of the CM's own balance sheet, the expertise and experience of its employees, and its technical robustness. All assessments of member eligibility are related to the CM entity only.

A6.3. CLEARING MEMBER OBLIGATIONS

Sullivan and Cromwell LLP's memorandum to the Futures Industry Association (**FIA**) and International Securities and Derivatives Association (**ISDA**) in 2020[25] sought, inter alia, to clarify the role of US FCMs in clearing listed and OTC contracts in the US.

[25] https://www.fiadocumentation.org/fia/us-legal-opinions_8/united-states-4th-september-2020

In the context of an FCM clearing a cleared customer transaction for a customer through a DCO pursuant to a customer agreement, the legal opinion found that:

- The nature of the relationship between the FCM and its customer is properly characterised as a principal to agent relationship though with significant statutory trust and contractual aspects that result in **the FCM acting in a principal capacity with respect to the DCO in certain situations (e.g. the end client's default)**.
- The nature of the relationship between the FCM and the DCO is properly characterised as a principal-to-principal relationship.
- There is no contractual relationship between the customer and the DCO. (Section VI of the memorandum details the relationships between an end client, FCM and DCO).

When the FCM clears customer transactions, it does so as the customer's agent and for the customer's account. However, as noted, the FCM is the sole contractual counterparty to the DCO under each cleared customer transaction cleared for its customer through the DCO; the customer and the DCO are not in contractual privity, either directly or indirectly through the FCM. The customer is, however, the beneficial owner of the transactions credited to the FCM's omnibus customer position account, entitled to the benefit and subject to the burden of the transactions. In other words, these transactions are held in a type of trust for each customer by the FCM. Each customer will have a beneficial interest in its pro-rata portion of the transactions carried by the FCM in its omnibus customer positions account, based on the transactions executed for such customer's account, but will not have an interest in any specific transaction.

A6.4. COUNTERPARTY RELATIONSHIPS AND SEGREGATION

US CCPs operate under what the market/regulator terms an agency model in which the CCP itself guarantees performance of the trade/position to the end client, whilst clearing members (FCMs), guarantee the performance of their respective clients to the CCP.

The FCM acts as a trustee for its clients' positions as US common law allows an agent trustee to be the legal owner but not the counterparty, so leaving clients as the beneficial owners of the contracts. There is no contractual relationship between the end client and the CCP although the clearing agreement that lies between the FCM and the client generally incorporates specific provisions laid down by the CCP that bind the client to certain key aspects of the CCP's rules.

As discussed above, whether the cleared contract is derived from trading a listed contract (generally referred to as futures) or an OTC swap, the client's collateral and positions are always legally segregated from the FCM's. In respect of clearing futures, a client's collateral could be used on a pro-rata basis to cover off any collateral shortfall arising as a result of another client of the same FCM defaulting. This is not the case, however, in relation to the clearing of swaps where the CCP operates the legally segregated operationally commingled (**LSOC**) approach that offers some omnibus benefits whilst its FCMs margin customers on a gross basis. This approach requires FCMs to report all individual client positions on an ongoing, intra-day basis to ensure full and accurate transparency of the client positions/collateral that would need to be ported in the event of the FCM's default.

LSOC rules, reflected in the CCP's rules, impose a higher bar on the use of collateral when a swap clearing member defaults, albeit under what is ostensibly the same agency clearing model for OTC and listed trades as defined under CFTC regulations. The FCM's client agreement further spells out the rights and obligations of both parties and is supported by US bankruptcy rules. SEC rules, applied under securities laws, enforce the segregation of assets between the FCM and the client, but allow the FCM to use any excess collateral posted by its client, beyond that required to meet its CCP's margin obligations, together with the associated omnibus arrangement. This can impose on a CCP, like OCC and its customers (clearing stock futures and options under CFTC and SEC oversight, respectively), greater operational complexity.

A6.5. RISK AND COLLATERAL MANAGEMENT

US CCPs use variations of standardised portfolio analysis of risk (**SPAN**) and value at risk (**VAR**) risk algorithms to measure initial margin requirements, the decision as to which to use generally depends on the nature of the contract (i.e. futures or options), and the underlying asset class. Such analysis always considers historic volatility and market disruptions (the largest price movements) over multiple years in their stress tests, with initial margin often set between a first order and second order standard deviation event.

Margin offsets are sometimes provided between correlated instruments (e.g. equity options, index futures) and across durations (e.g. calendar spreads). Offsetting correlated OTC and listed positions (e.g. IRS vs STIRs) are often precluded especially when supported by separate default funds. CMs are generally allowed to use their own risk analysis approach when determining their clients' margin requirements, with the CCP's rules stipulating they must call from their clients at least as much as the CCP/DCO calls from the FCM.

US CCPs offer a variety of eligible asset classes that can be used as collateral, e.g. cash (multiple currencies), treasuries, equities and gold. All variation margin (**VM**) is paid or received in the currency of the underlying contract. US CCPs have full legal title to and full control over all forms of collateral presented to them by their FCMs.

US CCPs call margin from their CMs daily following the close of the underlying market, and often intra-day.

A6.6. HANDLING OF A CLIENT DEFAULT

In its simplest terms the FCM has complete control over how it handles a client default, but also ultimate responsibility for performing to the CCP in respect of the client's obligations. The FCM will trade-out the client's positions in the market (listed) or bilaterally (OTC) and pass to the client, or its administrator, all remaining collateral once all positions have been closed out. There is necessary communication between the FCM, the CCP and the exchange, to ensure that the client cannot trade further and any resident market orders are pulled.

Under the US futures model, customer property must be segregated at the FCM and DCO levels from the FCM's and DCO's assets and must be treated as customer property. Operational commingling of such segregated amounts by account class in omnibus accounts at the FCM and DCO levels is, however, permitted for administrative convenience.

The CFTC rules for cleared OTC swaps require the clearing model to provide legal segregation with operational commingling (**LSOC**) model, also referred to as the full legal segregation model. Segregation at both the FCM and DCO levels is required just like the US futures model. FCMs are also required to prevent DCOs from using, and DCOs are prohibited from using, a swap customer's property as collateral for another swap customer's swap contracts.

CCPs operate under an OSA arrangement although one in which the law stipulates that one client's collateral cannot be used to cover another client's obligations, preserving the benefits of commingling but presenting operational complexity (ongoing reporting of each client's individual positions) and generating a greater number of intra-day calls.

Client positions and collateral must always be segregated from those of the CM. In this context, clients operate under either an Individual Segregated Account (**ISA**) or an Omnibus Segregated Account (**OSA**).

A6.7. HANDLING OF A CLEARING MEMBER DEFAULT

Under LSOC, in a clearing member default caused by a default of a customer of that clearing member, a DCO cannot apply the property of non-defaulting swap customers of the defaulting FCM to satisfy such a deficiency, but rather must look only to the property of the defaulting customer and other available financial resources (e.g. assets of the defaulting FCM, its own equity, the guaranty fund or unfunded assessments). LSOC reduces but does not eliminate the fellow customer risk that exists in the US futures agency model.

This is a major change from the traditional US futures segregation model, which does not distinguish between defaulting and non-defaulting customers in an FCM default scenario. LSOC imposes additional information reporting requirements on FCMs to ensure DCOs have the information they need for proper allocation. LSOC increases the clearing house's risk, because it reduces the available amount of financial resources, and as a result, LSOC may increase swap clearing costs. This is due to higher margin, guaranty fund and assessment requirements imposed by DCOs stripped of access to non-defaulting swap customers' margin, than is the case under the current US futures agency model.

The CCP assumes the positions of a defaulting CM and it will follow its rules and pre-defined procedures in order to minimise disruption to its members and the market.

As part of the process, the CCP will seek to transfer (port) the defaulting CM's clients' positions and collateral to non-defaulting members who have the capacity to accept the defaulter's clients. Depending on the asset class (e.g. interest rate swaps), the CCP may have already identified the universe of CMs that could step in to support this process. Some markets encourage end clients to establish alternative CM relationships that could be used in such circumstances. It is usual for CCPs to not be overly prescriptive as to how they would handle such an event in order to retain flexibility even though the overall objectives are commonly held across all CCPs.

A US CCP has the right to transfer the collateral and associated positions of a defaulting FCM to another FCM using a 'bulk transfer order'. An FCM insolvency will only result in losses to the client pool (to be shared pro-rata) if an end client simultaneously fails to meet its margin obligations (which would generally only be the in the event of its insolvency).

The choice of receiving CMs is made at the time and depends on a number of factors including the nature and size of the underlying positions at a client-by-client level, and on the client's compatibility. Porting avoids liquidity risks, execution and clearing fees, and bid/offer spreads and is conducted over a defined period (usually two days) after which the CCP will close out any un-ported client positions.

All CCPs operate a 'default waterfall' structure which sets out how financial resources are utilised in order to cover any losses that may result from a defaulting CM. As is the case with most international CCPs, the waterfall cascades through: the defaulting CM's initial margin; then positive variation margin; then the CM's own contribution to the default fund; the value put up by the CCP itself (skin in the game); then the assets remaining in the default fund; before finally resorting to the CCP's recovery powers. The latter varies between CCPs but generally include one or more of the following elements: use of the CM's clients' positive variation margin; calling on further funds from CMs; drawing down further on their own capital and/or parent; and insurance schemes (which would generally kick-in earlier). It is unusual for the CCP to look to the parent company of the failed CM. It is also a commonly held belief that the CM's central bank would step in to avoid system risk, although this is not confirmed, nor has it been tested.

A6.8. CCP RELATED FAIR ACCESS

In cash equity markets, there is no need for CCP fair access because the market clears and settles all trades, across all venues and OTC, through a single industry-owned and governed not-for-profit utility, the DTCC. Similarly, options are cleared horizontally through a CCP jointly owned by multiple exchanges.

To date, no rules have been created in listed derivative markets to consider open access between clearing houses and exchanges, whereas CCPs do compete for the clearing of OTC IRS and CDS.

A7. EU & UK MARKETS

A7.1. GENERAL MARKET STRUCTURE OVERVIEW

A7.1.1. Legislation and Regulatory Oversight

MIFID, (the Markets in Financial Instruments Directive (2004/39/EC)) has been applicable across the European Union since November 2007 and was replaced by MiFID II/MiFIR (Markets in Financial Instruments Regulation) to become operational in 2018. It is a cornerstone of the EU's regulation of financial markets seeking to improve their competitiveness by creating a single market for investment services and activities, and to ensure a high degree of harmonised protection for investors in financial instruments. MIFID sets out:

- Conduct of business and organisational requirements for investment firms.
- Authorisation requirements for regulated markets.
- Regulatory reporting to avoid market abuse.
- Trade transparency obligation for shares.
- Rules on the admission of financial instruments to trading.

EMIR is the European regulation that resulted from the G20 commitments, and it regulates the reporting of OTC derivative contracts to trade repositories and clearing standardised OTC derivative contracts through CCPs. EMIR focuses on three primary objectives: reporting, clearing, and risk mitigation.

Each market has their own regulator, known as a national competent authority (**NCA**), which is empowered to implement Directives and enforce the legislation. In addition to this, ESMA is an independent European Union (**EU**) authority that contributes to safeguarding the stability of the EU's financial system by enhancing the protection of investors and promoting stable and orderly financial markets. It fosters supervisory convergence amongst Member States' NCAs with responsibility for securities and capital markets supervision and is accountable to the European institutions including the European Parliament.

European clearing houses operating within the EU are registered as CCPs and are regulated by their NCA. CCPs that qualify as systemically important (Tier 2 CCPs) are required to comply with the relevant European Market Infrastructure Regulation (**EMIR**)[26] requirements and are subject to supervision by the European Securities and Markets Authority (**ESMA**)[27].

- EMIR provides a framework for authorisation and supervision of CCPs under the responsibility of the NCAs of the Member States, as well as registration (or recognition) and supervision of trade repositories through ESMA.

Since Brexit, the UK aims to revoke or assimilate retained EU law, which will happen over a period of time with appropriate consultation. For the moment the legislation has been on-shored and any necessary, immediate changes have been made to the laws, specifically referencing EU versus UK. Authorisation and supervision of CCPs rests with the Bank of England. These changes should not materially affect the subject matter of this report.

[26] Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories (EMIR)

[27] https://www.esma.europa.eu/supervision/tc-ccps#:~:text=TC%2DCCPs%20that%20qualify%20as%20systemically%20important%20(Tier%202%20CCPs,2b)%20and%2025b%20of%20EMIR

A7.1.2. Pre-Trade Risk Controls

Pre-trade risk controls are laid out in MiFIR. It specifies that certain pre-trade controls should be in place before sending orders onto a trading venue, for example price collars, which automatically block or cancel orders that do not meet set price parameters, maximum order values, volumes and message limits. All of this should contribute to any calculations of orders forwarded on to a trading venue. Investment firms should also be able to throttle orders or automatically cancel or block them.

A7.1.3. Exchanges

Most markets have a dominant national exchange in equity markets and many of these also have successful derivative markets. However, there is competition in the cash equity markets with numerous exchanges and multi-lateral trading facilities (**MTFs**), competing for flow in the securities that are listed on the primary markets of each national exchange.

Trading in listed derivatives is dominated by a few national exchange groups, and by ICE Europe, but there is little real competition across the product set offered by each exchange.

A7.1.4. Clearing/Recognised CCPs

The clearing of cash equity markets is undertaken through a combination of vertical and physical silos. There is generally a clearing house in each national market, which is usually owned by the exchange parent. In additional to this, the market has evolved so that pan-European CCPs with a horizontal model have been able to compete for clearing flow and several clearing houses now inter-operate offering clients a choice of where to clear.

The clearing of listed derivative markets is undertaken in vertical silos by the respective exchange where the product is traded and the clearing house is 100% owned and controlled by the parent exchange group.

There is competition in OTC derivatives, although LCH is the dominant player in IRS and ICE is similarly positioned for CDS and energy.

Figure 20 below shows the major clearing houses in the Europe and the UK, who regulates and owns them, and the main products that they clear.

The EU provides for the recognition of third country CCPs under EMIR, the current list of such CCPs, of which there are many can be found here:
https://www.esma.europa.eu/sites/default/files/library/third-country_ccps_recognised_under_emir.pdf

CCPs operating in the UK are regulated by the Bank of England (**BoE**). UK CCPs, having met the BoE requirements, are recognised as third country CCPs by the EU regulator and can offer their services from the UK to EU-regulated and non-regulated entities although there has been much contention between the two jurisdictions on this subject since Brexit. The UK has chosen to retain the EMIR law and apply it in the UK for the time being.

Figure 20: Key Facts About the Main UK/European CCPs

CCP	Regulator/Overseas Recognition	Ownership	Main F&O Products
LCH Ltd (86 CMs, 68 SwapClear members, 32 equities)	• Bank of England (**BoE**) under the UK Financial Services and Markets Act 2000. • Recognised as a third country CCP to offer services and activities in the EU in accordance with EMIR. • Registered as a DCO with the CFTC in US (as amended by Dodd Frank). • Recognised in multiple jurisdictions by national regulators e.g. Switzerland, Canada, Brazil, Australia, Singapore.	London Stock Exchange Group (publicly listed)	IRS, Repos, FX, cash equities
LCH SA (135 CMs, 49 listed derivatives, 25 CDS, 49 equities, 86 bonds)	• Authorised as a CCP to offer services and activities in the EU in accordance with EMIR. • NCAs: regulated as a credit institution and CCP by L'Autorité des marchés financiers (**AMF**), L'Autorité de Contrôle Prudentiel et de Résolution (**ACPR**), and Banque de France (**BDF**).	London Stock Exchange Group (publicly listed)	Repos, CDS, fixed income, cash equities, broad range of derivatives on equities, bonds & commodities
Nasdaq Clearing (16 GCMs)	• NCA: the Swedish Financial Supervisory Authority (**FI**) • Authorised as a CCP to offer services and activities in the EU in accordance with EMIR.	Nasdaq LLC (publicly listed)	Listed and OTC - indices, rates, FX, bonds, commodities, energy
Eurex Clearing (45 GCMs, 31 DCMs)	• NCA: Germany's financial regulator, the Federal Financial Supervisory Authority (**BaFin**) • Authorised as a CCP to offer services and activities in the EU in accordance with EMIR • Registered as a DCO with the CFTC in US (as amended by Dodd Frank)	Deutsche Börse Group (publicly listed)	Cash equities, rates, equity and index derivatives
ICE Clear Europe (70 CMs)	• NCAs: the Dutch Central Bank (**DNB**), and the Netherlands Authority for the Financial Markets (**AFM**). • BoE under the UK Financial Services and Markets Act 2000. • Authorised as a CCP to offer services and activities in the EU in accordance with EMIR. • ICE Clear US: regulated by CFTC and SEC in the US.	Intercontinental Exchange Group Inc (publicly listed)	CDS and broad range of derivatives on equities, bonds & commodities
Cboe Clearing Europe (FKA EuroCCP) (14 CMs)	• NCAs: the DNB and the AFM. • Authorised as a CCP to offer services and activities in the EU in accordance with EMIR.	Cboe Europe, owned by Cboe LLC (Publicly listed)	Index futures and options, cash equites traded on multiple EU and UK exchanges and OTC

A7.2. EU & UK MARKETS CLEARING MODEL

A7.2.1. Clearing Member Suitability

Clearing members are generally established as separate legal entities from their parent company to avoid, or at the very least, limit liabilities to the broader group. CCPs will consider a range of eligibility criteria including: the strength of the CM's own balance sheet, the expertise and experience of its employees, and its technical robustness. All assessments of member eligibility are related to the CM entity only.

A7.2.2. Agency vs Principal Relationships

The EU and UK clearing models adopt a principal clearing model in which back-to-back positions exist between the CCP and its CM, and the CM and its client. This model, which is not prescribed by the regulators, is applied to listed derivatives, cash equities and OTC trades.

As principal to its client's positions the CM guarantees the performance of its clients' position to the CCP in event of a client default. Essentially imposing the same obligations on the CM as arise under agency models operated in other jurisdiction like the US.

The CCP guarantees performance to its CM's clients and seeks to meet this obligation through the same mechanisms as apply under an agency model, namely: risk measurement and management that determine and collect initial margin, pay/collect variation margin, backed by a proportion of the CCP's own capital, the assets held in the respective default funds and then resolution measures should all these levels be exhausted.

As discussed above, the FIA is currently working with EU CCPs and regulators to potentially introduce an agency model for EU clearing to avoid the balance sheet impact that pension fund clearing would have under a principal model on CMs.

The CMs are obliged under the regulations to provide their clients with the option of using ISAs across all listed derivatives.

CCPs may refer to their clearing model being agency or principal, with these umbrella terms relating to whether the obligations arising under the clearing model are legally or contractually binding. Under both models the end result, as far as a CM is concerned, in relation to their counterparty risk obligations and operational burden, is largely the same. Where CMs are affected most by the underlying model is in respect of their capital obligations which can be higher under a principal model and why the UK/EU markets have been looking into the efficacy of introducing an agency clearing model.

A7.2.3. Counterparty Relationships and Segregation

Clients contract with their CM under a clearing services agreement (or equivalent) and not with the CCP. The CM is the client's legal counterparty for their cleared positions whilst the performance of these positions is guaranteed by the CCP through its own counterparty relationship with its CMs. The CCP has no contractual relationship with end clients and will not involve itself in the management of a client default, however, under its rules it has provisions that allow it to port and/or close down client positions in the event the client's CM defaults.

The underlying EU/UK regulations do not prescribe for an agency, principal nor hybrid model, nor do they mandate the use of full segregation between clients, only full segregation of clients from their CM. Under EMIR rules CMs must offer their clients the choice of an individual segregated account or an omnibus segregated account.

As a result, EU/UK CCPs generally offer their CMs, in relation to their listed/ETD activities, the ability to extend to their clients (and in some cases the client's clients) the choice of clearing under an individually segregated account (**ISA**) or omnibus segregated account (**OSA**). Under an OSA clients' positions are legally segregated but collateral is comingled. Some cleared OTC markets (e.g. those cleared by Nasdaq) only allow the ISA model.

The key consideration when operating under an OSA is whether or not clients' collateral held in the omnibus account can be used to cover the obligations of a defaulting client of the same CM, and whether there is a difference between the clearing of listed and OTC generated positions. In the EU/UK markets, a client in an ISA cannot be called on to help meet any collateral shortfall of defaulting client of the same CM; the CM itself would step in to make up any shortfall rather than utilising its clients' collateral.

Under EMIR, any clearing member that offers services that involve clearing through an EU CCP must:

- Publicly disclose the levels of protection and costs associated with different levels of segregation.
- Describe the main legal implications of different levels of segregation.
- Provide the costs associated with the different levels of segregation in a prescribed fee disclosure document.

A7.2.4. Risk and Collateral Management

EU/UK CCPs adopt the same approach to risk and collateral management as US CCPs.

Margin offsets are provided between correlated exchange-traded instruments, but only between these and OTC positions if backed by the same default fund. CMs are able to use their preferred risk analysis approach to determine their client's margin requirements, with the CCP's rules stipulating they must call from their clients at least as much as the CCP/DCO calls from them.

EU/UK CCPs offer to their CMs a variety of eligible asset classes that can be used as collateral e.g. cash (multiple currencies), treasuries, bonds, equities, gold. EU/UK CMs make regular and sizeable use of the ability to use bonds as collateral for initial margin, perhaps up to 40% in some markets.

All variation margin (**VM**) is paid/collected in the currency of the underlying contract. Beyond the use of cash, regulators require CCPs to determine the eligibility of an asset based on its underlying liquidity, volatility, and price transparency and to then apply suitable haircuts and concentration risk limits.

Collateral is 'transferred' by the CM to the CCP in a variety of ways, generally driven by underlying securities law. Such ways include transfer of title, pledging, rehypothecation and guarantees. The outcome of which is always the same, the CCP has full legal title and full control of the collateral in the event of the CM's default.

UK/EU CCPs call margin from their CMs daily following the close of the underlying market, and intra-day if there is a meaningful increase in risk or deterioration in collateral valuations. CMs are required to participate in payment system arrangements between their agent bank (or sometimes the central bank) and the CCP that allows the CCP to directly debit and credit their bank accounts, in respect of margin obligations and fees. In addition to their own CCP fees, CCP's often collect the exchange's fees.

A7.2.5. Handling of a Client Default

As per the US agency model, the CM acts as a guarantor of its clients to the CCP. All CCPs leave the management of defaulting client to the client's CM, only getting involved if the CM itself is impaired by the client's inability to meet its margin obligations.

In most cases the CCP will not be aware of a CM's client's inability to meet a margin call until informed by the CM or it becomes public knowledge, which may be because of financial difficulties that could lead to a default, connectivity or technical problems or liquidity issues. Depending on the market and the nature of the client segregation model being utilised, the CCP may not even be aware of who the ultimate end client is or of the positions held.

The CM works closely with its client to resolve the associated problems, only calling the client into default when the situation demands it. At which point the CM will take responsibility for closing out the client's positions and transferring remaining collateral to the client, and where required making up any shortfall and becoming a creditor of the client's insolvency agent. The CM will liaise with the exchange(s) and the client's brokers to prevent further market orders and manage any already in the market.

As the CM remains operable there is no porting of any positions held through the CM to another CM.

A7.2.6. Handling of a Clearing Member Default & Portability

Again EU/UK CCPs' approach to managing the default of a CM is very similar to that in other jurisdictions including the US.

All CCPs operate a 'default waterfall' structure which sets out how financial resources are utilised in order to cover any losses realised as a result of CM defaulting. The defaulting member's collateral always being used prior to that of non-defaulting clearing members and the CCP itself.

The CCP assumes the positions of a defaulting clearing member and it will follow its rules and pre-defined procedures in order to minimise disruption to its members and the market.

Whether the CM's clients operate under an Individual Segregated Account (**ISA**) or an Omnibus Segregated Account (**OSA**), the CM must maintain real-time position and collateral records at a client-by-client level and ensure assets are always segregated from those of the CM. As such, the CCP has the transparency it requires to transfer (port) positions and associated collateral to non-defaulting members that have the capacity and interest to accept the defaulter's clients. This process operates for a limited time and each CCP has indicative porting windows. As a general rule the most efficient way for a CCP to resolve the client portion of a CM default is to port all client positions so they are incentivised to facilitate porting however market activity (increase in risk or deterioration in collateral valuations) may cause them to (and unwind proprietary positions. However, 24 hours by Nasdaq clearing, 2 days at other EU/UK CCPs, after which the CCP will trade out any remaining (un-ported) client positions, and those of the defaulting CM. Throughout the entire process, the CCP must endeavour to maintain its matched book status.

Some CCPs (e.g. Nasdaq Clearing) strongly encourage, but do not mandate, that clients identify an alternative CM to support such a scenario.

Once the CCP has performed the above and closed out the defaulting CM's positions, it will determine the extent to which the initial margin held on behalf of the CM covers the associated obligations. The CCP will look to make-up any shortfall in collateral by first using the CM's positive variation margin, then the CM's contribution to the associated default fund(s), before drawing down on its own committed capital (minimum levels prescribed under EMIR), then the remaining funds in the default fund (on a pro-rata basis). CCPs would then resort to their

resolution measures should there remain a shortfall. Such measures vary between CCPs and include elements like using a proportion of other CMs' positive variation margin, further calls on CMs to replenish the default fund, further contributions from its own balance sheet or parent, and insurance policies (which generally kick in earlier but are not widely used). Fortunately, even the significant failures of Bear Stearns, Lehman and MF Global did not require the use of these resolution tools.

The portability and margin protection features that typify the agency model are achieved in the principal model through the use of a security package that, in addition to the typical posting of initial and variation margin, includes the grant of a security interest by the CM to each of its customers in its right to the return of collateral from the CCP.

A7.2.7. Governance/Conflicts of Interest

Under EMIR, CCPs must operate in the best interests of their clearing members and the end clients. As a result, they are expected to have robust organisational arrangements and policies to prevent potential conflicts of interest and to solve them if the preventive measures are not sufficient.

Where a CCP is a parent undertaking or a subsidiary, any circumstance which may give rise to a conflict of interest as a result of the structure and business activities of another group entity has to be taken into account as long as the CCP is or should be aware of this circumstance.

ESMA has provided further detailed guidelines about governance and conflict of interest management, particularly in relation to Group organisations.

A7.2.8. Fair Access to CCPs/Competition

The MiFID/MiFIR regulation currently has requirements for trading venues and CCPs offering the trading and clearing of exchange-traded derivatives to enable open access to other trading venues and clearing houses that wish to use their services. This means trading venues and CCPs may only deny access where the operational risk and complexity arising from granting access would cause undue risk.

To meet their responsibilities, trading venues and CCPs are expected to have processes to assess any open access requests against a series of factors that would signal potential risk.

In reality, this has proved very hard to put into practice and has become more contentious since Brexit. In the latest legislative package that is being proposed by the European Commission,[28] MiFID/MiFIR will be amended to delete the open access requirement for exchange-traded derivatives, thus reducing the likelihood of competition.

[28] https://www.linklaters.com/en/knowledge/publications/alerts-newsletters-and-guides/2021/november/19/advance-drafts-of-legislative-package-from-mifid-iimifir-review-what-are-the-key-points

A8. CANADA CCP MODEL

A8.1. LEGISLATION AND REGULATORY OVERSIGHT

A8.1.1. Setting of Legislation and On-Going Oversight

Canadian securities regulation is managed through laws and agencies established by Canada's 13 provincial and territorial governments. To achieve a more harmonized approach, the provinces work under an umbrella organization; the Canadian Securities Administrators (**CSA**). The CSA establishes an agreed statement of rules known as National Instruments and these are adopted and implemented by law in each of these provinces and territories. Each province or territory may also have its own additional laws.

CCPs are part of a group of infrastructures known as 'clearing agents' and because they undertake national business across multiple provinces and territories, Canadian securities regulators have entered into a memorandum of understanding (**MOU**) with each other respecting the oversight of clearing agencies and other infrastructure providers. The MOU outlines the way the jurisdictions cooperate and coordinate in their oversight of these entities in order to promote the entities' safety and efficiency, and to contribute to the management of systemic risk.

Each regulator has also entered into an MOU with the Bank of Canada (**BoC**), Quebec's Autorité des marchés financiers and the B.C. Securities Commission to promote the safety and efficiency of clearing and settlement systems. The MOU enhances regulatory cooperation and the oversight of commonly regulated clearing and settlement systems to ensure consistency and reduce regulatory burden, as well as promoting information sharing.

The setting and enforcement of rules involving the proficiency, business and financial conduct of investment firms, are set by IIROC, the Investment Industry Regulatory Organisation of Canada, a self-regulatory organisation (**SRO**).

A8.1.2. High-Level Clearing Legislation

Clearing agents and general clearing agency requirements for all CCPs in all asset classes are dealt with through National Instrument 24-102, known as the clearing rule. Any CCP wishing to operate in a province or territory must apply for recognition or exemption from recognition as a clearing agency under the local jurisdiction which will then assesses the application in accordance with National Instrument, and any of its own local laws, as appropriate. A CCP will be considered exempt if it is deemed to have limited operations in Canada and is being regulated under a jurisdiction that is considered to be comparable to the Canadian regime.

National Instrument 24-102 requires clearing agencies to demonstrate adherence to the ISOCO Principles of PFMI1.[29] The CSA and BoC have together developed Joint Supplementary Guidance to provide additional clarity on certain aspects of some PFMI Principles within the Canadian context. It also includes requirements relating to the segregation and use of customer collateral and detailed recordkeeping, reporting and disclosure requirements intended to make customer collateral and positions readily identifiable. Finally, the Instrument contains requirements relating to the transfer or porting of customer collateral and positions intended to result, in the event of default or insolvency of a clearing intermediary, that

[29] Part 3 https://www.osc.ca/en/securities-law/instruments-rules-policies/2/24-102/unofficial-consolidation-companion-policy-24-102cp-clearing-agency-requirements#_ftn16

customer collateral and positions can be transferred to one or more non-defaulting clearing intermediaries.

Clearing legislation was further enhanced for the clearing of OTC derivatives to meet G20 objectives. Two concurrent laws were introduced: National Instrument 94-101,[30] which mandated central clearing of certain standardised OTC derivatives; and National Instrument 94-102,[31] the purpose of which is to ensure that the clearing of a local customer's OTC derivatives is carried out in a manner that protects the customer's positions and collateral and improves derivatives clearing agencies' resilience to default by a clearing.

The above-mentioned legislation is mainly relevant to clearing agents (i.e. CCPs and CSDs) and their direct users (i.e. clearing members). IIROC has further regulations which govern the clearing member dealer/end client relationships.

A8.1.3. Pre-Trade Risk Controls

In 2013, IIROC implemented Provisions[32] Applicable to Electronic Access to markets by brokers and dealers that, among other things, detailed the automated pre-trade controls that were expected of participants to prevent trades from being entered that do not comply with the relevant requirements or that cause the participant to exceed predetermined credit or capital thresholds.

A8.1.4. Market Structure Characteristics

Exchanges

The market is dominated by one exchange group, The Montreal Exchange Group (**TMX**) which describes itself as an integrated, multi-asset class exchange group. TMX owns the incumbent equities exchange, the Toronto Stock Exchange (**TSX**) and The Montreal Exchange (**MX**), which is the main listed derivatives market.

There is competition in the equity market with numerous exchanges and Alternative Trading systems (**ATSs**) including TSX, competing for flow. TSX is still the most significant trading venue with approximately 67%[33] total of equity market share by volume and the remaining market share is fragmented cross a number of smaller venues, the largest of which has approximately 12%.

Other exchanges offer listed derivatives products such as ICE and CME; both US derivatives exchanges which operate subsidiaries in Canada. However, there is little competition across the product set offered by each exchange.

There are several, ATSs trading bonds and one ATS for securities lending.

Domestic/Recognised CCPs

There two main clearing houses recognised for operation in Ontario,[34] which we have deemed the main centre for clearing for the purposes of illustrating how Canadian markets work in this report:

[30] 2017, https://www.osc.ca/en/securities-law/instruments-rules-policies/9/94-101-94-101cp/national-instrument-94-101-mandatory-central-counterparty-clearing-derivatives-and

[31] 2017, https://www.osc.ca/en/securities-law/instruments-rules-policies/9/94-102/national-instrument-94-102-derivatives-customer-clearing-and-protection-customer-collateral-and-2

[32] UMIR 7.1(6) and Policy 7.1, Part 7, 2013

[33] 3-month Average daily volume ending Sept 2022

[34] OSC also recognises Canadian Depository for Securities Limited (CDS) and FundSERV Inc as clearing agents but for the purpose of this report, they have not been included as these are not CCPs.

- LCH Limited SwapClear
- Canadian Derivatives Clearing Corporation (**CDCC**)

Additionally, the OSC has exempted the following CCPs from recognition, because they are based in another country with limited operations in Ontario/Canada, and subject to a regime considered comparable to that of the OSC:

- Chicago Mercantile Exchange Inc.
- CLS Bank International
- DTCC ITP Matching (Canada) Limited (formerly Omgeo Canada Matching Ltd.)
- Fixed Income Clearing Corporation
- Eurex Clearing AG
- ICE Clear Credit LLC
- ICE NGX
- LCH SA
- LME Clear Ltd.
- Nodal Clear LLC
- Options Clearing Corporation

Figure 21: Summary of Domestic/Recognised CCPs in the Canadian Market

CCP	Ownership Structure	Products Traded/Cleared or Records Held	No of Members
CDCC	• 100% owned by TMX Group	• ETFs • Index derivatives (futures, share futures and options) • Equity derivatives • OTC Fixed income (repo)	• 28 (Options) • 21 (Futures) • 19 Fixed income
LCH Ltd SwapClear	• Majority owned by LSEG (publicly listed in the UK)	• OTC – Interest Rate Swaps	• 59 IRS clearing members in LCH Ltd

Central Securities Depository

The Canadian Depository for Securities Limited (**CDS**) is the main depository and supports Canada's equity, fixed income and money markets. It is wholly owned by TMX.

A8.1.5. CCP Operations

For this report, the information in the rest of the Chapter relates to the overarching Instruments for all CCPs and the operations and rule book of the CDCC, which is considered to be the main clearing house and has its primary operations in the provinces of Quebec and Ontario. The CDCC is 100% owned by TMX and is a for-profit legal entity, separate and independent from its parent shareholder.

Clearing Member Suitability

Clearing members (**CMs**) must be fully segregated from their parent entity with their own balance sheet. All assessments of member suitability are related to the CM entity only.

A8.1.6. Legal and Contractual Relationships

The law does not define principal or agent or speak to del credere models. However, the guidelines acknowledge, that the PFMI Principles allow for alternative principal and agent models where the CCP is not able to identify positions or the assets of its participants' customers.

As part of its services to the exchange-traded derivatives market, the CDCC offers CMs the capacity to provide agency clearing services to non-clearing members. As such, the CDCC has a tiered CCP service which provides central counterparty clearing to CMs and non-CMs.

All transactions that are submitted to the CDCC are registered in the name of the CM either in the firm or client accounts. As a result, each client of a CM looks solely to the CM for performance of the obligations and not to the CDCC. The CDCC is obligated to the CM only. The CM is therefore acting in a principal capacity in terms of its obligations to the CDCC.

IIROC provides standardised contracts that should be used for dealer-to-dealer relationships for clearing and other services.

A8.1.7. Account Segregation

The law states that CCPs must have rules and procedures that enable the segregation and portability of positions and related collateral of a CCP participant's customers, particularly to protect the customers from the default or insolvency of the participant. However, it does not stipulate whether individually segregated accounts for each underlying client must be offered and so fellow risk between end client accounts is a possibility.

However, the law does include obligations on clearing agents to maintain detailed recordkeeping, reporting and disclosure requirements intended to make customer collateral and positions readily identifiable and IIROC requires its dealer members to maintain books and records of client activity at a fully segregated level even if full segregation is not required by the clearing house. However, this segregation rule only applies to the client's securities and not the client's cash unless certain limits are triggered.

Cash Markets

The CSA has chosen to exempt domestic cash markets from the requirement for segregation if all the clearing members of the CCP are Investment Industry Regulatory Organization of Canada (**IIROC**) dealers. This is because most clearing of cash markets is undertaken by domestic investment dealers, which are required to be members of IIROC. This means they must contribute to the Canadian Investor Protection Fund (**CIPF**) and the CSA is of the view that this is an acceptable alternative form of default management and customer asset protection.

Derivative Markets

The CDCC's current account structure and margin methodology for both futures and options markets provides for both client omnibus account (client account) and individual client account (netted client account) to hold a participant's customers' positions.

In futures markets, a net margin methodology is applied in both account types. In options markets, a gross margin methodology is applied in the client account, and a net margin methodology is applied in the netted client account.

The CDCC books and records allow for identification of CMs' customers' positions while the margin requirements allow the CDCC to calculate the associated collateral. The CDCC's system allows the CM to identify positions to a client level using the CDCC's account/sub-account structure.

In futures, while CMs may maintain sub-accounts for clients in the client omnibus account, the CDCC does not hold information related to a customer's identity and pledged collateral, and as such, offers only omnibus protection on such accounts. Enhancements are being developed to enable reports that reflect the client level positions and collateral and implement gross customer margin for client omnibus accounts.

In options, the CDCC books and records allow for identification of CMs' customers' positions while the margin requirements allow the CDCC to calculate the associated collateral. The CDCC's system allows the CM to identify positions to a client level using the CDCC's account/sub-account structure.

The CDCC, therefore describes itself as, at a minimum, having segregation that effectively protects CMs' clients' positions and related collateral from the default or insolvency of that CM. However, this means that if end clients do not make use of a netted client account, then they may be exposed to fellow risk in the event of a default of another end client.

Although the CDCC does not gather information on non-CMs on a day-to-day basis, it has access to certain information through an information sharing agreement with the Montreal Exchange and the rules provide the CDCC with the authority and capacity to audit the books and records of all CMs if the circumstances require it.

A8.1.8. Risk and Collateral Management

At the CDCC, current and potential future exposures are computed and covered through the collection of variation margin (**VM**) in the first instance and initial margin (**IM**) in the latter, on at least a daily basis. Both VM and IM are collected from clearing members, either in cash or via a collateralization scheme, and IM is set to achieve a coverage target of at least 99%. Both VM and IM are secured via acceptable margin deposits and are maintained at either the central bank (for cash collateral), pledged to the CDCC via the CDS settlement system, or held at approved custodians in segregated accounts subject to control agreements. The clearing member grants to, and in favour of the CDCC, a first ranking pledge and security interest on all property deposited as margin deposits as defined under the CDCC's rules.

The CDCC has adopted the delta hedge margining model for derivatives and the historical value-at-risk (**HvaR**) model for fixed income transactions, such as repurchase agreements and cash trades. These models operate within the SOLA-RX component of the CDCC's clearing application platform (SOLA) for all of its cleared products, and the margin system is calibrated with the market risk measures that are made publicly available in its risk manual, whilst also being consistent with its policies and risk appetite statements.

IIROC stipulates the margin requirements for dealer-to-dealer relationships in clearing.

Collateral

The CSA and BoC guidelines state that a Financial Market Infrastructure's (**FMI**) collateral pools should be composed of cash and debt securities issued or guaranteed by the Government of Canada, a provincial government or the US Treasury. Additional asset classes may be acceptable as collateral if they are subject to conservative haircuts and concentration limits and are limited to a maximum of 40% of the total collateral posted from each participant. It also limits securities issued by a single issuer to a maximum of 5% of total collateral from each participant. Letters of credit may be permitted as collateral in some circumstances, providing that regulatory approvals have been given.

The CDCC lays down the criteria that it uses to determine the acceptability of collateral. As of March 2020, it only accepts cash collateral for the clearing fund to mitigate the liquidity risk associated with the closing of positions in the unlikely event of a CM default.

The CDCC's collateral framework includes consideration for multiple risk factors that may affect the value of collateral in the event of a CM default. One of the key factors includes (trading) liquidity risk and sets minimum standards for collateral acceptability in stock outstanding and trading liquidity. The collateral policy also includes limits on the size of any specific collateral that may be accepted from any one particular CM.

In addition to other forms of acceptable collateral, the CDCC accepts USD bonds and a selection of non-CAD currencies as collateral to meet the VM and IM requirements. Haircuts on USD collateral are adjusted to reflect the foreign exchange risk that would be incurred upon liquidation and conversion into CAD to meet CAD denominated losses. Haircuts on non-CAD currencies are assessed based on historical returns of foreign exchange rates and using an exponentially weighted moving average (**EWMA**) to capture the corresponding volatility.

As is the case for CAD collateral, USD collateral is pledged to the CDCC at acceptable depositories in Canada thereby minimizing any legal risks that are inherent in cross-border transactions. Non-CAD currencies are deposited with commercial banks that are within the CDCC's counterparty credit and operational risk appetite. Finally, the CDCC's liquidity arrangements include support for USD and non-CAD currencies collateral, thereby ensuring timely liquidity if necessary. Member grants to, and in favour of the CDCC, a first ranking pledge and security interest on all property deposited as margin deposits as defined under the CDCC's rules.

The IM models adopted by the CDCC set potential future exposure at the individual product level and sub-account level. The CDCC has a model for derivatives and another model for fixed income transactions. The models also set rules regarding aggregation of IM across sub-accounts, accounts, and product types to determine the total IM requirement at the CM level. The IM model is designed to achieve a 99% coverage target at the CM level, after accounting for the aggregation rules.

IIROC sets out the collateral that can be used in dealer-to-dealer relationships.

Handling of a Client Default

The CM has complete control over how it handles a client default and the ultimate responsibility for performing to the CCP in respect of its client's obligations.

Handling of a Clearing Member Default

The law states that a CCP's own capital contribution should be used in the default waterfall: immediately after a defaulting participant's contributions to margin and default fund resources have been exhausted, and prior to non-defaulting participants' contributions. Such equity should be significant enough to attract senior management's attention, separately retained, and not form part of the CCP's resources for other purposes, such as to cover general business risk.

The CDCC, or any other CCP, has full rights to manage a default process and does not have to defer to bankruptcy or insolvency laws. Any losses incurred in the liquidation and/or liquidity

management process are meant to be extinguished by the use of collateral provided as margin cover. CDCC rules provide for full rights over variation and initial margin provided by the suspended CM as well as full right of use and re-hypothecation for the entirety of the clearing fund (suspended and non-defaulting CM alike).

Disclosures

The law requires clearing members to provide a number of disclosures to the end client such as the names of each CCP that the clearer uses, as well as the policies that each CCP s uses when investing collateral attributable to the customer and must update this when changes occur. The clearing intermediary must also provide written disclosure to the customer describing the treatment of customer collateral not held at a regulated clearing agency, including the impact of relevant bankruptcy and insolvency laws, in the event of a default by the clearing intermediary and continuously update this when changes occur. If the clearing intermediary invests customer collateral it must disclose in writing its investment guidelines and policy directly to the customer, or, if applicable, to the indirect intermediary that is providing clearing services to the customer.

Governance and Managing Conflicts of Interest

The law provides clarification on independence criteria for the Board of Directors and the minimum mandates for Board and advisory committees, which include processes to manage conflict of interests at the Board.

The CDCC governance structure consists of the Board of Directors of the Corporation (the Board of Directors) that is assisted by various Committees. Currently, the CDCC has twelve elected directors, six of which were determined to be independent by the Board of CDCC (the requirement is for 33%)

A8.1.9. Fair Access to CCPs

The regulation stipulates that a clearing agent cannot unreasonably prohibit, condition or limit access by a person or company to the services offered by the clearing agency.

A9. AUSTRALIAN CCP MODEL

A9.1. LEGLISATION & REGULATORY OVERSIGHT

'Clearing agents', which includes CCPs, are regulated by the Corporations Act 2001.[35] The Act provides a licensing framework for domestic as well as overseas clearing facilities that seek to operate in Australia. An overseas-based clearing agent that is subject to requirements and supervision in its home country, that are considered sufficiently equivalent to those in Australia, can operate in Australia under an overseas clearing and settlement (**CS**) facility licence. If the clearing agent is considered systemically important in the Australian market, then it must be subject to ongoing assessments by the Reserve Bank of Australia against the CCP Standards over a rolling four-year period.

The Australian Securities and Investments Commission (**ASIC**) licenses and oversees clearing and settlement facilities, which includes CCPs, under the Corporations Act. It assesses each CS facility licensee on its compliance with its licence obligations under the Corporations Act. The Reserve Bank of Australia has formal responsibility for ensuring that licensed CS facilities conduct their affairs in a way that is consistent with financial system stability. It publishes the Financial Stability Standards[36] (FSS), which are consistent with the CPMI-IOSCO Principles for FMIs.

Further regulation, the ASIC Derivative Transaction Rules[37] (Clearing) was introduced in 2015 to create a mandatory central clearing regime in Australia for OTC interest rate derivatives denominated in Australian dollars, US dollars, euros, British pounds and Japanese yen. The clearing mandate applies to Australian and foreign financial institutions that meet a defined clearing threshold.

CCPs in some jurisdictions have secured specific legislation that allows them to operate outside of their domestic bankruptcy/insolvency laws so that it can more effectively manage a CM default.

A9.1.1. Pre-Trade Risk Controls

In 2012, ASIC updated its market integrity rules[38] to ensure that participants have: direct control over filters and automated controls to suspend orders and/or systems; a process for certifying systems and reviewing changes at least yearly; and guidance on testing of systems and filters/controls (the ability to manage highly automated trading, and stress testing of order flow).

A9.2. MARKET CHARACTERISTICS

A9.2.1. Exchanges

The market is dominated by the national exchange group, the ASX, a for-profit exchange. There is some limited competition in the trading of cash equities and the ASX still retains the largest

[35] https://www.legislation.gov.au/Details/C2019C00216 (7.3 of the Act)

[36] https://www.rba.gov.au/payments-and-infrastructure/financial-market-infrastructure/clearing-and-settlement-facilities/standards/financial-stability-standards.html

[37] https://asic.gov.au/regulatory-resources/markets/otc-derivatives/central-clearing-of-otc-derivatives/

[38] https://asic.gov.au/regulatory-resources/markets/market-structure/market-structure-reforms/

market share. The ASX is also the main exchange for listed derivative trading and there is no competition in the ASX's listed derivative products.

A9.2.2. Clearing

The ASX provides clearing services to the cash and derivatives markets through the operation of two licensed, wholly owned subsidiaries: ASX Clear and ASX Clear (Futures).

- ASX Clear provides clearing services and a CCP for equities, listed/quoted investment products, warrants, interest rate securities and equity related derivatives (comprising exchange-traded options and futures) and for equities, listed/quoted investment products and warrants traded via an Approved Market Operator (**AMO**). Equity Swaps are not currently cleared.
- ASX Clear (Futures) clears and provides CCP services for ASX24 ETD contracts and for over-the-counter interest rate derivative products affirmed on an approved affirmation platform.

There is no competition in clearing of any cash market or ASX-listed derivative products. LCH Ltd.'s SwapClear and CME operate under an overseas clearing license and offer commodity, energy and environmental derivatives. They also compete against ASX with a service to clear OTC interest rate swaps. It is noted that the Reserve Bank of Australia (**RBA**) has set a priority for LCH to extend its operating hours to cover Australian business hours as participants currently cannot clear for 4 hours of the day, which requires participants to manage bilateral credit risk exposures during that time.

Figure 22: Summary of Domestic/Systemically Important CCPs in the Australian Market

CCP	Ownership Structure	Products Traded/Cleared or Records Held	No of Members
ASX Clear	100% owned by ASX Group	• Equities • Listed/quoted investment products • Warrants • Interest rate securities • Equity related derivatives (comprising exchange-traded options and futures) and for equities	ASX Clear (equities): 36 ASX Clear (options): 26
ASX Clear (Futures)	100% owned by ASX Group	ASX24: • ETD contracts • OTC interest rate derivatives	ASX Clear (Futures) - Futures: 16 OTC Clearing: 8
LCH	Majority owned by LSEG (publicly listed in the UK)	• ETFs • Index derivatives (futures, share futures and options) • Equity derivatives • OTC - fixed income (repo) • OTC - Interest Rate Swaps	59 IRS Clearing members in LCH Ltd

A9.2.3. Central Depository

The CSD is 100% owned by the ASX in a fully vertical silo with its trading and clearing businesses.

A9.3. CLEARING OPERATIONS

A9.3.1. Clearing Member Eligibility

Clearing members must be fully segregated from their parent and there is a higher requirement for a CM to meet when clearing derivatives.

A9.3.2. Legal and Contractual Relationships

The laws and standards do not define principal or agency. ASX Clear operates on a principal basis. ASX Clear (Futures) is more nuanced. It is principal-to-principal until a CM defaults and then there is the potential for the clearing house to look through to the end client in the event there is an individual client account, ICA. The Individual Client Account (**ICA**) is opened in the name of the individual client at ASX, under the client clearing account of the clearing participant (who continues to clear transactions as agent of the client).

A9.3.3. Account Segregation

The laws and standards do not request the use of individually segregated accounts. However, potential improvements are under review.

ASX Clear maintains a segregated account structure for its exchange-traded products (options) which separates client positions from the CM's proprietary positions. For these products, clients are also able to access individually segregated accounts that offer protection against the concurrent default of the CM and a fellow client.

For cash markets, a single (commingled) account is currently used for each participant's house and client transactions, but the ASX considers that it provides clients with protections that are materially equivalent to those afforded by segregated house/client omnibus accounts because:

- Client stock in the accumulation account is maintained beneficially for the client and accurate records are required to allow daily reconciliation of stock in the accumulation account.
- Funds covering client purchases can only be withdrawn from the client trust account if the CM has taken all steps required to register the stock into the client's name (subject to certain exceptions based on the Corporations Act).
- When client stock is transferred from the accumulation account or a direct/ sponsored HIN (holder identification number) into the settlement account funds representing the sale proceeds (net of brokerage) are paid into the client trust account or to the client on the same day the stock is transferred.

The RBA has asked ASX to review its current segregation arrangements in ASX Clear for the cash market and to consult on the current model versus an omnibus account model.

ASX Clear (Futures) offers an account structure and rules that enable its participants to offer to their futures and OTC derivative customers the choice of clearing through an individual segregated account known as an individual client account (**ICA**), or the traditional client omnibus account.

The ICA is opened in the name of the individual client at ASX, under the client clearing account of the CM (who continues to clear transactions as agent of the client). The segregated account allows for the separate identification and protection of individual customers' gross positions and collateral.

A9.3.4. Risk and Collateral Management

The CCPs consider market liquidity in determining the eligibility of collateral and ensures securities are sufficiently liquid to be eligible as collateral. The following are accepted as collateral:

- ASX Clear (Futures) accepts Australian Government and some semi-government securities and US Treasury bills. It also accepts NZD, EUR, JPY, USD and GBP foreign currencies which are considered highly liquid and commonly accepted and traded in the Australian market.
- ASX Clear accepts ASX200 equities and large/ highly liquid ETFs as collateral.

The impact of concentrations on collateral holdings is mitigated by the fact ASX's CCPs only accept collateral where credit quality is transparent, either through externally verifiable standards (i.e. S&P ratings of AA+/AAA; or being a constituent of a major index, the S&P ASX 200; or highly liquid ETFs). The standard for credit quality is an indication that those high-quality instruments are liquid, non-volatile, and priced adequately.

ASX Clear monitors aggregate concentration levels for each constituent of the S&P ASX 200, or, each highly liquid ETF held as collateral, by each participant, against the certain levels.

The CCPs operate different margin systems according to the requirements and characteristics of each market/product class.

The margin systems used for initial margin are:

- ASX Clear:
    - Equity derivatives: SPAN (standard portfolio analysis of risk).
    - Cash equities: Combination of historical simulation VaR and flat rates.
- ASX Clear (Futures):
    - Futures: SPAN.
    - OTC interest rate derivatives: filtered historical simulation VaR.

Each of the CCPs has slightly different arrangements for the calling and collecting of margins:

ASX Clear:

- For cash equities transactions (risk and mark-to-market), margins are calculated based on end-of-day prices and settled at the following business day. Currently there is no intra-day margin called against cash equities transactions.
- For derivatives transactions (exchange-traded options), margins are calculated based on end-of-day prices and settled following business day. Ad hoc intra-day margin calls are made if certain thresholds are breached.

ASX Clear (Futures):

- For futures (futures and options over futures), margins are calculated based on end-of-day prices and settled the following business day. There are various intra-day margin calls to check if the initial margin on a CM portfolio has been eroded by a certain percentage and the margin call is greater than $1 million, or the shortfall exceeds a dollar margin threshold.

A9.3.5. Handling of a Client Default

As with the other markets reviewed, the CM controls how it handles a client default, with ultimate responsibility for performing to the CCP in respect of the client's obligations. The CM will trade-out the client's positions in the market (listed) or bilaterally (**OTC**) and pass to the client or its administrator all remaining collateral once all positions have been closed out. There is necessary communication between the CM, the CCP and the exchange to prevent/manage/pull any client orders.

Where ICAs are used, it means that one client is protected from another client's default.

A9.3.6. Handling of a CM Default

The ASX CCPs have powers through the ASX Recovery Rulebook to fully address any credit losses and liquidity shortfall they may face from a CM (participant) default and to replenish their financial resources following a CM default. Under the Operating Rules, ASX Clear has the power to transfer (port) CMs' clients' positions and collateral without the need to seek approval from the CM's external administrator.

If a default becomes apparent, the Participant Issue Response Group (**PIRG**) is called upon. In the event of a potential default, the PIRG will refer the matter to the Default Management Committee (**DMC**).

In ASX Clear, once the DMC has declared a clearing member default then (following notification to the market) ASX may liaise with one of its default brokers (authorised to act on behalf of ASX in the event of a default) to close out or hedge the defaulting CM's outstanding obligations to the clearing house.

For OTC markets, once the DMC has declared the CM default then ASX will convene the Default Management Group (comprising representatives from each of the OTC clearing member entities of ASX Clear (Futures)) to provide guidance and advice (such advice will be referred back to the DMC for consideration) on the best way to hedge, and subsequently auction, the defaulting CM's portfolio.

For clients with ICAs, it significantly increases the likelihood of ASX being able to port an individual client's positions and collateral value, to a nominated alternate CM, in the event of CM default. Where porting is not available, ASX will close-out the positions in the ICA, with margin value and/or actual attributed assets being returned directly to the client (less the costs of close-out).

Default management fire drills are conducted for the CCP facilities at least annually, to test, review and, where applicable, enhance ASX's default management processes and procedures. These tests include relevant parties that are likely involved in the default procedures.

In addition to the existing powers to utilise the defaulting CM's collateral and the prefunded mutualised default resources to address credit losses, the recovery rules provide the ASX CCPs with the following additional loss allocation tools:

- **Recovery assessments**: Each of the ASX CCPs has the power to call for additional cash contributions from non- defaulting participants. These are capped in aggregate at $300 million for ASX Clear and $600 million (less defaulter's contribution) for ASX Clear (Futures), with individual caps also applicable for each participant, for each default period.
- **Payment reduction**: ASX Clear (Futures) only has additional power to reduce (haircut) a broad range of its payment obligations to participants (e.g. variation margin payments due to participants with net in-the-money positions). This would not apply to obligations to repay initial margin.

- **Complete termination**: As a last resort, each of the ASX CCPs would have the power to terminate all open contracts at the CCP with any residual losses of the CCP allocated by haircutting settlement payments to participants on a pro- rata basis.

The ASX Recovery Rulebook also contains rules requiring CMs and the CCP to replenish the default fund following a default. The default fund would be replenished on an interim basis to a minimum fund size as soon as reasonably practicable after completion of the final default management process for a default period, and to final fund size not less than 22 business days after completion of the default management process. In the interim period until final replenishment, the CCP may also call additional initial margin if required to meet Cover 2 requirements.

In ASX Clear there is no default fund where the risk is shared between the non-defaulting market participants. ASX Clear instead puts its own funds (AUD250mn) in place of a mutualised default fund. This means ASX Clear puts significantly more skin in the game than is required by other international regulation and is responsible for 100% of readily available resources in the event of a default. However, there is a National Guarantee Fund (**NGF**) which originated as a series of 'fidelity funds' that existed to meet certain claims from dealing with participants of the various State stock exchanges before they merged and became privatised. They were run by an independent 'caretaker' organisation, which in turn became part of the Securities Exchanges Guarantee Corporation (**SEGC**) who are the current trustees of the fund. The fund may be applicable to some elements of a defaulting CM's business.

A9.3.7. Fair Access to CCPs

Up until 2016, there had been a moratorium on competition in clearing in cash equity markets. After some debate between the exchange and their participants, including studies to consider whether costs could come down despite local scale not being on a par with other markets, the Council of Financial Regulators (**CFR**), announced a reform package that would be developed to provide the path for competition in cash market clearing. This included a statement on:

- Regulatory Expectations for Conduct in Operating Cash Equity Clearing and Settlement Services in Australia (Regulatory Expectations).
- Minimum Conditions for Safe and Effective Competition in Cash Equity Clearing in Australia (Minimum Conditions).

ASX Cash Equities had to establish a Clearing and Settlement Code of Practice which sets out its commitments to its customers and other stakeholders in managing cash equities clearing and settlement infrastructure and services for the Australian market. Under the Code, ASX commits, among other things, to transparent and non-discriminatory terms of access to cash equities clearing and settlement services. This includes user input into governance, transparent and non-discriminatory pricing and access and the protection of confidential information of users.

To address concerns regarding 'essential facilities,' it was considered appropriate that the incumbent CS facilities would be required to facilitate the provision of access to its services on a fair, transparent and non-discriminatory basis with terms and conditions, including price, that are fair and reasonable.

A9.3.8. Governance

Under its Code of Practice, ASX has to consult on the management of its Boards and must maintain at least 50% of non-executive directors on its CS boards who are independent of ASX Limited. Currently the majority of CS Board directors are independent non-executives.

Additionally, under the Code of Practice, ASX has established an advisory forum comprising senior representatives from ASX's clearing and settlement participants, and a wide range of other industry stakeholders that are users of ASX's clearing and settlement services. This Business Committee provides a mechanism for ASX to seek user input so that the ongoing operation and development of cash market clearing and settlement infrastructure and services meet the needs of users and are aligned with global standards.

A10. G20 PRINCIPLES FOR FINANCIAL MARKET INFRASTRUCTURE

Summarised below are a subset of the standards that a CCP should have in place that are relevant to the core subject matter of this report.

With a few exceptions, the Principles do not prescribe a specific tool or arrangement to achieve their requirements and they allow for different means to satisfy a particular Principle.

Principle	Explanation	Extracts from the accompanying explanatory notes for CCPs to consider	MSP's Observations in SA
Legal Basis[1]	• A well-founded, clear, transparent, and enforceable legal basis for each material aspect of its activities in all relevant jurisdictions.	• *Should be a high degree of certainty and enforceability.* • *Should be able to clearly articulate the legal basis for its activities.* • *Rights and interests should be clear.* • *The legal basis should provide certainty, where applicable, with respect to an FMI's interests in, and rights to use and dispose of, collateral.* • *Should be clear rules for an orderly wind down.*	• JSE Clear participants say they are unsure of the legal basis under which they are operating, particularly in the event of a client default. • Current JSE Clear rules related to a client default can place the CM in an invidious position of having to choose between complying with rules or acting to minimise losses: i.e. unwinding a position before CCP has declared an event of default.
Governance[2]	• Governance arrangements that are clear and transparent, promote the safety and efficiency of the FMI, and support the stability of the broader financial system, other relevant public interest considerations, and the objectives of relevant stakeholders.	• *Should account for public interest.* • *Should be documented procedures for its functioning, including procedures to identify, address, and manage member (interesting that it does not state the CCPs own conflict of interest) conflicts of interest.* • *Should ensure that the FMI's design, rules, overall strategy, and major decisions reflect appropriately the legitimate interests of its direct and indirect participants and other relevant stakeholders.*	• Some concerns exist about the sort of assurances that might be given to other trading platforms; that they can also connect to BDA/JSE Clear if it offers a CCP for equities.

Principle	Explanation	Extracts from the accompanying explanatory notes for CCPs to consider	MSP's Observations in SA
		• *It is essential that an FMI's risk-management personnel have sufficient independence, authority, resources, and access to the board to ensure that the operations of the FMI are consistent with the risk-management framework set by the board.* • *An FMI's board should consider all relevant stakeholders' interests, including those of its direct and indirect participants, in making major decisions, including those relating to the system's design, rules, and overall business strategy.*	
Framework for the comprehensive management of risks[3]	• A sound risk-management framework for comprehensively managing legal, credit, liquidity, operational, and other risks.	• *An FMI should provide incentives to participants and, where relevant, their customers to manage and contain the risks they pose to the FMI.* • *An FMI should regularly review the material risks it bears from and poses to other entities (such as other FMIs, settlement banks, liquidity providers, and service providers) as a result of interdependencies and develop appropriate risk management tools to address these risks.* • *To establish a sound risk-management framework, an FMI should first identify the range of risks that arise within the FMI and the risks it directly bears from or poses to its participants, its participants' customers, and other entities.* • *An FMI should regularly review the material risks it bears from and poses to other entities (such as other FMIs, settlement banks, liquidity providers, or service providers) as a result of interdependencies and develop appropriate risk-management tools to address these risks.* • *The wind down plan should contain, among other elements, a substantive summary of the key recovery or orderly wind-down strategies, the identification of the FMI's critical operations and services, and a description of the measures needed to implement the key strategies.*	• Concentration amongst a small number of CMs is concerning. • CM default at JSE Clear appears untested and more focus is given to client default. • Portability of client positions following a CM default is highly unlikely to occur in the timeframes generally allowed, given that clients can only use one CM and have not established backup alternative CM relationships.

Principle	Explanation	Extracts from the accompanying explanatory notes for CCPs to consider	MSP's Observations in SA
Credit and liquidity risk management[4]	• The ability to effectively measure, monitor, and manage its credit exposures to participants and those arising from its payment, clearing, and settlement processes. • Sufficient financial resources to cover its credit exposure to each participant fully with a high degree of confidence. • In addition, a CCP that is involved in activities with a more complex risk profile, or that is systemically important in multiple jurisdictions, should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios. These should include, but not be limited to, the default of the two participants and their affiliates that would potentially cause the largest aggregate credit exposure to the CCP in extreme but plausible market conditions. All other CCPs should maintain additional financial resources sufficient to cover a wide range of potential stress scenarios that should include, but not be limited to, the default of the participant and its affiliates that would potentially cause the largest aggregate credit exposure to the CCP in extreme but plausible market conditions.	• *The following set of principles on (a) credit risk management, (b) collateral, (c) margin, and (d) liquidity risk management form the core of the standards for financial risk management and financial resources. Taken together, these four principles are designed to provide a high degree of confidence that an FMI will continue operating and serve as a source of financial stability even in extreme market conditions.*	• JSE Clear accepting a wider range of securities will further reduce credit risk. • Arrangements that allow JSE Clear to directly draw down from/pay funds to a CM bank account will further reduce risk. • More consideration will need to be given to these aspects which will need to be adapted if equities, bonds and particularly OTC trades are to be cleared by JSE Clear.

Principle	Explanation	Extracts from the accompanying explanatory notes for CCPs to consider	MSP's Observations in SA
Collateral[5]	• Where collateral is required to manage its or its participants' credit exposure, a CCP should accept collateral with low credit, liquidity, and market risks. It should also set and enforce appropriately conservative haircuts and concentration limits.	• *An FMI should generally limit the assets it (routinely) accepts as collateral to those with low credit, liquidity, and market risks.* • *An FMI should establish prudent valuation practices and develop haircuts that are regularly tested and take into account stressed market conditions.* • *An FMI should use a collateral management system that is well-designed and operationally flexible.*	• It is understood that JSE Clear will shortly extend its list of eligible collateral to include SA government debt.
Margin[6]	• A CCP should cover its credit exposures to its participants for all products through an effective margin system that is risk-based and regularly reviewed.	• *A CCP should also have procedures and sound valuation models for addressing circumstances in which pricing data are not readily available or reliable.*	• Lack of liquidity in some markets presents difficulties in setting closing prices, and the prices attached to a defaulting client's positions by JSE Clear, under the current model. • If this model is maintained into OTC clearing, rather than leaving the CM to manage its client's default, then there is greater scope for valuation anomalies, and greater risk to the impairment of the wider community.
Liquidity risk[7]	• Sufficient liquid resources should be maintained in all relevant currencies to effect same-day and, where appropriate, intra-day and multiday settlement of payment obligations with a high degree of confidence under a wide range of potential stress scenarios that should include, but not be limited to, the default	• *An FMI may supplement its qualifying liquid resources with other forms of liquid resources. If the FMI does so, then these liquid resources should be in the form of assets that are likely to be saleable or acceptable as collateral for lines of credit, swaps, or repos on an ad hoc basis following a default, even if this cannot be reliably prearranged or guaranteed in extreme market conditions. Even if an FMI does not have access to routine central bank credit, it should still take account of what collateral is typically accepted by the relevant central bank, as such*	• At present all margin is met using ZAR cash, and any extension to the inclusion of government debt will necessarily consider resident liquidity. • JSE Clear should consider establishing, if it does not yet have, PPS (or similar) type arrangements that enable it to

Principle	Explanation	Extracts from the accompanying explanatory notes for CCPs to consider	MSP's Observations in SA
	of the participant and its affiliates that would generate the largest aggregate liquidity obligation for the FMI in extreme but plausible market conditions.	*assets may be more likely to be liquid in stressed circumstances. An FMI should not assume the availability of emergency central bank credit as a part of its liquidity plan.*	pay/collect directly into a CM's bank account.
Default Management[8]	• Participant-default rules and procedures should be clearly defined to manage a participant (note that does not say non-participant, i.e. client) default. These rules and procedures should be designed to ensure that the CCP can take timely action to contain losses and liquidity pressures and continue to meet its obligations.	• *A CCP needs an appropriate segregation and portability regime to protect customer positions in the event of a participant default or insolvency.* • *An FMI should be well prepared to implement its default rules and procedures, including any appropriate discretionary procedures provided for in its rules.* • *Key objectives should include:* ○ *a), b) etc, …..(e) managing and closing out the defaulting participant's positions and liquidating any applicable collateral in a prudent and orderly manner. In some instances, managing a participant default may involve hedging open positions, funding collateral so that the positions can be closed out over time, or both.* • *An FMI should describe the method for identifying a default. In particular, an FMI should specify whether a declaration of default is automatic or discretionary, and if discretionary, which person or group shall exercise that discretion. Key aspects to be considered in designing the rules and procedures include (a) the actions that an FMI can take when a default is declared; (b) the extent to which such actions are automatic or discretionary; (c) potential changes to the normal settlement practices, should these changes be necessary in extreme circumstances, to ensure timely settlement; (d) the management of transactions at different stages of processing; (e) the expected treatment of proprietary and customer transactions and accounts; (f) the probable sequencing of actions; (g) the roles, obligations, and responsibilities of the various parties, including non-defaulting*	• JSE Clear's direct involvement in an end client default is unhelpful and not replicated by any of the international CCPs reviewed. It potentially complicates, distorts the outcome and delays required actions, and increases the risk of impacting a wider community of stakeholders. • CM default management is the most critical objective but appears untested. Stakeholders should plan how to handle individual defaults and multiple CM and/or end client default events occurring simultaneously.

Principle	Explanation	Extracts from the accompanying explanatory notes for CCPs to consider	MSP's Observations in SA
		participants; and (h) the existence of other mechanisms that may be activated to contain the impact of a default. An FMI should involve its participants, authorities, and other relevant stakeholders in developing its default rules and procedures (see Principle 2 on governance). • *A CCP should have rules and procedures to facilitate the prompt close out or transfer of a defaulting participant's proprietary and customer positions. Typically, the longer these positions remain open on the books of the CCP, the larger the CCP's potential credit exposures resulting from changes in market prices or other factors will be. A CCP should have the ability to apply the proceeds of liquidation, along with other funds and assets of the defaulting participant, to meet the defaulting participant's obligations. It is critical that a CCP has the authority to act promptly to contain its exposure, while having regard for overall market effects, such as sharp declines in market prices.*	
Segregation and portability[9]	• A CCP should have rules and procedures that enable the segregation and portability of positions of a participant's customers and the collateral provided to the CCP with respect to those positions.	• *A CCP should, at a minimum, have segregation and portability arrangements that effectively protect a participant's customers' positions and related collateral from the default or insolvency of that participant. If the CCP additionally offers protection of such customer positions and collateral against the concurrent default of the participant and a fellow customer, the CCP should take steps to ensure that such protection is effective.* • *A CCP should structure its portability arrangements in a way that makes it highly likely that the positions and collateral of a defaulting participant's customers will be transferred to one or more other participants.* • *A CCP should disclose its rules, policies, and procedures relating to the segregation and portability of a participant's customers' positions and related collateral. In particular, the CCP should disclose whether customer collateral is protected on an individual or omnibus basis.*	• JSE Clear currently mandates ISAs. • Backup CMs do not appear to be encouraged and therefore plans to conduct portability appear lacking. • Have such plans and the CCP's ability to port positions and collateral been assessed, in regulatory-led tests or real case events? • Should JSE Clear provide the choice of an OSA, the CMs will want to pay particular attention to the "fellow-customer-risk" issue. Regulators may need to mandate more disclosures by CMs.

Principle	Explanation	Extracts from the accompanying explanatory notes for CCPs to consider	MSP's Observations in SA
		• *Customer collateral should be segregated from the assets of the participant through which the customers clear. In addition, individual customer collateral may be held separately from the collateral of other customers of the same participant to protect customers from each other's default. Where offered by the CCP, such positions and collateral should be protected effectively from the concurrent default or insolvency of both a customer and the participant.* • *Portability refers to the operational aspects of the transfer of contractual positions, funds, or securities from one party to another party. By facilitating transfers from one participant to another, effective portability arrangements lessen the need for closing out positions, including during times of market stress. Portability thus minimises the costs and potential market disruption associated with closing out positions and reduces the possible impact on customers' ability to continue to obtain access to central clearing.* • *A CCP should employ an account structure that enables it readily to identify positions belonging to a participant's customers and to segregate related collateral. Segregation of customer collateral by a CCP can be achieved in different ways, including through individual or omnibus accounts.* • *The degree of protection achievable for customer collateral will depend on whether customers are protected on an individual or omnibus basis and the way initial margin is collected (gross or net basis) by the CCP.123 Each of these decisions will have implications for the risks the CCP faces from its participants and, in some cases, their customers. The CCP should understand, monitor, and manage these risks.* • *The use of individual accounts and the collection of margin on a gross basis provide flexibility in how a customer's portfolio may be ported to another participant or group of participants. Maintaining individual accounts, however, can be operationally and resource intensive for the CCP in settling transactions and ensuring accurate bookkeeping.*	

Principle	Explanation	Extracts from the accompanying explanatory notes for CCPs to consider	MSP's Observations in SA
		• *Another approach would be to use an omnibus account structure where all collateral belonging to all customers of a particular participant is commingled and held in a single account segregated from that of the participant. This approach can be less operationally intensive, can be more efficient when porting positions and collateral for a group of customers of a defaulting participant (where there has been no customer default or where customer collateral is legally protected on an individual basis), and can be structured to protect customers' collateral from being used to cover a default by the direct participant.* • *However, depending on the legal framework and the CCP's rules, omnibus accounts where the customer collateral is protected on an omnibus basis may expose a customer to "fellow-customer risk" – the risk that another customer of the same participant will default and create a loss that exceeds both the amount of available collateral supporting the defaulting customer's positions and the available resources of the participant. As a result, the remaining commingled collateral of the participant's non-defaulting customers is exposed to the loss. Fellow-customer risk is of particular concern because customers have limited, if any, ability to monitor or to manage the risk of their fellow customers.* • *One potential solution is for omnibus account structures to be designed in a manner that operationally commingles collateral related to customer positions while protecting customers legally on an individual basis – that is, protecting them from fellow-customer risk. Such individual protection does require the CCP to maintain accurate books sufficient to promptly ascertain an individual customer's interest in a portion of the collateral. A failure to do so can lead to delays or even losses in returning margin and other collateral that has been provided to the CCP to individual customers in the event a participant becomes insolvent.* • *The degree to which portability is fostered for a customer whose assets are held in an omnibus account also varies depending on whether the*	

Principle	Explanation	Extracts from the accompanying explanatory notes for CCPs to consider	MSP's Observations in SA
		CCP collects margin on a gross or net basis. As with account structure, there are advantages and disadvantages to the alternative ways in which margin may be collected by the CCP that employs an omnibus account structure. Margin calculated on a gross basis to support individual customer portfolios results in less netting efficiency at the participant level; however, it is likely to preclude the possibility of under-margined customer positions when ported. As a result, CCPs can port a participant's customers' positions and related margin in bulk or piecemeal.128 Gross margining enhances the feasibility of portability, which is desirable since porting avoids the transactions costs, including bid-offer spreads associated with terminating and replacing a participant's customers' positions. When margin is collected on a gross basis, it is more likely that there will be sufficient collateral in the omnibus account to cover all positions of a participant's customers. • *A CCP should therefore structure its portability arrangements in a way that makes it highly likely that the positions and collateral of a defaulting participant's customers will be effectively transferred to one or more other participants, taking into account all relevant circumstances. In order to achieve a high likelihood of portability, a CCP will need to have the ability to identify positions that belong to customers, identify and assert its rights to related collateral held by or through the CCP, transfer positions and related collateral to one or more other participants, identify potential participants to accept the positions, disclose relevant information to such participants so that they can evaluate the counterparty credit and market risk associated with the customers and positions, respectively, and facilitate the CCP's ability to carry out its default management procedures in an orderly manner.* • *A CCP should state its segregation and portability arrangements, including the method for determining the value at which customer positions will be transferred, in its rules, policies, and procedures.*	

Principle	Explanation	Extracts from the accompanying explanatory notes for CCPs to consider	MSP's Observations in SA
Operational Risk[10]	• The plausible sources of operational risk, both internal and external should be identified and mitigated through the use of appropriate systems, policies, procedures, and controls. Systems should be designed to ensure a high degree of security and operational reliability and should have adequate, scalable capacity. Business continuity management should aim for timely recovery of operations and fulfilment of the FMI's obligations, including in the event of a wide-scale or major disruption.	• *An FMI should identify and assess the sources of business risk and their potential impact on its operations and services, taking into account past loss events and financial projections. An FMI should assess and thoroughly understand its business risk and the potential effect that this risk could have on its cash flows, liquidity, and capital positions. In doing so, an FMI should consider a combination of tools, such as risk management and internal control assessments, scenario analysis, and sensitivity analysis. Internal control assessments should identify key risks and controls and assess the impact and probability of the risks and the effectiveness of the controls.*	• Has JSE Clear sufficiently addressed and documented the processes and procedures it would deploy in the event of a CM default, technology outages at major services (in-house and at agents)?
Access[11]	• There should be objective, risk-based, and *publicly* disclosed criteria for participation, which permit fair and open access.	• *An FMI should allow for fair and open access to its services, including by direct and, where relevant, indirect participants and other FMIs, based on reasonable risk- related participation requirements.* • *An FMI's participation requirements should be justified in terms of the safety and efficiency of the FMI and the markets it serves, be tailored to and commensurate with the FMI's specific risks, and be publicly disclosed. Subject to maintaining acceptable risk control standards, an FMI should endeavour to set requirements that have the least-restrictive impact on access that circumstances permit.* • *Access refers to the ability to use an FMI's services and includes the direct use of the FMI's services by participants, including other market infrastructures (for example, trading platforms) and, where relevant, service providers (for example, matching and portfolio compression service providers). In some cases, this includes the rules governing indirect participation. An FMI should allow for fair and open access to its services.*	• Particularly relevant in the context of the competition issues in the cash equity market, should JSE Clear move to clearing cash equities. • Provision then to A2X/other exchanges of access to JSE Clear's services will be of fundamental importance if competition is to be facilitated.

Principle	Explanation	Extracts from the accompanying explanatory notes for CCPs to consider	MSP's Observations in SA
		• *Fair and open access to FMI services encourages competition among market participants and promotes efficient and low-cost payment, clearing, and settlement. Because an FMI often benefits from economies of scale, there is typically only one FMI, or a small number of FMIs, for a particular market. As a result, participation in an FMI may significantly affect the competitive balance among market participants. In particular, limiting access to an FMI's services may disadvantage some market participants (and their customers), other FMIs (for example, a CCP that needs access to a CSD), and service providers that do not have access to the FMI's services. Further, access to one or more FMIs may play an important role in a marketwide plan or policy for the safe and efficient clearing of certain classes of financial instruments and the promotion of efficient financial markets (including the reporting and recording of transaction data). An FMI's participation requirements should therefore allow for fair and open access, in all relevant jurisdictions, based on reasonable risk-related participation requirements. Moreover, open access may reduce the concentrations of risk that may result from highly tiered arrangements for payment, clearing, and settlement.*	
Tiered participation arrangements[12]	• Material risks arising from tiered participation arrangements should be identified, monitored, and managed. (Tiered participation arrangements occur when some firms (indirect participants) rely on the services provided by other firms (direct participants) to use the FMI's trading, central payment, clearing, settlement, reporting or recording facilities).	• *An FMI should ensure that its rules, procedures, and agreements allow it to gather basic information about indirect participation in order to identify, monitor, and manage any material risks to the FMI arising from such tiered participation arrangements.* • *An FMI should identify material dependencies between direct and indirect participants that might affect the FMI.* • *An FMI should identify indirect participants responsible for a significant proportion of transactions processed by the FMI and indirect participants whose transaction volumes or values are large relative to the capacity of the direct participants through which they access the FMI in order to manage the risks arising from these transactions.*	• JSE appears to be overstepping the mark as the regulations make it clear that a participant is responsible for its own clients. • Lack of pre-trade risk controls have an impact from trading through to clearing and settlement. Regulators will need to address this.

Principle	Explanation	Extracts from the accompanying explanatory notes for CCPs to consider	MSP's Observations in SA
		• *An FMI should regularly review risks arising from tiered participation arrangements and should take mitigating action when appropriate.* • *The dependencies and risk exposures (including credit, liquidity, and operational risks) inherent in these tiered arrangements can present risks to the FMI and its smooth functioning as well as to the participants themselves and the broader financial markets.149 For example, if an FMI has few direct participants but many indirect participants with large values or volumes of transactions, it is likely that a large proportion of the transactions processed by the FMI depend on a few direct participants. This will increase the severity of the effect on the FMI of a default of a direct participant or an operational disruption at a direct participant. The credit exposures in tiered relationships can also affect the FMI. If the value of an indirect participant's transactions is large relative to the direct participant's capacity to manage the risks, this may increase the direct participant's default risk. In some cases, for example, CCPs offering indirect clearing will face credit exposures to indirect participants or arising from indirect participants' positions if a direct participant defaults.* • *Tiered participation arrangements typically create credit and liquidity exposures between direct and indirect participants. The management of these exposures is the responsibility of the participants and, where appropriate, subject to supervision by their regulators. An FMI is not expected to manage the credit and liquidity exposures between direct and indirect participants, although the FMI may have a role in applying credit or position limits in agreement with the direct participant. An FMI should, however, have access to information on concentrations of risk arising from tiered participation arrangements that may affect the FMI, allowing it to identify indirect participants responsible for a significant proportion of the FMI's transactions or whose transaction volumes or values are large relative to those of the direct participants through which they access the FMI. An FMI should identify and monitor such risk concentrations.*	

Principle	Explanation	Extracts from the accompanying explanatory notes for CCPs to consider	MSP's Observations in SA
Efficiency Principle[13]	• A CCP should be efficient and effective in meeting the requirements of its participants and the markets it serves.	• *An FMI should be designed to meet the needs of its participants and the markets it serves, in particular, with regard to choice of a clearing and settlement arrangement; operating structure; scope of products cleared, settled, or recorded; and use of technology and procedures.* • *An FMI should have clearly defined goals and objectives that are measurable and achievable, such as in the areas of minimum service levels, risk-management expectations, and business priorities.*	• Does JSE Clear fully meet the needs of its participants in terms of driving efficiencies? • CM concerns related to the mandated use of BDA given its use is not efficient for all participants and it operates on legacy technology. It also potentially disincentivises the creation of a CCP.
Disclosure of Rules and Key Procedures[14]	• There should be clear and comprehensive rules and procedures and should provide sufficient information to enable participants to have an accurate understanding of the risks, fees, and other material costs they incur by participating in the CCP.	• *An FMI should adopt clear and comprehensive rules and procedures that are fully disclosed to participants. Relevant rules and key procedures should also be publicly disclosed.*	• One of the main concerns expressed by CMs is the lack of clarity, and often contradictory language, presented to them in the CCP's rules.