CLEARABLE DERIVATIVE PRODUCTS

JSE Clear

February 2020

INTRODUCTION

Currently, JSE Clear (JSEC) performs a clearing function for every product listed on the JSE derivatives exchange and for all products in which participants have positions. This memorandum sets out the assessment criteria used when considering whether a product is suitable for clearing. This memo also provides a short description of the governance process involved in approving a new product to be cleared and the intended use of the capabilities that have been developed in the JSE's Can-Do platform.

ASSESSMENT CRITERIA

The business of a clearing house is to process payments and settlements for financial transactions. Through its rules and netting arrangements, the clearing house reduces counterparty credit and liquidity risk exposures through netting. It also provides standardised and transparent risk management. The efficiency with which a clearing house is able to do this is a function of the products for which it clears.

The following criteria were used to assess the clearing suitability of the products shown in this document:

- ***Standardization***. When creating and managing a clearing environment, standardising products wherever possible improves efficiencies and lowers operational risks. Managing the reference data for standardized contracts is significantly simpler than for non-standardized contracts. Crucially, the default management process for portfolios containing only standardized contracts is significantly less complex. Furthermore, standardization can concentrate trading activity in a smaller number of instruments, and thereby contributes to liquidity.
- ***Complexity***. More complex instruments are typically more difficult to value, increasing the risk of inaccuracy in quantifying the risk profile. Inaccurate collateralization is more likely. Complex instruments are often also more difficult to hedge. This complicates the task of managing defaults of portfolios that include such complex instruments. Complex instruments also often require bespoke valuation and risk measurement solutions (not typically provided by the standard infrastructure suppliers) which introduce more inefficiency and risk into established processes and systems.
- ***Liquidity***. More accurate pricing information is available for more heavily traded, liquid products. This allows more accurate valuation of positions, which in turn reduces the risk that positions will be under-collateralized or over-collateralized. Second, more actively traded, liquid products typically have more reliable time series price data. Such data facilitates the development, testing, and calibration of more accurate risk models that permit CCPs to choose initial margin levels that more precisely reflect the true risks posed by these products.
- ***Risk characteristics***. Various risk characteristics affect the ability of CCPs to clear certain products:
  - *Volatility:* more volatile products are often more challenging to clear;
  - *Tail/gap risk:* price discontinuities pose various challenges to CCPs, and can lead to higher exposures at default.
  - *Dependencies*: a CCP faces elevated risks when a clearing member's probability of default is elevated precisely when it owes the CCP substantial amounts on its cleared positions (wrong-way risk).

All the products that have been approved for clearing by JSE Clear are listed in the appendix to this document. The exact underlying assets that each product references need to meet certain criteria, mainly related to liquidity and price transparency. These criteria are set by JSE Clear and a brief description of these is placed in the appendix

GOVERNANCE PROCESS FOR APPROVING ALL NEW PRODUCTS FOR LISTING

Any product that is not on the list in the appendix is considered a new product and will need to follow the process outlined here before listing. Products which haven't been traded/used for a period of longer than 6 months will no longer be offered and should interest be shown, they will follow the new product process before being listed/offered. New products are considered by JSEC after full consultation across all parts of the business.

The business unit initiating the product will document the details of the product. In consultation with the various enabling business units the details of the operational mechanics, risk factors and any peculiarities will be documented. The Risk team opines on the suitability of clearing the proposed product. Once there is consensus on product details, the product will be presented to the JSE Executive Committee for approval before being put to the JSEC Risk Committee for approval.

The JSE Executive Committee will consider the underlying assumptions relating to the product, its valuation and margining; and evaluate JSEC's potential risk exposure should the assumptions fail. Consideration is to be given to possible difficulty in valuing any new product, and how the product might perform in a stressed economic environment. The JSE Executive Committee is to ensure that changes in the central counterparty's risk exposure are identified and reviewed and that any changes to the CCP's infrastructure, policies, processes and procedures needed as a result of the product being introduced are in place before the product is made available for clearing.

It is the responsibility of the management to ensure that all specific underlyings continue to meet the requirements as set out in this document. Where there is doubt, the Risk team is to be requested to provide clarity on a particular attribute, e.g. valuation methodology or inputs. It is Risk team's responsibility to ensure that all products and specific contracts meet the criteria in this document and are risk managed appropriately. Should there be no consensus on the clearability of a product or specific underlying, the product will be brought to JSEC Risk Committee to determine whether it should be offered for clearing after seeking advice from the Clearing Member Risk Advisory Committee.

The JSEC Risk Committee is to be provided with assurance that the product is appropriate for clearing by JSEC and that the JSE is able to effectively clear positions therein.

INTENDED USE OF THE CAN-DO PRODUCT PLATFORM

For instruments to be eligible for listing on the Can-Do platform there must be a standardised and robust valuation mechanism and risk measurement established within the JSE which includes effective and efficient processes for handling and maintaining reference data for that product type. This valuation will be the final, definitive and authoritative determinant of variation and initial margin requirements. Inputs into the valuation and risk management calculations are conservative and take operational and liquidity risk into account.

As part of the Cando option offering, to gain efficient margin offset, the JSE will allow combinations of options where at least one option is exotic may be listed. To robustly manage reference data, reduce operational risk and be in a position to provide adequate information in the case of a default no more than 5 options are permitted to be combined into one instrument (e.g. call spread – 2 options, fence – 3 options).

LIST OF TRADABLE PRODUCTS

The product types listed below have been identified as products that meet the JSE Clear 'clearability' criteria above; they have clearly specified hedging strategies, relatively low levels of complexity, and manageable risk characteristics.

It should be noted that the specific underlying to any instrument must still meet the requirements currently in place for liquidity. The risk management team reviews these underlyings not only when listing but for continued adherence to these requirements.

No derivative cleared on JSEC may have a tenor longer than 3 years with the exception of Swap Futures.

REVIEW

The products currently listed on the JSE derivative market and noted in the appendix meet the criteria described above.

Recently there have been a few instruments which are a subset of the products in the appendix which the risk team has assessed and has determined do not meet the criteria above. These are FX futures on currencies, some of which exhibit sufficient liquidity but are pegged against another currency. These currencies have exhibited discreet price moves when the peg is adjusted and hence futures thereon cannot reasonably be risk managed.

<table>
<tr><th>Asset Class</th><th>Product Types</th></tr>
<tr><td>Equity</td><td>
Local equities

Cash settled futures and vanilla options on indices
Cash and physically settled futures, dividend neutral futures, CFDs and vanilla options on single names

Foreign equities

Cash settled futures, dividend neutral futures (ZAR and quanto) on indices and single names
Cash settled options on quanto futures on indices and single names
Out of currency settled options on certain indices and single names

The underlying equity must have

been listed for at least 10 trading days
traded on 67 out of the previous 90 days or on all trading days if listed for less than 67 days
a market capitalization of at least R 2 billion ($ 2 billion for foreign); and
a stable adjusted average daily value traded (ADVT[1]) of R 3 million ($ 10 million for foreign).

If the market capitalisation and/or the ADVT are lower than the above listing thresholds but within 15% thereof, JSE Clear can still at its discretion decide to list the derivatives at margins that are deemed appropriately conservative. This could include IMRs based on 100% VaR values.

Single names and indices include ETFs based on underlyings that satisfy the requirements and which are not geared or have an inverse pay-off profile. For all indices, the calculator must be approved by the JSE and the JSE must have in place an agreement that covers the listing of derivatives with the index owner.

All local equity futures will expire at the close-out auction on that day. For standard expiries a close-out auction is held at 12:00, whilst for other expiry dates, the end-of-day auction price will be used. International equities will use the last closing price of the underlying before the contract expiry date, as published by the reference securities exchange. The forex price used will be the price of the currency pair on the futures expiry date.

For bespoke baskets of equities (local and international), options will only be allowed where 90% of the basket by notional weight makes up an observed underlying on which there exists observable option pricing inputs.

Cash settled futures on a custom basket of JSE listed or international equities – all constituents are long and at least 80% of the constituents satisfy the criteria for a single name future. The contract size of any basket will be 10. For all local single name equity derivatives, the contract size will be 100. For international single name equity derivatives the contract size will be 1. All indices (local and international) will have a contract size of 10.

Options may be listed on international equities (indices and single names) where there is an observable option market and a pricing model has been established that includes the automatic, daily sourcing of all pricing inputs.

Cash settled single barrier knock-in/out options.
Cash settled strike-resetting options (maximum of 5 reset events allowed)

The set-up of the above instruments have to be standardised to reduce operational risk and have to fulfill the requirements of the Can-Do platform (as mentioned above) for an instrument to be listed.
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[1] ADVT is calculated by averaging the last 90 day's value traded **after** removing the nine largest days

Asset Class	Product Types
Currencies	G20 currency prices against the ZAR where the currency pair is quoted in ZAR per currency • Cash settled futures and options G8 currency prices against one another • Cash settled futures and options Cash settled futures and options on certain sub-Saharan currencies against the ZAR • Cash settled futures and options All currencies pairs must exhibit the following: • Evidence of liquidity of that currency; and • Absence of a tight peg against the benchmarked currency (evidence of a free-float currency). Exotic options: • Cash settled single barrier knock-in/out options. • Cash settled strike-resetting options (maximum of 5 reset events allowed) • Out of currency settled options on certain currency pairs Options (vanilla and exotic) will only be allowed in the existence of a deep and liquid options market.
Fixed income	Fixed coupon ZAR government bond curve • Physically settled single-name bond futures • Cash settled index futures Inflation-linked ZAR government bond curve • Physically settled single-name bond futures • Cash settled index futures Fixed coupon ZAR SOE bond curve • Physically settled single-name bond futures ZAR interbank curve • 3M JIBAR linked Swap futures • 3M JIBAR futures
Commodities	Metals • Cash settled futures and vanilla options (ZAR and quanto) Energy • Cash settled futures and vanilla options (quanto) Local grains • Physically settled futures and vanilla options Foreign grains • Cash settled futures and vanilla options (ZAR and quanto) Livestock • Cash settled beef carcass, feeder calves and lamb futures. Soya bean complex • Cash settled futures on a basket of long soya bean, short soya meal and short soya oil Other soft commodities • Cash settled futures on SA wool, coffee beans, cocoa, cotton and sugar

Quanto instruments are cash settled derivatives which underlying assets are denominated in a foreign currency, where the quanto is settled in domestic currency at a predefined fixed exchange rate