



FARM^D

Forum for Agricultural Risk Management in Development

WEBINAR SERIES

Risk Management Solutions for Emerging Agriculture

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Johannesburg Stock Exchange



Washington DC, United States, March 18th , 2015

Risk Management Solutions for Emerging Agriculture

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| 18 March 2015

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In this presentation...



- About the Johannesburg Stock Exchange (JSE)
- Derivatives Market in South Africa
- Strategies for commodity marketing
- Financial Integrity of Markets
- Physical delivery mechanism
- Hedging with Futures – Short futures hedge
- Hedging with Options – Long put
- Extending commodity derivatives into Zambia
- Challenges faced by emergent agriculture
- The Revolving Credit Fund – the ultimate solution

- Listing venue to raise Capital for issuers
- Secondary listings/ fast track process available
- Debt listing available through Bond Market
- Price Risk Management platform through full range of derivative instruments and diversified products
- Well respected in the field of regulation
- Depth in establishing and evolving a commodity derivative markets with deliverable contracts
- Ranked in top 20 in terms of market capitalisation
- Ranked 15th largest derivatives exchange by FIA in terms of contracts traded

Advent of Derivatives Market in SA

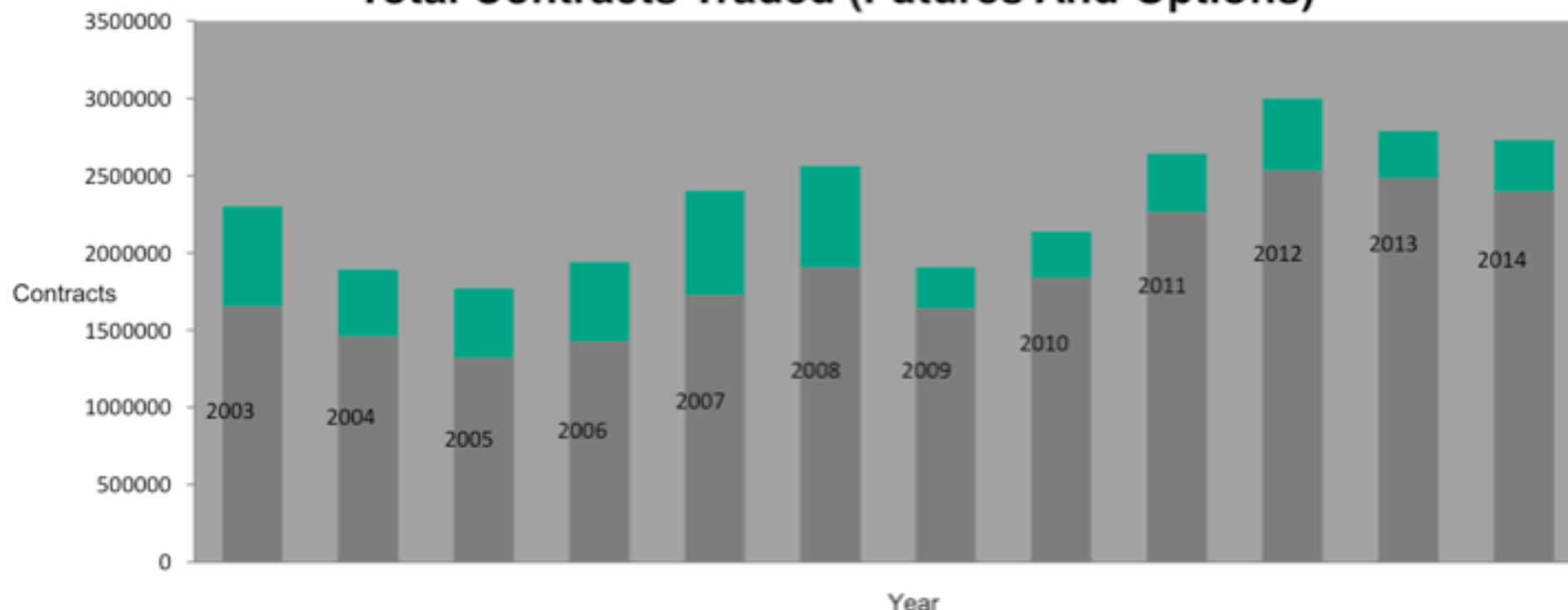


- Commodity derivatives market established in 1995 due to deregulation of grains market by SA Government.
- Introduced physically settled grain products: White and Yellow Maize, Wheat, Soybeans, Sunflower Seeds, Sorghum.
- Physical delivery being facilitated via a warehouse receipt process (silo receipt).
- Established its own clearing house to guarantee all transactions.
- In 2001 bought out by the Johannesburg Stock Exchange (JSE)
- Since 2009 introduced cash-settled products traded under license from the CME Group: Corn, Soybean Complex, WRW, KANS, Crude Oil and metals.
- Launch a diesel contract in 2014

JSE Commodity Derivatives –looking back 11 years



Total Contracts Traded (Futures And Options)



The focus remains on providing a well regulated platform that assists with price discovery and has the necessary liquidity to assist with price risk management and where all transactions are guaranteed !

Strategies for commodity marketing – the tools out there

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- Spot trading
- Forward contracts
- Derivative instruments:
 - Futures contracts
 - Option contracts

Futures contracts:

- **a standardised** contract for a future date that will allow a market participant to hedge their underlying exposure in the physical market
- 100tons, of WM1 grade white maize for JULY 2015 basis Randfontein

Options contracts:

- **Put Options** provide the buyer **the right but not the obligation** to sell grain at a specific floor price. Sellers of put options are obligated to buy grain at the floor price
- **Call Options** provide the buyer **the right but not the obligation** to buy grain at a specific ceiling price. Sellers of call options are obligated to sell grain at the ceiling price

What is a derivatives market



A trading operation that provides market participants with a price determination mechanism and a **price risk management** facility through which they can manage their exposure to adverse price movements on the *underlying physical market* and where *performance by both counterparties* to the contract **is guaranteed**

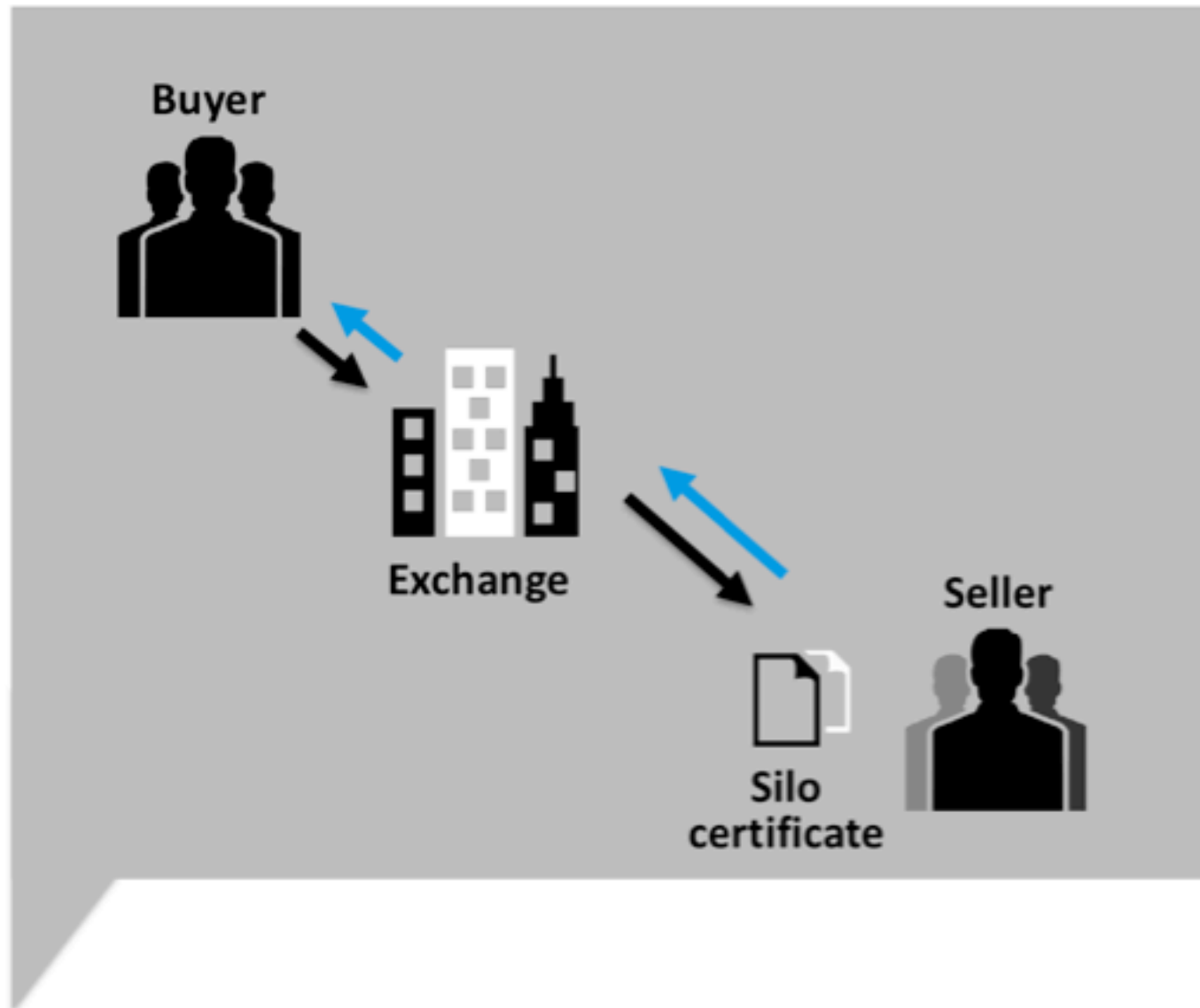
Financial Integrity of Markets



- Transactions are cleared and processed via clearing system
- That is, Clearing House acts as seller for all buyers and as buyer for all sellers
- Margining Methodology implemented
- Marking-to-Market on a daily basis

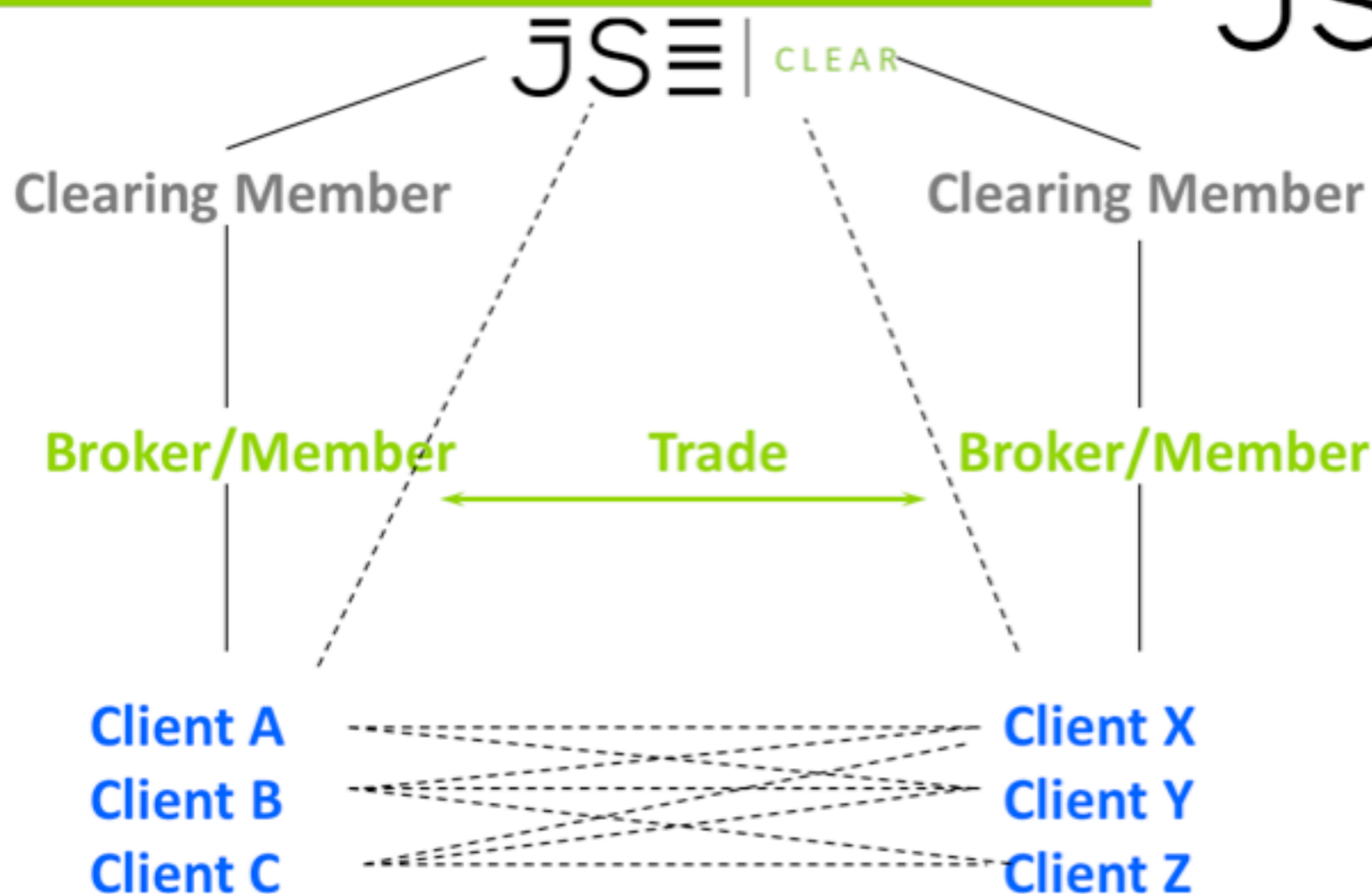
Guaranteed grain transaction

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The Central Counter Party (JSE Clear) guarantees all trades!

JSE



Physical delivery process crucial to the integrity of the derivatives market

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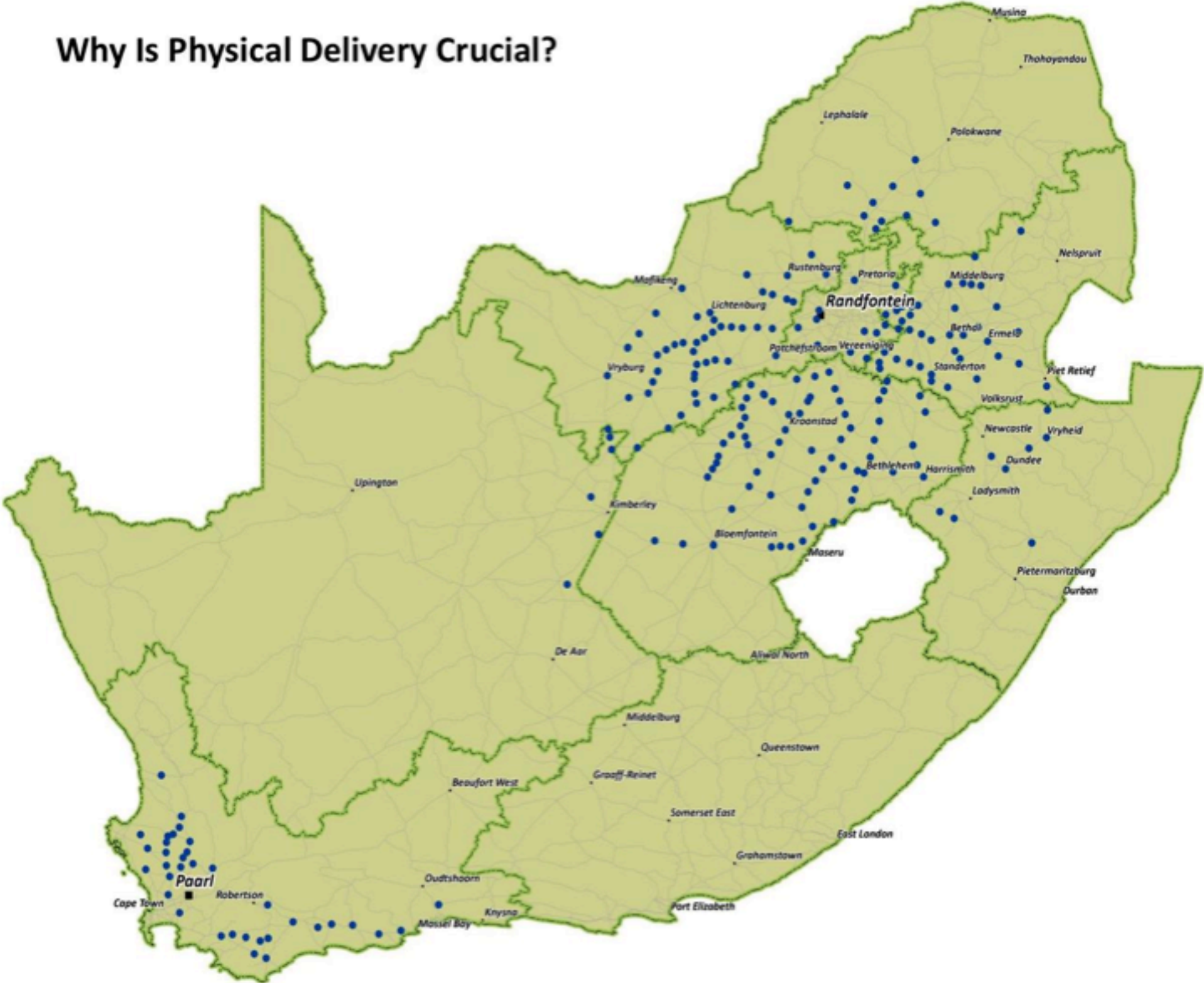




Keep it real !

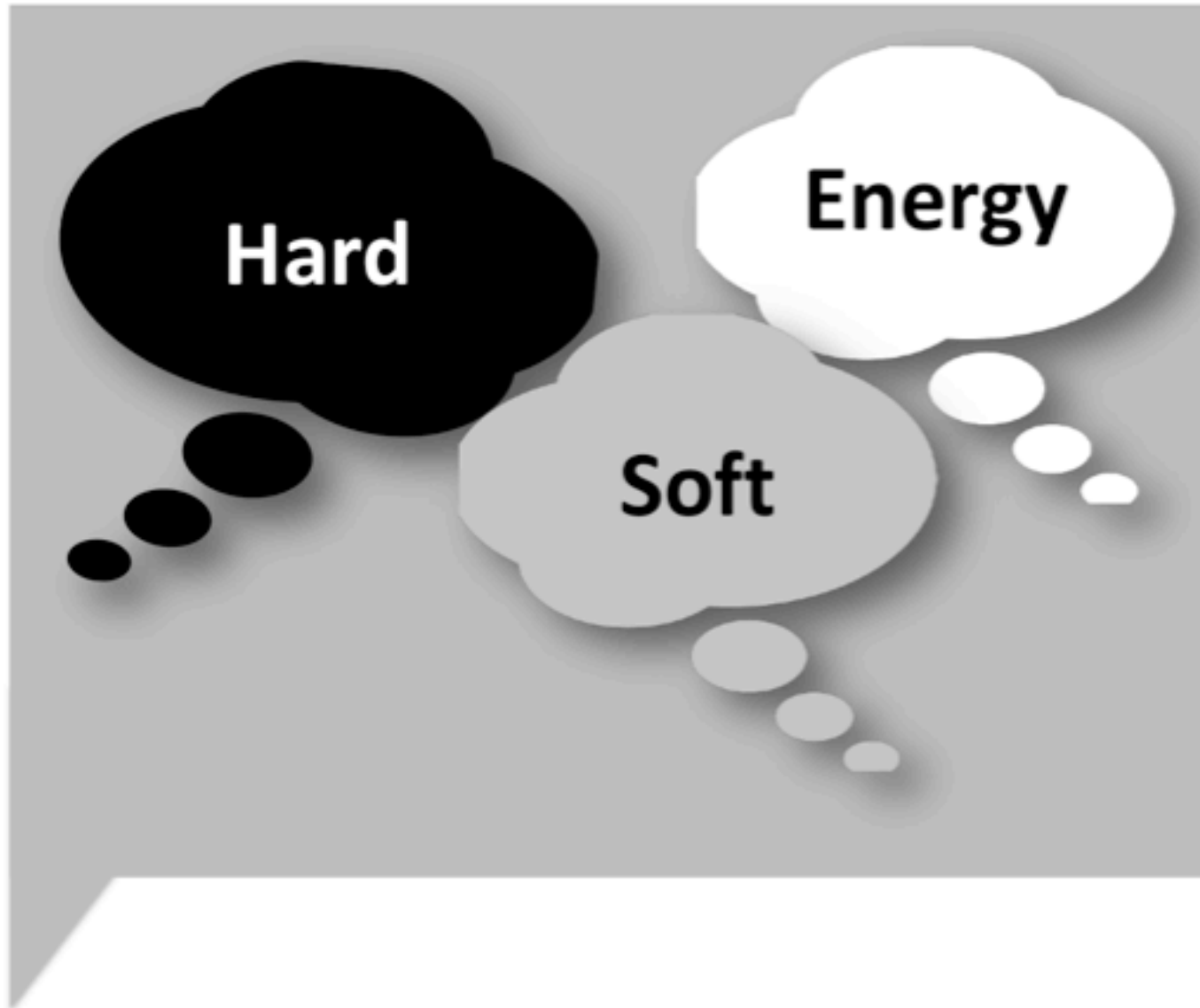


Why Is Physical Delivery Crucial?



Types of commodities

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Hedgers vs Speculators



- **Hedgers:** market participants who use derivative contracts to manage price risk of a underlying commodity that is present in the physical market
 - *Typically a farmer producing the grains we trade, a miller who processes the grain, a trader involved in grains market who could export or import the product, banks involved in providing financing to the grain market*
- **Speculators:** market participants who use derivative contracts, not to manage price risk, but with the purpose of benefiting from a directional move in the derivatives market
 - *Could be farmers who will not harvest the underlying crop as per their derivative position, traders, retail and institutional clients*

| | | | | | | | | | | | |
|----------|------|----|-------------------|----|--------|---------|-------|---------|---------|------|-------|
| 24 MAR15 | SOYA | 3 | 5076.00 / 5090.00 | 4 | -30.00 | 5090.00 | 11:59 | 5120.00 | 5045.00 | 101 | 281 |
| 22 APR15 | SOYA | 2 | 5000.00 / 5050.00 | 1 | -15.00 | 5020.00 | 11:48 | 5020.00 | 5020.00 | 8 | 15 |
| 22 MAY15 | SOYA | 2 | 4980.00 / 5020.00 | 2 | -10.00 | 4995.00 | 11:59 | 5000.00 | 4950.00 | 489 | 4299 |
| 24 JUL15 | SOYA | 2 | 5040.00 / 5090.00 | 2 | -40.00 | 5045.00 | 11:49 | 5063.00 | 5040.00 | 15 | 1500 |
| 22 SEP15 | SOYA | 2 | 5090.20 / 5159.00 | 2 | 0.00 | 5145.00 | 00:00 | 0.00 | 0.00 | 0 | 648 |
| 23 DEC15 | SOYA | 2 | 5125.20 / 5259.00 | 2 | -50.00 | 5150.00 | 10:27 | 5200.00 | 5150.00 | 31 | 42 |
| 24 MAR15 | SUNS | 2 | 5015.00 / 5028.00 | 1 | -15.00 | 5030.00 | 11:59 | 5035.00 | 5014.00 | 58 | 192 |
| 22 APR15 | SUNS | 0 | 0.00 / 5048.00 | 1 | 0.00 | 5000.00 | 00:00 | 0.00 | 0.00 | 0 | 6 |
| 22 MAY15 | SUNS | 10 | 4910.00 / 4950.00 | 3 | 55.00 | 4910.00 | 11:59 | 4940.00 | 4830.00 | 140 | 1776 |
| 24 JUL15 | SUNS | 1 | 5000.00 / 0.00 | 0 | 85.00 | 5015.00 | 11:57 | 5015.00 | 4980.00 | 67 | 315 |
| 22 SEP15 | SUNS | 0 | 0.00 / 5155.00 | 2 | 0.00 | 5058.00 | 00:00 | 0.00 | 0.00 | 0 | 121 |
| 23 DEC15 | SUNS | 0 | 0.00 / 5195.00 | 2 | 0.00 | 5160.00 | 00:00 | 0.00 | 0.00 | 0 | 106 |
| 24 MAR15 | WEAT | 2 | 3885.00 / 3890.00 | 7 | -24.00 | 3886.00 | 11:59 | 3910.00 | 3886.00 | 740 | 3984 |
| 22 APR15 | WEAT | 0 | 0.00 / 3910.00 | 7 | 0.00 | 3930.00 | 00:00 | 0.00 | 0.00 | 0 | 0 |
| 22 MAY15 | WEAT | 18 | 3918.00 / 3921.00 | 5 | -17.00 | 3918.00 | 11:59 | 3947.00 | 3916.00 | 1697 | 11859 |
| 24 JUL15 | WEAT | 2 | 3938.00 / 3950.00 | 17 | -28.00 | 3942.00 | 10:55 | 3965.00 | 3940.00 | 260 | 3666 |
| 22 SEP15 | WEAT | 2 | 3835.00 / 3840.00 | 15 | -20.00 | 3840.00 | 11:49 | 3855.00 | 3840.00 | 109 | 2289 |
| 23 DEC15 | WEAT | 5 | 3760.00 / 3800.00 | 10 | 0.00 | 3730.00 | 00:00 | 0.00 | 0.00 | 0 | 0 |
| 22 MAR16 | WEAT | 0 | 0.00 / 3935.00 | 10 | 0.00 | 3727.00 | 00:00 | 0.00 | 0.00 | 0 | 0 |
| 24 MAR15 | WMAZ | 1 | 2650.00 / 2679.00 | 2 | 72.00 | 2651.00 | 11:58 | 2652.00 | 2610.00 | 739 | 1471 |
| 22 APR15 | WMAZ | 1 | 2658.00 / 0.00 | 0 | 75.00 | 2662.00 | 11:57 | 2662.00 | 2660.00 | 67 | 172 |
| 22 MAY15 | WMAZ | 3 | 2680.60 / 2689.00 | 2 | 79.00 | 2690.00 | 11:55 | 2690.60 | 2630.00 | 185 | 2093 |
| 24 JUL15 | WMAZ | 3 | 2727.20 / 0.00 | 0 | 79.00 | 2730.00 | 11:59 | 2731.00 | 2650.00 | 2686 | 20309 |
| 22 SEP15 | WMAZ | 60 | 2764.00 / 0.00 | 0 | 80.00 | 2764.00 | 11:59 | 2764.00 | 2703.00 | 25 | 465 |
| 23 DEC15 | WMAZ | 33 | 2812.00 / 0.00 | 0 | 80.00 | 2812.00 | 11:58 | 2812.00 | 2754.80 | 324 | 2347 |
| 22 MAR16 | WMAZ | 32 | 2811.00 / 0.00 | 0 | 79.00 | 2810.00 | 11:45 | 2810.00 | 2780.00 | 36 | 549 |
| 24 MAY16 | WMAZ | 0 | 0.00 / 0.00 | 0 | 0.00 | 2593.00 | 00:00 | 0.00 | 0.00 | 0 | 0 |
| 22 JUL16 | WMAZ | 1 | 2327.40 / 0.00 | 0 | 0.00 | 2295.00 | 00:00 | 0.00 | 0.00 | 0 | 9 |
| 29 JUN15 | WNCI | 0 | 0.00 / 0.00 | 0 | 0.00 | 2651.00 | 00:00 | 0.00 | 0.00 | 0 | 0 |
| 24 MAR15 | YMAZ | 1 | 2462.00 / 2480.00 | 3 | 35.00 | 2465.00 | 11:59 | 2470.00 | 2440.00 | 192 | 811 |
| 22 APR15 | YMAZ | 1 | 2467.00 / 2495.00 | 3 | 12.00 | 2452.00 | 10:49 | 2452.00 | 2450.00 | 40 | 104 |
| 22 MAY15 | YMAZ | 1 | 2467.00 / 2485.00 | 2 | 45.00 | 2485.00 | 11:59 | 2485.00 | 2444.00 | 276 | 1664 |
| 24 JUL15 | YMAZ | 5 | 2487.20 / 2499.00 | 1 | 59.00 | 2495.00 | 11:59 | 2497.00 | 2434.00 | 1739 | 13656 |
| 22 SEP15 | YMAZ | 2 | 2515.60 / 2533.00 | 1 | 57.00 | 2522.00 | 11:56 | 2528.80 | 2512.00 | 37 | 552 |

| Date | Contract price | Contract value | Action | Seller's acc. | Buyer's acc. |
|------|----------------|----------------|--------------|-------------------------|------------------------------|
| 04/3 | R2650 | R26500 | init. margin | R2000 | R2000 |
| 05/3 | R2645 | R26450 | var. margin | R2050 \Leftarrow R50 | \Leftarrow R2000 (R50) |
| 06/3 | R2647 | R26470 | var. margin | R2030 \Rightarrow R20 | \Rightarrow R2020 |
| 09/3 | R2640 | R26400 | var. margin | R2100 \Leftarrow R70 | \Leftarrow R2000 (R50) |
| 10/3 | R2620 | R26200 | var. margin | R2300 \Leftarrow R200 | \Leftarrow R2000 (R200) |
| 11/3 | R2610 | R26100 | var. margin | R2400 \Leftarrow R100 | \Leftarrow R2000 (R100) |

Seller receives margin plus profit $R2000 + R400 ((R2650 - R2610) \times 10 \text{ tons})$ from the futures market and sells his maize at $R2610/t$ in the physical market.

Buyer receives margin $R2000$, but has lost $R400$ (which as a hedger will be compensated for by a lower physical purchase cost: $R2610/t$).

A Put Option example



Put option

It is planting season (Nov 2014) and Mr Mielies believes that the white maize price could drop by July 2015 when he has to market his crop. He is prepared to buy an option at R2250/t strike price and pay a premium of R250/t to Tom for the right to sell maize in July at the fixed price.

Tom believes the market value of white maize could increase or remain unchanged in the months ahead until July. He is prepared to write the option and in turn will receive a premium for his interpretation of the market.

Possibility 1

On 20 July the market value of white maize is R1950/t. On that day Mr Mielies exercises the option and the following profit is made:

| | |
|--------------|---------|
| Strike price | R 2250 |
| Market value | -R 1950 |

He will realise an amount of R300 for exercising his option however he will only make a profit of R50 (R300 – R250 the premium paid)

Possibility 2

On the 20 July the market value of white maize is R2400/t. Mr Mielies decides not to exercise the option since it is no longer profitable to do so.

| | |
|--------------|--------|
| Strike price | R 2250 |
| Premium | -R 250 |

For him to break-even he will do so at R 2000 but since the market value is R2400, a loss of R150/t will be made if he exercised his option.

Mr Mielies has the right to exercise his option, but in no way is he obliged to do so. Therefore in this case Mr Mielies will not exercise this right and will be limited to the loss of the premium paid, the R250/t.

Partnering with Zambian emergent agriculture

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IF YOU WANT TO GO FAST, GO ALONE
IF YOU WANT TO GO FAR, GO TOGETHER

AFRICAN PROVERB

Extending our product offering to include Zambian grain products – Launch Q2 2015!



- Zambia has 9 provinces with a population of just over 13 million people
- Zambia borders 7 countries
- Capital is Lusaka with a population of 1,8 million people
- Grain production has increased, expected 2013 production:
 - Maize – 3,000,000 tons
 - Wheat – 230,000 tons
 - Soybeans-116,000 tons
 - Sunflower- 21,000 tons
 - Sorghum - 18,000 tons

TOTAL: 3,385,000 tons



Challenges faced by emerging agriculture

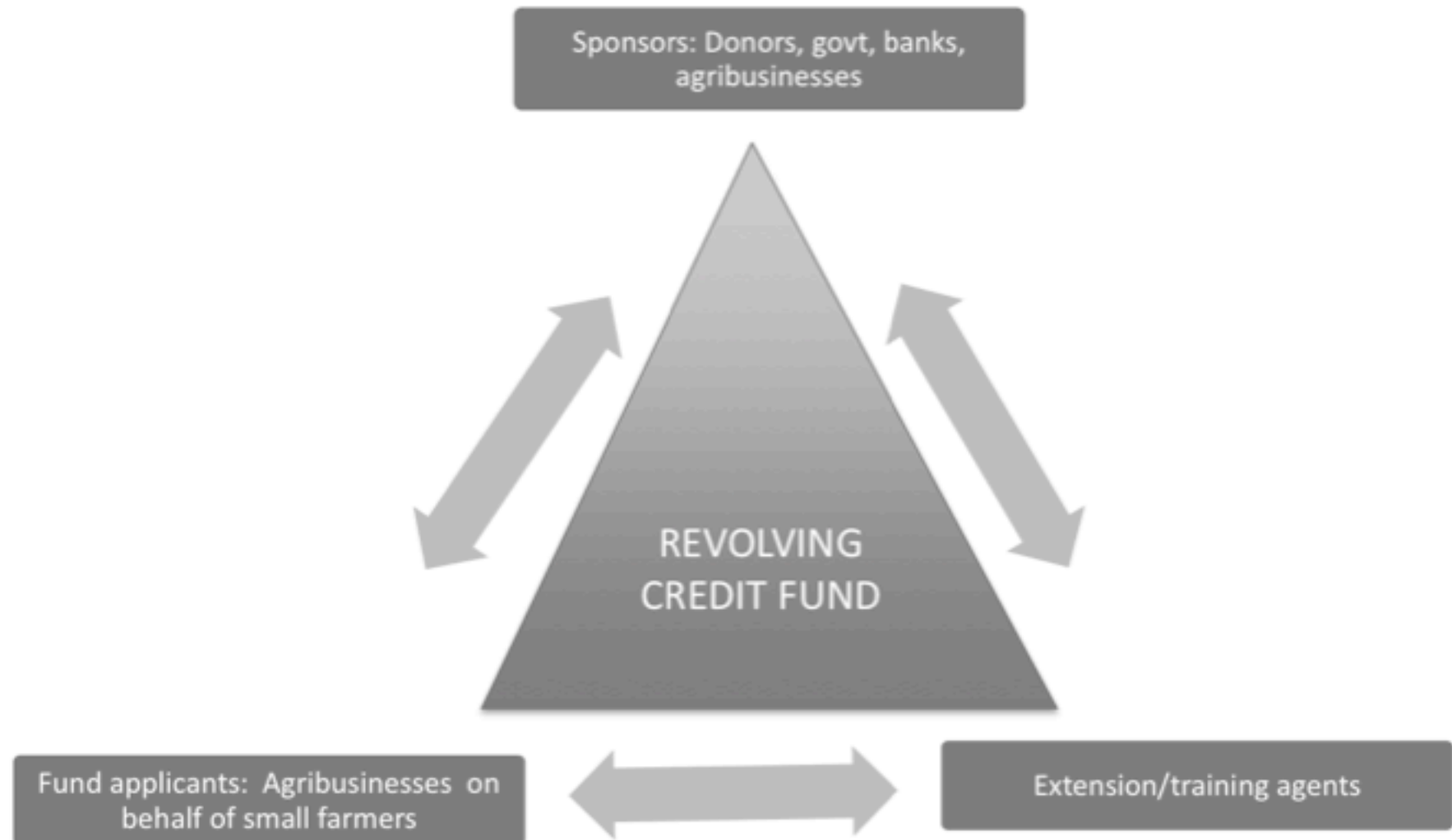
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- ❖ Access to finance
- ❖ Input costs
- ❖ Production risk
- ❖ Quality risk – post harvest losses
- ❖ Price risk

How can we add further value to emergent agriculture?

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Revolving Credit Fund:



THE RCF – Work in Progress



- Run by a Board of Trustees; managed by a Fund Administrator
- **Sponsors:** Any legal entity that contributes funds.
- Applicants apply on behalf of small farmer groups. Partner with extension agencies. Established agribusiness with proven track record of emergent agriculture programs.
- **Capital employed for:** fertilizer and seeds; crop/weather insurance; price risk management and training.
- Settlement after every cropping cycle after marketing.
- Lowered cost of capital; Economies of scale.
- Shared risk

Interested in the RCF?



Contact us at:

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Thank you!

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Q&A

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for Emerging Agriculture

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