

Understanding the Derivatives Market and Cytonn Weekly #27/2019

Focus of the Week

The Nairobi derivatives market began trading on Thursday 4th July 2019, with the purchase of three single stock futures contracts. This follows the successful completion of a six-month Derivatives Exchange Pilot Test between July and December 2018. This venture will make the Nairobi Securities Exchange (NSE) the second exchange in Sub-Saharan Africa to introduce derivatives trading after the Johannesburg Stock Exchange (JSE) in South Africa.

In this week's note, we shall discuss financial derivatives, highlighting the following:

- I. Background of Financial Derivatives,
- II. Nairobi Securities Exchange Derivatives Market (NEXT),
- III. African Case Study: South Africa's Derivatives Market, and,
- IV. Our Views, Expectations, and Conclusion.

Section I: Background of Financial Derivatives

A derivative is a financial contract whose value is derived/reliant on the value of an underlying asset, hence why it is called a "derivative" contract. The underlying asset may be a commodity, bond, equity, interest rate, market index, currency or real estate. There are five main types of financial derivatives, which are structured as contracts between parties:

- I. Forward Contract: This is a financial contract that can be customized to a specific commodity, a specific quantity of the commodity and agreed-upon delivery date at a future point in time. As such, this is where the buyer can purchase an asset, and the seller can sell the asset, at a set price at a future point in time. These contracts are private agreements between two parties and thus they do not trade on an exchange.
- II. Options Contract: This type of derivative gives the holder of the option contract the right but not the obligation to buy/sell the underlying asset at a specified price (strike price), at a set time in the future. Options that give the right to buy the underlying assets are known as *call options*, while those that give the right but not the obligation to sell the underlying asset are known as *put options*.
- III. Futures Contract: This is a financial contract between two parties where both parties agree to buy/sell a particular asset at a predetermined price at a specific date. These contracts can be traded on a centralized exchange or an Over-the-Counter (OTC) market as standardized contracts. Futures contracts have a single clearinghouse (an intermediary between a buyer and a seller), and require a margin to be posted at the beginning of the contract, and will be settled for the duration of the contract. The difference between futures and a forward contract is that futures contracts tend to be standardized, meaning the contract values are in defined units, and hence why they commonly trade in an exchange. On the other hand, forward contracts tend to be privately negotiated between two parties and are usually not standardized, and hence commonly exchanged in the OTC market.

- IV. Swaps Contract: This is a financial contract where two parties agree to exchange the cash flows from two different financial instruments. For instance, two parties may agree to exchange cash flows where one party makes payment in one currency while the other makes a payment in another currency. Such an arrangement is a currency swap. The main forms of swap contracts are currency swaps and interest rate swaps, where under interest rate swaps, parties exchange cash flows based on a benchmark rate such as the London Interbank Offered Rate (LIBOR).
- V. Warrants: These securities entitle the holder the right to purchase a company's stock at a specific price at a specific date. These financial derivatives are issued directly by the company that is involved in the contract and not another investor. These are used as a form of capital raising for a company.

Just as financial assets are tradeable on an exchange, derivative contracts can be traded between parties through a derivatives market. Derivative markets can be categorized into two, (i) Over-the-Counter (OTC) market and (ii) Exchange Traded Derivatives (ETD) market. In the OTC market, parties trade directly with each other without intermediaries, meaning that trading occurs with relatively less regulation. The derivative contracts on the OTC market tend to have tailor-made specifications, and there are no cash flows until the maturity of the derivatives contract. In the ETD market, parties trade through the derivatives exchange, under a more regulated environment. The products on this market tend to have standardized specifications with daily revaluations of open positions via marking to market, contract settlement assistance through clearinghouses, and investors are required to put up an initial margin requirement in order to access and trade these products.

Upon the expiration of the contracts, the derivatives contracts can be settled in various ways depending on their nature. The various ways of the settlement include:

- i. Daily Cash Settlement - All futures positions are marked-to-market based on the daily settlement price of the futures contract at the end of each trading day. The profits/losses are computed as the difference between the price traded or the previous day's settlement price (depending on when the position was initiated), and the current day's settlement price. The investors who have suffered a loss are required to pay the mark-to-market loss amount to the clearinghouse, which is passed on to the investors who have made a profit.
- ii. Final Cash Settlement - On the expiry date of the derivatives, there is a final settlement price, which is based on the closing price of the relevant underlying index/security in the stock exchange. The clearinghouse will mark all positions to the final settlement price and the resulting profit/loss will be settled in cash to investors. All open positions in the futures contract cease to exist after the contract expires.
- iii. Physical Delivery - In this form of settlement, traders have to take delivery of the underlying asset on the settlement day against the derivatives positions. For example, on expiry of an agricultural derivative future, the seller of the contract shall have an obligation to deliver the underlying agricultural product at the expiry price, while the buyer of the contract shall be obligated to buy the agricultural product at the expiry price.

The following are the main uses of financial derivatives:

- i. Risk Management - Due to the uncertainty of stock and commodity prices, derivatives are mainly used to protect against fluctuations in prices by locking in a buy or sell at a pre-determined price;
- ii. Enhance Liquidity - Derivatives provide an investment alternative for investors who are more risk averse to the fluctuation in the market thereby increasing the liquidity in the market; and,
- iii. Speculation - Derivatives enable individuals who may expect changes in the stock and commodity prices to speculate, where they would buy an asset at a low price expecting the prices to rise or they would sell at a higher price with the expectation that prices may drop at a future date and they can buy what they sold at a cheaper price; and,
- iv. Price Discovery - Derivatives allow for price discovery where individuals with better information

and judgment on the movement of prices are able to take positions in the market.

Section II: Nairobi Securities Exchange Derivatives Market (NEXT)

Having given an overview of derivatives, we now proceed to look at the NEXT. The derivatives market in Kenya will operate in compliance with the Capital Markets (Derivatives Market) Regulation Act of 2015, which outlines the licensing requirements and duties of the derivatives exchange, the duties of the clearinghouse and how other market players will operate.

The derivatives market structure in Kenya will include the following players:

- i. The NSE Clear - This will serve as the clearinghouse in the market responsible for ensuring settlement finality and centralized clearing of all contracts through novation;
- ii. Clearing Members - The Co-operative Bank of Kenya and Stanbic Bank have been appointed as clearing members to assist NSE Clear in the settlement process;
- iii. Specialized Derivatives Exchange - The NEXT market is where the derivatives will be traded with standardized specifications as defined by the exchange;
- iv. Trading Members - These are brokers and investments banks in the market;
- v. Clients - These are the investors (individuals and institutions); speculators, hedgers, and arbitrageurs.

The Nairobi Securities Exchange derivatives market (NEXT), which was launched on 4th July 2019, will facilitate the trading of the futures contract on the Kenyan Market and will be regulated by the Capital Markets Authority (CMA).

NEXT was established as a result of:

- i. Increased integration of the Kenyan financial markets with international markets;
- ii. Increased volatility in asset prices in local and international markets;
- iii. The need for more sophisticated risk management tools and strategies; and,
- iv. The need to broaden and deepen Kenyan financial markets.

NEXT will facilitate the trading of two futures contracts, in particular: Equity Index Futures and Single Stock Futures.

NEXT Equity Index Futures

These are derivative instruments that would give investors exposure to price movements on an underlying index, the NSE 25 index. Market participants can profit from the price movements of a basket of equities without trading the individual constituents. The contracts will be held quarterly with expiry on the third Thursday of the expiry month. For the contract size, one index point equals Kshs 100.0, with the minimum quote spread at one index point.

The benefits of trading Equity index futures include:

- i. Price transparency and liquidity as they can be easily bought and sold;
- ii. Lower transaction fees in comparison to individually buying and/or selling the basket of securities that are the underlying security;
- iii. Enhanced returns, which are brought about by leverage, as the investor stands to gain more than they put in, inclusive of the margin payments; and,
- iv. Reduction of counter-party risk as a result of trading via the exchange and centralized clearing.

The table below highlights the fees that would be incurred by trading:

Participant	Percentage of Contract Value
NSE Clear	0.02%

These are futures contract where the underlying security is an equity stock listed on the NSE, where one commits to buy or sell single equity at a future date. These instruments give investors exposure to price movements on an underlying stock. The single stock futures will be settled by cash with quarterly durations. The single stock futures contract will be valued based on the volume of the weighted average price of the underlying instrument for liquid contracts, and the theoretical price (spot price plus the cost of carry) for illiquid securities.

The single stock futures are expected to achieve various objectives:

- i. Provide an effective and transparent hedge against unfavorable share price movements,
- ii. Enhanced returns, which are brought about by leverage, as the investor stands to gain more than they put in, inclusive of the margin payments;
- iii. Possibly improve liquidity in illiquid securities, and,
- iv. Give investors exposure to share price movements without owning the underlying share.

Under the NEXT Single Stock Futures, the following fees will be incurred:

Participant	Percentage of the Contract value
NSE Clear	0.025%
Clearing Member	0.025%
Trading Member	0.10%
IPF Levy	0.01%
CMA Fee	0.01%
Total	0.17%

Since the fees payable under the NEXT Equity Index and Single Stock futures are quite low, at 0.14%, and 0.17% of the contract value, as compared to direct equity brokerage costs that range from 0.9%-2.2% of the contract value, we expect that the lower transaction costs of trading will attract more investors and aid in the deepening of the market.

Performance on the first day of trading

On the first day of trading single stock futures for Safaricom, Equity Group, KCB Group, EABL, and BAT were listed with there being uptake for two single stock futures contracts; one for Safaricom and the other EABL with contract values of Kshs 28,900.0 and Kshs 19,974.0, respectively. There was no purchase of the equity index future contract, which may allude to investor preference for the single stock futures contracts. We are of the view that there needs to be more transparency on the contracts that are traded and the open positions of the buyers of the futures contracts. We view this as an important aspect given the impact on equity prices it may have, in the event of significant trade in the futures contracts.

Example of a single stock futures Investment:

Suppose there are two investors who had Kshs 40,000 in funds to buy Equity Group shares. Investor A purchases Equity Group shares directly, while Investor B purchases a futures contract. How would the two investors be affected by the movements in Equity Group’s share price?

- For Investor A, who directly purchases Equity Group’s shares, the value of his investment would directly correlate to the movement in Equity Group’s share price. Thus, Investor A will directly purchase 1,000 shares of Equity Group in the market, at a value of Kshs 40,000, using Equity Group’s closing price of Kshs 40.0 as at Friday, 5th July 2019. If the price of the shares rose by 20.0%, the value of the investment rises by 20.0%, if prices remained flat, the value of the investment remains flat, and if prices decline by 20.0%, the value of the investment also declines

by 20.0%.

- For Investor B who purchases a futures contract, the contract will have specified the exercise price for the shares, i.e. the price that the investor will pay on the exercise date. Investor B will pay the initial margin and any additional margin at the onset of the contract, and be required to either pay or receive variation margins, depending on the changes in Equity Group's share price. Assuming an initial margin of 10%, Investor B can use the entire Kshs 40,000 to purchase 10 Equity Group futures contracts of 1,000 units each at an exercise price of Kshs 40, bringing his entire exposure in Equity Group to Kshs 400,000. The tables below summarize the outcomes for Investor B when share prices rise and fall by up to 20.0%, respectively, using Equity Group's closing price of Kshs 40.0 as at Friday, 5th July 2019.

Table 1: Share prices rise 20.0%

Date	Closing Price	P/L Calculation	Initial Margin	Variation Margin	Net Cash flow
5-July-2019	40.0	-	(40,000.0)	0	(40,000.0)
5-Sept-2019	48.0	$(48-40)*10*1,000$	0	80,000.0	80,000.0
Settlement			40,000	80,000.0	120,000.0

Table 2: Share prices decline 20.0%

Date	Closing Price	P/L Calculation	Initial Margin	Variation Margin	Net Cash flow
5-July-2019	40.0	-	(40,000.0)	0	(40,000.0)
5-Sept-2019	32.0	$(32-40)*10*1,000$	0	(80,000.0)	(80,000.0)
Settlement			40,000	(80,000.0)	(40,000.0)

If Equity Group's share price was to rise by 20%, Investor B's exposure of Kshs 400,000 will gain Kshs 80,000, giving him a Kshs 80,000 gain. If Equity Group's share price was to remain flat, Investor B would not gain/ lose anything, as the margin payments would cancel out, and exercise price remains unchanged. If Equity Group's share price falls by 20%, Investor B's exposure of Kshs 400,000 would decline by Kshs 80,000, giving him a Kshs 80,000 loss. However, when his initial margin of Kshs 40,000 is wiped out, Investor B will receive a margin call from his broker (NSE trading member) and prompted to add additional funds to keep the futures contract open, otherwise, the position will be forcefully closed and the investor will lose his entire initial margin.

Section III: African Case Study: South Africa's Derivatives Market

The derivatives market in South Africa began with the operations of the Equity Derivative Division of the Johannesburg Stock Exchange in 1990, coordinating warrants, single stock futures, and equity indices futures. This was followed by the introduction of options contracts in 1992 and derivatives contracts with agricultural commodities as the underlying asset in 1995. The trading system was then fully automated in 1996. The development of the South African Derivatives Market was established in efforts to hedge against volatile capital flows and manage financial risk associated with the high volatility of asset prices.

As of 2018, the derivatives market had grown to the following volumes:

Exchange-traded derivatives market	2018 Volume (in USD millions)
Stock options	9.0
Single stock futures	139.0

Over-the-Counter derivatives market	2018 Daily average turnover (in USD millions)
Forwards	7.0
Swaps	1.0
Options	1.0
Total	9.0

The products offered on the JSE derivatives market include:

- i. Bond derivatives - Bond futures, bond options and bond index futures;
- ii. Interest rate derivatives - Short-term Interest Rate Futures & Long-term Interest Rate Futures;
- iii. Equity derivatives - Equities futures, Exchange Traded CFDs & Equities options;
- iv. Commodity derivatives - Futures & options contracts; and
- v. Currency futures derivatives.

The prices of the derivatives are negotiated through the South African Futures Exchange order-matching platform, the automated trading system (ATS). There are 52 companies listed on the JSE that are involved in the derivatives market.

The main regulatory agencies involved in the derivatives market in South Africa include:

- The Financial Services of South Africa (FSB) - This agency supervises the activities of nonbank financial institutions and other financial services. The Capital Market Department of the FSB is responsible for the supervision of licensed exchanges, central securities depositories and clearing houses;
- The JSE and the Bond Exchange of South Africa (BESA) - These are licensed exchanges trading in derivative instruments and supervised by the FSB. Within the JSE, there are two divisions to oversee trading derivatives, which are the Equity Derivatives Division and the Agricultural Products Division; and,
- The SAFEX Clearing Company - This agency is licensed to clear transactions on the derivatives traded on the JSE and they operate under the direction of JSE.

The following are the main factors that have led to the success of the derivatives market in South Africa:

- *Deregulation of the agricultural sector* - Prior to 1995, the government had been involved in fixing prices of the agricultural commodities. With deregulation, this allowed for the creation of the agricultural commodities market on the JSE;
- *Exchange control reforms* - In 2007, corporate entities and retail investors were allowed to trade currency futures on JSE provided that they could cover the currency risk on a regulated platform;
- *Economic and capital markets growth* - With the economic expansion, the underlying value of equities and bonds in the capital market have appreciated over the years and thus increasing the value of the derivatives market; and,
- *Ease of doing business* - South Africa ranks 82 out of 190 countries in ease of doing business with ranks of 46 in payment of taxes and 23 in protecting minority investors. This has encouraged foreign investment into the market.

The following are the main challenges facing the derivatives market in South Africa:

- *Stringent regulation* - With regulation on asset allocation for institutional investors such as insurance and pension funds, this affects the demand for the derivatives market. Secondly, with different regulatory/supervisory agencies in place, this puts in place bureaucratic procedures to remain compliant with all the agencies. Furthermore, with regulation towards hedge fund products, this also affects the demand side of the derivatives market; and,

- *Knowledge amongst retail investors* - Institutional investors account for the larger proportion of investment on the JSE sighting to constraints on the retail investors such as the little or no knowledge of the derivatives market currently in operation.

The JSE has benefited from the derivatives market in the following ways:

- *Increased liquidity* - With derivatives increasing the investment opportunities on the Stock exchange, investors have an added investment channel for their funds and thus increasing the inflows into the JSE;
- *Management of risk-exposure* - The derivatives market has presented the aspect of loss minimization as the contracts have set out pre-agreed prices; and in the event that the prices of the stock market decline, the investors who purchased derivatives have reduced their exposure to loss.

In comparison to the Kenyan market, the South African market had more products on the issue when the derivative markets were introduced, as they also launched with Options Contracts, which are yet to be launched in Kenya. This may be attributed to the Kenyan market trying to ensure relatively good uptake of the new product, by not having many new product issuances. This is unlike the South African market, which was relatively more developed than the Kenyan market at the time in terms of size and product offerings, with derivative trades have been taking place informally, since 1987. In Kenya, products currently introduced are strategic, given that the single stock futures are few, and limited to only five of the largest companies by market capitalization, and a single equity index future. This may be done to avoid flooding the market with relatively new and complex products and give investors time to understand the new products and streamline processes by the various market intermediaries, before the introduction of additional products. We thus expect with time, introduction and uptake of new derivative products to improve.

Section IV: Our Views, Expectations, and Conclusion

The derivatives market is expected to be beneficial to investors in the following ways:

- Hedging* - The Derivatives market provides an opportunity for investors to protect their portfolios against volatile stock prices;
- Higher Returns* - The Derivatives market would only require an initial margin at the beginning of the contract and investors stand to gain higher returns upon expiration of the contract when they are in the money;
- Lower Transaction Costs* - The Equities index and single stock futures contracts involve transaction costs of 0.14% and 0.17%, respectively in comparison to direct equity brokerage costs that range from 0.9% - 2.2%; and,
- Lower Credit Risk* - With the NSE Clear ensuring that settlement is completed on a daily basis, there are lower chances of default by the counterparty in the agreement.

With the benefits presented by the Derivatives Market, there are risks that may affect the performance of the Derivatives market, some of which may include:

- Default Risk* - Despite the NSE Clear handling the settlements, there is risk posed by investors who may not have enough funds to handle the daily variation margin settlement obligations;
- Market Risk* - This is the risk of incurring losses due to market prices moving against investors' expectations;
- Liquidity Risk*-Liquidity risk exists, in the event, the counterparty to trade is to deliver a relatively illiquid counter on contract maturity. This has however been mitigated currently, with the clearing houses set to be the market makers, with Co-operative Bank and Stanbic Bank the clearing houses. They will be the initial writers (sellers) of the futures contracts. Furthermore, liquidity risk has however been mitigated by having futures contracts on the 5 largest companies by market capitalization, which should help buffer against low volumes trading periods in the

market;

- iv. Operational Risk - This risk would occur where market participants are unfamiliar with market procedures and that would lead them to incur unintended losses; and,
- v. Low Uptake - The Kenyan market has a low uptake rate when it comes to new products in the financial markets. This is mainly attributed lack of consumer education as has been the case for the Real Estate Investment Trusts (REITs).

The derivatives market in Kenya will be beneficial in opening up Kenya's financial markets to domestic and international investors, which will influence the performance of the economy. In order for the derivatives market to be widely accepted in the Kenyan market, we believe the following should be taken into consideration:

- i. Investor Education - Investors both foreign and domestic would need to be informed of the workings of the derivatives market and the current offerings to ensure there is a larger rate of uptake in the derivatives market.
- ii. Products Offered in the Derivatives Exchange - Given that the agricultural sector is the main backbone of the economy; it would be advisable to include a commodity derivatives market so as to support the entire agriculture value chain.

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