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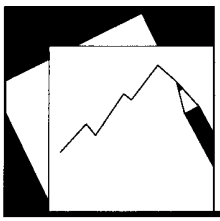

IMF Working Paper

The Derivatives Market in South Africa: Lessons for sub-Saharan African Countries

Olatundun Janet Adelegan

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Monetary and Capital Markets Department

The Derivatives Market in South Africa: Lessons for sub-Saharan African Countries

Prepared by Olatundun Janet Adelegan

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Abstract

This paper examines the role of the derivatives market in South Africa and provides policy options for promoting the development of derivatives markets in sub-Saharan Africa. South Africa's derivatives market has grown rapidly in recent years, supporting capital inflows and helping market participants to price, unbundle and transfer risk. There are tight regulations on asset allocations by insurance and pension funds to prevent excessive risk taking. The development of derivatives markets in sub-Saharan African countries could enable market participants to self-insure against volatile capital flows. Their overdependence on bank credit as a source of funding could be reduced and their management of seasonal risk could be improved through the introduction of commodity futures. However, these markets must be appropriately regulated and supervised. Since such markets would likely be small, consideration should be given to the establishment of a regional derivatives market.

JEL Classification Numbers: F31, G10, G13

Keywords: derivatives, South Africa, options, futures

Author's E-Mail Address: oadelegan@imf.org

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I. INTRODUCTION

This paper examines the role of derivatives in South Africa. It provides an overview of the derivatives market in South Africa and discusses options for promoting the development of derivatives markets in Sub-Saharan Africa.

Derivatives markets can facilitate the management of financial risk exposure, since they allow investors to unbundle and transfer financial risk. In principle, such markets could contribute to a more efficient allocation of capital and cross-border capital flow, create more opportunities for diversification of portfolios, facilitate risk transfer, price discovery, and more public information (Tsetsekos and Varangis, 1997; Ilyina, 2004).

South Africa's derivatives market was established to further develop the financial system, enhance liquidity, manage risk, and meet the challenges of globalization. However, like other emerging derivatives markets, the development of South Africa's derivatives market—the only one in Sub-Saharan Africa (SSA)—stemmed primarily from the need to "self-insure" against volatile capital flows and manage financial risk associated with the high volatility of asset prices.

The market comprises two broad categories of derivatives, namely options and futures. Within these two categories a wide range of instruments may be identified: warrants, equity futures and options, the agricultural commodity futures and options, interest rate futures and options, currency futures and fixed income derivatives. The fixed income derivatives are made up of bond futures, forward rate agreements (FRAs), vanilla swaps, and standard bond options.

South Africa's derivatives market has grown rapidly in recent years. While this has supported capital inflows and helped market participants to price, unbundle and transfer risk, the risks associated with its misuse have also increased. There are many derivative instruments traded with different institutional arrangements on the OTC markets and regulated exchanges. There are also tight regulations on asset allocations by insurance and pension funds to prevent excessive risk taking. Such regulations can constrain the potential benefits that they could bring to the local derivatives market. While the misuse of derivatives can lead to a financial crisis, accelerate capital outflows, and amplify volatility, their advantages should not be discounted.

SSA countries can explore the possibility of regional cooperation in derivatives market listings**.** Small SSA countries with a nascent local securities market would derive particular benefit from listing and trading their derivative instruments on a regional derivatives market.

The rest of the paper is structured as follows. Section II presents the background to the derivatives market in South Africa. Section III describes the current state of the market,

while section IV presents the current issues affecting the future of the market. This is followed in Section V by a discussion of policy lessons for countries of Sub-Saharan Africa from South Africa's experience.

II. BACKGROUND

The South African Futures Exchange grew out of an informal market in April 1987. At that time a local merchant bank, Rand Merchant Bank, started an informal financial market. Subsequently, option contracts were introduced in October 1992, agricultural commodity futures in 1995 and a fully automated trading system in May 1996.

The Equity Derivative Division of the Johannesburg Stock Exchange (JSE) has been in operation since 1990, coordinating trading activities in warrants, single stock futures (SSF), and equity indices and interest rate futures and options. Warrants are long-dated put or call options issued by a third party on individual or baskets of securities of listed companies. Single stock futures are futures contracts where the underlying security is an equity exchange listed on the JSE. A single stock futures contract is a legally binding commitment made through a futures exchange to buy or sell a single equity in the future. SSF are standardized with regard to size, expiration, and tick movement. The price of a single stock futures contract is negotiated through the South African Futures Exchange order matching platform called the automated trading system (ATS). The exchange also lists options on single stock futures which are American style options exercisable into single stock futures. Initially, derivatives on only 4 JSE-listed companies were listed on the South African Futures Exchange, but this number has gradually increased to 52. Market participants are retail investors, professional traders, asset managers, and short-term equity traders.

The deregulation of the agricultural market in 1995 led to the establishment of an agricultural commodity futures market. At that time, the government made a commitment to stay out of the price determination process in the agricultural market. In demonstration of this commitment, the South African Futures Exchange (SAFEX) Agricultural Markets Division was established in January 1995, with a start-up capital of 4.2 million rand. The first commodity listed on the exchange was a physical settled beef contract, shortly followed by a potato contract. Later, however, both contracts were delisted because of inactivity.

Notwithstanding the delisting, the flagship contracts that facilitated the success of the agriculture futures market were the white and yellow maize contracts, listed in May 1996, which resulted in a high growth in volumes traded on the market. Wheat was introduced in November 1997, and a sunflower seeds contract in early 1999. Options contracts were introduced on all the above in 1998, and this resulted in advanced price risk management for all market participants.

The Agricultural Futures Market has expanded since its inception. It started with five active brokers, and has now increased to 52 brokers with about 12,000 clients consisting of hedgers, participants like producers, millers, traders, banks, cooperatives and agricultural companies, and speculators. The Futures Market trades from Monday to Friday using an ATS, with an average daily trading volume of 200,000 tons of maize. Since 1996, more than 1.8 million contracts have traded, with concentration of trade in white maize contracts.

Currency Futures on Yield-X, the JSE's interest rate exchange, represent a significant advance for the South African financial market. On 18 June, 2007, the JSE commenced the trading of rand currency futures on Yield-X, one of the JSE's electronic trading platforms, as a part of the exchange control reforms announced in the 2007 budget. Yield-X has the ability to provide pre-trade approval as opposed to post-trade checking. This system capability was imperative in order to restrict the currency derivative trading to those qualified participants only. The underlying instrument is the US$/rand, GBP/rand and EUR/rand future contracts. For the US$/rand future contract, the model uses US$/rand forward points quoted by local banks, and a US$/rand spot price to calculate the fair value. For the other two contracts, EUR/rand and GBP/rand, the calculation makes use of the EUR/US$ and GBP/rand currency pairs. These currency pairs are crossed with the US$/rand pair in order to deliver the EUR/rand and GBP/rand fair values. The reason for using the dollar pairs is because of the low liquidity in the EUR/rand and GBP/rand currency pair market. Trading has commenced on the rand/US$ contract only as a retail product.

Institutional investors have an investment ceiling in currency futures. The qualifying clients that are permitted to trade and hold positions in currency futures comprise: pension funds and long-term insurance companies subject to their 15 percent foreign allocation allowance; asset managers and registered collective investment schemes subject to their 25 percent foreign allocation limits; individuals and foreigners with no limits applicable. All corporates, banks, and trusts can trade in currency futures provided they have a valid JSE or Bond Exchange of South Africa (BESA) control approval number in place or approval from the South African Reserve Bank. The minimum contract for qualifying individuals is US$1,000 with no limitations.

Interest rate derivatives were approved for listing on the BESA in December 2004. Consequently, the BESA introduced four interest rate instruments, including bond futures, FRAs, vanilla swaps, and standard bond options. BESA-listed derivative instruments are traded using both an electronic system and over the counter.

There are four key agencies involved in South Africa's derivatives market:

- The **Financial Services Board of South Africa (FSB)**, established under Section 2 of the Financial Services Board Act 1990, supervises the activities of nonbank financial institutions and other financial services. The Capital Markets Department of

the FSB is responsible for the supervision of licensed exchanges, central securities depositories and clearing houses.

- The **JSE** and the **BESA**, which are licensed exchanges trading in derivative instruments and supervised by the FSB. When the JSE took over the business operations of the SAFEX in 2001, two divisions were created within the JSE, namely the Equity Derivatives Division and the Agricultural Products Division.

- The **SAFEX Clearing Company**, which is under the direction of the JSE and is licensed to clear transactions in derivatives traded on the JSE.

Trading in South Africa's derivatives takes place in both the over-the-counter (OTC) market and on the established stock exchanges.

- Trading on warrants, equity futures and options, and the agricultural commodity futures and options takes place on the JSE.

- Trading on fixed-income derivatives such as bond futures, FRA, vanilla swaps and standard bond options takes place on the BESA.

- Trading on interest rate futures and options takes place on both exchanges.

- Trading on the currency futures and fixed income derivatives (such as interest rate futures) are mainly concentrated in the OTC market.

- Exchange-based trading on interest rate futures and options commenced in 2003 on the BESA through Intersec, a fixed income derivative platform.

- Exchange-based trading on currency futures commenced on the JSE currency futures exchange platform (Yield-X) in 2007.

Unlike the BESA, the JSE regulates exchange trading in derivative instruments. On the other hand, BESA provides the platform and regulates a range of derivative instruments on the exchange and OTC market for fixed income derivatives through Intersec.

Market activities in the organized exchanges are more transparent than in the OTC markets. Derivative instruments traded on the floor of the JSE and BESA are standardized and transparent. With the exceptions of OTC arrangements on Intersec, derivative instruments traded on OTC markets are privately negotiated and bilaterally arranged.

III. CURRENT STATE OF THE MARKET

OTC trading of currency and interest rate derivatives has been growing rapidly. Although currency derivatives are highly liquid and their notional amount of outstanding OTC contracts accounted for a larger share of trading in the market in 2007, the interest rate derivatives are growing much faster (Table 1). Overall, South Africa's OTC market accounted for about 9.9 percent of OTC derivatives in emerging markets in 2007 (Figure 1).

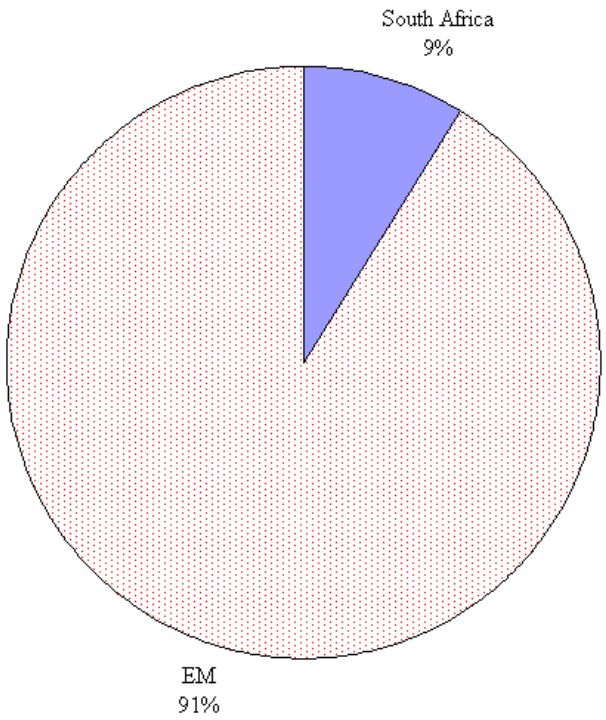
Table 1. South Africa: Trading Volume of over-the-counter Derivatives
(2001–2007)
(Daily Averages; Notional Amount in millions of U.S. dollars)

Volume	2001	2004	2007	Growth Rate
Currency derivatives 1/	7,858	8,032	10,568	2.21
Interest rates 2/	578	2,961	4,474	412.28
Total	8,436	10,375	15,042	22.98
Total emerging market	160,375	240,389	151,787	49.89
Share of emerging market 3/	5.26	4.32	9.91	

Source: Bank for International Settlements, Triennial Central Bank Survey, 2007.

1/ Currency derivatives comprise outright forwards, foreign exchange swaps, currency swaps, and options.
2/ Interest rates derivatives include forward rate agreements, swaps, options, and other products.
3/ Volume of South Africa daily trade in derivatives as a share of emerging markets is in percent.

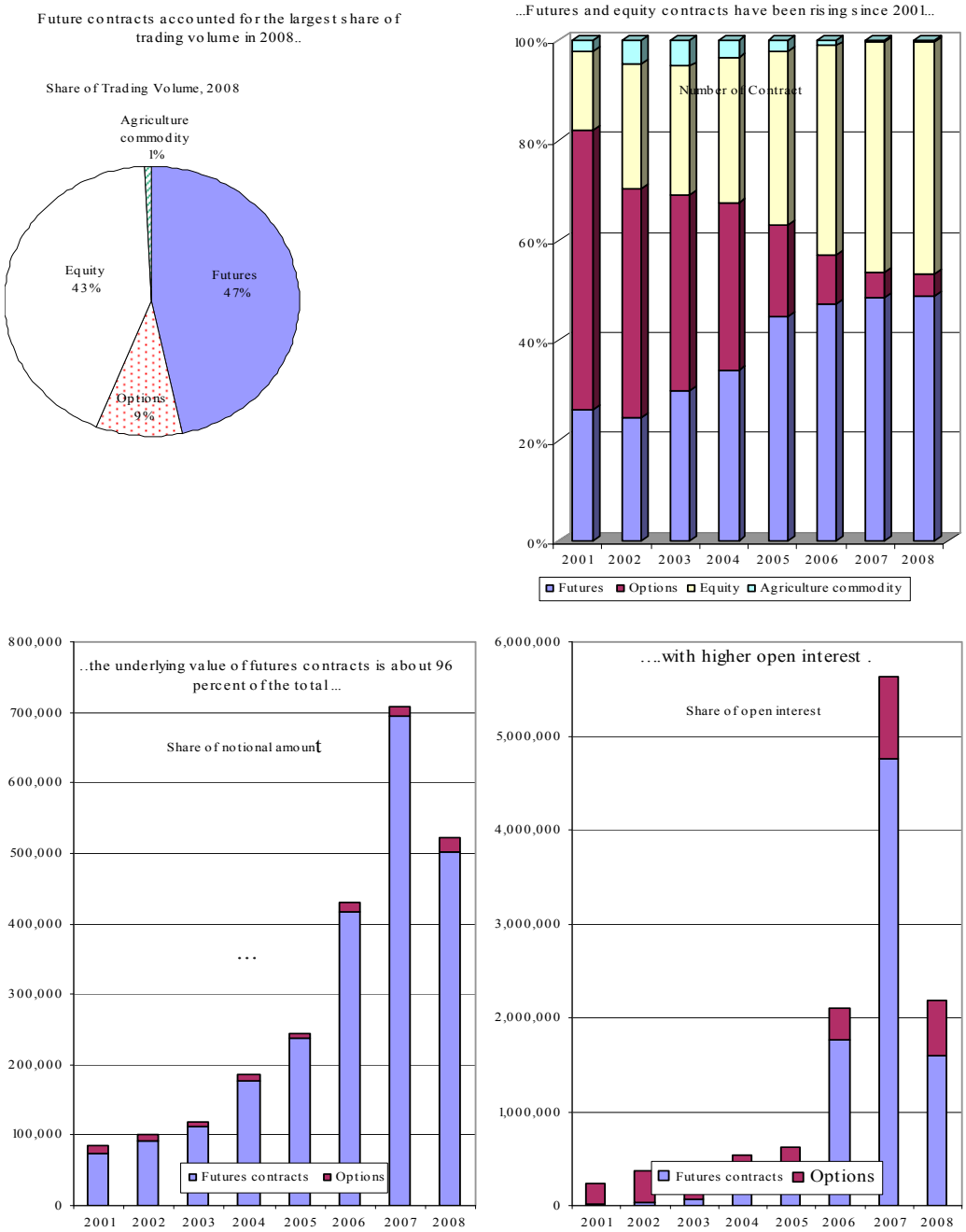
Figure 1. South Africa: Share of Emerging Market over-the-counter Derivatives
(2007)



Exchange-based derivatives are dominated by futures and equities derivatives. In 2008, futures contracts—interest rates and currency futures and fixed income derivatives—accounted for 49 percent of the volume of transactions, and equities 46 percent (Figure 2). Between 2001 and 2008, futures contracts accounted for about 47 percent of the total volume of transactions traded, while options on futures contracts, individual equities and agriculture commodity contracts accounted for 9 percent, 43 percent and 1 percent respectively (Table 2).

Exchange-based derivative trading has grown rapidly between 2001 and 2008. The average annual growth rate in the number of futures contracts is 82.7 percent, while the underlying value grew by 28.4 percent per year on average during the same period (Table 3). The number of options contracts increased by 10.4 percent, and the underlying value increased by 8.5 per cent per year. The number of equity contracts and agricultural commodity contracts increased on the average by 94.3 per cent and 19 per cent respectively. Activity in equity contracts on SSF on the JSE almost tripled in three consecutive years from 2005 to 2007 (Figure 2).

Figure 2. South Africa: Exchange-Based Traded Derivatives (2001–2008)



Source: Johannesburg Stock Exchange; and the South African Reserve Bank Quarterly Bulletin, June, 2009.

South Africa's economic and capital market growth has contributed to the rapid growth of the derivatives market. GDP per capita grew averagely by 2.6 percent between 2001 and 2008 (Table 4). The underlying value of equities and bonds in the capital market appreciated by 20.6 percent and 14.1 percent per annum respectively, while the underlying value of futures contracts experienced an average increase of 41.2 percent.

Turnover in the exchange-based derivatives market grew steadily in 2007 and declined in 2008, with the exception of warrants. The total number of futures and options on futures contracts traded on the Financial Derivatives Division of the JSE grew in 2007 due to the bullish underlying share market conditions, and it declined in 2008[1] as a result of the bearish share market. At the same time, currency futures were bolstered by exchange control reforms, and agriculture commodities derivatives rose due to high local grain prices stimulated by tight supply conditions in the market and high global demand for grain, especially in the United States where maize is being increasingly used for bio-fuel production (Table 5). Turnover in warrants continued to weaken in 2008 compared with 2006.

However, South Africa ranks above average in contract enforcement and ease of doing business in general. The World Bank's Doing Business Report 2009 ranks South Africa as thirteenth out of 46 SSA countries in contract enforcement, and second in ease of doing business. However, it ranks thirty-second out of 181 overall in contract enforcement and eighty-second in ease of doing business (Table 6). On the ease of paying taxes, it ranks third out of 46 SSA countries.

[1] The notional amounts in 2008 are from January to October.

Table 2. South Africa: Trading Volume of Exchange Based Options and Future Contracts (2001–2008)

(Actual Annual, Notional Amount in millions of U.S. dollars)

Period	2001	2006	2007	2008	Total	Average
Futures contracts						
Number of deals 1/	174,018	694,118	1,038,911	1,233,253	4,670,557	583,820
Number of contracts 1/	11,333,675	85,625,757	296,885,064	413,672,641	884,670,528	110,583,816
Notional amount	74,316	415,958	693,572	502,557	2,305,596	288,199
Open interest 1/	18,758	1,771,316	4,762,455	1,599,326	8,706,356	1,088,295
Options on future contracts						
Number of deals 1/	19,701	16,534	21,137	23,723	129,020	16,128
Number of contracts 1/	24,317,784	17,552,862	30,455,493	37,804,393	179,202,486	22,400,311
Notional amount	9,848	13,867	15,105	19,266	91,429	11,429
Open interest 1/	210,855	324,257	867,785	578,964	3,402,441	425,305
Equity contracts (number of contracts)	6,840,323	75,423,583	279,760,204	391,329,595	818,169,690	102,271,211

Sources: Johannesburg Stock Exchange; and the South African Reserve Bank Quarterly Bulletin, Sept. 2007.

Note: Futures and options contracts comprise interest rates futures and options and currency futures and fixed income derivatives.

1/ Equity contracts comprise warrants and equity futures and options.

Table 3. South Africa: Change in Exchange-Based Derivatives in South Africa (2001–2008)

(In percent)

Period	2002	2006	2007	2008	average
Futures Contracts					
Number of contracts	–9.5	143.4	246.7	39.3	82.7
Underlying value	–11.2	93.1	66.7	–27.5	28.4
Options on future					
Number of contracts	–21.4	21.8	73.5	24.1	10.4
Underlying	–34.4	93.9	8.9	27.5	8.5
Equity contracts	51.0	176.4	270.9	39.9	94.3
Agriculture commodity contracts	96.7	9.5	23.8	10.2	19.0

Table 4. South Africa: Economic and Capital Market Growth Rates (2001–2008)

	2001	2006	2007	2008	Average 2001–2008
GDP/capita					
Percent growth rate	0.78	4	3.8	1.9	2.6
Capital market					
Percent change in value of equity	31.7	21.2	47.9	–13.5	20.6
Percent change in value of bond	70.7	40.8	18.4	29.5	14.1
Future contracts, percent change	138.1	67.1	68.2	–53.7	41.2

Sources: Computed from data from South African Reserve Bank Quarterly Bulletin, June 2009; the Johannesburg Stock Exchange Limited and the Bond Exchange of South Africa.

Table 5. South Africa: Notional Amount of Exchange-Traded Derivatives

(In millions of U.S. dollars)

	2006	2007	2008 1/
Financial futures and options on futures	429,842	708,678	521,823
Warrant	1,004	396	488
Agriculture commodity futures and options	23,673	41,498	38,673
Interest rates derivatives	4,591	5,727	12,809

Sources: South African Reserve Bank Quarterly Bulletin, Dec. 2008; the Johannesburg Stock Exchange Limited; and the Bond Exchange of South Africa.

1/January–October, 2008

Table 6. Rankings According to Ease of Doing Business, Protecting Investors, and Enforcing Contracts in Selected Sub-Saharan African Countries for 2009

Country	Ease of Doing Business	Protecting Investors	Enforcing Contracts	Paying Taxes
South Africa	2	1	13	3
Kenya	5	14	19	36
Mauritius	1	2	10	2
Nigeria	12	6	16	25
Congo, Dem Rep.	46	32	44	33

Source: The World Bank Group, Doing Business Report, 2009

IV. Current Issues Affecting the Future of the Market

While further strengthening of the exchange control regulations needs to be considered, it is also important to expand the set of institutional investors. The tighter regulations could stipulate limits for institutional and corporate qualified participants in the currency futures market. The aim of these regulations on asset allocations by insurance and pension funds is to prevent excessive risk taking. However, such regulations also constrain the demand side in the futures market and may limit the potential benefits for the local securities market. As the global financial turmoil[2] persists, there are concerns that the financial sector of many SSA countries will become increasingly vulnerable to swings in market sentiment and risk aversion in global financial markets.[3] The current financial crisis and the lax regulation of derivatives that is exacerbating the financial turmoil in developed countries have also pointed towards the need for more regulation in order for the derivatives market to yield its ultimate benefit. There is a need to maintain investment restrictions on institutional investors, especially foreign investors such as insurance and pension funds. At the same time, the set of local institutional investors needs to be expanded to deepen the market.

[2] The financial market turmoil that erupted in August 2007 has caused heavy damage to markets and institutions at the core of the financial system. The turmoil was initiated by high defaults on sub-prime mortgages in the U.S, and the consequent blowout in spreads on securities backed by such mortgages, including collateralized debt obligations structured to attract high credit rating. The fallout has resulted in depletion of capital, an unprecedented disruption in interbank funds, a sharp contraction in credit supply, and in the repricing of risk across a broad range of instruments, with adverse consequences for the larger economy. Economies around the world have been seriously affected and emerging economies have not been spared with the damage being inflicted through both financial and trade channels (See Bank for International Settlements (2008, chapter 6, Bernanke (2008), Kashyap et al, (2008), IMF WEO, April, (2008 and 2009)). The crisis has underscored the need for effective regulation and transparency of financial derivatives activities.

[3] Emerging markets, including SSA countries are the recipients of "hot money" flows by investment managers from developed countries. The investment managers are fickle and they evaporate when interest rates rise. Emerging markets are most likely to be damaged by a 'sudden stop' imposed by a movement of investment managers toward lower risk as developed country rates rise.

Although these regulations exist, they need to be strengthened as South Africa moves towards a prudential system of exchange rate controls and financial regulations. The Financial Services Board (FSB) faces challenges in staff training and recruitment to ensure that it can carry out its responsibilities in supervision and meet the demands of a larger body of supervised institutions.

Hedge funds are barred in the currency futures market by the South African Reserve Bank (SARB) until the industry is regulated. The barring of hedge funds can affect the marketability and liquidity of currency futures since liquidity requires different people holding different positions and expectations. However, given the current global financial crisis, effective regulation is an important pre-requisite for before hedge funds being allowed in the currency futures market. Self-regulation by the key agencies in the industry needs to be accompanied by stronger government-supported sanctions.[4]

Certain investment restrictions have affected the involvement of unit trusts in fixed income derivatives (interest rate futures). However, other institutional investors such as pension funds and banks are very active in the interest rate futures market. Local banks concentrate on the one-to-five-year maturity segment and pension funds on the five-year and above segment. There is a need to review investment restrictions on unit trusts with a view to further deepen the market once the industry is properly regulated and supervisory capacity is enhanced.

Efforts should be made to set appropriate incentives for investment managers to avoid excessive tail risk taking[5] and herding[6] in the derivatives market. The derivatives market, like any other form of intermediation, introduces a layer of management between the investor and the investment. It is important to align the incentives for managers with those for investors to prevent distortions that can arise as a result of misalignment. Incentive structure and compensation should not be exclusively tied to returns as this will give investment managers a greater incentive to take tail risks or herd.[7]

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[4] Self-regulation might be better than public regulation and supervision because norms can be set by those with experience in the derivatives market, and can be monitored by those who know how the norms can be evaded. They also have the incentive to keep bureaucratic costs down.

[5] Tail risks are risks that are concealed most easily from investors. Given the requirement for periodic reporting, they are risks that generate severe adverse consequences, but with a small probability of occurring. In return, they offer fat compensation the rest of the time, and it will make the manager look as if he is outperforming his peers given the risk he takes (Rajan, 2005).

[6] Herding with other investment managers on investment choices provides a guarantee that the manager will not underperform his peers if boom turns to bust. Herding can move asset prices away from fundamentals. This can result in an upward spiral, creating a condition for a sharp and messy realignment (Rajan, 2005).

[7] Investment managers can always produce returns by taking on more risk. The young and unproven investment mangers are likely to take more tail risks and the established ones have the tendency to herd more. The two

(continued)

A risk management approach to financial regulation should be adopted to mitigate the possibility of perverse incentives in the derivatives market. This can be done through the judicious operation of monetary policy and through macro-prudential measures.

The agricultural commodities market is conducting in-depth education for the farmers and millers on the tools of a free market environment and how to use them. Market operators have embarked on face-to-face marketing, spending hours on the road from one farmers' meeting to another to educate them. Members of the exchange can also provide assistance in this respect.

Improvement in corporate governance and transparency is required. Good corporate governance and transparency can enhance the development of the derivatives market. This can be accomplished through improved laws, enhanced legal and regulatory frameworks, improved supervision, stronger contract enforcement and minority rights protection.

There is a need for clear accounting standards and prudential guidelines, and easy tax codes and payment system for derivatives market activities. National accounting standards and prudential guidelines can be clearly set and aligned to international financial reporting standards and generally acceptable accounting principles. Tax codes for cash and derivatives trading should also be made uniform. These will help to promote market growth and depth.

Improvement in the risk management capabilities of financial institutions and the risk assessment capabilities of regulators is critical. This can be achieved through provision of symmetric information and prompt disclosure. Vulnerability related to derivatives can be avoided through the adoption of Basel-type guidelines for capital adequacy for derivative instruments. This can also be avoided through the use of capital insurance.[8]

Investec and other OTC derivatives markets can be enhanced with features that ensure transparency. This includes greater emphasis on disclosure and information symmetry, and information on the credit standing and worthiness of trading parties.

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distortions are a volatile combination. If herd behavior moves assets prices away from fundamentals, the likelihood of large realignments that trigger tail losses increases (Rajan, 2005).

[8] Capital insurance is an additional element of the capital-regulation toolkit designed with the intention of mitigating the underlying frictions that make equity expensive, namely the governance and internal agency problems that are pervasive in the derivatives market. The added flexibility associated with the insurance option may help to reduce the externalities associated with distress, while at the same time minimizing the potential costs of public bailouts during crises, as well as on the drag on intermediation in normal times (Kashyap, et al, 2008).

V. Lessons for Countries of Sub-Saharan Africa from South Africa's Experience

Derivatives markets can be used by other countries of Sub-Saharan Africa (SSA) to "self-insure" against volatile capital flows. Shallow financial markets and inadequate access to finance are major sources of concern in African countries generally. Volatile international capital flows have the tendency to destabilize shallow markets and precipitate a crisis if there is a change in investors' appetite. The need to adopt stronger domestic policies should be underscored. The development of local derivatives markets would provide alternatives for the management of financial risks. The derivatives market in South Africa is a step in the right direction for increased access to finance and financial risk management, financial market deepening and to meet the challenges of globalization. Other SSA countries can learn from this experience to deepen their shallow capital markets.

South Africa has gradually relaxed exchange controls and further developed its financial market with the introduction of the currency futures market. Other SSA countries can learn from this in their efforts to increase liquidity, while ensuring proper regulation and enhanced supervisory capacity.

Many SSA countries have agriculture as their main source of income and can manage seasonal risks by introducing commodity futures. Agricultural products are affected by seasonal factors. Agricultural Commodity Futures and Options are essentially a means of spreading risk and a source of obtaining price insurance. Other SSA countries can learn from the South Africa "success story" in commodity futures and also introduce a commodity exchange. In the case of Nigeria, the commodity exchange, which was established in 1999, is yet to commence trading, indicating the need for proper assessment of feasibility and preparation.

Increased interest from external investors enhances market liquidity and financial deepening, but it has the potential to destabilize shallow markets. Proper rules and regulations need to be put in place for derivatives markets to achieve the desired results, as is being done in South Africa.

The development of derivatives markets can provide an alternative to bank credit as a source of funding. This can help to create a more stable source of local currency funding, thereby cushioning the funding gap from capital flow reversals or "sudden stops."

Regional cooperation can also be explored in derivatives market listings. Small countries with a nascent local securities market can list and trade their derivative instruments on a regional derivatives market. This can bring about synergy and reduction in operational costs. The Financial Services Board of South Africa has concluded a memorandum of understanding with 45 jurisdictions aimed at facilitating and improving the exchange of

information for cooperation and consultation between securities regulators of different countries. The FSB's Capital Markets Department plans to hold one securities familiarization program per year to enable African countries' delegates to exchange views on the regulatory regime in their respective country.

Macroeconomic policies and political fundamentals need to be strengthened to attract and sustain foreign investors' interest in the derivatives market. Weakness in the domestic economic and political climate and domestic financial systems are often accompanied by a reversal of capital flows and a reduction in emerging markets' access to international capital. To promote sustainable inflows efforts should also focus on effective regulation and enhanced supervisory capacity to prevent 'hot money' flows by investment managers from developed countries.

Domestic savings can be stimulated through the derivatives market. Other SSA countries can introduce derivatives markets, thereby broadening the set of investment opportunities available to domestic investors and enhancing diversification of the investment portfolio through derivative instruments.

Investor protection can be enhanced through the inclusion of "caveat emptor."[9] Investors can be advised of the nature of risk associated with different derivative instruments through the incorporation of appropriate warnings such as "caveat emptor" into investor contracts. While such warnings will encourage investors to make informed decisions, other means of investor education will also be required.

Hedging instruments need to be available for the proper development of the derivatives market, although this should be accompanied by tight regulation and enhanced supervisory capacity. Derivatives bring speculators and hedgers together, thereby improving liquidity and smoothing price changes in the underlying assets. Problems will arise if the market is one-sided. Hedging instruments are available in South Africa which has contributed to the development of the derivatives market.

The government bond yield curve remains the benchmark curve. Despite the fact that the outstanding notional value of foreign currency interest rate derivatives significantly exceeds the local bond market capitalization, the South African government bond yield curve still remains the benchmark curve. This is because South African government debt management policy was specifically aimed at improving the liquidity of the benchmark bond issues. Other SSA countries can learn about the need to develop the local government bond market which can in turn provide the benchmark curve.

[9] Caveat emptor means, "let the buyer beware."

VI. CONCLUSION

South Africa's derivatives market has grown rapidly in recent years, supporting capital inflows and helping market participants to price, unbundle and transfer risk. There are many derivative instruments traded with different institutional arrangements on the OTC markets and regulated exchanges. There are tight regulations on asset allocations by insurance and pension funds to prevent excessive risk taking. While such regulations may constrain the potential benefits to the local derivatives market, the misuse of derivatives can lead to a financial crisis, accelerate capital outflows, and amplify volatility. The regulations are necessary in South Africa because the country has limited supervisory capacity with the necessary training for a prudential system of exchange controls and financial regulations. The current financial crisis and lax regulation of derivatives that is exacerbating the financial turmoil in developed countries, have also pointed towards the need to further strengthen regulation and enhancing supervisory capacity in order for the derivatives market to yield its ultimate benefit. Despite these current weaknesses, the advantages of derivatives markets should not be discounted.

The main benefit of derivatives markets in SSA countries would be to enable them to self-insure against the volatility of capital flows. Their overdependence on bank credit as a source of funding could be reduced and through the introduction of commodity futures they could improve their management of seasonal risk, albeit with appropriate regulation and supervision.

Strong regional cooperation is critical for the establishment of a regional derivatives market. Since derivatives markets in many SSA countries would likely be small, consideration should be given to the establishment of a regional derivatives market. This would enable small SSA countries with a nascent local securities market to list and trade their derivative instruments.

REFERENCES

Bank for International Settlements, 2007: Triennial Central Bank Survey, BIS, April.

Bank for International Settlements, 2008, 78th Annual Reports: 1 April 2007–31 March 2008, Basel, Switzerland.

Bernanke, B.S, 2008, Risk Management and Financial Institutions, Speech delivered at the Federal Reserve Bank of Chicago's Annual Conference on Bank Structure and Competition, Chicago, Illinois, May 15.

Financial Services Board South Africa, 2007: Report to CISNA on Developments within the South African Control Markets, FSB, May.

International Monetary Fund, 2008: World Economic Outlook, Housing and the Business Cycle, The IMF, (Washington), April.

International Monetary Fund, 2009: World Economic Outlook Crisis and Recovery, The IMF, (Washington), April.

Kashyap, A.K, R.G. Rajan, and J.C. Stein, 2008: Rethinking Capital Regulation, Federal Reserve Bank of Kansas City Symposium on "Maintaining Stability in a Changing Financial System", Jackson Hole, Wyoming, August 21–23, 2008.

Liyina, A., 2004, "The Role of Financial Derivatives in Emerging Markets," in D.J. Mathieson, J.E. Roldos, R. Ramaswamy, and A. Ilyina eds. *Emerging Local Securities and Derivatives Markets*, Washington, IMF.

Rajan, R.G (2005): Has Financial development Made the World Riskier? NBER Working Papers 11728, National Bureau of Economic Research, Inc

South African Reserve Bank, 2009: Statistical Tables, Quarterly Bulletin, June. SARB.

Tsetsekos, G, P. Varangis, 1997: The Structure of Derivatives Exchanges: Lessons from Developed and Emerging Markets, The World Bank, (Washington), Dec.