

The Potential of Derivatives Market in Bangladesh

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The derivatives market has attained the highest growth of all financial market segments in recent years and has become the central contributor to the stability of the financial world. In recent years, derivative markets have grown by leaps and bounds in emerging economics and given the high level of economic and financial risks faced by market participants and investors in emerging countries, derivatives contribute to a country's economic development by making these risks manageable. Due to the recent catastrophic fall of capital market, rapidly declining FDI and scarcity of investment opportunities in an equity centric economy, investors of Bangladesh is crying out for an innovative and versatile financial product such as derivative securities for hedging and market expansion. In our paper, we have provided clear examples of how derivative securities can strengthen capital market of Bangladesh, both in terms of risk mitigation and creating alternative investment vehicles as well as reduce burden on our major import and export sectors. Furthermore, we have also looked into the prerequisite of setting up a derivative markets in Bangladesh and provided a clear roadmap. In view of recent turmoil in the equity markets, we need to be circumspect and foresighted in our approach; a standardized exchange traded derivative market with phase-by-phase introduction of product has been recommended.

1. Introduction

Derivative securities are one of the most actively traded financial instrument for ensuring efficiency and depth of capital market. These

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securities have no intrinsic value; their returns are linked to, or derived from, some other product or underlying asset. The derivatives market has attained the highest growth of all financial market segments in recent years and has become the central contributor to the stability of the financial world. Its size has increased by around 24 percent per year in terms of notional amount outstanding, far outpacing other financial instruments such as equities (11 percent) and bonds (9 percent)³. With a global reach and involvement of players with varied objective (hedging, speculation or arbitrage), derivatives offer various types of risk protection and innovative investment strategies.

The market for derivatives is the largest single segment of the financial market and as of June 2007, the global derivatives market amounted to €457 trillion in terms of notional amount outstanding⁴. From the data available through Bank International Settlement (BIS) in 2008, the derivatives market is more than four times larger than the combined global equity and bond markets measured by market capitalization.

Derivatives can be traded Over-the-counter (OTC) or on exchanges. OTC derivatives are created (and privately negotiated) by an agreement between two individual counterparties. Most of these contracts are held to maturity by the original counterparties, but some are altered during their life or offset before termination. Products such as swaps, forward rate agreements, and exotic options are almost always traded in this way.

Exchange-traded derivatives (ETD), on the other hand, are fully standardized and their contract terms are designed by derivatives exchanges. A derivatives exchange acts as an intermediary to all transactions, and takes Initial margin from both sides of the trade to act as a guarantee.

Of recent, the derivatives market has attracted more attention against the backdrop of the financial crisis, fraudulent actions and the near failure of some market participants. However, structured credit-linked securities which were responsible for the financial crisis, are not derivatives in the

³ See BIS 2008 and BIS statistics (www.bis.org/statistics/derstats.htm).

⁴ See BIS 2008; the notional amount of a derivatives contract refers to the value or nominal amount of the underlying to the derivatives contract; outstanding refers to open derivatives contracts that are held by market participants.

first place and so could not tarnish the impact and growth of derivative securities in modern finance.

For decades North America reigned supreme in derivative market. However, the emerging markets in Asia-Pacific has overtaken North America as the world's biggest derivatives market amid increasing demand for futures and options contracts in the region's fast-growing economies. According to Washington-based Futures Industry Association (FIA), Derivatives contracts traded in Asia-Pacific accounted for 38 percent of the global total in the six months to June 2010, while North America stands at 33 percent. This incessant growth has been fueled by creation of derivative markets in Brazil, Korea, Singapore, Malaysia, India, and after decade long stagnation in China. The derivative markets have added strength, variety and most importantly better risk management in afore mentioned emerging economies.

Bangladesh economy has been strong in recent years with GDP growth remained within range of 5-6 percent for last 8 years and real GDP has shown strong growth in recent years, averaging over 6 percent p.a. in 2006-09. The equity centric capital market i.e. Dhaka Stock Exchange (DSE), has been in the top three best performing markets in the world over the last three years (2008-10). However, these rapidly growing but fundamentally feeble capital markets experienced a staggering collapse in early December 2010 and from December 2010 till February of 2011 the index fell from a high of around 8,900 points to 5,200 points, a drop of almost 42 percent in just three months. The volatility in share markets has become a matter of concern in recent months for investors, regulators and policy makers and the debacle of the capital market has brutally exposed the lack of vehicles for risk minimization and alternative investment in the capital market of Bangladesh.

Hassan (2001) explains that capital market allows investors to accept greater risk in return for the chance of greater returns. In a good capital market risk must be accepted; the purpose of the regulatory regime is not to block the passage of the commercial risk to the investor but it is to keep the participants in the market from cheating. At present there is a lot of confusion over this. Capital market in Bangladesh is still at a nascent stage of development. Broadening and diversification of the

capital market is necessary to deepen the financial sector. This may be achieved by increase in financial assets in relation to non-financial ones and diversification of financial instrument. An efficient capital market is in help at both micro and macro level of the economy. At the micro level, an efficient capital market benefits investors by providing a range of investment outlets for their savings. On the other hand, firms may raise its funds whenever they face their financial needs. At the macro level, government is benefited by effective allocation of national savings to both public and private enterprises. Besides, by successfully mobilizing finance from local sources, the government can also reduce its dependency on foreign funds to finance its growth. However, to implement the above needful an efficient market is a prerequisite. Many have come forward with suggestions in order to develop the capital market of Bangladesh to make it a twenty-first century compatible. As the major stakeholders in Bangladesh is currently exploring new and pragmatic means for strengthening and stimulating the capital markets, the possibility of developing a structured derivative market alike flourishing emerging economies of India, China, Malaysia and so on, need to be judiciously analysed.

This paper aims to contribute an objective and fact-based foundation for exploring the possibility of introducing derivative securities for strengthening the feeble capital market of Bangladesh. We have provided fact, figures and analysis, and suggested a pragmatic roadmap for creating a derivative market in Bangladesh.

The rest of this paper is organized in five main sections. Section 2 takes a close look at the growth of emerging derivative markets and lessons learned from markets like India and China.

Section 3 discusses the prerequisites of creating a stable derivative markets and a brief literature overview outlining the building blocks. The rationale for creating a derivative market in Bangladesh is provided in Section 4 and section 5 outlines some of the major recommendations. Finally, section 6 briefly summarizes the facts and recommendations and provides concluding remarks.

2. Emerging Derivative Markets

2.1 Recent growth in Asia-Pacific

The Asia-Pacific has overtaken North America as the world's biggest derivatives market amid increasing demand for futures and options contracts in the region's fast-growing economies. According to Washington-based Futures Industry Association (FIA), Derivatives contracts traded in Asia-Pacific accounted for 38 percent of the global total in the six months to June 2010, while North America stands at 33 percent⁵.

Derivatives contracts traded in the Asia-Pacific region climbed 52 percent to 4.2 billion contracts in the six months to June in year 2010 from a year earlier, while those that changed hands in North America increased 16 percent to 3.7 billion, the association's data showed. The world's largest derivatives exchange (by number of transactions) is the Korea Exchange (which lists KOSPI Index Futures & Options) which accounted for 42 percent of derivatives traded across the Asia-Pacific region in the first half of 2010, while Indian derivative exchanges accounted for 32 percent and China's exchanges made up 16 percent. The rapid growth in demand for commodity futures contracts both in China and India have made analysts predict that both of this booming derivative markets to eventually overtake Korea as the region's top derivative exchange. According to FIA data, contracts traded on the four Indian derivatives exchanges more than doubled to 1.36 billion in the first half of 2010, compared with 542.4 million a year earlier; In China, contracts that changed hands on three exchanges climbed 60 percent to 672 million in the same period. This incessant demand for derivatives in Asia is due to the region's economic growth and a maturing market which has created a demand for new innovative derivative tools from Asian corporate and financial institutions to hedge their risks.

Exhibit 1 shows global derivative volume by region and percentage change for first six month of both year 2009 and 2010 and Asia Pacific region now the largest in terms of volume.

⁵ Burgos, J. (2010, October 15). Asia Tops North America as Biggest Derivatives Market for the First Time. Bloomberg

Exhibit 1: Global Listed Derivatives Volume by Region
Based on the number of contracts traded and/or cleared at 76 exchanges worldwide (in millions USD)

	Jan-Jun 2009	Jan-Jun 2010	% Change	% of Total
Asia Pacific	2,767.70	4,206.87	52.0%	37.5%
North America	3,170.86	3,666.78	15.6%	32.7%
Europe	1937.76	2,407.33	24.2%	21.5%
Latin America	476.13	776.53	63.1%	6.9%
Other	165.33	163.98	-0.8%	1.5%
Global Total	8,517.79	11,221.48	31.7%	100.0%

Source: Bank for International Settlements⁶

2.2 The size and structure of derivatives markets in EMEs

According to BIS Quarterly Review (Dec 2010), daily turnover in derivatives in of Emerging Market Economics (EME) has expanded four times over the past decade, to over 6% of emerging market GDP⁷. The derivatives in emerging markets are traded in almost equal proportions over the counter and on exchanges and unlike in advanced economies, Foreign Exchange derivatives are still the most traded derivatives in EMEs (50% of total turnover), while interest rate derivatives remain underdeveloped (probably due to pegged interest rates).

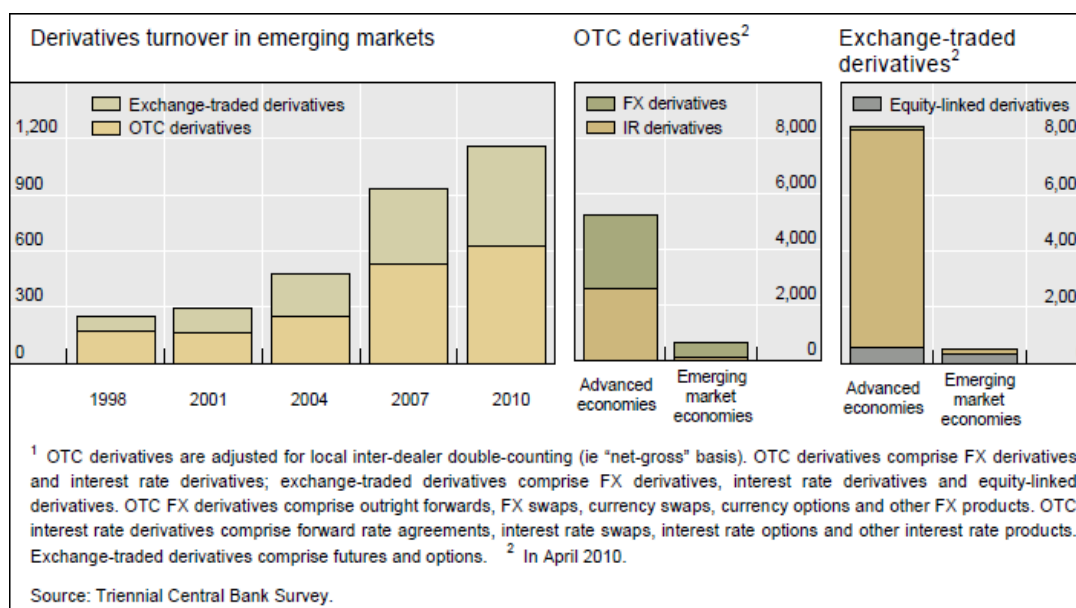
Average daily turnover of derivatives in EMEs was \$1.2 trillion in April 2010 (6.2% of those economies' GDP), compared to \$13.8 trillion (36% of GDP) in advanced economies. However, the small derivatives markets in EMEs have expanded rapidly with an average daily turnover increase of 300% since 2001, and 25% over the past three years, despite the crisis in 2008–09 (Exhibit 2, left-hand panel)⁸. This was higher than the growth of turnover in advanced economies (250% since 2001, and 22% since 2007).

⁶ See Bank for International Settlements for Derivatives volume in 2009-10

⁷ Mihaljek, D., & Packer F. (Dec 2010). Derivatives in emerging markets. BIS Quarterly Review, p.43-44

⁸ Triennial Central Bank Survey (2010)

Exhibit 2: Derivatives daily turnover in advanced and emerging markets¹ (in billions USD)



2.3 Driving factors for growth of derivative market (Globally and in Asia)

Firstly, an intrinsic characteristic of derivatives instruments is that they are designed to transfer risk, whereas equity or fixed income securities are designed to be an explicit claim on the stream of cash flows generated from the ownership of a financial asset in a certain jurisdiction. Traders trading in derivatives markets form expectations about underlying asset prices and are better placed to manage the risks associated with price changes.

Many fund managers of pension or hedge funds in North America have increasingly taken a global view of asset diversification and risk management, and have increasingly sought to create synthetic exposures to asset classes not readily available in domestic market. This characteristic makes derivatives more amenable to borderless trading, making OTC derivatives markets, in particular, more global in nature than, say, largely nationalistic equity markets.

The second driver is the rate of development of financial innovations and new derivatives instruments. Advances in information technology, coupled with financial institutions' drive to enhance returns and expand their global reach, have facilitated the financial intermediaries (and, to some extent, their clients, particularly hedge funds) to continuously introduce and/or embrace new derivatives instruments and advances in risk-management techniques.

The main driving factors for derivative markets in various economies of Asia have been the immense benefits from risk sharing in more complete capital markets, corporate demand for hedging tools, institutional needs for enhanced liquidity in an environment of large cross-border flows and trade integration, as well as rapidly declining transaction costs in electronic trading. At present, most of the derivative markets in Asia offer multiple products for different user requirement (Exhibit 3)

Exhibit 3: Derivative products and turnover across Asia

	Australia	China	Hong Kong	India	Indonesia	Japan	Korea	Malaysia	Singapore	Thailand
INDEX										
Futures	√	x	√	√	√	√	√	√	√	√
Options	√	x	√	√	x	√	√	√	√	√
Options on futures	√	x	x	x	x	√	x	x	x	x
STOCK										
Futures	√	x	√	√	x	x	x	x	x	√
Options	√	x	√	√	x	√	√	x	√	x
CURRENCY										
Futures	√	x	x	x	√	√	√	x	√	x
Options	x	x	x	x	x	x	√	x	√	x
INTEREST RATE										
Futures	√	x	√	√	x	√	√	√	√	√
Options on futures	√	x	x	x	x	√	x	x	x	x
BONDS										
Futures	√	x	√	x	x	√	√	√	√	x
Options on futures	√	x	x	x	x	√	√	x	√	x
COMMODITIES										
Futures	√	√	x	√	√	√	√	√	√	√ (gold)
Options on futures	√	x	x	x	x	x	x	x	x	x
# of products traded	12	1	6	6	3	10	9	5	9	5

Sources: Websites of regional exchanges, WFE, Futures Industry Association

Finally, equity derivatives have usually reduced volatility and strengthened liquidity in equity markets, enhanced returns to institutional investors such as mutual or pension funds, and reduced the cost of equity listings for firms.

2.4 Indian derivative markets – a roadmap for future derivative emerging markets

India over the years has developed a robust derivatives market. In the year 2000, National Stock Exchange (NSE) started its operation in derivatives contracts and introduced futures contracts on the Nifty and Sensex index. This was followed by Options contracts on Nifty and Sensex (European Style), Option contracts on stocks (American style) and Futures contracts on stocks in June, July and November 2001, respectively. The number of underlying stocks and indexes has increased over the years (Exhibit 4)

Exhibit 4: Future and Option contracts traded in NSE and BSE (Source: NSE and BSE)

Financial Year	NSE - Stocks	BSE - Stocks	NSE – Index(es)	BSE – Index(es)
2001-02	31	31	1	1
2002-03	41	38	1	1
2003-04	53	42	2	1
2004-05	52	46	2	1
2005-06	117	76	3	7
2006-07	155	89	3	7
2007-08	265	126	7	7

Since its inception, the derivative markets in India (Both NSE and BSE) have experienced steady growth in Turnover. During 2001-02, turnover on NSE was Rs. 1019,250 million and during 2007-08 it was Rs. 130,904,780 million. Likewise, during 2001-02, turnover on BSE was Rs. 19,170 million and during 2007-08 it was Rs. 2423,080 million (Exhibit 5).

Exhibit 5: Total Derivatives turnover since inception (in Rs. Millions)

Period	NSE	BSE	Total
2001-02	1,019,250	19,170	1,038,420
2002-03	4,398,650	24,750	4,423,400
2003-04	21,304,470	120,740	21,425,210
2004-05	25,470,530	161,120	25,631,650
2005-06	48,242,450	90	48,242,540
2006-07	73,562,710	590,070	74,152,780
2007-08	130,904,780	2,423,080	133,327,860
04/2008 to 09/2008	59,638,940	114,910	59,753,850

Source: BSE and NSE (excluding currency derivatives)

The story has not been without its share of hurdles. On path of creating a vibrant derivatives market, Indian government and regulators embarked on meticulous planning and feasibility analysis which can act as a roadmap for an emerging economy such as Bangladesh. We will have a brief look at some of these initiatives.

Initiation of feasibility analysis and policy amendment

The Securities and Exchange Board of India (SEBI) set up a 24-member Committee in November 1996 under the Chairmanship of Dr. L.C. Gupta in order to create an appropriate regulatory framework for derivatives trading in India. The Committee submitted its report in March 1998 expressing overwhelming support for introducing derivatives as a prudent tool of hedging market risk and also prescribing necessary preconditions for the introduction of derivatives trading in India⁹. SEBI also set up a separate committee in June 1998 under the Chairmanship of Prof. J. R.Varma to recommend measures for risk containment in derivatives market in India. While major recommendations of Gupta Committee dealt with the legal and

⁹ <http://www.sebi.gov.in/commreport/lcgupta.html>

regulatory issues and infrastructural changes; Varma report, which was submitted in October 1998, worked out the operational details of a margin system, a methodology for charging initial margins, broker net worth, deposit requirement and real-time monitoring requirements. The separate mandate of these two committees allowed them to analyze and provide recommendations in an unbiased manner.

Understanding investor objective

The LC Gupta Committee conducted a wide market survey with several entities relevant to derivatives trading like brokers, mutual funds, banks/FIs, FIIs and merchant banks. Of the 112 respondents to the questionnaire sent to brokers and financial institutions, about 67 percent favoured the introduction of stock index futures as the first step towards introduction of financial derivatives trading in India, and stock index options came a distant second with 39 percent support. Another major reason of these market surveys was to gauge the major necessity of introducing derivative securities. Although majority was in favour of hedging, a significant portion also felt the use of derivatives for speculative purposes. Such insight allowed the regulators and policy makers to go back to the drawing board and draw-out infrastructural and policy changes which not only accommodate hedging but also allowed speculation activities in moderation.

Need for building skill set and customized training

The L. C. Gupta Committee during its extensive market research recognized the lack of in-depth understanding of derivative products both of Indian trading community and the probable end-users. The committee suggested all broker-members, sales persons/dealers should compulsorily undergo training prior to the initiation of trading in such instruments, and should pass a SEBI-approved certification program recommended. The National Stock Exchange (NSE) acted upon the recommendation by launching a formal certification programme, called the National Certification for Financial Markets (NCFM), a web based on-line objective type test to build a band of future traders and investors who will have the necessary skills and knowledge to deal in derivatives.

Phase-by-phase entry

The L. C. Gupta committee had also recommended that there should be phased introduction of derivatives products. To start with, index futures to be introduced, which should be followed by options on index and

later options on stocks. Such gradual entry would allow investors to get acquainted with the functionalities of simple derivative instruments and be better adept to deal with other complex derivatives later. SEBI followed this prescribed order which allowed participants to learn gradually about more sophisticated products and in less than a decade develop one of the most robust derivative markets in India.

Our further study of the policy reforms, infrastructure modifications and operational mechanisms of the successful Indian derivative market played an integral role in developing the recommendations for introducing derivative securities in Bangladesh.

2.5 Failure of derivative market – Lessons from China

China experienced major obstacles in the early 1990s and closed out 27 of its 30 exchanges, and currently only allows commodity future trading which is expanding rapidly. During early 1990s, the Shanghai Stock Exchange and Shenzhen Stock Exchanges traded bond futures in very high volumes. Unfortunately, risk management procedures were not very adequate – margins were as little as one per cent of contract price in early 1995. This situation became acute when a scandal involving chaotic trading of bond futures contracts in the Shanghai Stock Exchange. One of largest securities firms incurred huge losses when its short-selling strategy went disastrously wrong, to the point of threatening the stability of the entire financial system (refer to Box 1 in Appendix)¹⁰. Shortly thereafter, the government shut down the bond futures markets and scaled back trading in commodity futures. Since then Chinese government has been very apprehensive on the reopening of any trading in financial futures contracts. The Shanghai derivatives failure has been a lesson for exchanges. In order to develop a strong derivative market there has to be a strong and liquid money market where the volatility of a well designed derivative is within acceptable limits. There has to be transparent legal and regulatory structures which must guide market participants and well established clearing house mechanism to ensure negligible counter party risk. Finally, if market elements are not market determined then derivative markets can create

¹⁰ Fratzscher, O., *Emerging Derivative Markets in Asia* (March 2006). The World Bank, p.10-12

systematic risk. If macro factors of any economy are artificially restricted, derivative markets will not flourish.

3. Building blocks for a Well-Functioning Derivatives Market

The derivatives market is very dynamic and has rapidly developed into the most important segment of the financial market. Whether access to derivative market is through a specific exchange or over-the-counter, derivative markets add substantial value to institutional or retail investors or corporate stakeholders. Due to this rapid growth of derivative markets, there has been consistent research by academics and policy makers in determining a set of prerequisites for developing new market for derivative securities.

3.1 Economic rationale of a derivative market

Derivatives accomplish a critical economic need by facilitating risk management, and enabling price discovery. Price discovery occurs when an asset is traded and new information about its value is incorporated into its price. Academic research has shown that trading in derivatives markets enable market participants form expectations about underlying asset prices and to manage the risks associated with price changes.

The economic benefits that organized derivatives exchanges provide in developed countries are well documented. In one such significant article, Peck (1985) demonstrates both theoretically and empirically the direct impact futures markets have on commodity prices, and their indirect impact on production, consumption and storage decisions. She also provides empirical evidence that seasonal and annual commodity prices are more stable in economies with futures markets. Her results demonstrate that futures markets fulfill an economic role by decreasing price volatility. Silber (1985) provides a sound explanation for the economic contribution of financial futures and indicates that increased liquidity and risk reduction facilities available to portfolio managers and other investors reduce the cost of capital to businesses, which ultimately translates into greater capital formation for the economy as a whole. Baluch and Ariff (2007) studied 11 countries, including 5 developed and 6 emerging markets, and their derivative exchanges to empirically test the economic contribution of derivative markets in the development process of countries, both developed and emerging. Although, the

results of the study did not provide conclusive evidence of direct economic contribution, it did provide some insight into the relationship between derivative markets development and economic growth as well as the dependence of the derivative markets as a risk-reducing agent for the spot markets/economy. The study recommended that emerging markets should follow the Supply-Leading pattern of development, launching derivative products on their most liquid spot market financial products; with prior and proper set-up of financial infrastructure and institution and legal arrangements.

3.2 Reason for concern

However, derivatives have its fair share of criticism. Some analysts have even called derivative as “Destructive”. Recent subprime mortgage crisis is an example how over exposure in security and derivative market without substantial collateral can lead to a chain of global havoc. Concerns arise especially in the areas of accounting and transparency and in presence of appetite for higher leverage and speculation, lack of corporate governance, as well as on counterparty and potential systemic risks in unregulated markets. These concerns are valid but can be successfully eradicated with an appropriate legal and regulatory environment and a sound market infrastructure.

3.3 Prerequisite of a derivative market

Research pertaining to launching derivatives exchanges in emerging markets consists primarily of country specific feasibility reports or study conducted by using different emerging markets as model. Such studies have been performed on countries such as Korea, India, Pakistan, Malaysia and Turkey. However, a limited number of empirical studies, which generally focus on one specific derivatives contract, exist. Bricheux, Savre and Tachon (1992) describe the important factors for developing a successful futures contract and future market:

- (i) Conditions for creating a futures market (legal, regulatory, political and economic).
- (ii) Conditions for creating a futures contract (price volatility, underlying asset's risk, large cash market, maturity of the spot market, and existence as well as involvement of dealer community).
- (iii)

Conditions for futures contract success (futures market environment, well-designed contract, and exchange perseverance).

Ersen and Karagozoglu (2003) analyzed the readiness of emerging markets for the establishment of derivatives trading. They mentioned that between 1989 and 2000, 183 derivatives contracts were introduced by 10 derivatives exchanges in emerging countries; which were mostly futures contracts on financial (equity, exchange rate and interest rate) assets. They indicated that 45 percent of the contracts launched by emerging country exchanges failed on average after 2.75 years and were no longer offered for trading. According to their paper the successful derivatives, equity, interest rate and exchange rate contracts attain the highest volume of trade, respectively. Ersen and Karagozoglu (2003) developed a model based on macroeconomic, financial, risk and market size variables to explain the trading in derivatives contracts in emerging markets.

Fratzscher (2006) identified three critical policy issues that need to be carefully considered before derivatives markets can be successfully developed: (i) a deep liquid cash markets supported by market determined prices, (ii) how much regulation is needed in OTC and ETD derivative markets; and (iii) what infrastructure is necessary. Market participants, policy makers and regulators should support each-other to ensure these prerequisites are satisfied.

In order to support a vibrant derivative market, a liquid, efficient, and integrated cash market is imperative. Most exchange-traded derivatives and standard OTC derivatives, such as foreign exchange forwards and interest rate swaps, are very liquid. Market participants can expect to find a counter party to trade at a fair price. On the contrary, artificial policy mechanisms such as pegged interest rates, segmented fixed income markets, and capital controls impede foreign exchange derivative markets development and they might develop underground markets. In addition, some of the major derivatives markets are settled in kind (rather than cash) and hence require a sizeable amount of underlying securities for settlement. Many examples in developed markets have illustrated that large derivative positions can be abused to “squeeze” the cash markets, unless large and liquid benchmark securities have been established.

The next major requirement for a sound derivative market is stringent regulation to monitor and ensure the credibility and efficiency of derivative markets. There must be sound risk management mechanisms in place to ensure depositors are protected in financial distress and integrity of the payment systems need to be secured to ensure transparency and efficient transaction processing. Hedging is a pivotal practice in derivatives market, it at its core deals with risk minimization to attract investments which has played a vital role in the recent popularity of derivatives in financial markets, emerging economies promote derivatives and the risk free side of it to create stability in their markets and enable it to grow.

However, use of derivatives may create some unwanted risks. The different risks that market participants face such as counter party, operational, legal and liquidity can ultimately lead to systemic risk, that is, default of one counterparty may have adverse effects on other market participants, potentially destabilizing the entire financial market. A primary concern of all stakeholders, including regulators and policy makers, is to limit systemic risk to the greatest extent possible and a strong set of administrative regulations can certainly reduce these unwanted risks. The progressive regulators argue that the existing institutional supervision of banks does not require any additional functional regulation of derivatives markets. Instead, markets are encouraged to develop self-regulatory organizations (SROs) to maintain the integrity of the derivatives market. This approach appears to be consistent with the existing market structure in the US and the UK where OTC derivatives trading is dominant and the market is highly concentrated among banks.

However in a country like Bangladesh dominated by naïve investors with limited knowledge of global investment products, along with improving governance of market participants and for self regulation of the exchanges, there must be vigilant regulatory oversight over derivatives to maintain financial stability.

Fratzscher (2006) emphasized on three additional considerations that regulators have to weigh in order to establish an even playing field for derivative markets: First, an adequate legal framework for enforcement and the adoption of IFRS accounting rules (incl. IAS 39) are critical

prerequisites for sound derivative markets. Second, capital rules for banks operating in OTC derivative markets need to be aligned with margin rules that are effective in ETD derivative markets. International Swaps and Derivatives Association (ISDA) has worked diligently over the years to make over-the-counter (OTC) derivatives markets safe and efficient. ISDA has clear guidelines for global derivative markets—developed or emerging economies alike in reducing counterparty credit risk, increasing transparency, and improving the industry’s operational infrastructure. Such guidelines should be adjusted for local market requirement and implemented carefully. Third, taxes need to be harmonized for all derivatives and related cash products, because transaction costs are an important driver of liquidity that can shift and even destabilize markets. Indian derivative market has suffered due to lack of liquidity over the years and one of the major reasons is different tax treatment for different financial market.

Finally, the single most important risk management tool for derivative markets is to reduce exposure through close-out netting arrangements, ideally with a central counterparty (CCP). The most common means of mitigating counterparty risk are netting and collateralization of counterparty risk exposures. In the OTC segment, these lead to the theoretic regulatory capital required being reduced by around 70 percent¹¹.

A derivative exchange with a Central Counterparty (CCP) provide multilateral netting across all trading parties and creates confidence in investors and regulators by offering several lines of defense against their counterparty risk exposure. As a consequence, the use of CCPs reduces the trading parties’ regulatory capital for credit risk from derivatives transactions to zero – irrespective of whether the transaction is OTC or on exchange. However, major financial institutions have been vocal against multilateral netting through a CCP because that would require them to post margins and hence increase transaction costs. The highly successful Indian derivative exchanges have struggled to gain active participation of major banks due to similar concerns. This presents an intricate situation for policy makers to balance the need for financial innovation and low transaction costs on one hand, while on the other hand trying to reduce risks that may undermine financial stability.

¹¹ see BIS 2007b

Based on information of major exchanges of Asia, Fratzscher (2006) determined an index of major infrastructure requirements for a derivative market (Exhibit 6). Surprisingly, there appears to be a strong correlation between existing derivatives products in Asia we found-out in Exhibit 3 as markets with adequate infrastructure have experienced higher growth in turnover and product line

Exhibit 6: Derivatives market infrastructure across Asia¹²

	Australia	China	Hong Kong	India	Indonesia	Japan	Korea	Malaysia	Philippines	Singapore	Thailand
Liquidity											
Fixed income benchmarks	✓	⊙	⊙	✓	⊙	✓	✓	✓	✗	✓	✓
Fixed income liquidity	✓	⊙	✓	⊙	✗	✓	✓	⊙	⊙	✓	⊙
Equity market liquidity	✓	✓	✓	✓	⊙	✓	✓	✓	✗	✓	⊙
Regulation											
Derivatives law	✓	✗	✓	✓	✗	⊙	⊙	⊙	✗	⊙	⊙
Securities lending	✓	⊙	✓	✓	⊙	✓	✓	✗	✗	✓	⊙
Accounting standards	✓	⊙	✓	⊙	✓	⊙	⊙	✓	✗	✓	⊙
Exchanges											
Clearing and settlement CCP	✓	✗	✓	✓	✗	⊙	✓	⊙	✗	✓	⊙
ISDA netting opinion	✓	✗	✓	✓	✓	✓	✓	✓	✓	✓	✓
Demutualized exchange	✓	✗	✓	✓	✗	⊙	✓	⊙	✗	✓	⊙
Taxes											
Tax harmonization	✓	✗	⊙	✓	✓	⊙	✓	⊙	✗	✓	✗
Transaction costs and IT	✓	⊙	✓	✓	✗	✓	✓	✓	⊙	✓	⊙
Investor base and NBFI	✓	⊙	✓	✓	✗	⊙	✓	⊙	✗	✓	⊙
# best practice components	12	1	10	10	3	7	10	5	1	11	2

Notes: ✓ denotes best practice ; ⊙ denotes progress on existing deficiencies ; and ✗ denotes major problems.

4. Justification for Derivatives in Bangladesh

4.1 Why Bangladesh needs a derivative market

(a) Increased volatility in capital market needs attention

A good number of academic papers investigated the nature and performance of Bangladesh stock Market. For example, Hassan and Chowdhury (2008), using monthly data for market index and 46 actively traded individual firms from January 1991 through May 2003, examine the efficiency of stock market of an emerging market. We employ a

¹² Fratzscher, O., Emerging Derivative Markets in Asia (March 2006). The World Bank, p.8

battery of tests including variance ratio tests to examine the efficiency issue of Bangladesh stock market. Portfolio results suggest that the DSE is weak-form efficient, but the individual firm returns suggest that DSE is weak-form inefficient. We suggest that individual firm returns are influenced by non-synchronous trading and firm-specific and market micro-structure effects.

Basher, Hassan and Islam (2007) examines the time-varying risk return relationship and the impact of institutional factors such as circuit breaker on volatility for the emerging equity market of Bangladesh using daily and weekly stock returns. The Dhaka Stock Exchange (DSE) equity returns show negative skewness, excess kurtosis and deviation from normality. The returns display significant serial correlation suggesting stock market inefficiency. The results also show a significant relationship between conditional volatility and stock returns, but the risk-return parameter is found to be sensitive to choice of samples and frequencies of data. Overall, the coefficient of the risk-return parameter is negative and statistically significant. While this result is not consistent with the portfolio theory, it is possible theoretically in emerging markets as investors may not demand higher risk premia if they are better able to bear risk at times of particular volatility. While lock-in did not have any overall impact on stock volatility, the imposition of a circuit breaker has contributed significantly to the volatility of realized returns. As a policy to improve the operation of capital market timely disclosure and dissemination of information to the shareholders and investors on the performance of listed companies should be emphasized.

Chowdhury, Hassan and Kabir (2007) investigate whether or not there is any contrarian profit (return reversal) in the Bangladesh capital market due to investor overreaction. They consider 1-, 3-, 6-, 12-, and 18-month portfolio formation and evaluation period to detect any pattern in the difference between the returns of the loser and winner portfolios for the period from June 1991 through May 2003. They have found that there is no long-term overreaction in stock prices. Even there is negligible overreaction when intermediate-term like 3- and 9-month investment strategy is considered. But, there is a tendency for the market to overreact when short-term such as monthly strategy is used. This phenomenon gives the indication that DSE may suffer from more severe short-term overreaction. However, it can only be found if data of higher frequency like daily and weekly are taken into account. Finally, it is

premature to comment whether or not the market is at least efficient in the weak form since there has been little research accomplished so far to detect overreaction or underreaction in the Bangladesh market.

Hassan and Maroney (2004) observes that capital market in Bangladesh is still at a nascent stage of development. This paper examines efficiency of Dhaka Stock Exchange (DSE) by taking into consideration the problems of non-linearity, thin trading and structural change. Their results show that parameter uncertainty is a major consideration when developing any successful trading strategy in Bangladesh stock market. Even though they do find non-linearity after correcting for thin- trading in some of the years under study, the ability to execute profitable trading strategies is confounded by parameter instability. Even if these statistics indicate dependence in returns data, the ability to make trading profits may be limited.

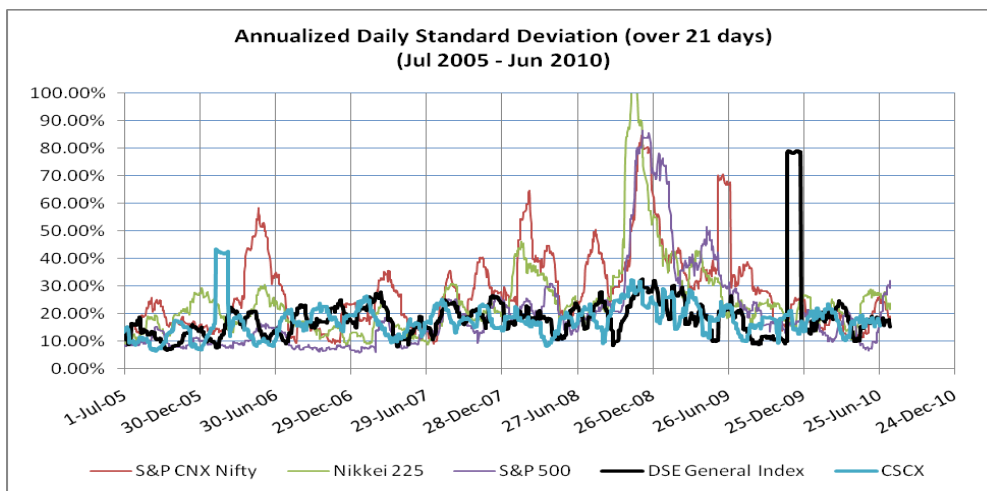
We have calculated volatility of the two capital markets of Bangladesh: Dhaka Stock Exchange and Chittagong Stock Exchange. There are a few reasons behind taking only the equity markets into account. Firstly, derivatives on the equity securities (stocks and index) have always accounted the greater portion of the global derivatives market. As of 2008, 69% of all the derivative contracts traded were the equity derivatives despite the growth rate had declined comparing to the previous years¹³. The second reason is the commodity markets still lacks infrastructural strength and the interest rates being strictly controlled by the central bank of the country (not conducive for derivatives). However, the impediments and the low yield of the other investment alternatives and the rapid growth¹⁴ in the capital market have turned a lot of investors to our share markets with an expectation of high return within a much shorter time lag. So, while introducing derivatives in Bangladesh, the capital market is the very first sector to be demanding attention. The potential or scopes in other sectors like foreign exchange or commodity markets or petroleum import are discussed in later.

¹³ World Federation of Exchanges [WFE], 2009, p. 11

¹⁴ Approximately 24%, 44% and 42% growth in the three consecutive 6 months period during the Jan '09 – June '10 timeline. Detailed data is shown in Figure 1 (in Appendix).

While comparing the annualized volatility¹⁵ of DSEGEN and CSE Selective Category Index (CSCX) to some stock indices around the world the S&P 500, S&P CNX Nifty and Nikkei 225 index were taken into account. According to WFE (2009), these are underlying indices of the most actively traded index options in the world (p. 25). Now, Exhibit 7 shows that both DSEGEN and CSCX show a moderate volatility level over the period under consideration in contrast to other three indices. However, Telecom giant Grameenphone Ltd. entered the market on November 16, 2009 collecting BDT 4.49 billion worth of capital from the public in form of equity which caused record breaking volatility in the Nov-Dec period in 2009. Other than this particular event the fluctuation of both the national indices is observed to be at a decent level.

Exhibit 7: Comparison of volatility (DSEGEN, CSCX, S&P 500, Nikkei 225 and S&P CNX Nifty)



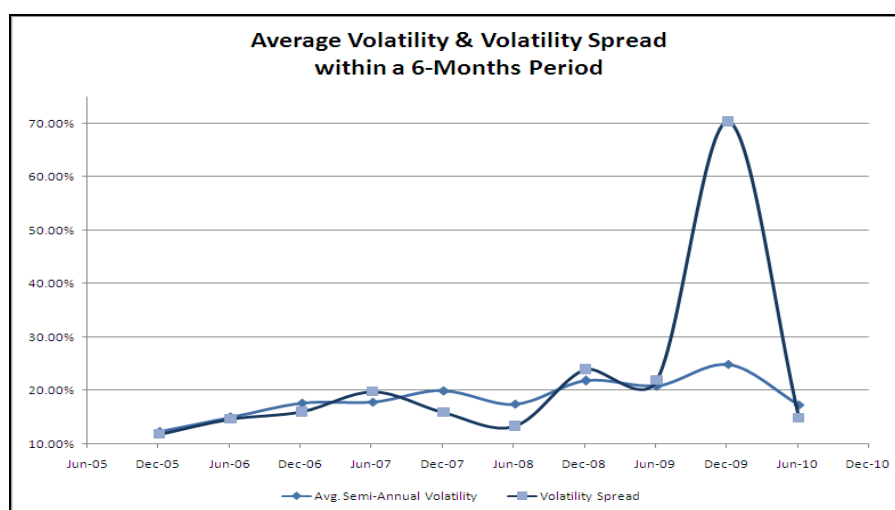
As the exhibit shows, volatility of the three reference stock indices is quite high, especially at the end of the year 2008 and beginning of 2009; while the two local indices could hardly reach that particular level of fluctuation. However, having a closer look at the price movements of DSEGEN in Exhibit 8, it can be noticed that the average standard deviation¹⁶ is increasing throughout the timeline. Having ignored the

¹⁵ Volatility is defined as 21-day standard deviation of daily returns times $\sqrt{252}$ (assuming 21 trading days in a month and 252 trading days in a year).

¹⁶ Mean of the annualized standard deviation for a 6-months period (Jan-Jun and Jul-Dec).

massive upward rise of the volatility spread curve¹⁷ in the late 2009, the spread has also widened with the increase of average fluctuation.

Exhibit 8: Average volatility for a 6-months period and the volatility spread (for DSE General Index)



Though earlier discussion reveals that the volatility level of the local markets has not yet reached a level of being threatened of possible market collapse, the increasing rate of uncertainty and the spread signals a possible alarming situation in the future. Basically the greater attention is demanded by the volatility spread as it illustrates the maximum amount of deviation the market had shown. No matter for how long this level of instability had to be sustained by the market, risk of an overall meltdown remains high. In this regard, the great collapse of Shanghai Stock Exchange could be again brought into the discussion. On February 23, 1995, the market incurred a \$10 billion loss in eight minutes due to price manipulation and the subsequent affects (Fratzscher, 2006, p. 14). So, it is a matter of high concern to control the volatility level more closely by the authority. The fluctuation level might grow gradually with the growth of market capitalization and other factors, but the deviation reaching an abnormal ceiling within a very short time limit must be impeded.

¹⁷ Volatility spread is defined as the difference between the maximum and minimum standard deviation during a 6-months period.

The growth of the index and the market getting more volatile are basically results of more and more investors entering the market with fresh capital to grab greater return within a shorter time period. As a result, one of the major reasons behind the increasing volatility trend is the discrepancy between the amount of the large investor pool attracted towards the market with fresh fund and the amount of the capital being capitalized by the companies.

Exhibit 9: Growth rate comparison- Market Capitalization (MC) and Issued Capital (IC) in DSE¹⁸.

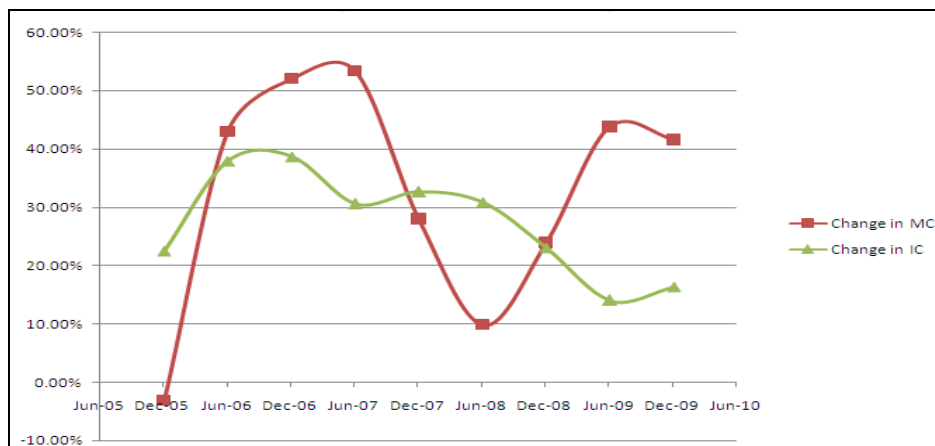


Exhibit 9 shows how the growth in the issued capital is sloping downward over the last five years and how market capitalization has grown at a far higher rate than that of the issued capital. From Figure 2, it can be observed that the amount of issued capital in DSE had grown at the rate of 14.01% and 16.31% during the latter half of 2009 and the first half of 2010, comparing to the 43.76% and 41.53% growth in market capitalization respectively. Such a high difference resulted into a drastic price hike of all the securities traded and also in the increase in volatility spread. If this trend prevails for a long duration, the current efficiency level of the entire market is anticipated to decline largely and also the low supply and high demand of securities is likely to raise the volatility ceiling to a precarious extent. A strong derivative market can be a remedy in such volatile scenario.

¹⁸ Detailed data shown in Figure 2.

(b) Defense against abnormal growth in capital market

We have demonstrated the need for derivatives in our capital market due to abnormal rise in volatility. Like volatility abnormal growth in return may also be matter of grave concern.

In the latter half of the year 2009, the main gauge¹⁹ of Dhaka Stock Exchange started showing a drastic upward rise as the largest IPO in the country's history was executed. However, the rising streak hasn't stopped since it reached its peak on December 5, 2010 at 8918.51 points through breaking all-time-high records almost every week. Exactly a year before the index stood at 4383.31 and within a year it grew at an amazing rate of 103.47% with a growth of around BDT 1.82 trillion in market capitalization. Whether this is due overall performance of the market being apparently on the rise or does it indicate the investors' becoming more and more confident about their choices of investment or it is just a price bubble that has been given birth by the huge gap of supply and demand of securities and more and fresh capital being injected in the market- remains the question. The investors, policy makers and the market experts have shared different reasoning or theories to explain this abnormality in the market's growth, nevertheless all of them have expressed fear about this price bubble exploding in near future wiping away a large sum of money from the investors and institutions.

However, SEC has been striving for slowing down this seemingly unsustainable growth of the bourses by playing with the regulations and policies of the capital market as well as ensuring strict monitoring of the trading and transactions in the last two years consistently. Needless to say, all its endeavors failed to slowdown market and fear of massive market correction prevailed.

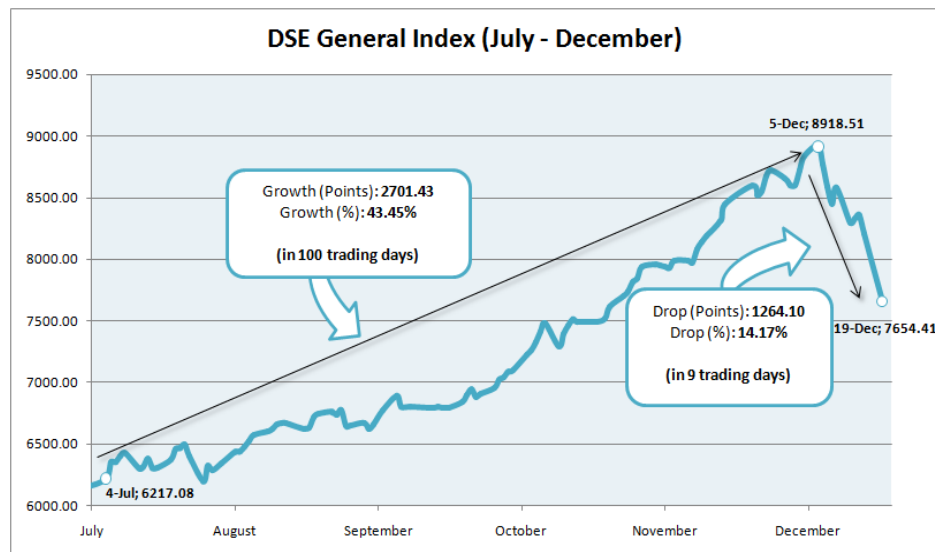
The Collapse of the Market

On December 6, 2010, the DSE General index started to prove the pessimist analyzers correct by starting a dire falling trend initiated by losing approximately 147, 185 and 134 index points during three consecutive sessions. However, the market had seen its deepest fall on

¹⁹ Dhaka Stock Exchange General Index (Considers all securities except the ones from Z-category)

December 19 losing 551 points and summing up to a loss of 1264.10 points in only 9 trading days²⁰.

Exhibit 10: DSEGEN Index: Rise and Fall



This fall has been designated as a “natural price correction” by the authority, while a number of investors have lost their investment due to this bizarre collapse of the market.

Protection against the Correction

Now, whether the market has faced a natural correction or an artificial one, the fact is that the investors have lost their valuable investment. When the institutional investors have either drawn their investments out of the bourse or retain the capacity of sustaining such losses, the individual investors in some cases have to lose everything as their portfolios failed as a whole with the dip in the market. For these instances, different means are needed in order to hedge against the possible losses. Derivatives could have played a very important role in this particular scenario by offering protection to the investors by hedging their investments.

²⁰ From Dec 6, 2010 to Dec 19, 2010

A simulated scenario is elaborated in the following sections showing how a particular investor could have hedged his investment with the help of a “put option”. The industries facing the greatest fall during the recent market disaster include the banking industry as a major contributor. So the stock the investor invested in is assumed to be the stocks of Mutual Trust Bank Ltd.²¹ (trading code: MTBL). For simplicity, the each put option contract is assumed to stand for the right to sell one share and the price of the options is assumed to be their intrinsic price²². However, it should be noted that the more the investors become insecure about the price, the more the price of the put options deviates upwards from the intrinsic value due to high demand. So, the real prices will be more than the ones used in the simulation.

The Investor & the Scenario

An investor is assumed to be interested in the stocks of Mutual Trust bank Ltd. (MTBL) as the bank has a pretty good financial performance (consistent dividends etc.) and the stock prices have shown a fairly long upward trend in the month of October. So he buys 10,000 shares of MTBL, BDT 622.75 each at a total cost of BDT 6,227,500.

Now, observing the abnormal upward trend of the market a put option is launched on the first trading day of December with the following features:

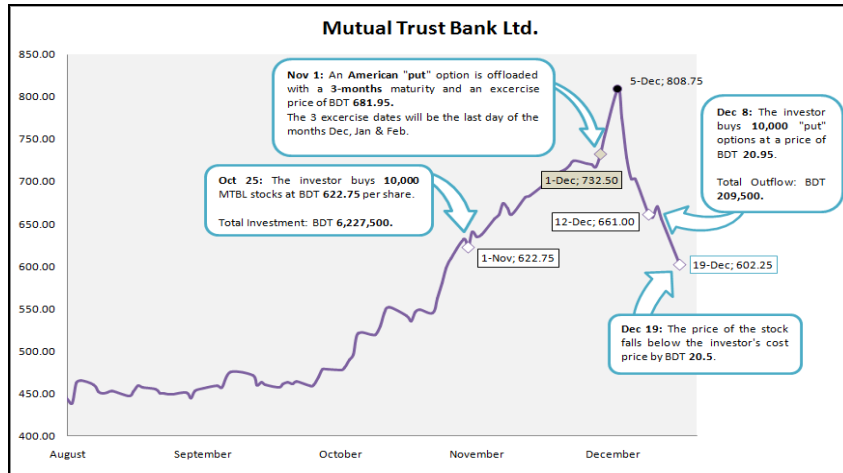
- Type: American option
- Maturity: 3 months
- Exercise dates: Last trading days of December, January and February
- Exercise price: BDT 681.95²³

²¹ MTBL is one of the banks that have moved with the index; meaning their price rose as the index went up and on the day the index dipped, these companies' shares also came down.

²² Intrinsic price of put option (premium) = Exercise price – Spot price

²³ Exercise price has been stipulated by taking the average of the closing prices during the month of the previous month (November)

Exhibit 11: MTBL: Simulated scenario over the real time price trend



After December 5, the investor starts apprehending possible loss he could make in his investment in MTBL. On December 12, he confirms himself about the long falling streak and takes long position (buys) in 10,000 put options spending BDT 209,500 (BDT 20.95 each option).

Exhibit 12: Illustration of the transactions and the portfolio values

Date	Security	Transaction	Price (BDT)	Volume	Value	Portfolio Value
1-Nov-10	Stock	Buy	622.75	10,000	6,227,500	6,227,500
	Options	-	-	-	-	
12-Dec-10	Stock	Held	661.00	10,000	6,610,000	6,819,500
	Options	Buy	20.95	10,000	209,500	
19-Dec-10	Stock	Held	602.25	10,000	6,022,500	6,819,500
	Options	Held	79.70	10,000	797,000	
* Cost of the portfolio = BDT 6,437,000 (Cost of stocks + Cost of options)						
** Price per share for exercising the options <= BDT 643.70						

The exhibit shows that with the stated transactions at the real time market price of the shares and the assumed price²⁴ of the options, the total value of the portfolio is never less than the cost price.

²⁴ The real time price is supposed to be higher than the stated ones due to the expected high demand.

However, if the price of the stocks remains below or equal to BDT 643.70 on the exercise dates, the investor can exercise the option and makes no loss at least²⁵. If the price is above this ceiling, the investor doesn't exercise the options as the value of the portfolio remains above the cost.

Hence, in presence of properly designed and adequate types of derivatives tools in the market, the investors could hedge their investment against the possible collapses like the recent one.

(c) Protection in major export sector (Case study: RMG Sector)

As one of the major industries and the largest export sector, Readymade Garments (RMG) has the highest exposure to the exchange rate risk with regard to their overseas financial transactions. To mitigate this particular risk, RMG exporting companies historically have been using two tools like selling the rights of the Letter of Credit (LC) and forward contract over the exchange rate.

Existing Tools

The transfer of LC has its own disadvantage of high processing fees that can amount from 3% to 5% of the total LC amount. Again, forward contract on the foreign exchange often becomes hassling due to the rigidity of the regulation of the central bank. On one side, the central bank of Bangladesh doesn't allow derivative tools on any asset except for the cases with special permission. On the other hand, if a forward contract is permitted by Bangladesh Bank, the financial institution acting as the processor of the entire contract has to close the accounts right on the maturity dates. It has been observed that due to any unavoidable circumstances it is likely for the LCs to have a deferred arrival and in such cases the customers are compelled to execute the contract at a the forward or worse rate²⁶.

²⁵ If the price is below the stated price, the difference will serve as the profit per share for the investor.

²⁶ "HSBC transacts first ever Bangladesh Taka Onshore FX Option Trade", The Financial Express, December 9, 2009.

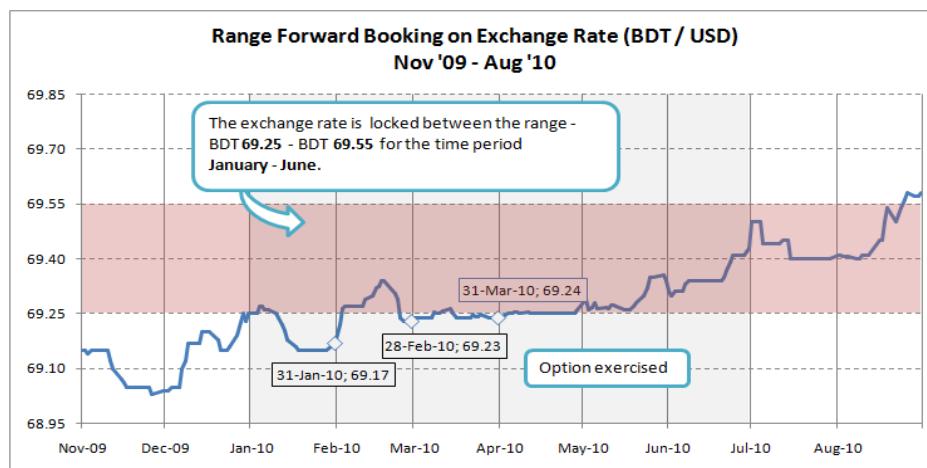
Range Forward Booking

In December 2009, HSBC introduced a customized option derivative contract for Viyelle Ltd- a local RMG exporter and Coats Bangladesh- a UK based supplier of yarn and other raw materials. The contract involved an upfront fee as premium, a volume limit of USD 0.5 million and a maturity period of six months. The difference of this particular option with the regular ones is that it features a range of exercise rate. Typically the floor (lower range) happens to be the spot rate of the contract being formed and the ceiling (upper range) is BDT 0.30 or 0.40 above the floor. The mechanism allows the supplier to exercise the contract if the exchange rate falls below the floor and if the rate goes above the ceiling the supplier can enjoy a limited profit as the difference is absorbed by the intermediary.

The Simulation

Assuming a Range Forward Booking processed in order to hedge the exchange rate risk during the period January to June in 2010 for an amount of USD 0.5 million. The amount is a limit and design of the contract allows exercising the right of converting certain amount of US dollar at the floor rate on exercise dates as long as the cumulative amount doesn't exceed USD 0.5 million.

Exhibit 13: Mechanism of Range Forward Booking on BDT/USD



For simplicity, in the illustration we assume that supplier needs to convert a total of USD 0.5 million into Bangladeshi currency at five

episodes amounting USD 100,000 each transaction. So they undergo a processing of a Range Forward Booking contract designed as mentioned earlier. The first three exercise dates are utilized as spot rates remain below floor of the specified range.

From the Exhibit 14, it can be shown that the option contract enables the company to avoid a possible loss of BDT 11,000, which could have been much higher depending on the intensity of exchange rate volatility. However, there is an upfront premium charged by the financial intermediary. Even if the charge is more than the avoided loss amount, the option enables the company to minimize loss to certain extent.

Exhibit 14: Transaction Summary

Date	USD Volume	Spot Rate (SR)	Exercised Rate (XR)	BDT @ SR	BDT @ XR	Actual Inflow
31-Jan-10	100,000	69.17	69.25	6,917,000	6,925,000	6,925,000
28-Feb-10	100,000	69.23	69.25	6,923,000	6,925,000	6,925,000
31-Mar-10	100,000	69.24	69.25	6,924,000	6,925,000	6,925,000
29-Apr-10	100,000	69.26	69.25	6,926,000	6,925,000	6,926,000
31-May-10	100,000	69.34	69.25	6,934,000	6,925,000	6,934,000
			Total	34,624,000	Total	34,635,000
					Amount of loss avoided	11,000

Hence, derivatives can act as a protection in any major swing exchange rates which has negative impact on our export transactions.

(d) Protection in major import sector (Import of Petroleum)

Being a country with higher import needs than the capacity of exporting, Bangladesh has been experiencing growing negative balance in its current account²⁷. Especially in 2008, the trade deficit took a leap from

²⁷ Refer to Figure 3 in Appendix for graphical representation of Export, Import and Balance of Trade condition.

around BDT 268 billion to BDT 511 billion, almost twice as it used to be in the preceding fiscal years²⁸. This unusual doubling of trade deficit was apparently caused by the increase in the import volume in taka in some major commodities like rice, wheat, fertilizer, cotton, staple fiber and most importantly the edible oil²⁹. The global political unrest and the financial crisis in 2007-08 contributed a great deal to the boost in price in the international market, especially the price of the edible oil and the petroleum products³⁰ (both crude and refined form). Hence, the government must take actions and look into modern financial tools to mitigate the risks due to the price instability and volatility in the exchange rate against major currencies.

Petroleum Products in National Import

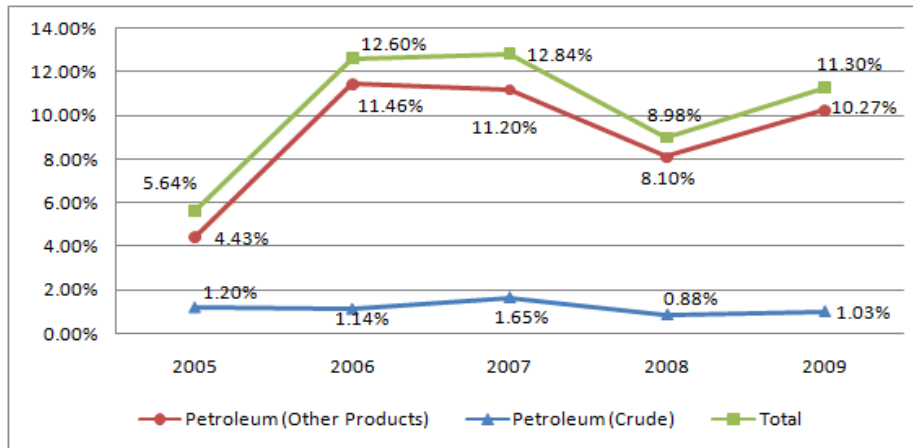
Petroleum is a principal commodity for Bangladesh, the national demand of which is met entirely by import (National Accounting Wing, BBS, 2010, p. 24). Bangladesh's petroleum imports mainly consist of the refined oil products and comparatively a very little crude oil is imported as the country doesn't have an established industry of oil refining (Islam, 2006). Considering the entire national import of any given year, the petroleum products as well as the machinery and equipments are the highest contributors in the whole import amount. Exhibit 16 provides a year-by-year contribution of petroleum and petroleum related products on the total import of Bangladesh. The petroleum import is entirely dealt by the government and afterwards supplied throughout the country and distributed among different sectors, private and public. The total import volume for petroleum in BDT has increased from 43.41 billion to 178.66 billion in 2009, in just 5 years.

²⁸ Approximately BDT 237, 270 and 268 billion during the years 2005, 06 and 07 respectively.

²⁹ Edible oil import jumped from BDT 76.28 to BDT 132.61 billion, mostly because of price increasing by 68.53%.

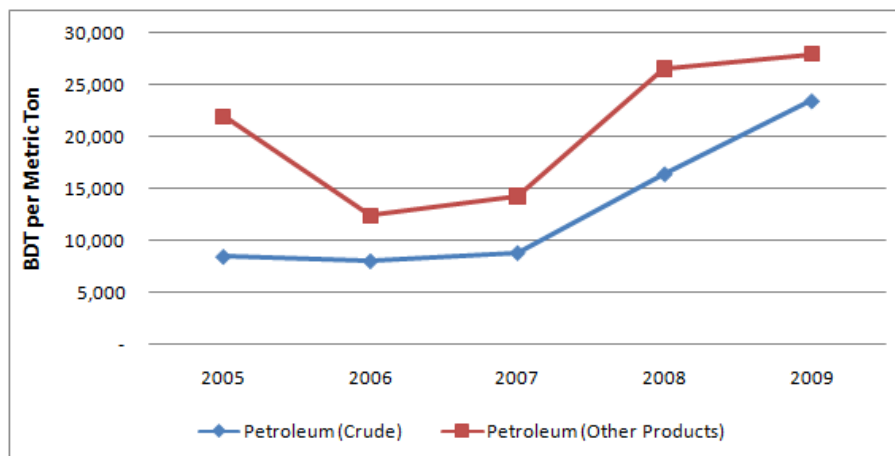
³⁰ Detailed numbers are shown in Figure 4 in the Appendix.

Exhibit 15: Trend of contribution of Petroleum products (crude & refined) in import



But interestingly enough, the total import quantity has come down from 10.24 million metric ton to 6.51 million metric ton during these years excluding the year 2005³¹ and the price paid for petroleum and related product has grown to staggering level (Exhibit 16).

Exhibit 16: Trend of unit price (BDT per Metric Ton) of crude oil and other petroleum products



³¹ Refer to Figure 4 in Appendix for the breakdown of the imported quantity of petroleum products.

Such hike in the price of the major import commodity is not a really good thing for a country, especially for the ones that are running in trade deficit such as Bangladesh. We buy most of the crude oil from the Middle Eastern and a few Asian countries and the refined oil products from the global oil companies like Shell, KPC etc (Islam, 2006). The government directly acts as the buyer. It is really important that the government protects itself from the exposure of the price risk posed by the current political unrest in the Middle East, otherwise widening of trade deficit cannot be controlled and non judicial use of the country's foreign reserve will create a negative impact on our economy. Energy derivatives, particularly on petroleum sector, can be a long-term solution for Bangladesh's over dependence on import of petroleum.

Use of derivatives in Petroleum Import

Petroleum commodities are highly price inelastic and the supply-demand paradigm doesn't usually intervene to force back the price towards the equilibrium in this particular market. This inherent volatility results in rapid price swings of petroleum products without being fueled by almost any global macro-economic change.

Exhibit 17: Average of 20-day Historical Volatility in Percent³²

Asset	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Crude Oil	32.89	19.26	23.22	28.99	19.85	38.17	29.11	43.15	35.70	38.40
Heating Oil	37.10	24.03	21.19	29.63	19.75	37.32	28.26	33.21	34.53	41.72
T-Bill	13.76	18.57	12.63	19.03	10.50	10.98	11.7	17.81	13.28	13.37
S&P 500	13.45	10.01	8.46	9.55	7.58	9.38	17.24	18.41	18.19	19.63
USD/DM	12.43	12.94	10.18	8.91	11.62	6.46	9.69	8.58	8.87	9.88
Gold	10.87	8.07	12.23	9.14	7.15	6.13	11.87	14.00	12.85	12.69

The above comparison shows how petroleum products have been historically showing a volatile movement than any other major assets in terms of price. However, after 2000 this volatility has increased even more with the prices breaking free from the resistance line and soaring due to the international wars and worsening political relations.

³² Source: (Sempra Commodities); details in the References section.

As previously mentioned, to hedge against such a risky trend in petroleum prices globally futures, options and swap contracts are used and the two major exchanges dealing with energy derivatives are the New York Mercantile Exchange and London's International Petroleum Exchange (Walsh, 2009). For Bangladesh, entering into customized swap contracts is much more feasible than to enter the overseas energy futures or options market. The bureaucracy prevailing in the administration and lack of technical know-how of derivative market would not allow the government to efficiently operate in the formal overseas options and futures markets. Besides, in the case of long-term forward contracts, the exposure to default and credit risks may be substantial. Hence, it is prudent for Bangladesh first to get accustomed to the concept of trading in energy derivatives via swaps, build-up credibility in international market as a strong counter party and in 5-10 years time participate in neighboring Shanghai Futures Exchange (SHFE) dealing with crude or fuel oil future contracts. One of our leading financial institution Standard Chartered Bank had already executed two successful swap contracts for importing cotton (Rahman, 2010) and more recently copper (The Financial Express, 2010).

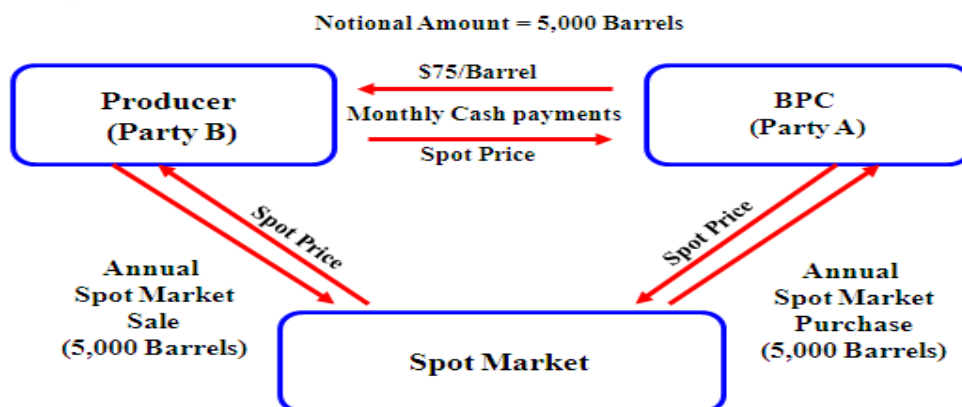
The possible use of a swap contract to minimize risk in petroleum purchasing is shown by the simplest form of fixed for floating swap contract. Firstly the fixed for floating swap contract enables oil end users to fix the purchase price of future oil consumption and thus minimizes any exposure to rising prices. By locking in prices, end users gain greater control over the variable revenues and costs inherent in their businesses. Because swaps do not involve the actual transfer of any assets or principal amounts, a base must be established in order to determine the amounts that will periodically be swapped. This principal base is known as the "notional amount" of the contract.

Example of Swap contract for petroleum:

The following example will give a clear idea how a swap derivative contract can work in purchasing/importing petroleum by Bangladesh. Exhibit 18 illustrates an example of a standard fuel oil swap. In the example, Bangladesh Petroleum Corporation (BPC) and an oil producer agree to enter into a 5-year fuel oil swap with a monthly exchange of payments. BPC (Party A) agrees to pay the producer (Party B) a fixed price of \$75 per barrel, and the producer agrees to pay BPC the

settlement price of a futures contract for Shanghai Futures Exchange (SHFE) fuel oil on the final day of trading for the contract. The notional amount of the contract is 5,000 barrels. Under this contract the payments are netted, so that the party owing the larger payment for the month makes a net payment to the party owing the lesser amount. If the SHFE settlement price on the final day of trading is \$71 per barrel, Party A will make a payment of \$4 per barrel times 5,000, or \$20,000, to Party B. If the SHFE price is \$80 per barrel, Party B will make a payment of \$25,000 to Party A. The 10-year swap effectively creates a package of 60 cash-settled forward contracts, one maturing each month for 5 years.

Exhibit 18: Example of a swap transaction between Fuel Oil Producer and Purchaser (BPC)



So long as both parties in this arrangement are able to buy and sell fuel oil at the variable SHFE settlement price, the swap guarantees a fixed price of \$75 per barrel, because the producer and BPC can combine their financial swap with physical sales and purchases in the spot market in quantities that match the nominal contract size. As a result, the purchases and sales shown in the inner loop cancel each other out and what remain are the fixed payment of money to the producer and BPC's purchase of crude oil. The producer never actually delivers fuel oil to the client BPC, nor does BPC directly buy fuel oil from the producer. All their physical purchases and sales are in the spot market, at the SHFE price.

(e) Demand for alternative source of investments

In light of our scrutiny of the volatility and the return vs. risk assessment of the two capital markets of Bangladesh, we can confer that moderate volatility level of the markets does not pose any threat of market collapse while ensuring that there is enough fluctuation to serve the purpose of hedging. As the investors are being offered by the market a fair return against the risk, the market capitalization is increasing at a bull rate being much higher than the supply of securities. This eventually poses potential threat of the market losing its efficiency and also the volatility increasing in the long run. In order to make sure that the market doesn't face the above mentioned dilemma, the regulatory authority must ensure a boost in the supply of new and good-quality securities. Now, derivatives securities can play a vital role in this regard besides the new stocks and bonds. An important aspect for capital market is reflection of fair value of scrips. This is not adequately present in the current scenario, and due to this reason the market is not receiving the attention of an important segment of investors, both foreign and local. Although DSE experienced impressive growth in liquidity in recent years with Average Daily Turnover increased from US\$ 24mm in 2007 to US\$ 75mm in 2009, FDI has actually declined by 36 percent between 2008 and 2009. In an equity centric market and in absence of a solid bond market, investors are looking for an alternative class of instruments and derivative can be the ideal solution to this problem as coming-up with innovative derivatives will be much easier than to issue fundamentally strong new company's IPO.

5. Recommendation for Introducing Derivatives in Bangladesh

The value of derivative securities is undeniable for a financial market. The capital market of Bangladesh has recently witnessed extra-ordinary volatility and the recent periodic crashes at Dhaka Stock Exchange (DSE) has illustrated our lack of knowledge and tools to combat this aggravating market volatility.

One of the major reasons for such high volatility of our capital market is the lack of hedging instruments that could protect the investors, both individuals as well as institutions. For last two decades, emerging markets namely Korea, Malaysia, Brazil and India have innovatively and judiciously used a vibrant derivative market for risk mitigation and

also yielded substantial benefits in terms of market expansion and overall economic growth. In view of the overwhelmingly positive outcome in similar markets of the world, the introduction of derivatives market in Bangladesh should have a salient effect on the country's capital market and the overall economy. The following set of recommendations will address both the preparatory evaluation need and also relevant building blocks of creating an efficient derivative exchange.

Recommendation 1: Establishing an Advisory Committee

First and foremost, the Security and Exchange Commission should form an advisory committee for preparing a comprehensive report on the feasibility of introducing exchange traded derivatives market in Bangladesh.

Our policy makers and regulators can take cue from India's Dr. L.C. Gupta led highly successful feasibility committee and create an advisory committee comprising of representatives of regulatory institution (SEC, Bangladesh Bank), DSE, CSE, financial institutions (ex: private bank, merchant bank, investment bank, brokerage, credit rating agency), academics, legal experts, consultants (local and/or international with relevant experience in derivatives) and ministry of finance. The committee should be headed by a senior official of local and international pedigree. The mandate of the committee can be as follows-

(i) Study and recommend whether trading of exchange-traded derivatives is suitable for the capital market in Bangladesh in its present form. The research should address (but not confined to) aspects concerning market infrastructure, systems, risks, transparency, investor interest and education, users of the derivatives products.

(ii) Specify the probable and likely benefits for the capital market of Bangladesh by introducing or trading of exchange-traded derivative products (based on the progress achieved by the emerging and developed markets after the introduction of exchange-traded derivatives).

(iii) Prepare a list of legal amendments and regulatory reform required for derivatives.

(iv) Prepare a comprehensive roadmap (if required) for successful introduction of exchange-traded derivatives for the capital market of Bangladesh.

Recommendation 2: Build-up public awareness and deduce stakeholder's opinion

The concept and usage of derivatives is still quite vague to our major stakeholders such as regulators, financial institutions and export/import entities. Such limited understanding of derivatives trading on the part of major players can become a hindrance to the development of the market. Hence, the initial process of creating a derivative market should involve sending customized leaflets and questionnaire to major stakeholders to educate them on the various derivatives available in global markets and also ascertain their requirement of derivative instruments. Such comprehensive market survey can be an interactive method of sharing ideas, concerns and suggestions for going forward.

Recommendation 3: Implementing stringent training and licensing mechanism

Derivative products by nature are complex and success of a derivative market is coherent with the knowledge and expertise of the participants. The recent stock market probe clearly identified the lack of basic understanding of risk and dynamics of a capital market of many of the representative of financial institutions and investors and oversight of the regulators as a key contributory factor of collapse of the exchanges³³. Given the high level of economic and financial risks faced by market participants and investors in emerging countries, such inadequacy in knowledge and skill set may lead to substantial increase in systematic risk of the market. The pricing of derivatives products and management risk models require brokers/dealers, regulators and end-users to have sufficient educational training in finance and quantitative methods used

³³ Khaled, K.I. (March 2011). Stock Market Probe Committee Report. Ministry of Finance, Bangladesh.

for asset pricing. Thus, it is essential professionals attend specialized courses in financial management and derivatives. SEC in consultation with domestic/international experts, Bangladesh Bank, Ministry of Finance and market players should introduce a compulsory training and certification program. The National Certification for Financial Markets (NCFM) of India can be an ideal guideline for preparing the content and means of offering such training.

Access by intermediaries to the market should be governed by adequate licensing to ensure that intermediaries understand characteristics of derivative market particular electronic exchange. They must understand the importance of due diligence for their clients and follow the best practice governance and accounting standards and offer sufficient collateral for their respective risk positions. Although this licensing will be responsibility of the exchange, it should be subject to stringent monitoring of SEC.

Recommendation 4: Derivative Exchange is the way to go, not over-the-counter market

Derivatives, introduced both via exchanges and OTC have enjoyed global recognition and appreciation primarily as effective instrument for hedging. They ensure depth and liquidity to the capital markets and hence encourage trading. However, choice of exchange versus OTC depends on the sophistication and prudence of capital market. The recent stock market manipulation in Bangladesh has severely questioned the integrity and effectiveness of the regulatory bodies and also demonstrated the facile manner syndicates can eat into the core fundamentals of the market. Under the circumstances, an OTC market which by nature is not strongly regulated will create havoc in already feeble governance framework. There is strong recommendation in stock market probe report for restricting the main regulatory body SEC and demutualization of the main exchanges DSE and CSE. If government is sincere in its effort to revamp our financial market and regulatory structure, such actions can also indirectly create an environment where derivative exchange market can flourish. Besides it would be easier for traders, investors and brokers to move up the learning curve by trading standardized products of exchange derivative market, rather than exotic derivative of OTC which usually combines attributes of several derivatives instruments and are, therefore, more complex than their exchange traded counterparts. Such initial standardization is not only

beneficial from the trader's perspective but also from the perspective of the regulators who need to understand the dynamics and magnitude of the risks associated with the products before being able to design sustainable measures to alleviate systematic risk. Therefore, introduction of Exchange-Traded Derivatives in Bangladesh will be pragmatic and efficient.

Initially, a cautious approach of development of a two track framework for derivatives trading, where SEC sets the rules and regulations pertaining to trading, eligibility, membership, clearing, settlement, margin maintenance, reporting and the electronic exchange (to begin with DSE) ensures stringent monitoring and ethical and efficient function, is suggested. However, in the long run, a self-regulatory organization (SRO) i.e. a separate demutualized exchange needs to be established to maintain the integrity of the derivatives market.

In view of recent turmoil in the equity markets, it is recommended that simpler derivative products be launched first followed by more sophisticated products as our markets evolve. Phased introduction of derivatives, with index futures (short-term) followed by options on index and individual assets should be in mid-term horizon. Once the exchange has gained some expertise by trading in index futures, we should also introduce limited kinds of commodity futures such as rice and grain. Considering Bangladesh's dependence on agricultural production, commodity futures can allow our producers some protection against drop of price due to unforeseen events or seasonality factors. Keeping in mind our need for risk minimization in export-import sectors (ex- RMG, Petroleum), longtime plan should include introducing currency swap derivative and commodity future contracts. It needs to be noted, in the presence of administered (pegged) interest rates, interest rate exchange derivatives won't be effective. Considering interest rate in Bangladesh is more or less steady, we are not recommending introduction of interest swaps in near future.

Recommendation 5: Development of existing infrastructure and new system

Once the advisory committee has successfully completed its feasibility analysis and provided a regulatory framework, focus should shift on upgrading infrastructure to accommodate derivative trading. A deep and

liquid market for the underlying (initially only DSE and CSE traded stocks) is necessary for the development of an efficient derivative market. The easy movement of capital between different markets and currencies is essential to eliminate pricing discrepancies and efficient functioning of the markets. The stock market probe report highlighted the crying need of restructuring main regulatory body SEC and also strengthening of key institutions such as Central Depository Bangladesh Ltd. (CDBL) and clearing house. Such actions should be taken on a priority basis, both for improving our stock market and creating a platform for a derivative exchange. In order to increase investor confidence, derivative exchange must set-up on-line screen-based systems for all trades in financial derivatives, and an independent and automated, real-time market surveillance systems to identify market abuses.

A specific sub-group of the advisory committee comprised of mathematicians, analysts and derivative exchange consultants should be in charge of preparing all rules pertaining to trading, clearing, settlement, margin maintenance and membership eligibility criteria.

Recommendation 6: Establish a Central Counterparty (CCP)

In order to maintain the efficiency and transparency of derivative security exchange, clearing and settlement of derivatives products should be executed through a central counterparty (CCP) with multilateral multi-product close-out netting arrangements.

Clearinghouses can be organized in a wide variety of forms: some are organized as departments of their affiliated exchanges (vertically integrated) while others are independent legal entities.

In present scenario, all transactions are settled by clearing house which is part of DSE and settlement is based on category of shares (Such as A, B, N, G, Z category). The settlement classifications are: T+0 (Day settlement), T+3 (Normal settlement) and T+9 (Prohibitory settlement). Central Depository Bangladesh Ltd. (CDBL), on the other hand, acts as a record keeper by electronically recording and maintaining securities accounts and registering transfer of securities. However modern concept of clearing house for a derivative exchange is much more vivid. A CCP acts as a buyer to all sellers and a seller to all buyers and assumes the responsibility of guarantor to both parties. The CCP establishes different

tools for conducting its monitoring activities, such as, daily compensation of losses (and gains), liquidation of open positions when a trading party is in default, collateralization of maximum expected daily losses, a clearing fund, support from a highly rated guarantor and finally the clearing house's equity capital. Bangladesh should establish an independent clearing corporation/clearing house for proposed derivative exchange, which should become counter party for all trades or alternatively guarantee the settlement of all trades.

6. Concluding Remarks

In summary, financial derivatives provide risk management tools as well as alternative investment opportunities to market participants. Emerging economies in which index futures and options have been introduced have experienced significant gains in both stock market capitalization and trading volume. There is no denying of the fact that our existing institutional set up and regulatory framework might not be adequate for sophisticated instruments like derivatives. However, the recent catastrophic fall of our stock market, rapidly declining FDI and scarcity of investment opportunities in an equity centric economy, is crying out for an innovative and versatile financial product for hedging and market expansion. The importance of the development of institutional infrastructure and human capital cannot and should not be overlooked; however if the capital market of Bangladesh want to be competitive with other emerging economies of India, China, Malaysia or Singapore, the process of progressive policy making cannot wait indefinitely for our market players to catch up with their counterparts in more developed financial markets. Hence, our policy makers and regulators must initiate a process for introducing derivative securities in Bangladesh within 3-5 years.

In view of recent turmoil in the equity markets, we need to be circumspect and foresighted in our approach; a standardized exchange traded derivative market with phase-by-phase introduction of product has been recommended. We are confident, adequate legal and regulatory reform, and governance infrastructure and oversight will pave the way for successful introduction of derivative securities in Bangladesh and provide the perfect fillip to our stagnant investment climate.

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