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# Comparative Study of Regulatory Framework for Stock Index Futures- An International Perspective

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This paper presents policy developments in the area of stock index futures. On the basis of certain selected parameters, a comparison has been made of the regulatory framework for stock index futures in India vis-a-vis Australia, Singapore, South Africa and USA.

***Key Words*:** CME, NSE, ASX, SGX, FTSE/JSE, NASDAQ

## INTRODUCTION

The Indian capital market has witnessed some unprecedented changes in the past few years. Every segment of the capital market, viz. primary, secondary, derivatives, institutional investment and market intermediation have experienced impact of these changes. Further, it is being recognized as one of the most transparent, efficient and clean markets in the world.

The history of the available products of futures contracts, stock index futures predominate. The first stock index futures contract based on value line index was introduced by Kansas City Board of Trade (KCBT) on 24 February, 1982. It was followed two months later by S&P 500 index futures contract introduced by the Chicago Mercantile Exchange (CME).

The securities market in India is abuzz with expectations and apprehensions. At the centre of the debate is the newly introduced stock index futures. L.C. Gupta Committee Report on financial derivatives products was submitted way back in May 1998. After years of preparation the BSE and NSE introduced stock index futures contract based on Sensex and Nifty on 9th June and 12th June 2000 respectively. A brief discussion about regulations for stock index futures in India, Australia, Singapore, South Africa and USA is followed by a comparison among above countries on the basis of certain parameters.

A parallel comparison of regulatory framework among the working of different stock markets can be made only with the help of certain selected parameters. As far as stock index futures contracts are concerned the following parameters have been identified:

1. Regulatory body for stock index futures
2. Underlying instrument
3. Contract size
4. Maturity date/last trading day
5. Trading cycle
6. Settlement basis
7. Final settlement price
8. Margin requirements
9. Pricing/valuation of stock index futures contract
10. Trading hours.

## 1. Regulatory Body for Stock Index Futures

In **India**, the four main legislations governing the securities market are: (a) The Companies Act, 1956; (b) The Securities Contracts (Regulation) Act, 1956; (c) The SEBI Act, 1992; and (d) The Depositories Act, 1996. The SEBI Act was enacted to empower SEBI with statutory powers for protecting the interests of investors, promoting the development of securities market and regulating the market. In India, the SEBI is the highest authority for derivatives trading too. Being a legislative body there is minimal interference from government for operations of stock market. The SEBI always takes rational decision as per the requirement of market.

In **Australia**, the Australia Stock Exchange (ASX) is the highest governing body for derivatives instruments. Index futures in Australia are similar to popular e-mini futures on the S&P 500 index and the Nasdaq 100 index in the US and the mini-FTSE 100 Index Futures in the UK. The index futures were introduced to provide a liquid competitive market, the ability to use shares as collateral to cover initial margin obligations. There are a variety of Index futures contracts such as (a) ASX Mini 50 futures (b) ASX Mini 200 futures (c) ASX Mini 200 Property Trust Futures. In India, the SEBI allowed trading in stock index futures both at BSE and NSE.

**Singapore** Stock Exchange, Asia Pacific's first demutualized and integrated securities and derivatives exchange was established on 1 December 1999. The Singapore Exchange (SGX) came into force with the merger of Stock Exchange of Singapore (SES) and Singapore International Monetary Exchange (SIMEX). SGX is responsible for working of different derivatives products including stock index futures and offers diverse range of securities and derivatives products via a global network of broking members. The SGX is regulated by Monetary Authority of Singapore.

In **South Africa**, the FTSE/JSE Advisory Committee is authorized to manage the regulations of stock index futures. The purpose of the committee is to consider and advise on matters relating to proposed amendments in management and construction of indices. Interested parties can appeal against the decisions of the FTSE/JSE Advisory Committee within a reasonable time period. Appeals are heard by a committee appointed by the FTSE and JSE. Members of the FTSE/JSE Advisory Committee may not serve on the Appeal Committee.

Stock Index Futures in **United States of America** are jointly controlled by New York stock Exchange, American Stock Exchange and Chicago Mercantile Exchange with the help of Nasdaq National Market System. Standards and Poor's U.S. Index Committee is mandated to run the indices independently. The committee does not mechanically choose potential replacements for companies in S&P Index. The selection process follows screening of index by using detailed fundamental analysis.

## 2. Underlying Instrument

A stock index is a composition of select securities traded on an exchange, e.g., Sensex is a composition of 30 blue chip securities being traded on BSE. Therefore, a stock index futures contract is simply a futures contracts where the underlying variable is a stock index value. Theoretically, an investor who buys the entire stock index futures contract agrees to buy the entire stock index and seller agrees to sell the entire stock index.

In **India** for NSE, Nifty serve the purpose of underlying instrument and in case of BSE it is sensex. So, value of stock Index futures in India purely depends on the movement of Nifty and Sensex.

In **Australia**, contracts are entered over the ASX index, ASX 50 index and ASX 200 property trusts sector index. In actual situation, ASX 50 index and ASX 200 index represent around 75 per cent and 90 per cent of total ASX domestic stock market capitalization respectively. The choice of futures contracts over these two indices enables participants either to focus their strategy on the market leaders (ASX 50 index) or to trade on a more broadly based Index (ASX 200 index). Mini 200 property trust futures give exposure to the property trust subsector of the ASX 200 index. This is really a new innovation as compared to India. As in India there is no such underlying index for different subsectors.

In **Singapore**, Morgan Stanley Capital International (MSCI) Free Index is used as underlying asset for stock index futures. MSCI free Index is market capitalization weighted index of large and medium stocks traded on the SGX. The Index is compiled by Morgan Stanley Capital International.

**South Africa** stock exchange offers a large number of stock index futures contracts. Such as FTSE/JSE Top 40 Index futures, FTSE/JSE INDI 25 Index Futures, FTSE/JSE FINI 15 Index Futures and FTSE/JSE FNDI 30 Index Futures. The underlying instrument for above products are their concerned stock index, i.e., FTSE/JSE Top 40 Index, FTSE/JSE INDI 25 Index, FTSE/JSE FINI 15 Index and FTSE/JSE FNDI 30 index.

Chicago Mercantile Exchange **(USA)** is pioneer in starting modern days stock index futures since April 21, 1982. Now CME is offering different stock index futures such as CME S&P 500 Futures, CME E-Mini S&P 500 futures, CME E-Mini S&P Asia 50 Futures, CME NASDAQ-100 Futures and CME E-Mini NASDAQ-100 Futures contracts. So, underlying instruments for above contracts are respective indices for above specific categories.

## 3. Contract Size

Stock index futures can be bought or sold only in a specified lot size. It is a standardized lot size which is common for all participants. In **India** the market lot size for Nifty futures is 200 or multiples of 200. On BSE, contract size is 50 or multiples of 50. It means that if on a day Nifty Futures is quoting at a price of 2800 then the value of one Nifty Futures Contract shall be Rs. 5,60,000 (2800 x 200).

In **Australia**, the system for contract size is slightly different. The dollar value of each ASX Mini Index Futures Contract is based on a $ 10 per index point multiplier. For example, if the futures contract is trading at 3290 points then the contract value is $ 32900.

In **Singapore**, the value of one Singapore MSCI Future is equal to S$ 200 multiplied by the current index value. If the index is trading at 190 points, holding a futures contract will be equivalent to investing S$ 38,000 in the stock portfolio of MSCI Singapore Free Index.

In **South Africa**, the value or worth of a stock index futures contract in Rand is the price of contract multiplied by ten. If the price of the share index futures contract is 5000 then value of one contract is R 50000 (5000 x 10). The value of a position in a share index futures contract is the value of the share index contract multiplied by the number of contracts comprising the position.

Due to availability of different stock index futures in **USA**, the contract size is also different for each contract. In case of CME S&P 500 futures contract size is calculated by multiplying CME S&P 500 Futures price by $ 250. For small investors CME E-Mini S&P 500 futures, it is CME E-Mini S&P 500 futures price multiplied by $ 50. The contract size for CME E-Mini S&P Asia 50 futures is arrived by multiplying the price/value of contract by $ 25. The total values of CME NASDAQ 100 futures and CME E-Mini NASDAQ 100 futures are calculated by multiplying the above price of futures by $ 100 and $ 20 respectively.

## 4. Maturity Date/Last Trading Day

In **Australia**, the third Friday of the maturity month, provided this day is a trading day and last trading day is the business day preceding the maturity date.

In **India**, for NSE and BSE, the last Thursday of the maturity month is a trading day, if the last Thursday is a trading holiday, then the preceding day of maturity date.

In **Singapore**, last trading day is the second last business day of the contract month. A business day is defined as a day on which the Singapore stock market is open for trading.

In **South Africa**, last trading day for stock index futures contract is third Thursday of March, June, September and December or previous business day if a public holiday falls as third Thursday. This rule is common for all four major stock index futures contracts prevalent in South Africa.

In **USA**, the last trading day is the Thursday prior to the third Friday of the contract month for CME S&P 500 Futures and CME NASDAQ-100 Futures. The last trading day is slightly different in case of CME E-Mini S&P 500 futures, CME E-Mini S&P Asia 50 Futures and CME E- Mini NASDAQ-100 Futures. In case of these contracts, the last trading day is the third Friday of the contract month and trading can occur up to 8.30 a.m. (Chicago time).

## 5. Trading Cycle

The lifetime of each series is generally three months worldwide. At any point of time there are three series open for trading. It is applicable both in case of NSE and BSE **(India)**. For instance when NSE introduced trading in Nifty futures on 12th June, 2000, there were three contracts opened, viz.:

One month June Nifty futures maturing on 29th June, 2000.

Two months July Nifty futures maturing on 27th July, 2000.

Three months August Nifty futures maturing on 31 August, 2000.

On the expiry of the one month June futures on 29th June 2000, a new series of three month September futures came into existence on 30th June, 2000. Then the two months July contract automatically became one month July contract and three months August futures became two months August futures.

In **Australia**, trading cycle is based on four months basis such as March/June/September/December cycle. So, trading of Australia stock Exchange is based on above four months of year. Here a contract entered in March will mature in June and so on.

In **Singapore**, contract months are two nearest serial months and four quarterly contract months.

The **South African** market follows the Australian Stock Exchange (ASX) for trading cycle. As per rules of the FTSE/JSE trading in stock index futures takes places on four months basis that means in March, June, September and December and this trading cycle is common for all stock index futures contracts famous in South Africa. Similarly, in **USA** contracts months are March, June, September and December for all contracts.

## 6. Settlement Basis

Basically, daily mark-to-market system is followed in futures trading. In **India**, for NSE and BSE, stock index futures are marked to market and final settlement will be cash settled on a T+1 basis.

All ASX, **Australia** Mini Index Futures remaining open at maturity are cash settled. This method is used to settle major index futures contracts internationally including contracts over the S&P 500, S&P 100 and Dow Jone Industrial Average in USA and over the Nikkei 225 and Nikkei 300 in Japan.

In **Singapore** upon expiry Singapore MSCI Futures will be cash settled by one last marking-to-market.

Stock index futures contracts are cash settled in **South Africa** and **USA**.

## 7. Final Settlement Price

In **India**, daily settlement price is the closing price of futures contract for the trading day and the final settlement price shall be the closing price of the underlying index on the last trading day. Above rule is applicable both at NSE and BSE.

In **Australia**, the settlement price used is the ASX Futures Opening Price Index Calculation (OPIC). The OPIC is based on the opening price of each stock in the index on the morning following the last trading day. As stocks in the relevant index open, the first traded price of each stock is recorded. Once all stocks in the index have opened, an index calculation is made using these opening prices. The OPIC method is regarded as an effective way to manage volatility often associated with the maturity of index futures contracts. The Australian market stagers the opening of stocks, it is not possible for the entire market to be traded in one hit during opening period. Further, market opening is typically a time of high liquidity, and therefore at this time the market is best able to absorb orders placed by traders looking to unwind index arbitrage strategies.

In **Singapore**, the final settlement price is based on the average value of the MSCI Singapore Free Index taken at one minute interval in the last one hour of trading, together with the closing MSCI Singapore index value on the last trading day, excluding the highest and lowest values. This final settlement price is used for those contracts which expire before September 2005. For contracts expiring in September 2005 and beyond, the final settlement price shall be the value of MSCI Singapore Free Index based on each component stock of MSCI on following the Last Trading Day (FSP Day). In the event that the FSP day is not a Singapore business day, the FSP day shall be deemed to the next immediately available Singapore business day following the last trading day.

In **USA**, all open positions at the close of the final trading day are settled in cash to the special opening quotation on Friday morning of the S&P 500 index for CME S&P 500 Futures and CME E-Mini S&P 500 Futures contracts. In case of CME E-Mini S&P Asia 50 Futures and CME NASDAQ 100 Futures are settled in cash to the special opening quotation on Friday morning of the S&P Asia 50 Index and NASDAQ 100 Index respectively.

In **South Africa**, the price at which a share index futures contract expires shall be the average of the index taken every 60 seconds (100 iterations). The first calculation being at 12:01 and the last at 13:40 on the expiry date. If the JSE is of the opinion that it will not be possible to compute the expiry price as per rules as if an error has been made in the calculation of the expiry price, the JSE may determine the expiry price on a basis decided by JSE Executive.

## 8. Margin Requirements

Like any other futures contract a stock index futures contract is also characterized by margin requirement. The traders in a stock index futures market are required to keep good faith deposits which are adjusted on a daily basis to account for the gains or losses. In **Indian** capital market, there is a provision of upfront initial margin on daily basis. Initial margin is the amount required to open a margin account for trading. The maintenance margin must be maintained in a margin account.

All futures contracts traded on ASX **(Australia**) are registered, cleared and settled by ASX's wholly owned subsidiary Options Clearing House Pvt. Ltd. (OCH). Both buyers and sellers of ASX Index futures contracts must pay an initial margin which is determined by OCH according to the volatility of the underlying index. Both buyers and sellers are also liable for daily variation margin calls.

In **Singapore**, no full payment equivalent to the contract value is required upon initiating a futures position, the buyer and seller must put up a margin deposit with the broker. This initial margin is set by the SGX and is typically about 5-10 per cent of the contract value. Broker may impose a slightly higher initial margin than that set by the SGX. If after the debit account falls below the maintenance margin level (usually set at 80 per cent of the initial margin level) broker will contact investor for additional funds to replenish his account back to the initial margin level.

FTSE/JSE in **South Africa** does not specify any margin requirements in the shape of initial margin, maintenance margin and variation margin.

In **USA**, the margin price limits are set on a quarterly basis and are based on per centage of 5 per cent, 10 per cent, 15 per cent, and 20 per cent. New limits go into effect at the beginning of each calendar quarter. The per centages (5 per cent, 10 per cent, 15 per cent and 20 per cent) are based on the average closing price of the lead month futures contracts in December, March, June and September.

## 9. Pricing/Valuation of Stock Index Futures Contract

Theoretically or fair price of a Stock Index Futures Contract is derived from the well-celebrated cost of carry model. Accordingly, stock index futures price depends upon (Hull, 2003):
Spot index value
Cost of carry or interest rate
Carry return, i.e., dividend expected on securities comprising the index.

**Mathematically**

$$F = Se^{(r - y)t}$$

Where,

F = Futures Price
S = Spot value of index
e = Exponential constant with value 2.718
r = Cost of carry or interest cost
y = Carry return, e.g., dividend income
t = Time of maturity in years.

The above model is common for all stock index futures traded around the globe. The full value of the futures contract is not paid or received when the position is opened instead both buyer and seller pay an initial margin. The traded price is the basis on which profit or loss is calculated at maturity or on closing out the position if this takes place before maturity.

Before maturity, the future contract typically trades at a premium to the level of the underlying index. The difference is often referred to as the cost of carry. This amount reflects the cost of holding the shares in dividends on those shares during this time. As maturity approaches the price of the futures contracts and the underlying index tend to converge. It is also possible for a futures contract to trade at a discount to the underlying index. Still, convergence of the futures price and the index level will take place as maturity approaches.

The valuation of stock index futures is common worldwide, i.e., **Indian**, **Australian, Singapore, South African** and **American** stock markets use above model to value futures contracts.

## 10. Trading Hours

In **Australia**, normal trading takes place 6.00 a.m. to 5.00 p.m. and 5.30 p.m. to 8.00 p.m. (Sydney time). Overseas trading takes place 8.00 p.m. to 5.30 a.m. Overseas trading is the period for transactions where a trading participant is acting for a client who is not resident in Australia, and the instruction from the client is received outside normal trading hours.

In **India**, trading hours are different for the NSE and BSE. At BSE trading takes place between 9.30 a.m. to 3.30 p.m. and at the NSE 9.55 a.m. to 3.30 p.m. As compared to the Australian Stock Exchange, in India there is no separate provision for overseas participants. ASX operates for stock index futures for 23 hours, but Indian stock markets are working for just six hours.

In **Singapore**, trading of stock index futures is between 8.45 a.m. – 12.35 p.m. and 2.00 p.m. – 5.15 p.m. It is important to note that the underlying stock market trades from 9.00 a.m. – 12.30 p.m. and 2.00 p.m. – 5.00 p.m. (Monday-Friday) with a pre-open session from 8.30 a.m. – 9.00 a.m. and a pre-close session from 5.00 p.m. – 5.06 p.m.

Trading hours for all stock index futures contracts are same at 13h 40 on third Thursday of March, June, September and December in **South Africa**.

In **USA** for CME E-Mini S&P 500 futures contracts, CME E-Mini S&P Asia 50 futures contracts, and CME E-Mini NASDAQ 100 Futures contracts virtually 24 hours trading (Chicago time) on the CME Globex Platform (Sunday from 5.00 p.m. to Friday 3.15 p.m. Daily shut down for maintenance is 4.30 p.m. – 5.00 p.m.). In case of CME S&P 500 futures and CME NASDAQ – 100 Futures contracts trading hours (Chicago time) are 8.30 a.m. –3.15 p.m. (open outcry); 3.30 p.m. – 8.15 a.m. (CME Globex platform) and on Sundays and holidays CME Globex trading begins at 5.00 p.m. Daily shut down for maintenance is 4.30 p.m. to 5.00 p.m

**Summary: -**

On the basis of above discussion, a comparison among different stock exchanges regarding stock index futures has been summarized in the following table.

**Table**
**Comparison of Regulatory Framework: At a Glance**

| S. No. | Parameter | Countries | | | | |
|---|---|---|---|---|---|---|
| | | **India** | **Australia** | **Singapore** | **South Africa** | **USA** |
| I | Regulatory body | SEBI (Stock Exchange Board of India) | Australian Stock Exchange (ASX) | Singapore Exchange (SGX) | FTSE/JSE Advisory Committee | New York Stock Exchange, American Stock Exchange and Chicago Mercantile Exchange |
| II | Underlying instrument | For NSE Nifty and in case of BSE it is Sensex | ASX 200 Index, ASX 50 index and ASX 200 Property Trust Sector Index | Morgan Stanley Capital International Free Index (MSCI) | FTSE/JSE Top 40 Index, FTSE/JSE INDI 25 Index, FTSE/JSE FINI 15 Index and FTSE/JSE FNDI 30 Index | CME S&P 500 Index, CME S&P Asia 50 Index and CME Nasdaq 100 Index |
| III | Contract size | For NSE in multiples of Rs. 200, in BSE in multiples of Rs. 50 | In multiples of Aus. $ 10 | In Multiples of S$ 200 | In Multiples of Rand 10 | In multiples of $250, $50, $25, $100 and $20 for different contracts |
| IV | Last trading day | Last Thursday of maturity month (if holiday on Last Thursday then preceding day of maturity date) | Third Friday of maturity month | Second last business day of the contract month | Third Thursday of the contract month | Thursday prior to the third Friday of the contract month for CME 500 S&P Futures and CME Nasdaq Third Friday of Contract months in case of CME E-Mini S&P 500 Futures, CME E-Mini S&P Asia 50 Futures and CME E-Mini Nasdaq 100 Futures |
| V | Trading cycle | Three months based, i.e. June, July and August | Four Months based, i.e. March, June, September and December | Two Months based | Four Months Based, i.e. March, June, September and December | Four months based, i.e. March, June, September and December |

| | | | | | | |
|---|---|---|---|---|---|---|
| VI | Final settlement price | On the basis of closing price of underlying index on the last trading day | On the basis of Opening Price Index Calculation (OPIC) | On the average value of the MSCI Singapore free index taken 1 minute internal for contracts expiring before Sept., 2005<br><br>For contracts expiring in Sept. 2005 and beyond it is value of MSCI Singapore free index computed on the basis of special quotation methodology | Arithmetic average of Index taken every 60 seconds (100 iterations) between 12h 01 and 13h 40 as calculated by JSE securities | All open positions at the close of the final trading day are settled in cash to the special opening quotation on Friday morning of the respective index. |
| VII | Margin requirements | Upfront initial margin on daily basis | As determined by Options Clearing House (OCH) | Initial margin set by SGX typically about 5-10 per cent of the contract value | Not applicable | Margin on quarterly basis from 5 per cent to 20 per cent based on the average closing price of the lead month futures contracts |
| VIII | Valuation of stock Index Futures | F=Se(r-y)t | F=Se(r-y)t | F=Se(r-y)t | F=Se(r-y)t | F=Se(r-y)t |
| IX | Trading hours | NSE: 9.55 a.m. to 3.30 p.m.<br><br>BSE: 9.30 a.m. to 3.30 p.m. | 6.00 a.m. to 5.00 p.m. and 5.30 p.m. to 8.00 p.m. (Sydeny time) overseas trading 8.00 .p.m to 5.30 a.m. | 8.45 a.m. to 12.35 p.m. and 2.00 p.m. to 5.15 p.m. | 13 h. 40 on 3rd Thursday of March, June, Sept. & Dec. | CME S&P 500 and CME Nasdaq 100 Futures: - 8.30 a.m. to 3.15 p.m. and 3.30 p.m. to 8.15 a.m.<br><br>CME E-Mini S&P 500, CME E-Mini Asia 50 and CME E-Mini Nasdaq 100<br><br>Futures: - Virtually 24 hours trading on – CME- Global Platform (with special conditions for holidays) (Chicago time) |

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