

PN-ACC-417

**World Securities Market -
Clearing/Settlement Proposal
for the Stock Exchange, Mumbai**

**Financial Institutions Reforms and
Expansion (FIRE) Project**

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**Financial Institutions Reform and Expansion (FIRE) Project
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Price Waterhouse LLP



March 12, 1997

Mr M G Damani
President
The Stock Exchange, Mumbai
P J Towers, 26th Floor
Dalal Street
Bombay - 400 001

Dear Mr Damani,

At the request of The Stock Exchange, Mumbai, Price Waterhouse LLP (PW) arranged for Mr Joseph Schenk, Consultant to PW/FIRE Project and expert on clearing and settlement issues, to assist The Stock Exchange, Mumbai in its efforts to develop a clearing corporation for its clearing and settlement operations. Mr Joseph Schenk was assisted in India by Mr R N K Prasad, a staff member of the PW/FIRE Project.

The work for this study is carried out under the US Agency for International Development Financial Institutions Reform and Expansion (FIRE) Project which is administered by Price Waterhouse LLP.

I. PURPOSE OF STUDY

The purpose of Mr Schenk's study is to assess the preparedness of The Stock Exchange, Mumbai to introduce a modern clearing corporation that would help in achieving

- Faster, accurate clearing process
- Recognition as a world's security market
- Enhancement of investor confidence in the market
- Minimization of brokers and investors financial exposure
- Encouragement of additional foreign investments

and make specific recommendations that The Stock Exchange, Mumbai could implement



II. CONTENTS OF THE REPORT

The report explains the role and functions of a modern clearing corporation that would suit the needs of The Stock Exchange, Mumbai and also review the group of thirty requirements. The report also examines the guarantee/clearing fund and the broker contingency fund and makes recommendations for The Stock Exchange, Mumbai to take in setting up and managing those funds. Mr. Schenk concludes his report with the immediate steps the Exchange need is to take in setting up a clearing corporation and the trade guarantee fund.

III. NEXT STEPS

Building on the report of Mr. Joseph Schenk, PW recommends that The Stock Exchange, Mumbai take the following steps towards setting up a modern Clearing House

- obtain various approvals that may be necessary for setting up a Clearing House,
- develop a detailed plan covering the scope of activities, technical assistance and training required to set up and operate a modern Clearing House;
- obtain approvals for and implement trade guarantee and brokers contingency funds,
- identify interfaces for automation between trading and clearing, clearing and brokers, develop the interface software and implement the interfaces,
- finalize the depository decision,
- develop T+5 rolling settlement proposal, obtain necessary approvals, develop hardware/software to implement T+5 rolling settlements,
- develop T+5 related trade rules and implement T+5 rolling settlement,
- expand DVP and implement a full DVP as per the G-30 requirements

March 12, 1997
Mr. M.G. Damani
President
The Stock Exchange, Mumbai
Page 3



We would like to thank The Stock Exchange, Mumbai staff for their cooperation and excellent support given to Mr Joseph Schenk and PW in gathering the information required to complete this report

Upon reading the report and its recommendations please feel free to contact me with any question or follow-up requests for technical assistance that the FIRE Project may be able to provide

I can be reached at FIRE Project Office on Tel 496 3599/88 or 494 6630/8718

Sincerely yours,

W. DENNIS GRUBB
PRINCIPAL CONSULTANT CAPITAL MARKETS

Enclosure

TABLE OF CONTENTS

I.	EXECUTIVE SUMMARY	1
II.	BACKGROUND	2
III.	CLEARING HOUSE FUNCTIONS	4
IV.	PROPOSED CLEARING ENVIRONMENT	5
V.	GROUP OF 30 REQUIREMENTS	7
VI.	TRADE GUARANTEE/BROKER CONTINGENCY FUNDS	10
VII.	RECOMMENDATIONS	13
VIII.	IMPLEMENTATION NEEDS	15
APPENDICES		
1.	GLOSSARY OF TERMS	16
2.	CLEARING AND SETTLEMENT FLOW CHART	18
3.	TRADING RULE CONSIDERATIONS	19
4.	BUYSIDE-SHORTING THE MARKET IN INDIA	20

I. EXECUTIVE SUMMARY

The Bombay Stock Exchange / The Stock Exchange, Mumbai (BSE) has identified a need to develop a modern clearing house to service its clearing and settlement operations. This report addresses that need of the BSE and the possibility that in the future other Indian Exchanges with similar needs would become users of this or a similar clearing house.

The premise for this report is that in the existing BSE clearing and settlement environment it takes up to 15 days to settle a trade, after which the new owner of the scrip must wait additional time (months) before the scrip is properly registered in his name. A modern environment would complete this process in five days and with the future assistance of a Depository further reduce this time to 3 days with the use of Book Entry or Dematerialized Scrip.

This report will identify the requirements necessary at the BSE to comply with the recommendations for "Clearance and Settlement Systems in the World's Securities Markets" As identified by the Group of Thirty in 1989, which include

- 1 T+1 Comparison
- 2 Non-broker Dealer Comparison
- 3 Development of A Central Securities Depository
- 4 Trade Netting
- 5 Delivery Versus Payment (DVP) for settling all securities transactions
- 6 Payments for settlement of securities transactions with "same day" funds
- 7 "Rolling Settlement" system with final settlement on T+3
- 8 "Stock Loan" securities lending and borrowing to expedite settlement
- 9 Develop ISIN numbering system for securities issues and messages

A separate section will deal with a clearing or guarantee fund whose purpose is to guarantee settlement thus protecting the investor and a second fund / insurance which would assist members experiencing financial difficulties.

The over all goal of this project is to improve the BSE as a world security market thus increasing international and national investor confidence by reducing risk and exposure. A fast, accurate, and secure post trade environment, added to the existing automated trade environment would establish for the Exchange and its members and environment conducive to increased trade volume and the financial benefits that should accompany that environment.

II. BACKGROUND

Following the Securities and Exchange Board of India's (SEBI) directive to all stock exchanges to form a clearing house or corporation for facilitating smooth settlement of clearing transactions, Price Waterhouse, India, in the month of October, 1996, on a specific request from the Stock Exchange, Mumbai (BSE), had examined the tax and legal implications for the BSE to set up a clearing house and trade guarantee and broker contingency funds. The three alternatives considered by Price Waterhouse were

- BSE revives the non functional fund or sets up a separate fund (in either case the fund would be part of the BSE and not be a separate entity,
- The fund is set up as a separate trust of which BSE through its trustees would be the settlor making periodic voluntary contributions towards corpus of such trust,
- A new company is incorporated as a clearing corporation of which the BSE and its members would be the shareholders

The scope of this consultancy was to focus on developing a plan for a modern Clearing House for the BSE and other Indian markets. This plan is to assist the market in achieving

- Faster, accurate clearing process
- Recognition as a world's security market
- Enhancement of investor confidence in the market
- Minimization of brokers and investors financial exposure
- Encouragement of additional foreign investments

The BSE has been operating for over 120 years. As is common in other exchanges in India, Clearing and Settlement has been viewed, until the present, as a part of the Exchange environment and has been looked upon as an appendage of the market where a trade took place

In the future, the Clearing Agency and the Depository will be independent organizations, owned by their users and the market or markets that they serve. Present Indian law does not provide for the BSE to form an independent clearing House. This issue must be addressed as part of the clearing and settlement project while the other exchanges in India do legally qualify to establish clearing Houses at this time. The BSE can proceed with the development of a clearing house until the legal impediments for an independent corporation are removed.

At the BSE, trade data will flow into clearing directly from the electronic trading system BOLT. Trades done on or off the system will be immediately added into the BOLT system. These locked-in trades will then be passed electronically into the clearing systems to start the clearing and settlement cycle and to provide greater trade transparency. All trades will be electronically

captured in clearing and no further input would be required by the participating broker dealers
Netting would occur in clearing and delivery and receive obligation would be transmitted to the individual brokers

The present clearing environment is manual, labor intensive and inefficient, but it has served its memberships for many years. This plan proposes to re-engineer the clearing operations to meet the demands of the future capital markets with a modern clearing house.

III. THE CLEARING HOUSE'S FUNCTION

Each business day at the BSE and other Indian markets buyers and sellers are brought together to make trades and establish the values of the listed corporations. The Clearing House is the central hub where the exchange of scrip and payments takes place. A form of clearing has existed at the BSE for over 100 years but only in 1992 did modernization and automation begin. The trading floor has been replaced by a modern electronic execution system, while the clearing house, although aided by CRT's, is still a cumbersome, paper handling appendage of the Exchange. In the present environment there are long delays for the delivery of funds and script for settlement. Cheques are physically brought to the clearing house on the following Thursday and scrips on Thursday and Friday. The amount of script being delivered by each broker is verified and then the actual delivery of certificates is checked. The process is slow and cumbersome. The goal of a modern Clearing House is to provide the delivery of funds and securities in a fast, accurate and secure environment for its members and all their investors.

DEFINITIONS

FAST In the twentieth century executions have moved to on-line locked-in trades. Clearing and settlement has moved from weeks and months to days. The function of a modern Clearing House is to strive to settle all trades in three days (T+3).

ACCURATE The movement of large quantities of securities is prone to human error, loss and inaccuracies. The Clearing House, in connection with a Depository, must strive to immobilize or dematerialize the scrip to minimize physical movement and insure the orderly transfer of customers' positions; and funds.

SECURE During the period of time from trade date to settlement date the investor's scrip and funds are out of his hands and are at risk. The Clearing House must manage that risk by insuring first its own credibility by becoming the guarantor of trades prior to settlement and second by insuring the risks associated with the member participant's ability to meet obligations are managed by established procedures and requirements which include a "Settlement Guarantee Fund", and adequate capitalization rules for all members.

IV. PROPOSED CLEARING ENVIRONMENT

Since 1989 virtually everyone associated with the world's capital markets has agreed that the major challenge facing clearing systems over the coming years is the reduction of risks at the Clearing House

The major approach to reducing risk is by shortening the settlement cycle. The ultimate goal is to settle equity trades on T+3. To move towards this goal in an orderly non-disruptive manner, and to take its place as a recognized world market, the BSE must now move to develop a T+5 rolling settlement environment. This will be accomplished through the development of a Clearing House owned by the Exchange or Exchanges it serves

A. The Clearing Corporation (Clearing House)

The modern Clearing House will have to change old practices and become a client oriented provider of delivery services with rules and regulations that will generate investor confidence. The new environment should start with a small pilot and run in a parallel mode with a few securities so that members and employee can accustom themselves to the new processes

It will become an independent organization recognized and registered with SEBI as a clearing agency and a self regulatory organization to service one or more Exchanges. It will be established to

- Provide fast, accurate and cost effective clearance and settlement of securities
- Guarantee the safeguarding of securities and funds
- Foster cooperation and coordination among its participants engaged in clearance and settlement
- Protect investors and the public interest
- Foster the establishment of T+3 settlement and other Group of 30 world market requirements.

B. Function

The primary function of the Bombay Clearing House (BCH) will be the clearance and settlement of equity securities and other instruments traded on the Exchange. Appendices B depicts the proposed 5 day rolling settlement. In this environment BCH will accept trade input from the BOLT system, and at the end of the trading day will do a netting of positions and funds overnight. On the morning of T+2 netting will be complete and deliver and receive instructions will be wired to all members. On the morning of T+4 the delivery of script and funds will be made by the members of the clearing house. Script and fund positions will be finalized and on T+5 payment of cash and delivery of script will be completed by BCH.

Once the BCH has successfully instituted procedures for itself to become the contra-side to all trades an institutional DVP can take place on T+5, with simultaneous deliveries and payments, eliminating the need for broker intervention with funds.

V. GROUP OF 30 REQUIREMENTS

Recommendations I

Comparison of trades between market participants should be accomplished by T+1

Status - MET

All BOLT and non-BOLT trades added to the system are locked in creating immediate comparison.

Recommendations II

Indirect market participants should be members of a trade comparison system which achieves positive affirmation of trade details

Status - MET

All BOLT trades are locked-in which insures immediate comparison Trades made off-BOLT are added to the system for comparison

Recommendation III

Central Securities Depository

Status - NOT MET

The NSE has started a Depository to support its trading The BSE is reviewing the possibility of its own Depository or a joint venture It is recommended that the BSE join with the NSE to start to develop a Central Securities Depository (CSD) which will eventually service all the other Indian Regional Exchanges to immobilize or de-materialize securities.

Recommendation IV

Trade netting to reduce risk and promote efficiency

Status - MET

All trades are netted both scrip and funds for clearing and settlement for a 5 day trading period However the remaining quantities of paper are still overwhelming This process should be studied further Its major benefit is minimizing the movement of scrip but it contains legal and credit problems which result from the contingent liabilities in the eventuality of a default by a clearing member

Recommendation V

Delivery versus Payment (DVP) for all trades

Status - Not MET

A form of DVP exists for some institutional trades but for most settling trades 3 business days (5 calendar days) exists between pay-in and pay-out. At present to achieve DVP for institutional traders the clearing broker must use his own capital until settlement and delivery occur.

Recommendation VI

Same day funds

Status - Not met

Brokers cheques are used to make settlement payments. Although these cheques clear quickly the necessity of clearing delays the settlement process. The capital market's requires the assistance of the banking system and the Indian government to develop a form of guaranteed payment.

Recommendation VII

Rolling settlement - final settlement occurring on T+3

Status - Not Met

The existing Clearing House changes to a Clearing Corporation, the development of a Depository and changes in existing trading practices are all necessary to move the Indian markets towards meeting this recommendation. It is recommended there be an interim step, T+5, as a preliminary step to achieving T+3 settlement.

RECOMMENDATION VIII

Securities Lending and Borrowing

Status - Not met

Lending and borrowing does not exist in India. The present practices in India include squaring up, "Badla" and the auction all of which require replacement by a modern stock loan environment. To establish a lending and borrowing environment potential regulatory and tax barriers must be identified and resolved. Rules governing short selling must be developed.

Recommendation IX

ISIN numbering and standardized messages

Standard - Partially met

ISIN numbers are being used to identify scripts Standardized messages are not in use
However, it should be noted that the expansion of the number of messages in use is currently on-going worldwide

As the clearing and settlement process evolves, a separate project to develop a futures/options market should be undertaken to provide brokers with a tool to hedge their equity positions

VI. TRADE GUARANTEE/CLEARING FUND

A. Background

There presently exists at the BSE a proposal to initiate a "Brokers' Contingency And Trade Guarantee Fund" This fund would make temporary advances to the members and would also guarantee settlement of transactions This is seen as a protection against the financial problems that occur when a member defaults This proposal inter-mingles a member's insurance policy with a settlement guarantee fund, thus diluting the protection that the guarantee fund should offer all settling participants.

B. Assumptions

- 1 At some point in time the BSE will have a modern Clearing House.
2. The Clearing House will guarantee settlement, that is to impose itself between the buyer and the seller to insure settlement.
- 3 To insure settlement while protecting its own financial stability it must have a Guarantee Fund that will be provided at the expense of its members
- 4 Membership in the Fund will be mandatory for all clearing brokers

C. Trade Guarantee Fund

The purpose of the Guarantee Fund is to financially protect the guarantor (Clearing House) from financial loss. The Fund infuses capital for trade settlement and netted obligations that have not settled on Settlement Day

Assuming the Clearing House is the Guarantor, there are three types of risk it could face

- 1 Credit Risk. This is the member's ability to pay for securities delivered to it The risk is the actual money to be paid to the seller for the securities he is delivering
- 2 Market Risk This is the member's ability to deliver securities The risk here is that member becomes insolvent and cannot fulfill his obligations to deliver or receive securities Then market actions must be taken to fulfill the obligations to the contra parties of his trades All trades should be marked to the market and a member's fees based on these figures The minimized risk here is then the difference in the value of the

securities acquisition or sale from the price used in the mark to the market calculation

- 3 The Clearing House will be subject to natural disasters or other non-specific risks as in any other organization

D. Information Sharing

Indian brokers may have a membership on one or more Exchanges and in one or more Clearing organisations in order to reduce risk, information sharing across these organization is vital. All Exchanges and Clearing organisations should form an information sharing bureau and participation should be required for their continued operation. This bureau should mandate that there be extensive cooperation and information sharing amongst its members. The need for information sharing diminishes but does not cease to exist if a central Clearing House is formed.

E. Developing and Maintaining the Fund

Every member will contribute an established sum of rupees at the beginning of the Fund. All future members will pay a similar sum, although the amount may be adjusted by the Fund's trustees. In addition, each member would pay an additional sum based on a mark to the market of his daily settlement exposure.

The method of funding should be determined by the trustees but it should include partial cash and partial letter of credit or bank guarantee. All members will be required to meet a prescribe capital requirement. They would also file with the Clearing House a financial report, an indication of intent to continue to meet capital requirements and a form identifying their trading activity, mix of business (Firm, Institution and Retail), membership with other trading clearing organizations and anticipated usage of clearing services. All initial information would be update annually or more often if changes occur or if the Exchange determines information about a particular broker or firm warrants investigation.

If a members credit worthiness changes, its standard contribution to the clearing fund can be increased to offset the greater risk. Another component of the fund would be a percentage charge for all unsettled positions which the fund must assume responsibility for.

Each member will be entitled to any interest earned by the Fund or the interest may be used to increase the size of the fund or finance the clearing house's expenses.

F. Brokers Contingency Fund

This Fund is separate and distinct from the Guarantee Fund and at no time should the two be

intermingled Its purpose is to provide an insurance policy for Exchange members who are experiencing a financial crisis which could lead to default

Since the participation in a Contingency Fund is a business decision membership participation may not be mandatory The Exchange may deem however that participation in this Fund is a membership requirement

The establishment and operation of the type of fund would be best handled by an outside agency, such as an Insurance Company The external company would be charged with determining the size of the Fund and the type of funding each participant must contribute along with ongoing charges to maintain and operate the Fund

The external company would be charged with the management of this Fund It would require financial records from participants similar to those required by the Clearing Fund It would also have to set guide lines for payments to defaulting members or identification and prosecution when legal inconsistencies exist

VII. RECOMMENDATIONS

The BSE has developed a modern automated execution system but has not enhanced its post trade (clearing and settlement) environment.

The immediate need is to gain a consensus from the BSE and its members to move forward with a post trade modernization plan that would include

- ▶ Government (SEBI) approval
- ▶ Development or Participation in a Depository
- ▶ Streamline manual script processing
- ▶ Establish a modern Clearing House
- ▶ Develop operational procedures that can be used across all Exchanges
- ▶ Initiate 5 day rolling settlement
- ▶ Institute securities lending and borrowing
- ▶ Develop a funding program that would insure same day funds.
- ▶ Insure internal Delivery Versus Payment for all transactions
- ▶ Establish a Guarantee Fund

These ten items which represent standard practices in Western Markets are major changes for the BSE to undertake. Its membership realizes that some of its present profitable, but questionable, practices will cease in this environment.

The positive aspects of this environment must be delivered to the capital markets community and to the regulators (SEBI). These include:

- ▶ Guaranteed, timely deliveries
- ▶ Investor protection and confidence
- ▶ Increased domestic and foreign participation

- ▶ Elimination of rework (correcting mistakes)
- ▶ Availability of funds
- ▶ Immobilization/dematerialization of scrip
- ▶ Minimizes fraud
- ▶ Gaining of world recognition

With these items in place the Stock Exchange, Mumbai (BSE) and the Indian markets would gain the recognition of being a World Security Market

VIII CLEARING AND SETTLEMENT IMPLEMENTATION NEEDS

A. Acceptance

To proceed with this project approval is required from BSE, SEBI, PW/FIRE and USAID. When all parties are in agreement, a formal implementation plan can be developed. In the interim the following steps toward an implementation plan should be reviewed.

1. Implementation

Upon acceptance of this proposal a feasibility study must be done to identify the Funding and time required to complete the project.

2. Project Management

For the public sector - SEBI assisted by USAID-FIRE

For the private sector - BSE working with USAID-FIRE and necessary Indian and international vendors

3. Contracting Plan and Procurement

- Implementation of the private sector component must be defined and meet with USAID's satisfaction
- Technical assistance contractors and vendors must be identified
- Procurement plan will be responsible for bids and take into account the source and origin requirement of goods and services for this project

4. Cost

Expenses identified and a determination made as to who will be responsible for their payments

5. Staffing and Training

- Public and private sector training for the clearing systems and the rule changes that the new environment will operate under
- Training courses and career development plans will be needed in the private sector to develop the technical skills needed to operate in the new environment

APPENDIX 1

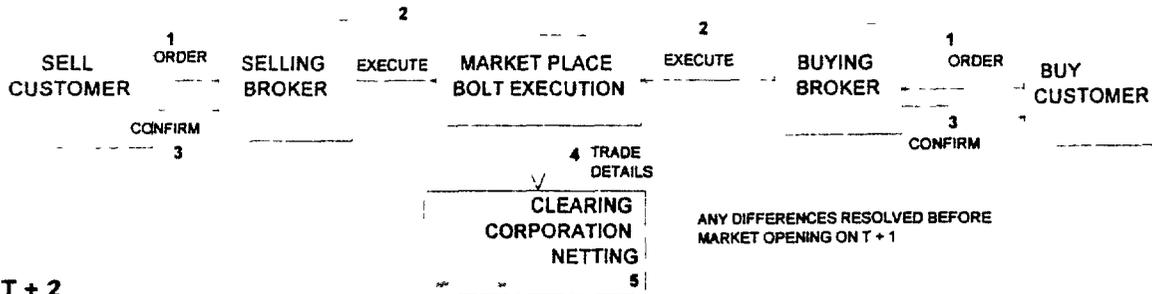
GLOSSARY OF TERMS

BADLA	Agreed upon extended delivery if scrip/funds are not available
BCH	Bombay Clearing House
BDS	Bad delivery session conducted by BSE fortnightly
BISL	Bank of India Share Holding Limited "Clearing House"
BSE	Bombay Stock Exchange/Mumbai Stock Exchange
BOLT	"Bombay" On Line Trading System
COLT	"Calcutta" On Line Trading System
CRORES	10 million
CSD	Central Securities Depository
DOLT	"Delhi" On Line Trading System
DP	Depository Participant
DVP	Delivery versus Payment
FORTNIGHT	2 weeks - 10 business days
ISD	Information Systems Dept
ISIN	International Securities Identification Numbering
KAPLI	Credit to purchasing broker for unrectified bad deliveries
LAKHS	100,000
NMS	National Market System

NSDL	National Securities Depository Limited
NSE	National Stock Exchange
OTCEI	Over The Counter Exchange of India
R&T	Registrar & Transfer Agent
RBI	Reserve Bank of India
SEBI	Securities and Exchange Board of India
SQUARE-OFF	Flatten out a position by trading on the opposite side, thus netting off
TD	Transfer Deed
T	Trade Date, usually followed by the number of days passed

**APPENDIX 2
CLEARANCE & SETTLEMENT
RETAIL FLOW
T + 5 SETTLEMENT**

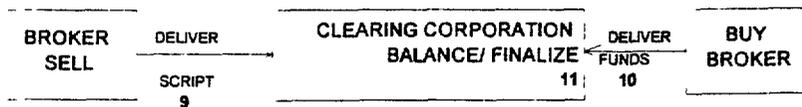
T - TRADE DATE



T + 2



T + 4



T + 5



1. Customers give orders to their respective brokers to buy and sell script
2. Broker executes orders on BOLT
3. Broker reports executed trade to customer
4. BOLT reports locked-in trades to clearing corporation
5. Clearing corporation nets the trades
6. Clearing corporation issues reports indicating net receive / delivery
7. Selling customer gives script to selling broker
8. Buying customer pays buying broker for script
9. Selling broker delivers script to clearing corporation (Net)
10. Buying broker delivers funds to clearing corporation (Net)
11. Clearing corporation finalizes all settlements
12. Clearing corporation issues check to selling broker
13. Clearing corporation delivers script to buying broker
14. Buying broker delivers script to buying customer
15. Selling broker pays selling customer for shares delivered

APPENDIX 3

**TRADING RULES FOR CONSIDERATION - CHANGES, ADDITIONS,
DELETIONS**

- Elimination of Badla
- Elimination of Squaring Up
- Development of a Short Sale Rule
- Development of Stock Loan
- Identification and Rules governing Proprietary Trading
- Initiate same day funds for settlement
- Broker know your customer rules - to ensure payment and delivery
- All persons who are in a position to solicit orders to buy/sell securities must be qualified (tested) and registered (with SEBI)
- All clearing brokers must be members of a Guarantee Fund

APPENDIX 4

SHORTING THE MARKET IN INDIA

Traditionally in the U S to short the market is a term used for selling - better known as Short Selling This is selling what you don't have

In the Indian markets a similar type of transaction can occur on the buy side That is buying without the intent to own or pay for the script on settlement. With the present settlement system, which includes up to 5 trading days, settling at the same time, a broker can purchase shares and then "square up" by selling them out within the 5 trading days Although he assumes market risk from the purchase to the sale, he has not had to tie up his capital since the purchase position is flattened out by the sale prior to settlement

The complex yet necessary solution to the buy trade problems is a rolling settlement with each day settling independently

In the present settlement environment

- Client or buyer accounts must have papers attesting to this type of trading attached to the account filing Any account without the proper papers that creates a "Squared UP" trade should post the purchase funds until settlement.
- Indication of proposed square up should be on order
- Use of a letter of credit should be posted until settlement
- Trading rules governing this type of trading are needed
- Surveillance to insure compliance with procedures is necessary

This type of trading creates a Derivative Market (Future/Option)