INDIA

BOMBAY STOCK EXCHANGE, BSE

ASSESSMENT AND RECOMMENDATIONS

April 3, 1987

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Currency Equivalents

Rs1.0	=	US$0.075
US$1.00	=	Rs13
Lakh	=	100,000
Crore	=	10,000,000

Abbreviations and Acronyms

BSE	Bombay Stock Exchange, India
CATS	Computer Assisted Trading System (Canada, France, Australia)
CBOE	Chicago Board Options Exchange, U.S.A.
DSE	Delhi Stock Exchange, India
GIC	General Insurance Corporation
ICICI	Industrial Credit and Investment Corporation of India
IDBI	Industrial Development Bank of India
IFCI	Industrial Finance Corporation of India
IRCI	Industrial Reconstruction Corporation of India
LIC	Life Insurance Corporation
LSE	London Stock Exchange, England
MSE	Madras Stock Exchange, India
NYSE	New York Stock Exchange, U.S.A
PTI	Press Trust of India
SHC.I	Stock Holding Corporation, Phase 1
TCS	Tata Consultancy Services
TSE	Toronto Stock Exchange, Canada
UTI	Unit Trust of India
VSE	Vancouver Stock Exchange, Canada

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BOMBAY STOCK EXCHANGE (BSE)

I. EXECUTIVE SUMMARY

Acknowledgment

1.01 Acknowledgment and appreciation is extended to the many individuals in Bombay, Madras and New Delhi whose gracious assistance made this study possible. The author was impressed with the awakening Indian economic giant and the dynamic nature of its business sector.

Overview

1.02 India's stock markets are currently facing the wonderful dilemma of how to cope with 30% per annum growth. While it is difficult to handle the day-to-day problems and expand facilities at the same time, this is a far preferable environment to one in which there are scandals and collapsed markets. India also has the advantage of a "time machine" in being able to see its future by examining the recent history of the major markets of Europe and North America.

1.03 As always, there are some problems. The transfer of share ownership is an inefficient process made more frustrating by laws on signature guarantee limitations and time expiration. This has discouraged longer term investing by individuals who find that short term speculating is lower in costs and can be done with little capital for several months by using the "carry forward" feature of the specified list. This leveraged speculation creates its own liquidity and has given the Bombay Stock Exchange (BSE) many of the characteristics of the Chicago Board Options Exchange (CBOE) without its risk reducing, 24 hour settlement system and margin requirements. To reduce the risk of a market collapse due to leveraged speculators being caught in a bear market without funds to cover their losses requires a shorter settlement cycle and better market information. All of this means more automation, primarily at the point of trading, and expeditious ownership transfer.

1.04 The Press Trust of India (PTI) project to link 11 stock exchanges to display market prices of major interlisted issues is an encouraging example of cooperation and information improvement. The BSE trading information requirements go far beyond this project, however. Similarly, the Stock Holding Corporation recently set up by seven institutions is to be applauded but will not address the problems of individual shareholders soon enough.

1.05 Can the BSE members recognize the need to make some drastic changes to cope with the projected growth in market activity, and to serve the needs of all clients? If they do not meet the challenge, then the London example is bound to be followed, whereby trades will be done desk to desk using telephones and/or computer terminals, and the floor will eventually be eliminated (refer to Exhibit A, "London To Close Stock Trading Floor"). Planned improvements to the Indian communications networks, particularly in Bombay, will make this realistic in three years.

1.06 This possible shift to non-floor trading will likely be coordinated by a few aggressive Bombay merchant banks and dealers who will act like jobbers, but with much more capital. Their access to an institutional Stock Holding Corporation, along with good internal record-keeping systems, will allow them to easily settle trades with their clients and between themselves. This type of service will attract investors, leaving the BSE to be a leveraged speculators market if the present settlement rules still apply. To avoid this bleak scenario, the BSE needs to show strong leadership to convert the BSE into a modern trading and settlement facility that serves the needs of investors.

1.07 Dr. L.C. Gupta's "Special Note" in Volume II of the final report of the "High Powered Committee on Stock Exchange Reforms" has much to commend it, and could serve as a plan within which the BSE will map its future. Dr. Gupta logically argues for a consolidated national market for major issues and regional markets for smaller regional companies. Another form of two-tiered market is a block market for institutions and a retail market for individuals. With slight adjustments, the two forms can be merged into a single two-tiered market concept. Institutional block trades are usually confined to the larger, national companies, so Dr. Gupta's national/regional market split need only be designed so that the national market serves the special block trading needs of the institutions as well as retail clients. Will the BSE take the steps to fulfill the obligations of being India's national exchange, or should the merchant banks and institutions set up the required mechanism and the BSE retain a local focus and become a regional exchange trading local issues? Or should the BSE aim to become a major market in options on the national issues?

Summary of Recommendations

1.08 Recommendations for enhancing some of the functions of the BSE have been prioritized and divided into those which:

a) can be applied to the present facilities;
b) require changes in legal procedures; and
c) are projects to be implemented over the longer term.

a) Modifications and Enhancements to Present Facilities

i) Introduce a three-part souda slip or floor trading ticket.

Rationale - The most serious weakness in the BSE settlement system is the high proportion (over 25%) of mismatched trades. A significant 10% or more (over 1,500 trades per day) never get resolved so that transactions have to be repeated to satisfy clients. The current system also permits brokers to exercise discretion in allocating profitable and unprofitable trades between clients and between clients and the brokers' own trading account. The Madras Stock Exchange has introduced an equivalent system. Initially, the introduction of the three-part souda slip will improve the settlement system but, over time, will form the basis of a real time information system.

ii) Increase BSE trading hours and reduce number of eligible traders.

Rationale - On the basis of current projections, by 1990 market activity should reach 30,000 trades (60,000 buy/sell transactions) daily. Even with the new trading hall, which is likely to be at its capacity by the time it is built, the number of authorized assistants will have to be reduced to ensure that traders can move freely. This can only be achieved if trading hours are lengthened substantially to compensate. This change should be implemented gradually so the process should start immediately.

iii) Introduce a trading floor support system.

Rationale - Improve access to market information for traders by showing trading activity in both the local market and other regional markets. The linking of the regional stock exchanges by the Press Trust of India is likely to be a valuable input in this process.

iv) Disseminate trading information among financial institutions.

Rationale - As trading hours are increased, it becomes increasingly important to provide real time information to the financial community.

v) Reduce the settlement cycle to curb speculation.

Rationale - With enhanced information flow and wider dissemination of information, there is likely to be greater market involvement. At this stage, it would be advisable to reduce both the account netting cycle and the settlement cycle from the current 14 days to a week or less. This can only be imposed if the clearing, settlement and transfer systems are functioning more efficiently.

b) Changes in Legal Procedures

1. Alleviate the problem of share ownership transfer by:

   i) permitting signature guaranteeing by creditworthy members of the financial community; and
   ii) changing the rule regarding the expiry of transfer deeds once the company closes its books.
   iii) reducing or eliminating the power of companies to refuse share registration because of the owner's identity.

   Rationale - Investors in India have to deal with the significant risk of not gaining title to the shares for which they have paid. This occurs because of a number of factors:

   i) delays by companies in registering the transfer;
   ii) sellers' signatures differing from that in the registry;
   iii) communication problems between brokers and clients; and
   iv) the expiry of transfer deeds once a company closes its books.

   It normally takes investors three-to-six months from settlement date to get a script registered. During the process, the investor is unable to sell the stock, which again discourages investment at the expense of speculation.

2. Permit corporations to be members of exchanges and encourage stock brokers to increase capitalization.

   Rationale - Stock brokers need more capital if they are to specialize, provide a regional distribution system, afford automation and/or be members of Stock Holding Corporations. The individual/partnership stock brokers need to be encouraged to merge so that the BSE has fewer but larger and better capitalized members. Permitting corporations to become members of exchanges would be an important and necessary step in encouraging greater capitalization of stock brokering entities.

c) Long-Term Projects

1. Form a Stock Holding Corporation for individual shareholders.

   Rationale - If the settlement system is to cope with the increased volume of operations, it is vital that a Stock Holding Corporation for individuals be set up immediately, as the gestation period can be at least five years. (For

example, the gestation period for the Depository Trust Corporation of New York and the Canadian Depository for Securities in Toronto was 10 years.) The recently established Stock Holding Corporation for institutions, while useful, is too narrow in focus, as it operates principally as a custodial service for seven large institutional shareholders.

2. Replace floor trading by a computer based system.

   Rationale - A market information service is worthless if the information it provides is inaccurate or unduly delayed. The major problems are getting trade information into the system and difficulties in obtaining bid-offer prices. These problems can be resolved via a computer based system which is in use in the Toronto Stock Exchange, Paris Bourse and some of the Australian exchanges. The BSE should develop some experience in real time computers and networks before moving on to a computer based trading system, which would be a mid-1990 target.

3. Review goals and plans.

   Rationale - There are many changes happening in the financial and regulatory environment both within and outside India. The BSE needs to regularly review and revise its plans for change in order to move from a reactive to a proactive operational mode. A massive change in attitude is required; otherwise, the BSE is likely to follow the example of the London Stock Exchange (Exhibit A).

Implementation Plan

1.09 Although goal setting is a long term repetitive task, a first review must be scheduled as soon as possible. From this process should flow agreement that the BSE should assume responsibility to provide a fair and orderly market place for securities.

1.10 An important first step towards this goal is the introduction of the three-part souda slip or floor trading ticket. This should result in a significant reduction in brokers' staff workload to settle trades. With the reduction in paperwork, the trading hours can be lengthened, and the accounting and settlement cycles halved to one week each. Although there might be some increase in activity due to longer trading hours and due to the more streamlined trade settlement system, pressure should be exercised to gradually halve the number of traders in the BSE trading room. This will allow the remaining 1,000 traders to operate more easily on the new BSE floor which will be equipped with a trading floor support system. This system can be the basis of a terminal display system for the brokers' and institution's offices in Bombay and elsewhere when the communications facilities are appropriate.

1.11 In parallel with the above changes, the BSE should actively, in 1987, promote in cooperation with other interested parties, changes in laws that will help to improve the settlement process. The BSE should also actively encourage the implementation of a Stock Holding Corporation that will alleviate the problems that now plague brokers and individual shareholders.

II. SPECULATION

2.01 Several sources are concerned that the stock markets of India are highly speculative. Improvements in the processing of data can sometimes alleviate this condition, and even be essential to efforts to reduce speculative trading. The term "speculative" can be applied to several quite different market phenomena, however, and different solutions are required for each situation.

Speculative Factors and Practices

2.02 Concept Companies. The purest form of speculation is investment in "blue sky" companies. These are "paper" companies that have essentially no real assets other than some concept that the promoters wish to turn into an operating and profitable business.

2.03 In the United States, "blue sky" companies in computers or biotechnology have been successful in attracting many millions of dollars in the last decade. In Canada, this type of speculation is usually directed towards mining or petroleum exploration promotion. A recent study of the Vancouver Stock Exchange showed that only one out of every 100 new listings actually grew into an operating company. The returns to investors who picked the right one per cent are quite spectacular, however, so those with a gambling instinct keep trying as long as they have the money.

2.04 If concept companies are allowed to be traded on stock exchanges, there is not much that automation can do to control excesses other than provide timely and accurate trading information.

2.05 Incomplete Information. Another form of speculation or high risk investing focuses on operating companies with sketchy information about their business and accounting figures. This covers a wide spectrum of companies, if not all, for in the real world even those companies whose management has the best intentions are limited as to how quickly, accurately and to what detail they can publish accounting data. Insider trading is a parallel issue to the problem of timely and accurate release of company information. While listed Indian companies are not exemplary in this area, there are some skilled commentators in the financial press with the freedom and courage to openly address this issue of precise, up-to-date and relevant data.

2.06 Automation is used in North America to compile quarterly results in under 60 days and then distribute them quickly and simultaneously to an extensive audience. In theory, this gives most market participants an equal chance to respond to the new information.

2.07 To achieve this ideal, the stock markets monitor market activity in real time to detect unusual price or volume fluctuations in each security. Each market has a surveillance department staffed expressly for this purpose. They have the power to halt trading in any security based solely on their assessment of observed circumstances. A halt is typically called for 30 minutes to allow significant new company information to be dispersed to investors. In 1985, the Toronto Stock Exchange (TSE) had 421 trading halts among its 1,438 listed issues, which indicates that there is little drama associated with most halts in trading.

2.08 It is now accepted practice in North America for company management to contact stock exchange officials and disclose confidential information of market significance prior to public release. This practice of timely disclosure allows stock exchange staff to watch a company's trading for any activity that may indicate a "leak" of confidential information. In such an event, trading will be halted and suspect trades traced and possibly cancelled. Charges of insider trading may be laid if there is sufficient evidence.

2.09 As in many fields of human interaction, the concept of ethical business behavior is continually being redefined. Insider trading is currently one of the most vivid areas in North America where what used to be acceptable or at least tolerable behaviour is now being classed as theft. In many other world markets, including India, insider trading is not yet an issue and generally appears to be accepted as one of the facets of business life that cannot be changed.

Short Term Trading

2.10 In the real world stock markets where information is less than timely or complete, people may decide to buy or sell based on hints, rumours or the actions of others. These trades by the public tend to be emotional rather than rational and cause the price of an issue to fluctuate widely. If transaction costs are relatively low (under one per cent), then short term traders usually try to take advantage of the issue's price volatility.

2.11 Short term trading is an accepted component of all listed stock markets and is even encouraged because it enhances liquidity. Because many rumours turn out to be false, jobbers, specialists or market makers make good incomes fulfilling market stabilization obligations which state that 75% of their purchases/sales should be made at a price below/above the last preceding different price trade.

2.12 At the BSE there are no designated jobbers with market stabilization responsibilities, so anybody can trade any issue. Even clients can do in-and-out trades with no scrip delivery involvement, for only one-eighth to one-half per cent commission each way. Thus, it is not surprising that short term speculative trading appears to be quite significant. An indication of the amount of in-and-out trading at the BSE is given by the comparison of the 7,626 transactions of November 4, 1986 in the 63 specified shares. These transactions were Rs4,528.16 lakhs unnetted, which netted to a value of Rs2,092.81 lakhs.

2.13 The 53.8% reduction in value is based on offsetting, in each security, a trader's purchases and sales that were done within that day's two hour trading session. Of course, not all of the netted trades were for the broker's personal account, but neither would a short term trader never carry a position over to the next day. Nonetheless, a 50% netting reduction is remarkable for 500 members' activity in 63 issues spread over a mere two hours. This indicates that there must be some jobber-to-jobber trading taking place, where one side is wrong. Yet the jobber type of trading is presumably profitable, or there would be a higher turnover of BSE membership than the present three to five per cent per annum. The volatility of the BSE market index is not abnormally high, therefore unregulated jobber traders are probably not destabilizing the BSE market because they have learned that contra-market trading is usually profitable.

2.14 Brokers trading for their own account may also have the "safety net" of a non-existent real time trade data collection and reporting system. This means that the broker can exercise some discretion in allocating profitable and unprofitable trades between client orders and the broker's own trading account. In addition, bad trades can be subsequently "cancelled" by not matching the trade during the clearing cycle. The clearing operation is known to be error-prone, so willful reneging of 10% of 15,000 daily trades is difficult to control when there is also 15% of legitimate errors, which is normal for a post trade buyer and seller data comparison system. It is unlikely that the BSE could afford the number of investigators necessary to thoroughly sort through over 3,000 daily trade mismatches.

Leverage

2.15 In addition to "blue sky", rumour and short term trading forms of speculation, there is leverage speculation. Leveraging means that a buyer acquires the right to an asset for a small fraction of its current value. If the time period between acquiring the ownership right and paying the full agreed price is long enough, the speculative buyer expects the stock price to rise above the acquisition price plus costs so that he can sell the asset and make a profit.

2.16 For example, if a buyer acquires the right to buy a stock for a 10% deposit of the current price and pays a two per cent time premium for each month of delayed closing of the deal, then he will have doubled his money in two months if the stock price rises 30%, assuming one-half per

cent commission cost for each transaction. If this sounds tempting, imagine the attractiveness of the BSE specified list of 63 major companies where the "deposit" or margin can be zero to three per cent, with the commission one-quarter per cent, and one can delay settlement as long as six months. A 15% price rise in two months allows the speculator to double his money even at a three per cent margin.

2.17 By contrast, in North America the client must pay, or have securities on deposit for at least 30% of the full purchase price seven days after the day of trade. Historically, margin has been as high as 70% and the time as short as 3 days. For stock options, the full cost is due within 24 hours of the trade. Of course, the purchaser receives full ownership rights on settlement day. In practice, a North American broker usually does not accept a purchase order unless the client provides at least 30% of the price when the order is given. This may sound harsh, but most brokers operate as quasi-banks and usually hold all of the clients scrip in "street name". (In fact, the scrip is in a depository account with rights of transfer held by the brokers). These securities are pledgeable to banks who will loan upwards of 50% market value against good securities. Most clients have unused credit available from their securities on deposit with their broker and this credit is used to settle their next purchase until they actually make payment, if payment is delayed by the mail service. Competitive interest rates are both charged and paid on client's borrowings and cash deposits.

2.17 In order to curb excessive speculation, significant margin payments need to be introduced in India. With full settlement possibly delayed for months, a purchaser or short seller in India should put forward the funds appropriate for the risk being taken. Although a 30% margin deposit is considered very lenient in North America, it would be a tremendous shock to the Indian markets so any changes will have to be carefully considered. To avoid any confusion, the margin rate should be uniformly applied to all scrip. The stock exchange should hold the margin funds in trust and keep the interest earned as revenue to offset operating expenses, such as improved automation services. It is desirable that the margin be collected as soon as the obligation is assumed, which is the day of the trade, but the exchange could probably not cope with the bookkeeping more frequently than weekly. The ability to pledge scrip as loan collateral and the speediness of the settlement cycle are other factors which impinge on what is an appropriate margin rate and collection procedure.

2.18 In North America, leverage speculation has been an accepted and substantial part of the equity marketplace ever since the Chicago Board Option Exchange (CBOE) was established in the mid 1970s. Equity options in North America have two financial components: a premium for the right to buy/sell at a certain price, and an interest component based on the length of time for which the option is valid. The premium paid for the option rights attracts staid, institutions with large portfolios which they do not wish to liquidate but can enhance their return by over 10% per annum by acquiring option premium income.

2.19 Leveraging in India does not have a visible purchase/sale rights premium component, so it only attracts speculators and is of no value to institutions. This is unfortunate because capital gains tax laws until recently, inhibited institutions from selling stocks sooner than three years after purchase. This reduces liquidity in the market and lessens the impact on the marketplace of more sober professional institutional actions. In an attempt to curb speculation, options are illegal in India. As can be seen by the analysis of BSE speculation versus investment (para. 2.20 - BSE Client Speculation), leverage speculation is alive and well in most of India without the benefits of institutional involvement or the constraints of paying a premium for rights.

BSE Client Speculation

2.20 An estimated breakdown of market activity on the BSE by non-brokers (clients) acting in the short term (speculating), or the long term (investing) may be useful in an in-depth evaluation of this institution. Some representative monthly statistics are as follows:

63 specified issues (A group)	
Total sales or purchases	Rs5,000,000,000
Value of monthly netted scrip deliveries	Rs 500,000,000
Value of final day "badla" trades	Rs1,000,000,000
2,600 non-specified issues (B group)	
Total sales and purchases	Rs 350,000,000

2.21 Obviously, the statistician's view of "the significant few versus the trivial many" applies to specified versus non-specified issues on the BSE. The factor behind the popularity of specified shares is the ability to carry forward a transaction from one settlement period to the next. If an investor is defined as the person who actually holds scrip in his name, the monthly deliveries of Rs500 million, or ten per cent of total transactions of Rs5,000 million could be considered the investor component of the BSE market. However, this may not be accurate for two reasons.

i) On the last trading day of each settlement period, a half hour is spent making offsetting transactions at negotiated badla fees of about one per cent. These transactions (Rs1,000 million) are included in the monthly totals, even though the transactions are because of earlier trades. Thus, the real monthly market activity in specified shares, if each transaction only counted once, should be reduced by Rs1,000 million to a monthly total of Rs4,000 million.

From the November 4, 1986 netting analysis, the jobber participation is about 50 %, so the amount of monthly non-jobber trading in specified shares is about Rs2,000 million.

ii) On the other hand, the Rs500 million of monthly scrip deliveries is calculated after netting each broker's buys and sells in each scrip over a two-week period. The activity in specified shares is high enough with half the list having over 500 transactions in a fortnightly settlement period, that netting of buys with sells should reduce inter-broker deliveries by at least 50%. Thus, it is reasonable to conclude that investors make up approximately 50% (Rs1,000 million of the monthly total of Rs2,000 million) of the client trading in specified shares.

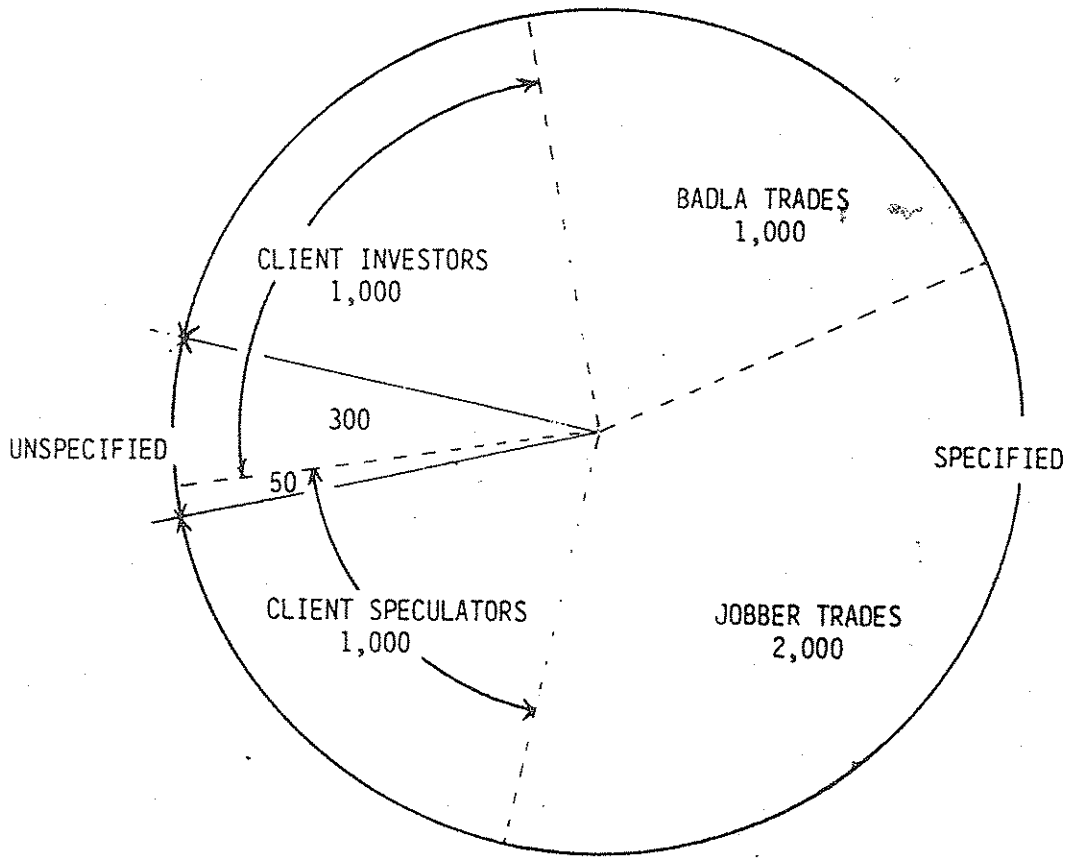
2.22 It is estimated that Rs300 million worth of the total Rs350 million trades in unspecified shares represents the monthly investor participation in the 2,600 unspecified issues.

2.23 By omitting the relatively significant jobber (Rs2,000 million) and badla (Rs1,000 million) components in the trading of specified shares, the total BSE market amounts to approximately Rs2,350 million of client trading per month. Of this activity, Rs1,300 million or about half is probably generated by investment oriented clients, and the other half by speculating clients.

2.24 The same conclusion about client speculation can be reached by assuming that the badla transactions are predominantly done for speculators. If so, the Rs1,000 million badla adjustments represent Rs1,000 million earlier speculator transactions out of the Rs2,000 million non-jobber trading in specified shares. Of course, some badla transactions are made by selling investors who cannot deliver their scrip in time. However, some speculators will complete their in-and-out cycle within one settlement period, so do not require badla.

Figure 2.1 Estimated Breakdown of Monthly BSE Trading

(in Rs Million)



2.25 Arguably, the above analysis may not be very accurate. Nevertheless, there is a marked difference between these calculations and the statement that the BSE has only ten per cent investor trading. In spite of the claim that the BSE has more client investors participating than commonly thought, the investor component of trading likely has a significant institutional participation which implies that more individuals are speculating than investing. Both types of client account for less than half of all BSE trading, with the non-client or professional trader activity on the BSE accounting for a substantial 55% of all reported activity.

2.26 In comparison to North American markets, the BSE market profile is much closer to that of the Chicago Board Options Exchange (CBOE) than to that of the New York Stock Exchange (NYSE). The NYSE has only 26% of its trading being done for members' accounts and over half is in large blocks to service institutional orders. Since both of these markets are felt to provide legitimate but different vehicles for the Western financial industry, there is nothing judgemental in the observation that the BSE more closely resembles a stock option market (CBOE) than an institutional equity market (NYSE). However, the trading on the relatively new CBOE is stabilized by massive institutional trading on the much older NYSE market. It is of some concern that there is no equivalent source of price stabilization for the Bombay Stock Exchange.

III. TRADING MECHANISMS

Trading Floor

3.01 Jobbers perform several essential functions in large, diversified trading environments such as that of the BSE. Jobbers usually specialize in a limited number of issues, and become the focal point for anyone interested in trading one of those issues. When there is no system by which prices are displayed, the jobber is a valuable source of information.

3.02 The bid/offer prices are usually reliable for small orders because the jobber is obliged to transact business at these prices. A client order being handled by either a share or floor broker can usually be executed promptly by dealing with the appropriate jobber, and the share broker can move on to his next order. Without the jobber, the share broker would have to spend considerable time waiting for another broker to arrive who was willing to trade with him at a reasonable price.

3.03 The jobber is paid directly for his facilitating services by the spread between bid and offer prices, and indirectly by being more informed about supply and demand changes in his issues. This heightened awareness of market mood towards a jobber's particular stocks allows him to profitably adjust his positions long or short. The jobber often gets to know the significant players in his stocks and is sometimes attuned to insider trading activities.

3.04 Obviously, a jobber usually prefers to deal in issues with high activity because there is more opportunity to read the mood of the market and to adjust one's position. Thus, there is more competition between jobbers to deal in the active issues and this creates competitively close quotation spreads. Ironically, because of their higher activity, these issues have less need of the jobbers' services because there are always several brokers available and willing to buy and sell the stock. It is the less active issues, which are harder to trade and consequently less attractive to jobbers, that really need the jobber.

3.05 In most developed markets, the jobber/specialist/market maker gains the rights to trade only specific issues. The assignment of these issues is a responsibility of the exchange, which uses the exclusivity rule to ensure that less attractive issues are serviced as well as desirable ones. The exchange also has to monitor the performance of the jobber/specialist/ market maker to ensure that a balance is maintained between their need for profitability and the need to provide "good markets". This is a very difficult role for an exchange to perform objectively when members play such an important role in its operation through the governing board and the many committees associated with the exchange. The cyclic of volatility of markets makes it difficult to enact sensible and strict rules which could be acceptable in good markets but ruinous in bad markets.

3.06 The BSE has not yet delved in this difficult and sensitive area, but has allowed free market forces to operate. This approach is desirable in some respects, but there are no procedures in place by which the quality of the BSE market can be monitored. Interestingly, "quality control" was not an issue that was raised during the author's discussions, but this may be due to the distractions of the closing of the BSE because of the massive raids on brokers by tax auditors. At this time there seems to be little justification to impose market performance criteria on traders.

Terminal Trading

3.07 The one problem that does exist in Bombay, as it does elsewhere in the world, is the disparity in capitalization between jobbers and institutional investors. The jobber can usually service small retail orders well, but cannot absorb or dispense large blocks of stock as desired by institutions. Typically, these deals are done institution to institution, sometimes without broker participation.

3.08 In major developed markets, institutions have tended to implement special telephone or terminal networks by which they conduct these large block trades. A few highly capitalized broker/dealer and merchant banks have focussed on this business and will deal in large blocks much like jobbers. This creates a two-tiered marketplace. Large blocks are traded commission free between unregulated participants who actually acquire ownership for short time periods. Small trades are done by agent brokers for commission in the more open public exchange market, which is regulated to some degree. Laws of supply and demand can mean that large blocks will often trade at prices that differ substantially from current prices in the public retail market. This is quite disturbing to some of the smaller investors and regulators, who usually try to control this situation. The key ingredients in controlling it are to be aware of prices and to conduct transactions in real time.

3.09 Although there has been a steady shift over the last decade in New York from the agency/specialist system of the NYSE to the upstairs dealer markets of Salomon, Merrill Lynch, et. al., it is in London, England, that this historical change has been most dramatic. As a result of the "Big Bang" deregulation on October 27, 1986, the London Stock Exchange (LSE) 25,000 square foot trading floor has become all but deserted in less than four months (Exhibit A). The highly capitalized banks and dealers have overwhelmed the jobber system and the markets have moved to the offices. This shift can only happen when there are good information dispersal systems, which make redundant the need to come together physically on a trading floor to get the best information and transact trades.

3.10 The deregulation in London has proved that terminals and telephones can be superior to the trading floor for conducting trades profitably. The well capitalized banks and dealers could have used the LSE trading floor, but were able to afford the investment in technology which allowed them to conduct trading in a less risky manner. New York and Tokyo currently have regulations which have held back this change somewhat. The exchanges have also encouraged automation and capital accumulation so that member firms can service both institutions and the individual investor. The automation has allowed the exchanges to be less archaic and less out of step with more competitive and efficient methods of transacting trades. A similar situation exists at the Toronto Stock Exchange, which possesses the advanced Computer Assisted Trading System (CATS) trading mechanism but has had its growth restrained by floor trader organizations.

3.11 It should be emphasized that London's Big Bang was triggered by deregulation. In the view of many, London was never heavily regulated to begin with, however. Regulations in India are also rather light in the areas that were significant in London; namely, who was allowed to deal in stocks. There do not appear to be any impediments, apart from the telephone system, to India having its own Big Bang. In fact, the small number of Indian merchant banks and institutions plus their significant financial and organizational resources stand in stark contrast to the multitude of Indian brokers and their small resources. There is no question as to which group it would be easier to provide an improved information and trading system. The only advantage the brokers have at the moment is that they have a coordinating organization, the BSE, which possesses some automation expertise.

3.12 Unfortunately, this advantage is not being exercised at the BSE. There has been no approval of a staff proposal to improve the present computerized settlement system by taking the essential first step of adopting a triplicate trading ticket or souda slip (Exhibit B, Bombay Stock Exchange -- "A Look Into the Future"). It is not surprising that the BSE members do not see a threat to their future existence during a bull market, but nevertheless, the threat is real. The recently formed

Stock Holding Corporation, Phase 1, provides the organizational vehicle by which seven significant equity trading institutions could easily implement an efficient off-floor institutional desk trading system instead of using the BSE.

3.13 The Madras Stock Exchange (MSE) has recognized the importance of change and has implemented a three-part Memo of Confirmation (Exhibit C). Terminal operators situated on the MSE trading floor enter the trade information into that exchange's small computer system during the trading session. Initially, this just improves the settlement system, but the basic elements have been put in place to build a system for disseminating accurate and timely information concerning MSE trading.

IV. PRODUCTIVITY

Trading Activity

4.01 At the end of a trading day, it is not unusual for the Bombay Stock Exchange's data entry department to enter 30,000 buys and sells as recorded on the brokers' souda sheets. This volume represents 15,000 trades that have taken place during the two hour trading session, plus some subsequent curb trading. This averages out to nearly eight buy and sell transactions per hour executed by each of the approximately 2,000 persons in the trading hall.

4.02 In comparison, the TSE trading floor has often done over 20,000 daily trades, or 40,000 buy and sell transactions during the six and a half hour trading session. This amounts to over 12 transactions per hour for each of the 480 floor traders, but the figure drops to 8.2 transactions per person per hour when the 270 clerical support staff for the floor traders are included. The productivity per trader on CATS portion of the TSE listed securities is more than double that of the floor traders, and CATS activity can add another 5,000 trades to the TSE daily total.

Table 4.1 Comparative Exchange Activity Figures

	NYSE New York	BSE 1986	BSE 1990	TSE Toronto
Typical floor trades on busy days	80,000	15,000	30,000	20,000
Daily trading hours	6.5	2.0	7.5	6.5
Average trades per hour	12,300	7,500	4,000	3,100
Total floor personnel (traders plus all clerks)	3,500	2,000	1,000	750
Average trades per floor person/hour	3.5	3.8	4.0	4.1
Average transactions per floor person/hour	7.0	7.5	8.0	8.2
Total trading floor space (sq. ft.) (including phone booths and data entry areas	37,000	8,000	10,000	30,000
Floor space per person (sq. ft.)	10.6	4.0	10.0	40.0
Active member firms	600	420	400	70

NOTE: One trade consists of one buy and one sell transaction.

4.03 Of the stock exchanges in the world, TSE is probably the closest to the BSE in daily trading activity, but on an hourly basis, the BSE stands midway between Toronto and New York. From the above table, it is evident that the hourly productivity per floor person is not very different between the three exchanges when clerical support staff is considered as well as traders. There is a marked difference in floor space per person that reflects the TSE's new floor built to handle growth for a decade or two. The NYSE and TSE trading floors also lose 30% to 40% of their space to members' phone booths and trading kiosks that house data entry clerks and display terminals.

4.04 Current projections indicate that in three years (early 1990) the expected 30% per annum growth in market activity due to new underwritings will mean that daily trading activity on busy days should reach 30,000 trades or 60,000 buy and sell transactions. By that time, the BSE should have its new 10,000 square foot trading hall. If the new floor contains trading support personnel, such as brokers' phone clerks and stock exchange data entry operators, an allowance of 10 square feet per person (as in New York) seems a reasonable allocation overall. This would restrict the floor to 1,000 people, not all of whom are traders.

4.05 If the BSE trading floor remains as efficient as most trading floors, then the 1,000 people will handle an average of four trades per hour. This means that there will have to be seven and a half hours of trading to handle a total of 30,000 daily trades. If only six and a half hours are to be spent trading each day, 1,150 total floor staff are needed and average space per person drops to 8.7 square feet. Trading floor space should not be so crowded that traders cannot move freely from one trading station to another. Therefore, for the BSE to have an efficient and functional trading floor in 1990, the present number of personnel on the floor has to be reduced. Yet there will be an increase in orders so trading hours will have to be lengthened substantially to compensate.

Trading Hours

4.06 Lengthening the daily trading hours by 30 minutes every year should help the BSE to cope with a 25% growth in trading activity. This sounds simple enough to implement when the trading period is currently only two hours a day. However, this change might not be so straightforward when one considers that some BSE floor traders do much more than just trade for two hours each day. A greater portion of their time (six hours) is spent performing sales and clerical functions to complete their transactions with their clients. A 25% increase in trading hours to accommodate 25% growth in activity would cause an equivalent increase in the clerical workload.

4.07 If traders were to work only eight hours a day, they would have their available office time reduced from six hours to five and a half hours, yet the workload would have increased to seven and a half hours. Thus, extending trading hours by 25% per annum would necessitate an expansion in office staff of one person for every four traders.

4.08 This expansion assumes no other changes in procedures, and could be an acceptable cost if business increases a comparable 25%. There could be problems in the future, however. If business activity doubles in three years, traders would trade for four hours each day and there would be 2,000 more office staff to settle accounts. If this trend continued, the traders would eventually only trade and others would specialize in the clerical work. This has already happened in Europe and North America, and there is inexorable pressure to further extend the present six and a half hours of trading to provide more overlap in different time zones.

4.09 As the hours of trading lengthen, it is less likely that a trader can begin the trading session knowing all of the intentions of his clients for that session. The longer trading hours mean that there is more time for new information to reach clients and cause them to send new instructions to their broker during the trading session. This in turn means that the broker must have a method for these new orders to reach the floor trader promptly to satisfy the client.

4.10 Telephones and clerks are usually used to forward client orders to the floor traders, with computer terminal based order switching networks eventually implemented by larger, more sophisticated firms. At the Toronto Stock Exchange, the 480 floor traders are assisted by about 270 floor telephone clerks and order desk clerks at the 70-member firm Toronto offices. Ten of these firms use computer networks to handle 500 to 2,000 orders per day per firm.

Number of Traders

4.11 The preferred approach to handling growth at the BSE has been to increase the number of traders accordingly. Physical space tends to put limits on this option. The present temporary trading area is 8,500 square feet and the new trading room will be 10,000 square feet, or less than 20% larger. Even allowing for improved efficiency with its semicircular shape, the new trading room will probably be at its capacity by the time it is built in early 1988 if trading hours remain from noon until 2:00 p.m. A larger trading room could be built, but this might further delay construction while waiting for the municipal approvals.

4.12 Another problem that tends to arise in trading rooms greater than 20,000 square feet is a loss in trader efficiency due to the longer distances between the zones where different issues are traded. The TSE now uses a 30,000 square foot equity trading area, but it previously had only 10,000 square feet. At that time, 320 traders would often handle 15,000 trades in a five hour trading day. This equates to an average of nearly 19 buy and sell transactions per trader per hour.

4.13 The higher productivity of TSE traders is interesting in view of the fact that TSE selling traders fill out a trade slip and have it initialled by the buying trader and thus "lock in" the trade (para. 4.20 - Trade Tickets).

4.14 It is generally accepted that the present BSE trading facility is unsatisfactory. The above analysis seems to indicate that a new 10,000 square foot trading room will still not accommodate the BSE's requirements if 2,000 people are allowed on the floor. With improved trading information support systems, fewer people will be able to handle the workload, but trading hours will have to be substantially lengthened. This means that the BSE and its members must plan a gradual reduction in the number of floor representatives allowed for each member. There will be a trend towards trading being considered a full time job.

Trading Room Displays

4.15 An average of 10 transactions per hour per trader does not seem like a heavy workload. Most trades are negotiated in under 30 seconds, which is much less than the average of six minutes between trades. There seems to be some opportunity here for improved trader productivity.

4.16 A trading room environment can be improved by using computer driven displays to keep traders better informed of market activity. This contributes to more equitable trading, but has only a small effect (perhaps 30%) on trader productivity. A fully automated trading system, such as TSE's CATS, can cause a significant improvement in productivity (over 100%), but India's data communications infrastructure does not appear to be developed enough at this point for such a system. Hong Kong has a computer-based trading system with all terminals located in one large trading room, but this particular system has significantly lower productivity per trader (probably about five trades per hour) and is not a recommended alternative.

Unmatched Trades

4.17 The fact that a BSE trader today spends two hours trading and six hours on office work is indicative of where there is the most room for productivity improvement: specifically, post trade settlement and client accounting.

4.18 One of the most time consuming factors in today's system at the BSE is the high proportion (over 25%) of unmatched trades during the first phase of the settlement process. Over half of these mismatches are due to transcription errors, but a significant proportion (about 1,500 trades each day) do not get resolved and may not be accidental.

4.19 By using a three-part trading ticket to "lock in" trade information, first stage settlement discrepancies are typically kept to under one per cent at the TSE. These few errors are usually resolved quickly by reviewing the original tickets. This may cause some inconvenience to traders during trading hours, but does not seem to reduce their productivity. However, the slight trader inconvenience would be more than compensated by the decrease in post trade work at the BSE, from over 7,500 mismatched buys and sells to less than 150 disputed trades after a busy day.

Trade Tickets

4.20 When a trade occurs, several groups have an interest in the details. Market observers and brokers want to know immediately which security has traded, its price, and the number of shares traded. Observers like to know the identities of the buyer(s) and seller(s), but the participants prefer anonymity. In Canadian markets, this is compromised by revealing the participating brokers via the terminal information systems, but the identity of the ultimate client is kept anonymous.

4.21 Another group interested in the trade details is the office staff of the member firms. They need to know trade data so that they can inform clients of security or money delivery instructions. They prefer to begin this process within 24 hours of the trade.

4.22 A third interested group is the BSE Clearing Department. This group needs to accumulate the trade data for the fortnightly netting of funds and scrip deliveries between members.

4.23 If the trade tickets were filled in by traders on the BSE floor at the time of the trades, this would be advantageous for several reasons:

i) The BSE members' clerical staff would not need to fill in the souda sheets, which would now come from the BSE computer. This reduces their workload and errors.

ii) Unmatched trades would be reduced because traders would have to immediately confirm the trade details in writing. This would reduce post trade clerical work and reduce the number of subsequent corrective trades.

iii) An accurate written record would be created, within seconds of the transaction, which could be used by a BSE staff person to enter into an information dissemination system. Timely, accurate data is an important by-product of a trade ticket, and gives the market a desirable, and deserved, image of openness and fair dealing.

4.24 There are some hurdles to overcome in implementing a floor trading ticket system. The BSE trading floor is open, but it is so congested with people that it may be difficult for the selling traders to reach the buying traders to have them initial the contract and take a copy. Floor trading tickets only work when traders stand face to face in an open floor trading zone type of trading floor. This can be alleviated by increasing the number of square feet of trading floor per trader.

4.25 Another problem is that traders typically dislike paperwork, so the floor trading ticket has to be as convenient to use as possible. Exhibit D shows filled-in samples of Trading Floor Tickets used for 20 years in Canadian stock markets. The Canadian Trading Floor Ticket is a colour coded, three-part form. The seller gets the bottom copy, which is white paper with red printing in Canada. The middle copy is for the buyer and is colour coded blue. The top original is for the exchange and is buff yellow with black printing on the TSE Trading Floor Ticket. To make copies, carbonless NCR paper is used. NCR paper is more expensive than carbon paper, but is a necessary convenience in a floor trading environment.

4.26 Each Canadian Trading Floor Ticket (Exhibit D) is 4 inches wide by 2 3/8 inches long, but they are printed in perforated sets of three, so the trader carries a pad 4 inches wide by 7 3/4 inches long. This size is easily handled, yet not too small to carry a lot of trade data.

4.27 Canadian rules stipulate that buyers or sellers who are registered professional floor traders trading for their own accounts (similar to BSE jobbers) must indicate such trading so that their conformance to market stabilization rules can be tracked by computer. This is made convenient by circling a preprinted "R" in the appropriate buyer/seller box. Similarly, brokers and other staff of member firms must declare their transactions as non-client trades by having the "N" circled by their trader.

4.28 If none of the above information is required by the BSE, the traders' identification only needs two 1/2 inch high boxes for initials and a three-digit firm identification. For efficiency, the TSE Trading Floor Ticket has the seller's firm identification preprinted in the seller's box to the right of the center The full name of the seller's firm is also printed at the bottom as a general practice, but is not necessary. Similarly, each ticket is serially numbered in the bottom righthand corner, but this data is not currently used.

4.29 The trade information of number of shares, security symbol and price are carried left to right in four 1/2 inch high boxes; the price uses two boxes to clearly separate the figures to the left and right of the decimal. There is a redundant box in the upper lefthand corner of the Trading Floor Ticket for the buyer to repeat his firm's identification and his single character initial, acknowledging that the record of the trade is acceptable. This information could be entered in the "BUYER" box on the line below.

4.30 The BSE could design a Trading Floor Ticket which is much smaller than 2-1/4 inches long. However, care has to be taken so that the transaction slip's design is not too small to be conveniently handled. It is advisable to give the traders as much space as possible for recording their data, because they have to write quickly in a jostling crowd.

4.31 The Trading Floor Ticket is always made out by the seller. He tears the original and the middle copy, which are held together on one edge, along the perforation separating them from the adjacent set. He hands them to his buyer and observes that he initials acceptance. The buying trader inserts the top original in one of many conveniently located automatic time stamping machines and then hands it to an exchange employee for subsequent processing. The data is usually in the computer system within 30 seconds of the actual trade in most North American markets.

4.32 The Trading Floor Ticket is the first of two steps that oblige a member firm to deliver or receive scrip or funds. The second and final sign-off of a trade occurs when the member firm receives the clearing computer printout of the details of all daily trades. Errors can be corrected at both stages by mutual consent of buyers, sellers and the exchange.

4.33 Exhibit C shows a copy of the Madras Stock Exchange's three-part Memo of Confirmation, which is similar in function to the TSE's Trading Floor Ticket. The MSE form is larger but covers the same basic information and has some spare boxes. This form is a key element in the MSE's implementation of improved automation in support of trading and settlement.

V. MARKET AUTOMATION

Inter-Market Information

5.01 The project to link 11 Indian stock exchanges for the electronic display of share prices is a very positive move. India is somewhat unique in that this plan shows a lack of destructive "sibling rivalry" between the exchanges of one nation.

5.02 Briefly, the PTI will undertake the project, which will consist of local and combined displays of prices (Exhibit E). The local displays will show 12 issues' last, tick, bid and offer prices as currently available on that exchange. This display will change about every minute so that it can cycle through 192 different local scrips in 16 minutes. The combined inter-market display can only show four scrips' last, tick, bid and offer prices in four different markets. This display will change at two minute intervals so that the proposed list of 30 inter-market scrips will have a 16-minute cycle time. Important market news and the BSE Sensitive Index of Equity Prices can also be displayed.

5.03 The six stock exchanges at Bombay, Calcutta, Madras, Delhi, Ahmedabad and Kanpur will enter prices, so each will have both local and inter-market displays. The five exchanges at Indore, Hyderbad, Bangalore, Cochin and Ludhiana will initially only receive the inter-market price display from the other six exchanges.

5.04 The linking of stock exchanges means that regional markets can better serve local investors and speculators because all parties will feel more confident that they are trading at truly competitive prices. This could mean an increase in activity on the exchanges other than Bombay, which in turn could begin to influence the prices in Bombay. However, there is some concern as to whether or not the regional exchanges are prepared to handle the possible increase in settlement activity. At the same time, it is probably much better for regional stock markets to coordinate local trade settlement than to have too much activity funneled through Bombay. Because the regional exchanges are generally much less active than Bombay, any growth in their activity is going to be far more visible than any slowing of growth in Bombay. Thus, the BSE should not hope for any respite from the spectre of a doubling of activity within four years.

5.04 A market information service will be worthless if the data it provides is inaccurate. The main problems in maintaining a credible inquiry service are delays in getting trade information into the system and difficulties in obtaining valid bid and offer prices.

5.05 The only type of system that really solves these problems is one in which trading is done via the computer system. The only system in the world that can handle all trades done in a trading floor continuous market is the CATS of the TSE. CATS is based on an IBM mid-sized computer with special purpose terminals, and has been in operation since 1977. The TSE has sold CATS to the Paris Bourse, which started trading via a computer in June, 1986. The Sydney and Melbourne exchanges of Australia will soon launch trading systems similar to CATS, based on DEC VAX computers and using personal computers as terminals. Their software will also likely be for sale. The important concepts of a CATS are easy to learn, and five systems professionals can build a system in two years.

5.06 These automated trading systems offer markedly superior inquiry services over any system based on floor trading. Thus, inter-market competition is causing exchanges to look at computer based trading systems to provide a better level of client service. Costs in North America and Europe have favoured computer based trading for a decade, but have not been persuasive enough to eliminate traditional floor trading, except in London, England.

5.07 In India at this time, the BSE lacks experience with real time computers and networks, so computer based trading may be too ambitious a first step. It would be prudent, however, to consider it as a future possibility.

Trading Support

5.08 The market information system planned by the PTI is an efficient, low cost and useful system that will satisfy many needs. However, the BSE trading room needs a better trading support system. Because of its size and large number (over 2,600) of issues, the trade data (last, tick, bid and offer prices) on many issues needs to be displayed more frequently than once every 16 minutes. Many exchanges typically provide a constant video display of the same issues in the area where the trading of those issues takes place. As prices change, the displayed data is updated within seconds and traders are kept better informed.

5.09 Such a system would require over 220 video displays to handle the BSE's 2,600 issues if each display consisted of 12 issues. To save both space and expense, the less active issues could be shown on displays using smaller characters, which would allow up to 48 issues to be handled on one video display using the normal standard of 24 lines, with 80

characters per line. The more active issues would use the PTI format of 12 lines of 40 double size characters per line. In this scheme, 10 to 20 displays could be used for active issues and about 50 for the less active issues.

5.10 A trading support system for the BSE is a significant undertaking, but the problems in implementing it are likely to be more political than technical in nature.

5.11 On June 12, 1985, the Patel Committee considered the Tata Consultancy Services (TCS) "Interim Report on Automation of Stock Exchanges" and decided on a sensible trading support system using exchange data entry staff with terminals and VDU's located on the trading floor. The author is unaware of the results of the second phase of the TCS feasibility study which was to cover the evaluation of hardware and costs. For a trading support system the TCS is unquestionably competent to advise the BSE on this topic.

5.12 Technically speaking, the usual approach is to have the data entry stations and the trading information displays connected to a number of minicomputers that are used to edit and format the data. The minicomputers would be linked to a host computer which would have the master files and would accumulate the trade data for the settlement cycle.

5.13 This type of system should be modular in operation so that single failures are not disruptive to the entire system. For example, terminals and minicomputers are low enough in power consumption that battery backup power sources are feasible to allow uninterrupted data collection, even during brief power failures. The larger central host may not be on an expensive supplemental power system, so the trading support system should be able to still perform essential functions, even when the central host computer is not operational. Similarly, there should be an alternative procedure in case there is a failure of one of the minicomputer subsystems.

5.14 As mentioned in para. 5.01, Inter-Market Information, bid/offer data is difficult to keep up-to-date in a trading support system. In the active issues, traders are often too busy conducting trades to inform the data entry clerks that their bid or offer price has changed. In the less active issues, bid/offer prices may depend on an open client order, and it is necessary to know the identification of the bidding or offering broker so that a trade can be consummated expeditiously. Only experience will prove what is really best at the BSE but the last, tick, bid and offer prices for each issue are a good starting point. If needs change, video displays are usually more adaptable than LED (light emitting diode) displays, but the LED displays can be of larger character size and may be more visible in a brightly lit room. Unfortunately, large LED displays for 2,600 issues would take up more wall space than will likely be available in the trading room.

5.15 The PTI inter-market system should be fed data from a BSE trading floor support system, but there is no reason to delay the one for the other. The interconnection can be done after both are running successfully as separate entities. Most importantly, information collection and dissemination must be improved as quickly as possible. Dishonest dealings in the market will diminish rapidly when exposed to public scrutiny through a sound information system.

Clearing and Settlement

5.16 The clearing of scrip and settlement of funds resulting from trades between BSE members is handled by the exchange's sophisticated computer system and the Bank of India, which manages the Clearing House. The BSE's settlement system is as complex as any in the world. Besides the usual netting of scrip and funds, the system handles the carry forward provisions of badla trades, and can handle arbitrarily different buy/sell "making up" prices if the exchange so chooses. Scrip deliveries can be directed through 24 banks which are also members of the BSE Clearing House. The BSE is to be congratulated for having recognized how essential an automated settlement system is to the viability of an active market.

5.17 The most serious weakness in the BSE settlement system is the high proportion (over 25%) of mismatched trades. Fifteen per cent handling errors is normal in a settlement system where both buyer and seller submit transaction summary (souda) sheets after the close of trading. The BSE and its members are having to cope with over 7,500 unmatched daily transactions out of 30,000 reported buys and sells. A significant 10% or more (over 3,000 per day) never get resolved, so the transactions have to be repeated to satisfy the clients.

5.18 The only way to control this debilitating problem is for traders to use three-part souda slips or floor tickets (para. 4.10 - Trade Tickets). Such tickets should be introduced as soon as possible to improve the settlement system as well as the quality of the Daily Official List. This will reduce the workload at the member firms by the removal of souda sheet compilation and most error resolution. The data entry workload will be halved by using multi-part tickets because it will only be necessary to have one entry per trade input into the BSE computer system.

Broker Accounting

5.19 Few of the 420 active BSE member firms are large enough to benefit from using computers to assist in their client accounting. Several firms are using automation and there is a good possibility that they will sell their software and expertise to other firms. If so, computerization is an area best left to entrepreneurs, and one that the

BSE should try to avoid because of the diversity of brokers' needs. The BSE should look for ways in which it can facilitate the development of broker accounting systems, such as promoting standard client identification and improving scrip ownership transfer procedures.

Scrip Transfer

5.20 One topic that clearly frustrates all participants in the Indian equity markets is the difficulty in transferring scrip ownership. (Exhibit F provides a sample of the current transfer form in use at the BSE). It is a tribute to the conservative and patient nature of many Indians that there are any clients willing to invest in the longer term rather than engaging in speculation. Because of all the scrip transfer problems, brokers' commissions for investors are in the range of one to one and a half per cent for local clients, and two per cent for out of town clients, whereas speculators are usually charged less than one half per cent commission. The investor also incurs transfer taxes. Until recently, there was a significant tax incentive, however, in the form of a 50% reduction in capital gains tax if the investor held the security beyond three years (and made a profit).

5.21 Remarkably, investing clients in India have to deal with the significant risk of not necessarily being able to actually gain title to the shares for which they have paid. This can happen because of a combination of simple factors. Companies usually manage their own share registries and hence there is not enough activity or incentive to streamline the procedure. One exception is the Tata group of companies, which all use the computerized Tata Share Registry Limited operation. The Tata group is considered to be good at its task, handling 1,200 to 3,000 daily transfers. For a normal processing of ownership transfer, it takes Tata Share Registry two months to complete a series of tasks which probably add up to 20 minutes of clerical work. Other registrars take even longer than the Tata registry. Added to this time is the delivery times taken between clients and brokers, and from broker to broker. Thus, an investor normally does not acquire his registered scrip until three to six months have passed from the date of settlement. During this wait, he cannot sell, so he can neither take a quicker than expected profit, nor limit his losses by selling out of a losing situation.

5.22 Added to this risk is the chance that the transfer of ownership will be delayed because the registered seller signed off the scrip with a signature which was not identical to the signature recorded at the registry. For example, the registered signature could have been with initials, whereas the typed ownership names on the scrip could be in full. If the seller forgets and signs his name in full, then the transfer is invalid. The registered seller may have sold the scrip eight months ago and the scrip has moved through several brokers and owners without getting registered again. It can be a tortuous and time consuming process to send the offending scrip back through the chain of

brokers to get the registered owner to sign off properly. Another complicating factor is that the seller may be only semi-literate and may change his signature inadvertently. No intermediary party, such as a bank or broker, is allowed to guarantee the signature.

5.23 These types of delays can be crucial in the face of another law which causes a transfer deed to expire once the company closes its books. There is a two month maximum time allowance for transfer deeds dated within two months of the closing date.

5.24 With all of these obstacles, it is decidedly risky to invest in a quantity of shares that might come from several sellers, because one mistake could hold up the change in ownership of the entire lot. If the book closing date passes, all documents have to be signed off again. The sellers, of course, do not appreciate this inconvenience, but are often compensated for their mistakes by being given dividends for stock for which they have already been fully paid. The dividend claiming process is too cumbersome and expensive for the rightful owners to pursue. Gaining true ownership of the shares is their primary concern.

5.25 The above stated problems have been well known to all concerned parties for a long time, yet no relief has appeared in the form of amendments to the offending signature rules.

Stock Holding Corporation (SHC)

5.26 The root of the ownership transfer problem is the long time (two to four months) for registrars to process a valid transfer. In Canada, the few professional transfer agents always processed transfers in 48 hours, even before they were automated. This turnaround time allowed a noncumulative five day settlement cycle to function even in bull markets. In spite of this efficiency and the highly automated accounting and custodial functions performed by brokers, the cumbersome nature of certificate handling was recognized and the Canadian Depository for Securities was established during the 1970s and early 1980s (Exhibit G).

5.27 India has even more pressing reasons to immobilize the certificate handling process, and there have been many learned papers written in the past eight years promoting the concept of a Stock Holding Corporation (SHC).

5.28 The late Mr. P.J. Jeejeebhoy's 1979 paper, "A Blueprint of Economic Democracy", elegantly describes the functions and advantages of a Stock Holding Corporation. His description of the existing share transfer system aptly concludes with the following paragraph:

5.29 "This tortuous share transfer system, if at all it could be called a system, would almost seem to have been deliberately devised as an unending obstacle race. It makes it as difficult as may be for the stock market to function, while the man-in-the-street who buys and sells shares and invests his savings in joint stock enterprise is confused and confounded and all are bothered, badgered and harassed".

5.30 More recently, the Tata Central Share Department and TCS presented "Innovations in Share Accounting" to the High Powered Committee on Stock Exchange (also known as the Patel Commission). This paper contains specific details and recommendations that reflect Tata's professional approach to the duties of a share registrar. Their goals are commendable and illustrate how even the present structure, with only minor legal changes, would allow a professional registrar to offer an acceptable level of service to shareholders. Unfortunately, the Tata Central Share Department is only one provider, albeit a significant one, of share registrar services. A more comprehensive solution is needed if India is to have a viable capital market.

5.31 Five students[1/] at the Indian Institute of Management in Ahmedabad submitted a report to Professor S.C. Kuchhal on December 3, 1985, in partial fulfillment of the requirements of the course "Seminar on Capital Markets". This report, entitled "Relevance of Stock Holding Corporation in India", serves as a reasonable pre-feasibility study of an SHC, and also shows considerable awareness of the problems involved in inserting an SHC organization into the existing fabric of the financial industry in India. The authors listened well to their advisors[2/] and recognize that while an SHC would be a valuable contribution to the infrastructure of Indian capital markets, it is not by itself the panacea for all ills.

5.32 This report is a useful and still fairly current contribution to the literature on an Indian SHC. If anything, the report underestimates the necessity of an SHC for capital markets to function properly and the irrelevance of the SHC operational cost to the decision to proceed. The report's greatest value is probably in raising the issue of SHC ownership and behaviour restraints to obtain the confidence of participants.

1/ Roopa Phene, Latika Monga, Vivek Kudva, Jay Toshniwal and Venkat Narayanaen.

2/ M.R. Mayya, Executive Director of the BSE; M.N. Kampani, J.M. Financial and Investment Consultancy Services Pvt. Ltd.; and Professor S.C. Kuchhal, IIM, Ahmedabad.

"There must exist:

- credibility of the SHC regarding integrity, honesty and safekeeping capability. This can be ensured if a SHC is set up as a "Government/Public Sector Corporation" with 10% ownership by the Governments and/or various Stock Exchange Associations and by prohibiting it to invest and transact on its own account. Thus the risk of SHC speculating on its clients shares is eliminated.

- acceptability of SHC as a member by companies whose shares SHC shall hold in trust for its clients. This can be achieved over a period of time if necessary safeguards are taken to ensure that the companies are kept up to date on the composition of the SHC's shareholding in those respective companies".

5.33 One significant issue that is merely mentioned in passing is that the largest portion of share transfer time delay is due to the process of approval by company directors. This power of directors to refuse to transfer ownership is an anachronism in a country as democratic as India, and would be a major obstacle to an SHC reaching its goal of improved efficiency of the Indian capital market.

5.34 One of the most current reports on an SHC is the "Organization and Systems Study" by TCS on behalf of seven financial institutions.[3/] This is a good report which has initiated the establishment of a legal entity to carry out its recommendations. This is a significant and commendable first step towards improving the handling of scrips. The following two excerpts from the report clearly outline that the mandate of both the document and the new corporation it has prompted pertains to the custody and handling of scrips for the seven financial institutions. This narrow focus produces an attainable and saleable objective for conservative institutions.

5.35 An immediate need has therefore been felt by the Financial Institutions to establish an independent SHC. The Institutions propose to adopt a phased approach to the development and functioning of the Corporation.

5.36 In Phase I, this Corporation would be held by the Financial Institutions and would take over the functions currently performed by the Agents in relation to purchase and sale of securities and safe custody of scrips.

3/ UTI, ICICI, IDBI, GIC, LIC, IFCI and IRCI

5.37 In Phase II, the SHC would enlarge its institutional membership to include other investment institutions, large investors as well as companies listed on the Stock Exchanges.

5.38 Phase III would render the Corporation open to the public. This phase would also explore the possibility of simplifying the procedures associated with the investment in securities including abolition of share certificate and transfer deeds.

5.39 TCS was invited to carry out an Organisation and Systems Study as a prelude to setting up the Corporation. TCS conducted a detailed study of the prevailing structures and systems of the Institutions and Agents and formulated recommendations for Phase I of the Corporation.

5.40 In Phase I, it is envisaged that the SHC would have offices at Bombay, Delhi, Calcutta, Madras and Ahmedabad. The recommendations in the above areas would be evolved to suit each location depending on its volume of operations.

5.41 Clarity about the nature of operations envisaged for the proposed Corporation in Phases II and III would emerge after the completion of Phase I. Further, the execution of Phases II and III would entail amendments in existing legal procedures and formalities. It is therefore felt that a study for Phases II and III should be deferred till such time as the Phase I recommendations have been implemented".

5.42 Phase I of the SHC is expected to provide improved scrip custodial services for the seven institutions at a lower cost than the current charges by the banks. The project's schedule expects 1988 to be the year that each institution will move its scrip to the SHC as each institution's holdings pass a rigorous fiscal year-end audit. If the experience in the U.S. and Canada is repeated in India, getting an acceptable audit could be a formidable obstacle. It will likely be three to five years before Phase I can be considered successfully accomplished. At that time (1991) there may be less interest in expanding to Phase II. Phase III, which will finally address the problems posed by many scattered individual shareholders, will not have a chance of being implemented before 1995. Another eight years would be too long for Indian capital markets to be handicapped by the "tortuous share transfer system", as it was labelled by the late Mr. P.J. Jeejeebhoy in 1969. By 1990, there will be twice as much scrip to be handled twice as often.

5.43 That little has happened is not surprising when one considers all of the institutions, banks, companies, brokers and stock exchanges, as well as the different governmental agencies, that must be involved in the successful implementation of a comprehensive national SHC. It takes strong, dedicated, tenacious leadership to bring an SHC to life. While committees and boards are necessary evils, one remarkably skilled person has to accept this as their life's challenge and make the seemingly impossible happen.

5.44 There is a pressing need for other groups to begin work on local SHCs that will address the needs of public investors in each region. It took 10 years for the Depository Trust Corporation in New York and the Canadian Depository for Securities in Toronto to begin to provide functional benefits to investors.

5.45 If present positive attitudes in India prevail, it is conceivable to hope for the first regional SHC to be functioning within five years. These regional SHCs can then link to each other to gradually form a national system which will serve the needs of all parties involved in the ownership and transfer of fungible investment instruments. There is the critical need today for an SHC that services more than just institutions, yet none will exist until someone takes the first step towards its establishment. It will be at least five years after this beginning before the SHC will contribute any relief to the ownership transfer problems.

5.46 Therefore, it is imperative that work commence on a noninstitutional SHC as soon as possible. Until an SHC for client holdings is established in Bombay, it is pointless to try to discourage speculation while the present signature regulations exist.

Standards

5.47 The BSE has already introduced some standard procedures which are essential for automation. Member firms use three-digit clearing identification codes to minimize confusion, and these same codes can also be quickly noted on settlement forms or possibly trading tickets.

5.48 Listed issues are also identified by three- to five-digit numbers, with the 63 more active specified stocks being exclusively three digits. This system provides an excellent standard for efficient data entry by skilled operators and circumvents linguistic differences, but it is usually considered awkward for people who think in terms of the name of the company.

5.49 In North America and Europe, symbol standardization is is more alphabetic, such as IBM (International Business Machines), IR (Ingersoll Rand), and so on. These initials are more easily and more accurately remembered than a number. Because there are 26 letters in the English alphabet, symbol identification of an issuing company needs only be three "positions" to produce over 17,000 possible combinations. Four-letter symbols would allow more than 400,000 different combinations. Suffixes are appended to the basic common share symbol to indicate special issues such as rights, warrants, preferred shares, and so on (for example, ABC.Rt or GE.Pr.C).

5.50 The BSE should reconsider the use of digits for identifying issues if it plans to distribute market data to a wider audience in India by means of a computer based terminal system. If BSE issues are to be of interest to overseas investors and are to be carried on the international Reuters market information service, alphabetic symbols would be mandatory and would need to conform to international standards. It appears that the PTI inter-market information system will use a six character short name to identify issues.

5.51 The one area at the BSE where there is no standardization is in the identification of clients. This is a significant problem in a country with a sizeable percentage of illiterate people who may nevertheless be investors. This is an acute problem in ownership registration and transfer, and should be considered a sub-project in any SHC promotion.

Financing of Automation

5.52 It is commendable that the charges to clients for stock exchange transactions are as low as they have been in India. Unfortunately, there is an invisible cost to clients because of the lack of good pricing information; for example, their trade price may not have been as favourable as it could have been because of lack of information. It will cost a lot for computer systems and staff to improve the quality of the market by providing better market information. Ultimately, the listed companies or the people who trade on the exchange must bear the expense.

5.53 The BSE listing fees are already a little higher than at other exchanges, and account for a large segment of the annual BSE budget. Typically, annual transaction fees exceed listing fees, but at the BSE they are only 20% of the size of the listing fees. Thus, it would seem logical that the added cost of automation should be funded from transactions. Since all exchanges in India will eventually need to implement some form of automation to better provide market information, perhaps they should all impose an identical increase in transaction fees for this purpose. Ideally, it is least painful to obtain resources indirectly such as through interest on escrow funds.

FINANCIAL TIMES
EUROPE'S BUSINESS NEWSPAPER
No. 30,174 Tuesday March 3 1987 D 8523 B

London to close stock trading floor

By Clive Wolman in London

THE London Stock Exchange decided yesterday to close down its trading floor – the main venue for transactions in UK company shares and Government securities since the construction of New Jonathan's Coffee House on Threadneedle Street in 1773.

A working group has been set up to consider future use of the 25,000 square feet area which is next to the Bank of England. But a final decision is expected only at the end of the year, which will allow the floor to continue in use at least until early 1988.

The rapid decline of the trading floor began on October 27 of last year, when the "Big Bang" deregulation was implemented. This included the introduction of an electronic price and trading information system, which facilitated trading over the telephone, and the abolition of the separate role for stockjobbers who operated mainly on the exchange floor from their hexagonal "pitches."

In September, the number of firms with pitches increased from 19 to 28 as few were willing to bank on the demise of the floor under the new regime. Heavy refurbishment costs were incurred and the firms paid rent for their pitches up to three years in advance.

On an average day before Big Bang, 1,800 to 2,000 stockbrokers and jobbers would mill around the floor, exchanging information and carrying out trades. Now, the stock exchange estimates, that figure has fallen to between 200 and 300.

Of these, many will leave when their firms have set up proper telephone trading floors. And most of the remainder are users of the traded options market where trading, by means of open outcry, will continue in a single physical location, possibly to be shared with the financial futures exchange.

Among the options to be considered by the working party, which will be led by the exchange's property and finance committee, are the renting out of the floor as a single unit or its conversion into smaller offices. As the floor is separate from the adjacent stock exchange tower, demolition and redevelopment are also possible.

Centuries-old era to end when London closes floor

Reuter

LONDON

The London Stock Exchange will close its trading floor for equities and Government bonds, ending almost three centuries of face-to-face dealing.

Exchange official Luke Glass said the floor has been almost deserted since the switch to electronic trading as part of last October's Big Bang deregulation of London's financial markets.

"In terms of physical markets, it's the end of an era in London," he said.

The exchange's council has set up a committee to report on other uses for the building by the end of this year. In the meantime, the few traders who still want to use the floor may do so.

The current building was opened in 1973, but trading has taken place on the site since 1801, Mr. Glass said.

Exchange sources said one proposal is to tear down the building and erect a tower block on the site, which is in the middle of London's financial district.

Other ideas are to convert the area into an exhibition centre or to open a restaurant there. Last year, the building was re-equipped and updated at a cost of $4.7-million (U.S.).

Mr. Glass said exchange officials were surprised at how quickly traders converted to electronic dealing through the exchange's computer linkup. The system was plagued by breakdowns in its first month of operation but has recovered and performs well, traders said.

Most major market players have retained only a token presence on the trading floor, and others have withdrawn.

"The decision is no surprise — the floor is like a morgue," said Tim Coghlin, head of equities at Barclays de Zoete Wedd. He said his firm has only 25 people on the floor, many of them trainee dealers, compared with 140 last year.

The exchange intends to retain a trading floor for traded options.

THE GLOBE AND MAIL

TUESDAY, MARCH 3, 1987

Bombay Stock Exchange -- "A Look Into the Future"

The number of transactions as well as the volume of business has been steadily rising of late. If this trend persists, and there is no reason to believe otherwise, the load on the computer as well as the paper work of the members will increase tremendously. Therefore, it will be interesting to think ahead and look for newer methods to cope up with the increased workload.

The basic element in the whole set up is the transaction that is reported. Ways must be found out to ensure that the details of a transaction are entered into the computer system at the same time and from the same place where the transaction has originated, that is, the trading ring itself. For this purpose, the onus of reporting has to be fixed on one of the parties to the transaction, say always the seller. He will be keeping with him a pad of sauda slips in triplicate wherein he will fill the other details of the transaction like the number of the buying broker, the code number of the security, the quantity and the rate as soon as the transaction has been entered into. One copy of the sauda slip will be deposited by the selling member into a receptacle in the trading hall from where the information will be directly keyed in to the computer centre. One copy of the sauda slip will be given to the buyer for his record and the other copy will be retained by the seller. The advantages of such a system are many. First, there is no need for each member to write out all the saudas in the sauda sheet at the end of the

day for submission to the computer centre. Also there is no question of any mismatched transaction arising and all the botheration of going round to correct such mismatched entries will be avoided. As the transaction data is available on-line, the data can be put to various other uses. The price movements as well as the volume of turnover can be easily processed by the computer and displayed back instantly in the trading ring and offices of members. The same data can be channelled to the trading rings of other stock exchanges also. The data can also be used to check instantaneously excessive activity in any scrip by any member and also for temporary suspension of trading in any security showing unhealthy fluctuations in price during the market session. As soon as the market session is over, the computer can print out the day's price list as well as give to each member full details of all his buying and selling transactions during the day. As far as the stock exchange administration is concerned, the data available with the computer at the end of the market session will enable them to exercise proper and effective control of the market and also to call for the correct margins wherever necessary.

The system requirement for doing all these would be a modern computer with enough memory capacity and which is capable of receiving and sending on line data from/to a large number of terminals. The trading hall of the Exchanges will have to be suitably enlarged and modernized for this purpose.

Exhibit C

MADRAS STOCK EXCHANGE LTD.

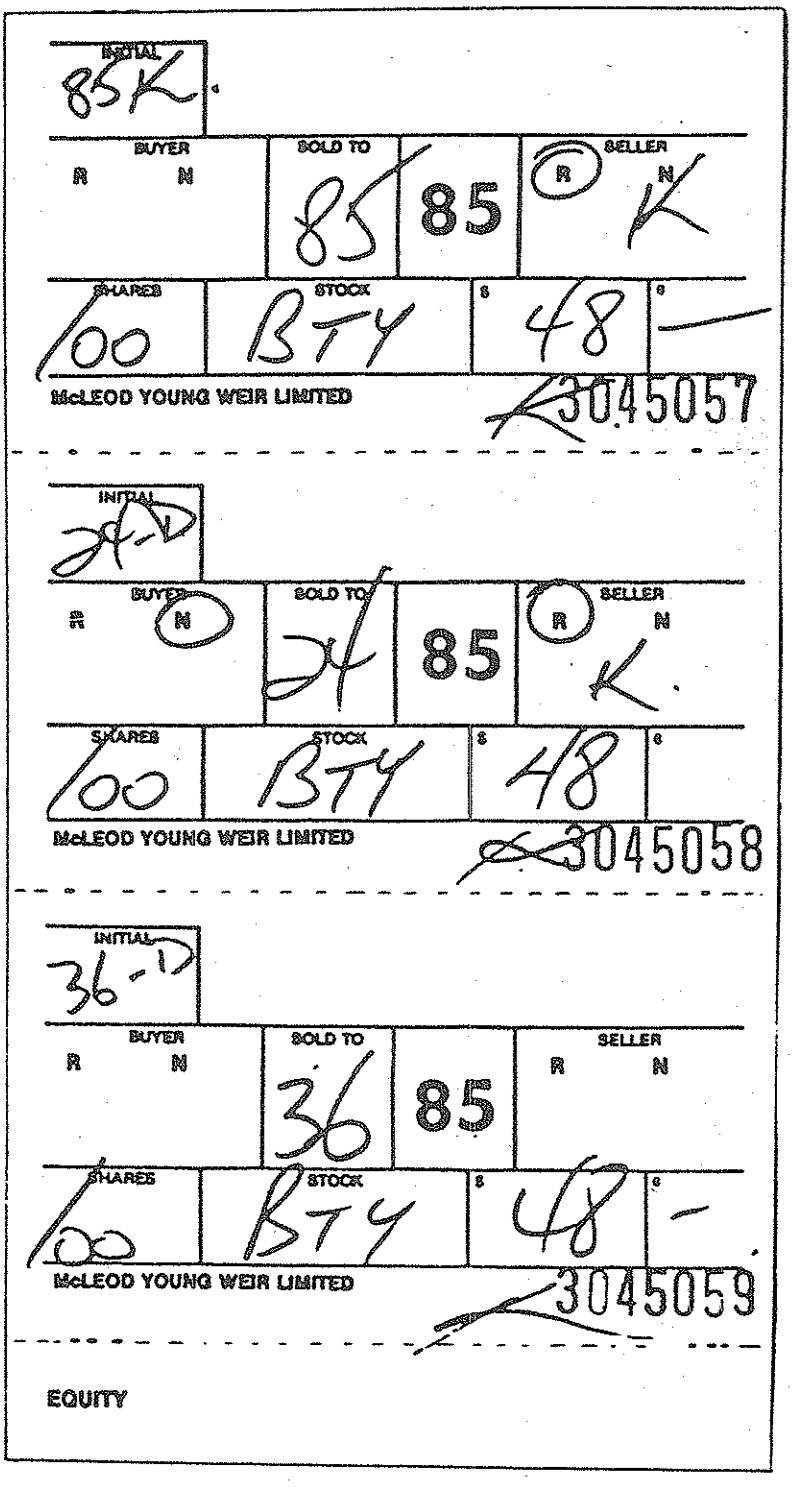
MEMO OF CONFIRMATION

QTY.	SECURITY	RATE	CODE		REM (4)	ALPHA	BETA
			SELLER	BUYER			

FOR MSE USE ONLY	
REF. NO.	SEC. CODE

INITIALS		DATE

Madras Stock Exchange Memo of Confirmation



Registered trader "K" (market maker or jobber) of firm 85 sold 100 shares of BTY at $48.00 from his professional account to fill his firm's client's order.

Registered trader "K" of firm 85 has sold 100 shares of BTY at $48.00 to trader "D" of firm 24, who was buying for the account of a non-client.

Trader "K" of firm 85 has sold 100 shares of BTY at $48.00 to trader "D" of firm 36, who also was acting for a client.

Canadian Floor Trading Ticket

Exhibit E

SPECIMEN DISPLAY - BOMBAY LOCAL

	LAST	BID	OFFER
A.C.C.	373.00 -	371.50	374.00
CENTRY	1645.00 +	1640.00	1650.00
GNFC	58.50 +	57.00	60.00
GSFC	1515.00 +	1500.00	1525.00
GW RYN	82.50	80.00	82.50
H.MOTR	123.50 -	121.00	124.00
L & T	192.50 +	190.00	192.50
PR.AUT	695.00 -	680.00	700.00
RELINC	342.50 +	341.00	343.50
TISCO	1375.00 +	1375.00	1390.00
TELCO	765.00 -	760.00	770.00
SPIC	181.00 +	178.00	181.00

SPECIMEN DISPLAY - BOMBAY INTER-MARKET

		BOM	CAL	MDS	DEL
A.C.C.	L	373.00 -	372.00 +	372.50	374.00 +
	B	371.50	371.00	372.50	372.00
	O	374.00	375.00	372.50	375.00
CENTRY	L	1645.00 +	...	1640.00 +	1648.00 -
	B	1640.00	...	1635.00	1640.00
	O	1650.00	...	1648.00	1652.00
GNFC	L	58.50 +	...	57.00 +	58.50 -
	B	57.00	...	55.00	56.00
	O	60.00	...	58.00	60.00
GW RYN	L	82.50	81.00 +	81.00 +	81.50 +
	B	80.00	79.50	80.00	79.50
	O	82.50	81.50	82.00	82.50

Press Trust of India (PTI) Local and Combined Exchange Price Displays

PRESENTED THIS DAY OF 07 XI 86

Date of presentation to the prescribed authority

SHARE TRANSFER FORM

(Pursuant to section 108 (1A) of the Companies Act 1956)

FOR THE CONSIDERATION stated below the "Transferor(s)" named do hereby transfer to the "Transferee(s)" named, his (their) executors, administrators and assigns the shares specified below subject to the conditions on which the said shares are now held by the Transferor(s) and the transferee(s) do hereby agree to accept and hold the said shares subject to the conditions aforesaid.

Full Name of Company	BAJAJ AUTO LIMITED		
Number and full description of Shares	No. in Figures -5-	Number in words FIVE ONLY	Description EQUITY/PREF. SHARES
Distinctive Numbers	596719 - 596723		
Whether the said shares are dealt in or quoted on a recognised Stock Exchange § If reply to above is yes, name of Stock Exchange should be indicated	YES, BOMBAY STOCK EXCHANGE		
TRANSFER FROM TRANSFEROR(s) Names (s) in full (Preferably typewritten or in block capitals)	SMT. HASUMATI DINESH ACHARYA SHRI DINESH MOTIRAM ACHARYA		
† CONSIDERATION (in words)	Rupees Twenty Three Thousand only.		
TRANSFER TO TRANSFEREE (s) Names (s) in full (Preferably typewritten or in block capitals) (The name/names may be filled in before the instrument is lodged with the Company for Registration)	MRS. ANJINI PATIL MR. SHASHANK PATIL		

Sample

Signature of Witness: M. PRABHAKARAN

Name (as indicated by the signature) in block letters: J.M. FICS PVT LTD

Address: Maker Chambers III, Nariman Point, BOMBAY-400 021

‡ Signature (s) of Transferor (s): H. D. Acharya, D M Acharya

Signature of Witness: M. GANESH

Name (as indicated by the signature) in block letters: J.M. FICS PVT. LTD

Address: Maker Chambers III, Nariman Point, BOMBAY-400 021

‡ Signature (s) of Transferee (s): Aspatil, Sipatil

Dated this 18 day of November One thousand nine hundred and Eighty Six.

PARTICULARS OF TRANSFEREE(S)

* TRANSFEREE (S)	Shri/Smt or Kumari	OCCUPATION	ADDRESS	FATHER'S/HUSBAND'S NAME
	Mrs.	Services	C-21, Kira Nagar	Husband's name Mr. Shashank Patil.
	Mr.	Services	Santacruz (W) S.V. Road,	Mr. Chandrakant Patil
			Bombay-400 054	

§ 1. If the shares are listed on more than one recognised Stock Exchange, name of any one such Stock Exchange only need be indicated.

† 2. The consideration money set forth in a transfer may differ from that which the first seller will receive owing to subsequent sales by the original buyer.

‡ 3. Signature by thumb impressions marks etc. should be attested by a J.P., Magistrate, Notary Public or a similar authority holding a public office and authorised to use the seal of his office.

* 4. Particulars in respect of each transferee should be entered in the same order in which transferees' names occur above.

Entered in Register of Transfers No. _____

Approved

Date _____

Folio _____ Specimen Signature(s) of Transferee(s)

Aspatil

Sipatil

Note:Names must be rubber-stamped preferably in a straight line. Chronological order should be maintained. Broker's Clearing Number should be stated when delivery is given by a Clearing Member Bank.

Name of Delivering Broker or Clearing Member	Date	Name of Delivering Broker or Clearing Member	Date

LODGED BY M/s.Jamnadas Morarjee & Co

Full Address { 5A Hamam Street,
BOMBAY-400 001

POWER OF ATTORNEY	PROBATE	LETTERS OF ADMINISTRATION
DEATH CERTIFICATE		

Registered with the Company under

No. _____ Date _____

(Signature (not initials) of Broker, Bank, Company or Stock Exchange Clearing House)

Printed for The Stock Exchange, Bombay.

The Depository and Clearing Corporation

FACTS

WHAT IS CDS?

A national, inter-industry enterprise aimed at improving the operational efficiencies of securities clearing and safekeeping functions, as well as securities transfer functions related to the Canadian capital markets.

WHO SPONSORS AND USES THE FACILITIES OF CDS?

- Major Canadian chartered banks
- Major trust companies
- Members of the Toronto and Montreal Stock Exchanges
- Members of the Investment Dealers' Association of Canada

WHY WAS CDS CREATED?

- Incorporated in 1970 as a private company under Part I of the Canada Corporations Act, continued under the Canada Business Corporations Act in 1980.
- To limit or reduce costs of settlement procedures associated with trading in the capital markets.
- Reduce paper volumes stemming from the issue, holding and transfer of securities certificates.
- Accelerate the movement of securities between buyers and sellers.
- Reduce financing costs associated with certificate deliveries.
- Help financial industry remain competitive in the international marketplace.
- Reduce the risk of loss through misplacement, counterfeiting, or theft of securities certificates.
- Provide an environment that will enable full computerization of securities market processing.

WHERE IS THE DEPOSITORY TODAY?

CDS currently operates in Toronto, Montreal and Vancouver. As a securities depository and clearing house for processing securities transactions, CDS processes settlements for all equity trading on the Toronto and Montreal stock exchanges, and most of the over-the-counter trading in unlisted equities and an increasing number of debt securities between broker/investment dealers, banks and trust companies, who are CDS participants. CDS provides electronic ledger facilities for safe, centralized immobilization of securities and more efficient post-trade processing for its participants.

CURRENT OPERATING STATISTICS

Value of securities on deposit as at Aug. 30, 1986: **$55.8 billion**

Number of Equity Issues Eligible for Deposit as at Aug. 30, 1986: **4142**

Number of Debt Issues Eligible for Deposit as at Aug. 30, 1986: **890**

Current CDS Staff: Toronto = 331
Montreal = 44
Vancouver = 19

THE CANADIAN DEPOSITORY FOR SECURITIES LIMITED

The Canadian Depository for Securities Limited (CDS) is an inter-industry organization owned by seven major Canadian chartered banks, six major trust companies, and the members of the Montreal Exchange, the Toronto Stock Exchange and the Investment Dealers' Association of Canada.

Incorporated on June 9, 1970, CDS was originally established as a securities clearing corporation, with the objective of increasing the efficiency of the clearing system to a point where the reliance on physical certificates could be reduced substantially.

CDS currently operates securities clearing centres in Toronto, Montreal and Vancouver.

The major mission of the Corporation is to contribute to improved efficiency in the financial sector of the Canadian economy through provision of automated facilities for the clearing of securities transactions and the custody of securities.

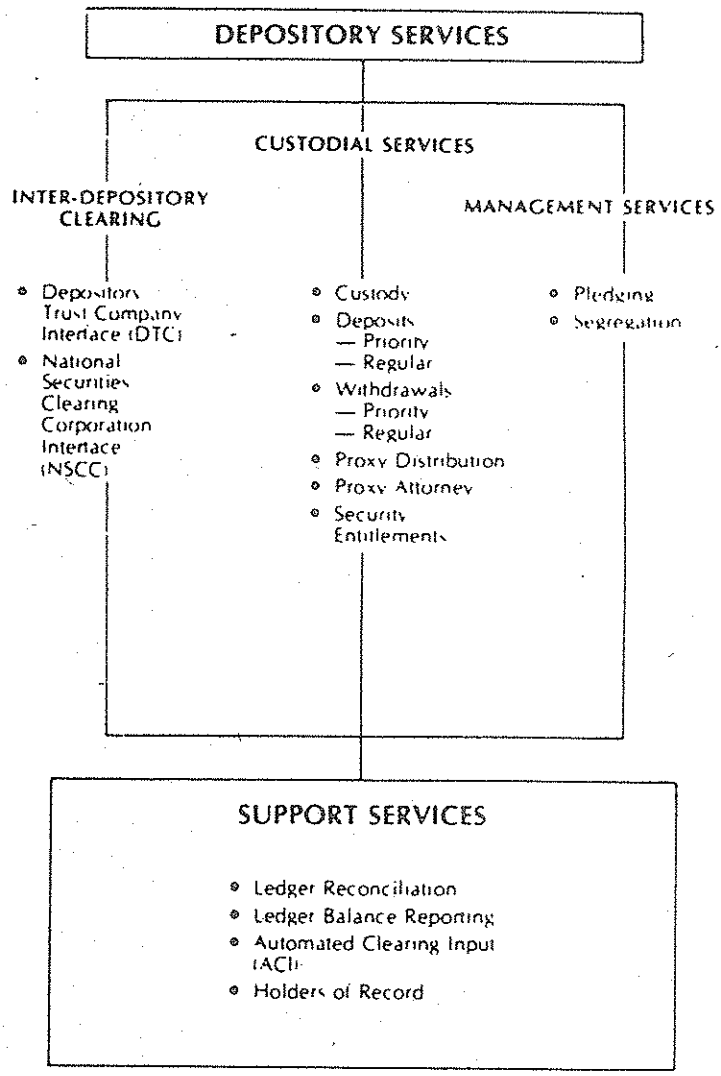
To this end CDS currently provides a full range of services in four main operational areas. These are:

CLEARING SERVICES:
which facilitate the reporting of trades, confirmation of the trade details between the parties to the trade and the eventual exchange of monies for securities.

DEPOSITORY SERVICES:
which include a custodial service for securities and various management services which allow the owners of these securities to use them while in the custody of CDS.

SECURITY INFORMATION SERVICES:
which provide comprehensive information on both Canadian and U.S. securities.

COURIER SERVICES:
which expedite the physical movement of securities certificates throughout Canada and the U.S.



DEPOSITORY SERVICES

As a depository, CDS provides its participants with secure custodial services for securities. Participants transfer their securities into CDS's nominee name for credit in CDS's ledger system. CDS, as nominee, becomes the shareholder of record for all securities in its custody. Participants, who maintain effective ownership of their deposited securities, are then able to use their ledger positions with CDS to effect a variety of activities. The depository services offered by CDS can be grouped into three major categories:

— Custodial Services
— Management Services
— Depository Support Services

CUSTODIAL SERVICES

The services associated with CDS's custodial facility are designed to allow securities to be moved into, retained in, and moved out of the CDS ledger system according to the needs of the participants.

Custody

This facility allows participants to retain securities in CDS custody without relinquishing control of their right to the entitlements associated with the securities.

Depositing to a Ledger Position

A participant deposits securities at CDS by having them transferred into CDS's nominee name "CDS & CO.". This may be done by means of a REGULAR DEPOSIT or by means of a PRIORITY DEPOSIT. A regular deposit requires 48 hours before the amount of the deposit is credited to the participant's account. A Priority Deposit is credited the same day it is received by CDS.

Withdrawal from a Ledger Position

A participant may withdraw physical stock or bond certificates from the ledger system. This may be done by means of a REGULAR WITHDRAWAL, with the certificates available on the third day following receipt of the request by CDS.

When the certificates are required as quickly as possible, they may be withdrawn by means of a PRIORITY WITHDRAWAL. In this case, the certificates are available either the Same Day or the Next Day, depending on the participant's instructions.

MANAGEMENT SERVICES

These services allow participants to manage the ledger positions held through the custodial facility and to use these positions to satisfy various business functions.

Pledging

The facility known as PLEDGING allows participants to use their BBS balances as collateral for call loans with those BBS participants who accept book entry pledges through an on-line terminal network.

Segregation

CDS allows participants to separate their ledger balances into various sub-accounts through the facility known as SEGREGATION. The movement of the balances between sub-accounts is at the discretion of the participant.

INTER-DEPOSITORY CLEARING

To facilitate participants trading in the United States, and in the New York market in particular, CDS offers access to two systems of electronic securities movement.

DTC Link

The first is CDS's established link with the DEPOSITORY TRUST COMPANY (DTC) of New York. This enables participants to maintain securities balances on deposit with DTC and, via CDS, to direct their use in settling trades with other DTC participants. CDS facilitates the movement of

money between Canada and the U.S. and provides detailed transaction reports of the settlements which take place.

NSCC Link

The second system is that of the NATIONAL SECURITIES CLEARING CORPORATION, also of New York. This interface allows users to participate in the New York clearing system as full members. CDS participants receive trade reports, can confirm trades and may settle either from their DTC positions or on a certificated basis. Moreover, CDS provides the capability of utilizing securities on deposit in New York for ledger based settlement in Canada.

DEPOSITORY SUPPORT SERVICES

To supplement these depository services, CDS offers a group of supplementary services.

The LEDGER RECONCILIATION SERVICE provides participants with a machine readable balance of their holdings in the ledger system for reconciliation with their own internal records. Alternatively CDS will accept a machine readable file from a participant and will reconcile the content of this file to the balances held in the depository.

LEDGER BALANCE REPORTING provides a participant with a full accounting of all his ledger positions at a requested date.

The AUTOMATED CLEARING INPUT (ACI) SERVICE supplies transaction information on depository activity as well as clearing activity. As stated under Clearing Services, ACI information can be used for internal reconciliation purposes and to drive a participant's internal updating process.

The HOLDERS OF RECORD facility permits the issuers of BBS eligible securities or their Registrars, Transfer Agents or Trustees to obtain a complete up-to-date list of all CDS participants holding ledger positions in their issues. This includes the total of all holdings of those issues on deposit with CDS.

More information about CDS services can be obtained by contacting the CDS Product Manager for Depository Services.

Toronto: **(416) 365-8400**
Montreal: **(514) 871-2850**
Vancouver: **(604) 685-3705**