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Depository Cost Study--Final Report
The Stock Exchange, Mumbai

Financial Institutions Reform and Expansion (FIRE) Project

US Agency for International Development (USAID/India)
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DISCLAIMER

The forecasts developed in the depository cost model have been prepared by Price Waterhouse LLP (PW) using information provided by The Stock Exchange Mumbai (BSE). As a consequence, PW can assume no responsibility for their accuracy. The forecasts in the model are intended to provide BSE with a better insight into the costs of setting up and running a depository. PW makes no representations or warranties as to the accuracy or completeness of the information contained in this report and shall have no liability for any representations (express or implied) contained herein, or for any omissions from this report.

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ACRONYMS

BSE	The Stock Exchange Mumbai
BISL	Bank Of India Shareholding Ltd.
DVP	Delivery versus Payment
NSDL	National Securities Depositories Ltd.
NSE	National Stock Exchange of India Ltd.
PW	Price Waterhouse LLP
TD	Transfer Deed
USAID	US Agency for International Development

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I. EXECUTIVE SUMMARY

The Stock Exchange Mumbai (BSE) has indicated its desire to establish a depository and has asked Price Waterhouse LLP (PW) to undertake a depository cost study under the Financial Institutions Reform and Expansion (FIRE) Project funded by the US Agency for International Development (USAID).

This study first presents a financial cost model which estimates possible capital expenditures and annual operating costs given BSE assumptions about a depository, the number of participants and the number of transactions it will process. Then it compares the potential savings that could be realized in settling dematerialized trades versus the costs incurred in today's paper-based environment. Cost savings would result primarily from decreased processing costs and opportunity costs currently incurred at settlement, ownership transfer and safe custody.

The model's value lies not in predicting future costs, but rather providing a framework around which an analysis of the costs involved can be discussed by BSE members and other potential participants. Any depository decision will have to gain the approval of the exchange membership and the cost/benefit analysis is an important element.

The Security and Exchange Board of India (SEBI) regulations require the depository to have a net worth of not less than Rs. 100 crore. This report makes no recommendations on the capital structure nor how they Rs. 100 crore will be financed. The cost model only looks at the initial capital expenditure, the yearly operating requirements, and a possible fee schedule to recoup these costs in a reasonable amount of time.

After the costs and a fee schedule are presented, an analysis is done to demonstrate the impacts the BSE depository fees would have on a jobbing broker and how the fees compare to the National Securities Depository Ltd. (NSDL) depository fee schedule. The first comparison is done because transactions netted of today do not incur settlement costs whereas they would under the depository modeled. The second analysis helps answer a broker's question of, "Which depository would it be better to join?"

A. Cost of Setting Up a Depository and Cost Recovery

Given BSE's assumptions, and the hardware and software cost estimates provided by PW, it could cost BSE on the order of Rs. 76 crore in initial capital expenditure to establish a depository. Given the fee schedule developed, the depository reaches break even in year two of the moderate market trading projections and in year one of the optimistic market trading projections. Surplus is generated in the out years and it would be a business decision on the part of the depository promoters of whether any surplus would be returned to participants or if it would be used to generate a return on equity.

B. Cost Savings

Cost savings to the industry would be generated through a reduction in explicit processing costs associated with processing physical paper at settlement, ownership transfer and safe custody and by opportunity cost savings of investors not having their money tied up at settlement or ownership transfer.

1. Explicit Cost Savings

Calculating the explicit cost savings if the number of transactions predicted to run through the depository in 1997 did not have to be physically processed shows cost reduction to the industry on the order of 23%. If all of the trades were to have been in dematerialized scrips for the period of April 1, 1995 to March 31, 1996, up to a 35% reduction in processing costs for the industry may have been achievable.

2. Opportunity Cost Savings

The opportunity cost savings resulting from a depository present even larger savings to the industry, particularly to the investor. Anywhere from three to nine days can be taken off the exchange of scrips and money compared to current settlement practices. Bigger savings result from eliminating the need to send in scrips for ownership transfer which can take 60 or more days in the case of smooth transfer and 165 days or more in cases of objected transfer.

Opportunity cost savings calculated for scrips projected to settle through the depository in 1997 is Rs. 385 crore or nearly 19 times the estimated 20.49 crore in the explicit cost savings. In the case of estimating the opportunity cost savings if all transactions in 1995-1996 had been dematerialized, a potential Rs. 745 crore may have been saved which is more than 10 times the estimated explicit cost savings of Rs. 67.44 crore.

C. Depository Cost Impacts on Brokers

The impact of the depository fee schedules developed in the model is examined against the profile of a jobbing broker, against three average brokers, and against the NSDL fee schedule.

1. Jobbing Broker

It is shown that a jobbing broker, doing approximately Rs. 6,000 crore turnover per year and netting of his positions within each settlement period to avoid delivering or receiving scrip, would incur depository fees of Rs. 11.3 lakhs. This may seem high given that netted off transactions carry no settlement cost in today's market. The depository could change its fee schedule to accommodate a jobbing broker, but movements at the depository and clearing corporation would still occur, so the costs would have to be recovered elsewhere. This is a business decision the BSE would have to look into in developing a fee schedule.

2. *Comparison Against NSDL Fee Schedule*

Three different broker profiles were compared against the NSDL fee schedule to demonstrate why a broker may prefer to join one or the other depository. This analysis is necessary because brokers will ask why they should not join the NSDL depository instead of the BSE depository. In addition, BSE needs a basis of comparison if they undertake negotiation to join NSDL rather than setting up their own depository.

The BSE fee schedule developed has higher one time up front fees but is over four times less expensive than NSDL when the recurring year to year expenses are compared.

D. Intangible Benefits

In addition to the cost implication of the different depository alternatives available to BSE, the intangible benefits of a depository should not be overlooked. An effective depository system can:

- Create a superior infrastructure for trade settlement;
- Instill confidence in the marketplace for investors; and
- Generate additional liquidity for domestic and foreign investors.

II. INTRODUCTION

A. Need for a Depository

The paper-based clearing and settlement systems now in place in India have not been able to successfully withstand the strain caused by the growth in the Indian capital markets that resulted after economic liberalization that began in 1992. The current paper-based system poses the following constraints and risks:

1. Paper work gridlock threatens to slow the growth of the Indian capital markets;

2. Removal of counter party risk, credit risk and systemic risk are not addressed in the current paper-based system; and

3. International institutional investors seeking to invest in India are apprehensive about the reliability of post trade settlement mechanisms that do not conform to standards established by international organizations and committees on clearing and settlement.

In recognition of this, Indian capital markets institutions have undertaken steps to establish a depository system. The National Securities Depository Ltd. (NSDL) has announced plans to begin depository operations for eight to 10 scrips by the end of this month and The Stock Exchange Mumbai (BSE) has declared its intention of starting a depository in 1997.

B. Scope of this Cost Study

In anticipation of undertaking depository development efforts, BSE has requested Price Waterhouse LLP, under the USAID funded Financial Institutions Reform and Expansion (FIRE) Project, to carry out a depository cost study that will:

1. Document current clearing and settlement costs, both explicit costs and opportunity costs, at the following levels:

   * The Exchange;
   * BOI Shareholding (BISL)--the clearing house;
   * Exchange members;
   * Custodians; and
   * Registrar and Transfer Agents.

2. Estimate future transaction costs that could be realized under a depository environment.

3. Perform a cost/benefit analysis which will demonstrate to exchange members what might be the transaction cost savings of a depository.

The Exchange requires this report to provide a logical and reasonable framework around which exchange members can base discussions on the:

1. Costs for the exchange members in establishing a depository,

2. Costs of joint ventures with other depositories, and

3. Costs if the depository project is abandoned.

PW recognizes that cost is not the only decision factor, but it is an important element for making an informed business decision which will require an estimated Rs. 76 crore capital expenditure.

C. Current Clearing and Settlement Costs

Data collection for estimating current clearing and settlement costs was limited to brief reviews consisting primarily of interviews with personnel and the gathering of cost data made available by the organizations and people interviewed. PW did not conduct audit examinations of the management information and accounts of the participants in the study. BSE recommended all institutions to be interviewed and made arrangements for the participating institutions to accommodate the PW team members assigned to information gathering.

Cost data elicited from organizations and people interviewed was used to estimate the actual explicit costs of clearing and settlement in the current paper-based system and the amount of time money was tied up in order to estimate opportunity costs. The cost of capital used to determine opportunity cost is the average bank lending rate of 21% per annum prevailing in India at the time of information gathering.

Out of exchange members, registrar and transfer (R&T) agents and custodians, PW interviewed no fewer than three and no more than seven in each category to achieve a representative cross section. The identity of the organizations and persons interviewed has been kept confidential and the findings in this report do not reflect data provided by a specific organization. Rather the data presented represents an averaging of findings.

Current clearing and settlement costs were estimated on a per transfer deed (TD) delivered basis because this is the piece of paper that moves through the system from the point of sale until transfer of ownership with the final buyer. A per transaction basis was not appropriate because BSE currently has a weekly settlement cycle and as much as 90% of all trades are netted off within the week leaving the broker with a net zero receive/deliver position. Therefore, even though a person might have done Rs. 10 crore in turnover during a week, they could theoretically not have had to deliver or receive a single share because they netted off their position by the end of the settlement cycle and, therefore, do not incur any settlement costs.

D. Estimation of Depository Transaction Costs

In performing the cost analysis of BSE establishing a depository to process transactions, PW has made the assumption that BSE will establish a clearing corporation to interface with the depository. The clearing corporation and depository will each be separate and independent corporations.

To estimate future transaction costs, PW built a financial model, presented in Appendix A, which projects the capital expenditure and annual operating budgets required to establish and run a clearing corporation and depository. The detailed assumptions underlying the model are presented in Appendix B. Transactions projections run through the depository were provided by BSE and are presented in Appendix C. Then a list of probable services to be offered by the depository and a fee schedule to recover costs was developed which shows the revenue generation and break even of the depository. All assumptions and projections going into the model were provided by BSE to PW.

III. CURRENT SETTLEMENT COSTS, OWNERSHIP TRANSFER AND SAFE CUSTODY PROCEDURES

A. Difference Between A+B1 and B2 Scrips

Previously A+B1 scrips were on different settlement cycles. A+B1 scrips had a weekly trading and settlement cycle and all on-market trades were cleared through the Bank of India Share Holding Limited (BISL), the clearing house. BSE would net money and scrip positions of each broker for the week and transmit that information to BISL for the exchange of money and scrips to be conducted on the pay-in and pay-out dates each week. A detailed description of the services and processes of BISL in the settlement process is contained in Appendix D.

It should be noted, however, that only the money settlement of B2 scrips was through the clearing house and these scrips were on a fortnightly trading and settlement cycle. Physical exchange of scrips was on a broker to broker basis. However, effective September 2, 1996, all B2 scrips were put on the same weekly settlement cycle as A+B1 scrips and money and scrip deliveries are processed by BISL.

Given this recent change, emphasis is placed on the costs and times associated with settling A+B1 scrip trades as this will be more representative of the cost of clearing A, B1, and B2 scrips under the new changes in the settlement cycle.

B. Costs Examined

Introduction of a depository will principally change the cost profile of settlement, ownership transfer, and safe custody compared to how they are now conducted in the physical environment. Therefore, these cost areas are the focus of this report. Other ancillary processes such as the issuance of bonus, rights shares and duplicate shares will also experience changing cost profiles but are not examined in depth.

As mentioned earlier, current costs are tracked on a per TD basis as this is the piece of paper that flows through the entire cycle regardless of how many shares are attached to it. Most TDs have a marketable lot attached to them, but there are jumbo TDs utilized by institutional investors although these are not too common according to the industry intermediaries interviewed.

C. Current Role of Intermediaries in Settlement, Ownership Transfer and Safe Custody

The role of BISL, brokers, custodians, and R&T agents in the current system in the areas of settlement, ownership transfer and safe keeping are detailed in Appendices D, E, F and G respectively. It was necessary to develop an understanding of the current systems and times involved in order to determine how the depository would change the cost profiles.

D. Clearance and Settlement

1. Explicit Costs

The costs of clearance and settlement are incurred at the Exchange (Information Systems Department, arbitrators, shortage auction, prima facie bad delivery auction), BISL, broker and custodian. In the case of institutional transactions, there are also costs at the custodian level.

The settlement cost per TD processed for each intermediary is arrived at by taking the annual operating costs of each of these intermediaries associated with clearing and settling trades and dividing it by the number of TDs processed.

2. Opportunity Costs

These are the costs associated with the time a share is tied up in the clearance and settlement process.

a. Retail and Institutional Non Delivery Versus Payment Transactions

For a purchase this is the time from when an investor pays his money to the time he receives his shares. For a sale, this is the time from when the shares are given to the broker until money for the sale is received from the broker. This opportunity cost represents a real cost to the investor because his money is not available for other investment purposes during this period.

b. Institutional Delivery Versus Payment Transactions

For an institutional delivery versus payment (DVP) transaction, the broker's money is tied up from when the broker pays in his money for the shares until when he receives his payment for the shares after delivering them to the custodian. Delivery of shares can either be effected through the clearing house or directly between brokers on a spot basis.

Since custodians often do not accept partial delivery and short delivery is up to 10% for on-market transactions, some brokers carry inventory in shares which they trade actively so they can make up any short delivery and receive payment from the client. When short delivery is filled through auction, the broker keeps these shares for future use in fulfilling short deliveries. The costs of holding this inventory to fill short deliveries is not included in the cost analysis presented in this report even though it can represent a real cost to the broker, particularly depending on the price movements of shares held.

In other cases, brokers break the transaction into two contract notes, say one for 80% of the shares and the other for 20% of the shares. The broker then delivers the 80% after receiving shares on pay-out day and subsequently delivers the remaining 20% after the balance of the shares that were short are received from auction approximately three days later. This can add up to another week before the broker receives payment for this balance 20%.

c. *Negotiated Transactions*

In a negotiated transaction, price and quantity are agreed between two parties and then it is reported to the exchange. The order is not subjected to BOLT's order matching processing (BOLT the BSE trading system). Delivery can either be broker to broker on a spot basis or be through the clearing house.

A detailed discussion of a broker and custodian's role in the trade settlement process can be found in Appendices E and F mentioned previously.

E. Ownership Transfer

To have a scrip registered in his name, an investor must send it to the company or the company's R&T agent. In the case of a retail investor, the investor must do this or sometimes the broker will send in the shares. Custodians send in the shares on behalf of institutional investors.

Retail investors do not have to send in a scrip for transfer unless it is time for book closure or there is a pending corporate action. Therefore, many retail investors hold scrips in "street name" meaning they do not transfer ownership when they purchase the scrip if they intend to resell it. All institutions, except Foreign Institutional Investors (FIIs) and domestic and foreign mutual funds, must resubmit scrips for ownership transfer upon purchase. BSE estimates only 20% of retail investor scrips are sent in for transfer and 95% of delivered institutional scrips are sent for transfer. The scrips sent to the R&T agent are accompanied by a TD.

When an investor, either institutional or retail, transfers shares into his name, there are explicit and opportunity costs.

1. Explicit Costs

a. *Smooth Transfer (No Objection)*

The explicit cost for the retail investor is the cost of delivering his shares in person or by post or courier to the R&T agent or company for transfer. For the purpose of this study, this cost is ignored. However, there are explicit costs for the issuing company represented by the fees they pay to R&T agents or the costs they bear of handling this process in house. Custodians also bear a cost because they submit the scrips on behalf of their clients and track the return.

b. Objections

Brokers and custodians interviewed estimate about 4 percent of scrips submitted for transfer are rejected. The most common reason for objection is signature difference, but there are a multitude of possible grounds for objection. The explicit costs borne are by brokers and custodians are the "objection cells" devoted to handling company objections. BSE also bears some cost as it runs a fortnightly bad delivery session where brokers rectify bad delivery between themselves.

2. Opportunity Costs

The opportunity cost consists of the time the share is not available to the investor for resale. In the case of a smooth transfer, brokers report it takes 60 days from when the scrip is lodged until it is returned rectified. Custodians interviewed, however, report the process to take three to four months from the day the certificate is sent in for transfer to when it is received back duly transferred. Using the brokers' estimates of 60 days, an objected transfer can take 165 days as follows:

60 days	Time from first submission for transfer and receipt of objection from the company
45 days	Time required for rectification (based on interviews with brokers and custodians)
60 days	Time required for transfer to be completed on resubmission
165 days	Total

a. Institutional Investors

Historically TDs could be submitted to brokers for rectification without certificates, but a low percentage of cases were rectified and the certificates had to be subsequently submitted along with the TD. Starting in mid-September per SEBI requirements, certificates along with TDs are to be submitted in order to cut down on the time.

In the case of giving TDs along with certificates, the institution can demand the following from the broker:

1. A collateral deposit for the higher of the purchase price or the current market price of the shares to be held until the transfer is effected. Thus, the broker's money is tied up representing a cost of capital for 37 days per timings reported by brokers.

2. Replacement of objected TDs and certificates with fresh certificates. The broker must either purchase new shares on the market or take shares from his holdings. When the objected shares are rectified at a later date, they become the property of the broker. The broker faces price risk with this case since the objected TDs return to the originating broker up to one year after the trade.

3. The transaction is squared off meaning the broker reimburses the institution for the shares at the higher of the contract price or the current market price and the broker once again faces price risk discussed above as the shares become the investment of the broker.

Detailed reviews of the roles played by the brokers, custodians and R&T agents can be found on the write ups presented in Appendices E, F and G referenced earlier.

IV. DEPOSITORY COST MODEL

The depository cost model presented in Appendix A is designed to give an estimate of the costs involved in starting up and running a depository and how costs can be recovered through charging fees for services provided to participants. The detailed assumptions behind the model are presented in Appendix B.

A. Overview

The pricing of clearance and settlement services assumed in the model has been guided by two primary goals:

1. Recover costs associated with provision of clearance and settlement services; and

2. Provide funding for the continuing enhancement of the services provided by the clearance and settlement agency.

In the case of BSE, this is assumed to require two agencies, a Clearing Corporation and a Depository. The clearing corporation and depository will each be separate and independent corporations. However, the fact there are two legal entities does not necessitate the use of two separate systems to achieve the clearance and settlement functions. The model used here reasonably assumes the existence of a single system to achieve the clearance and settlement functions through the use of a depository. There are several commercially available systems in the marketplace today which combine the functions readily.

In performing the cost analysis in this report, PW has thus made the assumption that BSE will establish both a clearing corporation and a depository. The financial model which estimates possible capital expenditures and annual operating expenditures and the fees charged to recover them is presented in Appendix A. The projections go out for 10 years (from 1997 to 2006). All assumptions and projections going into the model were provided by BSE to PW.

The model's value lies not in predicting future costs, but rather providing a framework around which an analysis of the costs involved can be discussed by BSE members and other potential participants. It would also provide a framework for negotiation if BSE were to approach another depository, such as NSDL or a regional exchange, to establish a joint venture.

The SEBI regulations require the depository to have a net worth of not less than Rs. 100 crore. This report makes no recommendations on the capital structure or how it will be financed. The model only looks at the cost of the depository initial capital expenditure, the yearly operating requirements, and the fees required to recoup these costs in a reasonable amount of time.

B. System Description

The hypothetical system used here to assist in analyzing the costs of BSE establishing and running a depository is consistent with the requirements in the *Depositories Bill No. 29 of 1996* and the *Securities and Exchange Board of India (Depositories and Participants) Regulations, 1996.*

Before going into the system description, it is important to realize this is a cost analysis report, not a depository design document.

The system used as the basis for model is briefly described as follows:

- All trades flowing to the clearing corporation/depository system for settlement from the BSE are locked-in trades which pass directly into the clearing corporation.
- Physical settlement is still conducted through BISL and the costs involved in this are not considered here. At the time of trade, it will have to be indicated if the trade is to be settled in the depository or physically.
- The clearing corporation provides trade guarantee by becoming the counter party to each trade made.
- The trades are edited and held until settlement date.
- There can be either rolling settlement or a five-day settlement period as is currently used. Neither alternative affects the cost profile of the depository. Settlement cycles and settlement dates are business decisions to be left to the regulator and the exchange. No assumptions are required for the costs analysis.
- Beneficial ownership is captured at the time of order entry.
- For institutional trades, the specification of a custodian and its institution at the time of order entry results in a Confirmation being sent to the custodian for its Affirmation in the clearing corporation. An Affirmation on the part of the custodian will result in a settlement between the broker and his client institution via the custodian.
- Investors not utilizing the services of a custodian are assumed to be sub-accounts of brokers acting as custodians. The assumption is each client accessing the depository through a depository participant will have its unique sub account (trading account) under that participant.
- At the time of order entry, the trading account associated with the trade and input with the order will provide the system with the necessary link to the beneficial owner data.

- All trades are cleared and settled on a trade for trade basis. The beneficial owner is associated with each trade in this model. If a netting approach is desired, it would impact the charges for the Delivery Orders which the clearing corporation passes to the depository and the number of inter-participant transactions. The reduction in transaction number would be a factor of the netting percentage selected. The processing costs for netting would not change for those incurred on the trade for trade basis, so the charges would only have to be changed to a different basis to recover the costs.

- All holdings in the depository are as a result of the dematerialization process which requires the depository participant to record the entry in the depository system but sends the physical securities directly to the registrar. No processing of physical securities is performed at the depository.

- Withdrawals from the depository are permitted in the rematerialization process. The withdrawal entry is recorded by the depository participant and the required forms are sent to the registrar and the resulting physical securities are sent directly to the beneficial owner. No processing of physical securities is performed at the depository.

- There is money settlement within the clearing corporation/depository system. However, no assumption has been made on whether the money settlement takes place in the clearing corporation or the depository.

- Corporate actions are controlled by beneficial ownership lists furnished by the depository as of the record date.

- Cash dividends are distributed by the registrar directly to the beneficial owner.

- Bonus shares and other related activities which result in increases or decreases in holdings in the depository will be distributed by the registrar directly to the depository for the benefit of the beneficial owner.

- Hypothecation of depository holdings are permitted at the beneficial owner level.

- All beneficial ownership records are kept on the main depository computer system.

As mentioned, the model projects the possible capital expenditure and annual operating budgets required to establish and run a clearing corporation and depository. A list of probable services to be offered and a fee schedule to recover costs has been developed which shows when the depository breaks even under different scenarios.

C. Software and Hardware

PW has estimated the cost of software and supporting hardware that could be provided to BSE by international companies specializing in clearing and settlement software packages. For purposes of the model calculations, we utilize the most expensive option (vendor 3), but all four are presented in more detail in the following table.

Software and Hardware Vendor	Software (Rs. lakhs)	Appropriate Hardware (Rs. lakhs)	Total (Rs. lakhs)
Vendor 1	1480	1100	2580
Vendor 2	585	1880	2465
Vendor 3	1750	1100	2850
Vendor 4	350	1100	1450

The above rates have been arrived at after considering an exchange rate of $1 = RS 36.

These are not firm price quotations but estimates based on our experience of what this software and hardware might be available for. Obviously any particular package would be subject to negotiation between the promoters and the vendor. PW cannot guarantee that BSE will be able to source either the hardware or software at these prices.

D. Telecommunications

Current BSE brokers on the BOLT network can be linked to the depository through the existing trading network. Other participants and R&T agents that want to be linked to the depository will have to do so through VSAT or some other telecommunications network because the BOLT network only has a range of five kilometers from PJ Towers.

BSE has said the method of communication will most likely be VSAT which connects into the existing BOLT network to interface with the depository. The cost of the VSAT system presented in the model, including networking, have been taken from BSE estimates. It is assumed that the costs will be divided evenly between the depository and the BSE as it is anticipated that the nationwide expansion of BOLT will utilize the same VSAT network. Therefore, the depository has been allocated 50% of total VSAT capital expenditure and operating costs.

E. Financing of Capital Expenditure and Working Capital

1. Initial Capital Expenditure

Since PW does not know how the promoters will finance the initial capital expenditure, it is assumed in the model that the promoters of the BSE depository borrow the money required at an interest rate of 18% per annum which BSE has said to use for the cost of borrowing to finance the depository. Repayment is assumed over seven years. This interest rate offers a proxy for the cost of capital that will be involved in financing the start up whether debt or equity is used. A total of **Rs. 75.74 crore** in capital expenditure is required in year one. See the model in Appendix A for a detailed break out of the components of this figure.

2. Working Capital

The only year there is a deficit, given the cost and fee assumptions underlying the model, is in the first year of Scenario I, the Moderate Case. Working capital is financed on a cash in/cash out basis once break-even is achieved. When there is a short fall in working capital, no assumptions are made on how the short fall is financed.

F. Annual Operating Expenditures

Annual operating expenditures such as employee costs, maintenance, insurance, interest on debt, etc. incurred to run the clearing corporation and depository are estimated based on inputs from PW depository experts, market sources and BSE estimates. The operating expenses along with annual debt repayments are allocated between the clearing corporation and the depository on a 20:80 percent basis as the clearing corporation is less person intensive. In fact, of approximately 146 estimated employees, only four are for the clearing services.

G. Services and Fees

1. Clearing Corporation Methodology

The clearing corporation only offers trade recording, generation of confirmations and delivery order services. The costs associated with these (20% of total capital and operating expenditures per the assumptions stated above) are recovered through a fee charged for each transaction in the clearing corporation. For the calculation of number of transactions passing through the clearing corporation and the per transaction fee, please refer Appendix A.

2. Depository Methodology

Depository costs (80% of total capital and operating expenditures per the assumptions stated earlier) are recovered through three types of fees:

1. Transaction fees: A "transaction" in the depository is essentially an electronic movement of shares from one account or sub account to another account or sub account.

2. Value based fees: This is the safe custody fee and it is recovered on the basis of a percentage of market value of shares in the depository.

3. Period-based fees: These are annual charges to depository participants for categories of services they avail themselves of such as being a member, sub accounting and pledging.

The services provided and corresponding fees assumed in the model are:

List of Services	Type of fee	Amount (Rs.)
Clearing Corporation		
Trade Recording	Transaction-based	2.22
Confirmations	Transaction-based	2.22
Delivery orders	Transaction-based	2.22
Depository		
Entry Fee	One time fee	1,000.00
Account maintenance	Period fee	1,223.60
Sub accounting privileges	One time fee	100,000.00
Sub account maintenance	Period fee	1,223.60
Dematerialization	Transaction-based	0.26
Rematerialization	Transaction-based	0.26
Safekeeping	Value based	0.0013%
Inter participant movement	Transaction-based	0.26
Intra participant movement	Transaction-based	0.26
Pledging facility	One time fee	1,000.00

For detailed calculation of fees in the clearing corporation and depository, please refer Appendix A.

H. Cash Flows

The fee schedule calculated for 1997 for Scenario I (Moderate Case) is frozen and taken for all the years in both scenarios presented in Appendix A.

In 1997 dematerialization transactions in the depository are waived for participants to provide an incentive for dematerialization. In the later years dematerialized transactions are charged a transaction fee.

In 1997, in the Moderate Case, there is a deficit in the cash flows since dematerialized transactions are not charged any fee. However, from 1998 onwards the depository has surplus funds available. The depository can reduce the fee in later years, refund surplus to participants or keep the surplus for generating return on equity. However the model does not make any assumptions on the use of surplus funds as this is a business decision to be taken by the promoters of the depository.

Given the assumed fee schedule, it should be noted the depository generates most of its fee revenue through the annual fees which account for 78% income in 1997 declining to 58% in 2006 in Scenario I (Moderate Case). This means that even if there were no transactions being routed through the clearing corporation and depository for settlement, the depository would break even in year two given the assumptions regarding the number of participants.

These period and value fees could be reduced and the transaction fees could be increased, but once again, this is a business decision on the part of the depository promoters and does not affect the use of the model as a framework for discussion of costs involved and how they could be recouped.

I. Explanation of Fees to be Charged by the Clearing Corporation and Depository

1. Clearing Corporation

All movements in the clearing corporation are charged a transaction fee. They include:

1) Trade Recording Fees: Records the buy and sell sides of a trade in the clearing corporation and generates confirmation to custodian, in the case of institutional trades, to reflect the institution's trade.

2) Confirmations: Sends official notification to custodian of trade with one of its institutions for which it is requested to affirm and settle.

3) Delivery Orders: Generates delivery order to be sent to the depository.

2. Depository

The following services, listed above in the rate card, are envisaged to be offered by the BSE depository:

1) Entry fee: This is a one time fee for a depository participant to join the system.

2) Account maintenance: This is an annual period fee charged to anybody having at least one account in the depository.

3) Sub account privileges: A one time fee of Rs. 1 lakh is charged to depository participants wishing to have sub accounts. This is a large fee since the depository needs to determine through the application and review process whether the participant has the necessary system to handle sub accounting. This will require additional monitoring, audits and increases in liabilities for the depository.

4) Sub account maintenance: This is an annual period fee charged for each subaccount opened by a participant.

5) Dematerialization: Dematerialization of shares is charged a transaction fee. As mentioned, the dematerialization fee has been waived in year one (1997) to provide an incentive for dematerialization.

6) Rematerialization: Rematerialization of shares is charged a transaction fee.

7) Safe keeping: A fixed percentage of fee is charged on the market value of dematerialized scrips in the depository.

8) Inter participant movement: Book entry movement between participants of the depository is charged a transaction fee.

9) Intra participant movement: Transaction movement between sub accounts of a depository participant is charged a transaction fee.

10) Pledging facility: One time fee of Rs 1000 is charged to make this facility available to a depository participant and his sub accounts.

J. Depository Participants

1. Number of Participants

The number of participants is projected by BSE to be 400 in year one and increase by 200 per year until a total of 988 participants is reached as per the table below.

Year	Number of Participants
1997	400
1998	600
1999	800
2000	988
2001	988
2002	988
2003	988
2004	988
2005	988
2006	988

2. *Types of Participants*

The following table shows the detailed break out of projected participants by type of organization. It is not predicted in what order participants will join, but the total 988 participants arrived at by year 2000 are as follows:

Type of Participant	Total No.
Bombay-based BSE Brokers (1)	650
Term Lending Institutions	5
Domestic Scheduled Banks	35
Foreign Scheduled Banks	23
Custodians	14
Non-Banking Financial Companies (NBFCs)	37
Mutual Funds	24
200 New BSE Brokers (in or out of Bombay) (1)	200
Total	988

(1) It should be noted this assumes all BSE members will be participants and there will not be the division between clearing members and fully disclosed brokers as there is in the US.

K. Number of Transactions Flowing Through the Depository

1. *Market Projections*

For the number of transactions on BSE and the resulting percentage flowing through the depository, two market scenarios were provided by BSE and are referred to as the Scenario I (Moderate Case) and Scenario II (Optimistic Case) for purposes of differentiation. Even the "moderate case" is optimistic in regards to assumptions about growth in market capitalization and BSE's share of the total turnover in India given historical India data and the performance of emerging markets in the last 10 years in general. However, as noted above, the model as structured is not overly sensitive to the number of transactions as break even occurs in year two based on the period fees charged and BSE assumptions concerning the number of participants.

In both scenarios, the nationwide expansion of BOLT is an underlying assumption. Detailed projections provided by BSE are presented in Appendix C, but highlights of the main assumptions for each case are as follows:

a. Scenario I (Moderate Case)

This is based on projecting market turnover for all of India and then projecting BSE's market share of total turnover. Current market velocity (market capitalization/market turnover) is projected at to rise from approximately 80% at present to 100% by 2000 and then remains constant at 100% per year thereafter. Market capitalization increases by 6% by December 1996 and then by 20% annually for 1997 through 2000. After that it is projected to slow to an annual increase of 15% per year. BSE's percent of total market turnover grows from 34% in 1996 to 50% by 1999 and then stays constant.

b. Scenario II (Optimistic Case)

Turnover of A+B1 group scrips on the BSE is assumed to double by December 1996, double again by December 1997 and then grow by 20% per year through 2006.

Turnover of B group scrips nearly doubles by December 1996, triples in December 1997 and then grows by 20% per year through 2006.

It should be noted that this scenario does not include projections for turnover for the Indian market as a whole or BSE's percentage of total market turnover like Scenario I does.

2. Institutional Versus Retail Trades Settling Through the Depository

Appendix C gives BSE's assumptions on the percentage of trades through the depository that are institutional versus retail because an institutional trade has an extra confirmation transaction involved. The basic assumptions are institutions will comprise a large percentage of transactions through the depository, particularly in the early years, and the majority of their transactions will be in the A+B1 scrips.

L. Scrips to be Dematerialized

Total number of scrips to be dematerialization in each year are projected as follows:

Year	A Scrips	BI Scrips	B Scrips	Total	% of Mkt Cap (1)
1997	30	20	0	50	49.5%
1998	30	120	0	150	85.0%
1999	30	320	0	350	94.0%
2000	30	400	220	650	95.0%
2001	30	400	570	1000	95.5%
2002	30	400	1070	1500	96.0%
2003	30	400	1570	2000	96.5%
2004	30	400	2070	2500	97.0%
2005	30	400	3070	3500	97.5%
2006	30	400	4070	4500	98.0%

(1) This is the percent of market capitalization represented by the dematerialized scrips, not the percentage of market capitalization held in the BSE depository. For the vale of dematerialized scrips held in the BSE depository, see calculations in Appendix A.

A detailed listing of the actual scrips to be dematerialized in years 1997, 1998, and 1999 is presented in Appendix H.

M. Clearing Guarantee and Participants Funds

The clearing corporation will most likely have a trade guarantee fund and the depository will most likely have a participants fund. Estimation of the size of the funds required is beyond the scope of this report. These will not be a direct cost for either the clearing corporation or the depository because it is assumed the costs of administering these funds will be covered by the interest earned investing the money overnight and any excess interest earned over and above operational requirements will be refunded to participants. Therefore, the costs associated with administration and the interest earned do not appear in the cost model annual operating figures since they are a wash. Cash in equals cash out.

However, the clearing corporation and depository will have to determine the proper size and components of these funds and they may represent a real cost to a depository participant depending on the financing vehicles used to raise the required money.

V. POTENTIAL SAVINGS REALIZED FOR SCRIPS PROCESSED THROUGH THE DEPOSITORY IN 1997

The main savings to the securities industry by the creation of a depository will be in the areas of decreased physical processing cost and opportunity costs. This section looks at the potential savings that could be realized if the trades projected to go through the depository in the Scenario I (Moderate Case) actually do get processed electronically and are not processed physically. The current transaction costs of the paper-based system detailed in Appendix I are compared against the depository costs developed in the model in Appendix A. Calculations for possible opportunity cost savings of the depository are developed in Appendices J and K.

A. Savings in Physical Processing Costs

The depository will change the cost profile of transaction processing in the areas of settlement, ownership transfer and safe custody for shares which are settled in the depository.

1. Settlement

a. Retail Transaction

In a retail trade in today's market that goes to delivery, costs are incurred by the buying and selling brokers, the clearing house and BSE's Information Systems Department (ISD) in processing the settlement. Total estimated cost for handing each TD delivered is Rs. 14.28 on the buy and sell side respectively. Total cost per TD processed, therefore, is Rs. 28.56 per the following calculations:

Party Involved	Processing Cost Per Delivered TD (Rs.)
Buy Side Broker	13.52
Sell Side Broker	13.52
BISL	0.44
BSE/ISD	1.08
Total Processing Cost Per Delivered TD	**28.56**

(1) All cost estimates taken from Attachment 1 of Appendix I.

b. Institutional Transaction

There are two types on institutional transactions, on-market and off-market. An off-market transaction here is considered to be a negotiated deal where broker to broker delivery takes place outside the clearing house (currently called a "bulk deal").

The estimated cost of settlement associated with each delivered TD for an institutional trade is:

Party Involved	Processing Cost Per Delivered TD (Rs.)	
	Institutional On-Mkt Transaction	Institutional Off-Mkt Transaction
Buy Side Broker	13.52	13.52
Sell Side Broker	13.52	13.52
BISL	0.44	0.00
ISD	1.08	0.00
Buy Side Custodian	7.83	7.83
Sell Side Custodian	5.13	5.13
Total Processing Cost Per Delivered TD	**41.52**	**40.00**

The only difference in the cost between an on-market and off-market transaction is the cost of processing at BISL and ISD since off-market transactions are not netted off and delivered through the clearing house.

c. Cost Difference Under a Depository

Given this distinction in back office costs, in the case of processing dematerialized scrips, all of the costs above associated with physical settlement (i.e., BISL, ISD, and custodian) will disappear except for the broker's back office costs. The back office costs of the broker associated with settlement will probably decrease, but for the purposes of this report we assume, conservatively, that they will remain unchanged as the broker will still require staff and infrastructure to interact with the depository.

Therefore, the only costs associated with settlement for dematerialized scrips over and above the costs of the depository processing these trades will be the Rs. 27.02 in broker back office costs (Rs. 13.52 on the buy side and Rs. 13.52 on the sell side). This figure is used below in calculating total savings to the industry.

2. Ownership Transfer

Per the calculations in Attachment 1 of Appendix I, the cost of ownership transfer is estimated to be Rs. 42.76 for a retail TD and Rs. 44.11 for an institutional TD. BSE estimates that 95% of all institutional deliveries result in lodgement and only 20% of retail deliveries result in lodgement.

Transfer costs are incurred at R&T agent level in the case of smooth transfers and at the broker and custodian levels as well in case of objected transfers requiring rectification. All of these costs will disappear in dematerialized scrips because ownership transfer will be automatic in the depository and there will be no problems associated with bad delivery.

3. Safe Custody

As shown in Attachment 1 of Appendix I, the estimated safe custody cost per TD at a custodian is Rs. 2.71. It is assumed a retail customer has no safe custody costs although it is possible such an investor may rent a security box in which to store certificates. Such safe custody costs at the custodian will disappear under a depository scenario because the scrips will be held in safe custody by the depository in electronic form.

4. Savings Under a Depository

a. Estimated Cost to Settle Through the Depository

It is estimated, per BSE projections in Scenario I (Moderate Case) presented in Appendix C, the trades passing through the depository will result in 110.59 lakhs of TDs being delivered (see calculations in Appendix I). This means brokers would incur back office costs of equivalent to Rs. 27.04 per TD that would have been delivered physically for a total cost of Rs. 29.90 crore (Rs. 27.04 x 110.59 lakhs TDs delivered).[1]

The depository, per the cost estimates presented the model in Appendix A, will incur another Rs. 39.42 crore in processing making the total cost to the industry to effect settlement, ownership transfer and safe custody of the dematerialized trades through the depository Rs. 69.33 crore (Rs. 29.90 crore + Rs. 69.33 crore).

b. Estimated Cost to Settle Physically

If these trades were to settlement physical settlement, ownership transfer and safe custody, the estimated cost for this would be Rs. 89.81 crore per the calculations in Appendix I.

c. Potential Savings to the Industry

Given the estimated cost to settle physically versus through a depository, the industry stands to save Rs. 20.49 crore (Rs. 89.81 crore - Rs. 69.32 crore) if the trades projected to settle

[1] It should be noted that in speaking of a broker's back office costs associated with settling a trade, we are strictly talking about the costs associated with a broker's delivery or receipt of scrips at settlement. The processing of company objections by the broker's objection unit, which is also part of the back office, is considered to be part of the costs associated with ownership transfer which will disappear in the case of dematerialized scrips.

through the depository in 1997 actually do. This represents a cost reduction of 23% for the industry.

B. Opportunity Cost of Settlement

The largest savings, however, of dematerializing scrips will be the opportunity cost savings. In the current paper-based system, an investor buying or selling a scrip has money tied up at two stages: trade settlement and ownership transfer. For analysis of this cost, the amount of money tied up, the length of time the money is tied up, and an interest rate have to be determined.

For settlement at trade time, different timings could occur depending on the type of trade (retail, institutional non-DVP, institutional DVP). A detailed analysis of possible timing differences between physical and depository settlement of the trade types is presented in Appendix J. These timing differences are used to calculate potential opportunity cost savings at settlement.

For 1997, we have calculated an "average value" TD based on statistics provided by BSE in the Scenario I market projections given in Appendix C. For 1997, the "average value" TD that would result from the trades running through the depository, if they had to be settled physically instead, would be Rs, 10,010. Calculation of this average value TD is given in Attachment 3 of Appendix K.

The amount of time a TD is held up depends on the process it is going through and different timings are discussed below. The interest rate is estimated at 21%, the current cost of bank borrowing, which translates into a daily interest rate of 0.058% (21%/365 days).

1. Trade Settlement

The time between paying for the purchase and actually receiving the scrips or between delivering scrips to the broker and receiving the proceeds of the sale is the amount of time money is tied up.

a. Retail Investor

For the retail investor, money is tied up at least nine days in the case of a purchase and at least seven days in the case of a sale. In a depository scenario, the seven to nine days could be reduced to zero to two days which generates significant savings. Having the money in an average TD of Rs. 10,010 tied up for seven days implies an opportunity cost of Rs. 40.32 (Rs. 10,010 x 0.058% x 7 days), which represents 0.4% of the value of the TD.

Attachment 1 of Appendix K calculates the potential opportunity cost savings on a buy and sell transaction involving an "average" size TD.

b. Institutional Investor

i. <u>Non-DVP Transaction</u>

Institutional investors generally only have their money tied up for four days in a "through clearing house transaction," whether it be a buy or a sell. With a daily interest rate of 0.058% and an average TD size of Rs. 10,010, the opportunity cost of each TD is Rs. 23.04 (Rs. 10,010 x 0.058% x 4 days) or 0.23% of the TD value. See Attachment 1 of Appendix K.

ii. <u>DVP Transaction</u>

In what are called "DVP" transactions in India, the broker must deliver the shares to the client for scrutiny before the client/custodian releases the payment.[2] Per the timings outlined in Appendix J and the subsequent calculations in Attachment 1 of Appendix K, the broker's money is tied up in on-market DVP transactions for about seven days and for three days in an off-market DVP transaction.

The broker, however, charges an extra 0.5% commission for DVP transactions. Assuming the broker's money is tied up for one week, 0.5% extra charge would equal about 2% per month, or 24% per annum. Therefore, the broker simply passes the cost of carrying onto the client, but the opportunity cost is still borne by the system.

Detailed discussions of the roles played by the BISL, brokers and custodians in trade settlement can be found in the write up on the settlement practices of these institutions in Appendices D, E and F respectively.

C. Opportunity Cost of Ownership Transfer

In India, physical scrips along with TDs must be sent to the company or the R&T agent to record change in ownership. Many scrips are traded in "street name" (i.e., the TD is not completed by the buyer and sent to the company for transfer before resale), but all scrips must be sent in at least once per year at the time of book closure for the company. All institutions, except FIIs and foreign and domestic mutual funds, must send in scrips for transfer immediately after purchase and before resale. BSE estimates that 20% of retail trades result in scrips being sent in for transfer and 95% of institutional trades result in transfer applications.

[2]Payment is usually released 24-48 hours after delivery of the shares because the client/custodian first examines the shares before making payment. This delay between delivery of shares and receipt of payment makes it a non-DVP transaction when DVP is taken in its literal sense.

1. Smooth Transfer

From the time when the scrip is sent to the company for ownership transfer until it returns duly transferred, it is not available to the investor for resale. Transfer can take as little as one month or as long as three to four months, but on average takes about two months based on interviews with brokers.

It takes the same amount of time, in general, for a retail TD or an institutional TD to be transferred. There are jumbo TDs institutional investors can now use which decrease transfer time, but R&T agents interviewed did not report these to be very common.

Assuming 60 days at an interest rate of 0.058% per day and average TD size of Rs. 10,010, this results in an opportunity cost of Rs. 345.56 per TD transferred (60 days x 0.058% x Rs. 10,010), or 3.45% of the TDs value. Calculations are shown in Attachment 2 of Appendix K.

2. Objected Transfer

The period required to effect transfer, however, is greatly extended if the ownership transfer request is objected by the company and the TDs and certificates are returned to the investor for rectification. Based on interviews conducted with R&T agents, brokers, and custodians, the average time for obtaining transfer in objected cases is 165 days per the following schedule as discussed earlier:

Days from initial lodgement to receipt of objection letter	60 days
Days to rectify objection and relodge	45 days
Days to receive transferred shares after relodgement	60 days
Total days for company objection	165 days

Opportunity costs associated with those TDs rejected is estimated at Rs. 950.29 (Rs. 10,010 x 0.058% x 165 days). This is 9.49% of the TDs value. Calculations are given in Attachment 2 of Appendix K.

a. Frequency of Objected Transfer

The following objection rates have been reported by R&T agents, brokers and custodians interviewed:

R&T Agents	9.80%
Brokers	3.93%
Custodians	3.67%

For purposes of this report and the analysis involved, the objection rate reported by brokers is used. The rate reported by R&T agents is not necessarily indicative of objections resulting from transactions as they have separate streams of TDs they process for transfer such as those resulting from deaths, ownership transfers within families, etc.

b. Retail Client

In the case of a retail client, the investor has to bear the full opportunity cost of rectifying the shares and/or TDs as he can collect no collateral or compensation from the broker while the broker is rectifying the bad delivery.

c. Institutional Client

i. Collateral Deposit

Institutional clients, on the other hand, can and do collect collateral deposits from brokers which they hold until rectified shares are returned. This shifts at least some of the opportunity cost onto the broker. However, the cost is not removed from the system.

ii. Replacement of Shares and Squaring Off

Institutional clients can also require a broker to replace the bad shares with fresh shares or "square off" which means the broker reimburses the client the higher of the current market value or the original transaction price for the shares. In either case, the broker is left with the bad shares as his own investment to be rectified and the opportunity cost is just shifted.

Replacing bad shares or squaring up can occur up to one year after the original sale, so the broker can face significant price risk in these situations. However, no brokers could give estimates of the costs associated with this price risk as it depends on the rise and fall of market prices.

A detailed discussion of the roles played and procedures followed by the BISL, brokers, custodians and R&T agents in the ownership transfer process can be found in Appendices D, E, F and G respectively.

D. Magnitude of the Opportunity Cost Savings Provided by a Depository

Appendix K makes a detailed calculation of the opportunity costs that could be saved on the scrips estimated to flow through the depository in 1997 per the estimates of the BSE in Scenario I (Moderate Case) presented in Appendix C. The calculations show that for a turnover of Rs. 107352 crore projected to settle through the depository in 1997, savings of Rs. 384.69 crore in opportunity costs could be realized because of faster settlement, no time required for ownership transfer and the elimination of bad delivery resulting in objections. This represents savings of 0.358% of the value of the turnover through the depository.

E. Total Potential Savings

With processing savings estimated at Rs. 20.49 crore and opportunity cost savings estimated at Rs.384.69 crore, total savings to the industry could be Rs. 405.18 crore (Rs. 20.49 crore + Rs. 384.69 crore).

VI. POTENTIAL COSTS SAVINGS OF A DEMATERIALIZED ENVIRONMENT IN 1995-1996

This section looks at the potential cost savings that could have been realized for the period of April 1995 - March 1996 if the BSE depository had been in place and all scrips were in dematerialized form. As discussed, a depository will change the cost profile in the following areas for the concerned individuals and institutions:

1.	Settlement:	Broker, BISL, BSE/ISD, Custodian.
2.	Ownership Transfer:	R&T Agent, Custodian and Broker. Custodians and brokers are mainly involved when an ownership transfer request is objected.
3.	Safe Custody :	Custodians in the case of institutional trades.[3]

The savings realizable in a dematerialized environment consist of processing costs and opportunity cost savings.

A. Processing Savings

In a completely dematerialized environment, all of the processing costs for settlement, ownership transfer and safe custody would be replaced by the depository except for the back office costs of the broker in processing the settlement of a trade as the broker would still need to interface with the depository and manage his sub accounts. The broker's back office settlement processing costs associated with settlement would most likely decrease from what they are today, but for the purposes of this report we have assumed they stay the same in order to be on the more conservative side in determining the magnitude of possible cost savings.

1. Costs to Physically Process TDs Resulting in Delivery in 1995-1996

The BSE reported delivery of 2502.92 lakh A group securities and 259,03.14 lakh B group securities between April 1995 - March 1996. Assuming there are 50 shares per TD for A group shares and 100 shares per TD for B group shares, the total TDs processed in 1995-1996 would be 50.06 lakh A group TDs and 259.03 lakh B group TDs for a total of 309.09 lakh TDs processed in 1995-1996. At an estimated average cost per TD processed of Rs. 61.98 as calculated in Appendix L, the total cost of physical processing for settlement, ownership transfer and safe custody came to Rs. 191.56 crore (Rs. 61.98 per TD x 309.09 lakh TDs) for the year.

[3]It is assumed a retail investor has no safe custody costs although some do rent security boxes in which to keep their shares.

2. *Estimated Cost to Process in a Dematerialized Environment*

The estimated cost to process the 1995-1996 transactions, if all scrips had been dematerialized and settled in the depository, would be the brokers' back office cost at Rs. 27.04 per TD delivered plus the operating costs for the depository. Broker back office costs that would have been still incurred are estimated at Rs. 83.58 crore (Rs. 27.04 per TD x 309.09 TDs). The depository costs would have been an additional Rs. 39.42 crore, using the depository operating costs of 1997 as a proxy, making a total processing cost of Rs. 123.00 crore (Rs. 83.58 crore + Rs. 39.42 crore).[4]

3. *Depository Savings*

In summary, it is estimated that it cost the industry Rs. 191.56 crore to physically process the delivery orders resulting from April 1, 1995 to March 31, 1996. Under a depository scenario with all scrip dematerialized, total costs could have been on the order of Rs. 123.00 crore which represents a savings of 68.56 crore for the industry (Rs. 191.56 crore - Rs. 123.00 crore). This is a potential decrease in processing costs of 36% (Rs. 67.44 crore/Rs. 191.56 crore).

B. Opportunity Cost Savings

As calculated in Appendix M, estimated opportunity cost per TD processed in 1995-1996 was Rs. 241.00. This is lower than the opportunity cost per TD in 1997 cost comparison presented earlier because a larger number of the TDs delivered were retail (estimated at 50% instead of 10% through the depository in 1997). This decreases the estimated opportunity costs because BSE estimates only 20% of retail TDs delivered are transferred with investors keeping them in street name showing the opportunity costs associated with transfer are often avoided by the retail investors when possible. This is logical since people would only want to transfer a scrip if it is time for book closure or if they were planning to hold the scrip a long time. Otherwise investors do not want to be subject to the opportunity costs of transferring ownership into their name before they sell it.

Given the estimated opportunity cost per TD delivered in 1995-1996 is Rs. 241.00 and the number of TDs delivered was 309.09 lakhs, the total opportunity cost savings that could have been realized if all scrips were dematerialized and settled through a depository would have been Rs. 744.89 crore (Rs. 241.00 per TD x 309.09 lakh TDs). Given that BSE reported Rs.

[4]Depository fees are not used because they were determined based on a low number of participants and transactions in 1997. Therefore, depository costs are a better proxy of the cost to the industry as fees could have been lowered to recover costs. Operating costs would have been essentially the same to process this extra volume of transactions except that more disk space and a few more personnel may have been required. However, these would not be too large given that each is relatively inexpensive. The Rs. 39.42 crore comes from the depository cost model presented in Appendix A.

11527.08 crore in deliveries in 1995-1996, the opportunity costs savings represent 6.42% of the value deliveries (Rs.744.89/Rs. 11527.08 in deliveries).

C. Total Potential Savings

With processing savings estimated at Rs. 67.44 crore and opportunity costs savings estimated at Rs. 744.89 crore, total savings to the industry could have been Rs. 812.33 crore (Rs. 67.44 crore + Rs. 744.89 crore).

VII. BSE DEPOSITORY FEES INCURRED BY A JOBBING BROKER

The following is an analysis of how much it would cost a broker, who is primarily in the business of speculation, to be a member of the BSE depository. Such an analysis is presented to answer a broker's question of, "If my business is of a speculative nature, how much cost would be incurred by joining the BSE depository?"

The analysis is targeted at brokers who deal in their personal capacity, have few or no clients, and principally aim to net off their transactions within the settlement period to avoid receiving or delivering shares. Such an analysis is necessary because in today's practices, a client who nets off incurs no costs, not even a transaction fee, at BSE. In the model depository and fee schedule presented in this report, however, all trades are cleared and settled on a trade for trade basis and fees are charged against each and every trade regardless if the broker has a net zero position on settlement day.

If a netting approach is desired, it would impact the charges for the delivery orders which the clearing corporation passes to the depository and the number of inter-participant transactions. The reduction in transaction number would be a factor of the netting percentage selected. The processing costs for netting would not change for those incurred on the trade for trade basis, so the charges would only have to be changed to a different basis to recover the costs.

Charging clearing corporation and depository fees on a delivery order basis rather than a trade for trade basis is possible and is a business decision the promoters of the depository will have to make. However, information on each trade will still have to be recorded and those costs will be incurred.

A. Profile of The Sample Broker

The depository fee calculations have been made for a sample broker having a high turnover, no customers and a perfect netting of positions each week, so he would not have to make or receive delivery on settlement day. For calculating the fees charged against this broker's activities, the following profile is used:

• Turnover/year	Rs 600,000 lakhs
• Number of transactions/year	2.4 lakh
• Value of shares held in dematerialized form	Rs. 0.00

B. Fees Payable

The BSE fee schedule, against which this broker's transactions will be charged, is presented in Attachment 3 of Appendix A. Fees paid to both the clearing corporation and the depository by the broker come to Rs. 11.3 lakhs per year as shown in the fee calculations at the end of this section. A discussion of the exact nature of the fees charged follows.

1. Clearing Corporation Fees

The clearing corporation would have charges for trade recording and processing of delivery orders. Please note the clearing corporation and the depository record transactions on a trade by trade basis as mentioned, but settlement can still be kept on a weekly cycle. Therefore, even though actual change of ownership may take place once per week, all of the individual trades adding up to a net zero position would be recorded as delivery orders in the clearing corporation with the clearing corporation taking the other side of each buy and sell transaction the broker enters into.

Thus each trade generates the two following clearing corporation fees:

Charge Type	Charge (Rs.)	Number	Total (Rs.)
Trade Recording	2.22	1	2.22
Delivery Order	2.22	1	2.22

2. Depository Fees

The fees payable to the depository can be broadly divided in the following categories:

- One time fees;
- Yearly fees;
- Transaction fees; and
- Value fees.

Payment of a security deposit or a contribution to a clearing guarantee fund or participants fund, either with the clearing corporation or the depository, have not been taken into account. The BSE clearing corporation will most likely have a clearing guarantee fund and the depository may have a participants fund, but the obligations with these have not been determined. Depending on the structure of these funds, this could represent a real cost to the broker over and above the fees charged for services.

a. Assumptions for One-time Fees

One time fees are analyzed separately since they are not of a recurring nature and are not linked to the trading profile of a broker. This is the BSE entry fee of Rs. 1,000.

Since the sample broker operates primarily in a personal capacity, it is assumed that there are no sub-accounts and consequently no fees are charged for sub-accounting privileges. Also, it is assumed the broker would not avail of the pledging facility.

b. Assumptions for Yearly Fees

Since the sample broker has no sub-accounts, the only yearly fee would be the account maintenance fee.

c. Assumptions for Transaction Fees

It is assumed that the broker incurs no dematerialization or rematerialization fees. Since all transactions are on personal account, there would be no intra participant movement fees.

Hence the only fee payable would be fee for inter participant movement between the clearing corporation and the broker's account for each trade.

d. Value Fees

It is assumed the broker will net off all transaction, so no safe custody fees would be incurred.

Thus each trade for the depository would incur the following fees:

Charge Type	Charge (Rs)	Number	Total
Inter participant movement	0.26	1	0.26
Intra participant movement	0.26	NA	NA

FEE TO BE PAID IN 1997 BY A SPECULATIVE BROKER MEMBER OF THE BSE DEPOSITORY

Statistics for broker participant	(all figures in lakhs)
Avg. value of shares held in depository (Rs.)	0
Avg. turnover through depository(Rs)	600,000
Number of trades	2.4
Number of sub-accounts	0

Fees to be paid to the clearing corporation

Fee Head	Fees (in Rs)
Trade recording transactions	532,800
Delivery orders	532,800
Total	**1,065,600**

Fees to be paid to the BSE depository

The following is the fixed one time fee that would be paid by the broker irrespective of his turnover.

Fee Head	Fees (in Rs)
ONE TIME FEES	
Entry fee	1,000
Sub accounting privileges	0
Pledging facility	0
Total one time fee	**1,000**

The following are the annual charges that would to be paid by the broker participant.

Fee Head	Fees (in Rs)
YEARLY FEES	
Account maintenance	1,224
Sub account maintenance	0
Total Yearly Fixed Fee	**1,224**
TRANSACTION / VALUE FEES	
Custody fees	0
Inter participant movement	62,400
Intra participant movement	0
Dematerialization fee	0
Rematerialization fee	0
Total variable fee	**62,400**
TOTAL FEE	63,624

Total fees to be paid to the depository and the clearing corporation (including one time fees)	**1,130,224**

VIII. COMPARISON OF BSE AND NSDL FEE SCHEDULES

The following is an analysis of how much it would cost a broker, given certain trading profiles, to be a member of the BSE depository or the NSDL depository. Such an analysis is presented to:

1. Answer a broker's question of, "Which of the two depositories would it be better to join, BSE or NSDL?"

2. Give BSE a reference for negotiating to bring both exchanges under a single depository.

The BSE fee schedule is illustrative and the NSDL fee schedule will probably be subject to change once the depository becomes functional. However, these are the only basis of comparison available at this point in time.

A. Clearing Corporation Fees

The comparison of fee structures does not take into account the charges associated with the clearing corporation of neither the BSE nor the National Stock Exchange (NSE) because the fee structure of the NSE clearing corporation is not known and, if a broker trading on the BSE were to instruct settlement at the NSDL, it would be through the interface of the BSE clearing corporation. It would be reasonable to assume that the BSE clearing corporation would have costs and fees similar to the NSE and that a comparison of depository only services can be made.

A discussion of the costs of BSE setting up a clearing corporation only is presented in the next section.

B. Profiles of the Sample Brokers

The depository fee comparisons have been made for three sample brokers (1, 2 and 3) having a "low," "average" and "high" turnover. These sample brokers have been considered so as to cover all those categories of brokers that fall under the NSDL graded fee structure of Rs. 1.0, 2.5 and 5.0 lakh annual fee based on the value of their assets handled by NSDL and to illustrate what skewing, if any, takes place based on the size of a broker's business.

The statistics for a sample broker are developed by using activity measurements such as projections of trades, turnover, delivery orders, percent of trades that are institutional, etc. for an "average" BSE depository participant. The BSE projections of trades etc. going through the depository in 1997 given in Scenario I of Appendix C are divided by 400, the number of depository participants in 1997, to arrive at this "average" broker profile.

On arriving at the average broker, the turnover and other associated figures are halved to create a second profile and doubled to get a third profile. The resulting three sample brokers are:

- Sample Broker 1: Half of the "average" broker.
- Sample Broker 2: The "average" broker.
- Sample Broker 3: Double the "average" broker.

B. Depository Fees

1. Sources of Fee Schedules

Appendix N gives the press release which details the NSDL fees the comparison has been run against. The BSE fee schedule is that presented in Attachment 3 of Appendix A.

2. One Time Fees

One time fees are analyzed separately since they are not of a recurring nature and are not linked to the trading profile of a broker. These include the NSDL Rs. 25,000 entry fee and the BSE entry fee of Rs. 1,000, sub accounting privilege fee of Rs. 100,000[5] and the pledging facility fee of Rs. 1,000.

3. Transaction Fees

a. BSE Depository

BSE transaction fees are those which result in the electronic movement of shares between accounts. In the case of one trade on the exchange, either two or three transactions (electronic movements) take place for a retail and institutional trades respectively.

i. <u>Retail Transactions</u>

In case of a retail transaction two movements are involved on the buying broker side and two are involved on the selling broker side in the depository as illustrated below:

[5]The BSE depository assumes that all sub accounting will be done at the depository. Therefore, allowing a participant to hold sub accounts and act as a "custodian" for others, be they retail or institutional accounts, will require the participant to demonstrate he has the ability to do such which will include minimum capital requirements, other related activities, and increased liability for the depository will have to monitor.

Buy Side Broker			Sell Side Broker		
Clearing Corp. Acct.	⇒	Broker Acct.	Retail sub-account	⇒	Broker Acct.
Broker Acct.	⇒	Retail sub-account	Broker Acct.	⇒	Clearing Corp. Acct.

ii. Institutional Transactions

In case of an institutional transaction three steps are involved on the buying broker side as well as the selling broker side as far as the depository is concerned. These are :

Buy Side Broker			Sell Side Broker		
Clearing Corp. Acct.	⇒	Broker Acct.	Institution Acct.	⇒	Custodian Acct.
Broker Acct.	⇒	Custodian Acct.	Custodian Acct.	⇒	Broker Acct.
Custodian Acct.	⇒	Institution Acct.	Broker Acct.	⇒	Clearing Corp. Acct.

Accordingly, fees are charged at three stages for institutional trades, but only at two stages for retail trades for both the selling side as well as the buying side. For each stage the charges are Rs. 0.26 per the fee schedule in Appendix A. Thus, the fee is Rs. 0.78 (Rs. 0.26 x 3) for institutional trades and Rs. 0.52 (Rs 0.26 x 2) for retail trades regardless if the broker is on the buying or the selling side.

Per the BSE assumptions given in the calculation of depository trades in 1997 presented in Appendix C, it is assumed that in 1997 of all trades going through the depository, 10% are retail and 90% are institutional. This assumption is required to calculate the charges for the extra movement in an institutional trade illustrated above.

b. NSDL Settlement Fees

NSDL "transaction" fees are really based on the value of the delivery order which the receiving side pays a fee on and are thus not really transaction fees. However, they are the closest comparable to BSE's transaction fees.

An "average" value delivery order is arrived at by taking total turnover through the depository divided by total number of delivery orders through the depository as given in 1997 Scenario I (Moderate Case) projections given by BSE and presented in Appendix C.

The number of delivery orders a broker would receive through the NSDL depository would be the total number of delivery orders resulting from trades running through the depository in 1997 and dividing them by the 400 participants.

An off-market trade is defined as one that does not clear through any clearing entity yet uses the depository book entry system for settlement. NSDL has off-market settlement fee payable at the rate of 0.1% subject to a minimum of Rs. 10,000 per transaction. For the purposes of this comparison it is assumed that there are no off-market trades for any of the sample brokers.[6] Therefore, all delivery orders are subject to the 0.05% settlement fee.

A jobber entering into multiple transactions on NSDL, but netting off before the end of the settlement cycle, would not be subject to any "transaction" fees on NSDL because they would not be accepting delivery. However, such a jobber would be subject to fees at the BSE clearing corporation and depository. A separate analysis of the cost impact of the BSE fee schedule on jobbers was presented in the previous section.

4. Value Fees

Value of securities held in custody is equal in both NSDL and BSE scenarios. The average value of shares held by "average" BSE Sample Broker 2 is the total value of shares held in custody in the Scenario I depository projections per Appendix C divided by the 400 estimated participants. The value of shares held by Sample Broker 1 is half those of Sample Broker 2 and the value of shares held by Sample Broker 3 are twice those of Sample Broker 2.

C. Other Assumptions

Dematerialization and rematerialization fees have been excluded to avoid clouding the analysis with fees not related to trading activity and whose frequency is subject to great speculation. In addition, any charges a broker incurs for dematerialization and rematerialization on the part of a client may be passed on as a direct charge, particularly in the case of NSDL where it is Rs. 10 per certificate.[7]

Security deposits have not been taken into account. NSDL has a security deposit of Rs. 10 lakhs. BSE will most likely have a security deposit or participants fund deposit, but that has not yet been determined.

The fee comparisons presented on the following three pages show that the BSE depository has higher one time fees, but the recurring fees each year are less than those charged by NSDL by a factor of 4.5. The BSE one time fees are higher because of the Rs. 1 lakh charge for sub accounting privileges. The NSDL recurring fees are higher primarily because of the higher custody fees.

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[6]As per BSE statistics, only 1.5% of total trades are off-market (negotiated bulk deals). Of these only 10% are above Rs. 1 crore or about 0.15% of all trades. Therefore, very few brokers would be likely to engage in off-market transactions and settle them in the NSDL depository unless they were over Rs. 1 crore.

[7]In the fee schedule developed for the model BSE depository, the charge for rematerialization is just the regular transaction charge of Rs.0.26 because it is just an electronic intimation to the R&T agent.

COMPARATIVE FEE STRUCTURE OF NSDL AND BSE DEPOSITORY FOR 1997

The following is the fee comparison between NSDL and the BSE depository. It does not include the charges of the clearing corporation.

Statistics for BSE in 1997	(all figures in lakhs)
Number of shares traded, with settlement through depository	29,282
Turnover through depository(Rs. lakhs - two sided)	10,737,120
Number of trades (lahks) through depository	37.8
Number of depository participants	400
% of off market trades through depository	0%
Number of trading days is	240

Figures per broker participant	**Depository to which statistic is relevant for fee calculation**	**Sample Broker Participants** (all figures in lakhs)		
		1	**2**	**3**
Value of shares held in depository (Rs.)	NSDL/BSE	14,700	29,400	58,800
Turnover of shares through depository(Rs)	NSDL	13,421	26,843	53,686
On market delivery orders	NSDL	960	1,920	3,840
Off market delivery orders *	NSDL	0	0	0
Average value of delivery orders (Rs)	NSDL	14	14	14
Number of trades	BSE	0.05	0.09	0.19
Institutional (90%)		0.04	0.09	0.17
Retail (10%)		0.00	0.01	0.02
Number of sub-accounts	BSE	250	500	1000

* For NSDL "An off-market trade does not clear through any clearing entity yet uses the depository book entry system for settlement". Since such off-market trades are rare, it is assumed that there are no off-market trades for any of the sample brokers.

COMPARATIVE FEE STRUCTURE OF NSDL AND BSE DEPOSITORY FOR 1997

The following is the fixed one time fee that would be paid by a depository participant irrespective of his turnover.

All the fees given below are in Rs.

Fee Head	Broker 1		Broker 2		Broker 3	
	Fee charged by NSDL	**Fee charged by BSE Depository**	**Fee charged by NSDL**	**Fee charged by BSE Depository**	**Fee charged by NSDL**	**Fee charged by BSE Depository**
ONE TIME FEES						
Entry fee	25,000	1,000	25,000	1,000	25,000	1,000
Sub accounting privileges	NA	100,000	NA	100,000	NA	100,000
Pledging facility (7,10)	NA	1,000	NA	1,000	NA	1,000
Total one time fee	**25,000**	**102,000**	**25,000**	**102,000**	**25,000**	**102,000**

COMPARATIVE FEE STRUCTURE OF NSDL AND BSE DEPOSITORY FOR 1997

The following are the annual charges that would have to be paid by a depository participant.
These annual charges include

- Custody fees
- Transaction fees

All the fees given below are in Rs.

Fee Head	Broker 1		Broker 2		Broker 3	
	Fee charged by NSDL	Fee charged by BSE	Fee charged by NSDL	Fee charged by BSE	Fee charged by NSDL	Fee charged by BSE
YEARLY FEES						
Sub account maintenance	NA	307,124	NA	613,024	NA	1,224,824
Annual fee	100,000	NA	250,000	NA	500,000	NA
Total Yearly Fixed Fee	**100,000**	**307,124**	**250,000**	**613,024**	**500,000**	**1,224,824**
TRANSACTION / VALUE FEES						
Custody fee	1,029,000	19,110	2,058,000	38,220	4,116,000	76,440
Settlement/Transaction fee for						
on market transactions	335,525	2,457	671,075	4,914	1,342,150	9,828
off market transactions	0	0	0	0	0	0
Total variable fee	**1,364,525**	**21,567**	**2,729,075**	**43,134**	**5,458,150**	**86,268**
TOTAL FEE	**1,464,525**	**328,691**	**2,979,075**	**656,158**	**5,958,150**	**1,311,092**

Ratio **	4.46 :1	4.54 :1	4.54 :1

Comments :

** The ratio given above is the ratio of the yearly and transaction charges the NSDL participant would pay as compared to the BSE depository participant. It does not account for the one time fixed fee that would have to be paid in either case.

APPENDIX A

DEPOSITORY COST MODEL

1) SCENARIO I - MODERATE CASE

2) SCENARIO II - OPTIMISTIC CASE

3) COMMON CALCULATIONS FOR BOTH SCENARIOS :

   A. CAPITAL EXPENDITURE

   B. ANNUAL OPERATING EXPENSES

   C. FEE SCHEDULE

   D. CALCULATION OF FEES

1) SCENARIO I - MODERATE CASE

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STATEMENT OF SOURCES AND USES OF FUNDS

SCENARIO I - MODERATE CASE

All amounts in Rupees lakhs

Sources of Funds	**Year Ending - December 31st**									
	1997	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Initial Equity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Debt at Market Rates	7573.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fee Income										
Clearing Corporation	788.47	2127.63	3526.22	4662.35	6229.18	7987.81	10126.06	12767.19	15897.01	19373.85
Depository	3001.75	4620.35	6182.43	8026.59	8268.08	8713.28	9157.60	9642.01	10268.98	10849.46
Total in Rupees (lakhs)	**11364.08**	**6747.98**	**9708.65**	**12688.94**	**14497.25**	**16701.09**	**19283.65**	**22409.20**	**26165.99**	**30223.31**
Total in US $ (millions)	**31.57**	**18.74**	**26.97**	**35.25**	**40.27**	**46.39**	**53.57**	**62.25**	**72.68**	**83.95**
Uses of Funds										
Initial Capital Expenditure										
Hardware	3714.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Software	1925.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Telecommunications	1655.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Capital Expenditure	278.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Enhancements	0.00	774.01	774.01	774.01	774.01	774.01	774.01	774.01	774.01	774.01
Annual Operating Expenses	3942.36	3540.43	3485.38	3448.44	3363.88	3332.84	3321.11	2249.15	2487.58	2761.68
Total	**11516.22**	**4314.44**	**4259.38**	**4222.45**	**4137.89**	**4106.85**	**4095.12**	**3023.15**	**3261.58**	**3535.69**
Difference between sources and uses of funds in Rupees (in lakhs)	-152.14	2433.54	5449.27	8466.49	10359.37	12594.24	15188.53	19386.04	22904.40	26687.63
Difference between sources and uses of funds in US $ millions (000,000) (Exchange rate of US$1.00 = Rs. 36)	-0.42	6.76	15.14	23.52	28.78	34.98	42.19	53.85	63.62	74.13

Note: The fee for dematerialization transaction is waived in 1997. Due to this there is a negative balance in Year 1997

ANNUAL REVENUES

SCENARIO I - MODERATE CASE

Year Ending - December 31st

		1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
	Clearing Corporation										
A	Transaction fee	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22
B	Total transactions (in lakhs)	355.32	958.80	1589.07	2101.06	2807.14	3599.65	4563.24	5753.45	7163.88	8730.70
C	**Total revenues from Clearing Corporation (A multiplied by B)**	**788.47**	**2127.63**	**3526.22**	**4662.35**	**6229.18**	**7987.81**	**10126.06**	**12767.19**	**15897.01**	**19373.85**
	Depository	*All amounts in Rupees*									
D	One Time fee	102000	102000	102000	102000	102000	102000	102000	102000	102000	102000
E	Transaction based fee	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
F	Custody fee (value based)	0.0013%	0.0013%	0.0013%	0.0013%	0.0013%	0.0013%	0.0013%	0.0013%	0.0013%	0.0013%
G	Period fee	1223.60	1223.60	1223.60	1223.60	1223.60	1223.60	1223.60	1223.60	1223.60	1223.60
H	Incremental participants	400	200	200	188	0	0	0	0	0	0
I	Total transactions (in lakhs) (1)	262.55	1967.75	2685.51	5016.05	6255.66	7453.43	8723.96	10080.36	11906.35	13461.93
J	Market value of shares in depository(in Rupees lakhs)	5874541	18157673	30120375	38964230	47859994	58581694	67719828	78281314	90487550	104594327
K	Total accounts and sub accounts	200400	300600	400800	494000	494000	494000	494000	494000	494000	494000
L	Total revenues from Depository										
	From	*All amounts in Rupees Lakhs*									
	One time fee (D*H)	408	204	204	191.76	0	0	0	0	0	0
	Transaction fees (E*I)	68.21	511.18	697.64	1303.07	1625.10	1936.26	2266.32	2618.68	3093.04	3497.15
	Custody fees (F*J)	73.45	227.02	376.59	487.16	598.38	732.43	846.68	978.73	1131.34	1307.72
	Period fees (G*K)	2452.10	3678.15	4904.20	6044.60	6044.60	6044.60	6044.60	6044.60	6044.60	6044.60
M	**Total revenues from Depository**	**3001.75**	**4620.35**	**6182.43**	**8026.59**	**8268.08**	**8713.28**	**9157.60**	**9642.01**	**10268.98**	**10849.46**
	Total Revenues from Clearing Corporation and Depository	**3790.23**	**6747.98**	**9708.65**	**12688.94**	**14497.25**	**16701.09**	**19283.65**	**22409.20**	**26165.99**	**30223.31**

(1) : The transactions in the depository in 1997 do not include dematerialisation transactions as dematerialization fee is waived in 1997.

CALCULATION FOR NUMBER OF TRANSACTIONS (ELECTRONIC MOVEMENTS) IN CLEARING CORPORATION

SCENARIO I - MODERATE CASE

All amounts in lakhs

Year Ending - December 31st

	TOTAL TRADE RECORDING TRANSACTIONS	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
	Total trades at the exchange per day										
	A+B1	0.63	0.94	1.32	1.67	1.91	2.2	2.53	2.91	3.35	3.85
	B	0.55	0.82	1.18	1.18	1.68	1.93	2.22	2.58	2.94	3.38
	% of trades that flow through the depository										
	A+B1	25.00%	50.00%	66.00%	70.00%	75.00%	80.00%	85.00%	90.00%	95.00%	97.50%
	B	0.00%	0.00%	0.00%	20.00%	35.00%	45.00%	55.00%	65.00%	75.00%	85.00%
A	Total trades at the exchange that flow through the depository (Total trades per day *times* % through depository *times* 240 days)										
	A+B1	37.80	112.80	209.09	280.56	343.80	422.40	516.12	628.56	763.80	900.90
	B	0.00	0.00	0.00	71.04	141.12	208.44	293.04	402.48	529.20	689.52
B	Total trades reported to clearing corporation (Buy and sell)										
	A+B1	75.60	225.60	418.18	561.12	687.60	844.80	1032.24	1257.12	1527.60	1801.80
	B	0.00	0.00	0.00	142.08	282.24	416.88	586.08	804.96	1058.40	1379.04
C	% of Institutional trades of total trades										
	A+B1	90.00%	75.00%	60.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%
	B	0.00%	0.00%	0.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
D	Confirmation of Institutional trades (B * C)										
	A+B1	68.04	169.20	250.91	224.45	275.04	337.92	412.90	502.85	611.04	720.72
	B	0.00	0.00	0.00	7.10	14.11	20.84	29.30	40.25	52.92	68.95
E	Recording of Custodian settlement obligation (Assumes 100% affirmations of D above)										
	A+B1	68.04	169.20	250.91	224.45	275.04	337.92	412.90	502.85	611.04	720.72
	B	0.00	0.00	0.00	7.10	14.11	20.84	29.30	40.25	52.92	68.95
F	Total trade recording transactions (B+D+E)										
	A+B1	211.68	564.00	919.99	1010.02	1237.68	1520.64	1858.03	2262.82	2749.68	3243.24
	B	0.00	0.00	0.00	156.29	310.46	458.57	644.69	885.46	1164.24	1516.94
	Total	211.68	564.00	919.99	1166.30	1548.14	1979.21	2502.72	3148.27	3913.92	4760.18
	TOTAL DELIVERY ORDER TRANSACTIONS										
	Total trades to clearing corporation (buy + sell) (from B)										
G	A+B1	75.60	225.60	418.18	561.12	687.60	844.80	1032.24	1257.12	1527.60	1801.80
	B	0.00	0.00	0.00	142.08	282.24	416.88	586.08	804.96	1058.40	1379.04
H	Percentage of Institutional trades of total trades (from C)										
	A+B1	90.00%	75.00%	60.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%
	B	0.00%	0.00%	0.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
I	Institutional trades (delivery order movement between custodian and broker)										
	A+B1	68.04	169.20	250.91	224.45	275.04	337.92	412.90	502.85	611.04	720.72
	B	0.00	0.00	0.00	7.10	14.11	20.84	29.30	40.25	52.92	68.95
J	Total Delivery orders (G + I)										
	A+B1	143.64	394.80	669.08	785.57	962.64	1182.72	1445.14	1759.97	2138.64	2522.52
	B	0.00	0.00	0.00	149.18	296.35	437.72	615.38	845.21	1111.32	1447.99
	Total	143.64	394.80	669.08	934.75	1258.99	1620.44	2060.52	2605.18	3249.96	3970.51
	TOTAL TRANSACTIONS IN CLEARING CORPORATION										
	Trade recording transactions	211.68	564.00	919.99	1166.30	1548.14	1979.21	2502.72	3148.27	3913.92	4760.18
	Delivery orders	143.64	394.80	669.08	934.75	1258.99	1620.44	2060.52	2605.18	3249.96	3970.51
	Total	355.32	958.80	1589.07	2101.06	2807.14	3599.65	4563.24	5753.45	7163.88	8730.70

CALCULATION FOR NUMBER OF TRANSACTIONS (ELECTRONIC MOVEMENTS) IN DEPOSITORY

SCENARIO I - MODERATE CASE

All amounts in lakhs

Year Ending - December 31st

		1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
A	**Total trades on exchange that flow through the depository**										
	A+B1	37.80	112.80	209.09	280.56	343.80	422.40	516.12	628.56	763.80	900.90
	B	0.00	0.00	0.00	71.04	141.12	208.44	293.04	402.48	529.20	689.52
B	**Total trades in depository (Buy and Sell) - movement between clearing corporation and broker**										
	A+B1	75.60	225.60	418.18	561.12	687.60	844.80	1032.24	1257.12	1527.60	1801.80
	B	0.00	0.00	0.00	142.08	282.24	416.88	586.08	804.96	1058.40	1379.04
C	**% of Institutional trades of total trades**										
	A+B1	90.00%	75.00%	60.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%
	B	0.00%	0.00%	0.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
D	**Institutional trades - movement between broker and custodian**										
	A+B1	68.04	169.20	250.91	224.45	275.04	337.92	412.90	502.85	611.04	720.72
	B	0.00	0.00	0.00	7.10	14.11	20.84	29.30	40.25	52.92	68.95
E	**Intra participant trades in institutional trades - movement between institution and custodian**										
	A+B1	68.04	169.20	250.91	224.45	275.04	337.92	412.90	502.85	611.04	720.72
	B	0.00	0.00	0.00	7.10	14.11	20.84	29.30	40.25	52.92	68.95
F	**Intra participant trades in retail trades - movement between broker and investor sub-account**										
	A+B1	7.56	56.40	167.27	336.67	412.56	506.88	619.34	754.27	916.56	1081.08
	B	0.00	0.00	0.00	134.98	268.13	396.04	556.78	764.71	1005.48	1310.09
	Total transactions due to trades in depository										
	A+B1	219.24	620.40	1087.26	1346.69	1650.24	2027.52	2477.38	3017.09	3666.24	4324.32
	B	0.00	0.00	0.00	291.26	578.59	854.60	1201.46	1650.17	2169.72	2827.03
	Total	219.24	620.40	1087.26	1637.95	2228.83	2882.12	3678.84	4667.26	5835.96	7151.35
	TOTAL TRANSACTIONS IN DEPOSITORY										
1	**Number of transactions due to trades (from above)**	219.24	620.40	1087.26	1637.95	2228.83	2882.12	3678.84	4667.26	5835.96	7151.35
2	**Dematerialisation (Refer following schedule - Column 11)**	585.64	1026.27	643.79	1365.58	1305.54	1526.22	1669.09	1940.06	2473.67	2584.63
3	**Rematerialisation (Refer following schedule - Column 12)**	29.28	80.60	112.79	181.06	246.34	322.65	406.11	503.11	626.79	756.02
4	**Bonus/ Rights share distribution (Refer following schedule - Column 17)**	14.03	240.48	841.68	1831.46	2474.94	2722.43	2969.93	2969.93	2969.93	2969.93
	Total transactions in the Depository	**848.19**	**1967.75**	**2685.51**	**5016.05**	**6255.66**	**7453.43**	**8723.96**	**10080.36**	**11906.35**	**13461.93**

SCENARIO I - MODERATE CASE

CALCULATION FOR SHARES IN DEPOSITORY

	1	2	3	4	5	6	7	8	9	10	11	12
Year	Total market Capitalisation (in Rupees lakhs)	Market capitalisation of scrips eligible for dematerialisation as a % of total market capitalisation %	% of shares dematerialised of those eligible %	Market Capitalisation of dematerialized shares Rs lakhs	BSE's share in dematerialised shares %	Market value of dematerialised shares at BSE (4 * 5) Rs lakhs	Turnover in depository per day Rs lakhs	Shares transacted per day Lakhs	Average value per share in depository (7 / 8) Rupees	Total shares in depository (6 / 9) Lakhs	Dematerialization transactions (Incremental shares in depository divided by 50) Lakhs	Rematerialisation transactions (Total shares in depository multiplied by 0 05) Lakhs
1997	59338800	49.50%	40.00%	11749082.40	50.00%	5874541.20	44738	223	200 62	29282.10	585 64	29.28
1998	71206560	85.00%	60.00%	36315345.60	50.00%	18157672.80	75248.00	334	225.29	80595.67	1026 27	80 60
1999	85447872	94.00%	75.00%	60240749.76	50.00%	30120374.88	125518.00	470	267.06	112785 23	643.79	112.79
2000	102537446.4	95.00%	80.00%	77928459.26	50.00%	38964229.63	168068.00	781	215.20	181063.99	1365.58	181.06
2001	117918063.4	95 50%	85.00%	95719987.93	50.00%	47859993.97	208466.00	1073	194.28	246341 24	1305.54	246 34
2002	135605772.9	96 00%	90.00%	117163387.75	50.00%	58581693.88	251828 00	1387	181.56	322652 01	1526.22	322 65
2003	155946638.8	96.50%	90.00%	135439655.79	50.00%	67719827.90	295488.00	1772	166.75	406106 29	1669.09	406.11
2004	179338634.6	97 00%	90.00%	156562628.02	50.00%	78281314.01	348844.00	2242	155.60	503109 43	1940.06	503 11
2005	206239429.8	97.50%	90.00%	180975099.65	50.00%	90487549.83	405957.00	2812	144.37	626792.96	2473 67	626 79
2006	237175344.3	98.00%	90.00%	209188653.65	50.00%	104594326.83	477300.00	3450	138 35	756024 36	2584 63	756 02

CALCULATION FOR NUMBER OF TRANSACTIONS FOR BONUS AND RIGHTS

	13	14	15	16	17
Year	Bonus	Rights	Total Bonus And Rights (11+12)	Total number of transactions (13 * 21)	Number of transactions In lakhs
1997	2	5	7	1402800	14.03
1998	30	50	80	24048000	240.48
1999	60	150	210	84168000	841.68
2000	120	250	370	183145560	1831.46
2001	200	300	500	247494000	2474.94
2002	200	350	550	272243400	2722.43
2003	200	400	600	296992800	2969.93
2004	200	400	600	296992800	2969.93
2005	200	400	600	296992800	2969.93
2006	200	400	600	296992800	2969.93

CALCULATION FOR NUMBER OF ACCOUNTS AND SUB ACCOUNTS

	18	19	20	21
Year	Number of Participants (other than R&T)	Number of		
		Sub Accounts Per participant	Number of Sub-accounts	Total number of accounts
1997	400	500	200000	200400
1998	600	500	300000	300600
1999	800	500	400000	400800
2000	988	500	494000	494988
2001	988	500	494000	494988
2002	988	500	494000	494988
2003	988	500	494000	494988
2004	988	500	494000	494988
2005	988	500	494000	494988
2006	988	500	494000	494988

Notes:

Data pertaining to Columns 1,2,3,4,7,8,13,14,18,19 is provided to us by the BSE.

Market capitalisation (Column 1) remains constant in Moderate and Optimistic case as per projections given by the BSE. Due to this market value of shares in the depository (Column 6) remains constant in both the scenarios.

2) SCENARIO II - OPTIMISTIC CASE

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STATEMENT OF SOURCES AND USES OF FUNDS

SCENARIO II - OPTIMISTIC CASE

All amounts in Rupees lakhs

Sources of Funds	**Year Ending - December 31st**									
	1997	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Initial Equity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Debt at Market Rates	7573.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fee Income										
Clearing Corporation	2102.59	4563.08	6462.61	7749.53	10633.92	14065.77	18445.01	24013.31	31071.12	39252.88
Depository	3096.70	4804.93	6418.02	8288.85	8660.57	9256.34	9900.42	10668.13	11617.25	12667.53
Total in Rupees (lakhs)	**12773.15**	**9368.01**	**12880.62**	**16038.38**	**19294.49**	**23322.12**	**28345.43**	**34681.44**	**42688.38**	**51920.41**
Total in US $ (millions)	**35.48**	**26.02**	**35.78**	**44.55**	**53.60**	**64.78**	**78.74**	**96.34**	**118.58**	**144.22**
Uses of Funds										
Initial Capital Expenditure										
Hardware	3714.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Software	1925.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Telecommunications	1655.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Capital Expenditure	278.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Enhancements	0.00	774.01	774.01	774.01	774.01	774.01	774.01	774.01	774.01	774.01
Annual Operating Expenses	3942.36	3540.43	3485.38	3448.44	3363.88	3332.84	3321.11	2249.15	2487.58	2761.68
Total	**11516.22**	**4314.44**	**4259.38**	**4222.45**	**4137.89**	**4106.85**	**4095.12**	**3023.15**	**3261.58**	**3535.69**
Difference between sources and uses of funds in Rupees (in lakhs)	1256.93	5053.57	8621.24	11815.93	15156.61	19215.27	24250.31	31658.28	39426.79	48384.72
Difference between sources and uses of funds in US $ millions (000,000) (Exchange rate of US$1.00 = Rs. 36)	3.49	14.04	23.95	32.82	42.10	53.38	67.36	87.94	109.52	134.40

Note: The fee for dematerialization transaction is waived in 1997. Due to this there is a negative balance in Year 1997

ANNUAL REVENUES
SCENARIO II - OPTIMISTIC CASE

	Year Ending - December 31st	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
	Clearing Corporation										
A	Transaction fee	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22	2.22
B	Total transactions (in lakhs)	947.52	2056.32	2912.33	3492.27	4792.11	6338.65	8312.12	10821.44	14001.99	17689.05
C	Total revenues from Clearing Corporation (A multiplied by B)	2102.59	4563.08	6462.61	7749.53	10633.92	14065.77	18445.01	24013.31	31071.12	39252.88
	Depository	*All amounts in Rupees*									
D	One Time fee	102000	102000	102000	102000	102000	102000	102000	102000	102000	102000
E	Transaction based fee	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
F	Custody fee (value based)	0.0013%	0.0013%	0.0013%	0.0013%	0.0013%	0.0013%	0.0013%	0.0013%	0.0013%	0.0013%
G	Period fee	1223.60	1223.60	1223.60	1223.60	1223.60	1223.60	1223.60	1223.60	1223.60	1223.60
H	Incremental participants	400	200	200	188	0	0	0	0	0	0
I	Total transactions (in lakhs) (1)	628.05	2678.27	3592.38	6025.61	7766.52	9543.87	11583.40	14030.31	17096.40	20460.40
J	Market value of shares in depository(in Rupees lakhs)	5874541	18157673	30120375	38964230	47859994	58581694	67719828	78281314	90487550	104594327
K	Total accounts and sub accounts	200400	300600	400800	494000	494000	494000	494000	494000	494000	494000
L	Total revenues from Depository From	*All amounts in Rupees Lakhs*									
	One time fee (D*H)	408	204	204	191.76	0	0	0	0	0	0
	Transaction fees (E*I)	163.15	695.76	933.23	1565.34	2017.59	2479.31	3009.14	3644.80	4441.31	5315.21
	Custody fees (F*J)	73.45	227.02	376.59	487.16	598.38	732.43	846.68	978.73	1131.34	1307.72
	Period fees (G*K)	2452.10	3678.15	4904.20	6044.60	6044.60	6044.60	6044.60	6044.60	6044.60	6044.60
M	Total revenues from Depository	3096.70	4804.93	6418.02	8288.85	8660.57	9256.34	9900.42	10668.13	11617.25	12667.53
	Total Revenues from Clearing Corporation and Depository	5199.30	9368.01	12880.62	16038.38	19294.49	23322.12	28345.43	34681.44	42688.38	51920.41

(1) : The transactions in the depository in 1997 do not include dematerialisation transactions as dematerialization fee is waived in 1997.

CALCULATION FOR NUMBER OF TRANSACTIONS (ELECTRONIC MOVEMENTS) IN CLEARING CORPORATION

SCENARIO II - OPTIMISTIC CASE

All amounts in lakhs
Year Ending - December 31st

	TOTAL TRADE RECORDING TRANSACTIONS	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
	Total trades at the exchange per day										
	A+B1	1.68	2.016	2.4192	2.90304	3.483648	4.1803776	5.01645312	6.019743744	7.223692493	8.668430991
	B	1.04	1.248	1.4976	1.79712	2.156544	2.5878528	3.10542336	3.726508032	4.471809638	5.366171566
	% of trades that flow through the depository										
	A+B1	25.00%	50.00%	66.00%	70.00%	75.00%	80.00%	85.00%	90.00%	95.00%	97.50%
	B	0.00%	0.00%	0.00%	20.00%	35.00%	45.00%	55.00%	65.00%	75.00%	85.00%
A	Total trades at the exchange that flow through the depository (Total trades per day *times* % through depository *times* 240 days)										
	A+B1	100.80	241.92	383.20	487.71	627.06	802.63	1023.36	1300.26	1647.00	2028.41
	B	0.00	0.00	0.00	86.26	181.15	279.49	409.92	581.34	804.93	1094.70
B	Total trades reported to clearing corporation (Buy and sell)										
	A+B1	201.60	483.84	766.40	975.42	1254.11	1605.26	2046.71	2600.53	3294.00	4056.83
	B	0.00	0.00	0.00	172.52	362.30	558.98	819.83	1162.67	1609.85	2189.40
C	% of Institutional trades of total trades										
	A+B1	90.00%	75.00%	60.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%
	B	0.00%	0.00%	0.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
D	Confirmation of Institutional trades (B * C)										
	A+B1	181.44	362.88	459.84	390.17	501.65	642.11	818.69	1040.21	1317.60	1622.73
	B	0.00	0.00	0.00	8.63	18.11	27.95	40.99	58.13	80.49	109.47
E	Recording of Custodian settlement obligation (Assumes 100% affirmations of D above)										
	A+B1	181.44	362.88	459.84	390.17	501.65	642.11	818.69	1040.21	1317.60	1622.73
	B	0.00	0.00	0.00	8.63	18.11	27.95	40.99	58.13	80.49	109.47
F	Total trade recording transactions (B+D+E)										
	A+B1	564.48	1209.60	1686.09	1755.76	2257.40	2889.48	3684.08	4680.95	5929.21	7302.29
	B	0.00	0.00	0.00	189.78	398.53	614.87	901.81	1278.94	1770.84	2408.34
	Total	564.48	1209.60	1686.09	1945.53	2655.93	3504.35	4585.90	5959.89	7700.04	9710.62
	TOTAL DELIVERY ORDER TRANSACTIONS										
	Total trades to clearing corporation (buy + sell) (from B)										
G	A+B1	201.60	483.84	766.40	975.42	1254.11	1605.26	2046.71	2600.53	3294.00	4056.83
	B	0.00	0.00	0.00	172.52	362.30	558.98	819.83	1162.67	1609.85	2189.40
H	Percentage of Institutional trades of total trades (from C)										
	A+B1	90.00%	75.00%	60.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%
	B	0.00%	0.00%	0.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
I	Institutional trades (delivery order movement between custodian and broker)										
	A+B1	181.44	362.88	459.84	390.17	501.65	642.11	818.69	1040.21	1317.60	1622.73
	B	0.00	0.00	0.00	8.63	18.11	27.95	40.99	58.13	80.49	109.47
J	*Total Delivery orders (G + I)*										
	A+B1	383.04	846.72	1226.24	1365.59	1755.76	2247.37	2865.40	3640.74	4611.61	5679.56
	B	0.00	0.00	0.00	181.15	380.41	586.93	860.82	1220.80	1690.34	2298.87
	Total	383.04	846.72	1226.24	1546.74	2136.17	2834.30	3726.22	4861.55	6301.95	7978.42
	TOTAL TRANSACTIONS IN CLEARING CORPORATION										
	Trade recording transactions	564.48	1209.60	1686.09	1945.53	2655.93	3504.35	4585.90	5959.89	7700.04	9710.62
	Delivery orders	383.04	846.72	1226.24	1546.74	2136.17	2834.30	3726.22	4861.55	6301.95	7978.42
	Total	947.52	2056.32	2912.33	3492.27	4792.11	6338.65	8312.12	10821.44	14001.99	17689.05

CALCULATION FOR NUMBER OF TRANSACTIONS (ELECTRONIC MOVEMENTS) IN DEPOSITORY

SCENARIO II - OPTIMISTIC CASE

All amounts in lakhs

Year Ending - December 31st

		1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
A	**Total trades on exchange that flow through the depository**										
	A+B1	100.80	241.92	383.20	487.71	627.06	802.63	1023.36	1300.26	1647.00	2028.41
	B	0.00	0.00	0.00	86.26	181.15	279.49	409.92	581.34	804.93	1094.70
B	**Total trades in depository (Buy and Sell) - movement between clearing corporation and broker**										
	A+B1	201.60	483.84	766.40	975.42	1254.11	1605.26	2046.71	2600.53	3294.00	4056.83
	B	0.00	0.00	0.00	172.52	362.30	558.98	819.83	1162.67	1609.85	2189.40
C	**% of Institutional trades of total trades**										
	A+B1	90.00%	75.00%	60.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%
	B	0.00%	0.00%	0.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
D	**Institutional trades - movement between broker and custodian**										
	A+B1	181.44	362.88	459.84	390.17	501.65	642.11	818.69	1040.21	1317.60	1622.73
	B	0.00	0.00	0.00	8.63	18.11	27.95	40.99	58.13	80.49	109.47
E	**Intra participant trades in institutional trades - movement between institution and custodian**										
	A+B1	181.44	362.88	459.84	390.17	501.65	642.11	818.69	1040.21	1317.60	1622.73
	B	0.00	0.00	0.00	8.63	18.11	27.95	40.99	58.13	80.49	109.47
F	**Intra participant trades in retail trades - movement between broker and investor sub-account**										
	A+B1	20.16	120.96	306.56	585.25	752.47	963.16	1228.03	1560.32	1976.40	2434.10
	B	0.00	0.00	0.00	163.90	344.18	531.03	778.84	1104.54	1529.36	2079.93
	Total transactions due to trades in depository										
	A+B1	584.64	1330.56	1992.65	2341.01	3009.87	3852.64	4912.11	6241.27	7905.61	9736.38
	B	0.00	0.00	0.00	353.67	742.71	1145.90	1680.66	2383.47	3300.20	4488.27
	Total	584.64	1330.56	1992.65	2694.68	3752.59	4998.54	6592.77	8624.74	11205.80	14224.65
	TOTAL TRANSACTIONS IN DEPOSITORY										
1	**Number of transactions due to trades (from above)**	584.64	1330.56	1992.65	2694.68	3752.59	4998.54	6592.77	8624.74	11205.80	14224.65
2	**Dematerialisation (Refer following schedule - Column 11)**	587.55	1026.52	645.10	1320.48	1295.25	1503.96	1620.73	1938.72	2308.34	2527.13
3	**Rematerialisation (Refer following schedule - Column 12)**	29.38	80.70	112.96	178.98	243.75	318.94	399.98	496.92	612.33	738.69
4	**Bonus/ Rights share distribution (Refer following schedule - Column 17)**	14.03	240.48	841.68	1831.46	2474.94	2722.43	2969.93	2969.93	2969.93	2969.93
	Total transactions in the Depository	**1215.60**	**2678.27**	**3592.38**	**6025.61**	**7766.52**	**9543.87**	**11583.40**	**14030.31**	**17096.40**	**20460.40**

SCENARIO II - OPTIMISTIC CASE

CALCULATION FOR SHARES IN DEPOSITORY

	1	2	3	4	5	6	7	8	9	10	11	12
Year	Total market Capitalisation (in Rupees lakhs)	Market capitalisation of scrips eligible for dematerialisation as a % of total market capitalisation %	% of shares dematerialised of those eligible %	Market Capitalisation of dematerialized shares Rs lakhs	BSE's share in dematerialised shares %	Market value of dematerialised shares at BSE (4 * 5) Rs lakhs	Turnover in depository per day Rs lakhs	Shares transacted per day Lakhs	Average value per share in depository (7 / 8) Rupees	Total shares in depository (6 / 9) Lakhs	Dematerialization transactions (Incremental shares in depository divided by 50) Lakhs	Rematerialisation transactions (Total shares in depository multiplied by 0.05) Lakhs
1997	59338800	49.50%	40.00%	11749082.40	50.00%	5874541.20	116980	585	199.97	29377.73	587.55	29.38
1998	71206560	85.00%	60.00%	36315345.60	50.00%	18157672.80	157944.00	702	224.99	80703.83	1026.52	80.70
1999	85447872	94.00%	75.00%	60240749.76	50.00%	30120374.88	224625.60	842	266.65	112958.65	645.10	112.96
2000	102537446.4	95.00%	80.00%	77928459.26	50.00%	38964229.63	289647.36	1331	217.70	178982.84	1320.48	178.98
2001	117918063.4	95.50%	85.00%	95719987.93	50.00%	47859993.97	374512.90	1907	196.35	243745.30	1295.25	243.75
2002	135605772.9	96.00%	90.00%	117163387.75	50.00%	58581693.88	472979.87	2575	183.67	318943.22	1503.96	318.94
2003	155946638.8	96.50%	90.00%	135439655.79	50.00%	67719827.90	581311.37	3433	169.31	399979.52	1620.73	399.98
2004	179338634.6	97.00%	90.00%	156562628.02	50.00%	78281314.01	714056.27	4533	157.53	496915.62	1938.72	496.92
2005	206239429.8	97.50%	90.00%	180975099.65	50.00%	90487549.83	876646.68	5932	147.78	612332.54	2308.34	612.33
2006	237175344.3	98.00%	90.00%	209188653.65	50.00%	104594326.83	1075711.01	7597	141.59	738689.27	2527.13	738.69

CALCULATION FOR NUMBER OF TRANSACTIONS FOR BONUS AND RIGHTS

	13	14	15	16	17
Year	Bonus	Rights	Total Bonus And Rights (11+12)	Total number of transactions (13 * 21)	Number of transactions In lakhs
1997	2	5	7	1402800	14.03
1998	30	50	80	24048000	240.48
1999	60	150	210	84168000	841.68
2000	120	250	370	183145560	1831.46
2001	200	300	500	247494000	2474.94
2002	200	350	550	272243400	2722.43
2003	200	400	600	296992800	2969.93
2004	200	400	600	296992800	2969.93
2005	200	400	600	296992800	2969.93
2006	200	400	600	296992800	2969.93

CALCULATION FOR NUMBER OF ACCOUNTS AND SUB ACCOUNTS

	18	19	20	21
Year	Number of Participants (other than R&T)	Number of		
		Sub Accounts Per participant	Number of Sub-accounts	Total number of accounts
1997	400	500	200000	200400
1998	600	500	300000	300600
1999	800	500	400000	400800
2000	988	500	494000	494988
2001	988	500	494000	494988
2002	988	500	494000	494988
2003	988	500	494000	494988
2004	988	500	494000	494988
2005	988	500	494000	494988
2006	988	500	494000	494988

Notes:

Data pertaining to Columns 1,2,3,4,7,8,13,14,18,19 is provided to us by the BSE.

Market capitalisation (Column 1) remains constant in Moderate and Optimistic case as per projections given by the BSE.

Due to this market value of shares in the depository (Column 6) remains constant in both the scenarios.

3) COMMON CALCULATIONS FOR BOTH SCENARIOS

A. CAPITAL EXPENDITURE

CAPITAL EXPENDITURE (Same for Both Scenarios)

Amounts in Rupees lakhs

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
A. Hardware and Site Preparation										
1 Computer site preparation										
Civil	1.77									
Furnishing	19.91									
Electrical work	10.29									
Fire alarm	2.37									
Air conditioning	25.61									
UPS	39.97									
Total Site Preparation Costs	199.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2 Professional services for hardware and software installation	330.92									
3 Hardware										
Customs Duty for Hardware	20.00%									
a) Hardware costs (including customs duty)	3168.00									
b) Back up accessories (CTDs)	15.33									
Total Hardware costs including customs duty	3183.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total Hardware and Site preparation costs *(Includes site preparation, professional services and hardware costs)*	**3714.10**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
B. Software										
Customs Duty for Software	10.00%									
Software costs (including customs duty)	1925.00									
Total Software costs	**1925.00**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C. Telecommunications										
Customs Duty	20.00%									
VSAT costs allocated to depository										
1 Central costs (including customs duty)										
Dedicated Hub - main for BOLT and depository	763.20									
Dedicated Hub - at back up site for BOLT and depository	763.20									
Installation of dedicated hub - main	31.80									
Installation of dedicated hub - back up site	31.80									
2 Networking costs										
Hook up costs										
Networking operations for VSAT	37.10									
UPS (Siemens) for DOV network	22.53									
Installation of UPS - Electrical expenses	6.36									
Total Telecommunications Costs	**1655.99**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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		1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
D.	**Other Capital Expenditure**										
i)	***Furniture and Fixture***										
a.	Main Office	125.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
b.	Back up office	50.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**175.11**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
ii)	***Office equipment***										
a.	Main Site	70.22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
b.	Back up site	8.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Total	**78.65**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
iii)	***SEBI Registration Fees***	**25.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
	Total Initial Capital Expenditure (excluding enhancements)	**7573.85**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**
E.	**Expenditure on Enhancements**										
1	***Enhancements***	**0.00**	**757.39**	**757.39**	**757.39**	**757.39**	**757.39**	**757.39**	**757.39**	**757.39**	**757.39**
2	***Ongoing Expenditure for***										
a.	***Furniture and Fixture***	**0.00**	**8.76**	**8.76**	**8.76**	**8.76**	**8.76**	**8.76**	**8.76**	**8.76**	**8.76**
b.	***Office Equipment***	**0.00**	**7.87**	**7.87**	**7.87**	**7.87**	**7.87**	**7.87**	**7.87**	**7.87**	**7.87**
	Total Capital Expenditure including enhancements and ongoing capital expenditure	**7573.85**	**774.01**	**774.01**	**774.01**	**774.01**	**774.01**	**774.01**	**774.01**	**774.01**	**774.01**

3) COMMON CALCULATIONS FOR BOTH SCENARIOS

B. ANNUAL OPERATING EXPENSES

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ANNUAL OPERATING EXPENSES (Same for Both Scenarios)

Amounts in Rupees lakhs

		1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
A.	**Employee costs**	**215.17**	**256.04**	**326.08**	**406.82**	**431.23**	**498.93**	**573.77**	**655.85**	**754.23**	**867.37**
B.	**Communication**										
1	*Annual charges for VSAT hook up - Transponder fee*	106.00	112.36	119.10	126.25	133.82	141.85	150.36	159.38	168.95	179.08
2	*Telephone , Fax expenses*	3.44	3.65	3.87	4.10	4.34	4.61	4.88	5.17	5.49	5.81
	Total	**109.44**	**116.01**	**122.97**	**130.35**	**138.17**	**146.46**	**155.24**	**164.56**	**174.43**	**184.90**
C.	Rent										
1	*Main office*	127.20	134.83	142.92	151.50	160.59	170.22	180.44	191.26	202.74	214.90
2	*Back up office*	50.88	53.93	57.17	60.60	64.23	68.09	72.17	76.50	81.09	85.96
	Total	**178.08**	**188.76**	**200.09**	**212.10**	**224.82**	**238.31**	**252.61**	**267.77**	**283.83**	**300.86**
D.	**Annual Maintenance Expenses**										
1	*Main office*										
	Annual Maintenance costs for running the computer site -										
	Equipment	213.38	226.18	239.75	254.14	269.38	285.55	302.68	320.84	340.09	360.50
	AC units	2.54	2.70	2.86	3.03	3.21	3.40	3.61	3.83	4.05	4.30
	UPS units	4.04	4.28	4.54	4.81	5.10	5.40	5.73	6.07	6.44	6.82
	Network	67.00	71.02	75.28	79.80	84.59	89.66	95.04	100.75	106.79	113.20
	Software	75.75	80.29	85.11	90.22	95.63	101.37	107.45	113.90	120.73	127.98
	Office equipment	8.48	8.99	9.53	10.10	10.71	11.35	12.03	12.75	13.52	14.33
	Total	**371.19**	**393.46**	**417.07**	**442.10**	**468.62**	**496.74**	**526.54**	**558.14**	**591.62**	**627.12**
2	*Back up office*	**0.85**	**0.90**	**0.95**	**1.01**	**1.07**	**1.13**	**1.20**	**1.28**	**1.35**	**1.43**
	Total Annual Maintenance expenses	**372.04**	**394.36**	**418.02**	**443.11**	**469.69**	**497.87**	**527.75**	**559.41**	**592.97**	**628.55**
E.	**Office Maintenance costs**										
	Office Maintenance Costs incurred by the BSE allocated to Depository										
1	*Main office*	41.50	51.76	64.56	80.51	100.42	125.24	156.21	194.82	242.99	303.06
2	*Back up office*	16.60	20.70	25.82	32.21	40.17	50.10	62.48	77.93	97.20	121.22
	Total	**58.10**	**72.46**	**90.38**	**112.72**	**140.59**	**175.34**	**218.69**	**272.75**	**340.18**	**424.28**

		1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
F.	**Professional Services**										
1	*Legal fees*	15.90	16.85	17.87	18.94	20.07	21.28	22.55	23.91	25.34	26.86
2	*Professional fees*	31.80	33.71	35.73	37.87	40.15	42.56	45.11	47.82	50.68	53.73
	Total	47.70	50.56	53.60	56.81	60.22	63.83	67.66	71.72	76.03	80.59
G.	**Stationary and Printing**										
1	*Computer centre*	39.81	42.20	44.73	47.42	50.26	53.28	56.48	59.86	63.46	67.26
2	*Other*	1.86	[illegible]	2.08	2.21	2.34	2.48	2.63	2.79	2.96	3.13
3	*Consumables for back up*	0.96	1.02	1.08	1.15	1.22	1.29	1.37	1.45	1.54	1.63
	Total	42.[illegible]	45.19	47.90	50.78	53.82	57.05	60.48	64.10	67.95	72.03
H.	**Other Expenses**										
1	*Insurance*										
a.	*Fire and Burglary*										
	Main office and back up office	18.12	19.97	21.83	23.69	25.55	27.41	29.26	31.12	32.98	34.84
b.	*Loss of data - computer crimes*										
	Main office and back up office	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	Total	118.12	119.97	121.83	123.69	125.55	127.41	129.26	131.12	132.98	134.84
2	*Training*										
	Training of internal BSE staff and consultants	344.75	36.54	38.74	41.06	43.52	46.14	48.90	51.84	54.95	58.25
	Training need analysis for members	1.06	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
	Total	345.81	36.56	38.75	41.07	43.54	46.15	48.92	51.85	54.97	58.26
	Total	463.93	156.53	160.58	164.76	169.09	173.56	178.18	182.97	187.94	193.10
I.	**Interface with other depositories**	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
J.	**Annual Fees payable to SEBI**										
	Rs. 10 lakhs per annum as per SEBI Regulations	10	10	10	10	10	10	10	10	10	10
K.	**Interest on long term debt**										
	Taken at 18% per annum	1363.29	1168.54	973.78	779.02	584.27	389.51	194.76	0.00	0.00	0.00
L.	**Debt Repayments**										
	Annual principal repayments for seven years	1081.98	1081.98	1081.98	1081.98	1081.98	1081.98	1081.98	0.00	0.00	0.00
M.	**Enhancements**										
	Payment for ongoing capital expenditure	0.00	774.01	774.01	774.01	774.01	774.01	774.01	774.01	774.01	774.01
	ANNUAL OPERATING EXPENSES	**3942.36**	**4314.44**	**4259.38**	**4222.45**	**4137.89**	**4106.85**	**4095.12**	**3023.15**	**3261.58**	**3535.69**

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3) COMMON CALCULATIONS FOR BOTH SCENARIOS

C. FEE SCHEDULE

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FEE SCHEDULE

CLEARING CORPORATION List of Services	Basis of Fee	*In Rupees* 1997
Trade Recording	Transaction based	2.22
Delivery orders	Transaction based	2.22

DEPOSITORY **List of Services**	**Basis of fee**	***In Rupees*** **1997**
Entry fee	One time fee	1,000
Account Maintenance	Period fee-Yearly	1,223.60
Sub accounting privileges	One time fee	100,000
Sub account maintenance (1)	Period fee-Yearly	1,223.60
Dematerialisation	Transaction fee	0.26
Rematerialisation	Transaction fee	0.26
Custody fee	Value based	0.0013%
Inter participant movement	Transaction fee	0.26
Intra participant movement	Transaction fee	0.26
Pledging facility	One time fee	1,000

(1) Payment a participant needs to make annually multiplied by number of subaccounts a participant maintains)

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3) COMMON CALCULATIONS FOR BOTH SCENARIOS

D. CALCULATION OF FEES

CALCULATION OF FEES
(For Both Cases)

			1997
A	**Total transactions (in lakhs)**		
A.1	Clearing corporation		355.32
A.2	Depository		848.19
B	**Market Value of dematerialised shares in the depository (Rupees lakhs)**		5874541
	CLEARING CORPORATION		
C	Annual cash outflows allocated to clearing coporation (Rupees lakhs)		788.47
	Fee per transaction in the Clearing Corporation (C/A.1) in Rupees		***2.22***
	DEPOSITORY		
	Transaction/ Value based annual operating expenses (Rupees lakhs)		
	Employee costs		172.13
	Communication		87.55
	Printing and Stationery		34.11
	Total (Rupees lakhs)		**293.79**
D	**Transaction based costs**	**75.00%**	**220.34**
E	**Value based costs**	**25.00%**	**73.45**
	Fee per transaction in the Depository (D/A.2) in Rupees		***0.260***
	Custody fee (Fee on value) (E / B)		***0.0013%***
F	**Period based costs (Rupees Lakhs)**		**2860.10**
	One time fee		Amt in Rupees
	Entry fee		1000.00
	Sub accounting priviledges		100000.00
	Pledging		1000.00
			102000.00
G	***Total one time fee (In Rupees lakhs)***		***1.02***
H	**Number of incremental participants**		**400**
I	**One time fee for incremental participants (G * H) (in Rupees lakhs)**		**408.00**
J	**Period fee - Net of One time fee (F - I)**		**2452.10**
K	**Number of account and subaccount holders**		**200400**
L	***Period fee per account holder (J / K) (in Rupees lakhs)***		***0.012236026***

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APPENDIX B

MODEL ASSUMPTIONS

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CAPITAL EXPENDITURE

A. Hardware and Site Preparation

1. Computer Site Preparation

This covers the cash outflow on account of

- Preparation of the computer room site which will house the main computer configuration, the testing computer configuration and central communication equipment; and
- Backup site which will house the backup computer configuration and communication equipment.

Site preparation costs has been taken as per information obtained from the Information Systems Department (ISD) of the Bombay Stock Exchange (BSE) These have been taken for the main site and the back up site.

2. Professional services

These professional services are related to information technology. The costs associated with the trading hardware and software have been considered here as a close approximation.

3. Hardware

We have made cost estimates of commercially available hardware. The lowest among them was Rs. 1100 lakhs and highest was Rs. 1880 lakhs. We cannot, however, guarantee BSE will be able to procure hardware at these prices.

The model takes hardware costs after adjustment for customs duty. Customs duty on import of hardware has been taken at 20% as per rates announced in the Budget of 1996-97.

Three separate and distinct computer configurations will be required : the main clearing and depository computer configuration, the backup computer configuration and a testing computer configuration. The hardware costs have been considered in the following manner:

Main computer configuration	100% of estimated computer configuration cost
Back up computer configuration	100% of estimated computer configuration cost
Testing computer configuration	40% of estimated computer configuration cost

Sufficient disk space for initial year(s) is assumed to be included in hardware expenses.

Depreciation has not been taken in the model as the model calculations are on a cash basis.

B. Software

Software costs have been estimated for four vendors. The lowest is Rs. 350 lakhs and the highest is Rs. 1,750 lakhs.

Three copies of the software will be required : one each for the main clearing and depository computer configuration, for the backup computer configuration and for the testing computer configuration. The software costs have been considered in the following manner:

1)	Main computer configuration	100% of the estimated price
2)	Back up computer configuration	0% of the estimated price
3)	Testing computer configuration	0% of the estimated price

It is assumed that copies of software will be made available at no extra cost by the vendor for the testing and backup computer configurations as long as production does not run on more than one computer configurations at a time. Accordingly software costs for backup and testing computer configurations machine are taken as nil.

Software costs have been taken at the estimated price with no adjustments for inflation or discounts. The customs duty at 10% is added.

The model takes hardware and software costs which are the most expensive. A comparison of the hardware and software cost estimates is given below :

Software and Hardware vendor	Software (Rs. lakhs)	Appropriate Hardware (Rs.lakhs)	Total (Rs.lakhs)
Vendor 1	1480	1100	2580
Vendor 2	585	1880	2465
Vendor 3	1750	1100	2850
Vendor 4	350	1100	1450

Since Vendor 3 has the highest price combinations, these costs have been utilized in the model to be on the conservative side.

The rates for hardware and software have been arrived at after considering an exchange rate of $1 = Rs. 36.

C. Telecommunications

As per assumption given by the ISD, the clearing corporation and the depository will utilize the existing BOLT trading network to communicate with brokers already connected to that network. A second VSAT will be set up to communicate with all other participants (new members in Mumbai or outstation members, custodians, banks, financial institutions, etc.) and Registrar and Transfer Agents. This VSAT network will also be utilized for the BOLT expansion.

The VSAT costs estimates for the main site and the back up site have been provided to us by the BSE. It has been assumed that since the VSAT network will be used for the purpose of BOLT and the depository its costs will be allocated in the ratio of 50:50 between the two. The VSAT network will interface with the depository through the existing BOLT network.

No VSAT hubs have been taken for backup for members located in the three buildings in and around BSE. We understand from ISD that the existing BOLT trading network connecting current BSE members has sufficient redundancies built in making it unnecessary to provide for additional backups for that network.

The installation costs of the dedicated hub at the main and backup site are taken from data provided to us by the BSE (ISD).

Customs duty on import of hardware for telecommunications has been taken at 20% as per rates announced in the Budget of 1996-97.

D. Other Capital Expenditure

1. Furniture and Fixture

The costs per square foot for furnishing has been taken at Rs. 1,000 per square foot. This is based on estimates provided by market sources.

a. *Main Office*

Total square feet required for the main office is 10,000 square feet as estimated in the following page:

Total number of employees estimated - 146 for 1997 (as per Attachment 1)

a) 3,000 sq. feet - front office space for 20-22 employees
b) At the rate of 100 sq. feet for 4 people i.e. approx. 3100 sq. feet for 124 employees
c) Buffer area - 900 sq. feet (this buffer is sufficient for the addition in number of employees from 146 in 1997 to 167 in 2006)
d) Computer room - 3000 sq. feet

Total sq. feet required equals 10,000 sq. feet (a) + b) + c) + d))
These space requirements and cost estimates have been obtained by us from market sources.

b. *Back up office*

Total area estimated us as per market sources is 4,000 square feet. The costs per square foot for furnishing has been taken at Rs. 1,000 per square foot.

2. Office Equipment

Office equipment for various departments in the clearing corporation and depository for the main office and the backup office has been estimated by a PW depository consultant with 25 years experience in depository operations. Based on the estimates, current market rates for the various equipment have been taken to arrive at total office equipment costs. The number of items for each type of equipment and their current market rates is given in Attachment 2.

3. Registration fees

Registration fees of Rs. 25 lakhs are based on provisions of Securities and Exchange Board of India (Depositories and Participants) Regulations, 1996. These are assumed to be paid in 1997.

E. Expenditure on Enhancements

1. Enhancements

In order to account for hardware additions and software enhancements we have assumed certain enhancements to the capital assets every year at the rate of 10% per year of total initial capital expenditure. This outflow takes place every year from the second year of operations. No enhancements have been assumed for the year 1997.

2. *Ongoing Capital Expenditure*

a. *Furniture and Fixture*

It is estimated that five percent of the initial expenditure for furniture and fixture is likely to be spent each year on an ongoing basis.

b. *Office Equipment*

It is estimated that ten percent of the initial expenditure for office equipment will be spent each year on an ongoing basis.

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ANNUAL OPERATING EXPENSES

A. Employee costs

The employee costs are based on the following:

1) Number of employees is based on the organization structure as per estimates given by a PW depository consultant with 25 years experience in depository operations.

2) The costs for the base year, 1995-96 are taken from the employee costs incurred by BOI Shareholding Limited (BISL). The assumption here is that the depository is a joint venture between BISL and BSE which is similar to the current structure of BISL. Therefore the compensation rates would be similar.

3) The rate of increase of employee costs is taken at 15%. This is based on the following assumption relating to quasi government/ public sector companies:
The employee costs rise on account of three factors:

- Inflation;
- Wage settlements; and
- Market comparison.

Of the above factors inflation accounts for 40% of the rise. Inflation rate assumed in the model is 6% hence rate of increase of employee costs is taken at 6% divided by 40% is 15%.

Detailed employee costs calculations are given in Attachment 1.

B. Communication

1. Annual Charges for VSAT hook up - Transponder fee

The transponder fee charges have been provided to us by ISD. These are estimated to occur each year and are adjusted to inflation.

2. Telephone - Fax expenses

The current expenses incurred by BISL and ISD are taken as basis for telephone - fax expenses. These are then adjusted to inflation.

C. Rent

Rent has been considered for the following:

1. Main office

Total square feet for the main office have been estimated at 10,000 sq. feet consisting of :

Total number of employees estimated - 146 for 1997 (as per Attachment 1)

a) 3,000 sq. feet - front office space for 20-22 employees
b) At the rate of 100 sq. feet for four people i.e. approx. 3100 sq. feet for 124 employees
c) Buffer area - 900 square feet - (This buffer is sufficient for the addition in number of employees from 146 in 1997 to 167 in 2006)
d) Computer room - 3,000 sq. feet

Total square feet required equals 10,000 sq. feet (a) + b) + c) + d))

These space requirement estimates have been obtained from market sources.

Rent per square foot is estimated at Rs. 100 per month as per BSE estimates.

2. Back up office

Total area estimated for the back up office as per market sources is 4,000 square feet of which 3,000 square feet will be for the computer room and 1,000 square feet for other purposes. Rent per square foot is estimated at Rs. 100 per month considering that the backup site will most probably be situated in or around Dadar.

Rent is adjusted to inflation.

D. Annual Maintenance Expenses

Annual Maintenance Costs costs for running the computer site and software are based on estimates provided to us by ISD and are adjusted to inflation.

E. Office Maintenance Costs

These costs are based on the maintenance costs provided by the BSE for maintenance and upkeep of the BSE building. An allocation is made to the depository based on total area (in square feet) occupied by the depository as compared to the total area of the BSE. Please refer Attachment 3 for Office maintenance costs.

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Office maintenance costs for the back up site have been taken on the same basis as the main office.

F. Professional Services

Fees for professional services are taken as per estimates provided to us by the BSE and adjusted to inflation. Primarily, these include expenses on legal services (other than fees for information technology services) allocated to the depository.

G. Stationery and Printing

1. Computer centre

Stationery and printing expenses for the computer centre of the depository are based on stationery and printing costs incurred by ISD and adjusted to inflation.

2. Other

Other stationery and printing expenses are taken on the basis of such costs incurred by BISL and adjusted to inflation.

3. Consumables for Backup

Costs incurred by ISD on consumables for backup are taken as a basis for consumables for backup and adjusted to inflation.

H. Other Expenses

1. Insurance

These expenses consist of insurance expenses for which estimates have been provided to us by the BSE. This pertains to insurance for fire and burglary.

Insurance premium to cover employee error is estimated as Rupees one crore per annum to insure against employee error or malfeasance.

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2. *Training*

Training expenses are based on expenses incurred by BSE on training BSE staff at the time of BOLT expansion. It is assumed that four times training costs for BOLT will be incurred by the depository.

10% of the costs incurred in the first year are assumed to be incurred every year. These are then adjusted to inflation.

I. Interface With Other Depositories

There may be inter depository charges for transactions between depositories. However for the purposes of this study we have assumed that this service is provided free of charge.

J. Annual Fees Payable to SEBI

Annual fees of Rs. 10 lakhs are based on provisions of Securities and Exchange Board of India (Depositories and Participants) Regulations, 1996

K. Interest on long term debt

Interest on long term debt has been taken at 18% per annum. This is based on BSE estimates that they would be able to source long term debt at this rate.

L. Debt Repayments

Repayment of debt is annually over a period of seven years beginning from the end of the first year : 1997

M. Enhancements

This includes expenditure incurred for enhancements for computer hardware and software and ongoing capital expenditure necessary for office equipment and furniture and fixtures.

Note : The depository has been accounted for on cash basis, hence no provision for working capital is considered.

SOURCES AND USES OF FUNDS

A. Sources of Funds

1. Initial Equity

Equity has been taken as zero since it is assumed that the capital expenditure is funded by debt (there is no infusion of equity at any stage). This does not take into account funding requirement of Rs. 100 crore for net capital requirement.

2. Debt

Debt has been arrived at to cover the initial capital expenditure. Repayment of debt is through seven equal installments starting from Year 1. The expenditure on enhancements and ongoing capital expenditure is recovered through fees. Interest is calculated at the rate of 18% per annum.

3. Clearing Corporation and Depository Fees

Total fees for a year are calculated as follows

1. The fee schedule is calculated in the first year : 1997, based on the BSE Scenario I - Moderate case, and is frozen for the out years. The same fees are then applied against Scenario II - Optimistic case.

2. There are four types of fees

    - One time fee;
    - Transaction fee;
    - Period fee; and
    - Value fees.

3. These fees are multiplied by the annual

    - Number of incremental participants (in case of one time fee);

    - Number of transactions (in case of transaction fee);

    - Number of accounts and sub accounts (in case of period fee); and

    - Market value of shares in the depository (in case of value based fee) to arrive at total annual inflows.

The number of participants, transactions, accounts and subaccounts, and market value of shares are arrived at based on projections given by BSE.

B. Uses of Funds

1. Initial Capital Expenditure

Hardware, software, telecommunications, other capital expenditure and enhancements are taken from the capital expenditure schedule.

2. Annual Operating Expenses

The annual operating expenses including hardware and software enhancements are taken from annual operating expenses schedule.

ALLOCATION OF TOTAL OPERATING COSTS

The total costs are allocated between:

- Clearing Corporation 20%
- Depository 80%

A. Clearing Corporation - 20%

Within the clearing corporation the costs are allocated between :

1) Trade Recording

This is based on the total number of trade recording transactions in a year in A, B1 and B group of shares. The calculations are given on Appendix ____.

2) Number of delivery orders

This is based on the total delivery orders in the clearing corporation in a year in A, B1 and B group of shares. The calculations are given on Appendix ____.

B. Depository 80%

1. One time fees

a. Entry fee

One time fee of Rs. 1,000 is charged

b. Sub Account Privileges

One time fee of Rs. one lakh is charged to depository participants wishing to have subaccount(s). This is a large fee since the depository needs to determine through the application and review process whether the participant has the necessary system to handle subaccounting.

c. Pledging Facility

One time fee of Rs. 1,000 is charged.

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2. *Period fees (yearly)*

a. *Account Maintenance*

This an annual period fee arrived at by dividing the annual operating expenses taken as period fee by the total number of depository participants for that period.

b. *Sub account maintenance*

This a annual period fee charged for each subaccount opened by a participant. This an annual period fee arrived at by dividing the annual operating expenses taken as period fee by the total number of depository participants including sub - accounts (if any) for that period.

3. *Transaction fees*

a. *Dematerialization*

This a transaction fee. The total cash outflows taken as transaction fee are divided by number of transactions in that period.

Dematerialization fee has been waived in Year 1 (i.e.. 1997) to provide an incentive for dematerialization. Due to waiving this fee the cash flows in 1997 show a negative balance (deficit) in Scenario I (Moderate case). The model does not estimate how this deficit is to be funded.

b. *Rematerialization*

This a transaction fee. The total cash outflows taken as transaction fee are divided by number of transactions in that period.

c. *Inter participant movement*

This is a fee based on transaction fee for movement of holdings from one participant's account to another participant's account. The total cash outflows taken as transaction fee are divided by number of transactions in that period.

d. *Intra participant movement*

This is a fee based on transaction fee based on movement between sub accounts of a participant or between the participant's main account and a sub account. The total cash outflows taken as transaction fee are divided by number of transactions in that period.

4. *Custody*

The total cash outflows taken as valued based fee are divided by market value of dematerialized shares in the depository.

Notes on services not included:

There will eventually be a per pledge fee. However estimates of pledge transactions have not been calculated.

Account freezing and unfreezing is not included as a depository service in the model because it is currently not clear under what circumstances this will occur. This service is not anticipated to be a significant cost or revenue generator.

Suspending account services not included for the same reasons as account freezing and unfreezing.

ALLOCATION METHODOLOGY

The operating expenses for the year 1997 are taken as the basis for calculation of fees

The total annual operating costs are recouped through fees indicated as below:

A. Transaction and Value based (custody) fees

The following operating costs are allocated to transaction and value based fee.

- Employee costs;
- Communication; and
- Printing and Stationery.

Seventy five percent of the above expenses are allocated to transaction based fee and the balance 25% is taken for value based fee.

The expenses allocated to transaction based fee are divided by number of transactions (electronic movements) in the depository to arrive at fee per transaction. The calculation for number of transactions in the depository are given in Appendix ____

The expenses allocated to value based fee is divided by market value of shares in the depository in the year 1997. This ratio thus arrived is used as a basis for calculation of value based fee in later years.

B. One time fees

The following one time fees are charged to a depository participant

	Rupees
Entry fee	1,000
Sub account privileges	1,00,000
Pledging facility	1,000

Therefore a total one time fee of Rs. 1,02,000 is estimated from each participant. However, the subaccounting and pledging fees are optional services which a participant may or may not avail himself.

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C. Period based fees

The following operating expenses are taken as period fees

Rent
Annual Maintenance Expenses
Office Maintenance costs
Professional fees
Other expenses
Annual fees payable to SEBI
Interest
Principal repayments
Enhancements

The total amount of operating costs taken as period fees is deducted by the one time fee of Rs. 1,02,000 (as above) to arrive at net period fee. This is divided by the total account holders and sub accounts to arrive at period fee per account or sub account.

ATTACHMENT 1

EMPLOYEE COSTS

EMPLOYEE COSTS

Calculation of number of employees and employee costs

Category of Employee	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
I										
Chairman, Managing Director, and Deputy Managing Director	4	4	4	4	4	4	4	4	4	4
II										
Department heads	6	6	6	6	6	6	6	6	6	6
III										
Operations Department										
R&T Interface	4	7	9	9	8	9	9	8	8	8
Sales Interface	16	24	32	40	40	40	40	40	40	40
Participant Interface	40	34	40	46	33	33	33	33	33	33
Clearing Corporation Interface	1	1	1	1	1	1	1	1	1	1
Clearing Corporation	4	4	4	4	4	4	4	4	4	4
Information Services Department	16	16	16	16	16	16	16	16	16	16
Marketing Department	18	18	18	18	18	18	18	18	18	18
Compliance Department	7	7	7	7	7	7	7	7	7	7
Internal Audit Department	5	5	5	5	5	5	5	5	5	5
IV										
Support staff	25	25	25	25	25	25	25	25	25	25
Total number of employees	**146**	**151**	**167**	**181**	**167**	**168**	**168**	**167**	**167**	**167**

Summary of number of employees

	Year									
Category of employee	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
I	4	4	4	4	4	4	4	4	4	4
II	6	6	6	6	6	6	6	6	6	6
III	111	116	132	146	132	133	133	132	132	132
IV	25	25	25	25	25	25	25	25	25	25
Total	**146**	**151**	**167**	**181**	**167**	**168**	**168**	**167**	**167**	**167**

Annual salary of each category

Category	**Salary (Rs. lakhs)**
I	5.00
II	1.80
III	1.30
IV	0.48

Growth in salary per year 15%

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Total employee costs (in Rupees lakhs)	215.17	256.04	326.08	406.82	431.23	498.93	573.77	655.85	754.23	867.37

ATTACHMENT 2

OFFICE EQUIPMENT

OFFICE EQUIPMENT

For Main Office

Department	Fax	Photocopier	Printer	Line printer	Terminal -diskless node	Terminal with hard disk & floppy drive	Telephone	Direct lines	Calculator
Management	1	1						10	
Operations Department	1	1				1			
Registrar interface			1		4		4	1	4
Clearing Corporation Interface			1		1		1		1
Participant Services			1		40		40	8	40
Security Masterfile			1		4		4	1	
Information Technologies Staff	1	1				1			
Communications							5	2	
Computer Operations				2			9	1	
Disaster Recovery					1		1		
Marketing Department Staff	1	1	1			1			
Sales department							16	5	
Training department					6		6	1	
Membership					4		4	2	
Compliance Department	1	1	1						
Surveillence Department					4		4	1	4
Legal Department							2	1	
Internal Audit	1	1	1		5		5		5
Support Services	2	2			1		16	2	10
Secretaries ...	1	1	2		6	1	6		
Risk Management					2		2	1	2
Cash Settlement	1	1	1		4	1	4	1	4
Clearing Corporation	1	1	1		4		4	1	4
TOTAL	11	11	11	2	86	5	133	38	74
Cost per item (in Rupees)	27,120	74,460	35,000	575,000	32,500	54,500	4,500	26,500	550
Total cost per item category (in Rupees) for 1996	298,320	819,060	385,000	1,150,000	2,795,000	272,500	598,500	265,000	40,700

Total costs in Rs. lakhs for 1997 (after taking inflation @ 6% per annum)	70.22

For Back up office

Department	Fax	Photocopier	Printer	Line printer	Terminal -diskless node	Terminal with hard disk & floppy drive	Telephone	Direct lines	Calculator
Common Utilities	1	1	2	0	0	7	0	14	7
TOTAL	1	1	2	0	0	7	0	14	7
Cost per item (in Rupees)	42,120	74,460	35,000	575,000	32,500	54,500	1,000	16,000	550
Total cost per item category (in Rupees) for 1996	42,120	74,460	70,000	0	0	381,500	0	224,000	3,850

Total cost in Rupees lakhs for 1997 (after taking inflation @ 6% per annum)	8.44

Assumptions

(Based on discussions with BSE officials and information from market sources)

i) Each EPABX extension costs Rs 3,500

ii) The cost of converting a direct line to a fax line is Rs 600

iii) MTNL cost of Rs 15,000 per direct line has not been considered for the main site since BSE has spare capacity that can be availed of.

ATTACHMENT 3

OFFICE MAINTNANCE COSTS

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OFFICE MAINTENANCE COSTS

Amounts in Rupees

Expenditure Heads	Total Expenses for annual maintenance (As per data provided by BSE)		
	94-95(10 months)	94-95	95-96
Electricity	20375000	24450000	35586211
Building repairs & maintenance	4577000	5492400	9430571
Municipal taxes	4427000	5312400	6279367
Insurance	1587000	1904400	2103153
Repairs to fire fighting	1011000	1213200	854895
Miscellaneous Expenditure	361000	433200	0
Water charges	1800000	2160000	1453000
Elevator (OTIS)	1215000	1458000	2004180
A.C. machinery maintenance	970000	1164000	1323653
Security Expenses	1548000	1857600	3706423
Depreciation			
Elevator (OTIS)	3569411	4283293	2712964
A.C. machinery maintenance	3839462	4607354	3376286
Fire fighting	743624	892349	727900
Electricity Installation	2064002	2476802	2411984
TOTAL	**48087499**	**57704999**	**71970587**
Yearly % increase in AMC			**24.72%**

	Costs - Rs lakhs for 1996	Area (Sq. feet)
Total office maintenance costs for BSE	719.71	**216294**
Hence total office maintenance costs for depository		
For main office	**33.27**	**10000**
For back up site	**13.31**	**4000**

Costs for 1997 after taking multiplier of 24.72%	Costs - Rs lakhs for 1997
Total office maintenance costs for BSE	**897.63**
Hence total office maintenance costs for depository	
For main office	**41.50**
For back up site	**16.60**

APPENDIX C

BSE MARKET PROJECTIONS

- SCENARIO I (MODERATE CASE)

- SCENARIO II (OPTIMISTIC CASE)

SCENARIO I (MODERATE CASE)

SCENARIO I: 20% ANNUAL GROWTH IN MARKET CAPITALIZATION, 1997 - 2000
BSE TRADING TURNOVER PREDICTED AS PERCENTAGE OF TOTAL MARKET TURNOVER

Table 1: Total Market Assumptions (Market Capitalization and Turnover)

Year	Mkt Cap (crores)	% Growth In Mkt Cap	Total Market Turnover Per Day (Rs.) (1)						Total Market Turnover (Rs. crores) (3)	Implied Velocity (4)
			A		B1		B			
			(Rs. crores/ day) (2)	% Growth	(Rs. crores/ day) (2)	% Growth	(Rs. crores/ day) (2)	% Growth		
Apr-Jul 96 (5)	466500		1,099.1		366.4		114.1		379,099.10	81.26%
Dec 96	494490	6%	1,165.0	6%	388.3	6%	121.0	6%	401,845.05	81.26%
Dec 97	593388	20%	1,398.1	20%	466.0	20%	145.2	20%	482,214.05	81.26%
Dec 98	712066	20%	1,858.0	33%	619.3	33%	192.9	33%	640,859.04	90.00%
1999	854479	20%	2,353.5	27%	784.5	27%	244.3	27%	811,754.78	95.00%
2000	1025374	20%	2,972.8	26%	990.9	26%	308.7	26%	1,025,374.46	100.00%
2001	1179181	15%	3,418.7	15%	1,139.6	15%	354.9	15%	1,179,180.63	100.00%
2002	1356058	15%	3,931.5	15%	1,310.5	15%	408.2	15%	1,356,057.73	100.00%
2003	1559466	15%	4,521.3	15%	1,507.1	15%	469.4	15%	1,559,466.39	100.00%
2004	1793386	15%	5,199.5	15%	1,733.2	15%	539.8	15%	1,793,386.35	100.00%
2005	2062394	15%	5,979.4	15%	1,993.1	15%	620.8	15%	2,062,394.30	100.00%
2006	2371753	15%	6,876.3	15%	2,292.1	15%	713.9	15%	2,371,753.44	100.00%
1	2	3	4	5	6	7	8	9	10	11

(1) 240 trading days in a year.

(2) Of Total Mkt Trades, the following is the percentage division between a, B1 and B (based on Apr-Jul 96 actuals):

A Scrips	69.58%
B1 Scrips	23.19%
B Scrips	7.22%

(3) Daily turnover of A, B1 and B scrips multiplied by 240 trading days per year.

(4) Total Mkt Turnover/Mkt Capitalization.

(5) April-July1996 turnover for total market based on BSE actual figures and assumption that BSE represents 33.3% of total market turnover during that period.

Table 2: BSE Market Assumptions (Scenario I)

	BSE's Turnover as % of Total Mkt. Turnover	Total BSE Turnover Per Day (Rs.) (2)						No. of Trades/Day						No. of Delivery Orders						Ave. Size of Trade (Rs.)		
		A		B1		B		A		B1		B		A		B1		B		A	B1	B
Year		(Rs. crores/ day)	% Growth	(Rs. crores/ day)	% Growth	(Rs. crores/ day)	% Growth	No. of Trades (lakhs/day)	% Growth	No. of Trades (lakhs/day)	% Growth	No. of Trades (lakhs/day)	% Growth	No. of Del. Orders (lakhs/day)	Del. Orders as % of Trades	No. of Del. Orders (lakhs/day)	Del. Orders as % of Trades	No. of Del. Orders (lakhs/day)	Del. Orders as % of Trades			
Apr-Jul 96 (1)	34%	366.0		122.0		38.0		0.29		0.12		0.36		0.014	4.83%	0.028	23.33%	0.092	25.56%	126,207	101,667	10,556
Dec 96	35%	407.8	11%	135.9	11%	42.3	11%	0.32	11%	0.13	11%	0.40	11%	0.015	4.67%	0.031	23.33%	0.108	27.04%	126,207	101,667	10,556
Dec 97	40%	559.2	37%	186.4	37%	58.1	37%	0.44	37%	0.18	37%	0.55	37%	0.022	5.00%	0.028	15.00%	0.135	24.52%	126,207	101,667	10,556
Dec 98	45%	836.1	50%	278.7	50%	86.8	50%	0.66	50%	0.27	50%	0.82	50%	0.033	5.00%	0.041	15.00%	0.194	23.64%	126,207	101,667	10,556
1999	50%	1,176.7	41%	392.2	41%	122.2	41%	0.93	41%	0.39	41%	1.16	41%	0.047	5.00%	0.058	15.00%	0.289	25.00%	126,207	101,667	10,556
2000	50%	1,486.4	26%	495.5	26%	154.3	26%	1.18	26%	0.49	26%	1.46	26%	0.059	5.00%	0.073	15.00%	0.366	25.00%	126,207	101,667	10,556
2001	50%	1,709.4	15%	569.8	15%	177.5	15%	1.35	15%	0.56	15%	1.68	15%	0.068	5.00%	0.084	15.00%	0.420	25.00%	126,207	101,667	10,556
2002	50%	1,965.8	15%	655.3	15%	204.1	15%	1.56	15%	0.64	15%	1.93	15%	0.078	5.00%	0.097	15.00%	0.483	25.00%	126,207	101,667	10,556
2003	50%	2,260.6	15%	753.5	15%	234.7	15%	1.79	15%	0.74	15%	2.22	15%	0.090	5.00%	0.111	15.00%	0.556	25.00%	126,207	101,667	10,556
2004	50%	2,599.7	15%	866.6	15%	269.9	15%	2.06	15%	0.85	15%	2.56	15%	0.103	5.00%	0.128	15.00%	0.639	25.00%	126,207	101,667	10,556
2005	50%	2,989.7	15%	996.6	15%	310.4	15%	2.37	15%	0.98	15%	2.94	15%	0.118	5.00%	0.147	15.00%	0.735	25.00%	126,207	101,667	10,556
2006	50%	3,438.1	15%	1,146.0	15%	357.0	15%	2.72	15%	1.13	15%	3.38	15%	0.136	5.00%	0.169	15.00%	0.845	25.00%	126,207	101,667	10,556
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23

(1) April-July 1996 are actual figures.
(2) 240 trading days in a year.

Table 3: Dematerialisation Assumption Table (Scenario I)

Year	Cumm. Scrips in Depository A	B1	B	Total	% of Total Mkt. Cap. Eligible For Demat.	% of Shares Demat. of Those Eligible	Turnover Thru Depository/Day: A % of Total Turnover Thru Dep.	A Rs. Crores Thru Depository	B1 % of Total Turnover Thru Dep.	B1 Rs. Crores Thru Depository	B % of Total Turnover Thru Dep.	B Rs. Crores Thru Depository	Total Rs. Crores	Trades/Day: Total (lakhs) A+B1	Total (lakhs) B	% of Total Trades Thru Depository A+B1	% of Total Trades Thru Depository B	Total Thru Depository A, B1 and B (lakhs)
July 96	0	0	0	0	0.0%	0%	0%	0.0	0%	0.0	0%	0.0	0.00	0.41	0.36	0.0%	0%	0.00
Dec. 96	0	0	0	0	0.0%	0%	0%	0.0	0%	0.0	0%	0.0	0.00	0.46	0.40	0.0%	0%	0.00
1997	30	20	0	50	49.5%	40%	70%	391.5	30%	55.9	0%	0.0	447.38	0.63	0.55	25.0%	0%	0.16
1998	30	120	0	150	85.0%	60%	70%	585.3	60%	167.2	0%	0.0	752.49	0.94	0.82	50.0%	0%	0.47
1999	30	320	0	350	94.0%	75%	85%	1000.2	65%	255.0	0%	0.0	1,255.18	1.32	1.16	66.0%	0%	0.87
2000	30	400	220	650	95.0%	80%	90%	1337.8	65%	322.1	20%	30.9	1,690.68	1.67	1.46	70.0%	20%	1.46
2001	30	400	570	1000	95.5%	85%	95%	1623.9	70%	398.9	35%	62.1	2,084.86	1.91	1.68	75.0%	35%	2.02
2002	30	400	1070	1500	96.0%	90%	100%	1965.8	70%	458.7	45%	91.8	2,516.29	2.20	1.93	80.0%	45%	2.63
2003	30	400	1570	2000	96.5%	90%	100%	2260.6	75%	565.2	55%	129.1	2,954.88	2.53	2.22	85.0%	55%	3.38
2004	30	400	2070	2500	97.0%	90%	100%	2599.7	80%	693.3	65%	175.4	3,468.44	2.91	2.56	90.0%	65%	4.28
2005	30	400	3070	3500	97.5%	90%	100%	2989.7	85%	847.1	75%	232.8	4,069.57	3.35	2.94	95.0%	75%	5.39
2006	30	400	4070	4500	98.0%	90%	100%	3438.1	90%	1031.4	85%	303.4	4,773.00	3.85	3.38	97.5%	85%	6.63
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

Year	Qty of Shares Transacted/Day: A+B1 Total (crores)	A+B1 % Growth	B Total (crores)	B % Growth	% of Total Trades Thru Thru Depository A+B1	% of Total Trades Thru Thru Depository B	Total Thru Depository A+B1 (crores)	Total Thru Depository B (crores)	Total Thru Depository Total (crores)	Delivery Orders/Day: Total Del Orders A+B1 (lakhs)	Total Del Orders B (lakhs)	% Thru Depository A+B1	% Thru Depository B	Del Orders Thru Depository A+B1 (lakhs)	Del Orders Thru Depository B (lakhs)	Total Del Orders Thru Depository (lakhs)
July 96	2.25		1.74		0.0%	0%	0.00	0.00	0.00	0.042	0.092	0.0%	0%	0.000	0.000	0.000
Dec. 96	2.51	11%	1.94	11%	0.0%	0%	0.00	0.00	0.00	0.046	0.108	0.0%	0%	0.000	0.000	0.000
1997	3.44	37%	2.66	37%	65.0%	0%	2.23	0.00	2.23	0.050	0.135	65.0%	0%	0.032	0.000	0.032
1998	5.14	50%	3.97	50%	65.0%	0%	3.34	0.00	3.34	0.074	0.194	65.0%	0%	0.048	0.000	0.048
1999	7.23	41%	5.59	41%	65.0%	0%	4.70	0.00	4.70	0.104	0.289	65.0%	0%	0.068	0.000	0.068
2000	9.14	26%	7.07	26%	70.0%	20%	6.40	1.41	7.81	0.132	0.366	70.0%	20%	0.092	0.073	0.165
2001	10.51	15%	8.13	15%	75.0%	35%	7.88	2.84	10.73	0.152	0.420	75.0%	35%	0.114	0.147	0.261
2002	12.08	15%	9.35	15%	80.0%	45%	9.67	4.21	13.87	0.175	0.483	80.0%	45%	0.140	0.218	0.357
2003	13.90	15%	10.75	15%	85.0%	55%	11.81	5.91	17.72	0.201	0.556	85.0%	55%	0.171	0.306	0.476
2004	15.98	15%	12.36	15%	90.0%	65%	14.38	8.03	22.42	0.231	0.639	90.0%	65%	0.208	0.416	0.623
2005	18.38	15%	14.21	15%	95.0%	75%	17.46	10.66	28.12	0.265	0.735	95.0%	75%	0.252	0.551	0.804
2006	21.14	15%	16.35	15%	97.5%	85%	20.61	13.89	34.50	0.305	0.845	97.5%	85%	0.298	0.719	1.016
	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35

Year	Qty of Shares Per Del. Order/Day: No. of Shares/ Del Order A+B1	Total # of Shares for Del Orders A+B1 (lakhs)	No. of Shares/ Del Order B	Total # of Shares for Del Orders B (lakhs)	% Thru Depository A+B1	% Thru Depository B	Total Thru Depository A+B1 (lakhs)	Total Thru Depository B (lakhs)	Total Thru Depository A,B1+B (lakhs)	Value of Delivery Orders/Day: Value/Del Order Thru Depository A+B1 (Rs.)	Total Val of Del Orders Thru Dep. A+B1 (Rs. crores)	Value/Del Order Thru Depository B (Rs.)	Total Val of Del Orders Thru Dep. B (Rs. crores)	Total Val of Del Orders Thru Dep. A, B1+B (Rs. crores)
July 96	720	30.20	915	84.40	0.0%	0%	0.00	0.00	0.00	0	0	0	0	0
Dec. 96	720	33.32	915	99.23	0.0%	0%	0.00	0.00	0.00	0	0	0	0	0
1997	720	35.75	915	123.41	65.0%	0%	23.24	0.00	23.24	1,386,036	447	0	0	447
1998	720	53.46	915	177.89	65.0%	0%	34.75	0.00	34.75	1,559,290	752	0	0	752
1999	720	75.23	915	264.77	65.0%	0%	48.90	0.00	48.90	1,848,047	1,255	0	0	1,255
2000	720	95.03	915	334.44	70.0%	20%	66.52	66.89	133.41	1,796,484	1,660	42,222	31	1,691
2001	720	109.29	700	294.23	75.0%	35%	81.97	102.98	184.95	1,776,821	2,023	42,222	62	2,085
2002	720	125.68	700	338.37	80.0%	45%	100.54	152.27	252.81	1,736,154	2,424	42,222	92	2,516
2003	720	144.53	700	389.13	85.0%	55%	122.85	214.02	336.87	1,656,109	2,826	42,222	129	2,955
2004	720	166.21	700	447.49	90.0%	65%	149.59	290.87	440.46	1,584,957	3,293	42,222	175	3,468
2005	720	191.14	700	514.62	95.0%	75%	181.59	385.96	567.55	1,521,296	3,837	42,222	233	4,070
2006	720	219.82	700	591.81	97.5%	85%	214.32	503.04	717.36	1,501,538	4,470	42,222	303	4,773
	36	37	38	39	40	41	42	43	44	45	46	47	48	49

SCENARIO II (OPTIMISTIC CASE)

PB

SCENARIO II
BSE TRADING TURNOVER DOUBLES BY DECEMBER 1996, A+B1 TURNOVER DOUBLES AGIN BY DEC 1997,
B TURNOVER TRIPLES BY DEC 1997, 20% GROWTH PER YEAR THEREAFTER IN A, B1 AND B SCRIPS

Table 1: Market Trading Assumptions

Year	Mkt Cap (crores)	% Growth In Mkt Cap	Turnover (Rs.) A (Rs. crores/ day)	Turnover (Rs.) A % Growth	Turnover (Rs.) B1 (Rs. crores/ day)	Turnover (Rs.) B1 % Growth	Turnover (Rs.) B (Rs. crores/ day)	Turnover (Rs.) B % Growth	No. of Trades/Day A No. of Trades (lakhs/day)	No. of Trades/Day A % Growth	No. of Trades/Day B1 No. of Trades (lakhs/day)	No. of Trades/Day B1 % Growth	No. of Trades/Day B No. of Trades (lakhs/day)	No. of Trades/Day B % Growth	No. of Delivery Orders A No. of Del. Orders (lakhs/day)	No. of Delivery Orders A Del. Orders as % of Trades	No. of Delivery Orders B1 No. of Del. Orders (lakhs/day)	No. of Delivery Orders B1 Del. Orders as % of Trades	No. of Delivery Orders B No. of Del. Orders (lakhs/day)	No. of Delivery Orders B Del. Orders as % of Trades	Ave. Size of Trade (Rs.) A	Ave. Size of Trade (Rs.) B1	Ave. Size of Trade (Rs.) B
Apr-Jul 96	466500		366.0		122.0		38.0		0.29		0.12		0.36		0.014	4.83%	0.028	23.33%	0.092	25.56%	126,207	101,667	10,556
Dec 96	494490	6%	732.0	100%	244.0	100%	72.0	89%	0.60	107%	0.24	100%	0.68	89%	0.028	4.67%	0.056	23.33%	0.184	27.04%	122,000	101,667	10,582
Dec 97	593388	20%	1,462.0	100%	488.0	100%	216.0	200%	1.20	100%	0.48	100%	1.04	53%	0.060	5.00%	0.072	15.00%	0.255	24.52%	121,833	101,667	20,769
Dec 98	712066	20%	1,754.4	20%	585.6	20%	259.2	20%	1.44	20%	0.58	20%	1.25	20%	0.072	5.00%	0.086	15.00%	0.295	23.64%	121,833	101,667	20,769
1999	854479	20%	2,105.3	20%	702.7	20%	311.0	20%	1.73	20%	0.69	20%	1.50	20%	0.086	5.00%	0.104	15.00%	0.374	25.00%	121,833	101,667	20,769
2000	1025374	20%	2,526.3	20%	843.3	20%	373.2	20%	2.07	20%	0.83	20%	1.80	20%	0.104	5.00%	0.124	15.00%	0.449	25.00%	121,833	101,667	20,769
2001	1179181	15%	3,031.6	20%	1,011.9	20%	447.9	20%	2.49	20%	1.00	20%	2.16	20%	0.124	5.00%	0.149	15.00%	0.539	25.00%	121,833	101,667	20,769
2002	1356058	15%	3,637.9	20%	1,214.3	20%	537.5	20%	2.99	20%	1.19	20%	2.59	20%	0.149	5.00%	0.179	15.00%	0.647	25.00%	121,833	101,667	20,769
2003	1559466	15%	4,365.5	20%	1,457.2	20%	645.0	20%	3.58	20%	1.43	20%	3.11	20%	0.179	5.00%	0.215	15.00%	0.776	25.00%	121,833	101,667	20,769
2004	1793386	15%	5,238.6	20%	1,748.6	20%	774.0	20%	4.30	20%	1.72	20%	3.73	20%	0.215	5.00%	0.258	15.00%	0.932	25.00%	121,833	101,667	20,769
2005	2062394	15%	6,286.3	20%	2,098.3	20%	928.8	20%	5.16	20%	2.06	20%	4.47	20%	0.258	5.00%	0.310	15.00%	1.118	25.00%	121,833	101,667	20,769
2006	2371753	15%	7,543.6	20%	2,518.0	20%	1,114.5	20%	6.19	20%	2.48	20%	5.37	20%	0.310	5.00%	0.372	15.00%	1.342	25.00%	121,833	101,667	20,769
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

Notes:
1. April-July 1996 are actual figures.
2. 240 trading days in a year.

Table 2: Dematerialisation Assumption Table (Scenario II)

Year	Cumm. Scrips in Depository A	Cumm. Scrips in Depository B1	Cumm. Scrips in Depository B	Cumm. Scrips in Depository Total	% of Total Mkt. Cap. Eligible For Demat.	% of Shares Demat. of Those Eligible	Turnover Thru Depository/Day: A % of Total Turnover Thru Dep.	A Rs. Crores Thru Depository	B1 % of Total Turnover Thru Dep.	B1 Rs. Crores Thru Depository	B % of Total Turnover Thru Dep.	B Rs. Crores Thru Depository	Total Rs. Crores	Trades/Day: Total (lakhs) A+B1	Total (lakhs) B	% of Total Trades Thru Thru Depository A+B1	% of Total Trades Thru Thru Depository B	Total Thru Depository A, B1 and B (lakhs)
July 96	0	0	0	0	0.0%	0%	0%	0.0	0%	0.0	0%	0.0	0.00	0.41	0.36	0.0%	0%	0.00
Dec. 96	0	0	0	0	0.0%	0%	0%	0.0	0%	0.0	0%	0.0	0.00	0.84	0.68	0.0%	0%	0.00
1997	30	20	0	50	49.5%	40%	70%	1023.4	30%	146.4	0%	0.0	1,169.80	1.68	1.04	25.0%	0%	0.42
1998	30	120	0	150	85.0%	60%	70%	1228.1	60%	351.4	0%	0.0	1,579.44	2.02	1.25	50.0%	0%	1.01
1999	30	320	0	350	94.0%	75%	85%	1789.5	65%	456.8	0%	0.0	2,246.26	2.42	1.50	66.0%	0%	1.60
2000	30	400	220	650	95.0%	80%	90%	2273.7	65%	548.1	20%	74.6	2,896.47	2.90	1.80	70.0%	20%	2.39
2001	30	400	570	1000	95.5%	85%	95%	2880.0	70%	708.3	35%	156.8	3,745.13	3.48	2.16	75.0%	35%	3.37
2002	30	400	1070	1500	96.0%	90%	100%	3637.9	70%	850.0	45%	241.9	4,729.80	4.18	2.59	80.0%	45%	4.51
2003	30	400	1570	2000	96.5%	90%	100%	4365.5	75%	1092.9	55%	354.7	5,813.11	5.02	3.11	85.0%	55%	5.97
2004	30	400	2070	2500	97.0%	90%	100%	5238.6	80%	1398.9	65%	503.1	7,140.56	6.02	3.73	90.0%	65%	7.84
2005	30	400	3070	3500	97.5%	90%	100%	6286.3	85%	1783.6	75%	696.6	8,766.47	7.22	4.47	95.0%	75%	10.22
2006	30	400	4070	4500	98.0%	90%	100%	7543.6	90%	2266.2	85%	947.3	10,757.11	8.67	5.37	97.5%	85%	13.01
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

Year	Qty of Shares Transacted/Day: A+B1 Total (crores)	A+B1 % Growth	B Total (crores)	B % Growth	% of Total Trades Thru Thru Depository A+B1	% of Total Trades Thru Thru Depository B	Total Thru Depository A+B1 (crores)	Total Thru Depository B (crores)	Total Thru Depository Total (crores)	Delivery Orders/Day: Total Del Orders A+B1 (lakhs)	Total Del Orders B (lakhs)	% Thru Depository A+B1	% Thru Depository B	Del Orders Thru Depository A+B1 (lakhs)	Del Orders Thru Depository B (lakhs)	Total Del Orders Thru Depository (lakhs)
July 96	2.25		1.74		0.0%	0%	0.00	0.00	0.00	0.042	0.092	0.0%	0%	0.000	0.000	0.000
Dec. 96	4.50	100%	3.29	89%	0.0%	0%	0.00	0.00	0.00	0.084	0.184	0.0%	0%	0.000	0.000	0.000
1997	9.00	100%	7.00	113%	65.0%	0%	5.85	0.00	5.85	0.132	0.255	65.0%	0%	0.086	0.000	0.086
1998	10.80	20%	8.40	20%	65.0%	0%	7.02	0.00	7.02	0.158	0.295	65.0%	0%	0.103	0.000	0.103
1999	12.96	20%	10.08	20%	65.0%	0%	8.42	0.00	8.42	0.190	0.374	65.0%	0%	0.124	0.000	0.124
2000	15.55	20%	12.10	20%	70.0%	20%	10.89	2.42	13.31	0.228	0.449	70.0%	20%	0.160	0.090	0.250
2001	18.66	20%	14.51	20%	75.0%	35%	14.00	5.08	19.07	0.274	0.539	75.0%	35%	0.205	0.189	0.394
2002	22.39	20%	17.42	20%	80.0%	45%	17.91	7.84	25.75	0.328	0.647	80.0%	45%	0.263	0.291	0.554
2003	26.87	20%	20.90	20%	85.0%	55%	22.84	11.50	34.33	0.394	0.776	85.0%	55%	0.335	0.427	0.762
2004	32.25	20%	25.08	20%	90.0%	65%	29.03	16.30	45.33	0.473	0.932	90.0%	65%	0.426	0.606	1.031
2005	38.69	20%	30.09	20%	95.0%	75%	36.76	22.57	59.32	0.568	1.118	95.0%	75%	0.539	0.838	1.378
2006	46.43	20%	36.12	20%	97.5%	85%	45.27	30.70	75.97	0.681	1.342	97.5%	85%	0.664	1.140	1.804
	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35

Year	Qty of Shares Per Del. Order/Day: No. of Shares/ Del Order A+B1	Total # of Shares for Del Orders A+B1 (lakhs)	No. of Shares/ Del Order B	Total # of Shares for Del Orders B (lakhs)	% Thru Depository A+B1	% Thru Depository B	Total Thru Depository A+B1 (lakhs)	Total Thru Depository B (lakhs)	Total Thru Depository A,B1+B (lakhs)	Value of Delivery Orders/Day: Value/Del Order Thru Depository A+B1 (Rs.)	Total Val of Del Orders Thru Dep. A+B1 (Rs. crores)	Value/Del Order Thru Depository B (Rs.)	Total Val of Del Orders Thru Dep. B (Rs. crores)	Total Val of Del Orders Thru Dep. A, B1+B (Rs. crores)
July 96	720	30.20	915	84.40	0.0%	0%	0.00	0.00	0.00	0	0	0	0	0
Dec. 96	720	60.48	915	168.36	0.0%	0%	0.00	0.00	0.00	0	0	0	0	0
1997	720	95.04	915	233.33	65.0%	0%	61.78	0.00	61.78	1,363,403	1,170	0	0	1,170
1998	720	114.05	915	269.93	65.0%	0%	74.13	0.00	74.13	1,534,033	1,579	0	0	1,579
1999	720	136.86	915	342.58	65.0%	0%	88.96	0.00	88.96	1,818,065	2,246	0	0	2,246
2000	720	164.23	915	411.09	70.0%	20%	114.96	82.22	197.18	1,767,316	2,822	83,077	75	2,896
2001	720	197.07	700	377.40	75.0%	35%	147.81	132.09	279.89	1,747,980	3,588	83,077	157	3,745
2002	720	236.49	700	452.87	80.0%	45%	189.19	203.79	392.99	1,707,955	4,488	83,077	242	4,730
2003	720	283.79	700	543.45	85.0%	55%	241.22	298.90	540.12	1,629,234	5,458	83,077	355	5,813
2004	720	340.55	700	652.14	90.0%	65%	306.49	423.89	730.38	1,559,259	6,637	83,077	503	7,141
2005	720	408.65	700	782.57	95.0%	75%	388.22	586.93	975.15	1,496,651	8,070	83,077	697	8,766
2006	720	490.39	700	939.08	97.5%	85%	478.13	798.22	1,276.34	1,477,234	9,810	83,077	947	10,757
	36	37	38	39	40	41	42	43	44	45	46	47	48	49

APPENDIX D

BANK OF INDIA SHAREHOLDING LIMITED (BISL)

Table of Contents

I. INTRODUCTION

The Bank of India Shareholding, Ltd. (BISL) was established in September, 1989, as a joint venture between the Bombay Stock Exchange (BSE) and the Bank of India (BOI). As a clearing house, BISL reduces risk to the Indian securities industry through facilitating the settlement of trades executed on the BSE. Areas of this settlement process that are supported by BISL include:

- Trade settlement through delivery of and payment for physical securities.
- Tracking of shortages (fails to deliver) as reported by delivering brokers and subject to the auction market.
- Tracking of objection items (bad deliveries) and facilitating settlement of same.
- Payment of BSE margin requirements.
- Limited safekeeping (depository) services.

BOI and BSE maintain a shareholding ratio in BISL of 51:49. General operating expenses are paid for by BSE, while the personnel cost is primarily borne by BOI. (BSE pays for overtime.) The revenues of BISL are negligible as brokers are not charged for routine use of the clearing house. They are charged a one-time fee to become a member.

II. PURPOSE OF REVIEW

The purpose of this review was to gain a thorough understanding of the BISL services, including operations and costs. The data for this report was obtained through interviews held with staff members from various departments of BSE and BISL. A list of the individuals interviewed can be found in Attachment A.

Because the final report from Price Waterhouse will be concerned with the operations of a securities clearing corporation and depository, the following material focuses on those areas of BISL that are related to such service companies. Primarily, the related functions include the delivery and payment of securities, identification of shortages (fails to deliver), and objections (bad deliveries as identified by the receiving broker). Person hours to complete the current processes have been consolidated in Attachment B.

III. BISL CLASSIFICATIONS OF MARKET TRANSACTIONS

For purposes of settlement, BISL classifies market transactions into the following groups:

- A+B1 securities: These are the most actively traded issues on the BSE, and include 32 issues of "A" securities and 497 issues of "B1" securities. Trades in these issues are settled once a week for a specified 5-day trading period.

  NOTE: *The distinction between "A" and "B1" securities is that settlement of trades in "A" securities may be carried forward to the next trading period per BSE rules.*

- B2 securities: Securities that are less active or inactive are categorized as B2 issues. The total number of issues in this classification is approximately 5700. Trades in these issues are also settled once a week for a specified 5-day trading period.

  NOTE: *In the past, the time period of the settlement cycle for B2 issues was a fortnight. However, as of September, 1996, B2 issues have the same settlement cycle as A+B1 issues.*

- C securities: This category includes odd lot trades of any security. Odd lots are not considered to be "marketable" lots. Therefore, trading is not active. Settlement for odd-lot trades is effected outside of BISL.

- D securities: These securities have been designated as "spot deliveries" by the BSE Market Operation/Surveillance Department to maintain control over market movements. Deliveries in these issues must be done within 72 hours of the execution of the trade. BISL does not process these issues.

- H securities: This category represents deliveries versus payment for financial institutions (domestic and foreign) and custodians.

The procedures as followed by BISL and described in this report are only for the classifications of A+B1 and B2, using the same settlement cycle as became effective in September 1996. It is these security types that would be processed in BSE's proposed clearing corporation and depository. For purposes of this report, is assumed that types C, D, and H will continue to be handled as they are in today's environment. Therefore, the trade settlement stream that is described within this paper is limited to the weekly cycle as currently followed for A+B1 and B2 shares.

IV. TRADE SETTLEMENT THROUGH BISL - PHYSICAL SECURITIES

The following is a narrative of each of the steps involved in the delivery of the physical securities for trade settlement at BISL. After each narrative there is a flowchart of the steps described.

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A. Determining Settlement Positions

Trading occurs on Monday through Friday of the current week (Week 1), with settlement activity beginning on Pay-In Day which is Thursday of the following week (Week 2). Completion of the normal settlement process concludes on Pay-Out Day which is Monday of Week 3.

During the five-day trading period (Week 1), the Information Systems Department (ISD) of BSE records the trade data for those trades settling at BISL. Based on this trade data, daily reports are provided to brokers that detail the trades as well as their daily net position. At the end of the trading period, a cumulative net position is distributed to the brokers. A listing of all of the reports produced by ISD may be found in Attachment C.

During the trading cycle, brokers categorize their completed trades through the use of flags input to the BOLT system for reporting and settlement purposes. ISD uses this data to produce future reports, the delivery orders given to brokers to facilitate the delivery of securities on settlement date, and the diskette of trade settlement information given to BISL.
On the Wednesday after the trading cycle ends (Week 2), ISD delivers the diskette to BISL that contains all of the trade data for that period. Over the next two days (Thursday and Friday of Week 2), the brokers also deliver diskettes to BISL. The diskettes from the brokers carry their in-house trading data that has been sorted into two files:

- Delivery File - Represents those deliveries of physical securities that the broker intends to make.

- Shortage File - Represents those securities that the broker cannot deliver for settlement of trades.

BISL loads the data received from ISD and the brokers to their matching system. The system compares the two sets of data and reports items that do not match.

NOTE: This is an "on-line" process.

Differences identified are immediately researched by BISL. The research may include consulting with the brokers themselves who are waiting at BISL while this procedure is being performed. Based on this review and investigation, the differences are corrected in BISL's system.

Scroll numbers (identifiers) are then created by BISL's system for each intended delivery and each shortage. A delivery scroll sheet and a shortage scroll sheet are then manually prepared by BISL for each broker. These scroll sheets are used as supporting documentation as noted in the

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following additional processes that include the delivery of securities, objections (bad deliveries), and items subject to the auction market.

> NOTE: *The "auction market" is compulsory for certain shortages and objections receiving a "Not-In-Order" arbitration decision, and provides other BSE members with an opportunity to sell securities needed by the failing brokers. This topic is discussed further under "Auction Market - Shortages and Objections".*

Included with the securities are the delivery scroll sheets, the Delivery Orders previously produced by ISD, and a listing prepared by the broker of securities being delivered. The BISL staff checks to insure that all of the documents agree with each other, with the exception that securities are not counted at this point. (The certificates remain in sealed bags.) Any differences found during this comparison process are immediately corrected with the broker.

Once accepted, the deliveries are manually entered into a register by BISL. A stamped copy of the register is provided to the broker as a receipt for the securities. The deliveries are also entered to BISL's matching system, confirming receipt. The securities are transferred to BISL's vault for safekeeping and sorting receiving brokerwise.

A flow chart detailing the process flows in the determination of settlement positions is presented in the annexure to this appendix.

B. Deliveries of Securities to BISL by Delivering Broker

Securities are delivered to BISL in batches known as "lots". Brokers make the deliveries to BISL's "lot scrutiny team" on the same day that the scroll sheets are produced ("pay-in day"). Included with the securities are the delivery scroll sheets, the Delivery Orders previously produced by ISD, and a listing prepared by the broker of securities being delivered. The BISL staff checks to insure that all of the documents agree with each other, with the exception that securities are not counted at this point. (The certificates remain in sealed bags.) Any differences found during this comparison process are immediately corrected with the broker.

Once accepted, the deliveries are manually entered into a register by BISL. A stamped copy of the register is provided to the broker as a receipt for the securities. The deliveries are also entered to BISL's matching system, confirming receipt. The securities are transferred to BISL's vault for safekeeping and sorting receiving brokerwise.

A flow chart detailing the process flows in deliveries of securities to BISL from brokers is presented in the annexure to this appendix.

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C. Deliveries of Securities from BISL to Receiving Brokers

Once the securities are received in BISL's vault, they are sorted receiving brokerwise and filed into the respective bins assigned to each broker. The lots of securities are then compared to reports produced by BISL for each receiving broker. Differences found through this reconciliation are immediately corrected. (Such differences may include over-deliveries, deliveries of securities previously erroneously reported as shortages or short deliveries.)

After the reconciliation process is completed (Saturday of Week 2), the securities remain in BISL's vault until "pay-out day", when they are picked up by the receiving broker. This normally occurs on Monday of Week 3 after payment has been received by BISL (discussed further under "Trade Settlement Through BISL - Money Settlement".) Specific pick-up times are assigned to each receiving broker by BISL. The following processes occur when the receiving broker arrives at BISL:

- BISL verifies the signature of the receiving broker by comparing it to a specimen signature card on file.
- The receiving broker physically counts all of the securities delivered by BISL.
- Discrepancies found through the security count are reported to BISL by the receiving broker.
- BISL notifies the delivering broker of the difference and acknowledgment is received from the receiving broker for the shares accepted from BISL.

A more thorough good delivery check is performed by the receiving broker once he returns to the firm's office. To standardize this process, BSE has provided its members with an "objection checklist" that contains all of the reasons for considering securities as "bad deliveries". Objected shares are submitted to BSE for receiving an arbitration decision. Around 1,000-1,200 cases are submitted to arbitration each settlement since B1 shares also began going through the clearing house in April 1996.

A flow chart detailing the process flows in the delivery of securities from BISL to receiving brokers is presented in the annexure to this appendix.

D. Arbitration Processing

The steps followed in reaching an arbitration decision are as follows:

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- The receiving broker prepares an objection memo that provides the details of the delivery and the reason for the objection.

- The objection memo along with an objection coupon, the related securities, and transfer deed is submitted to BSE with a payment of Rs. 100.

- Using BSE's standards for objections, the arbitrators decide on the validity of the objection.

  - "In Order Award" - Those objections that are found not to be valid. The related securities are actually in good delivery form, and are returned to the receiving broker for further processing. The arbitration fee is not returned to the submitting broker.

  - "Not In Order Award" - Those objections that are found to be valid. The related securities are not in good form, and must be returned to the delivering broker by the receiving broker through BISL. The arbitration fee is passed on to the original delivering broker and returned to the submitting (receiving) broker.

Securities subject to a "Not In Order" award are delivered to BISL by 7:00 PM on Tuesday of Week 3. A delivery form accompanies the securities. BISL stamps one copy of the form and returns it to the broker as a receipt for the securities.

Details on the "objections" received as provided by the broker with the securities are entered by BISL to a tracking system. A unique number is generated for each objection. An objection report is produced which is compared to the physical securities. Any discrepancies between the report and the securities are corrected as needed by BISL with the broker.

Similar to original deliveries, objections are sorted by the original delivering broker (now receiving), and stored in BISL's vault. The objections are available for pick-up on Wednesday of Week 3. Corrections are made by the delivering broker who then re-delivers the securities to the receiving broker outside of BISL. Confirmation of such corrections are provided to BISL by the brokers. Any unrectified objections are subject to the objection auction held on BOLT each Wednesday between 4:30 P.M. and 5:30 P.M.

Flow charts detailing the process flows in the arbitration processing are presented in the annexure to this appendix.

E. Shortages Reported by Delivering Brokers

The shortages reported by delivering brokers represent those sales that cannot be covered (fails to deliver). Such shortages are immediately subject to the auction market. The diskette delivered by the broker on Friday, the last day of the pay-in, carries the details of the shortages in a separate file from actual physical deliveries being made. At the same time, the broker submits a hard copy listing of the intended shortages. The data is entered to BISL's system, compared to the hard copy report, and any discrepancies are identified. The discrepancies are immediately corrected by BISL, with the broker being contacted as needed.

Within the shortage details, the broker identifies the following sub-categories:

- Not to Auction - Stock Exchange (N.A.S.E.): This category indicates those shares that will be carried forward to the next settlement period. This process is referred to as "Badla", is restricted to certain securities, and requires the permission of the BSE. Badla sessions are held on the BOLT system each Saturday. Should the broker not be able to access the session for some reason, permission to carry forward the settlement may be received from BSE outside of the system. Shortages related to this exception processing are indicated as such on the shortage file of the diskette delivered to BISL for settlement purposes. BISL then knows not to send these items to the auction market.

- Not to Auction - Clearing House (N.A.C.H.): Where objections have been satisfied through the auction market, there may be a delay in the actual delivery of those shares through BISL. These shortages should not be sent to the auction market again, as there is simply a timing problem with the delivery. To insure that such items are not submitted to the auction market, the broker indicates "Not to Auction - Clearing House (N.A.C.H.)" on the shortage file.

The remainder of the shortages reported are subject to the auction market. ISD produces a listing of the items for auction which is distributed to all BSE members. The shortage auction then takes place on Monday evening between 4:00 and 5:00 P.M as discussed below.

A flow chart detailing the process flows when shortages are reported to BISL by delivering brokers is presented in the annexure to this appendix.

F. Auction Market - Shortages And Objections

The auction market at BSE facilitates the clearance of fails to deliver due to either shortages on settlement date or objections that have been subjected to arbitration and not corrected by the delivering broker. The auction market provides an opportunity to all BSE members to sell securities to other brokers who need to cover the fails.

A separate auction is held for each type of fail. The auction for shortages is held on Monday of Week 3. For objections, auction is held on Wednesday of Week 3 but can be as late as Friday of Week 3 if pay-out in certain scrips is delayed.

While the timing is different, the basic steps are similar for each auction. These steps are as follows:

- Based on related reports, the BSE auction department provides ISD with a listing of issues subject to the auction.
- BSE members are provided with the details of all securities subject to auction.
- BSE members offer to sell securities in the auction market via the BOLT system.
- The BOLT system validates the offer price to the acceptable system range of prices, and immediately rejects any inadmissable offers.
- After the trading session is over, the offers are matched with the auction items in ascending order of shares.
- Any auction items not matched with offers are settled in cash (square off) at a price set by BSE.

The procedure for delivery of securities against auction trades is similar to that of original deliveries. On pay-in day, diskettes are delivered to BISL by brokers and compared to ISD data. Delivery scrolls are produced and compared to actual securities. Securities are retained in BISL's vault until pay-out day when they are picked up by receiving brokers. Only the pay-in and pay-out days are different from original deliveries.

Should the selling broker fail to deliver the shares offered through the auction, a cash adjustment is made by BISL between the selling (auction) and receiving members.

A flow chart detailing auction market procedures for shortage and objections is presented in the annexure to this appendix.

V. TRADE SETTLEMENT THROUGH BISL - MONEY SETTLEMENT

A. Daily Net Settlement Figure

Before deliveries can be picked up by receiving brokers on pay-out day, funds must have been delivered to BISL on pay-in day in payment of securities. Funds will be paid to delivering

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brokers by BISL on pay-out day. To support this process, ISD generates balance sheets summarizing the daily net settlement amount for each broker. Included in the net amount due to or from brokers are such items as:

- Net value of BOLT transactions for the related trading period.
- Cash adjustments for unrectified objections (square offs).
- Dividend adjustments.

If a broker is in a net receivable position, he prepares and presents to BISL a draft in the amount due to the firm. The draft authorizes BISL to credit the broker's bank account. It is signed by the broker, countersigned by BISL after confirmation of accuracy, and then presented to the brokers bank. Where a broker is in a net payable position, he delivers a cheque to BISL for the amount due.

BISL enters the data on cheques and drafts received to their balance sheet file where a comparison is done. Any discrepancies between settlement amounts and cheques and drafts found through this reconciliation is corrected with the brokers as necessary.

BISL deposits all cheques received and confirms their clearance with the paying bank by pay-out day. Should cheques not be honored by the bank, BISL takes action to rectify the non-payment with the appropriate broker(s). The non-payment is usually due to insufficient funds in the brokers account which is corrected by funds being deposited. (Based on cheques not honored by paying banks, BSE may make a determination to delay pay-out day. However, BSE reports delay of pay-out has not occurred for the past year.)

Once the pay-out day is declared, the receiving broker can pick up the related securities from BISL, and the drafts produced by the delivering brokers are sent to the bank for credit to the member account.

Flow charts showing the money settlement procedures for when a broker is in a net pay position and when a broker is in a net receive position are shown in the annexure to this appendix.

B. Other Payments to BISL

Besides the daily net settlement, brokers must make certain other payments to BISL. These include:

- Payment for shortages subject to the auction market (fails to deliver).
- Margin payments (on behalf of BSE).

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Such miscellaneous cheques are appropriately recorded and deposited into the related bank account(s).

VI. OTHER SERVICES PROVIDED BY BISL

Other services provided by BISL that may not be related to the proposed clearing corporation and depository environment include:

- Processing of margin requirements for BSE - ISD produces a daily report of margin requirements. Cheques may be received from brokers or BSE directly in payment of the margins. BISL reconciles the payments to the actual margin due and reports any discrepancies to BSE. Cheques are deposited to the appropriate bank account by BISL.

- Depository services - Securities may be held for safekeeping at BISL by a broker who becomes a participant of the depository. The share positions are defined as follows:

  - Badla shares: These services are mandatory for those BSE members who participate in the process of carrying forward the settlement of trades (Badla).

  - Non Badla shares: Shares for which there are no carry forward options.

  No dividend protection is given by the depository. Shares must be withdrawn by the broker 15 days prior to book-closure date.

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ATTACHMENT A

STAFF INTERVIEWED

BISL
Mr. Chawda
Mr. Khambatta
Mr. Sameer
Mr. Surti
Mr. Anup
Ms. Netra
Mr. Kulkarni
Mr. Kaskar
Mr. Thakkur
Mr. Pandya
Mr. Surendra
Mr. Daniel
Mr. Peter
Mr. Bhave

BSE Information Systems Department
Mr. A. Y. Godbole, Deputy General Manager
Mr. D. Fernandes
Mr. Parbat Kumar Das
Ms. Anjali Chemburkar
Mr. Kaladharan

ATTACHMENT B

PERSON HOURS RELATED TO BISL FUNCTIONS

FUNCTION	*TIME*[1] *(Man-Hours per Settlement Reported by BISL)*
Matching and scrolling deliveries	80-100
Register entries for deliveries	14-20
Sorting deliveries	75-100
Objection Processing	
-Lot scrutiny	10
-Data entry	10
Auction processing	400-500

[1]These are times associated with the clearing ans settlement of A+B1 scrips from April 1996.

ATTACHMENT C

SETTLEMENT-RELATED REPORTS PRODUCED BY ISD

- Delivery/Receive Orders - Provides details of deliveries and receives based on trades. Used to facilitate delivering securities to BISL and picking up securities from BISL.

- Money Statements - Contains details of each item to be settled and the related pay or receive money amount.

- Pay/Receive Slips - Used by brokers when delivering cheques and drafts to BISL.

- Pay/Receive Slip Summary - Listing of all pays and receives that is sent to BISL to facilitate settlement functions.

- Delivery/Receive Orders through Bank - Facilitates delivery of securities to a custodian bank.

- Broker Pay/Receive Statement through Bank - Summarizes positions by broker to be settled through custodian bank.

- Bank Statement for Delivery/Receive Orders - Summarizes by bank the deliveries to be made through custodian banks.

- Internal report for historic purposes only:

    - Summary of Matched Transactions - Provides activity by security, including number of transactions, minimum and maximum rates, weighted average rate, gross quantity and value, net quantity and value, and any remarks concerning the security.

    - Brokerwise Turnover Data - Provides activity by broker, including gross/net turnover, settlement number, total purchase quantity, total sale quantity, receivable order quantity and value, and deliverable order quantity and value.

    - Security Turnover Data - Provides activity by security, including total number of transactions, total bought quantity and value, deliverable quantity and value, and standard rate.

    - Security Summary Report - Details minimum and maximum rates for securities, standard rates, number of delivery orders, deliverable quantity and value, turnover value, and number of auction cases.

- Bank Depository Report - Related to position movements within the depository service at BISL. Includes summary of delivery/receive orders, net deliverable/receivable position for each bank, and specific details on individual deliveries/receives.

- Report on Specified Badla Securities - Provides details of Badla transactions.

ATTACHMENT

BISL FLOW CHARTS

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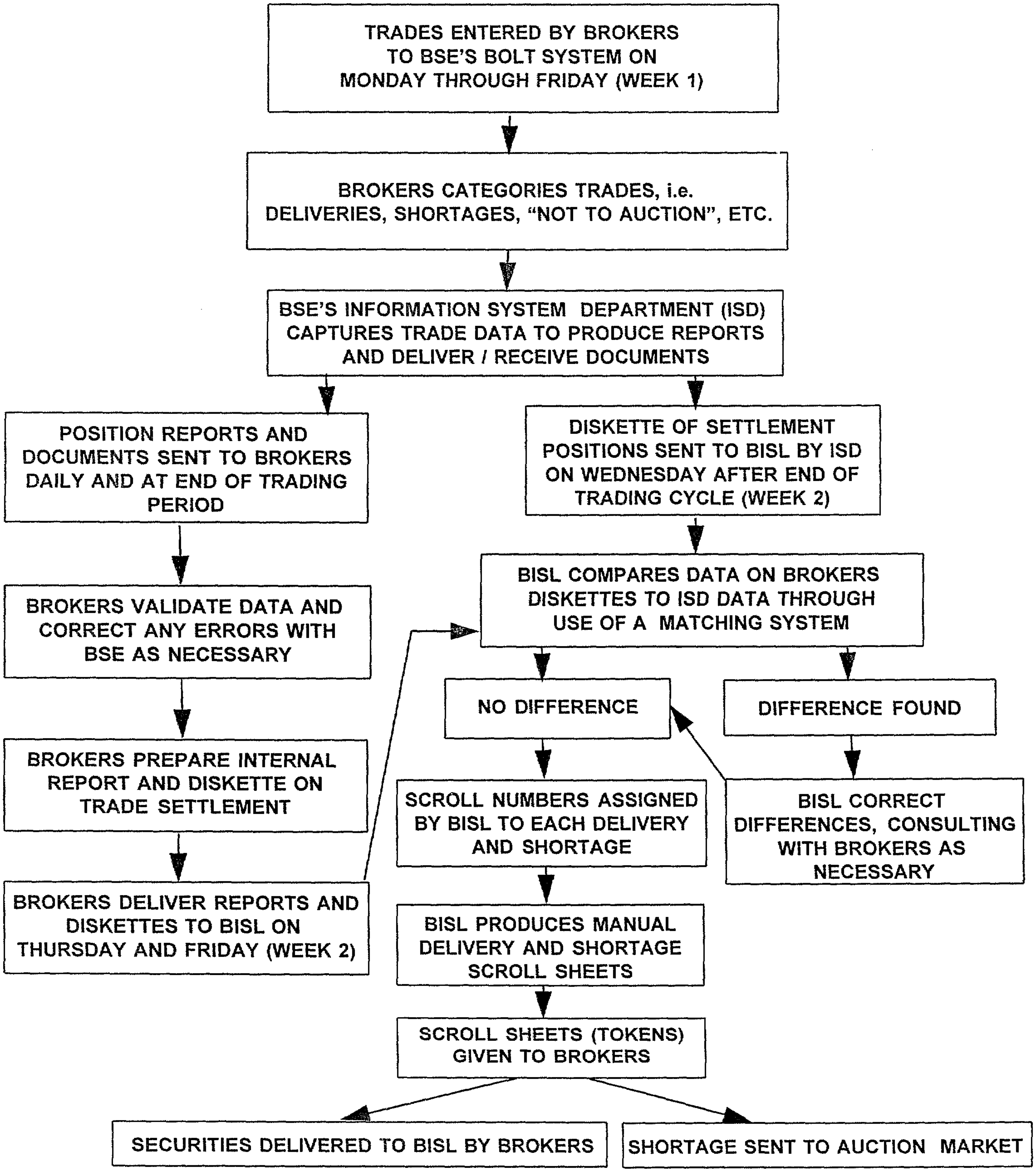
BISL PROCESSING
DETERMINING SETTLEMENT POSITIONS



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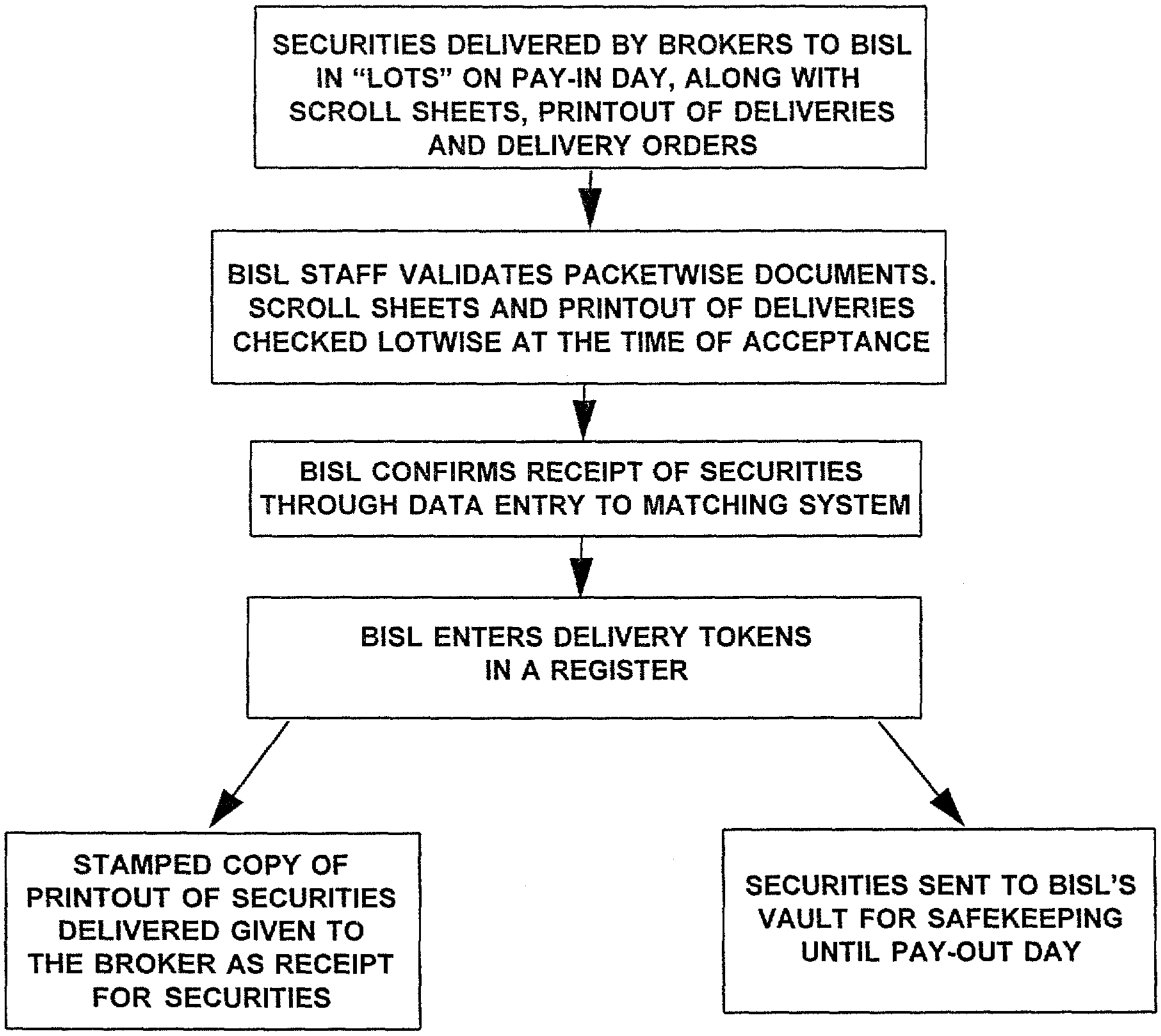
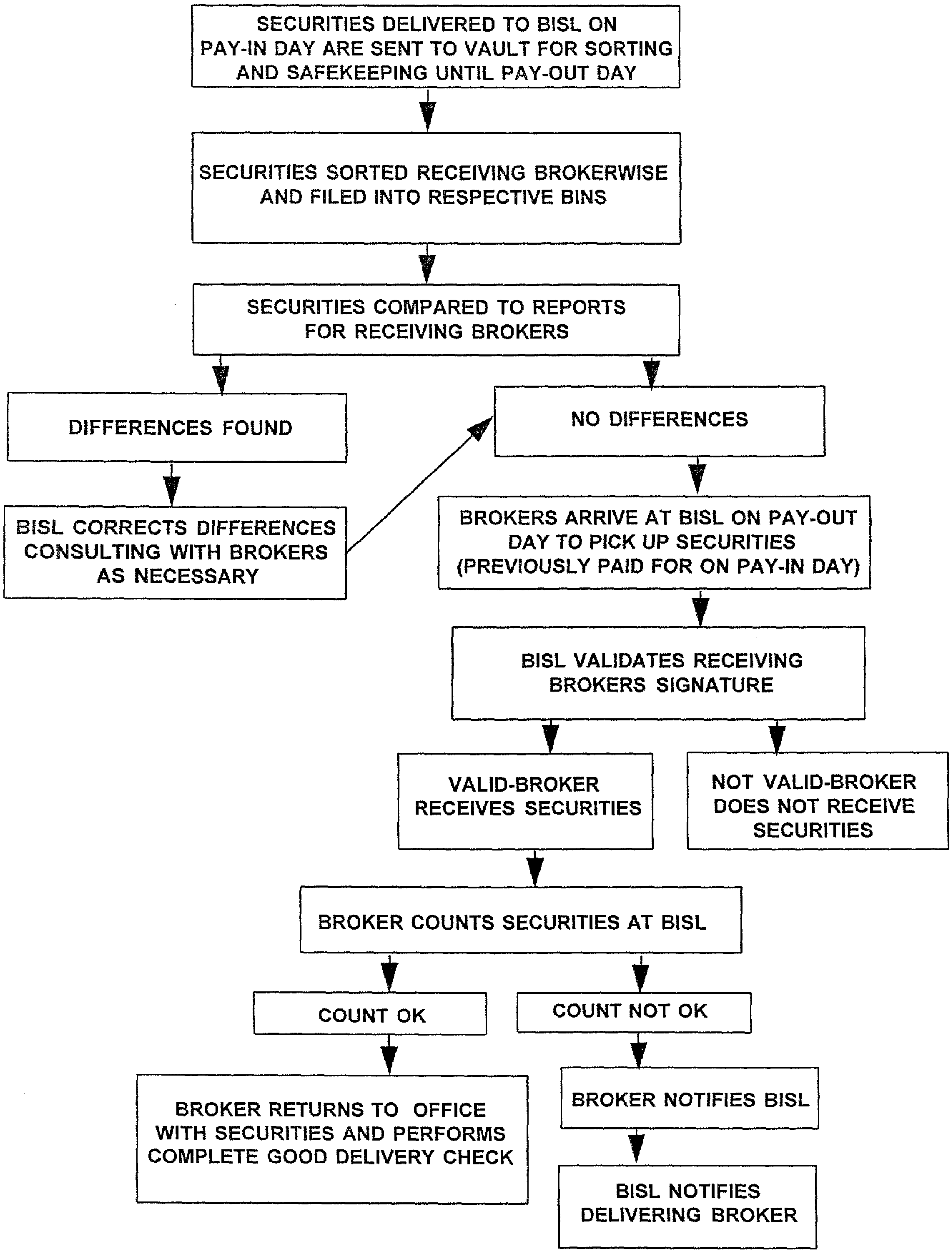
BISL PROCESSING
DELIVERIES OF SECURITIES TO BISL BY BROKERS



BISL PROCESSING
DELIVERIES OF SECURITIES FROM BISL TO RECEIVING BROKERS



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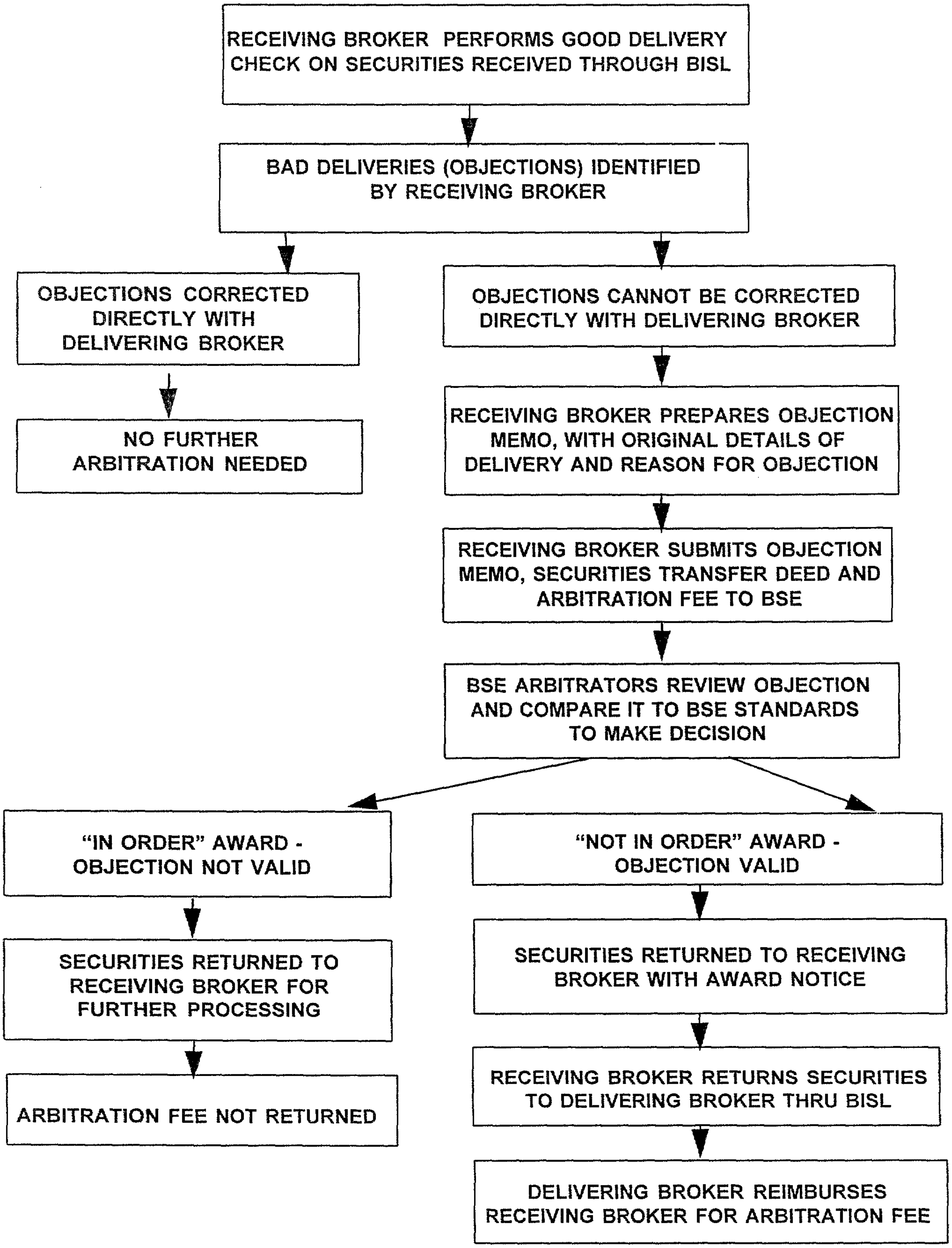
BISL PROCESSING
ARBITRATION PROCESSING
BSE AWARDS



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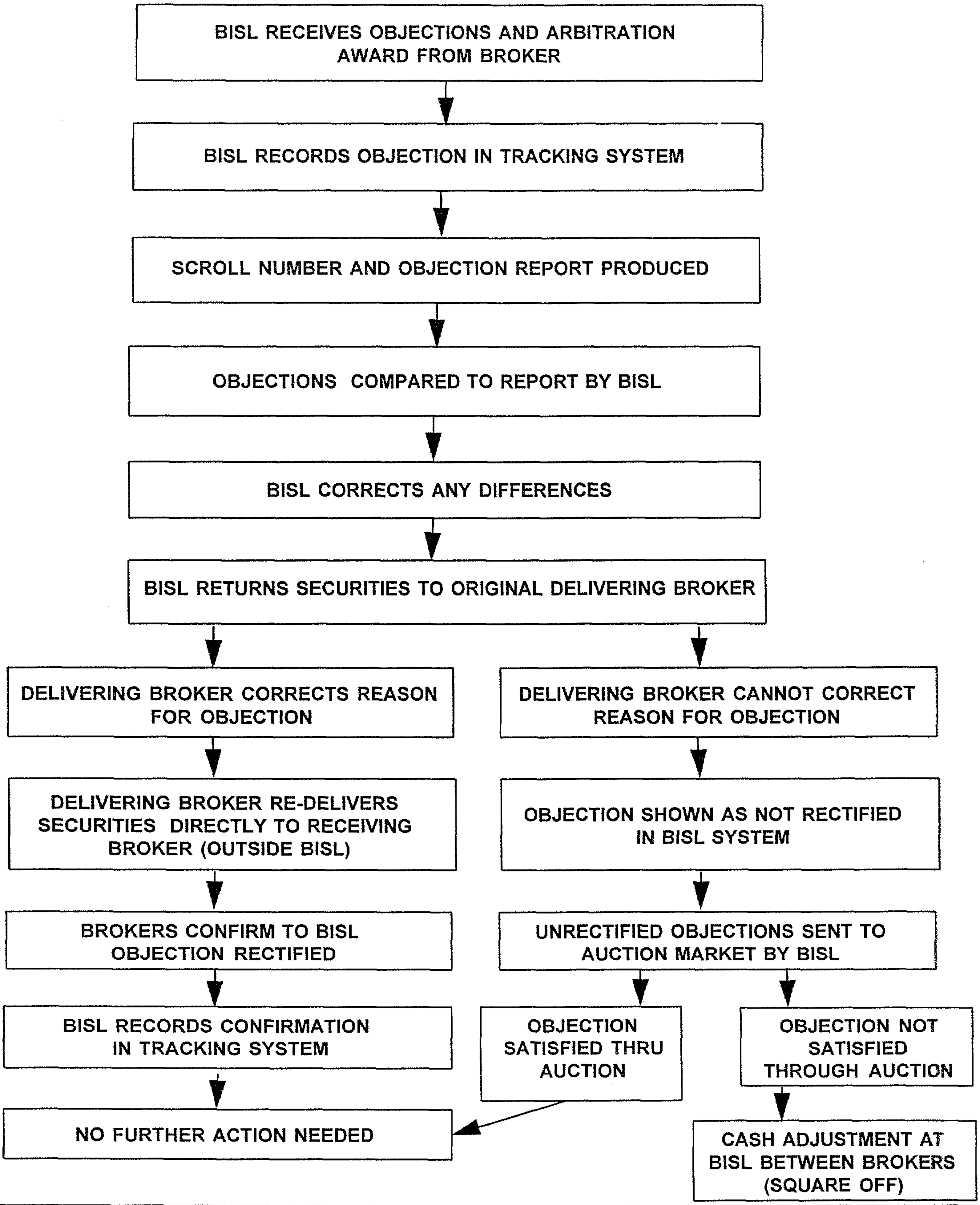
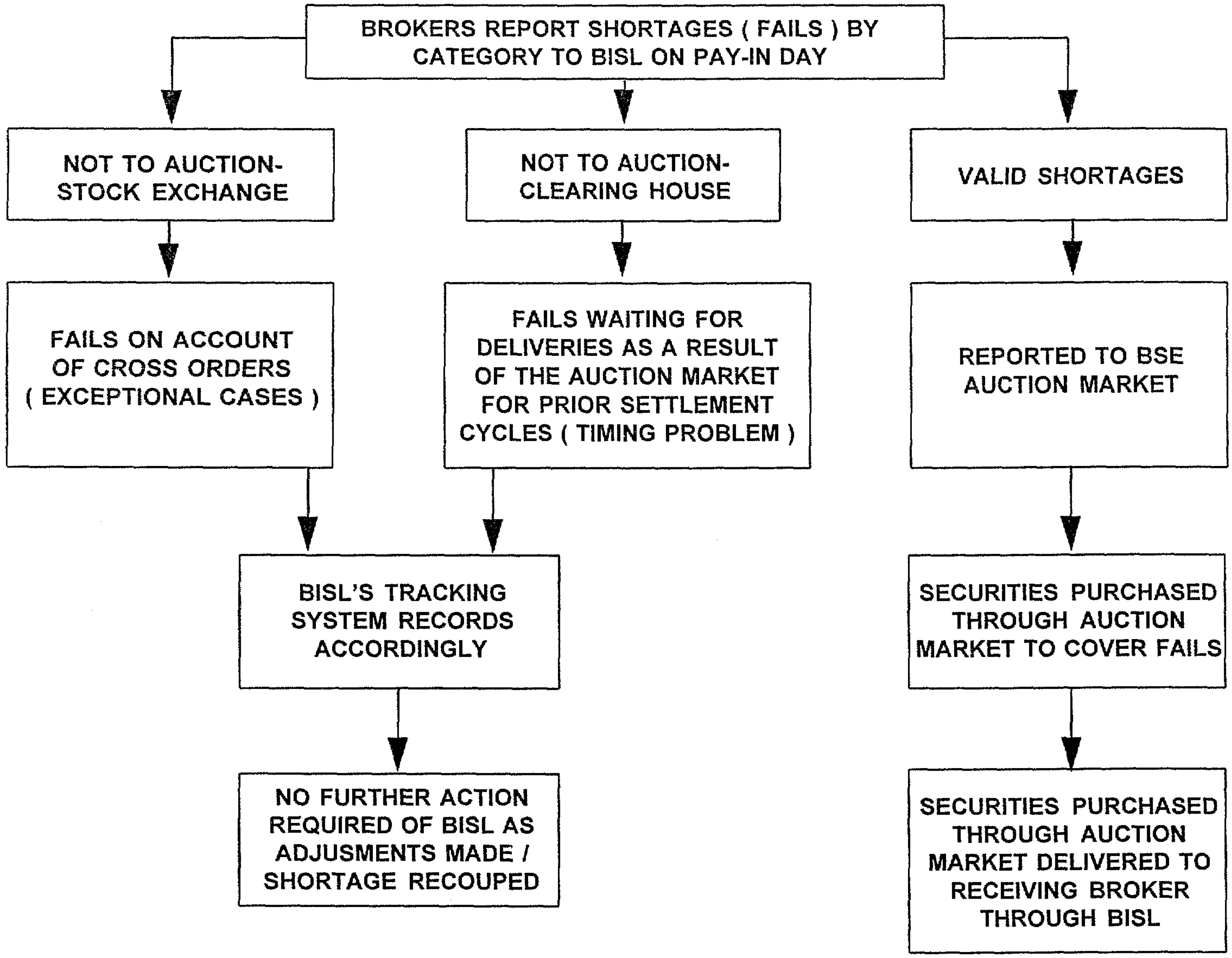
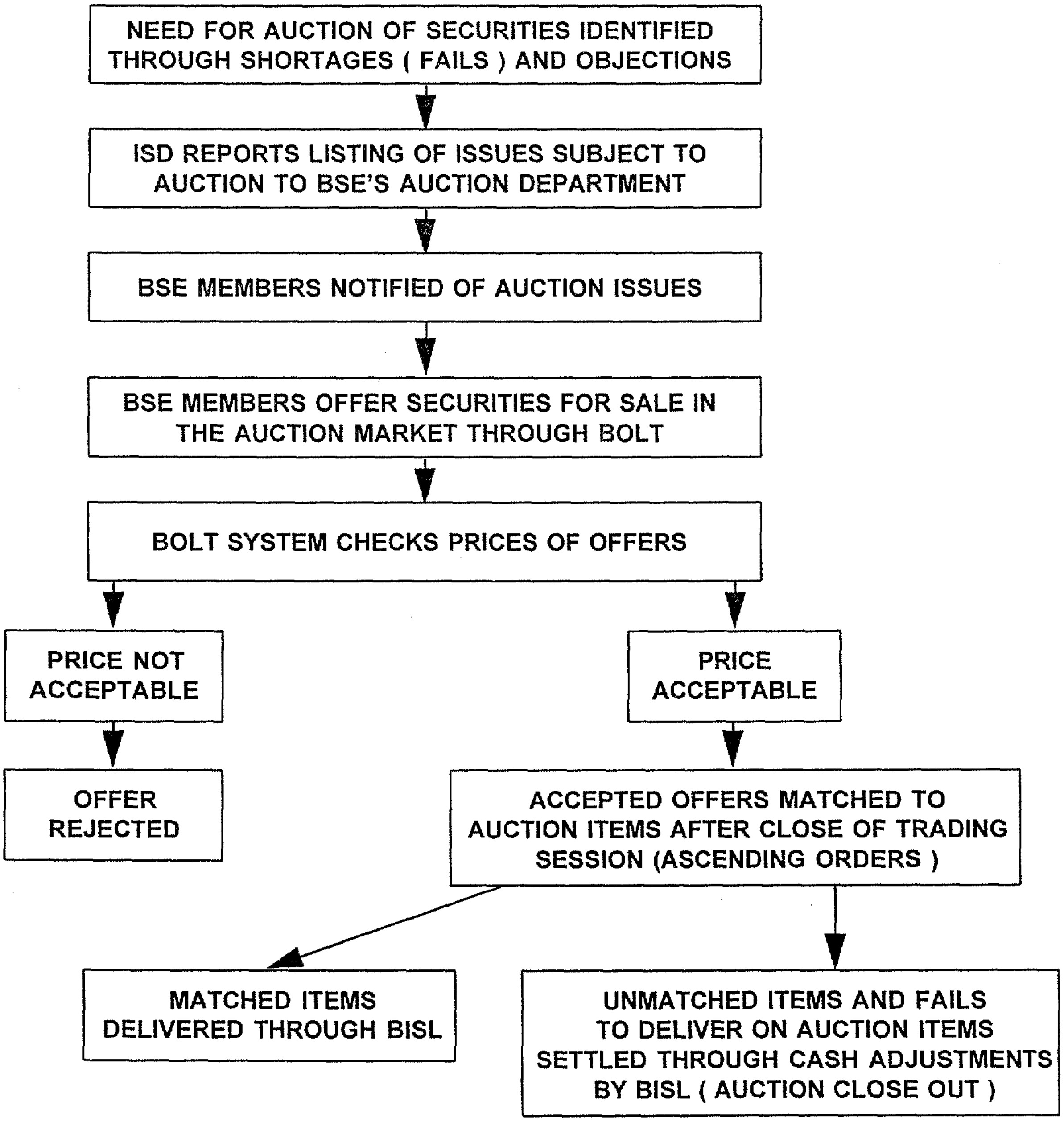
BISL PROCESSING
ARBITRATION PROCESSING
SETTLEMENT OF VALID OBJECTIONS



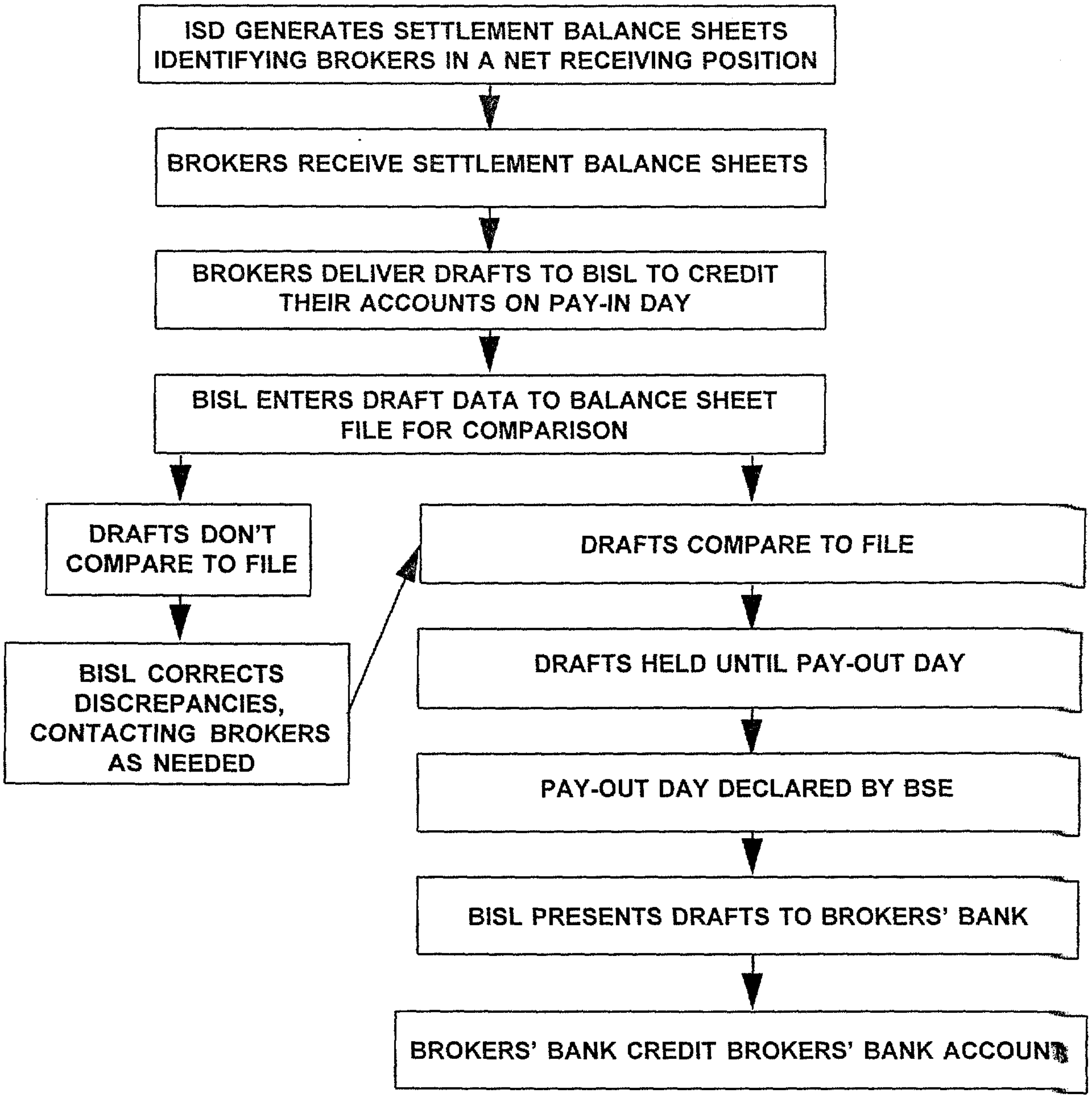
BISL PROCESSING
SHORTAGE REPORTED BY DELIVERING BROKERS



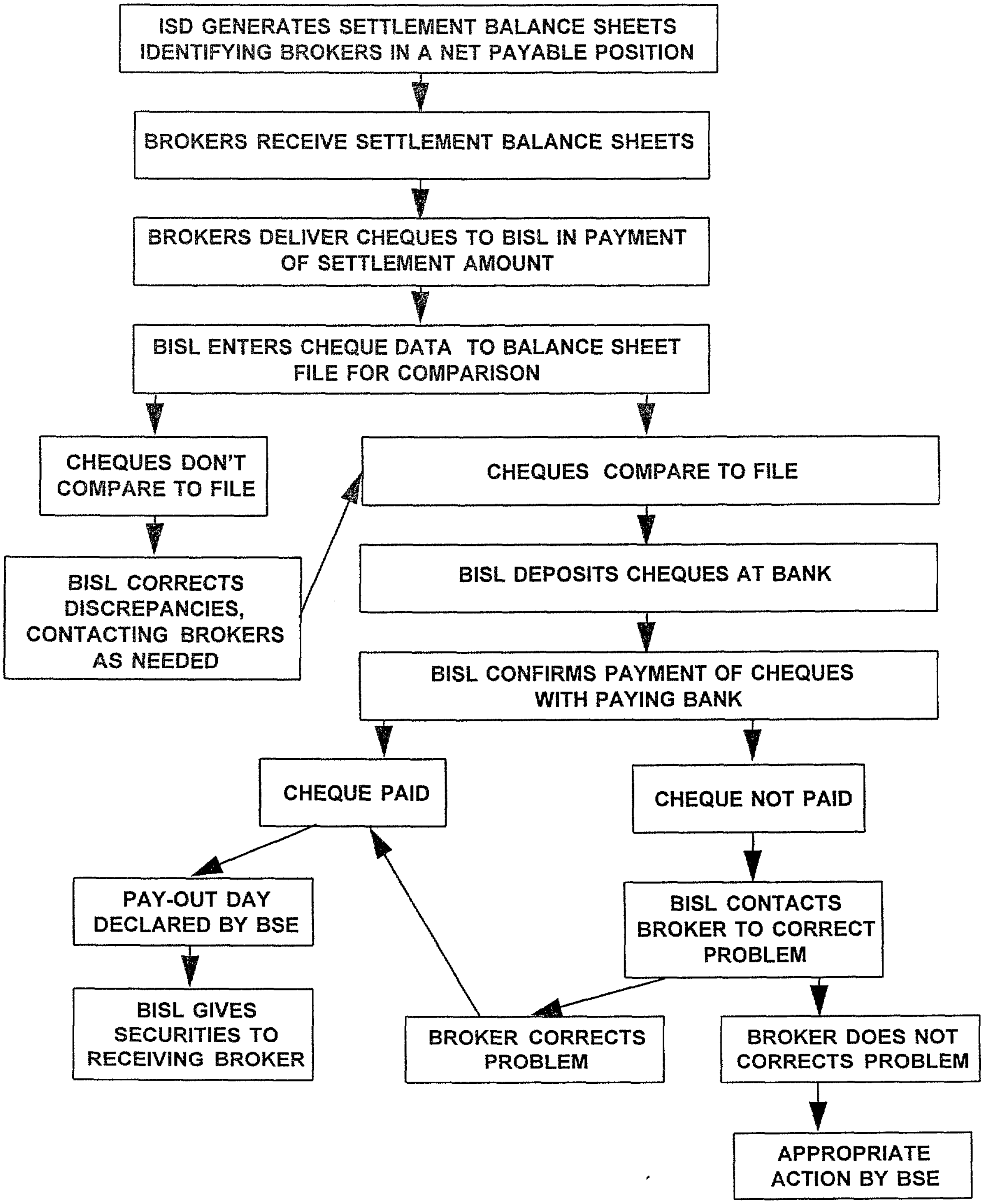
BISL PROCESSING
AUCTION MARKET - SHORTAGES AND OBJECTIONS



BISL PROCESSING
MONEY SETTLEMENT - BROKER NET RECEIVES



BISL PROCESSING
MONEY SETTLEMENT - BROKER NET PAYS



APPENDIX E

GENERIC BROKER REPORT

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I. INTRODUCTION

Seven BSE brokers were interviewed by Price Waterhouse in the course of preparing this depository cost study for BSE. The brokers were picked by BSE to give a cross section of the different kinds of business: retail, institutional, jobbing and arbitrage. What follows is a generic description of the activities undertaken by a broker to settle trades entered into and the broker's role in rectifying ownership transfer objections.

Only the processes for A+B1 group securities are described because effective September 2, 1996, the settlement program for B2 group securities (non-specified shares) is the same as in the case of A+B1 scrips except that in case of "through clearing house" transactions involving custodians, the purchase and sales amounts are transacted directly between the custodian and the selling or buying broker. The broker then pays or receives from the clearinghouse.

A flow chart detailing the process flows in broker settlement procedures for institutional and retail transactions which are discussed below is presented in the attachment to this appendix.

II. INSTITUTIONAL BUSINESS

A. Settlement Procedures for Institutional Purchases On-Market (Through BOLT)

1. Delivery Versus Payment (DVP) On-Market Transaction

An institutional on-market transaction is one where the broker fills the purchase order for the institutional client through BOLT, but the client will not pay the broker for the shares until they are delivered. In this case, the broker's money is tied up and they subsequently charge a brokerage commission of 1.0% instead of the normal 0.5% for non-DVP transactions. The steps involved for the broker are detailed below.

1. On pay-in day, the broker pays the amount to the clearing house if the net position in the money statement is payable (purchase trades exceed sale trades).

2. On pay-out day, shares are received from the clearing house and quantity delivered is verified.

3. Since bad-deliveries are to be reported within 24 hours to the clearing house, shares are scrutinized at the brokers office for prima-facie bad-deliveries.

4. Good shares are allocated scrip-wise and client-wise. Entry is made in the inward register.

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5. Broker delivers scrutinized shares to the concerned custodian along with a list of distinctive numbers.

6. The custodian confirms receipt of shares and issues cheque to broker.

The following time line details this process for a full delivery from the clearinghouse with no shortage or prima facie bad delivery, cases which are discussed later.

Institutional On-Market DVP Purchase

Date	Day	Process	Blockage of funds (if any)
1	Mon	]	
2	Tue	]	
3	Wed	] Trading days	
4	Thu	]	
5	Fri	]	
6, 7	Sat, Sun		
8	Mon	]	
9	Tue	] No Action	
10	Wed	]	
11	Thu	Pay-in day: Broker pays cheque to the clearing house (based on net exposure)	Purchasing broker makes payment by cheque to clearing house
12	Fri		
13, 14	Sat, Sun		
15	Mon	Pay-out day: Securities received from the clearing house, quantity verified.	
16	Tue	Scrutiny of shares at broker's premises to detect bad deliveries and allocation of scrip client-wise and delivery of scrips to custodians.	
17	Wed	Receipt of cheque by the broker from the custodian. (1)	Purchasing broker receives cheque from the custodian

(1) Depending upon the volume of institutional business handled by the broker, delivery of scrips to the custodian can be made as early as the 16th day or at latest by the 18th day.

Note: Even though these transactions are called "DVP" in today's market terminology, they are not DVP in the strictest sense of the work. This is because the broker delivers the shares on one day and does not receive the check for another one to two days while the custodian scrutinizes

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the shares. To truly be DVP, the broker would have to receive the check the same day the shares were given to the custodian.

2. Non-DVP On-Market Purchase

If the custodian is a member of the clearing house and, if the contract so provides, the custodian can take delivery of shares from the clearing house after making payment for the same. This is a Non- DVP purchase transaction since the broker's money is not blocked and is referred to as a "through clearing house" transaction.[1]

For a through clearing house transaction, the broker is required to submit the forms 7A and 10A which contain delivery instructions in the BSE prescribed format. These forms must be submitted two days before the pay-in day. Form 7A is submitted to BSE and contains summary information of transactions for a particular settlement. Form 10A is submitted to the custodian/client and contains detailed delivery instructions.

About 10% of a broker's own funds are blocked on average, however, because of the difference between the contract rate and havala rate.

B. Settlement Procedures for Institutional Sales On-Market (Through BOLT)

1. Delivery Versus Payment (DVP) On-Market Sale

The following steps are undertaken for a DVP on-market transaction through BOLT:

1. After entering into a transaction to sell the shares, the selling broker collects the shares from the custodian which are to be delivered to the clearing house on the pay-in day.

2. On collecting the shares, the selling broker makes payment to the selling custodian.

3. The shares are physically verified at the selling broker's office and entries are made in the register maintained for this purpose.

4. On pay-in day, the selling broker delivers the shares to the clearing house.

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[1]In case of a sale transaction the selling broker assists the custodian in scrutiny of shares for sale and arranging in lots, etc. on the day preceding the pay-in day (i.e.,on Wednesday). Similarly, in a purchase transaction, the purchasing broker assists the custodian in scrutiny of shares after the payout (i.e., on Tuesday).

5. On the pay-out day, the selling broker gets credit for the sale amount in his bank account from the clearing house.

The following table gives the sequence of activities and time taken.

Institutional On-Market DVP Sale

Date	Day	Process	Movement of Money
1	Mon	]	
2	Tue	]	
3	Wed	]Trading Days	
4	Thu	]	
5	Fri	]	
6, 7	Sat , Sun		
8	Mon	Broker pays to custodian to obtain delivery of shares	Selling broker makes payment to the custodian
9 , 10	Tue, Wed	Scrutiny of shares and entry of details in the register	
11	Thu	Pay-in day - Selling broker delivers shares to the clearing house	
12	Fri		
13 ,14	Sat , Sun		
15	Mon	Pay-out day - Selling broker receives cheque from the clearing house	Selling broker receives cheque from clearing house

Note: Delivery versus payment takes place when the broker gives the selling custodian money for the shares.

2. *Non-DVP On-Market Sale*

In a non-DVP institutional sale, where the custodian is a member of the clearing house and if the contract so provides, the custodian directly delivers the shares to the clearing house on pay-in day and receives the cheque on pay-out day. The selling broker's funds do not get blocked in a DVP sale and a lower brokerage fee is charged than that for DVP sales.

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In a through clearing house sale, however, the selling broker is required to submit forms 6A and 9A containing delivery instructions in the BSE prescribed format, two days before the pay-in day. Form 6A is delivered to BSE and contains summary information of transactions for a particular settlement. Form 9A is delivered to the custodian/client containing detailed delivery instructions.

About 10% of a broker's own funds are blocked on average, however, because of the difference between the contract rate and havala rate.

C. Off-Market Transactions

Off-market transactions, for the purposes of this report, refers to transactions do not clear through any clearing entity.

It is assumed, for purposes of analysis, 100% of these off-market transactions are institutional trades. It should also be noted that these off-market transactions do not refer to kerb deals which are outside the scope of this report.

The steps and timing of off-market transactions are illustrated below.

Off-Market Purchase Transaction

Date	Day	Process	Movement of Money
1	Mon	Purchase transaction entered into.	
2	Tue	Purchasing broker pays opposite broker/client.	Purchasing broker pays cheque to the opposite broker.
3	Wed	Purchasing broker receive scrips and scrutinizes shares.	
4	Thu	Broker delivers the shares to the client.	
5	Fri	Broker receives payment from the client.	Receipt of cheque from the client by the purchasing broker.

Off-Market Sale Transaction

Date	Day	Process	Movement of Money
1	Mon	Sale transaction entered into	

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2	Tue	Broker pays custodian/client and obtain scrips	Selling broker pays cheque to the custodian.
3	Wed	Broker scrutinizes shares	
4	Thu	Selling broker delivers shares to opposite broker.	
5	Fri	Selling broker receives payment from opposite broker.	Receipt of cheque by the selling broker from the opposite broker.

The tables indicate an off-market transaction takes as little as five days. However it can also take up to 14 days depending on the delivery date specified in the contract. 14 days is the outer most limit for delivery that is allowed.

III. RETAIL BUSINESS

A. Retail Purchase Transaction

All retail transactions are of non-DVP nature. The steps undertaken in settlement follow.

1. Money is collected from the purchasing client as soon as the orders are executed or at least before pay-in day.

2. On pay-in day, the purchasing broker pays the amount to the clearing house if the net position in the money statement is payable.

3. On pay-out day, the broker collects shares from the clearing house.

4. Since bad-deliveries are to be reported within 24 hours, shares are scrutinized at the purchasing broker's office for prima facie bad-deliveries.

5. Good shares are allocated scrip-wise and client-wise. Entry is made in the computerized inward register.

6. The clients collect the shares from the purchasing broker's office.

The broker's money is not tied up in these transactions. Timing of these steps is detailed in the table below.

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Retail Purchases

Date	Day	Process
1	Mon	]
2	Tue	]
3	Wed	] Trading Days
4	Thu	]
5	Fri	]
6 ,7	Sat , Sun	
8	Mon	]
9	Tue	] Broker collects amounts from the clients for purchases made on their behalf.
10	Wed	]
11	Thu	Pay-in day : Broker makes payment to clearing house.
12	Fri	No action
13 ,14	Sat , Sun	
15	Mon	Pay-out day : Shares are received from the clearing house.
16	Tue	Scrutiny of shares by the brokers office.
17	Wed	Client-wise allocation of scrips .
18	Thu	Client collects shares from the broker.

B. Retail Sales Transaction

In the case of a sale, the selling broker undertakes the following settlement activities:.

1. The selling broker collects shares from selling client at least two days in advance of the pay-in day to allow for scrutiny and processing.

2. The selling broker scrutinizes the shares.

3. The selling broker delivers the shares to the clearing house on pay-in day.

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4. Selling broker gets credit in his Bank account from the clearing house on the pay-out day if the net position in the money statement is receivable.

5. The selling broker in turn pay the sale proceeds to his clients.

The following table details this process.

Retail Sales

Date	Day	Process
1	Mon	]
2	Tue	]
3	Wed	] Trading Days
4	Thu	]
5	Fri	]
6 ,7	Sat , Sun	
8	Mon	]
9	Tue	]Selling broker collects shares from the clients for sales made on their behalf.
10	Wed	]
11	Thu	] Pay-in day :Selling broker delivers shares to clearing house.
12	Fri	]
13 ,14	Sat , Sun	
15	Mon	Pay-out day: Payment is received from the clearing house.
16	Tue	Client collects payment from the selling broker

IV. LOSS OF SHARES

In case of loss shares which he is handling, the broker has to inform the R&T Agent/Company, the Police, the BSE and he has to get a court injunction. Administrative costs involved are employee cost involved in the follow-up for obtaining the lost shares. Also the brokers maintain a record of these shares lost which again involve costs.

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In cases where the documentation is done and the legal formalities are through, it would take about 45 days to get the shares replaced. But, if the formalities are yet to be complied with or it gets delayed, the process can take between four to five months to get the shares replaced and has sometimes been known to go on for several years.

In a purchase transaction, if the shares purchased are lost at the broker's premises, the broker has to make good this loss by replacing the shares either out of his own investments or by making a fresh purchases from the market.

In case of a sale transaction, if the shares are lost before they could be delivered to the clearing house on the pay-in day, the broker will have to pay the client the sale proceeds as per the contract rate and then follow-up for the replacement of the lost shares on his own account.

V. SHORT DELIVERY

Short delivery refers to when a broker delivers fewer shares to the clearing house than required to fill the delivery orders he has been assigned as a result of his net position at the end of the settlement cycle. Short delivery varies from settlement to settlement depending upon the scrips traded.

Short delivery is rare for negotiated C group transactions, but is common for clearing house deliveries, particularly for A group scrips. BISL, the clearing house, reported a delivery shortage rate of 12% for the fiscal year April 1995 to March 1996 when only A group physical delivery of scrips was occurring through the clearing house. Delivery of physical B1 and B2 scrips was done broker to broker with only money movements going through the clearing house.

In April 1996, B1 physical delivery started through the clearinghouse and effective September 1996, B2 physical deliveries of scrips have also been routed through the clearing house. However, statistics were not available for the percentage of short deliveries since the clearinghouse started handling B1 and B2 scrips. Brokers report receiving short delivery through the clearinghouse as little as one to two percent of the time and as high as 30 percent.

Retail investors must accept short delivery and wait for the balance to be filled. In institutional trades, in some instances custodians will accept short delivery and in other cases they will not, mostly depending on instructions from the client. In the case of a DVP institutional transaction through BOLT, the purchasing broker's funds are blocked until the receipt of full quantities of scrips.

Generally, the selling broker generally tries to ensure full delivery on his part. However short deliveries occur for reasons like short selling, delay in receipt of shares from outstation, mistakes on the part of the client regarding the quantity or scrip to be delivered, etc.

Short deliveries are filled through auction per the process outlined in the table below:

Shortage Auction

Date	Day	Process
1	Mon	]
2	Tue	]
3	Wed	] Trading days
4	Thu	]
5	Fri	]
6, 7	Sat, Sun	
8	Mon	]
9	Tue	] No Action
10	Wed	]
11	Thu	Pay-in day: Purchasing broker pays cheque to the clearing house (based on net exposure) . Selling broker delivers scrips to the clearing house. If the selling broker is not able to deliver scrips sold by him ,he delivers shortage memo to the clearing house.
12	Fri	Selling broker can also deliver the shares sold by him / shortage memos latest by this day.
13	Sat	
14	Sun	
15	Mon	Pay-out day: Securities received from the clearing house. The list of shortages, if any, gets finalized and auction is conducted after regular trading hours.
16 /17	Tue / Wed	Pay-in day for auction: Auctioned scrips are delivered to the clearing house by the selling broker.
18	Thu	Purchasing broker receives the short scrips and delivers to the client.

On comparing a normal transaction (no short delivery) with a transaction where there is a short delivery , there is a delay of three days in receipt of scrips from the clearing house.

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VI. BAD-DELIVERY (OBJECTIONS)

There are two types of objections. The first is referred to as "prima facie" objection which is when bad delivery is identified at pay-out day and reported to the clearing house by the receiving broker within 24 hours.

The second, company objection, occurs at the time the shares are sent to the company or registrar and transfer (R&T) agent for ownership transfer. Company objection can up to one year after the original sale transaction depending on when the shares are finally sent in for lodgement. It generally does not happen longer than a year after the transaction because shares must be lodged with the company at the time of book closure which occurs once per year for every company.

Flow charts detailing the process flows in objection procedures for prima facie objection and company objection discussed below are presented in the attachment to this appendix.

A. Prima Facie Objections

Upon receiving shares from the clearinghouse on pay-out day, the broker scrutinizes them and reports bad deliveries within 24 hours. The bad deliveries are examined by the exchange and those found to be valid objections not immediately correctable are given a "Not-In-Order" award which means the shares are then subject to auction for replacement. Brokers report very few objections at this stage, possibly less than one percent.

When there is an objection awarded a "Not-In-Order" decision, the auctions cycle detailed below is initiated.

Prima Facie Objection Auction

Date	Day	Process
1	Mon	]
2	Tue	]
3	Wed	] Trading days
4	Thu	]
5	Fri	]
6, 7	Sat, Sun	
8	Mon	]
9	Tue	] No Action

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10	Wed	]
11	Thu	Pay-in day: Broker pays cheque to the clearing house (based on net exposure)
12	Fri	
13, 14	Sat, Sun	
15	Mon	Pay-out day: Securities received from the clearing house, quantity verified.
16	Tue	Scrutiny of shares by the broker to detect *Prima Facie objections* as these are to be reported to BISL within 24 hours. On detection of any *Prima-Facie Objection* , the broker reports the same to the arbitrators for "Not -In - Order" award.
17	Wed	The selling broker gets the objection shares for rectification from BISL.
18	Thu	The shares are rectified by selling broker and rectification confirmation is given to BISL.
19	Fri	
20	Sat	
21	Sun	
22	Mon	Auction tender notice issued by BSE.
23	Tue	Auction conducted on BOLT
24	Wed	
25	Thu	Brokers selling the shares in auction deliver to clearing house. Money status included in form 31A of subsequent settlement.

Thus, brokers report that prima facie bad delivery is rectified within four days of receiving the bad shares on the pay-out day. If it is not rectified through auction because shares were not made available, the BSE has developed a close-out price which will terminate the transaction rather than having it go through auction again. This close-out practice at the conclusion of the first auction cycle has just been initiated.

B. Company Objections (As Received from R&T Agent)

When the buyer lodges shares purchased by him with the issuing Company or R&T Agent for transfer to his name, the transfer request may be rejected. These company objections are solved by the broker through the Bad Delivery Session (BDS) conducted by the BSE fortnightly.

Brokers interviewed report an occurrence of objection at this level between one and nine percent. R&T agents interviewed, however, indicate a rejection rate of 10% or more for transfer requests.

Every BDS is for three days per the following schedule:

Day 1(Tue): Purchasing broker gives the transfer deeds (TDs) or TDs along with share certificates to the introducing broker.

Day 2(Wed): Purchasing broker receives the rectified shares which were given for rectification at the previous BDS.

Day 3(Thu): In case the shares which were given for rectification at the previous BDS are not rectified by the introducing broker, the introducing broker gives a "kapli."[2]

Market terminology used for the objections is:

Objection: When the client/custodian gives only TD to their purchasing broker for rectification.

Direct Bad-Delivery: When the client/custodian gives TD along with certificates to their purchasing broker for rectification.

1. Rectification of Objections for an Institutional Client

a. Transfer Deeds (TDs) Only Given for Rectification

Custodians have traditionally only given TDs for the first attempt at rectification. The process is a follows:

1. The custodian informs the purchasing broker of the receipt of objection from the R&T Agent/Company and gives the TDs to the broker for rectification while retaining the associated share certificates.

2. These TDs are given by the purchasing broker to the introducing broker on Day 1 of BDS # 1.

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[2]A "kapli" is a monetary credit given by the introducing broker to the purchasing broker for the unrectified shares.

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3. In case the introducing broker is able to rectify the TDs, he returns the rectified TDs to the purchasing broker on Day two of BDS # 2.

4. The purchasing broker in turn delivers the rectified TDs to the custodian.

Historically, however, brokers report that less than one percent of TDs are rectified and then the certificates along with the TDs need to be given subsequently for rectification.

In an attempt to speed up the resolution of bad delivery given the fact so few TDs are rectified at this stage and it takes 22 days before further rectification action can be taken, SEBI has decreed certificates along with TDs must now be given in all cases.

b. Transfer Deeds (TDs) and Certificates Given for Rectification

This process was often initiated only after the rectification of the TDs alone had failed. Now, however, this will be the starting point for all future rectifications of company objections. The steps are:

1. The custodian gives TDs and certificates for rectification and collects a collateral deposit from the broker, either in money or securities, for the higher value of the contract price or the current market price.

2. The purchasing broker delivers the TDs and certificates to the introducing broker in a bad delivery session. This is done as under the current bad delivery scenario where the introducing broker has to rectify the bad delivery within 45 days of Day one of the BDS at which the purchasing broker first delivered the objections.

3. In case the shares could not be rectified and if the purchasing broker delivers the share certificates to the introducing broker in a BDS (it could be BDS # 2 or BDS # 3), the purchasing broker gets "kapli" from the introducing broker on Day three of that particular BDS.

4. On receiving this "kapli" the purchasing broker gives the "kapli" to BSE's Information Systems Department (ISD) which enters the same as a fresh transaction.

5. The monetary credit for the "kapli" is given to the purchasing broker in the next money statement.

6. "Kaplis" received by ISD are entered into as a new transaction in the on-going settlement. Thus on pay-out day of this particular settlement, the purchasing broker receives the shares.

7. On receipt of the rectified shares from the broker, the custodian verifies the rectified shares and releases the broker's collateral deposit.

As noted above, under the new scenario for solving objections, compulsory bad delivery will have to be given by the purchasing broker in the first instance.

Thus, the no. of days lost in case of company objections can be summarized as follows.

Process	Time involved
Bad Delivery session to be conducted by BSE from the day the broker receives the objection from the custodian.	7 days (On an average)
TDs given for rectification at bad delivery session	15 days 22 days
Certificates given for rectification if TDS could not be rectified	15 days 32 days
Share certificates to be received through normal clearing and settlement	15 days 52 days

In summary, three outcomes can result with the following times associated with them:

1. If TDs are rectified in a BDS then time involved in solving company objection is 22 days.

2. If TDs are not rectified in a BDS and certificates are delivered in the same BDS then time involved in solving company objection is 37 days.

3. If TDs are not rectified in a BDS and certificates are delivered in the next BDS then time involved in solving company objection is 52 days.

Making it compulsory to deliver the certificates with the TDs should decrease the rectification time to 37 days.

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c. *Replacement of Shares and Squaring Off*

The institutional client can ask the purchasing broker to replace the objected shares or square-off the transaction. Squaring off means the purchasing broker pays the custodian the higher of the contract amount or the current market value of the shares under objection.

If the institution asks for replacement or square-off then for them the transaction is completed as soon as the broker replace the shares or square-offs the transaction. However the broker will have to undergo the above mentioned procedure to rectify the objections as these become his own investments.

1. Rectification of Objections for a Retail Client

The retail client cannot collect a deposit or require squaring up or replacement, so the process differs sightly.

1. The client informs the purchasing broker of the receipt of objection from the R&T Agent/Company and delivers the objected TD along with the shares to the purchasing broker for rectification.

2. The objected shares and the TDs are given to the introducing broker on Day one of the first BDS following the receipt of the objections at their office. [BDS # 1]

3. In case the introducing broker is able to rectify the objections, these rectified shares are received by the purchasing broker on Day two of BDS # 2 and in turn are handed over to the client.

4. However, if the introducing broker cannot rectify the objections, he will give a "kapli" credit note on Day three of BDS # 2.

5. On receiving this "kapli" the purchasing broker gives it to ISD which credits the same as a fresh transaction.

6. The monetary credit for the "kapli" is given to the purchasing broker in the next money-statement.

7. "Kaplis" received by ISD are entered into as a new transaction in the following settlement. Thus on pay-out day of this particular settlement, the purchasing broker receives the shares.

8. On receipt of shares, the broker delivers them to the client.

VII. JOBBING

Jobbing is the term used to describe the trading practice where brokers net off their positions by the end of the settlement period, so physical receipt and delivery of shares is avoided. In this business, the broker aims to make short term gains based on intra-settlement price fluctuations. Jobbing transactions which a broker is not able net out through a counter trade before the end of the settlement cycle results in shares the broker must deliver or receive. One broker interviewed said about five percent of such transactions ended in delivery.

VIII. ARBITRAGE

For a broker to enter into arbitrage business, he has to be a member of at least one another exchange in addition to BSE. Since there is a difference in the exchange procedures regarding the settlement periods, pay-in and pay-out dates, etc., the prices of the securities traded are not identical at these two different exchanges. This leaves the possibility of buying/selling at one exchange and selling/buying at the other at a favorable price with minimal risks.

Brokers engaging in this type of trading usually have an in-house research team which monitors the market price fluctuations to effect favorable purchase and sale transactions when the opportunity presents itself. The cardinal principle of arbitrage is *'minimum loss of time'*, so the broker should try to square-off his position as soon as possible instead of waiting for the best prices.

The broker then enters into an opposite trade on each exchange in order to have a net delivery position of zero on each exchange at the time of the respective settlements.

IX. FEE SCHEDULE

Generally brokers charge fees on the following basis :

Type of transaction	Brokerage as a % of transaction value
Retail Trades	1.00
Institutional DVP Trade	1.00
Non-DVP Trade	0.50
Off-Market Trade	0.50

Service-tax is generally recovered from the retail client, while in case of institutional clients, the service tax is borne by the concerned broker.

ATTACHMENT

BROKER FLOW CHARTS

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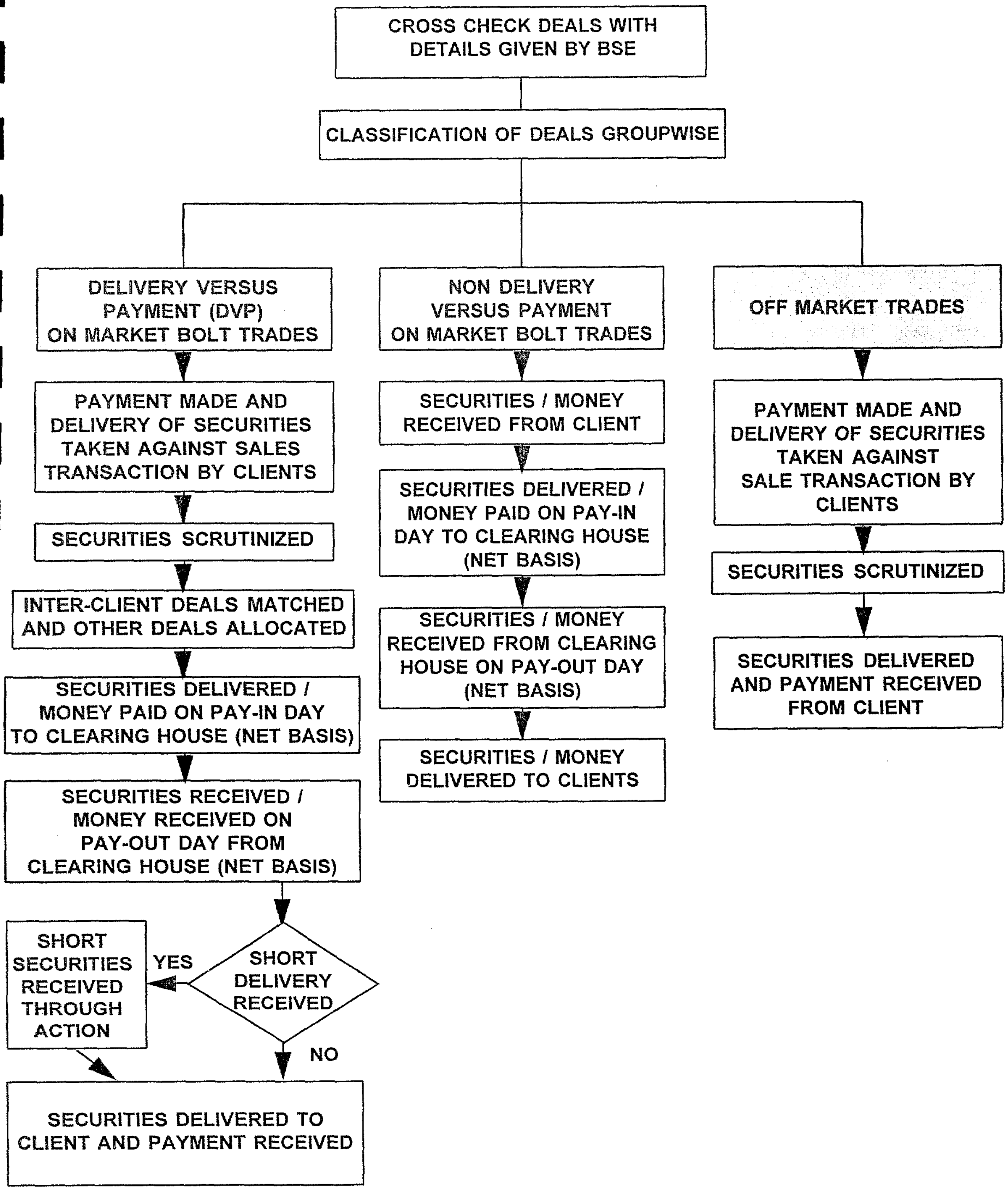
BROKER SETTLEMENT PROCEDURE



BROKER
SETTLEMENT PROCEDURE (CONTD.)
NOTES

On market transactions in will be settled by clients / their custodians directly with the clearing house if they are a member of the clearing house and if the contract specifies such delivery. Delivery instructions in the BSE prescribed format (Form 9A for sales transactions and Form 10A for purchase transactions) will be given to clients / their custodians.

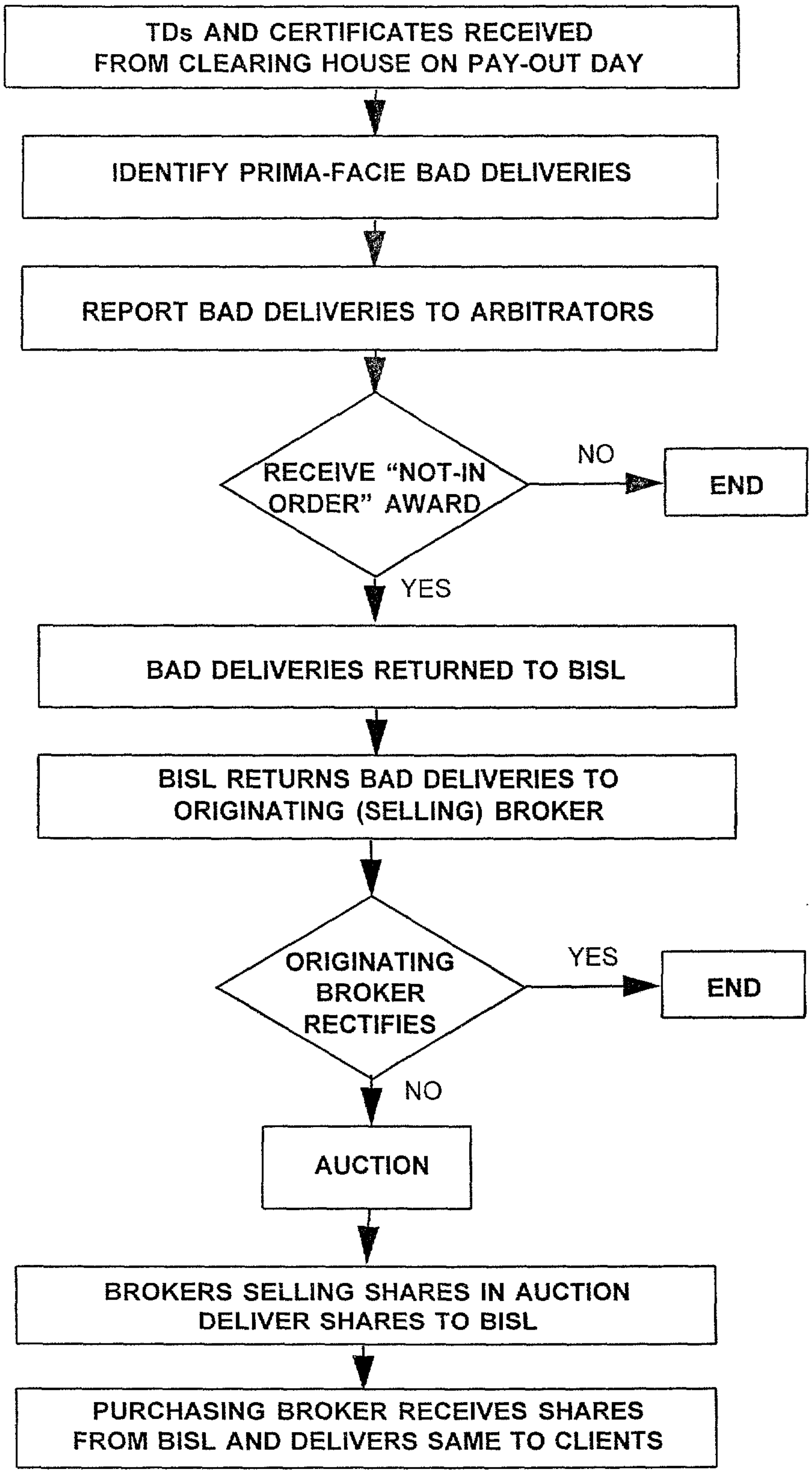
For off market trades, if the custodian for the buying and selling clients is the same then the settlement may take place by instruction to custodian to transfer securities from the selling client's account to the buying client's account.

For Delivery Versus Payment (DVP) institutional contracts, it is shown in the chart that in the case of purchase transactions on behalf of clients delivery will be made before money is received and in the case of sales transactions on behalf of clients money will be given first and delivery of securities will be effected later.

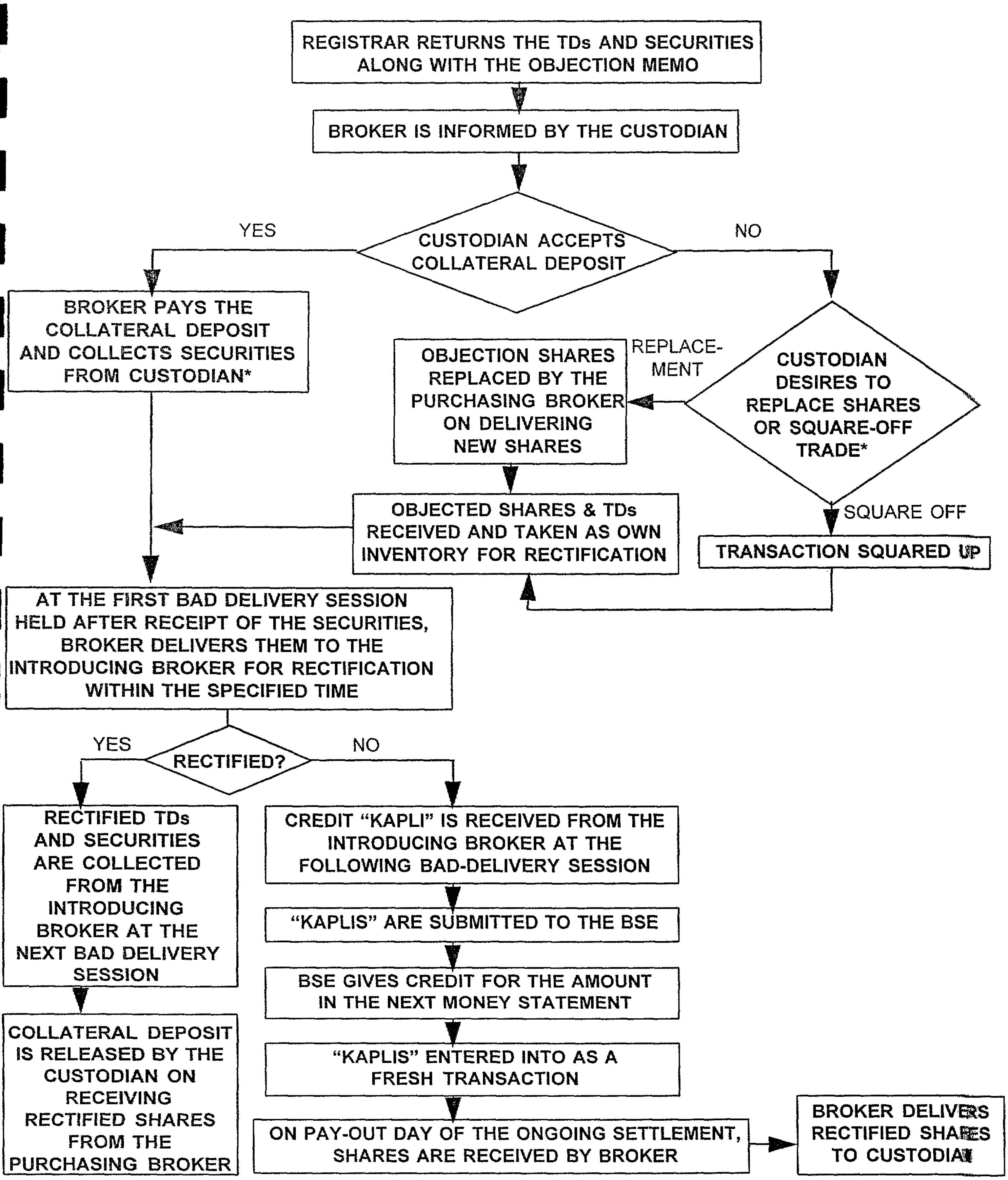
In the case of individual clients or non-DVP institutional contracts as a matter of policy the broker on purchase transactions delivers securities only after receiving money and on sale transactions pays money on pay-out day while securities are received before pay-in day.

The different procedures for DVP versus non-DVP transactions results in different working capital requirements.

BROKER
RECTIFICATION OF BAD DELIVERY AT SETTLEMENT

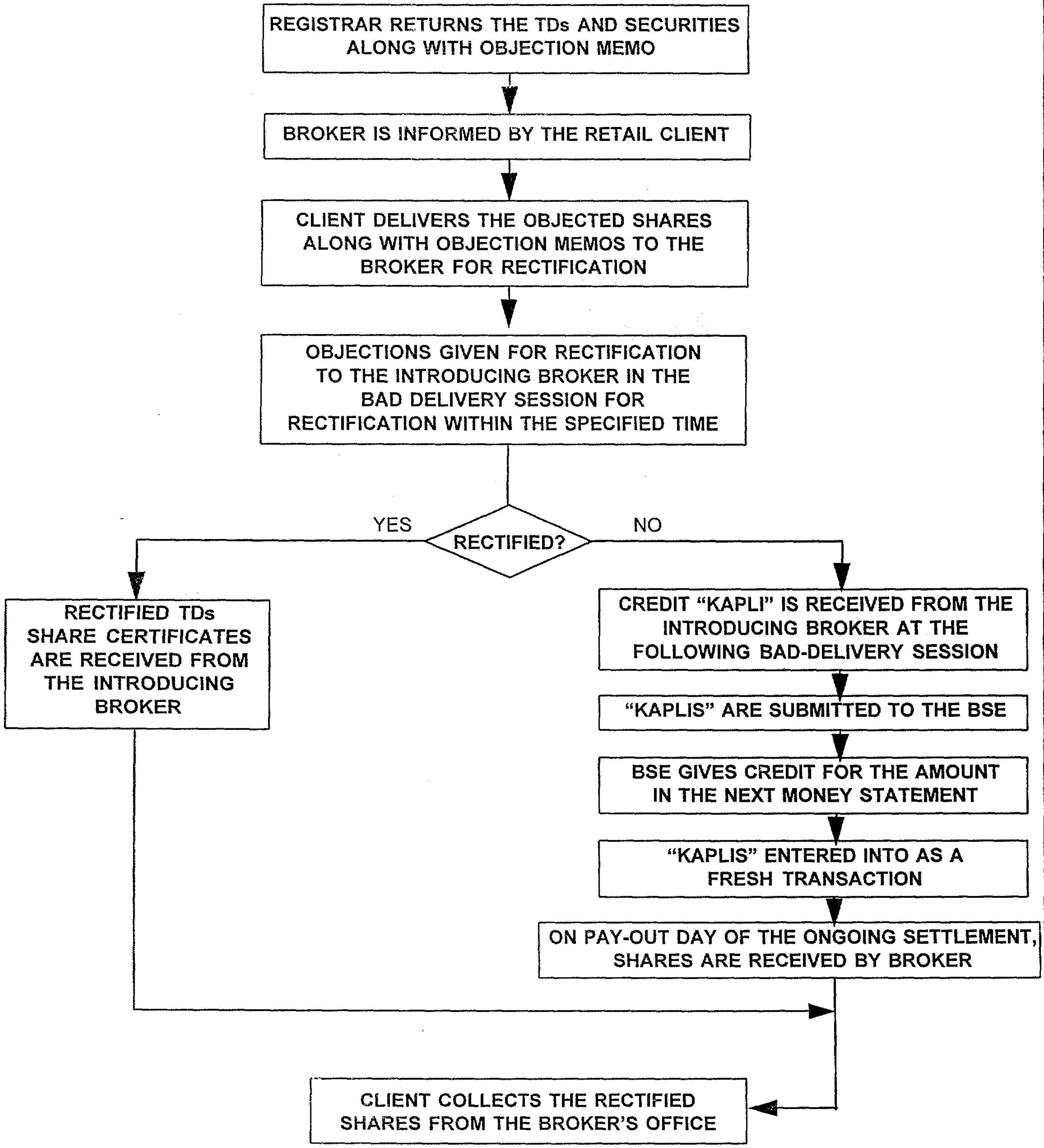


BROKER
RECTIFICATION OF COMPANY OBJECTIONS IN CASE OF INSTITUTIONAL CLIENTS



* EFFECTIVE IMMEDIATELY BY SEBI REGULATION, CERTIFICATES MUST NOW BE DELIVERED ALONG WITH TDs FOR RECTIFICATION

BROKER
RECTIFICATION OF COMPANY OBJECTIONS IN CASE OF RETAIL CLIENTS



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APPENDIX F

GENERIC CUSTODIAN REPORT

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I. INTRODUCTION

This report was drafted based on interviews conducted with several custodians currently active in the Indian market. The comments and observations are based on the practices of these custodians and will not necessarily apply to every custodian functioning in India. Flow charts outlining procedures discussed in this report are presented in the subsequent attachment.

Custodians provide the below listed services to mutual funds, foreign institutional investors (FIIs), domestic financial institutions (FIs), overseas corporate body and others:

- Purchase & Delivery of Securities;
- Sale of Securities;
- Safe Custody; and
- Corporate Actions.

The custodian infrastructure is divided into a front office and a back office. All activities involving interface between the custodian and the client, brokers and the clearing house are performed at the front office; where as actual processing of the securities is done at the back office.

Flow charts detailing the process flows of custodians are presented in the attachment to this Appendix.

II. PROCEDURES

A. Purchase of A+B1 Securities

The service of purchase of securities commences with the placing of a purchase order by the client with the broker. This service can be broadly divided into following process and activities:

1. Receipt of Delivery Instruction for Purchase

The front office of the custodian receives the Delivery Instruction for Purchase (DIP) from the client on a floppy disk, in hard copy or both or through electronic links. In the case of purchase orders received on a floppy disk, the front office downloads the data into the system and takes a print out of the same. In case of hard copy, the data is entered into the system. Authentication of DIP details in the system is done with the hard copy received from client.

Receipt of the DIP triggers the commencement of the purchase process. All the monitoring and tracking for the receipt of delivery is done against these purchase orders received from the client which are received from the clients in a maximum of two days after the trade day. In cases of custodians with foreign institutional investor (FII) clientele, the custodian also collects the contract notes from the broker and matches the same with the DIP received from

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the client. In the event of any discrepancy, the custodian informs the client and the broker. When the rectified data is receive, a valid trade is entered in the system.

2. *Payment for Purchase Order to Clearing House*

The activities performed in this process are:

a. *Receipt of Form 10-A*

The 10-A form is an intimation that the securities will be delivered to the custodian against payment through clearing house. The custodian:

- Receives Form 10-A across the counter from the broker delivering the securities, usually 72 hours before the settlement date;

- Matches Form 10-A with the trade information as per DIP in the system. In case of any mismatch the Form 10-A is returned to the broker and the client is also informed of the same;

- Preforms necessary rectification, if required, in which case a revised DIP/Form 10-A is received at the counter; and

- After matching, authentication is done in the system by a person other than person who performed the matching. This is an internal check.

b. *Receipt of Funds from Client*

There exists two modes of payment:

1. Payment by the client directly to the clearing house, or

2. An advice to the custodian directing them to pay to the clearing house under form 10-A (for purchase).

In cases where the payment is directed through the custodian, the bills are prepared clientwise after completion of matching and sent to the clients who are also informed of the funds required telephonically, usually 48 hours before pay-in day.

Funds are received from the client at latest by the pay-in day to enable custodian to make payment on the pay-in day itself. FII's remit the foreign exchange to the USD account maintained by them. Funds equal to the exact amount to be paid is converted into INRs at the rates prevailing on the settlement date and the excess dollars, if any, are kept in the USD account. In no situation funds of the custodian are blocked up.

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c. *Preparation of Settlement Sheet-Havala Report*

A record of all trades settling through clearing house is prepared on a spreadsheet by the counter on the basis of the 10- A forms received. The following information is included in the havala report:

- Name of the client;
- Name of scrip;
- Name of the broker through which the fund has done the trade and the delivering broker;
- DIP number;
- Trade quantity;
- Contract rate and value;
- Havala rate and value; and
- Amount receivable/payable to the broker due to difference between contract rate and havala rate.

d. *Payment to the Clearing House*

On the pay-in day the custodian issues the payment cheque in favor of the BSE clearing house. The cheques are prepared consolidated for all funds across all brokers. In the event of an amount receivable from the broker on account of havala rate difference, the cheque for the same is received along with Form 10-A (i.e., prior to payment to the clearing house). In the event of an amount payable to the broker, it will be paid only after counting and verification of securities received. The broker will be paid within 48 hours of receipt of delivery.

3. *Accepting Delivery from Clearing House*

The following activities are performed in this process by the counter staff of the front office:

a. *Actual Delivery from Clearing House*

The following tasks are performed in this activity:

- Counter staff of the custodian goes to the clearing house counter with the Havala report and compares the same with the printout given by the clearing house indicating the shares delivered by each broker;

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- In accordance with the new SEBI guidelines, the broker through whom the institution has transacted visits the clearing house premises on the pay-out day. He does the counting and verification of securities to be delivered to the custodian at the clearing house premises and delivers the same to the custodian's representative in the clearing house premises.[1] Any prima facie bad delivery detected by the broker during his verification is reported by the broker to the clearing house within 24 hours. The custodian's staff recounts the securities at the clearing house premises and an acknowledgment is given to the clearing house on the register.

  Note: Short securities are subsequently received from the clearing house after auction. In the case the short securities are not filled during auction, a new close-out mechanism has been put in place recently where money at a predetermined close-out price is delivered in lieu of the securities to prevent the securities from going into re-auction.

- In case of objections which are found by brokers, the clearing house is informed of the same by the broker and the securities are directly auctioned. A chukada form is filled up for major objections. If the delivering broker refuses to accept the objection then the broker through whom the client has transacted has the recourse of applying for arbitration. Depending on the award of the arbitration committee the securities are auctioned and delivered through the clearing house by the Friday after Monday's pay-out.

b. Checking of Securities

The securities are checked for bad delivery by the custodian at their premises. In case of bad delivery the broker is informed. The delivering broker first attempts to rectify the objection across the counter. However, if rectification cannot be done across the counter, the broker is allowed to take the transfer deeds (TDs) with share certificates, per new requirements[2], after giving proper security in the form of collateral. The collateral amount is collected at the contract rate or market rate whichever is higher. If the amount payable to the broker on account of havala and contract rate difference equals or exceeds the collateral due for the bad delivery then additional collateral need not be collected from the broker.

All custodians do not insist on a collateral. In such cases, if any amount is payable to the broker on account of havala rate difference, the same is not paid and is treated as collateral.

The custodian also informs the client of the bad delivery received.

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[1]Delivery of securities from the clearing house used to be taken directly by the custodian employee without intervention of the broker in the process.

[2]Custodians used to be able to give TDs without certificates to the broker for rectification. However, very few rectifications were successful and the custodian subsequently had to give the certificates along with the TDs for rectification. To shorten the rectification process, SEBI has made it mandatory that certificates along with TDs be given in the first place.

In case of prima facie objections, the receiving broker has to deliver rectified shares within one settlement period. However this does not happen in practice. The broker usually rectifies the prima facie bad delivery within a period of two to three settlements. The client may allow an extended period or square off the bad delivery at its own discretion. A regular follow up is done by the custodian with the brokers for rectification of such prima facie bad delivery.

On completion of verification, an entry is made in the system for the good delivery received against the DIP and securities are sent for further processing

4. *Corporate Action at the Time of Delivery*

Corporate actions at delivery stage refer to recovery of benefits when the purchase contracts are cum benefit. The details with respect to corporate actions are published by the BSE in its daily as well as fortnightly quotations. The exchange declares a *no delivery period* before the Book closure or Ex-benefit date to provide adequate time to process and lodge the securities for recovery of benefits from the company. This period is 15 days prior to the date of Book closure for out station companies and 10 days for local companies. The custodian performs the following tasks:

- Checks whether the purchase order is cum-benefit;
- Checks whether delivery received before or after no delivery period;
- If delivery has been received after no delivery period, recovery of benefit is initiated. In case of delivery before no delivery period, benefits will be received from the company on lodgement before Ex-benefit date.
- Collection of corporate benefits due from the brokers along with Form 10-A in respect of cum benefit DIP. Details of the benefits are updated into the system and funds are remitted to the clients.

5. *Processing for Lodgement and Actual Lodgement*

The front office checks for receipt of special instructions with regard to the delivery type. Delivery type refers to the client instructions regarding nature of lodgement which is either specified as "regular lodgement" or "blank" securities.

Regular lodgement refers to processing of securities for transfer in the client's name immediately on receipt of delivery. Blank securities refers to keeping the securities in the street name (i.e., no transfer in the client's name). Mutual funds are allowed to keep securities in street name.

Blank securities are kept blank until sale or book closure/ex-benefit date, which ever is earlier. Securities are generally kept blank when the client intends to sell the securities in a relatively short period of time.

There exist two methods of processing the securities:

In-House Processing: Under this method all the processing is done in the premises of the custodian either by their own staff. The securities do not leave the premises of the custodian.

Outsourcing of Processing: The securities are outsourced to external agencies for further processing or temporary staff is hired from vendor agency to process the securities at the custodians premises.

The custodians may follow either of the above mentioned methods of processing. Securities are processed on a first in first out basis. However, priority is given to lots for which book closures are approaching. If book closure or record date is imminent, custodians which generally outsource may process securities in-house.

The processing can be subdivided into following activities and tasks:

a. Filling of Transfer Deeds and Data Entry

The following tasks are performed in this activity:

- The delivery quantity is split into batches to facilitate easy handling of securities;

- The outsourcing agency (referred to as "agency" below) collects the securities from the custodian's front office and counts them at the custodian's premises. An acknowledgment is taken from the agency on the challan which is in triplicate and two copies are given with the lots.

  In case of in-house processing securities are sent to the back office.

- All securities are affixed with bar codes. Certificate level data entry is done by the in-house electronic data processing (EDP) department or the external agency. The following details are captured at the time of data entry:

  * Header Card

    - Batch number;
    - Name of client;
    - DIP number and installment number;
    - Number of shares, TDs and certificates; and
    - Total amount of stamp duty affixed on the batch.

  * Certificate and Transfer Deed Details

    - Batch number;
    - Certificate number;

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- Barcode number;
- Number of shares;
- Seller name and folio number; and
- Distinctive number.

- The Transfer deeds are filled and affixed with appropriate stamp duty. In case of jumbo lodgement the jumbo transfer deed is also filled.

- Securities are delivered to the lodgements unit situated at back office challanwise and clientwise.

Data entry is done for all securities received irrespective of its delivery type. However, in respect of securities to be kept in street name, the transfer deeds are not filled. Instead, upon completion of the bar coding and data entry, the securities are sent for safe keeping which is discussed later in this report.

b. *Receipt of Securities at Back Office by Lodgements Unit*

The lodgement unit at back office receives securities from the outsourcing agency or the EDP department along with a challan and gives an acknowledgment on a copy of the challan. In case of outsourcing of batches having stamp duty of more than Rs. 10,000 affixed on it, the receiver counts the stamps in front of the outsourcing agency. In the event of a discrepancy the batch is returned to the agency. Along with the securities the agency also delivers the certificate level data as a soft copy. This data is downloaded into the system on the same day. The securities are to be delivered to the back office within three days of receipt by the agency or the EDP.

c. *Verification of Transfer Deeds*

Lots received are checked for bad delivery. As checking for prima facie bad delivery was already done when securities were received from the brokers, the lodgement unit basically checks the transferee details of transfer deed for the following to ensure completeness:

- Buyers name is correctly stamped;
- Execution date is properly filled;
- Stamp column is filled and adequate stamp duty is affixed; and
- Witness details are filled.

Any mistakes identified have to be informed to the agency within 24 hours of receipt. On completion of verification, the authorized signatories of the custodian sign the transfer deeds. In case of jumbo lodgements only, the jumbo TD is signed though all individual TDs are defaced.

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d. Generation of Lodgement Letters

Lately SEBI has passed a notification on jumbo lodgements where all individual TDs are effaced as in normal lodgement, but they are not executed by the authorized signatory. A separate TD is prepared and executed for the entire batch. A jumbo TD is prepared for a single batch only because the execution date for the batch has to be common for all TDs in the batch.

As the lodgement unit receives many batches per day of the same scrip, the batches are accumulated clientwise and a common lodgement letter is prepared. The batches ready for lodgement are marked off on the system resulting in generation of lodgement letter with lodgement reference numberwise.

e. Lodgement of Securities

The securities are packed in pouches and sent for lodgement through speed post or courier service. The following are included in the pouches:

- Securities along with duly executed transfer deeds;
- Lodgement letter;
- Certificate and DNR listing;
- Stamp duty details;
- Business reply card;
- Acknowledgment card for proof of delivery;

The entire process of lodgement is completed within ten days of receipt of delivery of securities.

f. Monitoring for Book Closure for Street Name Securities

When a Book closure or Ex-benefit date is approaching, the fund manager informs the client by means of a *blank holding statement* indicating the Scrip, Quantity, Ex-benefit or Book closure date and the Benefit in order to receive instructions for lodgement. This intimation is usually sent one month prior to the Ex-benefit date. In case of some of the custodians, they have standing instructions from the clients to lodge the street name securities in case of an approaching book closure.

On receipt of instructions for lodgement, securities are withdrawn from the lockers by the respective fund officers and the procedure followed for regular lodgement commences. Securities are lodged within 10 days of receipt of instructions for lodgement from the client.

g. Receipt of Proof of Delivery

The receipt from the courier or EMS speed post is preserved as a proof of delivery and linked to the lodgement reference number. Acknowledgment cards are also received and attached to

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the lodgement reference number. In the event of non receipt of proof of delivery, follow up is done with the post office or the courier company after 15 days of dispatch. Business reply cards are sent back by the companies which serves as further proof of lodgement.

h. Follow up with Company

Securities duly transferred in the clients name are received in an average of three to four months. The registrar interface unit of the custodian does regular follow up with the company at periodic intervals of 60, 90, 120 and 150 days after which the custodian informs SEBI of the delay by letter.

i. Follow up for Securities Lost in Transit

Securities may be lost or stolen in transit. If this occurs, the following activities are undertaken by the custodian:

- Preliminary investigation is done by the lodgements unit based on EMS courier receipt, proof of delivery and business reply card;
- A stop transfer letter is sent to the company requesting them to hold all benefits in abeyance. However this letter is not binding on the company as it cannot refuse transfer if a duly filled up TD is submitted, unless a prohibitory order from a court of law is obtained;
- If company insists on a court injunction necessary steps are initiated to obtain it;
- Data of the lost securities are inserted into the *benami tables* to ensure that same certificates with forged transfer deeds are not delivered to the custodian to safeguard the interest of the client;
- The client is informed of the loss as well as the police;
- Follow up with company is done for issue of duplicate share certificates;
- A no objection certificate is obtained from the client and necessary indemnity forms are filled and submitted to the company; and
- Information is sent to the stock exchange and insurance claims papers, if required are filed.

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6. *Company Objections (Rectification, Relodgement and Corporate Action)*

On lodgement of securities with the company for transfer the company may raise objections. These objections are received by the custodian at its back office, on behalf of its clients, and the following activities are performed:

a. Receipt of Objections

The following tasks are performed in this activity:

- Objections are received at the mailing desk where they are inwarded in the register and handed over to the objections unit;
- The objections unit scrutinizes the documents received to ensure that objection memo, TDs and securities are received. This is verified with the quantity mentioned in the covering letter and discrepancies, if any, are followed up with the company;
- The data is entered in the system by capturing the header level information from the covering letter in the database resulting in the generation of an objection inward number;
- The bar codes are scanned to ensure that securities received under objections are the same securities that were lodged and a simultaneous count of shares is done on the system. Certificate level data entry is also done during the scanning.
- Updates in the system against the relevant lodgement number are done in order to reconcile the total quantity received back from the company, either as registered or under objection, with the total quantity lodged with the company.

b. Intimation to the Broker

Objections due to mistakes by the custodian are rectified in house and relodged with the company. Otherwise, the delivering is broker is contacted for rectification.

i. <u>Method 1</u>

The transfer deeds for the securities under objection are sent to the broker along with the objection intimation letter within seven days of receipt of objection from the company. Copies of the transfer deed are preserved either by xeroxing or by the imaging process (i.e. capturing images on the system).[3]

[3]As noted earlier, this practice has recently been suspended as SEBI has made it mandatory that certificates along with TDs be given for rectification in the first place.

ii. Method 2

The broker is sent only an objection intimation letter within seven days of receipt of objection from the company. On receipt of intimation the broker is expected to issue a caution deposit cheque drawn in favor of the client. The broker is expected to collect the transfer deeds along with the securities on issue of this cheque within three days of receipt of intimation from the custodian.

c. Collection of Collateral

Collateral paid by the broker to the custodian may be monetary (i.e., pay order or demand draft) or non-monetary (i.e., scrip collateral). The amount of collateral is calculated according to scrip rate based on either the contract rate or the previous day's highest market rate, whichever is greater.

i. Monetary Collateral

Some custodians do not bank the cheque and others bank the pay order or demand draft immediately. Regardless, funds are not remitted to the client but are retained to refund the collateral to the brokers against rectification.

ii. Scrip Collateral

Scrip collateral facility is allowed only to brokers having high net worth. Under the scrip collateral, an agreement is signed between the broker and custodian whereby power of attorney is given to the custodian to hold securities which are in the brokers name and to transfer them in case of default by the broker. The broker then deposits his personal stock of securities with the custodian. Generally blue chips are accepted for this purpose.

Securities are entered in the system and they are valued at the previous day's highest market rate. The broker can collect securities under objections for up to 70% of the value of securities deposited. Weekly revaluation of scrips under collateral is done and the collateral value limits are revised accordingly.

d. Rectification Done by Broker

The broker is allowed a period of 45 to 90 days to rectify the objections and the period varies for different clients. The broker rectifies the objection and delivers the same to the custodian's front office where the custodian checks the scrips completely in all respects and sends the same to back office for relodgement along with the share certificates. In case if broker has deposited some collateral he gives a letter to the custodian requesting them to release the collateral.

If the broker fails to rectify the objections within the permitted time period, the client may square off the objection. At the time of squaring off the amount is decided based on the

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following: the scrip rate or highest market rate on the date of squaring off, whichever is greater, plus the value of benefits, if any, declared by the company between DIP date and squaring off date, plus the stamp duty attested on the TDs.

e. Corporate Action for Securities under Objection

At the time of receipt of duly rectified securities, the custodian also collects all benefits that have been declared by the company between the DIP date and the relodgement date. Deliveries are not accepted and collaterals are not released until all benefits due to the clients have been received.

f. Relodgement of Securities

Duly rectified securities are relodged with the companies. The process for relodgement is the same as lodgement except that securities are not required to be given to the outsourcing agency unless the broker has rectified the objection by replacement with a new transfer deed or share certificate.

B. Sale of A+B1 Securities

The process for sale of securities can be divided into the following activities and tasks:

1. Receipt of Delivery Instruction for Sales

The activities performed in this process are:

a. Receipt of Delivery Instruction for Sale from Client

As in the case of a DIP, the counter staff custodian's front office receives the Delivery Instruction for Sales (DIS) from clients either on a floppy disk, in hard copy or both or through electronic links. In the case of sales orders received on floppy disk, the front office downloads the data into the system and takes a print out. In case of hard copy, the data is entered into the system.

Authentication of DIS details in the system is done with the hard copy received from client.

b. Receipt of Form 9-A

Form 9-A is an intimation that the securities have to be delivered to the buyer against payment through the clearing house. The custodian performs the following tasks similar to processing Form 10-A for sales:

- Receives Form 9-A across the counter from the broker delivering the securities, usually 72 hours before the settlement date.

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- Matches Form 9-A with the trade information per the DIS in the system In case of any mismatch the Form 9-A is returned to the broker and the client is informed of the same.

- Performs necessary rectification and a revised DIS/Form 9-A is received at the counter.

- After matching , authentication is done in the system by a person other than one who performs the matching. This as an internal check.

c. *Receipt of Sales Confirmation from the Clearing House*

On the last day of trading for a particular settlement the front office receives a sales confirmation from the clearing house on the floppy disk indicating the Scrip, Quantity, Rate, Receiving broker and Delivering broker name.

2. ***Withdrawal of Securities***

Securities are physically withdrawn from the vaults for delivery to the front office. The trigger for this activity is receipt of safe custody withdrawal request from the front office. This request is made on the receipt of DIS.

The thumb rule followed for delivery is that blank securities are delivered first and then registered securities in cases of sale of a scrip with blank and registered holdings.

The following tasks are performed in this activity:

- On receipt of the withdrawal request the same is entered in the system by the safe custody department;

- The update entry results in the assignment of a pouch number against a DIS by the system. The pouch numbers are assigned on a first in first out basis. This is done in case of custodians who perform tracking of securities based on pouch bar codes at the safe custody level. However, for the other custodians where tracking is done based on the DIP number, the DIP number is assigned to the particular DIS;

- The safe custody department staff withdraws the pouches of securities from the vaults and hands them over to the back office for processing;

- The safe custody department or the EDP does the scanning of the bar codes on the certificates and updates certificate level data in a statement called the *certificate level withdrawal from storage*;

- Securities are processed by filling the transferor details on the transfer deeds. This processing can be done in any of the following three ways:

  - Outsourcing to the agencies for processing;
  - In-house processing by custodian's own staff; or
  - The broker through whom the client has transacted visits the custodians office before the pay-in day and does the processing; and

- The securities are delivered to the front office.

3. *Delivery to Clearing House*

Securities are received at the front office after processing . These are counted and verified by the front office counter staff to ensure the correctness of delivery. They are than arranged as per the sales confirmation order received from the clearing house and stored in vaults at front office until they are delivered to the clearing house on the pay-in day.

4. *Collection of Payment*

On pay-out day, payment is collected through cheques or pay orders. These cheques are banked and funds are remitted to the client. In respect of high value cheques funds are remitted on the same day. In respect of FII's the funds are converted into foreign exchange and credited to their USD account.

In the event of remittance of funds required by the FII client, details of the sale are furnished to the Chartered Accountant/CPA appointed by the client for the calculation of the capital gains on the sale and the tax thereon as per the Indian tax regulations. On receipt of the certificate the proceeds, net off such tax, is sent to the client.

Corporate benefits payable in respect of cum benefit trades delivered as ex benefit are payed along with the payment to the broker by the custodian. However, it is possible that such payment may not be made immediately by the custodian forcing the broker to pay the benefit to the buyer and collect from the custodian at a later date which could be three to four months. In this case, the broker's money is tied up.

C. Purchase of Securities for Group B2

With effect from 2nd September 1996, as per the new guidelines issued by BSE, the settlements program for Group B2 securities (i.e. non-specified shares) has been modified. Prior to these guidelines, settlement of the securities in Group B2 was done between receiving and delivering brokers outside the clearing house premises. In the former settlement process, the delivering broker would deliver the securities to the receiving brokers premises who in turn would deliver the same to the custodian.

Under the new system, however the delivery of the securities will be routed through the clearing house in the same manner as in case of Group A+B1 scrips, (i.e. the delivering broker

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will deliver the securities to the clearing house on the pay-in day and the receiving broker will accept delivery from the clearing house on the pay-out day). The receiving broker will then deliver the securities to the custodian at the custodian's premises across the counter, as was being done previously under the former settlement process.

The process followed by the custodian for purchase of Group B2 securities is as follows:

1. Receipt of Delivery Instruction for Purchase

The process followed is the same as Group A+B1 detailed earlier.

2. Payment for Purchase Value

All B2 transactions are what is termed delivery versus payment (DVP) in the Indian market. Payment for purchase value is made to the broker within 48 hours of receipt of delivery for good deliveries only. In event of prima facie bad deliveries being delivered in any lot, the payment for the entire lot is withheld till such time as the broker rectifies the bad delivery. This is because the custodian does not accept partial delivery. However, some custodians may release partial payment in respect of the good deliveries received with the prior approval of the client.

3. Accepting Delivery from Broker

As a policy custodians do not accept part delivery from the broker unless specifically instructed by clients. In such cases, partial delivery is accepted subject to a minimum of 50% of DIP quantity. Partial delivery instructions are received in the DIP. The process differs from Group A+B1 in the following respects:

- The broker delivers the securities to the front office on the day after pay-out day. The securities are counted at the time of taking delivery. In case of partial delivery the brokers are allowed an extended period of time to deliver the balance quantity. This period is in the discretion of the client. If the delivery is not received within such extended time the transaction is squared off at the instance of the client.

- Bad deliveries detected on verification of securities are returned immediately to the broker. The defaulting broker is expected to rectify the bad delivery within the next settlement period.

4. Corporate Action at the Time of Delivery

Recovery of benefit is done either by receipt of benefit along with delivery through a separate cheque or by making payment net off benefit for the contracted value.

5. Processing for Lodgement and Actual Lodgement

The process followed is the same as in Group A+B1 detailed earlier.

6. Objections ,Rectification and Relodgement

The process followed is the same as in Group A+B1 detailed earlier.

D. Process for Sale of Group B2 securities

1. Receipt of Delivery Instruction for Sales

The process followed is the same as in Group A +B1 except that Form 9A and sales confirmation order is not received.

2. Withdrawal of Securities

The process followed is the same as in Group A+B1 detailed earlier.

3. Delivery to Brokers

The securities are received at front office, physically verified and kept in lockers maintained at front office. Before pay-out day the broker comes and collects delivery from the front office counter and acknowledgment is taken from the broker on the delivery summary statement. A payorder or demand draft is collected from the broker against delivery for sales value.

4. Collection of Payment

The payorders or demand drafts are encashed and payment advices are forwarded to the client. Some custodians also accept cheques. In such cases cheques are usually collected 48 hours before delivery of securities and banked immediately. This is done to have clear funds before delivering the securities to safeguard the client's interest against cheques being dishonored by the brokers, subsequent to delivery of securities against the sales orders.

E. Process of Safe Custody

The safe custody department is responsible for safe keeping of securities as well as their withdrawal for delivery against sales orders. The process of safe custody commences with the receipt of duly transferred securities in the client's name at the back office.[4] As soon as securities are lodged, a receivable is created in the system against the lodgement reference number. All securities received either as registered or under objections are updated in this

[4]For blank securities left in street name, lockers are assigned that are under the control and supervision of the fund managers or the settlements manager to facilitate withdrawal for lodgement or delivery against sale orders.

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receivable account. This facilitates tracking of securities which are lodged but not received back. The process of safe custody can be divided into following activities and tasks:

1. Processing of Duly Transferred Securities by Back Office

The following tasks are performed in this activity:

- All securities are received at the mailing desk of the back office where they are inwarded in the mailing inward system. Data from the covering letter is entered by the mailing desk without any counting of securities;

- The back office staff collects the securities from the mailing desk and acknowledgment is given;

- Header level information is captured in the system and an inward number is generated. The following data is entered in the header level:

    * Name of scrip;
    * Company letter reference number;
    * Number of certificates and shares; and
    * Mailing inward number.

- Securities are counted and verified for rectification. Rectification may be required in the following cases:

    * Non affixing of company seal;
    * No signature of authorized signatory;
    * Error in endorsing transferees name; or
    * Sellers folio number/transferees folio number absent or incorrect.

- On completion of counting and verification securities are placed in pouches. The number of certificates kept in individual pouches varies amongst the custodians as per convenience in handling.

- In the case of custodians having the infrastructure, tracking of securities is done based on pouch bar codes. A unique pouch barcode is generated and pasted on the pouch. All further processing is done against the pouch bar code. However in case of other custodians tracking is done based on DIP number.

- Scanning of barcode of individual certificates is done pouchwise against the inward number or the DIP number.

- Securities requiring rectification are sent back to the company along with the necessary rectification letter through EMS speed post or courier.

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- Batches are created by accumulating a few pouches each and a batch slip (or safe custody letter) is generated batch numberwise. These batches are handed over to the safe custody department.

2. *Safe Keeping in the Vaults*

The following tasks are performed in this activity by the safe custody unit:

- Securities are received from the back office in batches along with batch slip. These securities are counted and again verified for rectification. The quantity counted is tallied with the batch slip.

- Updation is done in the system for securities received for safe keeping. This results in generation of a location for a particular batch and printing of a pouch slip indicating the scrip name, pouch quantity, and the location in the vaults for the pouch.

- Pouch slips are affixed on the pouch and they are arranged in the location order. Batches are stored in the locations assigned to them.

3. *Information to the Client*

The client interface unit prepares a weekly *physical holding statement* indicating the actual holding position in the vaults. It also prepares a *logical holding statement* based on all DIPs/DISs received from the client indicating the total quantity that should be reflected in the client's net holding (also called logical holding) on a particular date which also reconciles the difference between the actual holding and logical holding .

F. Corporate Actions

Corporate action are performed at different stages: delivery, objections, relodgement and safe custody. The discussion of corporate action processing described below refers to the actions in respect of duly registered securities kept in safe custody.

The various corporate actions handled by the custodian are:

- Dividends;
- Rights;
- Bonus;
- Consolidation/splitting; and
- Redemption/Conversion.

The process of corporate actions commences with the monitoring of the daily quotations published by BSE, NSE, and regional exchanges. This monitoring is done on a daily basis by the data bank and entered in the system resulting in generation of a unique benefit number.

The corporate actions unit creates a receivable account in the system. This results in generation of a benefit accrual report indicating the total benefits accruing to the client.

Based on the benefit accrual report, a pre-receipt follow up is done with the company confirming the total benefits due to the client one month before the ex benefit date. In the event of any discrepancy between the benefits due as per the custodians records and that of the company the issue is resolved. A second follow up is done seven days before the ex benefit date to ensure that discrepancies, if any, have been rectified.

In the case where pre-receipt follow up is not conducted, a post-receipt follow up occurs (i.e., they reconcile the benefit actually received with the benefit entitled to the client and in the event of a discrepancy follow up with the company).

Cheques of dividend are collected from the company on the ex benefit date in case of local companies and three to seven days after ex benefit date in case of outstation companies. Cheques are deposited in the bank and funds are remitted to the client along with a statement showing the details of the benefit collected.

In the case of rights issues, seven days before the opening of the issue a statement of accruals is sent to the company and confirmation is obtained back. The rights application form is received and the same is reconciled with the statement of accrual. The custodian, in consultation with the client, segregates the rights quantity into the various schemes. Funds are received from the client for payment of application money and the application forms are completed. After 30 days of the closing of the rights issue period, follow up is done with the company for allotment. On receipt of allotment of the securities, a DIP number is generated, data entry and bar coding is done either by outsourcing or in-house and they are sent to safe custody for safe keeping.

In respect of bonus shares, allotment is received within 60 days of ex benefit date These are reconciled with the statement of accruals and a DIP number is generated. Data entry and bar coding is done and securities are sent to safe custody.

In respect of conversions, mergers, change in face values, consolidation and splitting, the certificates are withdrawn by the safe custody department, referred to as a *Non-DIS Withdrawal*. At the end of the day, a report of all Non-DIS Withdrawals is generated. Securities are then sent by the lodgements unit to the company for necessary action.

On receipt of securities, the header level information is captured in the system. Counting and verification of securities is done. In case of receipt of new certificates, the same are outsourced for data entry and bar coding. Securities are received back from the outsourcing agency, the batch slip are generated and sent to safe custody.

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ATTACHMENT

CUSTODIAN FLOW CHARTS

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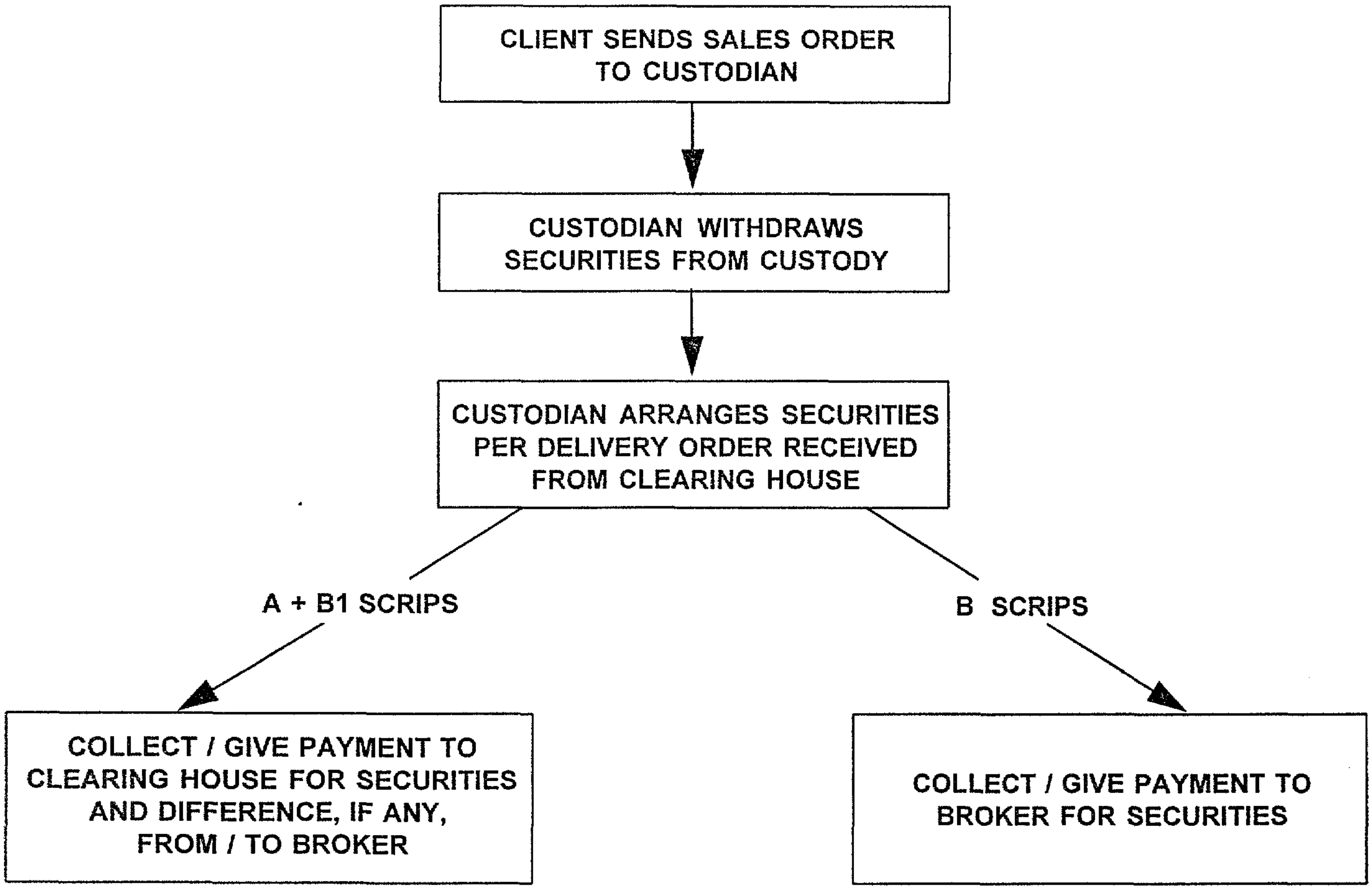
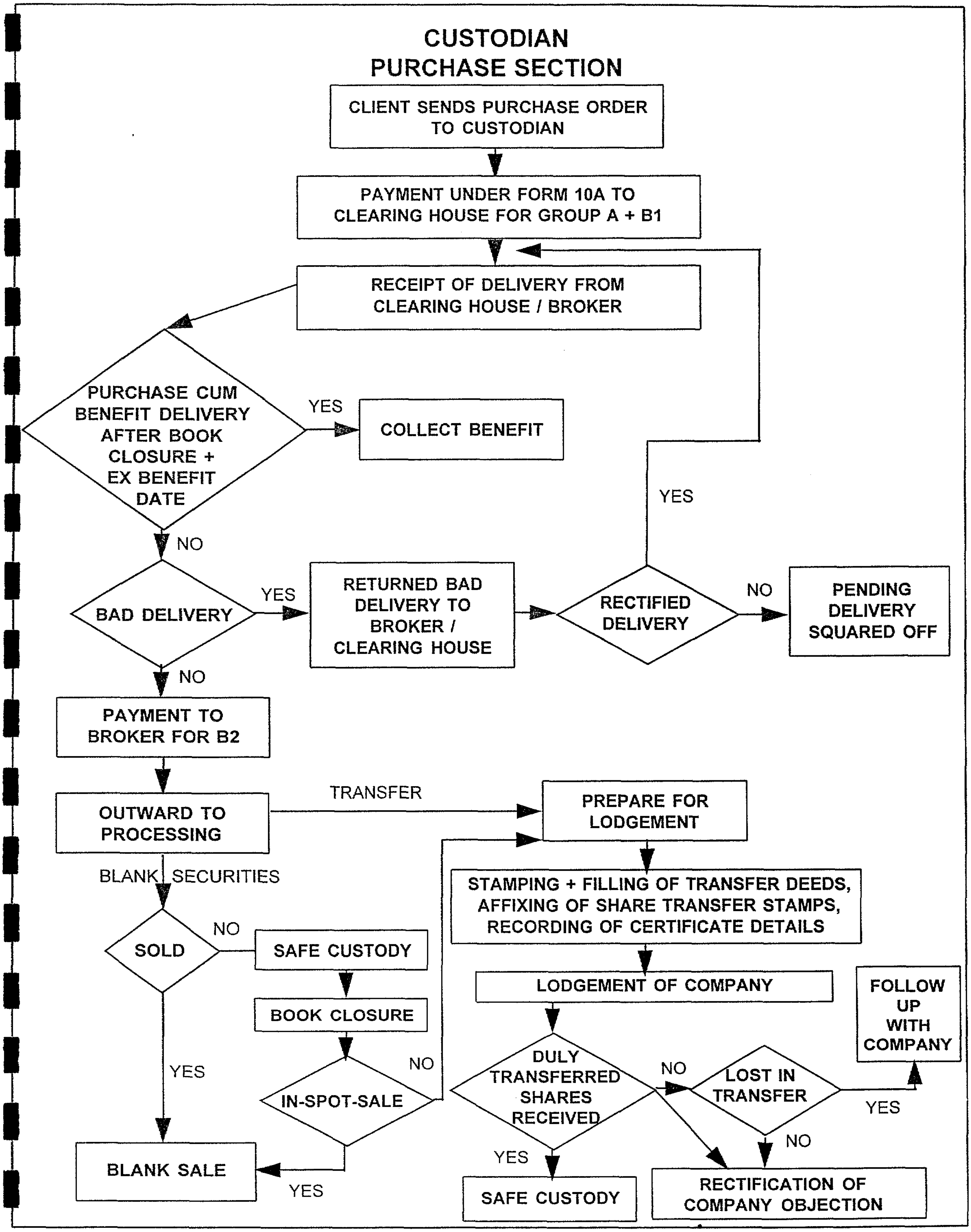
CUSTODIAN
SALES SECTION




CUSTODIAN
PURCHASE SECTION
CLIENT SENDS PURCHASE ORDER TO CUSTODIAN
PAYMENT UNDER FORM 10A TO CLEARING HOUSE FOR GROUP A + B1
RECEIPT OF DELIVERY FROM CLEARING HOUSE / BROKER
PURCHASE CUM BENEFIT DELIVERY AFTER BOOK CLOSURE + EX BENEFIT DATE
YES
COLLECT BENEFIT
NO
BAD DELIVERY
YES
RETURNED BAD DELIVERY TO BROKER / CLEARING HOUSE
RECTIFIED DELIVERY
YES
NO
PENDING DELIVERY SQUARED OFF
NO
PAYMENT TO BROKER FOR B2
OUTWARD TO PROCESSING
TRANSFER
PREPARE FOR LODGEMENT
BLANK SECURITIES
STAMPING + FILLING OF TRANSFER DEEDS, AFFIXING OF SHARE TRANSFER STAMPS, RECORDING OF CERTIFICATE DETAILS
SOLD
NO
SAFE CUSTODY
BOOK CLOSURE
LODGEMENT OF COMPANY
FOLLOW UP WITH COMPANY
YES
IN-SPOT-SALE
NO
DULY TRANSFERRED SHARES RECEIVED
NO
LOST IN TRANSFER
YES
NO
YES
BLANK SALE
YES
SAFE CUSTODY
RECTIFICATION OF COMPANY OBJECTION

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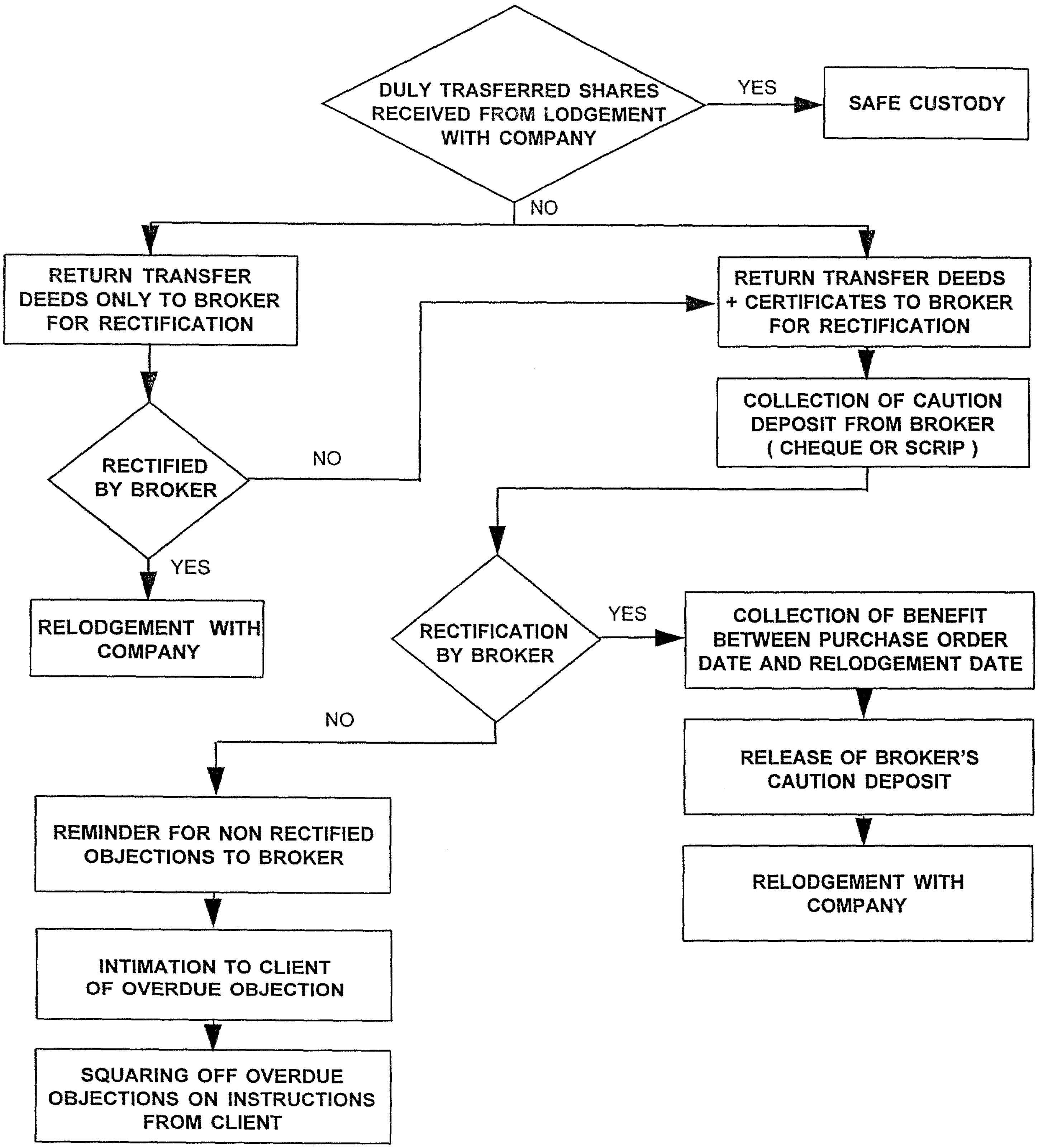
CUSTODIAN
RECTIFICATION OF COMPANY OBJECTION



APPENDIX G

GENERIC REGISTRAR AND TRANSFER AGENT REPORT

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Table of Contents

I. INTRODUCTION

Registrar & Transfer (R&T) agents perform ownership transfer, dividend, and corporate action processing for companies. Included in this is the processing of stop transfers and requests for duplicate shares. A flow chart of the R&T agent activities described below is presented in the attachment to this Appendix.

An R&T agent can be of three following types:

1. Working on a commercial basis for client companies;

2. Separate entities formed by big business houses to handle share transfer activity of their group companies; or

3. An in-house department of a company and which handles share transfer activity of that company only. It acts like a department of that company and does not have any separate legal status.

II. OPERATIONAL PROCEDURES OF R&T AGENTS

A. Standard Transfer

The total number of transfer deeds received from all the sources varies for different R&T agents as it is based on the number of companies handled by them and the amount the scrips are traded in the market. An R&T agent with a top traded scrip could see 40% of its volume accounted for by that one scrip. The highest volume of transfer processing comes at the time book closure and record date period.

1. Inward

The first stage in the transfer process is receipt of transfer deeds (TDs) and corresponding share certificates. These documents can be received from various sources such as by post, by courier, and across the counter. Some small R&T agents also pick up TDs directly from the company for whom the R&T agent is acting as an agent.

First TDs are sorted unit-wise (whenever applicable). Stop transfer requests are sent for processing immediately on a priority basis when received.

On receipt of a TD, the Inward department cancels the stamp duty of the TD, records the inward date, and applies a company stamp. A control sheet for TDs is prepared and the control sheet, TDs and share certificates are sent to for processing.

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2. Electronic Data Processing (EDP)

The process of share transfer starts with the Electronic Data Processing (EDP). For TDs received by EDP from the inward department, data entry is done company-wise for TDs only. Data entry is in the specified screen based format. It is online or off line depending on the size of the R&T.

The data entered is compared with the master file. Obvious errors are rejected (e.g. the system will not accept a folio number and a name that do not match). The operators also check for a few types of standard errors (e.g. stamps not affixed, date of transaction not mentioned, enclosures not in order, signature not present, signature of witness not present name not in order, etc.).

3. Signature Verification

Signatures are normally verified twice. Initially it is generally verified by junior level person and subsequently by a senior level person. Signature scanning by computer is done at most R&T agents which allows verification against a signature sample that is retrieved on the computer screen. However, some R&T agents only have manual verification where they cut and paste specimen signatures which they use for physical comparison at the time of transfer.

In case of a slight signature difference, the decision to accept the TD or reject it is subjective and left to the person who is comparing the signatures. In such cases, however, many R&T agents send confirmation letters to the seller asking to confirm whether they have sold these shares.

In case of obvious signature difference, the transfer request is rejected and the objection process is initiated with the drafting of an objection letter. In the first objection letter to the buyer, the latter is not informed about the category of signature difference. If the response has the same error, then a second letter is sent to the buyer stating the nature of the difference. However, this decision is taken on a case by case basis.

4. Transfer Deed Verification

Once the buyer and seller details are recorded in the computer system, the next step is checking the transfer deeds with punched details. A data entry checklist is printed against which transfer deeds are checked . Any corrections in the punched data is marked on the checklist itself. Transfer deeds are verified based on the following points:

a) Name and Signature of the seller is present;

b) Number of shares, folio number, certificate number & distinctive numbers are correctly mentioned on the transfer deed;

c) Name and address of witness is present;

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d) Buyer name, address, signature, and specimen signatures are present;

e) Correct amount of stamp duty has been paid;

f) Proper date of execution and the rates entered in the transfer deed actually prevailed in the stock exchange on the date of execution; and

g) Validity of the TD (TDs must be presented within one year from the day of its presentation to the prescribed authority or the book closure, whichever is later).

5. *Approval*

After separating good cases, a transfer register is printed. For transfer of ownership, approval from the board of directors of the concerned company is required. Authority to approve transfers is normally delegated to a committee formed for this purpose by the Board as it is not feasible for the Board to meet so often.

The R&T agent prepares a list of the proposed transfer cases, called the Memorandum of Transfer (MOT), which is sent to the company each time the Board is scheduled to meet. The MOT contains a list of all the present as well as the proposed interest holders in decreasing order of holdings. It also has the percentage of total holdings for each folio. Each MOT is up to a particular cut-off date which is for that Board meeting. Though it varies from company to company, the company transfer committee generally meets every 15 days.

The transfer committee either approves the MOT in full or, in cases of partial approval, returns the MOT with the proposed changes. In the case of partial approval, a fresh MOT is prepared and sent. The cases not approved are shifted to the following MOT.

6. *Endorsements*

As soon as the verbal approval is obtained from the transfer committee, endorsement is done on the back of the share certificate. Most R&T agents use a sticker system where EDP prints the stickers and covering letters to the individual investors. Once the written approval is received, the stickers are pasted on the share certificates and the covering letters are signed by either managers or higher designation officials.

7. *Despatch*

Mail is received and acknowledged twice daily from other departments. Enclosing letters in envelopes, sealing the letters and franking are all completed and the letters despatched within 24 hours of receiving the mail from various departments. In case of bulk mail orders with time limits specified by the company that the despatch department may not be able to adhere to, the

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department informs the company about the same. The company is requested to let the department take help of the postal services department and bear the marginally higher costs for the same. This is especially so in case of bulk registered mail.

B. Institutional Transfers

Institutional transfers are handled in much the same way as individual transfers. The agents receives very few Jumbo certificates for transfer since a pre-requisite for this would be a single buyer and a single seller. In such cases, both the buying and the selling parties come personally to the transfer agent and the formalities are completed within a period of two to three days. This process helps save time, money and effort for the transacting parties as well as for the agent.

SEBI has only recently allowed the concept of Jumbo transfer deed where the institutional buyer fills in only one "cover" TD while for all the other TDs only the seller portion is filled. Stamp duty, signature etc. are present only on the first TD while all the others have the company stamp. As a result, the time taken for processing is less than half that in other cases.

C. Objections

To transfer shares into a buyer's name, a TD has to pass through established acceptability tests. If a TD does not conform to any of a single acceptability criteria, the TD is rejected.

A transfer deed is rejected by an R&T agent on the following grounds:

1) Signature difference: This means that the signature on the transfer deed of the seller differs from what is registered with the company.

2) Invalid transfer deeds: A transfer deed should be sent for transfer within one year of the date of presentation to the prescribed authority (Registrar of Companies) or the book closure, whichever is later. A transfer deed received by an R&T agent beyond such time frame is invalid transfer deed.

3) Improper Stamp duty: The stamp duty should be affixed on the transfer deed at 0.5% of the value of the shares.

4) Incomplete transfer deed: A transfer deed has to properly indicate the name and signature of the seller; the number of shares, folio number, certificate number and distinctive numbers; the name and address of witness; and the buyer name, address, signature, and specimen signature.

5) Stop Transfer on file: This a unique case in which the TD and certificates are rejected as the existing share holder has lost the certificates or had them stolen.

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If a TD is rejected the company is not allowed to retain share certificates, except in the case of stop transfers, so they are returned to the investor for rectification.

Of all transfer requests received, R&T agents interviewed report approximately 10% are objection cases. Of the objection cases, 50% of these are due to signature difference. R&T agents do not track what happens to an objection once the TDs and certificates are returned to the investor.

D. Stop Transfers

In the case of stop transfers, a person who has lost their shares or had them stolen submits a stop transfer notice for the specified number of shares with the corresponding distinctive numbers to the R&T agent. The R&T agent puts a "flag" in its master file, so that if the corresponding certificates are sent for transfer by another person, a stop transfer message is flashed on the screen.

Upon filing the stop transfer request, the investor obtains a court injunction which is forwarded to the R&T agent. The court injunction is normally received within three days of receipt of the stop transfer letter, but R&T agents often wait for up to 45 days to receive it. The R&T agent will entertain requests for issuance of duplicate shares after receipt of court injunction.

In case shares with a stop transfer are lodged for transfer with the R&T agent, the transfer is rejected and the certificates are retained with the R&T agent as noted above.

E. Duplicate Share Certificates

In requests for duplicate share certificates, the R&T agent first asks for an indemnity bond (approx. cost Rs. 100) and an affidavit (approx. cost Rs. 20). The documents are received within 15-20 days for good cases and three to four months in case of disputed cases. After receiving these documents, an advertisement indicating loss of shares and request for duplicates issues must be run in a national daily. Depending on company policy, either the investor arranges for the advertisement or the company asks for a payment and the R&T agent does the job of getting a consolidated advertisement printed for all the duplicate certificate requests that it gets within a certain period (say seven to 30 days). The agents have to wait for 21 days after the advertisement appears before the process for issuing duplicate shares can be initiated. Approximate timings are given in tables below, but it usually takes 45-60 days for duplicate shares to be issued after the R&T agent receives the indemnity bond and the affidavit from the investor.

F. Times Taken

Time taken for transfers vary for different R&Transfer agents. However, the R&T agents interviewed indicated the following time periods on average:

1. Ownership Transfer

Function	Number of days (at each stage)			
	Smooth transfer	Objection		
		Stop transfer	Signature difference	Others
Inward	1	1	1	1
EDP - data entry	1	1	1	1
Scrutiny	1	-	1	1
Signature verification	1	-	1	-
Wait for MOT (average)	10	-	-	-
Sticker printing, cover letter	1	Objection cases are sent immediately. No time is wasted.		
Despatch	1	7	7	7
Postage Time (in transit)	10	10	10	10
TOTAL	**26**	**19**	**21**	**20**

2. Stop Transfer/Duplicate Shares Requested

Minimum time for legitimate duplicates share issues are as follows:

Process	**Number of days**
Court injunction	3
Affidavit & indemnity	20
Advertisement published	15
Wait period after advertisement	21
Duplicate made & sent to company	8
Duplicate returned & processed by agent	1
Despatch	1
Postage time	10
TOTAL TIME	79

G. Corporate Actions

1. Bonus and Rights Shares

The R&T agent is an important participant in the execution of bonus/rights declaration. When bonus shares are declared, an R&T agent has to allot shares in favor of existing shareholders. The following events occur when a bonus or a rights issue is declared by the client company in the Annual or Extra- ordinary general meeting

1) R&T agent fixes book closure or record date. All the transfers received until that date will be updated .

2) The investors apply for rights issue by giving application form and cheques to the bankers to the issue.

3) R&T agent collects the application forms and confirmation of payment received by bank from applicant in case of a rights issue.

4) R&T agent generates a Register of Members for the company.

5) R&T agent processes applications on receipt for rights issue.

6) R&T agent allots shares after obtaining the approval of stock exchange.

7) Share certificates are printed in shareholders name.

8) Share certificates are despatched.

R&T agents say that shares are despatched within 42 to 60 days of closure of the offer period in the case of rights and of the record date in the case of bonus shares. Thirty of the days are given for stock exchange approval.

2. *Dividend*

The R&T agent also performs dividend distribution. Once the book closure is declared, all the transfer up to a particular date, will be recorded. A dividend entitlement register is printed and then the dividend warrant is printed and despatched.

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ATTACHMENT

REGISTRAR AND TRANSFER AGENT FLOW CHARTS

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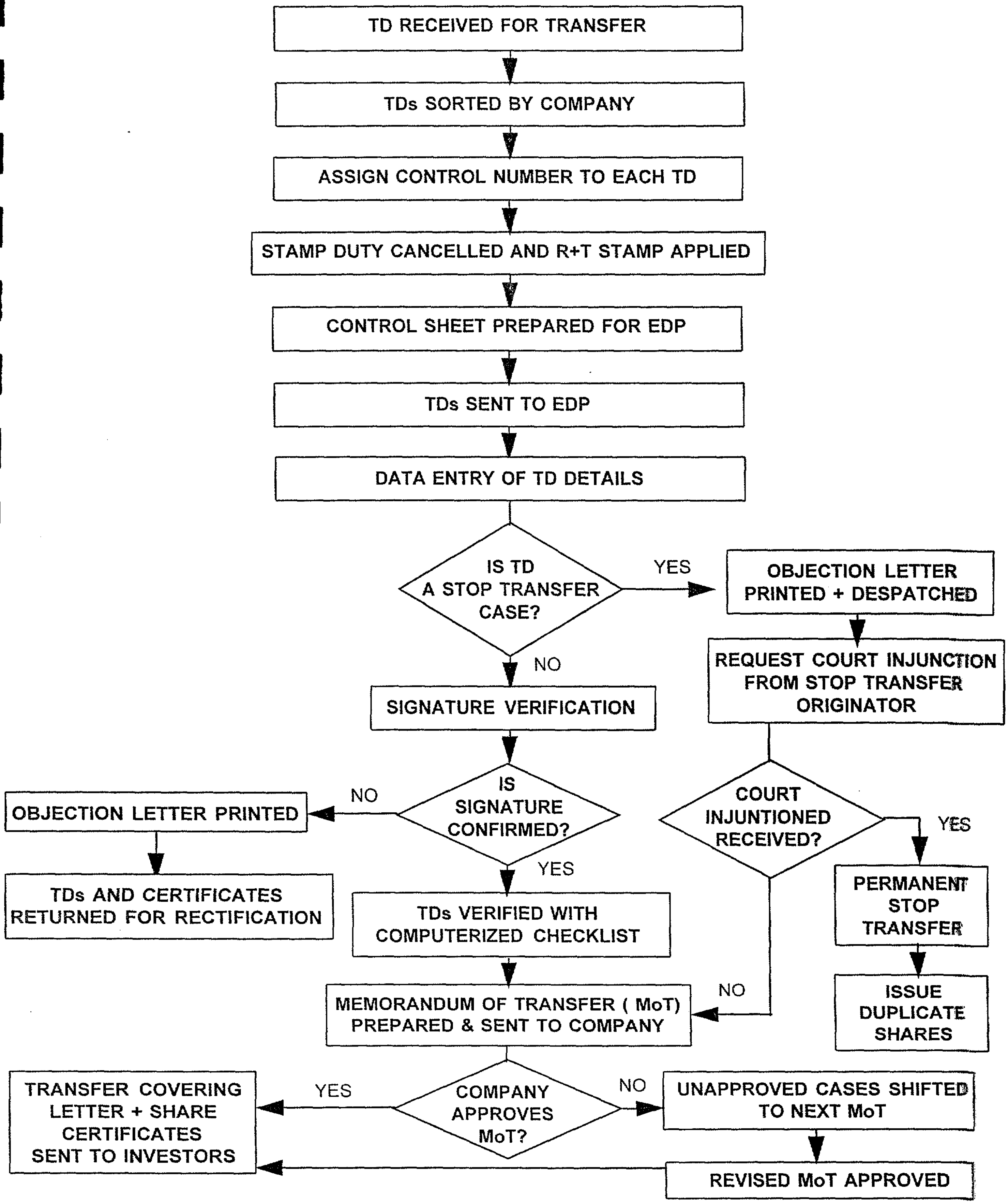
REGISTRAR TRANSFER AGENT OWNERSHIP TRANSFER



APPENDIX H

LISTING OF SCRIPS TO BE DEMATERIALIZED

IN 1997, 1998 AND 1999

Proposed List of Securities to be Dematerialised by the end of 1997

Sr.No.	Name	Group	Capital	Market Capitalization
1	OIL & NATURAL G	B	142593.40	336520424000
2	INDIAN OIL CORP	B	38933.74	292003050000
3	TATA ENG.	A	31032.94	141510206400
4	S.B.OF INDIA	A	474600.00	112836150000
5	STEEL AUTH	A	398150.76	109491459000
6	MAHANA.TEL	A	60000.00	106800000000
7	HINDU.LEVE	A	14583.86	103545406000
8	RELIANC IN	A	47784.74	99392259200
9	NEYVELI LI	B	156582.00	74376450000
10	TATA STEEL	A	36816.61	72896887800
11	VIDESH SAN	B	8000.00	71200000000
12	ASHOK LEYL	A	52287.60	65359500000
13	BAJAJ AUTO	A	7959.39	64789434600
14	HINDUST.PETROLE	A	20293.00	62908300000
15	ITC LTD.	A	26861.83	60976354100
16	HINDALCO I	A	4965.00	56601000000
17	L & T	A	22943.04	55522156800
18	INDUSTRIAL DEV.	A	48558.00	52928220000
19	TATA CHEM.	A	24849.69	52432845900
20	HIND COPPE	B	30419.00	50191350000
21	HIND.PETRO	B	21525.33	47355726000
22	BHARAT PET	B	15000.00	43500000000
23	GRASIM IND	A	7231.40	40495840000
24	BROOKE BON	A	12048.32	38795590400
25	HOU.DEV.FI	A	11011.40	35676936000
26	COLGATE	A	13599.28	35630113600
27	CASTROL IN	A	8490.86	34812526000
28	INDIAN PETROCHE	A	21892.00	34370440000
29	A.C.C.	A	8617.08	32744904000
30	INDIAN HOT	A	4511.47	32031437000
31	NAT ALLUMI	B	128861.92	30282551200
32	BHARAT HEA	A	24476.00	29983100000
33	RANBAXY LA	B	4316.95	28707717500
34	I.C.I.C.I	A	302103.29	28548760905
35	CENTURY TE	A	465.23	28030107500
36	GUJ.AMB.CE	A	7092.37	24965142400
37	MOTOR IND.	A	3805.15	24257831250
38	E.I.HOTEL	A	3380.35	21296205000
39	INDIAN RAY	A	4496.45	20908492500
40	NESTLE	A	6427.71	20729364750
41	MADRAS CEMENT	B	1789.44	19683840000
42	A.B.B.	B	3106.38	19570194000
43	INDIAN ALU	A	9481.60	18963200000
44	FERTILISER	B	34277.20	18852460000
45	INGE RAND	B	6313.80	18310020000
46	MAH & MAH	A	6388.00	16449100000
47	GANAPA EXP	B	6500.00	16250000000
48	TATA POWER	A	110604.86	16148309560
49	SIEMENS	A	2839.70	14908425000
50	KIRLOSKER CUMMI	B	4110.00	14179500000

Proposed List of Securities to be Dematerialised by the end of 1998

Sr.No.	Name	Group	Capital	Market Capitalization
1	RAYMOND WO	A	4099.70	13733995000
2	ASIAN PAIN	A	3982.22	13639103500
3	GLAXO	A	5977.50	13509150000
4	TATA TEA	A	4862.19	13371022500
5	NATNL.MIN.	B	128861.00	12886100000
6	GREAT EAST	A	27908.61	12558874500
7	STERLI IND	A	4099.96	12422878800
8	SMITHKLINE	A	4254.43	12231486250
9	BHARAT ELE	B	8000.00	12200000000
10	ORIEN.BANK	B	19254.00	12033750000
11	MASTERSHA PLUS	A	98534.00	11873347000
12	COCHIN REF	A	6893.27	11856424400
13	RELIAN.PET	B	87718.61	11842012350
14	BOMBAY DY.	A	4072.67	11525656100
15	MANG.REFIN	A	41800.00	11390500000
16	CROMPTON G	B	4428.48	10716921600
17	MRF LTD.	B	424.11	10475517000
18	S.C.I.C.I.	A	22799.92	10373963600
19	ARVIND MIL	A	9949.04	10148020800
20	ESSAR GUJ.	A	31648.61	10048433675
21	REL.CAPITAL	A	12864.60	9841419000
22	INDO GULF FERTI	A	18717.29	9826577250
23	INDUST OXY	B	6994.00	9791600000
24	BSES LTD.	A	5770.35	9636484500
25	CHEM & PLA	B	6390.00	9201600000
26	CONTAINER CORP.	B	6499.14	9098796000
27	BALLARPUR	A	4952.80	8915040000
28	HERO HONDA	B	3195.00	8866125000
29	SHIPP CORP	B	28230.00	8751300000
30	PONDS (I)	B	1001.44	8512240000
31	MADRAS REF	A	14374.81	8265515750
32	ORIENT HOT	B	1604.00	8260600000
33	KERALA CHE	B	2100.00	7980000000
34	PROC.& GAM	B	1327.28	7963680000
35	THERMAX LTD.	B	2325.00	7881750000
36	JAYMATA RO	B	7135.00	7848500000
37	GUJ.NARMAD FERT	A	14647.57	7689974250
38	HIND.CIBA	A	2647.75	7413700000
39	RECKIT COL	A	3291.57	7373116800
40	CIPLA	B	2013.92	7350808000
41	SKF BEARIN	A	2470.59	7312946400
42	DABUR INDI	B	2850.89	7269769500
43	GUJ.STATE FER	A	6652.02	7250701800
44	NIRMA LTD	B	1628.00	7163200000
45	DR.REDDY'S	B	2648.74	7019161000
46	ICI INDIA	B	4087.06	6948002000
47	ITC HOTELS	B	3719.14	6917600400
48	TAMILNADU NEWSP	B	5236.42	6912074400
49	UNIT.PHOS.	B	2476.71	6872870250
50	BAJAJ A.FI	B	10649.00	6868605000

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Sr.No.	Name	Group	Capital	Market Capitalization
51	SAW PIPES	B	4290.25	6864400000
52	WIPRO	B	1500.85	6603740000
53	HDFC BANK LTD.	B	20000.00	6500000000
54	PHILIPS IN	A	4552.25	6486956250
55	SUNDRAM FA	B	1020.68	6481318000
56	BIRLA JUTE	B	3055.77	6417117000
57	JINDAL DRUGS	B	1556.70	6211233000
58	LAXMI MA	B	609.58	6095800000
59	TVS-SUZUKI	B	2310.00	6063750000
60	GODREJ SOA	B	7977.17	5982877500
61	CHAMBAL FE	B	34708.60	5900462000
62	HOECHST IN	B	2303.06	5872803000
63	GUJ.ALKALI	B	4616.93	5817331800
64	MONSANTO C	B	1022.89	5728184000
65	BHARAT FOR	A	3882.89	5727262750
66	SESA GOA	B	1460.00	5694000000
67	RASHT CHEM	B	55169.00	5654822500
68	ANDRA VALL	B	5388.86	5550525800
69	HOTEL LEEL	B	3951.00	5482012500
70	PUNJAB TRACTOR	B	1013.00	5419550000
71	ESSAR OIL LTD.	B	24505.58	5391227600
72	ITC BHADRACHA	A	5285.58	5338435800
73	JK CORP.	A	4492.79	5335188125
74	MCLEOD RUS	B	3309.76	5295616000
75	NIIT	B	2575.94	5254917600
76	DCM DAEWOO MOTO	B	13233.67	5227299650
77	CANTRIPLE	B	34629.00	5194350000
78	ZUARI AGRO	A	1312.64	5184928000
79	APOLLO TYR	A	2890.50	5173995000
80	BOOTS	B	810.00	5103000000
81	ASIAN HOTE	B	1629.00	4927725000
82	NAT FERT	B	49057.00	4905700000
83	TITAN INDU	A	4227.63	4819498200
84	GARWARE PO	A	2274.85	4777185000
85	KOPRAN LTD	B	1380.00	4692000000
86	INDIAN CEM	B	3066.97	4677129250
87	MCLEOD RUSSEL	B	3309.76	4633664000
88	MUKAND LTD	A	2856.99	4628323800
89	CESC LTD	B	3848.17	4617804000
90	CADBURY IN	A	1240.00	4464000000
91	WALCH HIND	B	586.00	4453600000
92	SOUTH PETR	A	8804.77	4402385000
93	MALVIKA STEEL	B	14803.02	4366890900
94	HIND.PHOTO	B	14518.00	4355400000
95	COATS VIYE	B	4812.67	4331403000
96	BESCO LTD.	B	216.00	4320000000
97	ESCORTS LT	A	3660.77	4319708600
98	BAJAJ TEMP	B	971.29	4273676000
99	OTIS ELEVA	B	1432.57	4226081500
100	KOTAK MAHE	B	3673.00	4223950000

* The list is drawn for capacity planning and pricing of services.

Proposed List of Securities to be Dematerialised by the end of 1999

Sr.No.	Name	Group	Capital	Market Capitalization
1	JAIPRAKASH	A	15759.97	4215791975
2	FINOLEX CA	B	1627.33	4190374750
3	JINDAL STR	B	1950.87	4174861800
4	LUPIN LAB.	B	2423.05	4167646000
5	MODERN THR	B	4615.00	4153500000
6	ALFA LAVAL	B	1816.07	4131559250
7	WOCKHA.PRO	B	1752.00	4073400000
8	EXCEL IND.	B	1454.08	4071424000
9	CARRIER AI	B	2343.00	4029960000
10	CENTURY ENKA	A	2325.59	3965130950
11	BONGAIGAON	B	19981.79	3946403525
12	ESSAR SHIP	A	14885.37	3944623050
13	AHMEDA.ELE	B	5536.55	3930950500
14	SUN PHARMA	B	1480.00	3922000000
15	COLOUR CHE	B	1165.00	3902750000
16	NAT.ORGANI	A	102130.29	3778820730
17	BRITANI.IN	B	1856.70	3713400000
18	BASF	B	1151.00	3711975000
19	RALLIS IND	B	1437.00	3700275000
20	MODI XEROX	B	1946.60	3698540000
21	FINOLEX PI	A	14755.19	3688797500
22	BANK RAJAS	B	1792.25	3656190000
23	LIC HOU FI	B	7508.00	3641380000
24	HIND.ZINC	B	42253.19	3591521150
25	PRAKASH IN	B	5058.00	3591180000
26	KRISHNA TEXPORT	B	560.17	3529071000
27	NIPPO DENS	B	3162.00	3517725000
28	D S P FIN.	B	600.00	3510000000
29	LML LTD.	B	4143.96	3480926400
30	INDUS FIN	B	34596.00	3459600000
31	INFOSY.TEC	B	725.89	3447977500
32	HINDU.MOTO	A	10757.67	3388666050
33	NIP.DEN IS	B	15223.00	3234887500
34	CONS FIBER	B	24241.00	3151330000
35	MORARJEE	B	1962.00	3139200000
36	SUASHISH D	B	2086.00	3129000000
37	JINDAL VIJAYNAG	B	36741.49	3123026650
38	JINDAL IRO	A	3126.00	3110370000
39	KELVINATOR	B	3173.37	3109902600
40	KEC INTER	B	2740.53	3083096250
41	BINDAL AGR	B	22826.00	3081510000
42	VIDEO.INTE	A	5182.02	3031481700
43	TUBE INV	B	2065.58	3015746800
44	DIGITAL EQ	B	3273.00	3011160000
45	NICHOLAS P	B	1049.00	2963425000
46	SUNDRAM CL	B	948.00	2938800000
47	WIDIA IND.	B	549.00	2909700000
48	SWARAJ ENG	B	800.00	2880000000
49	SANDOZ	B	765.00	2868750000
50	ORIENT PAP	B	1483.73	2856180250

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Sr.No.	Name	Group	Capital	Market Capitalization
51	FEDERAL BA	B	1464.00	2854800000
52	CEAT TYRES	A	3521.33	2852277300
53	CRB CAP MA	B	4336.22	2818543000
54	I.B.P.	B	1476.51	2805369000
55	GEC ALSTHO	B	3979.00	2785300000
56	FORBES GOK	B	1245.34	2739748000
57	THOMAS COO	B	525.00	2730000000
58	HIND.DEV.	B	11453.18	2691497300
59	JINDAL POL	B	617.00	2683950000
60	BOC INDIA	B	2727.00	2658825000
61	SIV IND	B	1810.00	2624500000
62	BALAJI IND	B	979.00	2564980000
63	PAL-PEUGEOT	B	26185.25	2553061875
64	CORE HEALT	B	2755.00	2534600000
65	MAHAVIR SP	B	2075.00	2531500000
66	BINANI ZIN	B	2967.13	2522060500
67	BAYER IND	B	1622.00	2514100000
68	I.P.C.L.	B	25014.94	2501494000
69	CITI CORP.	B	10800.00	2484000000
70	RELIAN CAP	B	8336.00	2459120000
71	NEPC MICON	B	6601.00	2458872500
72	SANDV ASIA	B	1224.64	2455403200
73	ITC CLAS F	B	3602.68	2449822400
74	ISHWAR MED	B	881.00	2422750000
75	TORRENT PH	B	2082.00	2394300000
76	ZEE TELEFI	B	1868.00	2391040000
77	POLYOLEFIN	B	1930.00	2364250000
78	VST IND.	B	1565.00	2347500000
79	FLOAT GLAS	B	7802.00	2340600000
80	FLEX INDU.	B	1698.34	2335217500
81	CHAMPDANY	B	759.00	2314950000
82	KESORAM IN	B	4196.13	2307871500
83	SUPREME IN	B	640.00	2304000000
84	WARTSILLA	B	1000.00	2300000000
85	BHARAT HOT	B	1250.00	2281250000
86	PFIZER	A	1172.01	2273699400
87	STELLAR PL	B	251.00	2259000000
88	BHARAT EAR	B	3700.00	2257000000
89	ADANI EXP	B	501.00	2254500000
90	BPL LTD	B	2670.00	2242800000
91	HIND.ORGAN	B	6736.61	2239922825
92	CYNAMID IN	B	525.00	2231250000
93	VOLTAS	A	3183.16	2228212000
94	MAX INDIA	B	846.99	2202174000
95	KIR.OIL	B	1629.24	2199474000
96	JINDAL VIJAYANA	B	53466.49	2192126090
97	INDO RAMA SYNTH	B	5475.91	2190364000
98	TAMILNADU PETRO	A	8654.05	2163512500
99	J.K. SYNTHETICS	A	7442.44	2158307600
100	J.K. IND	B	3456.51	2143036200

Sr.No.	Name	Group	Capital	Market Capitalization
101	DALMIA CEMENT	B	765.00	2142000000
102	JCT LTD.	B	10505.24	2127311100
103	SU-RAJ DIA	B	3761.00	2106160000
104	PADMI.POLY	B	1975.13	2073886500
105	CRB ARIHAN	B	22925.00	2063250000
106	TIMEX WATC	B	4000.00	2060000000
107	HIND.POWER	B	2648.00	2038960000
108	BHUS.STEEL	B	2624.47	2033964250
109	HOECHST SCHERIN	B	460.68	2026992000
110	S.I.SHIPP.	B	3000.00	2025000000
111	RHONE POUL	B	450.00	2025000000
112	PIDILITE I	B	613.60	1994200000
113	DCM SHRIRAM CON	B	1106.00	1968680000
114	TATA UNISY	B	613.00	1961600000
115	GLOBLE TEL	B	1960.12	1940518800
116	RAASI CEM	B	1420.00	1934750000
117	CROS RES L	B	371.80	1933360000
118	VIDEO.FIN.	B	2270.00	1929500000
119	SH.MANUFAC	B	419.00	1919020000
120	BALAJI DIS	B	900.00	1908000000 .
121	IPCA LABOR	B	1250.00	1906250000
122	ESCORTS TR	B	1233.82	1900082800
123	GOODLASS N	B	716.00	1897400000
124	IDL CHEM	B	6290.00	1887000000
125	WESTER HAT	B	2850.00	1852500000
126	ESSEL PACK	B	936.00	1834560000
127	BHARAT GEA	B	4030.00	1813500000
128	NARMADA CE	B	8138.00	1810705000
129	MODERN SYNTEX	B	4934.67	1801154550
130	SOUNDCRAFT	B	298.90	1799378000
131	SHAW WALLACE&CO	B	3586.00	1793000000
132	KALYANI BR	B	1624.65	1787115000
133	DLF CEMENT	B	12848.00	1766600000
134	A.P.RAYONS	B	2410.00	1759300000
135	ASSAM CO.	B	2040.00	1734000000
136	EUROPEAN SOFT.	B	304.00	1732800000
137	DCM LTD.	B	3464.00	1732000000
138	SANGHI POL	B	8215.00	1725150000
139	GUJ.GAS CO	B	1282.00	1717880000
140	INVEST COR	B	756.00	1701000000
141	BLUE STAR	B	2709.86	1693662500
142	E.MARCK	B	891.00	1692900000
143	PUNJ.COMMU	B	1610.00	1690500000
144	PRISM CEMENT LT	B	20529.80	1683443600
145	BURR BROWN	B	2399.66	1679762000
146	INDIANA DA	B	6100.00	1677500000
147	BIRLA VXL INDIA	B	5870.00	1672950000
148	PARRY AGRO	B	1337.00	1671250000
149	SRF LTD.	B	3170.96	1664754000
150	PUN.WIRELE	B	1171.00	1662820000

Sr.No.	Name	Group	Capital	Market Capitalization
151	BATA INDIA	B	2571.40	1658553000
152	NALCO CEME	B	500.00	1650000000
153	LAKME LTD	B	669.00	1645740000
154	WILLIAM MA	B	1096.00	1644000000
155	GUJ.IND.PO	B	4284.00	1627920000
156	VINYL CHEM	B	4566.00	1620930000
157	CHEMINOR D	B	1079.90	1619850000
158	ITW SIGNOD	B	1321.12	1572132800
159	BIMETAL BE	B	383.00	1570300000
160	GTN TEXT.	B	1300.00	1560000000
161	SH.BHIK	B	623.00	1557500000
162	MAFAT.IND.	B	4326.13	1557406800
163	MYSORE CEM	B	4442.00	1554700000
164	WOOLWORTH	B	3791.00	1554310000
165	BANK OF PUNJAB	B	10500.00	1548750000
166	SUDAR.CHEM	B	462.00	1547700000
167	MODI RUBBE	A	2507.22	1541940300
168	VARDHA.SPG	B	1389.00	1541790000
169	IND SHAVIN	B	790.45	1541377500
170	HIMACHAL FUTURI	B	3690.54	1531574100
171	SQUAR-TE B	B	1768.00	1524900000
172	CRB CORPN	B	6094.81	1523702500
173	SH.CEME	B	2895.50	1520137500
174	TATA FINAN	B	3367.00	1515150000
175	IND RLY CO	B	495.00	1509750000
176	GODFREY PH	B	1039.88	1507826000
177	VLS FINANC	B	699.00	1502850000
178	OPTEL TELECOM.	B	5000.00	1500000000
179	FLAT PRODU	B	888.76	1493116800
180	FOSECO IND	B	547.00	1490575000
181	USHA BELTR	B	1323.00	1488375000
182	SHRIRAM HONDA	B	1014.00	1480440000
183	BIRLA 3M	B	920.00	1472000000
184	IFCI	A	34596.00	1470330000
185	KSB PUMPS	B	870.15	1461852000
186	SUPREM PET	B	7564.00	1456070000
187	PARKE DAVI	B	1205.38	1446456000
188	TATA TIMKE	B	4250.00	1445000000
189	ITC AGROTE	B	2373.85	1424310000
190	MADRAS ALU	B	1646.00	1415560000
191	ATLAS COPC	B	725.37	1414471500
192	DCM SH IND	B	940.85	1411275000
193	PAN.CHEM.	B	2156.00	1401400000
194	LLOYDS STE	B	5589.00	1397250000
195	VIKAS WSP.	B	997.00	1395800000
196	SHAPER CHE	B	5685.00	1392825000
197	ENGINE VAL	B	227.00	1384700000
198	TAMILNADU NEWSP	B	1727.38	1381904000
199	CHLORIDE IND.	B	2478.56	1363208000
200	A.SARABHAI	B	8007.00	1361190000

APPENDIX I

PROCESSING SAVINGS, 1997

1. CALCULATIONS OF EXPLICIT COSTS OF SETTLEMENT, OWNERSHIP TRANSFER AND SAFE CUSTODY IN CURRENT PHYSICAL ENVIRONMENT ON A PER TRANSFER DEED BASIS (1997)

2. PROJECTIONS OF COST OF BISL PROCESSING PHYSICAL DELIVERIES IN 1997

3. PROJECTIONS OF COST OF ISD PROCESSING TRADE SETTLEMENT IN 1997

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COMPARISON OF COST FOR TOTAL PROJECTED TRANSACTIONS
GOING THROUGH DEPOSITORY IN 1997, SCENARIO 1 (MODERATE CASE)

- PHYSICAL PROCESSING COSTS -

This analysis computes the total cost of clearance, settlement, ownership transfer and safe custody resulting from the trades BSE predicts will go through the depository in the 1997 Scenario I (Moderate Case) if these trades were processed physically instead of thorugh the depository.

Key Variables:		
No. of Delivery Orders Resulting from dematerialized 1997 trades(1)	7.68	lakhs
No. of shares represented per delivery orders (2)	720	shares
Ave. no. of shares per A+B1 TD (3)	50	shares
No. of TDs per delivery order (4)	14.4	Del. Orders
Percent of TDs that are Institutional (5)	90.00%	
Percent of TDs that are Retail (5)	10.00%	
Of total institutional trades:		
- On-Market (6)	98.50%	
- Off-Market(6)	1.50%	
No. of TDs that would have to be processed if the projected trades through the depository were settled physically(7)	110.592	Lakh TDs

1 See column 35 of Scenario I, Moderate Case, Projections.
2 See column 36 of Scenario I, Moderate Case, Projections.
Only A+B1 scrips in depository in 1997.
3 Assumed to be 50 because only 30 A scrips and 20 B scrips eligible for depository dematerialization.
4 No. of shares per delivery order/No. of shares per TD
5 Derived from BSE assumption that 90% of all trades through depository in 1997 are institutional.
6 Derived from the percent of negotiated bulk deals in settlements 26 and 27 from BSE data and the BSE assumption retail trades are 90% of total trades (not just trades thru the depository)
7 (Total Delivery Orders x No. of Shares/Delivery Order)/No. of Shares Per TD

Settlement Processing Costs Per Type of TD - Buy Side

	Retail	Institutional (Rs./TD)	
	(Rs./TD)	On-Market	Off-Market
Settlement (1)	14.28	22.11	21.35

1 Detailed calculations shown in Attachment 1 of this appendix.

Settlement Processing Costs Per Type of TD - Sell Side

	Retail	Institutional (Rs./TD)	
	(Rs./TD)	On-Market	Off-Market
Settlement (1)	14.28	19.41	18.65

1 Detailed calculations shown in Attachment 1 of this appendix.

Ownership Transfer Processing Costs Per Type of TD

	Retail	Institutional (Rs./TD)	
	(Rs./TD)	On-Market	Off-Market
Cost per TD Transferred (1)	42.76	44.11	44.11
Percent of Trades Resulting in Transfer (2)	20.00%	95.00%	95.00%
Expected Ownership Transfer Cost Per Trade (3)	8.55	41.90	41.90

1 Detailed calculations shown in Attachment 1 of this appendix.
2 Percentages per BSE estimates.
3 Cost for transferring TD x Percentage chance the TD will be sent for lodgement.

COMPARISON OF COST FOR TOTAL PROJECTED TRANSACTIONS GOING THROUGH DEPOSITORY IN 1997, SCENARIO 1 (MODERATE CASE)

- PHYSICAL PROCESSING COSTS - (CONTINUED)

Safe Custody Processing Costs Per Type of TD

	Retail (Rs./TD)	Institutional (Rs./TD)	
		On-Market	Off-Market
Custodian (1)	0	2.71	2.71

1 Rs. 2.71 per TD estimated based on interviews with custodians.

Average Settlement and Ownership Transfer and Safe Custod Processing Costs Per TD transacted

	Retail (Rs./TD)	Institutional (Rs./TD)	
		On-Market	Off-Market
Settlement Handling on the Buy Side	14.28	22.11	21.35
Settlement Handling on the Sell Side	14.28	19.41	18.65
Ownership Transfer	8.55	41.90	41.90
Safe Custody	0.00	2.71	2.71
Total Per Trade	37.11	86.13	84.62

1 Detailed calculations shown in Attachment 1 of this appendix.

Average Cost Per TD Transacted

Retail TD	37.11
% of TDs transacted that are Retail	10.00%
Institutional On-Market TD	86.13
% of TDs transacted that are Institutional On-Market TDs	88.65%
Institutional Off-Market TD	84.62
% of TDs transacted that are Institutional Off-Market TDs	1.35%
Ave Cost of Physical Handling per TD transacted (1)	**81.21**

1 (Rs./Retail TD x % of Retail TDs) + (Rs./Inst. On-Mkt TD x % of On-Mkt TDs) + (Rs./Inst. Off-Mkt TD x % of Inst. Of-Mkt TDs)

Total Costs of Physical Handling

No. of TDs Porcessed in Absence of Depository	110.59
Ave. Cost per TD for Physical Processing (Rs.)	81.21
Total Physical Processing Costs Processing Costs (Rs. lakhs)	**8981.29**

ATTACHMENT 1

CALCULATION OF EXPLICIT COSTS OF SETTLEMENT,

OWNERSHIP TRANSFER AND SAFE CUSTODY

IN CURRENT PHYSICAL ENVIRONMENT

ON A PER TRANSFER DEED BASIS (1997)

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EXPLICIT COST OF SETTLEMENT, OWNERSHIP TRANSFER AND SAFE CUSTODY IN THE CURRENT PHYSICAL SCRIP ENVIRONMENT

All calculations are on a cost/TD basis because this is the basic until of paper that moves through the entire settlement and ownership transfer cycle from point of trade to final lodgement of ownership.

Trade Settlement

Settlement Costs Per TD - Buy Side

	Retail Transaction (Rs./TD)	Institutional Transaction On-Market (Rs./TD)	Institutional Transaction Off-Market (5) (Rs./TD)
Broker (1)	13.52	13.52	13.52
BISL (2)	0.22	0.22	0.00
ISD (3)	0.54	0.54	0.00
Custodian (4)	0.00	7.83	7.83
Total	**14.28**	**22.11**	**21.35**

1 Takes the average per TD processing cost from six brokers interviewed. This includes processing cost and service tax and stamp duty where applicable.
2 Based on the calculations of BISL settling physical deliveries in 1997 (see attachment 2 which follows). One half BISL's cost per TD allocated to the buy side of the transaction.
3 Based on the calculations of ISD processing physical deliveries in 1997 (see attachment 3 which follows). One half ISD's cost per TD allocated to the buy side of the transaction.
4 There is more cost associated with a buy transaction at a custodian because of (i) more processing at receipt and (ii) lodgement which is part of the purchase process from a custodian's perspective. Figures based on average of those given by custodians interviewed.
5 An off-market transaction is one that does not clear through any clearing entity. In the physical environment of today, this is equivalent to negotiated trades with spot delivery, or "bulk deals." Based on recent data, these only represent 0.15% of all transactions.

Settlement Costs Per TD - Sell Side

	Retail Transaction (Rs./TD)	Institutional Transaction On-Market (Rs./TD)	Institutional Transaction Off-Market (Rs./TD)
Broker (1)	13.52	13.52	13.52
BISL (2)	0.22	0.22	0.00
ISD (3)	0.54	0.54	0.00
Custodian (4)	0.00	5.13	5.13
Total	**14.28**	**19.41**	**18.65**

1 Same cost as on the buy side.
2 Based on the calculations of BISL settling physical deliveries in 1997 (see attachment 2 which follows). One half BISL's cost per TD allocated to the sell side of the transaction.
3 Based on the calculations of ISD processing physical deliveries in 1997 (see attachment 3 which follows). One half ISD's cost per TD allocated to the sell side of the transaction.
4 There is less cost associated with a buy transaction at a custodian because of (i) less processing, and (ii) no lodgement. Figures based on average of those given by custodians interviewed.

EXPLICIT COST OF SETTLEMENT, OWNERSHIP TRANSFER AND SAFE CUSTODY IN THE CURRENT PHYSICAL SCRIP ENVIRONMENT (CONTINUED)

Ownership Transfer

	Smooth Transfer		Objected Transfer ()	
	Retail	Institutional	Retail	Institutional
Percentage Occurrence	96.07%	96.07%	3.93%	3.93%
R&T Agent (1)	38.97	38.97	38.97	38.97
Broker (2)	0.00	0.00	96.51	96.51
Custodian (3)	0.00	0.00	0.00	34.23
Total	38.97	38.97	135.48	169.71

Average Cost to Transfer a Retail TD (4)	**42.76 Rs./TD**
Average Cost to Transfer an Institutional TD (5)	**44.11 Rs./TD**

1 This is the average cost reported by an R&T agent to process an incoming TD whether it is transferred or objected.
2 Takes the total cost a broker's objection cell divided by the no. of objected TDs processed by the broker. Average of information gathered from six brokers. In the case of a smooth transfer, the broker faces no costs. Only in the case of an objected transfer is the TD and certificates returned to the broker.
3 For a smooth transfer, the costs of lodgement are incorporated in the custodian costs for a purchase detailed above and that is why there is no additional charge at the custodian level for smooth transfer.
4 Weighted average between cost of smooth retail transfer and objected retail transfer based on frequency reported (see footnote no. 6).
5 Weighted average between cost of smooth institutional transfer and objected institutional transfer based on frequency.
6 Brokers report, on average, about 3.93 percent of transfer requests are objected.

Safe Custody

	Retail (1) (Rs./TD)	Institutional (2) (Rs./TD)
Custodian	0	**2.71**

1 Assumes that retail investors currently incur no safe custody costs although some people do rent security boxes in which they store their shares.
2 Assumes that an institution's only safe custody costs are those at the custodian.

ATTACHMENT 2

PROJECTIONS OF COST OF BISL PROCESSING

PHYSICAL DELIVERIES IN 1997

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PROJECTIONS OF COST OF PROCESSING PHYSICAL DELIVERIES BY BISL IN 1997

Total TDs Processed By BISL

	Actual Apr 1, 95-Mar 31, 96	Projected Jan 1-Dec 31, 97
Total DOs Processed	249,704	1,968,000
Shares Delivered (1)		
A	250,292,000	
A+B1	N/A	858,000,000
B	N/A	2,961,840,000
Total	250,292,000	3,819,840,000
Shares Settled Through Depository		
A+B1	0	557,760,000
B	0	0
Total	0	557,760,000
Total Shares to be Settled Physically	250,292,000	3,262,080,000
Total Shares Processed by BISL(2)(3)	232,925,710	3,035,743,452
Estimated No. of Equivalent TDs to be settled thru BISL (4)	4,658,514	40,476,579

1. Exchange historical data for 95-96 and exchange 1997 projections.
2. Only A scrip deliveries physically processed by BISL in 95-96. However, in 1997, A, B1 ad B scrip deliveries will be to be physically processed will go through BISL. BSE Scenario I Market Projections call for 159.16 lakh (15.916 million) shares to be delivered out of which 23.24 lakhs (2.324 million) shares will be settled through the depository meaning 135.92 lakh (13.592 million) shares will be settled physically.
3. According to BSE figures 25.03 crore A shares were delivered and according to BISL figures 23.29 crore shares were processed. This means 93% of A scrip deliveries were settled through BISL. Assumption is this will hold for 1997 physical deliveries.
4. 50 shares/TD in 95-96 because only A scrips
   75 shares/TD in 97 because A, B1 and B scrips

Departmental Costs

	Total Costs by Department	
Total Costs (1)	Actual Apr 1, 95-Mar 31, 96 (Rs.)	Projected (1) Jan 1-Dec 31, 97 (Rs.)
Objections Dept.	1,637,083	1,800,791
Auctions Dept.	4,209,455	4,630,401
Settlement Dept.	8,742,317	9,616,549
Total Settlement Costs at BISL	14,588,855	16,047,741

1. BISL predicts cost in each dept. will increase by 10% to handle all A, B1 and B physical deliveries.

No. of TDs Passing Through Each BISL Dept (1)

	Actual Apr 1, 95-Mar 31, 96	Percent of Total TDs Handled (2)	Projected (3) Jan 1-Dec 31, 97
Objections Dept.	409,950	8.80%	3,561,946
Auctions Dept.	571,320	12.26%	4,964,046
Settlement Dept.	4,099,493	88.00%	35,619,394
Total TDs Handled by BISL	4,658,514		40,476,579

1. These are the relevant departments of BISL which are involved in settlement.
2. Total comes to over 100% because scrips objected at settlement and receiving "Not-in-Order" arbitration decision pass through BISL twice (once at original settlement and again after fresh shares are obtained through auction to replace bad shares).
3. 1997 projections kept in same proportion to total TDs as 95-96.

Cost/TD for Each Dept. (1)

	Actual Apr 1, 95-Mar 31, 96 (Rs./TD)	Projected Jan 1-Dec 31, 97 (Rs./TD)
Objections Dept.	3.99	0.51
Auctions Dept.	7.37	0.93
Settlement Dept.	2.13	0.27

1. Takes total operating budget of the department and divides it by the number of TDs handled to arrive at an estimated cost per TD
2. Costs per TD decreases significantly because BISL only projects a 10% increase in costs to handle a 869% increase in the no. of TDs handled.

Ave. Cost per TD Passing Through BISL (1)

Shares comprising a delivery order to be settled through BISL can take one of four routes:

Route 1: Delivery to BISL and onward to broker. Only pass through Settlement Dept.

Route 2: Delivery to BISL, objected by receiving broker, receive "In-Order" Arbitration decision.
These scrips pass through the Settlement and Objections Department.

Route 3: Delivery to BISL, objected by receiving broker, receive "Not-In-Order" Arbitration decision, replaced through auction.
These scrips pass through the Settlement, Objections and Auctions Departments.

Route 4: Short Delivery. These scrips do not pass through the Settlement Dept., but they do pass through the Auctions Dept.

	Actual		Projected	
	Apr 1, 95-Mar 31, 96	Percent of Total TDs Handled	Projected Jan 1-Dec 31, 97	Percent of Total TDs Handled (1)
Route 1 (No. of TDs)	3,689,544	79.20%	32,057,457	79.20%
Route 2 (No. of TDs)	397,652	8.54%	1,602,879	3.96%
Route 3 (No. of TDs)	12,299	0.26%	1,959,075	4.84%
Route 4 (No. of TDs)	559,022	12.00%	4,857,192	12.00%
Total TDs Handled by BISL	4,658,514	100.00%	40,476,579	100.00%

1. BISL now reports 55% of scrips objected today receive "Not-In-Order" award.

Cost Per TD per Route, 95-96 Actuals (1)

	(Rs./TD Processed) Settlement Dept.	(Rs./TD Processed) Objections Dept	(Rs./TD Processed) Auctions Dept.	(Rs./TD Processed) Total	Percent of Total TDs Handled
Route 1					
95-96	2.13	N/A	N/A	2.13	79.20%
1997	0.27	N/A	N/A	0.27	79.20%
Route 2					
95-96	2.13	3.99	N/A	6.13	8.54%
1997	0.27	0.51	N/A	0.78	3.96%
Route 3					
95-96	2.13	3.99	7.37	13.49	0.26%
1997	0.27	0.51	0.93	1.71	4.84%
Route 4					
95-96	N/A	N/A	7.37	7.37	12.00%
1997	N/A	N/A	0.93	0.93	12.00%

1. If a TD passes through a dept., it incurs the cost with being processed by that dept.

Average Cost of a Processing a TD Entering BISL for Settlement

A TD entering BISL for settlement can take one of the four routes. The cost for the "average" TD would be
(% through route 1 x cost of route 1) + (% through route 2 x cost of route 2) + (% through route 3 x cost of route 3)+
(% through route 4 x cost of route 4)

Ave. Cost Per TD in Rs. for 95-96 (actual)	**3.13**
Ave. Cost Per TD in Rs. for 1997 (estimated)	**0.44**

ATTACHMENT 3

PROJECTIONS OF COST OF ISD PROCESSING

TRADE SETTLEMENT IN 1997

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PROJECTIONS OF COST OF PROCESSING PHYSICAL DELIVERIES BY BSE/ISD IN 1997

Assumptions

1. BISL's cost will not increase for processing clearing and settlement data becasue they currently process the data for all trades and delivery orders on BOLT
2. ISD only processes the on-maket transacations for netting.

ISD's Costs for 95-96 Related to Clearing and Settlement	43,646,459
No. of TDs to be Processed in 1997 (1)	40,476,579
Cost Per Equivalent TD Processed (Rs.)	1.08

1 Taken from BSE Market Projections, Scenario I.

APPENDIX J

DEPOSITORY VS. PHYSICAL TRADE SETTLEMENT

TIMING DIFFERENCES

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Settlement timings for the following transactions in a physical versus dematerialized depository environment are compared to determine how many days will be saved by settling transactions DVP in a dematerialized environment. This provides the basis for arriving at the opportunity cost savings a depository can provide to industry participants.

The following transactions are compared:

1. Retail Transactions

   * Purchases
   * Sales

2. Institutional Transactions

   * On-Market Purchases
     - Delivery Versus Payment (DVP)
     - Non-DVP
   * On-Market Sales
     - Delivery Versus Payment (DVP)
     - Non-DVP
   * Off-Market (delivery outside of the clearing house)
     - Purchases
     - Sales

I. RETAIL TRANSACTIONS

A. Retail Purchases

1. Time Line

Date	Day	Physical Settlement	Depository Settlement
1	Mon	}	}
2	Tue	}	}
3	Wed	} Trading Days	} Trading Days
4	Thu	}	}
5	Fri	}	}

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6	Sat		
7	Sun		
8	Mon	}	}
9	Tue	} Broker collects amounts from the clients for purchases made on their behalf.	} Broker collects amounts from the clients for purchases made on their behalf.
10	Wed	}	}
11	Thu	Pay-In day: Broker makes payment to clearing house.	Pay-In/Pay-Out: Broker makes payment and receives scrips in depository acct electronically. Client receives shares from broker by electronic book entry
12	Fri	No action	
13	Sat		
14	Sun		
15	Mon	Pay-out day: Shares are received from the clearing house.	
16	Tue	Scrutiny of shares by the brokers office.	
17	Wed	Client-wise allocation of scrips .	
18	Thu	Client collects shares from the broker.	

2. *Time Savings (Investor's Money Tied Up)*

Physical Settlement: Nine days pass between when a client pays his money to the broker and when he receives his scrip.

Depository Settlement: Two days pass between when a client pays his money to the broker and when he receives his scrip.

Time Savings: Time savings with dematerialized settlement through depository is seven days.

B. Retail Sales

1. *Time Line*

Date	Day	Physical Settlement	Depository Settlement
1	Mon	}	}
2	Tue	}	}

3	Wed	} Trading Days	} Trading Days
4	Thu	}	}
5	Fri	}	}
6	Sat		
7	Sun		
8	Mon	}	
9	Tue	}Selling broker collects shares from the clients for sales made on their behalf.	
10	Wed		
11	Thu	}Pay-In day: Selling broker delivers shares to clearing house.	Pay-In/Pay-Out day: Selling broker delivers client's dematerialized shares through electronic book entry and receives money for sale. Client receives money from selling broker
12	Fri	}	
13	Sat		
14	Sun		
15	Mon	Pay-out day: Payment is received from the clearing house.	
16	Tue	Client collects payment from the selling broker	

2. *Time Savings (Investor's Money Tied Up)*

Most likely, the selling broker will confirm the selling client has the shares in dematerialized form before undertaking the sale. Shares from selling client sub account can be transferred into broker depository account on Pay-In/Pay-Out day itself.

Physical Settlement: Seven days pass between when a client gives his shares to the broker and when he receives his money from the sale.

Depository Settlement: Zero day pass between when a client pays his money to the broker and when he receives his scrip.

Time Savings: Time savings with dematerialized settlement through depository is seven days.

II. INSTITUTIONAL TRANSACTIONS

Currently there are three types of institutional transactions:

1. On-Market Delivery Versus Payment (DVP)
2. On-Market Non-DVP (Through the Clearing House)
3. Off Market DVP (C Group Transactions)

For the on-market transactions the assumption is there will no longer be a differentiation between DVP and Non-DVP transactions for dematerialized scrips in the depository because pay-in and pay-out will occur on the same day. As in the case of retail sales, it is still assumed that settlement will take place on the Thursday following the trading week.

The only difference between on-market DVP and Non-DVP transactions is that the broker's money is tied up in the first case the investor's money is tied up in the second case.

A. Institutional Purchases (On-Market)

1. Time Line

Date	Day	DVP Physical Settlement (Broker's Money Tied Up) (1)	Non-DVP Physical Settlement (Seller's Money Tied Up)	Depository Settlement
1	Mon	}	}	}
2	Tue	}	}	}
3	Wed	} Trading Days	} Trading Days	} Trading Days
4	Thu	}	}	}
5	Fri	}	}	}
6	Sat			
7	Sun			
8	Mon			
9	Tue			
10	Wed			
11	Thu	Pay-In day: Broker pays cheque to clearing house (based on net exposure)	Pay-In day: Buying custodian delivers money to the clearing house	Pay-In/Pay-Out: Purchasing custodian receives shares electronically and makes payment
12	Fri			

13	Sat			
14	Sun			
15	Mon	Pay-Out day: Purchasing broker receives securities from the clearing house	Pay-Out day: Selling custodian receives shares from the clearing house	
16	Tue	Scrutiny of shares by broker and delivery to custodian		
17	Wed	Receipt of check from custodian		

(1) Even though these transactions are called "DVP" in today's market terminology, they are not DVP in the strictest sense of the work. This is because the broker delivers the shares on one day and does not receive the check for another one to two days while the custodian scrutinizes the shares. To truly be DVP, the broker would have to receive the check the same day the shares were given to the custodian.

2. *Time Savings*

a. *On-Market DVP Purchase (Broker's Money Tied Up)*

Physical Settlement: Seven days pass between when a broker pays the custodian for the shares to when the broker receives money from the sale.

Depository Settlement: No days pass between when scrips and shares are exchanged

Time Savings: Time savings with dematerialized settlement through depository is seven days.

b. *On-Market Non-DVP/Through the Clearing House Purchase (Investor's Money Tied Up)*

Physical Settlement: Four days pass between when a custodian pays in money to when the custodian receives scrips from the clearinghouse.

Depository Settlement: No day passes between when a custodian electronically receives scrips and makes payment.

Time Savings: Time savings with dematerialized settlement through depository is four days.

B. Institutional Sales (On-Market)

1. Time Line

Date	Day	DVP Physical Settlement (Broker's Money Tied Up)	Non-DVP Physical Settlement (Seller's Money Tied Up)	Depository Settlement
1	Mon	}	}	}
2	Tue	}	}	}
3	Wed	} Trading Days	} Trading Days	} Trading Days
4	Thu	}	}	}
5	Fri	}	}	}
6	Sat			
7	Sun			
8	Mon	Broker pays to custodian to obtain delivery of shares		
9	Tue	Broker scrutinizes shares and enters details into register		
10	Wed	Broker scrutinizes shares and enters details into register		
11	Thu	Pay-In day: Selling broker delivers shares to the clearing house	Pay-In day: Selling custodian delivers shares to the clearing house	Pay-In/Pay-Out: Institution delivers the shares via the custodian and the custodian delivers shares electronically and receives payment
12	Fri			
13	Sat			
14	Sun			
15	Mon	Pay-out day - Selling broker receives cheque from the clearing house	Pay-out day - Selling custodian receives cheque from the clearing house	

2. *Time Savings*

a. On-Market DVP Sale (Broker's Money Tied Up)

Physical Settlement: Seven days pass between when a broker pays the custodian for the shares to when the broker receives money from the sale.

Depository Settlement: No days pass between when a client pays his money to the broker and when he receives his scrip.

Time Savings: Time savings with dematerialized settlement through depository is seven days.

b. On-Market Non-DVP/Through the Clearing House Sale (Investor's Money Tied Up)

Physical Settlement: Four days pass between when a custodian pays in the scrips to when the custodian receives money from the sale.

Depository Settlement: No day passes between when a custodian electronically delivers scrips and receives payment.

Time Savings: Time savings with dematerialized settlement through depository is four days.

C. Off-Market Transactions

An off-market transaction is one that does not settle through any clearing entity. These are known as Negotiated bulk deals.

1. *Purchase Transaction*

a. Time Line

Date	Day	Physical Settlement	Depository Settlement
1	Mon	Purchase transaction agreed.	Purchase transaction agreed. Transaction entered into clearing corporation for trade comparison which, if matched, generates delivery order for settlement the next day.
2	Tue	Purchasing broker pays cheque to the opposite broker.	Shares and money exchanged electronically through depository
3	Wed	Receive scrips and scrutinize shares at broker's office	

4	Thu	Deliver the shares to the client.	
5	Fri	Purchasing broker receives payment from client.	

Note: The table reveals that the transaction in group can take five days if transaction takes place on Monday. However, the contract can specify delivery for any number of days up to a maximum of 14.

b. *Time Savings (Broker's Money Tied Up)*

Physical Settlement: At least three days pass between when a broker pays the custodian for the shares to when the broker receives money from the sale.

Depository Settlement: Money and shares can be exchanged the next day.

Time Savings: Time savings with dematerialized settlement through depository is three days minimum.

2. *Sales Transaction*

a. *Time Line*

Date	Day	Physical Settlement	Depository Settlement
1	Mon	Sales transaction agreed.	Sales transaction agreed. Transaction entered into clearing corporation for trade comparison which, if matched, generates delivery order for settlement the next day.
2	Tue	Pay custodian/client and obtain scrips	Shares and money exchanged electronically through depository
3	Wed	Scrutinize the shares at broker's office	
4	Thu	Deliver the shares to opposite broker.	
5	Fri	Receive payment from opposite broker.	

Note: The table reveals that the transaction in group can take five days if transaction takes place on Monday. However, the contract can specify delivery for any number of days up to a maximum of 14.

b. Time Savings (Broker's Money Tied Up)

Physical Settlement:	At least three days pass between when a broker pays the custodian for the shares to when the broker receives money from the sale.
Depository Settlement:	Money and shares can be exchanged the next day.
Time Savings:	Time savings with dematerialized settlement through depository is three days minimum.

APPENDIX K

OPPORTUNITY COST SAVINGS REALIZABLE ON

SCRIPS PASSING THROUGH DEPOSITORY IN 1997

1. OPPORTUNITY COST SAVINGS AT SETTLEMENT REALIZABLE UNDER A DEPOSITORY (1997)

2. OPPORTUNITY COST SAVINGS AT OWNERSHIP TRANSFER REALIZABLE UNDER A DEPOSITORY (1997)

3. CALCULATION OF AVERAGE TRANSFER DEED VALUE USED IN OPPORTUNITY COST CALCULATIONS (1997)

COMPARISON OF COST FOR TOTAL PROJECTED TRANSACTIONS GOING THROUGH DEPOSITORY IN 1997, SCENARIO 1 (MODERATE CASE)

- OPPORTUNITY COSTS -

In addition to cost savings in the physical processing of shares, the depository will decrease the amount of time an investor's money is tied up at the following stages:

1 Settlement
- Time between paying for a scrip and receiving the physical shares
- Time between selling a scrip and receiving proceeds from sale

2 Ownership Transfer
- Time taken to register ownership transfer
- Time taken to rectify company objections

Key Variables:		
No. of Delivery Orders Resulting from dematerialized 1997 trades(1)	7.68	lakhs
No. of shares represented per delivery orders (2)	720	shares
Ave. no. of shares per A+B1 TD (3)	50	shares
No. of TDs per delivery order (4)	14.4	Del. Orders
Percent of TDs that are Institutional (5)	90.00%	
Percent of TDs that are Retail (5)	10.00%	
Of Institutional total institutional trades:		
- On-Market (6)	98.50%	
- Off-Market(6)	1.50%	
No. of TDs that would have to be processed if the projected trades through the depository were settled physically(7)	110.592	Lakh TDs

1 See column 35 of Scenario I, Moderate Case, Projections.
2 See column 36 of Scenario I, Moderate Case, Projections. Only A+B1 scrips in depository in 1997.
3 Assumed to be 50 because only 30 A scrips and 20 B scrips eligible for depository dematerialization.
4 No. of shares per delivery order/No. of shares per TD
5 Derived from BSE assumption that 90% of all trades through depository in 1997 are institutional.
6 Derived from the percent of negotiated bulk deals in settlements 26 and 27 from BSE data and the BSE assumption retail trades are 90% of total trades (not just trades thru the depository)
7 (Total Delivery Orders x No. of Shares/Delivery Order)/No. of Shares Per TD

COMPARISON OF COST FOR TOTAL PROJECTED TRANSACTIONS
GOING THROUGH DEPOSITORY IN 1997, SCENARIO 1 (MODERATE CASE)

- OPPORTUNITY COSTS -
(CONTINUED)

Opportunity Costs per Type of TD (1)

		Institutional	
	Retail (6)	On-Market	Off-Market
Settlement (2)	40.32	23.04	17.28
Ownership Transfer	369.33	369.33	369.33
Percent of total TDs transacted which are sent to transfer (3) (4)	20.00%	95.00%	95.00%
Total Opportunity Costs/TD (5)	114.18	373.90	368.14

1 A TD is tied up for different amounts of time depending whether is institutional or retail.
2 This is the additional opportunity cost of money tied up of a physically settled trade. Inst. On-Market Opportunity Cost taken for a Non-DVP trade showing the investor's money being tied up. See Attachment 1 which follows.
3 See attachment 2 which follows for detailed calculations of ownership opportunity costs savings under a depository.
4 Many retail TDs kept in street name until book closure. BSE estimates 20% of retail transactions and 95% of institutional transactions are sent in for transfer.
5 Settlement Opportunity Cost + (Ownership Transfer Cost x Frequency of trades resulting in transfer).
6 Average opportunity cost for a retail TD is because they are only estimated to be sent in for transfer once out of every five trades per BSE estimates.

Opportunity Cost per TD Processed

Ave Opportunity Cost of a Retail TD	114.18
% that are retail TDs (1)	10.00%
Ave. Cost of an On-Market Institutional TD	373.90
% that are On-Market Institutional TDs (1)	88.65%
Ave. Cost of an Off-Market Institutional TD	368.14
% that are On-Market Institutional TDs (1)	1.35%
Ave. Cost per TD (Rs.) (2)	**347.85**

1 Percentage per BSE estimate.
2 (Rs./Retail TD x % of Retail TDs) + (Rs./Inst. On-Market TD x % of Inst. Off-Market TDs) + (Rs./Inst. Off-Market TDs x % of Inst. Off-Market TDs)

Total Estimated Cost to Physically Process All Trades Passing Through the BSE Depository in 1997

No. of TDs that would be processed if trades did not settle through the depository	110.592 lakhs
Opportunity Cost per TD	347.85
Total Additional Opportunity Costs of Physical Handling	38469 Rs. lakhs

ATTACHMENT 1

OPPORTUNITY COST SAVINGS AT SETTLEMENT

REALIZABLE UNDER A DEPOSITORY (1997)

OPPORTUNITY COSTS OF PAPER BASED TRADE SETTLEMENT
1997

Assumptions Underlying all Calculations:

1 All on-market trades through BOLT for A, B1 and B2 scrips on weekly settlement cycle.
2 Cost of capital for determining opportunity cost is 21% per annum with interest charged 365 days/year.
3 In the depository settlement, it is assumed Pay-In and Pay-out, both of scrips and money, would occur on the Thursday following the close of the trading week. This means pay-out would be occurring three days earlier (Thursday instead of the following Monday).
4 As calculated in Attachment 3 of this appendix, the average value of a TD from Scenario I (Moderate Case) BSE Projections are Rs. 10,010

RETAIL TRANSACTIONS

1 Retail Purchase Transaction (Investor's Money Tied Up)

	Days (1)	Daily Interest Cost	Ave. Val. of TD (Rs.)	Total Opportunity Cost (Rs./TD)
Physical Settlement	9	0.058%	10,010	51.83
Depository Settlement	2	0.058%	10,010	11.52
Savings Under Depository Environment (2)				40.32
Percentage Savings (Savings Per TD/Value of TD)				0.4027%

1 Days between exchange of scrips and money.
2 Opportunity costs savings is the difference between opportunity costs of a physical trade versus a dematerialized trade.

2 Retail Sales Transaction (Investor's Money Tied Up)

	Days (1)	Daily Interest Cost	Ave. Val. of TD (Rs.)	Total Opportunity Cost (Rs./TD)
Physical Settlement	7	0.058%	10,010	40.32
Depository Settlement	0	0.058%	10,010	0.00
Savings Under Depository Environment (2)				40.32
Percentage Savings (Savings Per TD/Value of TD)				0.4027%

1 Days between exchange of scrips and money.
2 Opportunity costs savings is the difference between opportunity costs of a physical trade versus a dematerialized trade.

INSTITUTIONAL ON-MARKET TRANSACTIONS

1 Institutional Purchases On-Market

A. On-Market DVP Purchase (Broker's Money Tied Up)

	Days (1)	Daily Interest Cost	Ave. Val. of TD (Rs.)	Total Opportunity Cost (Rs./TD)
Physical Settlement	7	0.058%	10,010	40.32
Depository Settlement	0	0.058%	10,010	0.00
Savings Under Depository Environment (2)				40.32
Percentage Savings (Savings Per TD/Value of TD)				0.4027%

1 Days between exchange of scrips and money.
2 Opportunity costs savings is the difference between opportunity costs of a physical trade versus a dematerialized trade.

B. On-Market Non-DVP/Through Clearing House Purchase (Investor's Money Tied Up)

	Days (1)	Daily Interest Cost	Ave. Val. of TD (Rs.)	Total Opportunity Cost (Rs./TD)
Physical Settlement	4	0.058%	10,010	23.04
Depository Settlement	0	0.058%	10,010	0.00
Savings Under Depository Environment (2)				23.04
Percentage Savings (Savings Per TD/Value of TD)				0.2301%

1 Days between exchange of scrips and money.
2 Opportunity costs savings is the difference between opportunity costs of a physical trade versus a dematerialized trade.

OPPORTUNITY COSTS OF PAPER BASED TRADE SETTLEMENT
1997
(CONTINUED)

2 Institutional Sales On-Market

A. On-Market DVP Sale (Broker's Money Tied Up)

	Days (1)	Daily Interest Cost	Ave. Val. of TD (Rs.)	Total Opportunity Cost (Rs./TD)
Physical Settlement	7	0.058%	10,010	40.32
Depository Settlement	0	0.058%	10,010	0.00
Savings Under Depository Environment (2)				40.32
Percentage Savings (Savings Per TD/Value of TD)				0.4027%

1 Days between exchange of scrips and money.
2 Opportunity costs savings is the difference between opportunity costs of a physical trade versus a dematerialized trade.

B. On-Market Non-DVP/Through Clearing House Sale (Investor Money Tied Up)

	Days (1)	Daily Interest Cost	Ave. Val. of TD (Rs.)	Total Opportunity Cost (Rs./TD)
Physical Settlement	4	0.058%	10,010	23.04
Depository Settlement	0	0.058%	10,010	0.00
Savings Under Depository Environment (2)				23.04
Percentage Savings (Savings Per TD/Value of TD)				0.2301%

1 Days between exchange of scrips and money.
2 Opportunity costs savings is the difference between opportunity costs of a physical trade versus a dematerialized trade.

INSTITUTIONAL OFF-MARKET TRANSACTIONS

1 Off-Market Purchases (Broker's Money Tied Up)

	Days (1)	Daily Interest Cost	Ave. Val. of TD (Rs.)	Total Opportunity Cost (Rs./TD)
Physical Settlement	3	0.058%	10,010	17.28
Depository Settlement	0	0.058%	10,010	0.00
Savings Under Depository Environment (2)				17.28
Percentage Savings (Savings Per TD/Value of TD)				0.1726%

1 Days between exchange of scrips and money.
2 Opportunity costs savings is the difference between opportunity costs of a physical trade versus a dematerialized trade.

2 Off-Market Sale (Broker's Money Tied Up)

	Days (1)	Daily Interest Cost	Ave. Val. of TD (Rs.)	Total Opportunity Cost (Rs./TD)
Physical Settlement	3	0.058%	10,010	17.28
Depository Settlement	0	0.058%	10,010	0.00
Savings Under Depository Environment (2)				17.28
Percentage Savings (Savings Per TD/Value of TD)				0.1726%

1 Days between exchange of scrips and money.
2 Opportunity costs savings is the difference between opportunity costs of a physical trade versus a dematerialized trade.

ATTACHMENT 2

OPPORTUNITY COST SAVINGS AT OWNERSHIP TRANSFER

REALIZABLE UNDER A DEPOSITORY (1997)

OPPORTUNITY COSTS OF OWNERSHIP TRANSFER
1997

Assumptions:

1 Transfer takes the same amount of time after lodgement whether it is a retail lodgement or an institutional lodgement.

2 Average time before a scrip is returned fully transferred or objected is taken to be 60 days. This is the average of the responses from R&T agents, brokers and custodians who reported the following times given below which are inclusive of post time.

R&T Agents/Companies	30 days
Brokers	60 days
Custodians	90-120 days

3 Opportunity cost calculations are based from time of lodgement until receipt of duly transferred shares.

4 For the percentage of objections at lodgement, the following rates were reported by R&T agents, brokers and custodians. For purposes of this report, the percentage reported by brokers is taken as a proxy became these are the most likely objections to be related to trades. R&T agents have other transfer requests (upon death, within families, etc. that are not trade related.

R&T Agents/Companies	9.82%
Brokers	3.93%
Custodians	3.67%

5 Average time to receive transferred shares in the case of objection is arrived at by the following calculation:

Time From Initial Lodgement Receipt of Objection	60	days
Time to Rectify Objection	45	days
Time to Relodge and Receive Transfer	60	days
Total	165	days

6 For dematerialized shares in the depository, it is assumed that ownership transfer will occur when settlement occurs in the depository.

7 Average Value of a TD calculated from BSE market projections, Scenario I (Moderate Case) in Attachment 3 of this appendix 10,010 Rs.

Smooth Transfer

A. Retail Transfer

	Days From Lodgement	Daily Interest Cost	Ave. Val. of TD (Rs.)	Total Opportunity Cost (Rs.)
Physical Transfer	60	0.058%	10,010	345.56
Depository Transfer	0	0.058%	10,010	0.00
Savings Under Depository Environment				345.56
Percentage Savings (Savings Per TD/Value of TD)				3.45%

B. Institutional Transfer (1)

	Days From Lodgement	Daily Interest Cost	Ave. Val. of TD (Rs.)	Total Opportunity Cost (Rs.)
Physical Transfer	60	0.058%	10,010	345.56
Depository Transfer	0	0.058%	10,010	0.00
Savings Under Depository Environment				345.56
Percentage Savings (Savings Per TD/Value of TD)				3.45%

1 Difference from institutional transfer is average size of TD lodged.

OPPORTUNITY COSTS OF OWNERSHIP TRANSFER, 1997
(CONTINUED)

Objections

A. Retail Transfer (1)

	Days From Lodgement	Daily Interest Cost	Ave. Val. of TD (Rs.)	Total Opportunity Cost (Rs.)
Physical Transfer	165	0.058%	10,010	950.29
Depository Transfer	0	0.058%	10,010	0.00
Savings Under Depository Environment				950.29
Percentage Savings (Savings Per TD/Value of TD)				9.49%

B. Institutional Transfer (1)

	Days From Lodgement	Daily Interest Cost	Ave. Val. of TD (Rs.)	Total Opportunity Cost (Rs.)
Physical Transfer	165	0.058%	10,010	950.29
Depository Transfer	0	0.058%	10,010	0.00
Savings Under Depository Environment				950.29
Percentage Savings (Savings Per TD/Value of TD)				9.49%

Average Opportunity Cost for Ownership Transfer

	Retail TD		Institutional TD	
	Physical	Depository	Physical	Depository
Cost of smooth transfer (Rs.)	345.56	0.00	345.56	0.00
% of Smooth Transfers (1)	96.07%	100.00%	96.07%	100.00%
Cost of Objected Transfer (Rs.)	950.29	0.00	950.29	0.00
% of objected Transfers	3.93%	0.00%	3.93%	0.00%
Ave. Cost Per TD (Rs.) (2)	**369.33**	0.00	**369.33**	0.00

1 Average of objection rate reported by brokers interviewed.
2 [(Cost of smooth transfer x % of Smooth transfers) + (Cost of objected transfer x % of objected transfers)].

ATTACHMENT 3

CALCULATION OF AVERAGE TRANSFER DEED VALUE

USED IN OPPORTUNITY COST CALCULATIONS (1997)

CALCULATION OF THE AVERAGE VALUE OF A TRANSFER DEED (TD)

Ave. Value of a Share for a share through depository	=	Turnover/Day Depository / No. of Shares Transacted per Day
		Rs. 447.38 crores / Rs. 2.23 crores
	=	200 Rs.
Ave. No. of shares per TD	=	50 (Only A+B1 shares)

Ave. Value of a TD for A, B1, and B shares

Ave Val. Per Share * Ave. No. of Shares per Del. Order	=	10,010 Rs.

APPENDIX L

PROCESS SAVINGS, APRIL 1995 - MARCH 1996

1. CALCULATION OF EXPLICIT COSTS OF SETTLEMENT, OWNERSHIP AND SAFE CUSTODY IN CURRENT PHYSICAL ENVIRONMENT ON A PER TRANSFER DEED BASIS (APRIL '95 - MARCH '96)

CALCULATION OF THE COST OF PHYSICALLY SETTLING ALL TRANSACTIONS ON BSE FROM April 1, 1995 TO MARCH 31, 1996

This analysis computes the total cost of clearance, settlement, ownership transfer and safe custody resulting from the trades on BSE between April 1, 1995 and March 31, 1996. The main cost difference between this and the analysis of depository processed trades in 1997 is that here 50% of all deliveries are assumed to be institutional and a larger number of TDs are processed.

Key Variables:

Calculation of the Total No. of TDs Processed in 95-96	A Group	B Group	Total
No. of Shares Traded in lakhs(1)	14190.8	62220.01	76410.81
No. of Shares Delivered in lakhs (1)	2502.92	25903.14	28406.06
No. of Shares per TD (2)	50	100	
Total No. of TDs resulting in Delivery (lakhs) (3)	50.0584	259.0314	309.0898

Percent of TDs delivered that are Institutional (1)	50.00%
Percent of TDs delivered that are Retail (1)	50.00%
Of total institutional trades:	
- On-Market (4)	98.50%
- Off-Market(4)	1.50%

1 BSE statistics
2 BSE assumptions
3 No. of shares delivered/No. of shares per TD
3 Assumed to be 50 because only 30 A scrips and 20 B scrips eligible for depository dematerialization.
4 Derived from the percent of negotiated bulk deals in settlements 26 and 27 from BSE data.

Settlement Processing Costs Per Type of TD - Buy Side

	Retail (Rs./TD)	Institutional (Rs./TD)	
		On-Market	Off-Market
Settlement (1)	14.46	22.29	21.35

1 Same value as that arrived at for estimating cost of physical processing in 1997.

Settlement Processing Costs Per Type of TD - Sell Side

	Retail (Rs./TD)	Institutional (Rs./TD)	
		On-Market	Off-Market
Settlement (1)	14.46	19.59	18.65

1 Same value as that arrived at for estimating cost of physical processing in 1997.

Ownership Transfer Processing Costs Per Type of TD

	Retail (Rs./TD)	Institutional (Rs./TD)	
		On-Market	Off-Market
Cost per TD Transferred (1)	42.76	44.11	44.11
Percent of Trades Resulting in Transfer (2)	20.00%	95.00%	95.00%
Expected Ownership Transfer Cost Per Trade (3)	8.55	41.90	41.90

1 Same value as that arrived at for estimating cost of physical processing in 1997.
2 Percentages per BSE estimates.
3 Cost for transferring TD x Percentage chance the TD will be sent for lodgement.

CALCULATION OF THE COST OF PHYSICALLY SETTLING ALL TRANSACTIONS ON BSE FROM April 1, 1995 TO MARCH 31, 1996

(CONTINUED)

Safe Custody Processing Costs Per Type of TD

	Retail	Institutional (Rs./TD)	
	(Rs./TD)	On-Market	Off-Market
Custodian (1)	0	2.71	2.71

1 Rs. 2.71 per TD estimated based on interviews with custodians.

Average Settlement and Ownership Transfer and Safe Custod Processing Costs Per TD Transacted (1)

	Retail	Institutional (Rs./TD)	
	(Rs./TD)	On-Market	Off-Market
Settlement Handling on the Buy Side	14.46	22.29	21.35
Settlement Handling on the Sell Side	14.46	19.59	18.65
Ownership Transfer	8.55	41.90	41.90
Safe Custody	0.00	2.71	2.71
Total Per Trade	37.48	86.50	84.62

1 Same value as that arrived at for estimating cost of physical processing in 1997.

Average Cost Per TD Transacted

Retail TD	37.48
% of TDs transacted that are Retail	50.00%
Institutional On-Market TD	86.50
% of TDs transacted that are Institutional On-Market TDs	49.25%
Institutional Off-Market TD	84.62
% of TDs transacted that are Institutional Off-Market TDs	0.75%
Ave Cost of Physical Handling per TD transacted (1)	**61.98**

1 (Rs./Retail TD x % of Retail TDs) + (Rs./Inst. On-Mkt TD x % of On-Mkt TDs) + (Rs./Inst. Off-Mkt TD x % of Inst. Of-Mkt TDs)

Total Costs of Physical Handling

No. of TDs Processed in Absence of Depository (lakhs)	309.09
Ave. Cost per TD for Physical Processing (Rs.)	61.98
Total Physical Processing Costs Processing Costs (Rs. lakhs)	**19156.13**

ATTACHMENT 1

CALCULATION OF EXPLICIT COSTS OF SETTLEMENT,

OWNERSHIP AND SAFE CUSTODY IN CURRENT PHYSICAL

ENVIRONMENT ON A PER TRANSFER DEED BASIS

(APRIL 1995 - MARCH 1996)

EXPLICIT COST OF SETTLEMENT, OWNERSHIP TRANSFER AND SAFE CUSTODY IN THE CURRENT PHYSICAL SCRIP ENVIRONMENT

All calculations are on a cost/TD basis because this is the basic until of paper that moves through the entire settlement and ownership transfer cycle from point of trade to final lodgement of ownership.

Trade Settlement

Settlement Costs Per TD - Buy Side

	Retail Transaction (Rs./TD)	Institutional Transaction On-Market (Rs./TD)	Institutional Transaction Off-Market (5) (Rs./TD)
Broker (1)	13.52	13.52	13.52
BISL (2)	0.24	0.24	0.00
ISD (3)	0.71	0.71	0.00
Custodian (4)	0.00	7.83	7.83
Total	**14.46**	**22.29**	**21.35**

1 Takes the average per TD processing cost from six brokers interviewed. This includes processing cost and service tax and stamp duty where applicable.
2 BISL' 95-96 Expenses Associated with Settlement divided by the total no. of TDs delivered in 95-96. One half of BISL's cost allocated to the buy side and One half allocated to the sell side.
3 ISD's 95-96 Expenses Associated with Settlement divided by the total no. of TDs delivered in 95-96. One half of ISD's cost allocated to the buy side and One half allocated to the sell side.
4 There is more cost associated with a buy transaction at a custodian because of (i) more processing at receipt and (ii) lodgement which is part of the purchase process from a custodian's perspective. Figures based on average of those given by custodians interviewed.
5 An off-market transaction is one that does not clear through any clearing entity. In the physical environment of today, this is equivalent to negotiated trades with spot delivery, or "bulk deals." Based on recent data, these only represent 0.15% of all transactions.

Settlement Costs Per TD - Sell Side

	Retail Transaction (Rs./TD)	Institutional Transaction On-Market (Rs./TD)	Institutional Transaction Off-Market (Rs./TD)
Broker (1)	13.52	13.52	13.52
BISL (2)	0.24	0.24	0.00
ISD (3)	0.71	0.71	0.00
Custodian (4)	0.00	5.13	5.13
Total	**14.46**	**19.59**	**18.65**

1 Same cost as on the buy side.
2 BISL' 95-96 Expenses Associated with Settlement divided by the total no. of TDs delivered in 95-96. One half of BISL's cost allocated to the buy side and One half allocated to the sell side.
3 ISD's 95-96 Expenses Associated with Settlement divided by the total no. of TDs delivered in 95-96. One half of ISD's cost allocated to the buy side and One half allocated to the sell side.
4 There is less cost associated with a buy transaction at a custodian because of (i) less processing, and (ii) no lodgement. Figures based on average of those given by custodians interviewed.

EXPLICIT COST OF SETTLEMENT, OWNERSHIP TRANSFER AND SAFE CUSTODY IN THE CURRENT PHYSICAL SCRIP ENVIRONMENT (CONTINUED)

Ownership Transfer

	Smooth Transfer		Objected Transfer ()	
	Retail	Institutional	Retail	Institutional
Percentage Occurrence	96.07%	96.07%	3.93%	3.93%
R&T Agent (1)	38.97	38.97	38.97	38.97
Broker (2)	0.00	0.00	96.51	96.51
Custodian (3)	0.00	0.00	0.00	34.23
Total	38.97	38.97	135.48	169.71

Average Cost to Transfer a Retail TD (4)	**42.76**	**Rs./TD**
Average Cost to Transfer an Institutional TD (5)	**44.11**	**Rs./TD**

1 This is the average cost reported by an R&T agent to process an incoming TD whether it is transferred or objected.
2 Takes the total cost a broker's objection cell divided by the no. of objected TDs processed by the broker. Average of information gathered from six brokers. In the case of a smooth transfer, the broker faces no costs. Only in the case of an objected transfer is the TD and certificates returned to the broker.
3 For a smooth transfer, the costs of lodgement are incorporated in the custodian costs for a purchase detailed above and that is why there is no additional charge at the custodian level for smooth transfer.
4 Weighted average between cost of smooth retail transfer and objected retail transfer based on frequency reported (see footnote no. 6).
5 Weighted average between cost of smooth institutional transfer and objected institutional transfer based on frequency.
6 Brokers report, on average, about 3.93 percent of transfer requests are objected.

Safe Custody

	Retail (1) (Rs./TD)	Institutional (2) (Rs./TD)
Custodian	0	**2.71**

1 Assumes that retail investors currently incur no safe custody costs although some people do rent security boxes in which they store their shares.
2 Assumes that an institution's only safe custody costs are those at the custodian.

APPENDIX M

OPPORTUNITY COSTS SAVINGS REALIZABLE IF ALL TRANSACTIONS

FOR APRIL 1995 - MARCH 1996 HAD BEEN DEMATERIALIZED

1. **OPPORTUNITY COST SAVINGS AT SETTLEMENT REALIZABLE FOR APRIL 1995 - MARCH 1996 IF ALL SCRIPS HAD BEEN DEMATERIALISED**

2. **OPPORTUNITY COST SAVINGS AT OWNERSHIP TRANSFERS FOR APRIL 1995 - MARCH 1996 IF ALL SCRIPS HAD BEEN DEMATERIALISED**

3. **CALCULATION OF AVERAGE TRANSFER DEED VALUE USED IN OPPORTUNITY COST CALCULATIONS (APRIL 1995 - MARCH 1996)**

CALCULATION OF THE OPPORTUNITY COST OF PHYSICALLY SETTLING ALL TRANSACTIONS ON BSE FROM April 1, 1995 TO MARCH 31, 1996

Based on the key variables in the projection of processing costs for April 1, 1995 to March 31, 1996.

1 Settlement
- Time between paying for a scrip and receiving the physical shares
- Time between selling a scrip and receiving proceeds from sale

2 Ownership Transfer
- Time taken to register ownership transfer
- Time taken to rectify company objections

Key Variables:

No. of TDs delivered	309.0898 lakhs
Percent of TDs delivered that are Institutional (1)	50.00%
Percent of TDs delivered that are Retail (1)	50.00%
Of Institutional total institutional trades:	
- On-Market (2)	98.50%
- Off-Market(2)	1.50%

1 BSE assumptions
2 Derived from the percent of negotiated bulk deals in settlements 26 and 27 from BSE data.

Opportunity Costs per Type of TD (1)

		Institutional	
	Retail (6)	On-Market	Off-Market
Settlement (2)	39.82	22.75	17.07
Ownership Transfer	364.79	364.79	364.79
Percent of total TDs transacted which are sent to transfer (3) (4)	20.00%	95.00%	95.00%
Total Opportunity Costs/TD (5)	112.78	369.30	363.61

1 A TD is tied up for different amounts of time depending whether is institutional or retail.
2 This is the additional opportunity cost of money tied up of a physically settled trade. Inst. On-Market Opportunity Cost taken for a Non-DVP trade showing the investor's money being tied up. See Attachment 1 which follows.
3 See attachment 2 which follows for detailed calculations of ownership opportunity costs savings under a depository.
4 Many retail TDs kept in street name until book closure. BSE estimates 20% of retail transactions and 95% of institutional transactions are sent in for transfer.
5 Settlement Opportunity Cost + (Ownership Transfer Cost x Frequency of trades resulting in transfer).
6 Average opportunity cost for a retail TD is because they are only estimated to be sent in for transfer once out of every five trades per BSE estimates.

Opportunity Cost per TD Processed

Ave Opportunity Cost of a Retail TD	112.78
% that are retail TDs (1)	50.00%
Ave. Cost of an On-Market Institutional TD	369.30
% that are On-Market Institutional TDs (1)	49.25%
Ave. Cost of an Off-Market Institutional TD	363.61
% that are On-Market Institutional TDs (1)	0.75%
Ave. Cost per TD (Rs.) (2)	**241.00**

1 Percentage per BSE estimate.
2 (Rs./Retail TD x % of Retail TDs) + (Rs./Inst. On-Market TD x % of Inst. Off-Market TDs) + (Rs./Inst. Off-Market TDs x % of Inst. Off-Market TDs)

Total Estimated Opportunity Savings if all April 1995 - March 1996 BSE Transactions Had Been Settled in Dematerialized Form Through a BSE Depository

No. of TDs that would be processed if trades did not settle through the depository	309.0898 lakhs
Opportunity Cost per TD	241.00
Total Additional Opportunity Costs of Physical Handling	**74489** Rs. lakhs

ATTACHMENT 1

OPPORTUNITY COST SAVINGS AT SETTLEMENT

REALIZABLE FOR APRIL 1995 - MARCH 1996

IF ALL SCRIPS HAD BEEN DEMATERIALISED

OPPORTUNITY COSTS OF PAPER BASED TRADE SETTLEMENT
April 1995 - March 1996

Assumptions Underlying all Calculations:

1 All on-market trades through BOLT for A, B1 and B2 scrips on weekly settlement cycle.
2 Cost of capital for determining opportunity cost is 21% per annum with interest charged 365 days/year.
3 In the depository settlement, it is assumed Pay-In and Pay-out, both of scrips and money, would occur on the Thursday following the close of the trading week. This means pay-out would be occurring three days earlier (Thursday instead of the following Monday).
4 Average Value of a TD for 95-96 calculated from BSE April - July 1996 actual figures in Scenario I (Moderate Case) BSE projections is shown in Attachment 3:
9,887 Rs.

RETAIL TRANSACTIONS

1 Retail Purchase Transaction (Investor's Money Tied Up)

	Days (1)	Daily Interest Cost	Ave. Val. of TD (Rs.)	Total Opportunity Cost (Rs./TD)
Physical Settlement	9	0.058%	9,887	51.20
Depository Settlement	2	0.058%	9,887	11.38
Savings Under Depository Environment (2)				39.82
Percentage Savings (Savings Per TD/Value of TD)				0.4027%

1 Days between exchange of scrips and money.
2 Opportunity costs savings is the difference between opportunity costs of a physical trade versus a dematerialized trade.

2 Retail Sales Transaction (Investor's Money Tied Up)

	Days (1)	Daily Interest Cost	Ave. Val. of TD (Rs.)	Total Opportunity Cost (Rs./TD)
Physical Settlement	7	0.058%	9,887	39.82
Depository Settlement	0	0.058%	9,887	0.00
Savings Under Depository Environment (2)				39.82
Percentage Savings (Savings Per TD/Value of TD)				0.4027%

1 Days between exchange of scrips and money.
2 Opportunity costs savings is the difference between opportunity costs of a physical trade versus a dematerialized trade.

INSTITUTIONAL ON-MARKET TRANSACTIONS

1 Institutional Purchases On-Market

A. On-Market DVP Purchase (Broker's Money Tied Up)

	Days (1)	Daily Interest Cost	Ave. Val. of TD (Rs.)	Total Opportunity Cost (Rs./TD)
Physical Settlement	7	0.058%	9,887	39.82
Depository Settlement	0	0.058%	9,887	0.00
Savings Under Depository Environment (2)				39.82
Percentage Savings (Savings Per TD/Value of TD)				0.4027%

1 Days between exchange of scrips and money.
2 Opportunity costs savings is the difference between opportunity costs of a physical trade versus a dematerialized trade.

B. On-Market Non-DVP/Through Clearing House Purchase (Investor's Money Tied Up)

	Days (1)	Daily Interest Cost	Ave. Val. of TD (Rs.)	Total Opportunity Cost (Rs./TD)
Physical Settlement	4	0.058%	9,887	22.75
Depository Settlement	0	0.058%	9,887	0.00
Savings Under Depository Environment (2)				22.75
Percentage Savings (Savings Per TD/Value of TD)				0.2301%

1 Days between exchange of scrips and money.
2 Opportunity costs savings is the difference between opportunity costs of a physical trade versus a dematerialized trade.

OPPORTUNITY COSTS OF PAPER BASED TRADE SETTLEMENT
April 1995 - March 1996
(CONTINUED)

2 Institutional Sales On-Market

A. On-Market DVP Sale (Broker's Money Tied Up)

	Days (1)	Daily Interest Cost	Ave. Val. of TD (Rs.)	Total Opportunity Cost (Rs./TD)
Physical Settlement	7	0.058%	9,887	39.82
Depository Settlement	0	0.058%	9,887	0.00
Savings Under Depository Environment (2)				39.82
Percentage Savings (Savings Per TD/Value of TD)				0.4027%

1 Days between exchange of scrips and money.
2 Opportunity costs savings is the difference between opportunity costs of a physical trade versus a dematerialized trade.

B. On-Market Non-DVP/Through Clearing House Sale (Investor Money Tied Up)

	Days (1)	Daily Interest Cost	Ave. Val. of TD (Rs.)	Total Opportunity Cost (Rs./TD)
Physical Settlement	4	0.058%	9,887	22.75
Depository Settlement	0	0.058%	9,887	0.00
Savings Under Depository Environment (2)				22.75
Percentage Savings (Savings Per TD/Value of TD)				0.2301%

1 Days between exchange of scrips and money.
2 Opportunity costs savings is the difference between opportunity costs of a physical trade versus a dematerialized trade.

INSTITUTIONAL OFF-MARKET TRANSACTIONS

1 Off-Market Purchases (Broker's Money Tied Up)

	Days (1)	Daily Interest Cost	Ave. Val. of TD (Rs.)	Total Opportunity Cost (Rs./TD)
Physical Settlement	3	0.058%	9,887	17.07
Depository Settlement	0	0.058%	9,887	0.00
Savings Under Depository Environment (2)				17.07
Percentage Savings (Savings Per TD/Value of TD)				0.1726%

1 Days between exchange of scrips and money.
2 Opportunity costs savings is the difference between opportunity costs of a physical trade versus a dematerialized trade.

2 Off-Market Sale (Broker's Money Tied Up)

	Days (1)	Daily Interest Cost	Ave. Val. of TD (Rs.)	Total Opportunity Cost (Rs./TD)
Physical Settlement	3	0.058%	9,887	17.07
Depository Settlement	0	0.058%	9,887	0.00
Savings Under Depository Environment (2)				17.07
Percentage Savings (Savings Per TD/Value of TD)				0.1726%

1 Days between exchange of scrips and money.
2 Opportunity costs savings is the difference between opportunity costs of a physical trade versus a dematerialized trade.

ATTACHMENT 2

OPPORTUNITY COST SAVINGS AT OWNERSHIP

TRANSFERS FOR APRIL 1995 - MARCH 1996 IF ALL SCRIPS

HAD BEEN DEMATERIALISED

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OPPORTUNITY COSTS OF OWNERSHIP TRANSFER
April 1995 - March 1996

Assumptions:

1 Transfer takes the same amount of time after lodgement whether it is a retail lodgement or an institutional lodgement.

2 Average time before a scrip is returned fully transferred or objected is taken to be 60 days. This is the average of the responses from R&T agents, brokers and custodians who reported the following times given below which are inclusive of post time.

R&T Agents/Companies	30 days
Brokers	60 days
Custodians	90-120 days

3 Opportunity cost calculations are based from time of receipt of duly transferred

4 For the percentage of obj
by R&T agents, brokers a
reported by brokers is tak
objections to be related to
within families, etc. that a

R&T Agents/Companies	9.82%
Brokers	3.93%
Custodians	3.67%

5 Average time to receive transferred shares in the case of objection is arrived at by the following calculation:

Time From Initial Lodgement Receipt of Objection	60	days
Time to Rectify Objection	45	days
Time to Relodge and Receive Transfer	60	days
Total	165	days

6 For dematerialized shares in the depository, it is assumed that ownership transfer will occur when settlement occurs in the depository.

7 Average Value of a TD calculated from BSE actual Apr-Jul 96 figures in Scenario I (Moderate Case). Calculations shown in Attachment 3 of this Appendix.

Smooth Transfer

A. Retail Transfer

	Days From Lodgement	Daily Interest Cost	Ave. Val. of TD (Rs.)	Total Opportunity Cost (Rs.)
Physical Transfer	60	0.058%	9,887	341.31
Depository Transfer	0	0.058%	9,887	0.00
Savings Under Depository Environment				341.31
Percentage Savings (Savings Per TD/Value of TD)				3.45%

B. Institutional Transfer (1)

	Days From Lodgement	Daily Interest Cost	Ave. Val. of TD (Rs.)	Total Opportunity Cost (Rs.)
Physical Transfer	60	0.058%	9,887	341.31
Depository Transfer	0	0.058%	9,887	0.00
Savings Under Depository Environment				341.31
Percentage Savings (Savings Per TD/Value of TD)				3.45%

1 Difference from institutional transfer is average size of TD lodged.

OPPORTUNITY COSTS OF OWNERSHIP TRANSFER
April 1995 - March 1996
(CONTINUED)

Objections

A. Retail Transfer (1)

	Days From Lodgement	Daily Interest Cost	Ave. Val. of TD (Rs.)	Total Opportunity Cost (Rs.)
Physical Transfer	165	0.058%	9,887	938.61
Depository Transfer	0	0.058%	9,887	0.00
Savings Under Depository Environment				938.61
Percentage Savings (Savings Per TD/Value of TD)				9.49%

B. Institutional Transfer (1)

	Days From Lodgement	Daily Interest Cost	Ave. Val. of TD (Rs.)	Total Opportunity Cost (Rs.)
Physical Transfer	165	0.058%	9,887	938.61
Depository Transfer	0	0.058%	9,887	0.00
Savings Under Depository Environment				938.61
Percentage Savings (Savings Per TD/Value of TD)				9.49%

Average Opportunity Cost for Ownership Transfer

	Retail TD		Institutional TD	
	Physical	Depository	Physical	Depository
Cost of smooth transfer (Rs.)	341.31	0.00	341.31	0.00
% of Smooth Transfers (1)	96.07%	100.00%	96.07%	100.00%
Cost of Objected Transfer (Rs.)	938.61	0.00	938.61	0.00
% of objected Transfers	3.93%	0.00%	3.93%	0.00%
Ave. Cost Per TD (Rs.) (2)	**364.79**	0.00	**364.79**	0.00

1 Average of objection rate reported by brokers interviewed.
2 [(Cost of smooth transfer x % of Smooth transfers) + (Cost of objected transfer x % of objected transfers)].

ATTACHMENT 3

CALCULATION OF AVERAGE TRANSFER DEED VALUE

USED IN OPPORTUNITY COST CALCULATIONS

(APRIL 1995 - MARCH 1996)

CALCULATION OF THE AVERAGE VALUE OF A TRANSFER DEED (TD)
April 1995 - March 1996

Assumptions:

No. of Shares per TD 75

Data from BSE Projections Tables:

(Actuals for Apr-Jun 1996)

	A	B1	B	Total
Turnover Per Day (Rs. Crores)	366	122	38	526
Qty. of shares Transacted per Day	2.25		1.74	3.99

CALCULATION OF AVE. VAL. OF A TD IN APR-JUL 1996

Ave. Value of a Share for A, B1, and B shares = Turnover/Day for all BSE / No. of Shares Transacted per Day for all BSE

= Rs. 366 crores + Rs. 122 crores + Rs. 38 crores) / (2.25 crores + 1.74 crores)

= 132 Rs.

Ave. No. of shares per TD = 75

Ave. Value of a TD for A, B1, and B shares

Ave Val. Per Share * Ave. No. of Shares per Del. Order = Rs. 132 * 75 shares

= 9,887 Rs.

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APPENDIX N

NSDL FEE SCHEDULE

NATIONAL SECURITIES DEPOSITORY LIMITED

MAHINDRA TOWERS, 'A' WING, 1ST FLOOR, RBC, WORLI, MUMBAI - 400 018.

PRESS RELEASE

NSDL ANNOUNCES FEE STRUCTURE FOR DEPOSITORY SERVICES.

The following fee structure has been announced by National Securities Depository Limited for various services it proposes to offer :

- No fee is payable by the Issuers (companies whose shares are declared eligible for dematerialisation) or their registrars to NSDL.

- No fee is charged by NSDL on dematerialisation requests. However, in case of rematerialisation, a flat fee of Rs.10/- per certificate will be charged.

- Depository participants will make a security deposit of Rs.10 lakhs, besides paying an entry fee of Rs.25,000/-.

- Depository participants (DPs) will pay an annual fee of Rs.1 lakh, Rs.2.5 lakh or Rs.5 lakh for the value of assets handled ranging upto Rs.200 crore, between Rs.200 -Rs.500 crore and above Rs.500 crore respectively.

- The following transaction related fees have been prescribed payable by the DPs to NSDL :

1. A settlement fee of 5 paise per Rs.100/- value of net deliveries received by the DP. No fees will be payable by the delivering participant.
2. Custody fee of 7 paise per Rs.100/- per annum on the average value of securities held in custody by the DP. This fee will be collected quarterly on the basis of average holding during the quarter.
3. Settlement fee for the off market transactions will be payable at the rate of 0.1% subject to a minimum of Rs.10,000/- per transaction.

Mumbai
28.08.1996

Released by
Vice President - Operations

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