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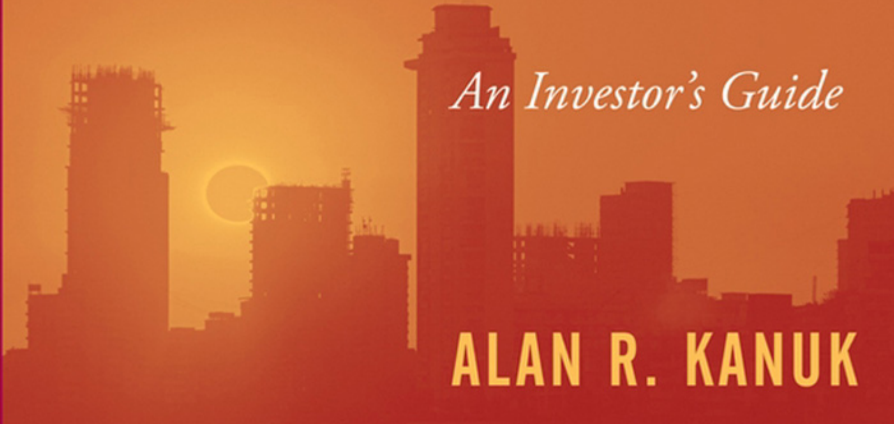

An Investor's Guide

ALAN R. KANUK

Capital Markets of India

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John Wiley & Sons, Inc.

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To my wonderful wife, Jaqui,
whose love and support are a neverending source of
great energy and inspiration for me.
And
to Max and Sarah,
my two spectacular children,
who give me the greatest joy and a constant smile.

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Preface

When I moved to Hong Kong in early 1995 as Senior Managing Director for the investment bank Bear Stearns, my assignment was not only to manage its existing Asian equity business, but also to explore opportunities for further involvement throughout the region. The equities of Hong Kong, Indonesia, Singapore, and Thailand were of greatest interest, China shares listed in Shanghai were watched with some interest, and the securities of India were not even on the radar screen. I found this odd.

The dominant investment theme in Hong Kong at the time was China, and the investment community there was falling all over itself to do Chinese investment banking deals and bring IPOs. No one could take their eyes off of China's population of one-billion-strong potential consumers. People spent little time considering the unreliability of Chinese company financials and the inconsistent application of the rule of law. Everyone seemed to be wearing rose-colored glasses and blinders facing north to China.

Being new to Asia, I found myself questioning why no one, and it seemed like *absolutely* no one, was looking west to the one-billion-strong population of India, which was and is the world's largest democracy and, thanks to its being a former British colony, was built upon strong foundations, a tradition of entrepreneurship, and most importantly, the rule of law. I was told that India, with the oldest stock exchange in Asia, was still a highly inefficient market for trading, that monies had to be transferred into the country prior to trade execution, and that settlement, still physical with numerous signatures required on stock certificates from various parties in multiple locations, was problematic and could take months. Having these realities explained to me, I didn't focus on India for several years, but always kept an eye on its developments.

The stunning success of the Chinese economy and many private investments there overshadowed the country's stagnant secondary market story, where the markets did virtually nothing, or even traded lower, for years until 2006. In the meantime, bureaucratic India was beginning its reform process, started in 1991 by the well-respected economist, then-finance minister and current Prime Minister Manmohan Singh. Begun 12 years after the China reform process, the Indian reforms opened the way for the Indian economy and capital markets to modernize and begin an ascent that has been nothing short of outstanding. Since 1998, its benchmark Sensex Index has increased five-fold, and in 2006, the secondary market capitalization of the Bombay Stock Exchange exceeded that of the Shanghai and Shenzhen exchanges combined. The economy has been growing at a consistent 8 percent rate that appears to be long-term sustainable. While lagging China's reported 10 percent growth by 2 percent, the Indian authorities like to describe this as the "2 percent democracy drag"—they are happy to give up that 2 percent in return for a free and democratic system that cannot autocratically impose change and direction.

I made my first investment in Indian securities in 2004. Investing as an individual, I found it impossible to invest directly into Indian companies and, relegated to the fund route, found it quite difficult to find an investment vehicle available to an American resident with which to get India-only exposure without my investment being watered down by dilutive pan-Asian exposure. I eventually found my vehicle. Falling into the old trader truism, "You don't *really* care until you *care*" (meaning until you have a position), I started learning all I could about investing in India as a foreigner. I learned four interesting things:

1. Virtually no professional investors in the United States with whom I spoke had any inkling that the Indian economy was growing at a sustained 8 percent per year.
2. Very few non-India-based so-called experts of India's capital markets had any real detailed knowledge of the market.
3. Very few of the thousands of professional and institutional investors in the United States alone had/have market exposure to India.
4. Fewer still of these investors knew what needs to be done to invest directly into Indian securities.

These four added up to one clear result: *Opportunity* for investing in an underappreciated, underinvested, dynamic, and reforming economy. In discussions with friends in the investment field, it became apparent to me that this underexposure to India was the result of ignorance: About India in general, about the reform process that had greatly improved a previously unwieldy investment process, about the incredible economic growth happening, about the world-class securities regulator, and about the sophisticated market systems and processes that had been developed to make the trading system not a third-world nightmare, but rather arguably one of the safest market systems in the world. This book is my antidote to that ignorance.

Capital Markets of India: An Investor's Guide is a reference book written for professional and other sophisticated investors. It has been written in recognition of the emergence of the Indian economy as a significant participant in the Asian and world economies. Smart investors do not take on exposure to a market without understanding the market and having a level of comfort about its structure. The goal of this book is to address this lack of knowledge about India and its capital markets, to inform the reader about the many relevant issues related to taking on Indian market exposure, and to provide that necessary level of comfort.

The slow but growing realization of India's strong, consistent economic growth and its political and economic stability has led to growing interest among both institutional and individual investors in the exciting investment opportunities available in the Indian capital markets. This reference book serves as an introduction to this exciting market.

As India newly appears on the radar screen of investors, they will go through a process familiar to them for all of their international investment activities:

- **Market Understanding—How does the market operate?** The investor must first learn as much as possible about India's financial markets. This includes learning about its institutions, such as the stock exchanges and regulatory structure; the strength of these institutions; the safety and integrity of the market; and the trading and settlement process. The investor must learn about the reforms that have taken place and the advantages that they bring to the market, but also about the risks to the market, and what can derail the booming share prices.
- **Foreign Access to the Market—How can I get involved?** Along with achieving a level of comfort that India is a market with foundations for safe and efficient handling of investments, the investor must understand how to make investments in the market, whether it is freely open for foreign investment, whether foreigners have any restrictions or requirements associated with investing in the domestic markets, and if so, the exact procedure to follow to address these requirements.
- **Available Financial Products—How can I gain exposure to India?** Having addressed the background and underpinnings of the market, the risks and opportunities, and the process required for foreigners to invest in India's markets, the next step is for the investor to receive an overview of the products available in the market for investment. In particular, the pending investor in India's markets should be introduced to: (1) the equity and derivative products available, together with the details associated with them; (2) the stocks underlying the various derivative products; (3) the available government and private debt market; and (4) the various benchmark general market and sector-specific indexes together with their component companies.

Capital Markets of India: An Investor's Guide has been written to address these steps in the process of becoming a new investor in the Indian markets. The book will introduce the reader to many relevant facts about India and the structure of the Indian equity capital markets. The book contains a detailed discussion about foreign investment possibilities in India, including foreign institutional investor (FII) registration requirements. The appendixes provide useful information for the investor, including numerous details about the economy and challenged national infrastructure; an explanation of the country's unique numbering system; a chart of comparative time zones around the world; a list of economic statistics and how to obtain them; names, descriptions, and Web site addresses of key market institutions; names, addresses, and phone numbers of important market participants, and web site addresses for other useful information.

I emphatically recommend that all investors visit India and see firsthand the progress it is making in so many areas, the dynamism of the people and their culture, the exploding consumerism so prevalent in the cities, and the sophisticated businesses springing up throughout the country. But I caution you: Remember your trained analytical skills that allow you to look beyond a company's basic financials to find its underlying value. When you land at Chattrapathi Shivaji International Airport in Mumbai and drive to one of the wonderful hotels in the city, you will pass people living in lean-tos by the side of the street and you will see crumbling real estate and find yourself wondering, "What am I doing here?" As you make this trip and travel through other parts of India, you must remember to use those analytical skills to look beyond the surface of what you see—the poverty and the challenged infrastructure—to see the underlying value and potential of this great and prospering country.

When using this book, the reader should be aware of several bookkeeping points with regard to currency conversion, the annual period used for statistics, stock exchange information, and the accuracy of the provided information.

In virtually all places where a statistic is quoted in the Indian rupee, the reader is provided with an approximate U.S.-dollar equivalent in parentheses. The currency exchange rate used is virtually always a rate of 45 rupees to 1 U.S. dollar. This rate was used because it is almost exactly the midpoint between the high and low in the exchange rate for the year 2006 and because it is a round number. The reader must remember that the rupee is a freely floating currency and that in 2006 it ranged from a low of 46.95 rupees to the dollar to a high of 44.07, a movement of 6.54 percent from top to bottom. Thus, the U.S.-dollar equivalent of Rs1 million in January (the low for the year) was different from what it was in July (the high for the year). Nevertheless, throughout the text the rate of 45 rupees to the dollar is used regardless of the date and year of the rupee-denominated statistic.

India operates on an April 1 to March 30 fiscal year and as such, most statistics provided by the institutions in India, including the stock exchanges, the Reserve Bank of India, the Ministry of Finance, and the Securities and Exchange Board of India (SEBI) are presented in fiscal years where, for example, FY2006 refers to the fiscal year ending March 30, 2006. Where monthly numbers are available through December 2006, I have attempted to present some charts with the more up-to-date data on a calendar year basis, ending December 31, a period that will be more comfortable for some readers. Thus, data presented in the book is of both types and is noted either as "FY2006," meaning the 12-month periods ending March 2006, or simply as "2006," meaning the 12-month periods ending December 2006.

The Indian market is technically made up of 22 different stock exchanges; the two primary, most significant and liquid are the Bombay Stock Exchange and the National Stock Exchange. The stock exchange information discussed in this book refers exclusively to these two exchanges. Each of these two exchanges has many similar systems and processes, so where possible and appropriate, information relating to both exchanges has been presented together.

The reader must note that much of the information provided in this book and in the Web sites and sources referred to in the text is time sensitive and subject to change. All of the sources from which I have gathered information have stressed this point both in discussions and in written disclaimers. I emphasize that in a dynamic, evolving marketplace, information is continually changing and that all of the information used in this book has been collected from publicly available sources presumed to be correct and reliable at the time of their use. Neither the author, nor the stock exchanges, nor the other sources make any warranty as to the accuracy of the sources of this information, and I remind the reader that all information was collected on a best-effort basis. The reader is reminded that the rules and regulations are continually being updated and that market indexes and their constituents are continually evolving. You are encouraged to look at the various Web sites referred to throughout the text for the most up-to-date information, and to heed the disclaimers accompanying these sites.

At the time of this writing, the benchmark Sensex index is hitting new all-time highs and the economy is strong. This book will assist all investors to make informed and educated evaluations of whether the markets of India should be part of their portfolio. It is my sincere hope that *Capital Markets of India: An Investor's Guide* proves to be a useful reference resource.

ALAN R. KANUK
January 2007

Acknowledgments

This book could not have been as complete and comprehensive without the help, input, and openness of a number of people in the United States, India, and other countries. As with many reference-type books, this is a compilation of facts, insights, viewpoints, and knowledge obtained over time from many people, Web sites, government agencies, and publications.

I would like to thank Brad West and Paul Alapat of AMBA Research for their support, introductions, and valuable input for the manuscript. The Asia Society's numerous India-focused programs and their speakers have provided me with wonderful insights, and in particular, I want to thank Judi Kilachand, its Executive Director of Business Programs, for all of her assistance in making introductions for me in India and in New York. I am grateful to Bill Wreaks of the Wreaks Media Group for his help, patience, and generosity of time as I developed the book, to Marc Still for his support, friendship, and guidance throughout this process, and to Douglas Hughes, whose skepticism, stubbornness, and risk-averse investment nature forced me to develop ever-more-articulate arguments for the soundness of an investment in India.

There were many people in India with whom I met and spoke to whom I am also most appreciative: K. N. ("Vaidy") Vaidyanathan, president of Alchemy Brokerage in Mumbai, for his insight, introductions, and advice; Ravi Narain, CEO and MD of the National Stock Exchange, and Rajnikant Patel, CEO and MD of the Bombay Stock Exchange, for their valuable insights into the broad market issues and their exchange inner-workings; V. Shanker, CEO of the Inter-connected Stock Exchange of India, and Mr. S. T. Gerela, CEO of Satco Securities & Financial Services Ltd., for their detailed explanations of the exchange-imbedded risk management systems and safeguards that make the Indian exchanges so safe; Dominic Fernandez and Cyrus Khambata of the Central Depository Services Ltd. for their explanations of the depository system, its history, and features that have done so much to modernize the Indian settlement process; and Mr. D. Chandra, Chief General Manager of the Securities and Exchange Board of India (SEBI) in charge of FII registration, for his numerous insights into the FII registration process and issues considered regarding FII approvals, and his valuable insights regarding many of the broader issues concerning the Indian markets.

From the private sector, I received valuable assistance from Chetan Ahya, the economist at JM Morgan Stanley, who provided a very balanced overview of the Indian economy, and from Shaurabh Mitra, Assistant Vice President at Citibank India in Product Management and Global Transaction Services, for his explanation of and insights into the Indian settlement process. I am very grateful to Khozem Merchant, the Mumbai correspondent for the *Financial Times*, for his unique and balanced outlook of the Indian economy, for sharing with me his insightful anecdotal evidence concerning the sustainability of the current boom taking place in India, and for introducing me to his friends, who represent the dynamic, educated new India.

I would also like to thank the anonymous taxi driver in Mumbai who gave me additional confidence in my belief in the future of the Indian economy and its markets when he told me of his two children, who not only were able to get scholarships for high school and college, but based on their merit alone, were able to attend the Indian Institute of Technology (IIT) and the Indian Institute of Management (IIM), respectively. I have always believed that the greatness of America lay in the unlimited opportunities for success that even the less-advantaged members of our society can achieve. This taxi driver's story tells me that India, too, may be a society that offers similar opportunities for all members of its society to succeed, and thus be a society that will realize and capitalize upon the great potential of its many people.

I would like to give special thanks to Rajendra P. Chitale, managing partner of M. P. Chitale & Co. and M. P. Chitale Law Associates, and his partner Satish Dinavahi, both of whom provided great help to me for background and details regarding the FII registration process and the tax-related issues affecting FII investments. As chartered accountants and attorneys offering financial structuring, tax, and regulatory advice to international institutional investors, FIIs, private-equity investors, and special situations investors, they proved to be extremely knowledgeable and a remarkably valuable resource on these topics.

A very special thanks goes to Carolyn Tiemann, my freelance editor in Singapore, whose careful reading, insightful comments and questions, and considered suggestions resulted in a significantly improved final manuscript. I would also like to thank my editors at John Wiley & Sons, Bill Falloon, Laura Walsh, Emilie Herman, and Christina Verigan for their invaluable assistance in bringing this book to print.

I am indebted to Wall Street legend Alan "Ace" Greenberg, former senior partner and CEO of Bear Stearns & Co., who took a chance 27 years ago and hired an inexperienced new graduate of Cornell for a much-desired seat on the trading desk. Having the privilege of sitting next to or near Ace for 14 years, I learned not only trading-related skills at the highest level, but also how integrity, decisiveness, intelligence, and fairness are integral to the skills of strong, charismatic leadership.

I am most thankful to my father, Jack, who introduced me to the world of Wall Street and investments, and continues to be my great role model of a good person and caring father; and to my mother, Leslie, who instilled in me an inquiring mind, and the confidence to seek success. My parents have taught me to challenge myself, question the status quo and always seek to realize my potential.

My greatest thanks and appreciation go to my terrific family: My wonderful wife, Jaqui, whose continuous unwavering love, support, and patience smoothed the way for this book to be completed, and my fantastic children, Max and Sarah. Life with them all is never dull, and their love and joy make every day a great day.

A.R.K.

About the Author

Alan "Deuce" Kanuk is a 27-year veteran of the investment business. He joined Bear Stearns & Co. in 1980, rose to be Senior Managing Director in Institutional Trading, served on the Equity Management Committee, and was a member of several NYSE committees. In 1995, he moved to Hong Kong to manage Bear Stearns's Asian Equity business and served as a director of Bear Stearns Asia Limited. Along with his Bear Stearns Asia role, Mr. Kanuk's eight years living in Asia included being Managing Director and Deputy Head of Asian Equities for ING, and founder and CEO of his own multimarket electronic trading business. During this time, Mr. Kanuk gained extensive experience with regulators, stock exchanges, trading-related issues, and investment systems in 12 Asian markets, and he dealt with some of the world's largest investment institutions in these markets. He holds a BA in economics from Cornell University in 1980 and an MBA in finance from New York University in 1987.

CHAPTER 1

India's Capital Markets

India's economy has undergone a profound evolution over the last 15 years, due in large part to reforms instituted by Manmohan Singh, the current prime minister, a former finance minister and a respected international economist. These reforms have had significant positive impacts throughout the economy and, specifically, have led to the financial markets developing the institutions, regulations, and practices that have put it on par with the best practices of the world's most respected financial markets.

Reforms in India's capital markets from 1991 to 2006 include the implementation of advanced electronic trading systems in the two primary stock exchanges; demutualization of securities issues, allowing for straight-through processing and electronic settlement on a T+2 settlement basis; implementation of state-of-the-art built-in market security and safeguard mechanisms to insure the safety and integrity of the markets; and the development of a sophisticated set of securities regulations monitored and enforced by the very capable and professional securities regulator, the Securities and Exchange Board of India (SEBI).

This chapter will introduce the reader to the capital markets of India with a discussion about foreign investment, the forms it takes in India, its recent growth and certain measures of that growth, and the factors that stymied growth in previous years. The chapter will examine the sources of rising domestic demand benefiting the capital markets, and then explore the various risks to the market, both internal and external, that all sophisticated investors must understand, consider, and weigh when contemplating their comfortable level of investment exposure to this exciting market.

GROWTH OF FOREIGN INVESTMENT

Reforms instituted over the last 15 years have opened the economy to significantly more foreign investment by easing the rules and procedures for

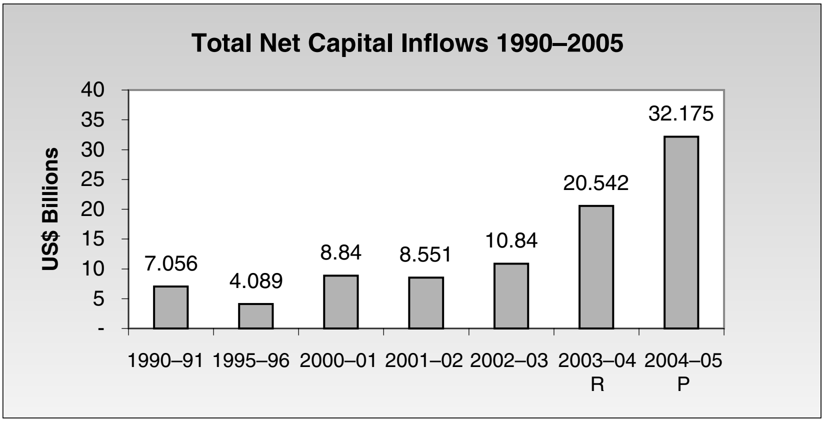

FIGURE 1.1 Total net capital inflows to India, 1990–2005.
Source: RBI 2004–2005 Annual Report, Capital Account Inflows.

both public and private investment. The increase in foreign investment is illustrated in Figures 1.1 through 1.4.

Figure 1.1 shows the growth of overall net capital inflows to India rising eightfold from US$4.09 billion in 1995–1996 to US$32.18 billion in March 2005.

Total equity inflows, made up of portfolio investment and foreign direct investment, have also grown markedly from the early days of reform to FY2005, although growth has not been steady. Figure 1.2 shows that total

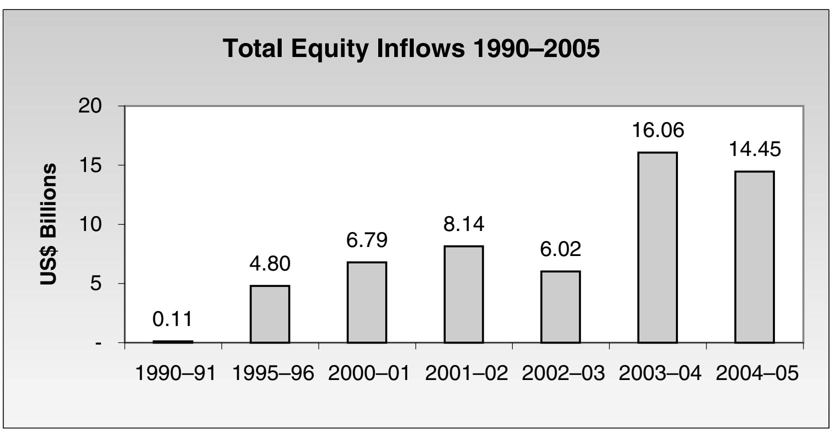

FIGURE 1.2 Total equity inflows to India, 1990–2005.
Source: RBI 2004–2005 Annual Report, Capital Account Inflows.

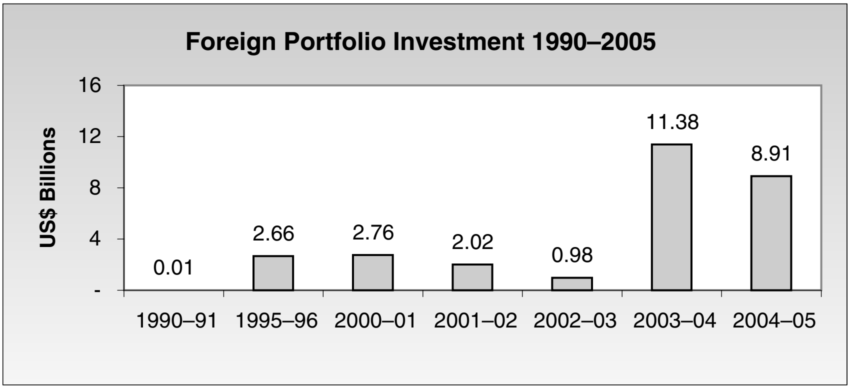

FIGURE 1.3 Foreign portfolio investment, 1990–2005.
Source: RBI 2004–2005 Annual Report, Capital Account Inflows.

equity inflows grew from US$4.8 billion in FY1996 to US$14.45 billion in FY2005, but fell 10 percent year-on-year (yoy) in FY2005 from a year earlier.

Foreign portfolio investment, representing foreign funds coming into the primary and secondary share markets, represented the bulk of the growth in equity inflows and saw a huge surge in interest, particularly in FY2004, when investment increased more than 1,000 percent to US$11.38 billion from less than US$1 billion in FY2003. Again, however, FY2005 demonstrated a

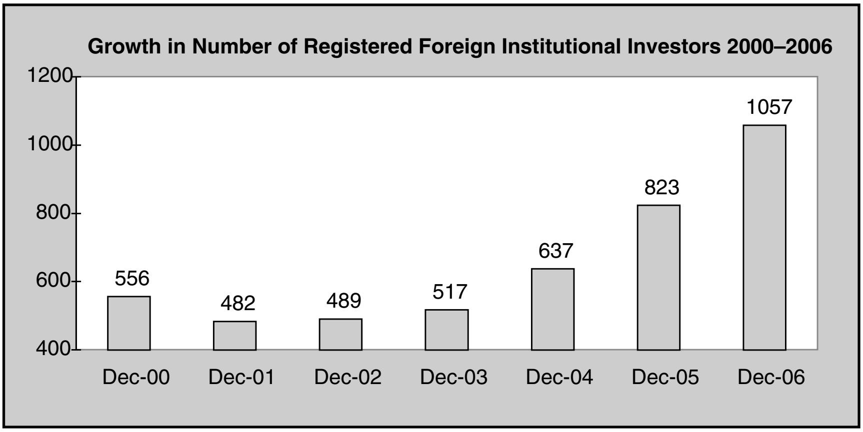

FIGURE 1.4 Growth in foreign institutional investor registrations, December 2000 to December 2006.
Source: The Bombay Stock Exchange.

year-on-year reduction, with net foreign portfolio investment falling 22 percent to US$8.91 billion.

The increase in net portfolio investment has been accompanied by a broader base of foreign investors. Regulations addressing investment in the primary and secondary public markets, monitored by SEBI through the *Foreign Institutional Investor* (FII) regime, have dramatically shortened the FII registration process from several months to a current benchmark of seven business days. This streamlined the registration process and, together with new awareness of the strength of the economy, has led to a steadily increasing number of FIIs, more than doubling in five years from 482 in December 2001 to 1057 in December 2006. Figure 1.4 illustrates this growth.

Foreign direct investment (FDI) has not mimicked the rising interest in portfolio investment and, rather, has experienced modest growth over the reform period from US$2.14 billion in FY1996 to US$5.53 billion in FY2005, an increase of just $2^1/_2$ times over the past 10 years. This modest rise, and fairly level FDI over the previous four years, is somewhat disappointing in light of such factors as: (1) the easing of the regulatory approval process, (2) the increased number of industries now open to foreign investment, (3) the rise in the percentage of domestic entities permitted to be owned by foreigners, and (4) the tremendous demand for infrastructure development. Furthermore, given the overwhelming growth of FDI in China during a similar period to nearly US$50 billion in 2005, FDI in India is severely lagging.

Some economists in India believe that the Reserve Bank of India (RBI) underestimates FDI by ignoring international standards of FDI computation set by the IMF by including only one component of FDI into its calculations, rather than including several other components commonly used by the IMF in its international standard for FDI comparisons. The one component used by the RBI is foreign equity capital reported on the basis of the issue/transfer of equity or preference shares to foreign direct investors. Some of the IMF-recognized components that India does not include when estimating its FDI inflows are:

- Reinvested earnings by foreign companies.
- Proceeds of foreign equity listings and foreign subordinated loans to domestic subsidiaries as part of intercompany (short- and long-term) debt transactions.
- Overseas commercial borrowings (financial leasing, trade credits, grants, and bonds) by foreign direct investors in foreign invested firms.
- Non-cash acquisition of equity, investment made by foreign venture capital investors, earnings data of indirectly held FDI enterprises, control premium, and noncompetition fees, as per the IMF's definition, which are normally included in other countries' statistics.

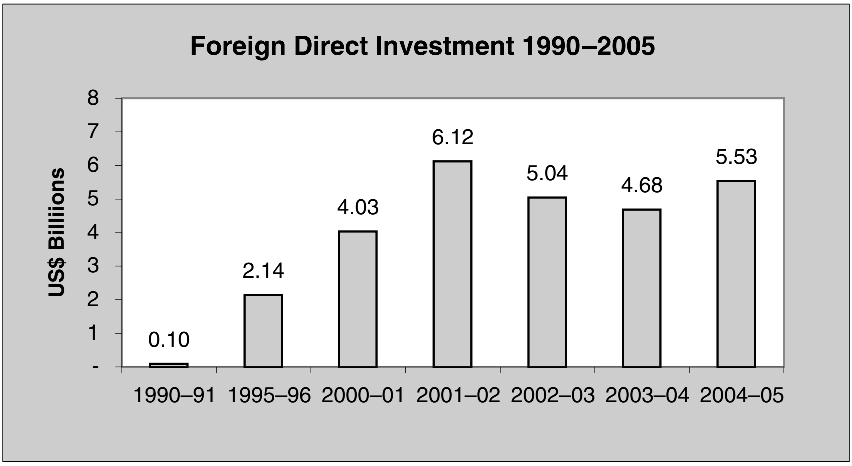

FIGURE 1.5 Foreign direct investment, 1990–2005.
Source: RBI 2004–2005 Annual Report, Capital Account Inflows.

The inclusion of these components would raise the reported FDI, but it would still lag China significantly. Figure 1.5 illustrates India's reported FDI from 1990 to 2005.

IMPROVED FOREIGN INSTITUTIONAL INVESTOR (FII) INTEREST AND ACCESS TO THE PUBLIC MARKETS

Foreign investment in India was limited previously due to two key factors:

1. ***External:*** Foreign investors believed that the market's liquidity was not large enough to, first, take a meaningful position and second, to be able to get out of that position in a timely manner without a significant market impact. This concern kept many large institutional investors away from the market.
2. ***Internal:*** There was fear and concern among Indian regulators and the financial community that the size and, therefore, power of the domestic Indian investor community, both retail and institutional, was too small relative to potential foreign institutional investment to absorb any meaningful foreign flows. In particular, there was fear that a herd instinct among foreign investors to get out of the market would lead to a severe market crash that would overwhelm the domestic investment

community's buying ability and thus lead to a sharp, negative impact not just on public market investors, but in such a way as to reverberate throughout the economy as a whole.

These two factors—market liquidity and domestic investment activity—have both evolved and improved such that they are no longer impediments to greater FII interest in India or India's desire to attract greater FII investment.

Figures 1.6 and 1.7 illustrate the development of liquidity in India's public cash equity markets over the past six years. After experiencing a decline in 2001 and 2002, Bombay Stock Exchange (BSE) liquidity more than tripled from a low of US$69 billion in 2002 to US$215 billion in 2006. National Stock Exchange (NSE) liquidity for cash equities more than tripled from a low of US$139 billion in 2002 to US$426 billion in 2006.

In addition to cash equities, the liquidity in derivatives products, futures, and options, has also increased from less than US$9 billion in 2001 to over US$1.5 trillion in 2006, an increase of over 176 times. Figure 1.8 illustrates this dramatic growth in both the value and number of contracts traded on the NSE.

In addition, the market capitalizations of India's two primary stock exchanges, the BSE and the NSE, have also grown dramatically since 2001. BSE's market cap has grown more than sevenfold from US$111 billion to US$812 billion at the end of 2006, and the NSE has grown more than sixfold from US$123 billion to US$761 billion. This is illustrated in Figures 1.9 and 1.10.

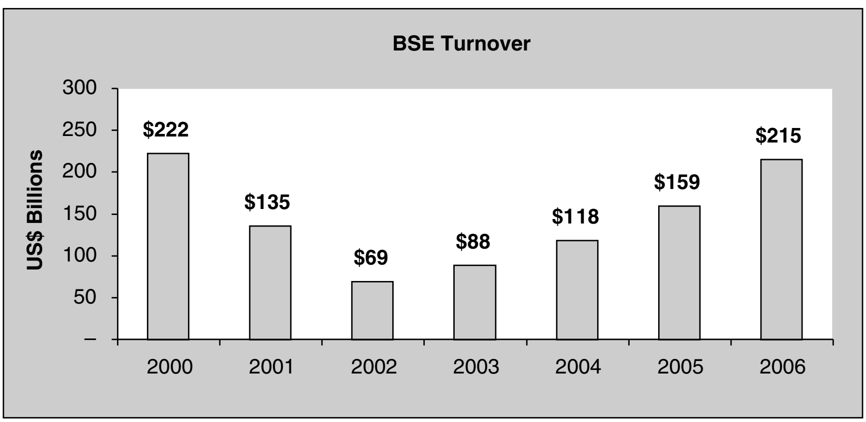

FIGURE 1.6 BSE market turnover, 2000–2006.
Source: The Bombay Stock Exchange Limited.

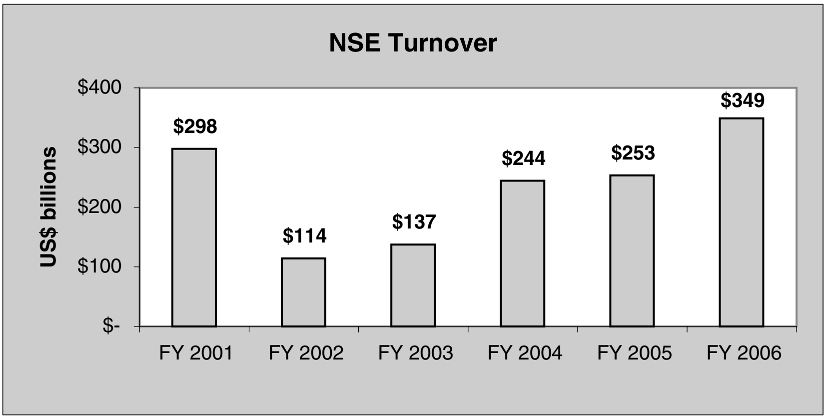

FIGURE 1.7 NSE market turnover, 2001–2006.
Source: The National Stock Exchange.

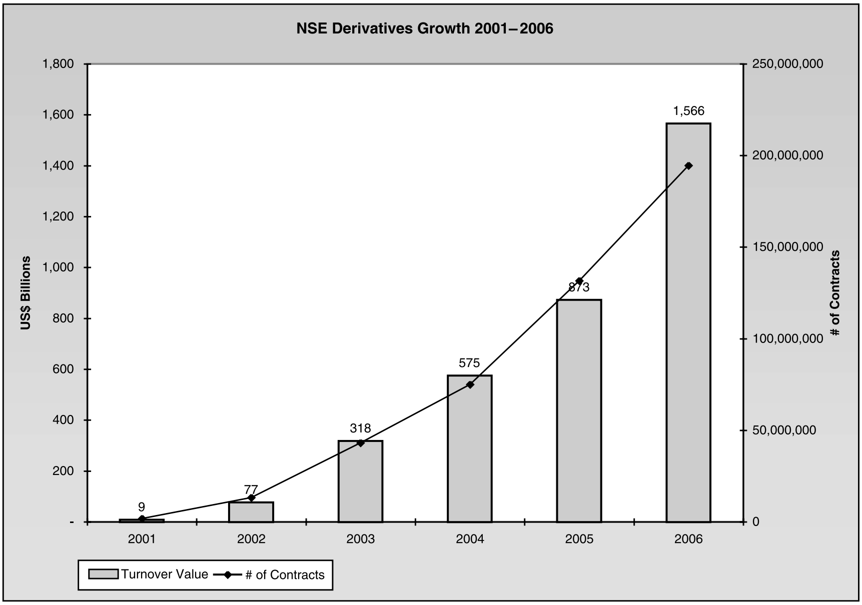

FIGURE 1.8 Growth of NSE derivatives turnover 2001–2006.
Source: The National Stock Exchange.

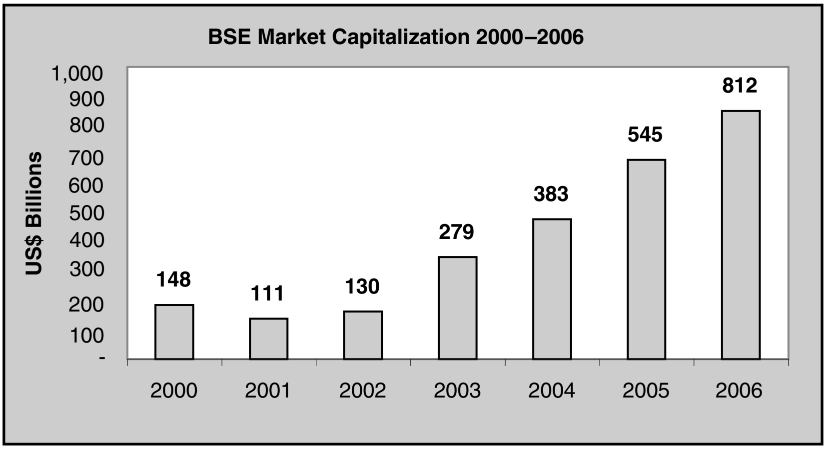

FIGURE 1.9 Growth of BSE's market capitalization 2000–2006.
Source: The Bombay Stock Exchange Limited.

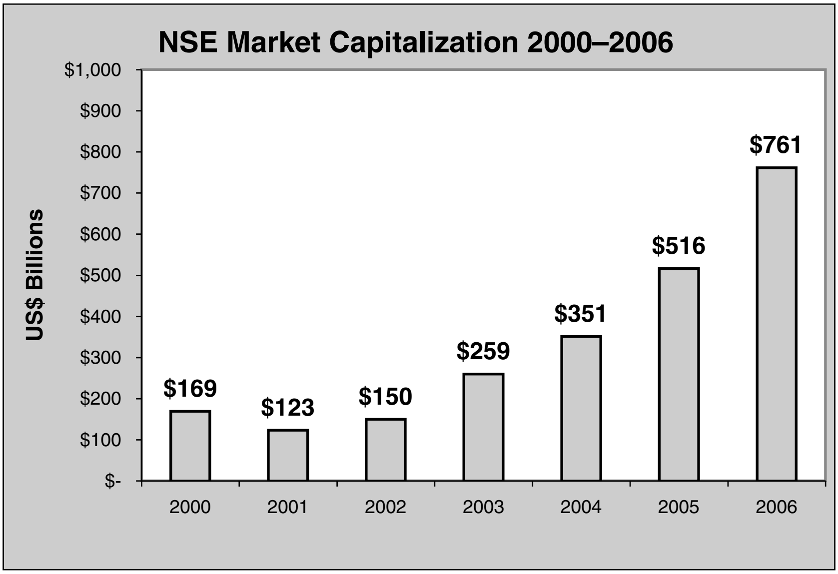

FIGURE 1.10 Growth of NSE's market capitalization 2000–2006.*
*The figures for this chart were converted from the original rupee-denominated figure to US$ using a Rupee:US$ exchange rate of 45:1. This rate is used throughout the book.
Source: The National Stock Exchange.

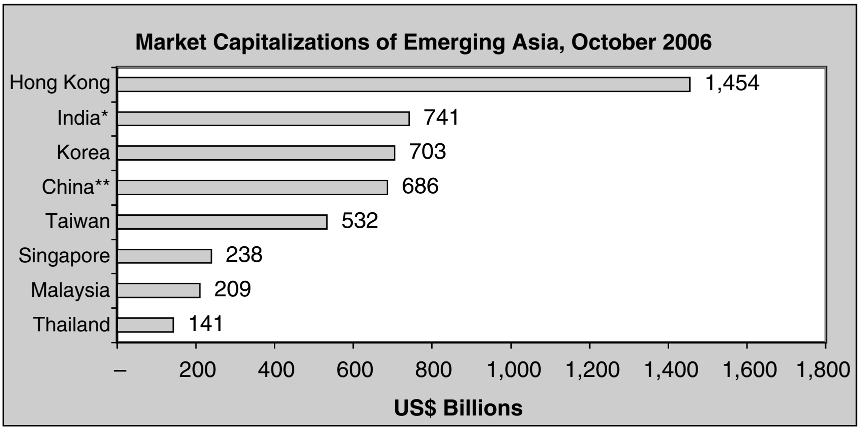

FIGURE 1.11 Comparison of India's BSE market capitalization versus Asian developing markets.
*The figure for India represents the BSE only, given the high percentage of dual listings with the NSE.
**The figure for China represents the Shanghai and Shenzhen Stock Exchanges.
Sources: The stock exchanges of BSE, HKEX, KSE, TSE, KLSE, SZSE, SSE, SET, and SGX.

Figure 1.11 places India's market capitalization in context relative to other Asian financial markets that have attracted considerable foreign interest and portfolio investment over the last decade. Further perspective as to India's market size can be gleaned by comparing it to the market capitalization of Brazil's Bovespa, another emerging market commanding much attention among global investors. At the end of January 2007, the market cap of the BSE was US$852 billion, or 14 percent higher than that of the Bovespa, at $745 billion.[1]

RISING DOMESTIC INVESTMENT DEMAND

Large and growing domestic investment demand in India has helped to alleviate concern among many domestic investors that the purchasing power of domestic investment funds could be overwhelmed by foreign flows, particularly selling flows. The expected significant increase in domestic investment demand over the next five years is the result of a strong economy, a growing middle class of 300 million people, rising incomes, booming domestic retail consumption, and strong household savings rates. Sources of domestic demand include:

Growth of retail investment in the public markets: India enjoys a domestic savings rate of close to 25 percent, but only 2 percent of household savings enters the public markets through direct retail investment in the stock market. This compares to an average of approximately 10 percent in other markets. Domestic retail investors are expected to begin to increase direct investments toward the global norm, thereby enhancing investment demand.

Maturing of the mutual fund industry: While mutual funds have been operating for several years, they are only now coming into their own. Approximately 3 percent of household savings enters the market through mutual funds, and this figure is expected to rise due to several factors in the industry. Many new funds are being launched, funds are posting strong nominal returns in line with booming market indexes, more products are being created, and more marketing is being conducted, which will likely attract more money.

Development of the insurance industry: The insurance industry is growing via both domestic companies and the entry of more foreign insurers into India. The industry is finally taking off and accumulating a surplus, much of which is expected to be invested in the domestic market.

Expected easing of restrictions on pension fund investment options by the government: Currently, all public pension funds are limited to investing in government securities, with no funds reaching the public stock markets. Furthermore, private pension funds also have restrictions on their investment options that require a significant share of their funds to be invested in government securities. There are expectations in the market that the government is considering a loosening of these investment restrictions, which will permit pension funds, both public and private, to invest a greater percentage of their funds in listed stocks.

Expectation that banks will increase exposure in the listed markets: Presently, domestic banks leave a large majority of their assets in government securities. Banks are widely believed to be underexposed to the markets and are likely to begin to increase this exposure over the next several years.

In addition to the above expected sources of domestic demand alleviating many concerns regarding the domestic ability to not be overwhelmed by foreign fund movements, recent anecdotal evidence has shown that domestic investor demand has, in fact, been able to not only absorb the foreign funds for sale, but also to push the market higher. A market sell-off in the spring of 2006 due to foreign selling was viewed as an opportunity for domestic buyers, who absorbed the selling and caused the market to rally. Such anecdotal evidence has supported the easing of not only opinions, but also the practices of regulators and other market participants toward foreign institutional investment.

MARKET RISKS

When evaluating investment prospects, investors must understand and evaluate the risks in a market in order to determine the most prudent and lucrative ways to exploit the investment potential. Risk is not bad in itself, but risk must be identified, understood, defined, and incorporated into a sound investment strategy.

A positive view about prospects for the Indian economy, and by extension, for the financial markets is due to the following factors cited by key market participants: the consistency and strength of earnings growth, a long-developed culture of entrepreneurship, a competitive business environment, the loosening of business restrictions, the strength of the fundamentals underpinning the economic expansion, rising incomes, exploding domestic consumption, and the "flattening of the world" in terms of communication and globalization, as described by author Thomas Friedman in his book *The World Is Flat*. Furthermore, the economy has been resilient to many recent shocks, and many investors and economists expect 8 percent GDP growth (GDP growth was 9.2 percent in the second quarter of FY2006–2007) to continue for many years to come.

Volatility of stock prices in the emerging markets is a risk that must be understood. Despite the positive views among so many key Indian market participants, an April/May 2006 correction in global emerging markets caused by fears of rising interest rates did not spare India's markets. The Indian market, at the time up 34 percent year-on-year, had been one of the world's best performers going into the correction; but then, like other emerging markets, it experienced a volatile period with the benchmark Sensex index falling from a then YTD high in May 2006 of 12,612.38 to a YTD low in June 2006 of 8,929.44, down 44 percent from top to bottom. The Sensex finished the calendar year 2006 at 13,786.91, up approximately 47 percent since December 2005. The broader indexes also experienced sharp volatility, as shown in Table 1.1, with the greatest volatility shown by the BSE Small Cap index, which experienced a swing of 76 percent between the

TABLE 1.1 2006 Stock Price Volatility in BSE Indexes

	2005	2006						
				Year High		Year Low		
Index Name	Year-End Close	Year-End Close	YOY Return	Value	YOY % Chg	Value	YOY % Chg	High/Low Swing (%)
BSE Sensex	9,397.93	13,786.91	47%	14,035.30	49%	8799.01	−6.37%	60%
BSE 100	4,953.28	6,982.56	41%	7,106.59	43%	4471.51	−9.73%	59%
BSE 200	1,186.23	1,655.74	40%	1,684.99	42%	1058.66	−10.75%	59%
BSE 500	3,795.96	5,270.76	39%	5,354.58	41%	3360.85	−11.46%	59%
BSE Midcap	4,427.03	5,805.18	31%	6,070.53	37%	3692.15	−16.60%	64%
BSE Small Cap	5,943.11	6,892.32	16%	7,872.80	32%	4480.45	−24.61%	76%
Sensex P/E	18.07	20.18		21.48		17.9		
BSE 100 P/E	16.47	18.84		20.41		16.67		

Source: The Bombay Stock Exchange Ltd.

year's high and low. The market's high P/E ratios, the one cause for concern expressed by a few cautious economists, dropped from the low 20s for the BSE 100 in May, to 16.67, and then back to 18.84 at the end of 2006.

The May/June 2006 market correction was very much an international phenomenon caused by fears of rising interest rates in the United States and Japan. However, there are several potential India-specific domestic risks to the economy, although most domestic participants had not given them enough weight to lead to a reduction of their exposure. In the contrarian investor viewpoint, the seemingly unanimous bullishness on the Indian economy prior to the correction would be a signal that it was an ideal time to reduce exposure and possibly even look to short the market. The correction was not caused by such thinking, but was certainly a catalyst for those concerned about the market to quickly exit positions. While the Indian market had apparently stabilized from the correction by June 2006 and resumed its upward movement, any overview of India's market would be deficient without noting some of the domestic and international risks that investors should consider.

The following is not an exhaustive or comprehensive list of market risks, but rather some issues that investors must consider when evaluating exposure to India's economy.

Internal Factors

Infrastructure Infrastructure is the first and most-often-cited risk to India's economy. The nation's rapid growth has put a heavy strain on the already stretched facilities. Power and electricity, telecommunications, roads, and airports all desperately need dramatic upgrades due to years of neglect. Frequent power outages require businesses, particularly manufacturing, to maintain backup power generation. The generally poor state of roads—only about 48 percent of the nation's roads are paved—has severely hampered efficient and cost-effective distribution and movement of goods, and port capacity is struggling to accommodate an increase in sea traffic. The good news is that the present government is aware of the problems and has begun addressing them by proposing budgets, reforming infrastructure funding rules, easing investment limits, and exploring public/private partnerships. However, if the reforms fail and/or needed investment doesn't pursue infrastructure projects, the weak infrastructure could become an impediment to continued economic growth.

Government Bureaucracy While much progress has been made to streamline government bureaucracy, considered by many to be one of the most bloated in the world, there is still a great deal of inefficiency experienced by businesses as they try to navigate through the system. Despite reducing the time to start a business from 71 to 25 days, the World Bank's *Doing Business Report 2007* ranks India at number 134 of 175 ranked countries on ease of doing business.

National Budget Deficit The national deficit is being widely watched not only for its potential to negatively impact growth, but also as a sign of the government's fiscal discipline. At the beginning of FY2007, the combined public debt of the federal and state governments stood at 82 percent of India's GDP. This represented a 20 percent increase over the past 10 years.[2] In addition, there was a deficit of 4.1 percent of GDP in FY2006. The government has targeted the FY2007 deficit to narrow to 3.8 percent, and parliament passed a law to trim that deficit to 3 percent by FY2009. These deficit and debt burdens are viewed as potential problems that could impact infrastructure and education reforms and eventually weigh down the market.

Politics and Populism Some influential politicians, including Sonia Gandhi, current president of the Congress Party and one of the most powerful politicians in India, have failed to see the trickle-down effect from the recent expansion and have begun to question the advantage of economic liberalization and globalization for the vast rural population, representing 60 percent of India. If Ms. Gandhi and others decide to take a strong stand, the government will have a difficult time pushing through additional reforms, much less maintaining the present ones. Furthermore, the nature of coalition governments is that small parties essential to the coalition often wield considerable leverage over the government. In July 2006, a small yet important coalition party, the Dravida Munnetra Kazhagam (DMK) party, caused the government to halt all privatizations, pending further review. Privatizations have raised approximately US$12 billion[3] for the government since reform efforts began in 1992, and halting them may negatively impact budget and spending plans. Other such demands from within the coalition could further impact the economic reform efforts.

Demographics Fifty-four percent of the population is under 25 years of age, and 31 percent is under 15 years of age. They must be educated and prepared for employment. Yet, while education at the top levels rivals the best in the world, the capacity, quality, and breadth of access to education for the masses must be improved dramatically. If the economy does not grow fast enough to absorb the growth of the working-age population, estimated at many tens of millions of new people each year, social unrest could develop, which might impede or even reverse some of the recent economic reforms that have driven the strong growth.

The extremes between the very rich and very poor are very acute in India. According to *Forbes* magazine, the number of U.S. dollar billionaires in India doubled in 2006 to 23, and their combined net worth of $99 billion now surpasses that of former Asian leader Japan's 27 billionaires. In the meantime, the latest World Bank estimates report that the percent of the population below the poverty line is 29 percent, and 47 percent of children under five suffer from malnutrition. Many in India fear that this extreme divide, if not addressed, is another potential source of social unrest.

Energy Requirements The fast-growing economy is developing a rapid and expanding need for energy. China and India together account for a significant rise in the global demand for oil and have been very competitive in locating and locking up oil supplies around the world. In addition, India is seeking to expand its civilian nuclear power capacity. India and the United States have negotiated a nuclear parts trade deal which, at the time of the writing of this book, requires a ratification by both countries' legislatures that is controversial in both countries. Should either legislature reject the trade deal, the consequences to the Indian economy may be felt beyond just the energy issue, and influence trade as well. In addition, Australia is the world's largest supplier of uranium that is needed to fuel nuclear reactors and, like the United States, Australia has domestic regulations restricting such trade with nonsignatories to the Nuclear Non-Proliferation Act, of which India is one. If India incurs energy shortages, such restrictions will impede its ability to continue to grow at its current pace.

External Factors

Oil Prices While the economy has so far been resilient regarding rising oil prices, the impact of continued high prices will likely affect growth in several ways. First, the domestic price of oil and gasoline is held stable by subsidies to shield consumers from true market prices. These subsidies are increasing directly with the rising price of oil. While these subsidies are directly borne by the large domestic oil companies in their bottom lines, they are indirectly borne by the government, the major shareholder of the domestic oil companies. To the extent that this impacts the government's budget or deficit, it will impact spending. Second, higher oil prices must eventually flow through to businesses and consumers, which would affect capital spending and consumption and negatively impact economic growth.

Pakistan While relations with Pakistan have been improving over the last several years, the relationship requires constant attention and is by no means trouble free. Tension continues regarding Kashmir, and uncertainty remains about the policies of any post-Musharaf Pakistani government. The July 2006 series of train bombings in Mumbai have been blamed on a Pakistan-based terrorist group (at the time of this writing), putting a further glitch in relations and causing some India–Pakistan conciliation talks to be interrupted. While many Indians dispute that Pakistan negatively impacts India's market, foreigners note the uncertainty, and from an investor's point of view, uncertainty raises the risk premium.

Market-Specific Risks

Expectations versus Fundamentals India's benchmark indexes, even given the May/June 2006 correction, have risen to what many believe are unsustainable levels. The BSE Sensex and the BSE 100 Index had P/E multiples at the end of 2006 of 22.51 and 19.93, respectively. Some analysts think these multiples, and hence company valuations, are not justified by the fundamentals of the underlying companies. Furthermore, there is concern that investors, and some domestic analysts, are not adjusting their expectations, expressed as market multiples, and thus price targets to those fundamentals, as logic would dictate. Rather, they are irrationally doing just the opposite: They are playing with the fundamentals[4] to make them appear higher and thereby fit them into their inflated expectations, and then feel justified by the inflated expectations and associated higher prices. This would inevitably lead to disappointment when earnings are announced and then followed by steep declines in share prices. The existence of this contrary view in the market should be noted by investors.

Supply/Demand Mismatch There is concern that if domestic and foreign investment enters the market too rapidly and in significant quantities the supply of attractive investment opportunities would further increase P/E multiples. This would lead to: (1) unsustainable prices and valuations, (2) the risk of further sharp stock price corrections from high levels, (3) significant losses for domestic and foreign investors, and (4) undesirable volatility. Furthermore, this would likely result in discouraging investors from participating in India's markets, which would impede capital market–funded growth. The counterargument to this is that there are numerous sources of future equity supply that are beginning to enter the market that may effectively fill much of the demand. There are still a number of new sectors that will absorb much of the new money. These include the civil aviation market, which is one of the fastest growing in the world, and the retail sector, presently a largely private, mom-and-pop industry of 12 million shops only just beginning to organize into public chains as retail consumption takes off. Currently, the public retail chains represent just a small percentage of overall consumer activity. In addition, there are several important industries not yet well represented in the stock markets, such as the real estate, telecommunications, and power sectors. Assuming the government continues privatizations, there is anticipation that the government will begin to privatize its vast holdings in the banking and power sectors.

SUMMARY

Economic reforms initiated by the government 15 years ago have led to a dramatic transformation of the once-socialist centrally planned economy into a dynamic, capitalist, entrepreneurial, competitive engine of wealth creation. Firmly established as a key player in the global economy, India is poised to produce sustainable economic growth of 8 percent in the years to come. The financial markets have responded with one of the world's best performances over the last several years and an easing of the rules for foreign institutional participation. The rebound from the sharp May/June 2006 correction shows the growing resilience of the stock markets and growing investment appetite among domestic investors. While risks to this potential economic growth and the stock market exist, India presents a compelling investment opportunity to the savvy investor who can adeptly navigate these risks.

CHAPTER 2

Foreign Portfolio Investment in India

CHAPTER HIGHLIGHTS

- Foreign investors must register with the SEBI and the RBI to invest in India.
- FII applicants must have been in existence for at least one year prior to applying.
- FIIs must be registered with and regulated by an appropriate foreign regulatory authority.
- Standard FII registration requires that at least 70 percent of investments be in equities; debt-only FIIs may hold 100 percent of their investment in debt.
- FIIs and sub-accounts can issue, deal in, or hold offshore derivative instruments such as participation notes, equity-linked notes, or any similar instruments.
- Foreign investors are subject to limits on the size of their investment in Indian securities and derivatives.
- As per BSE and NSE bylaws, a broker cannot charge clients more than 2.5 percent brokerage.
- FIIs must use special nonresident rupee bank accounts for movements of money in regard to the securities markets. All balances can be fully repatriated.
- Short selling has been approved but will not be implemented until the second half of 2007.

Foreign investment in India typically occurs either as *foreign portfolio investment* (FPI) or as *foreign direct investment* (FDI). FDI is generally characterized by an investor investing directly into a company, with the express purpose of exercising a significant degree of influence over the management and operations of that company. FPI is distinguished from FDI as being a passive investment, entailing no active management or control of the issuer by the investor. Purchases of shares in the stock markets are the most common form of portfolio investment. This chapter addresses many of the issues relevant to foreign portfolio investment in India. FDI is discussed in detail in Chapter 3, "Foreign Direct Investment."

The following discussion of FPI will include information about the types of foreign investors recognized by India, the regulatory and registration requirements for foreign investment, approval time periods, entities eligible to be registered, tax considerations, the financial instruments available to FIIs, and investment limits imposed on foreign investment. In addition, this chapter addresses some challenges for U.S. hedge funds as they seek registration in India. Finally, there is a detailed explanation of the FII registration procedures.

FOREIGN INVESTMENT

Foreign portfolio investment by investors in India is technically permissible only for investors registered with the Indian regulatory authority, the *Securities and Exchange Board of India* (SEBI),[a] as *foreign institutional investors*, more commonly referred to as *FIIs*, or as a *sub-account* of an FII.

The strength and vitality of India's economy, accompanied by significant government reforms, have led to increasing interest in India's financial markets among global investors. This phenomenon is best demonstrated by the number of registered foreign institutional investors (FIIs) registered with SEBI, up 66 percent in less than two years and more than doubling from 482 in 2001 to 1,057 in December 2006. (See Figure 2.1.)

Total cumulative equity inflows, including portfolio investment and foreign direct investment, amounted to more than US$106 billion between FY1991 and March 2006 with US$50 billion arriving in the three-year period from FY2004 to FY2006.[1] The bulk of the growth from FY2003's US$6 billion to FY2006's US$20 billion can be found in portfolio investments' twelvefold increase, from $1 billion to $12.5 billion. (A full discussion of investment growth in India can be found in Chapter 1, "India's Capital Markets.") These flows are illustrated in Figures 2.2 and 2.3.

[a]The Securities Exchange Board of India is discussed more fully in Chapter 4, "Safety and Integrity: The Regulator and Market Safeguards."

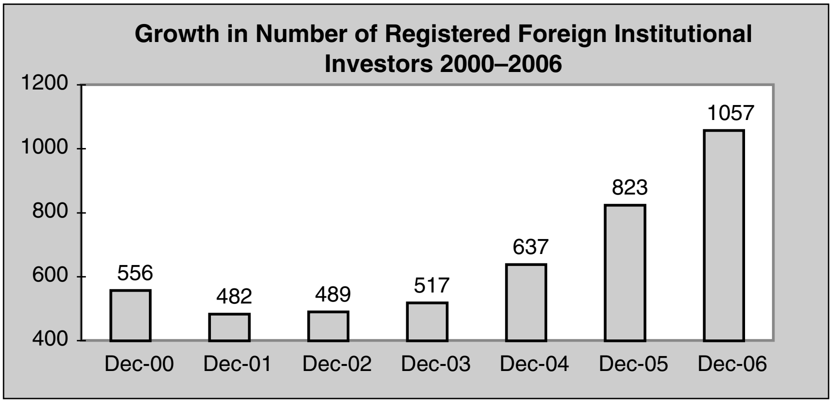

FIGURE 2.1 Growth of registered FIIs, 2000–2006.
Source: Bombay Stock Exchange.

Background

In 1991, India began liberalizing its economy with economic reforms aimed at stimulating the moribund economy. Recognizing the extensive capital requirements necessary to bring about the desired growth and benefits of foreign investment, such as capital to fund business development and technology transfer, the government designed new policies to attract and

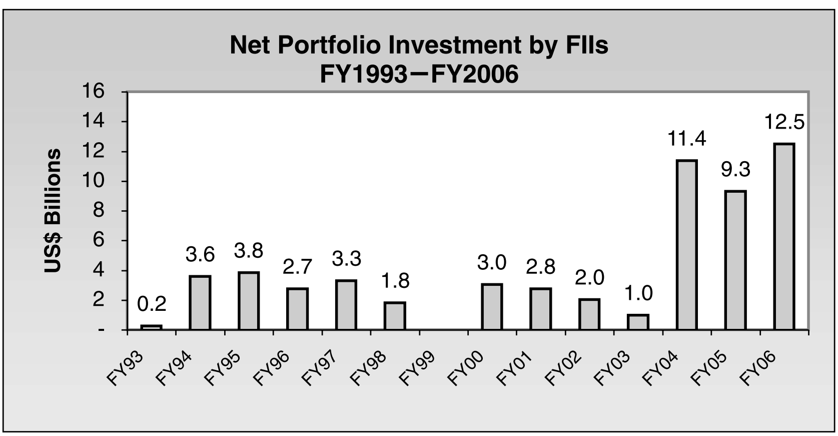

FIGURE 2.2 Net portfolio investment by FIIs, FY1993–FY2006.
Source: Reserve Bank of India.

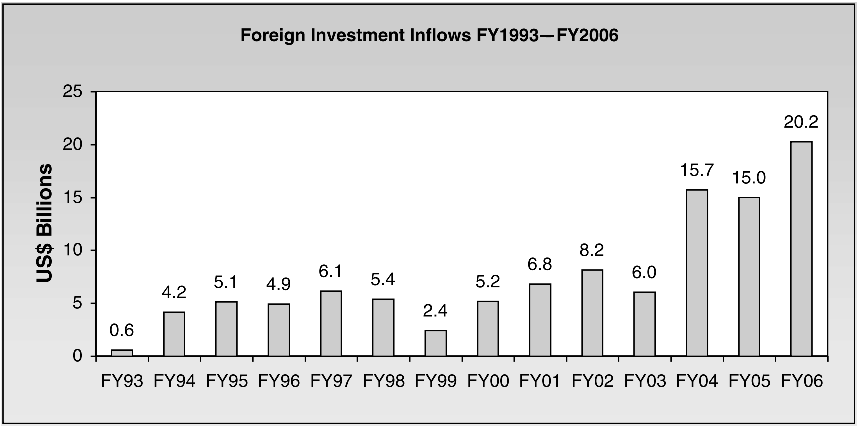

FIGURE 2.3 Annual gross foreign investment flows, FY1993–FY2006.
Source: RBI Annual Report 2005–2006.

manage foreign capital inflows. In a 1992 budget address, then Finance Minister and current Prime Minister Dr. Manmohan Singh introduced policies to give foreign institutional investors access to India's financial markets. Portfolio investment by FIIs in the primary and secondary markets was permitted for the first time in 1992. In addition, foreign direct investment (FDI) was also liberalized. Over the next year, a number of procedures and policies were implemented, many of which are still in effect from the policy written by the Ministry of Finance in 1992.

Statutes Regulating Investment by Foreign Institutional Investors

The primary regulation governing investment by foreign institutional investors is the *Securities and Exchange Board of India (Foreign Institutional Investors) Regulations, 1995*. This has been subsequently amended 23 times.[2] The most recent amendment, called the *Securities and Exchange Board of India (Foreign Institutional Investors) (Amendment) Regulations, 2006*, was issued on June 26, 2006. It addresses, among other issues, certain application procedures.[b] Regulation 5(2) of the *Foreign Exchange Management Act Notification No. 20, 2000* also governs the actions of FIIs with regard to their investments in India.

[b]These new procedures have been incorporated into the text of this book. It should be noted that at the most recent check, the SEBI Web site's application instructions do *not* incorporate these amendments.

Types of Foreign Investors

A foreign investor may choose to participate directly in the Indian market either as a foreign institutional investor (FII), or as a *sub-account*.

- An FII, as defined by SEBI, is "an entity established or incorporated outside India which proposes to make investment in India."
- A sub-account is an individual or entity established or incorporated outside India that invests in India through an FII.

FIIs and sub-accounts must register with the Securities and Exchange Board of India (SEBI) and the Reserve Bank of India (RBI). There is a marked difference in both the eligibility criteria and the registration process between FIIs and sub-accounts, with sub-accounts of FIIs enjoying a less rigorous standard and process. This difference most likely accounts for the fact that an estimated 90 percent of the cumulative FII investments in India are through sub-accounts versus the balance of just 10 percent representing proprietary investments made by FIIs.[3]

Eligible Entities

The following types of entities are eligible to register as an FII:

- Pension funds
- Mutual funds
- Insurance companies
- Investment trusts
- Banks
- University funds
- Endowments
- Foundations
- Charitable trusts and charitable societies
- Asset management companies
- Institutional portfolio managers
- Trustees
- Power-of-attorney holders

Protected cell companies and cells incorporated in Mauritius cannot be registered as FIIs or as sub-accounts. (See below for more discussion about Mauritius as an FII-favored jurisdiction.)

Registration Requirements

As per regulations presented in *SEBI (Foreign Institutional Investors) Regulations, 1995*, and its subsequent 23 amendments, FIIs are required to fulfill the following conditions to qualify for registration:[c]

1. They must have an established "track record, professional competence, financial soundness, experience, general reputation of fairness and integrity."
2. An applicant must be a "fit and proper person."[d]
3. Applicants should be in existence for at least one year. University funds, endowments, foundations, and charitable trusts should be in existence for at least five years.
4. Applicants should be "registered with and regulated by an appropriate foreign regulatory authority in the same capacity in which the application is filed with the SEBI." Registration with authorities that are responsible for incorporation only is not considered an adequate regulatory authority to qualify as an FII.
5. An applicant should be a regulated entity for at least one year prior to application.
6. Applicants are required to obtain permission under the provisions of the *Foreign Exchange Management Act 1999* from the RBI.
7. Applicants must be legally permitted to invest in securities outside the country of their incorporation/establishment.
8. Applicants should not have legal proceedings initiated against them by any statutory authority.
9. An applicant must appoint a local custodian and enter into an agreement with the custodian.[e]
10. An applicant must appoint a designated bank to open and maintain foreign-currency-denominated accounts and nonresident rupee accounts, and to route transactions.
11. A registration fee of US$10,000 is required[f] both for initial applications and for each renewal.

Applicants applying under the "asset management company" category must include a plan with details of the type of funds for which the applicant proposes to make investments for its clients (such as sub-accounts). It is

[c]Requirements Nos. 3, 4, and 5 are discussed in greater detail below with regard to hedge funds.
[d]The definition of and criteria for "fit and proper person" are addressed in SEBI Regulations (*Criteria for Fit and Proper Person*), 2004.
[e]The custodian must monitor investments on behalf of the FII and report such investments to SEBI on a daily basis.
[f]This is one of the key changes affecting FII registration, as amended in the June 26, 2006, SEBI (*Foreign Institutional Investors*) (Amendment) Regulations, 2006. The US$10,000 registration fee is an increase from the previous US$5,000 registration fee.

not uncommon for applicants who apply for FII status under the asset management company category to also submit a simultaneous application for registration of a sub-account fund.

Once approved, FIIs must appoint a compliance officer to monitor compliance with the SEBI Act and all rules and regulations issued by SEBI and the government.

Debt-Only Investors

Standard FII registration requires the FII to invest not less than 70 percent of their total investments in equity-related instruments and up to 30 percent in non-equity instruments. For those FII applicants who are interested only in debt securities, FII regulations permit an FII or sub-account to apply as a debt-only investor who will make all of its investment in debt instruments. This application is known as the "100 percent debt route." The registration procedure under the 100 percent debt route is similar to the non-debt application except for the addition of a statement by the applicant that it wishes to be registered under the 100 percent debt route.

Approval Time Period

The SEBI uses a time-period benchmark for approving FII applications of seven days from receipt, but some approvals for FIIs have been as short as three days. When the applicant is a bank or subsidiary of a bank, SEBI solicits comments from the Reserve Bank of India (RBI) and thus the approval process is usually extended as it becomes dependent upon the RBI review. Incomplete applications or those requiring further information from SEBI will also require additional time.

Rejection of Application

Decisions to reject an application are communicated by SEBI to the applicant in writing stating the grounds on which the application was rejected. Such applicants have 30 days to apply to SEBI for reconsideration, and SEBI is required to give the rejected applicant a hearing.

Validity of Registration

Once registered as an FII, registration and subsequent renewals are valid for three years.[g]

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[g]The time validity of registration and renewal was reduced to three years from five as one of the changes affecting FII registration, as amended in the June 26, 2006, SEBI (Foreign Institutional Investors) (Amendment) Regulations, 2006.

TAX CONSIDERATIONS FOR FIIS

The following discussion should be read as an overview only and as a method of introducing the reader to the many issues that should be considered when seeking registration. In no way should the information presented be viewed as timely beyond the printing of this book, as fully comprehensive, or as tax or legal advice. The reader is strongly encouraged to consult with appropriate tax and legal experts about these issues and their most up-to-date recommendations when seeking FII registration in India.

Foreign investors in India are subject to various taxes related to capital gains and business income. These taxes are applied to entities based on various factors including: (1) the nature of the income and whether it is business income or capital gains income; (2) the length of time of the investment (i.e., long-term vs. short-term capital gains); (3) whether the foreign entity has a "business presence"[h] in India; and (4) the tax jurisdiction of the foreign investor and whether that jurisdiction enjoys with India an Agreement for Avoidance of Double Taxation (AADT).

Long-term capital gains: Long-term capital gains derived from the sale of equity shares or convertible securities executed on a recognized stock exchange in India by an FII or sub-account are exempt from Indian income tax.[i] However, as per an amendment to the Income Tax Act in April 2006,[j] there is a possibility of an alternative tax on the profits of 10.455 percent.[k]

Short-term capital gains: Short-term capital gains achieved through the execution on a recognized stock exchange of India by an FII or sub-account are subject to tax in India at a rate of 10.455 percent,[l] but investors may be able to avoid this tax subject to the provisions of any applicable Agreement for Avoidance of Double Taxation (see below).

[h] A specific status defined by the India tax authorities.
[i] Under section 10(38) of the Income Tax Act, 1961.
[j] The amendment was to section 115JB of the Income Tax Act, 1961.
[k] This includes a surcharge of 2.5 percent and an additional surcharge of 2 percent.
[l] Under section 115AD(1)(ii) read with section 111A of the Income Tax Act, 1961.

Business income: Profits from the sale of securities, derivatives trading, and arbitrage trading can be deemed to be *business income* in certain instances by the Indian tax authorities.[m] Such income might then be subject to India income tax of 41.82 percent. If the FII is a tax resident of a country with which India has a tax treaty (see below), then such business income would be liable to the income tax in India only if the FII maintains a permanent establishment in India, as defined by the relevant AADT. It is for this reason that many FIIs investing in India carefully avoid establishing any kind of presence on the ground in India.

Interest income: Interest income earned by FIIs is taxable in India at a rate of 20.91 percent.[n]

Dividend income: Dividend income earned from portfolio companies is exempt from Indian income tax.[o]

Agreement for avoidance of double taxation: The government of India has entered into tax treaties with certain other countries for the purpose of encouraging investment. A key provision of these treaties is to provide protection to taxpayers against double taxation for capital gains and other income. The practical effect of this is that FIIs domiciled in a jurisdiction that has entered into such a tax treaty with India will not be subject to Indian taxes on their capital gains.

Mauritius and Its Indian Bilateral Tax Treaty

The country of Mauritius is home to a large majority of India's registered FIIs primarily because it is among a very few countries that has a bilateral tax treaty with India, since 1983, that includes capital gains among its protected income classes. Thus, as explained above, the Indian-based capital gains earnings of a Mauritius-registered entity are exempt from certain Indian capital gains taxes. As a result, a majority of FIIs set up and register investment vehicles in Mauritius to take advantage of these tax advantages to which such Mauritius-based entities are entitled. This is best illustrated by Table 2.1, which lists the country of origin for foreign direct investment flows. It is interesting to note that flows originating from Mauritius

[m]As is true for the rest of this section, the reader should consult with an Indian tax expert to learn the exact nature of income that might be deemed "business income" by the tax authorities.

[n]Under section 115AD of the Income-Tax Act, 1961.

[o]Under section 10(34) of the Income-Tax Act, 1961.

TABLE 2.1 Country of Origin for Foreign Direct Investment

Fiscal Year	2003–2004		2004–2005		2005–2006	
Total FDI Flows (US$ millions)	$1,462		$2,320		$3,358	
Mauritius	$381	26%	$820	35%	$1,363	41%
United States	297	20%	469	20%	346	10%
UK	157	11%	84	4%	261	8%
Germany	69	4.7%	143	6.2%	45	1.3%
Netherlands	197	13.5%	196	8.4%	50	1.5%
Japan	67	4.6%	122	5.3%	86	2.6%
France	34	2.3%	44	1.9%	12	0.4%
Singapore	15	1.0%	64	2.8%	166	4.9%
Switzerland	5	0.3%	64	2.8%	68	2.0%
South Korea	22	1.5%	14	0.6%	61	1.8%
Others	218	15%	300	13%	901	27%

Source: Reserve Bank of India, Annual Report 2005–2006.

increased from 26 percent of all flows in the 2003–2004 period to 41 percent in 2005–2006, while those originating from the United States fell from 20 percent to 10 percent of all flows in the same period. It should be recognized that *country of origin* indicates where the FII is incorporated and where the remittance into India came from, not necessarily the origin of its ultimate end beneficiary.

Investors seeking FII status would be wise to seek tax advice from appropriate experts to ascertain whether such a structure, or another structure, is the most suitable for their purposes. SEBI officials have been clear, however, that when they review applications and eligibility, they do look through such vehicles to the home country of the underlying investor as if the application were submitted from that entity's home country.

While Mauritius-registration has tended to be a popular approach to address these tax issues, there has been talk of a recent tax ruling by the Indian tax authorities with regard to a large American-based fund management company. The fund company is believed to have successfully argued to the Indian tax authorities that, as its business is the buying and selling of securities, the profits from such business activities should be deemed business income rather than capital gains income. Furthermore, if deemed business income, any associated taxes against such income should not fall under capital gains rules but rather business income rules. Further, it argued, this business income, from a foreign entity with no "business presence" in India, may in fact not be subject to any taxes at all. Based on the success of that argument, the fund company bypassed Mauritius incorporation and registered directly from the United States. While this situation and ruling cannot be verified at this printing, the implications of such a ruling would impact how potential FIIs might structure their application.

This section should give readers an appreciation for many of the issues to be taken into account when structuring an FII registration, and the possible complexities associated with creating a tax-efficient investment structure. Furthermore, the reader should gain an appreciation of the value that can be obtained from clever tax advice received from an Indian tax and legal expert.

REPATRIATION OF INVESTMENT FUNDS

Although India maintains strict control over the movement of funds by domestic entities to offshore jurisdictions, the investment funds of FIIs are expressly granted full repatriation rights, as granted in the *Foreign Exchange Management Act* (FEMA). As per the FEMA, approved FIIs are permitted to open special nonresident rupee accounts dedicated purely for inward remittances and for meeting payment obligations for transactions in the securities market. All balances in these special nonresident rupee accounts can be repatriated in full.

CHALLENGES FOR U.S. HEDGE FUND FIIS

Hedge funds registered in the United States under the Investment Advisors Act of 1940 tend to meet most of the criteria for registration under the asset management companies category. However, there is considerable reluctance within SEBI and the government to approve or encourage such applicants. This reluctance is discussed in detail in the November 2005 *Report of the Expert Group on Encouraging FII Flows and Checking the Vulnerability of Capital Markets to Speculative Flows*.

While the eligibility guidelines for FII registration are very specific, issues that often elicit requests from SEBI for further elaboration from the applicant (and thus slow down application approvals) revolve around requirement No. 4, listed on page 24 in the Registration Requirements: (1) the requirement of being regulated in one's home country; (2) the nature of the regulation itself under which it is regulated; as well as (3) the nature of the specific regulator regulating it.

Eligibility requirements (see Nos. 4 and 5) state that the applicant must be a regulated entity in its home country for at least one year and that the nature of the investor/applicant's regulation by its home country is in a capacity similar to that for which the application is being filed, but SEBI extends these requirements when considering applications. SEBI's opinion of the nature of the foreign regulator and the nature of the regulation regulating the applicant is subjective. It asks questions such as: (1) Is the regulatory regime under which the applicant operates a rigorous regime, or is it a loose oversight? and (2) Is the nature of the specific regulation under which the applicant operates considered adequate by SEBI as to the depth of the regulation, or is that regulation considered inadequate for the interests of SEBI? These issues are discussed in greater detail next.

Home Regulator

Simply being regulated by a regulator in one's home country is not enough to meet SEBI's requirement. Instead, SEBI is interested in the nature of the regulator and the strictness of the regulatory regime. Are the local rules strict and enforced, or are they loose and ignored? Generally, if an applicant is regulated by one of the internationally accepted regulators of developed markets—regulators such as the SEC (U.S.), FSA (UK), ASIC (Australia), SFC (Hong Kong), or MAS (Singapore)—SEBI is satisfied with the quality of the regulator.

However, if a regulatory regime is not known to be rigorous, the application may be delayed or rejected. In situations where the applicant is applying as an entity from a tax haven jurisdiction, such as Mauritius, Jersey, the Cayman Islands, or the British Virgin Islands, SEBI may examine the entity further by looking beyond the technical home country of the applicant (the tax haven) and also examine the individual applicant's true home country, the jurisdiction of that home country, the regulator in the home country, and its ultimate registration/regulation.

For example, an application by a Mauritius-registered entity whose ultimate owner is a U.S. hedge fund manager will result in the investigation not only of the Mauritius entity and its principals, but also of the U.S.-based hedge fund manager, the fitness of the manager, the U.S. regime under which it is regulated, the U.S. regulator (the SEC), and the suitability of its regulation with regard to that hedge fund.

Specific Regulations under Which the Applicant Operates

After the SEBI is satisfied with the regulator, it then examines the specific regulations that the applicant is subject to and whether the regulations are adequate according to the standards of the SEBI.

The specific regulations are particularly relevant to hedge funds, especially those in the United States. While the U.S. Securities and Exchange

Commission (SEC) is a highly regarded regulator, U.S. hedge funds come under greater scrutiny by the SEBI because of: (1) the one-year regulation requirement for eligibility, and (2) the nature of specific regulation in the United States regulating hedge funds.

As of the date of this writing, the regulation of U.S. hedge funds is an issue fraught with confusion and uncertainty. In 2005, the U.S. SEC passed a rule requiring hedge funds with assets in excess of US$30 million to register with the SEC as investment advisers and submit to occasional inspections of their books and records. This rule went into effect in February 2006, at which time many hedge funds complied and registered. However, the rule was challenged in court and voided by a U.S. Court of Appeals in July 2006. At the time of this writing, the SEC was still deciding whether to appeal the recent ruling, seek legislation reinstating it, or pursue some other course of action. Thus, hedge fund applicants for FII registration face two questions:

1. Are they registered with any entity? If not, their eligibility becomes problematic.
2. Does SEBI regard the regulation under which the hedge funds are registered as in providing adequate oversight to the standard that SEBI is seeking? Prior to the voidance of the registration requirement, SEBI had not yet reached a conclusion regarding the nature of the recent U.S. hedge fund regulation and whether it is simply an informative process or a more rigorous oversight of hedge fund operations. Up to May 2006, SEBI had not acted favorably on any U.S. hedge fund applications while it continued to review the nature of the regulation and whether SEBI considers it adequate for participation in India's financial markets. With the recent court ruling voiding the registration requirement altogether, SEBI approval will remain problematic.

In addition to the difficulties in meeting the FII registration eligibility requirements for hedge fund applications in India, U.S. hedge funds also receive greater scrutiny from SEBI because of two other concerns: (1) a concern for mass movements of funds out of the market, and (2) the origination of investor money.

Mass Movement of Funds

The potential for the mass movement of funds out of the market—which could cause a short period of concentrated selling beyond what the domestic market can easily or comfortably absorb—remains a concern throughout the developing market, and India is no exception. Indian regulators have been concerned about the possibility of a mass foreign investor exodus from the market that would overwhelm the buying power of domestic investors, thus leading to a sharp correction in the market. Recent and expected future growth of domestic investor demand has mitigated some of these concerns. However, these concerns have not disappeared, and SEBI remains conscious—and wary—of the issue. Thus, the nature of a particular applicant's investment strategy and style will be scrutinized to determine the quality of the FII's contribution to the market.

In the minds of some observers in Southeast Asia, including government bureaucrats and politicians such as former Malaysian Prime Minister Mahathir, the Asian economic crisis in the late 1990s was caused by hedge funds and the havoc that their fast trading can cause, particularly when operating under a herd mentality. As SEBI is concerned about maintaining the quality of FII flows, it seeks to approve only investors it considers responsible and beneficial to India's capital markets. The regulators are proud to note that every year from FY1993 until FY2006 (ending March 31, 2006) there have been net positive flows from FIIs into India, with the only exception being 1999, when net outflows totaled a mere US$166 million. For 2007, (encompassing the steep market corrections in April–June 2006 and February 2007) net equity investment flows were up US$5.73 billion and net FII investment in debt was up $1.27 billion, resulting in a net positive investment flow of almost US$7.0 billion for FY2007.

Source of Funds

The Indian government remains vigilant about knowing the source of funds coming into its markets. This vigilance includes, but extends beyond, global money laundering concerns from illegal sources of money. Of particular concern to India is what is known as *round-tripping*. Round-tripping concerns the return of money to India in respectable form from money that originally left India illegally. This might be money earned in the underground market or money for which taxes were never paid.

India has currency controls for citizens on the ability to move money outside of the country. The government wants to stop the illegal outflows and wants to ensure that money coming back into India is not illegally exported money. Thus, investments in India by nonresident Indians, persons of Indian origin, and overseas-controlled businesses (known as Overseas Corporate Bodies[p]) are monitored closely and fall under rules that are different

[p]Overseas Corporate Bodies (OCBs) are defined as entities that are predominantly (at least 60 percent) owned, directly or indirectly, by individuals of Indian nationality or origin resident outside India, and include overseas companies, partnership firms, societies, and other corporate entities.

from other foreign investors. This issue may impact hedge fund applicants because of their perceived lack of transparency as to the identity of underlying investors, and whether too large a block of a fund might in reality be round-tripping money returning to India.

Growing Acceptance of Hedge Funds

In the spring of 2007, the Chairman of SEBI, M. Damodaran, appeared to soften his stance regarding hedge fund registration in the Indian markets. A proposal is under consideration to permit the registration of any foreign entity which agrees to make certain disclosures about their operations. This shift from a previously harder line, rejecting attempts by hedge funds to register, is thought to be a result of the widely accepted reality that hedge funds are already participating in the Indian markets in a significant way, but doing so under the radar, without disclosure to the regulators. In 2006, approximately 30 percent of the estimated US$200 billion in FII activity was in the form of participatory notes, and a significant percentage of that activity is thought to be hedge fund driven. As such, SEBI has apparently decided that it is better to have the hedge funds operate as registered entities in an open, transparent, and direct way, with full disclosure, rather than through the hidden, indirect route behind off-shore participatory notes. In response to critics expressing concern about the feared destabilizing effect that hedge funds can impose on a stock market, the SEBI Chairman noted that since the hedge funds are in the market already, albeit hidden, their ability to destabilize will only be reduced by registration. Time will tell how this proposal to be more inclusive of hedge funds will develop, but the trend is definitely positive for hedge fund acceptance.

FINANCIAL INSTRUMENTS AVAILABLE TO FIIS

Foreign investors registered with SEBI can invest in the following financial instruments:

- Securities in the primary and secondary markets, including shares, debentures, and warrants of companies, unlisted, listed, or to be listed, on a recognized stock exchange in India
- Units of mutual funds
- Dated government securities
- Derivatives traded on a recognized stock exchange and subject to operational guidelines as specified by the SEBI, the RBI, and other various regulatory authorities
- Commercial paper

The following are the main financial products/instruments traded in the secondary market:

Equity:
- Equity shares
- Rights issues and rights shares
- Bonus shares
- Preferred stock and preference shares
- Security receipts
- Cumulative preference shares
- Cumulative convertible preference shares
- Participating preference shares

Derivatives:
- Futures
- Options
- Participatory notes

Fixed Income:
- Government securities
- Bonds
  - Zero-coupon bonds
  - Convertible bonds
- Debentures
- Commercial paper
- Treasury bills

Short Selling

Short selling is not permitted in India at the present time. However, the Minister of Finance and SEBI announced in the 2007–2008 Annual Budget Speech that short selling by domestic and foreign institutions will be approved in 2007. The rules and regulations surrounding short selling have yet to be finalized, and the settlement community will need to organize a stock lending and borrowing regime to support the business. In the meantime, market participants acknowledge that investors seeking to hedge positions or pursue a downside, short strategy can utilize the index and single stock futures and options, which trade for in excess of 180[q] underlying stocks and four indexes.

[q]The BSE and NSE trade single stock futures and options for 155 underlying stocks, as of 1Q2007.

Offshore Derivatives and Participatory Notes

Investors, both registered and unregistered with SEBI, may access the Indian market through the use of offshore derivative instruments known as participatory notes (or P-notes). Participatory notes are equity-linked instruments that track the performance of underlying equity securities listed on any stock exchange in India. FIIs and sub-accounts may issue, deal in, and hold participatory notes. Participatory notes are generally created by one of the large international investment banks with FII status in response to an investor expressing interest in a particular Indian stock. The FII investment bank would then purchase that stock for its own account and issue to the investor what is essentially a contract guaranteeing the investor a return on that contract exactly[r] matching the return on the underlying stock.[s] The use by foreign investors of participatory notes has steadily increased since the government began tracking them in September 2003, when approximately 26 percent of net FII investments was through participatory notes. In fiscal year 2004–2005, ending March 2005, participatory notes represented, on average, 32.69 percent of monthly net FII investment, and in the first five months of fiscal 2005–2006, this proportion increased again, to 40.31 percent.[4]

Regulatory Caution Regarding Participatory Notes Although foreign investment in India through participatory notes has been growing, SEBI, the Ministry of Finance, and the RBI have become increasing uncomfortable with their growing popularity. The financial market regulators have always maintained that it is imperative to monitor foreign investment not only with regard to the size of the investments but also with regard to the sources of the funds behind them. Of particular concern has been the ability to track the import of "dirty" money, enforce anti-money-laundering rules, monitor the return of NRI/PIO/OCB[t] money, and prevent the investment of fast money

[r]Different issuers of participatory notes may offer investors variations on the idea and features specific to that contract or investor.

[s]As of the end of June 2005, the most recent data available, only 17 registered FIIs out of the then-registered 733 FIIs had issued PNs. The total value of underlying investments in equity represented by the PNs was Rs. 67,185 crore (~US$15 billion), representing about 25 percent of the cumulative net investments in equities by FIIs of Rs261,334 crore (~US$59.4 billion) (Report of the Expert Group on Encouraging FII Flows and Checking the Vulnerability of Capital Markets to Speculative Flows, November 2005, annex III).

[t]Non-Resident Indians/Persons of Indian Origin/Overseas Corporate Bodies. Of particular concern to Indian authorities is the return to India of money that left the country illegally, either because it was earned in illegal ways or because it was the result of illegal tax avoidance.

(i.e., hedge funds). As participatory notes were issued offshore by foreign entities registered as FIIs, and then the holders of the participatory notes had in some cases the ability to sell them on to others, the number of layers between the regulator and the ultimate beneficial owner grew, impeding the ability of the regulators to have complete knowledge of the beneficial owner. The RBI response to the government's *Report of the Expert Group on Encouraging FII Flows and Checking the Vulnerability of Capital Markets to Speculative Flows*, November 2005, was to recommend a phasing out of the participatory note issuance due to this lack of knowledge issues. It was decided to maintain the rule implemented by SEBI in February 2004 that required FIIs to issue P-notes only to regulated entities and not to any non-regulated entities such as hedge funds, and that further transfers, if any, must be only to other regulated entities. P-notes issued prior to February 2004 to nonregulated entities are permitted to expire or to be wound down on maturity, or within a period of five years, whichever is earlier. Furthermore, the RBI supported SEBI's ability to gain full knowledge of the beneficial owners from issuing FIIs through regular reporting requirements.

Why Investors Use Participatory Notes Foreign investors choosing to participate in India's markets through participatory notes, rather than directly as an FII or sub-account, fall into several groups.

One group of investors uses participatory notes because it is ineligible to apply for FII status. Many hedge funds fall into this group for the reasons discussed above.

Another group of investors, some of whom might easily obtain approval as an FII, choose not to do so because the participatory note route is quick and easy. The major advantages to using the participatory note route of investing in India are that an investor can avoid going through the registration process with SEBI, does not have to pay attorney and accounting fees to prepare the application, does not have to pay the application fee, does not have to hire custodians and clearing agents, and does not have to deal with local brokers. FII-eligible entities might choose to use participatory notes because they do not anticipate active investment activity in India, but rather sporadic or small involvement, possibly as part of a global investment strategy in which India is only a small percentage of the portfolio.

A third group of investors, some of whom have FII status, use the participatory note route for some trades to ensure that their identity is hidden from the market (except from the participatory note issuer, of course). While trading with a broker in any country is supposed to be confidential, and the BSE BOLT and NSE NEAT trading systems are anonymous with regard to the underlying client, inevitably investor names sometimes get out into the market to the detriment of the investor. As this is a problem worldwide in every marketplace, particularly but by no means exclusively in the emerging markets, one method investors in India have found to stay anonymous is to trade through participatory notes.

Disadvantages to Using Participatory Notes There are two distinct disadvantages to using participatory notes: (1) The cost of using participatory notes is higher than going direct, and (2) the buyer is a captured client of the participatory note issuer in that it must exit the position through the broker/issuer of the participatory note. The cost disadvantage is debatable, however, when one weighs the high single-trade execution cost of a participatory note against the startup cost of the application process, including the US$10,000 registration fee and the fees of attorneys and others. Obviously, the more trading one does, the more advantageous registration becomes.

Eligibility to Use Participatory Notes SEBI regulations officially define entities that are eligible to subscribe and invest in participatory notes as:[5]

1. Any entity incorporated in a jurisdiction that requires filing of constitutional and/or other documents with a registrar of companies or comparable regulatory agency or body under the applicable companies legislation in that jurisdiction.
2. Any entity that is regulated, authorized, or supervised by a central bank, such as the Bank of England, the U.S. Federal Reserve, the Hong Kong Monetary Authority, the Monetary Authority of Singapore, or any other similar body, provided that the entity must not only be authorized but also be regulated by some of the aforesaid regulatory bodies.
3. Any entity that is regulated, authorized, or supervised by a securities or futures commission, such as the Financial Services Authority (UK), the Securities and Exchange Commission (U.S.), the Commodities Futures Trading Commission (U.S.), the Securities and Futures Commission (Hong Kong or Taiwan), Australian Securities and Investments Commission (Australia), or other securities or futures authority or commission in any country, state, or territory.
4. Any entity that is a member of securities or futures exchanges such as the New York Stock Exchange (U.S.), London Stock Exchange (UK), Tokyo Stock Exchange (Japan), NASD (U.S.), or other similar self-regulatory securities or futures authority or commission within any country, state, or territory, provided that the aforementioned self-regulatory organizations are ultimately accountable to the respective securities and financial market regulators.

5. Any individual or entity (such as a fund, trust, collective investment scheme, investment company, or limited partnership) whose investment advisory function is managed by an entity satisfying the criteria of (1), (2), (3), or (4) above.

Reporting Requirements for FIIs and Sub-Accounts Issuing Participatory Notes

- FIIs and sub-accounts that issue, renew, cancel, or redeem participatory notes are required to report their activity to SEBI on a monthly basis by the seventh day of the following month.
- FIIs and sub-accounts investing in or subscribing to participatory notes, access products, offshore derivative instruments, or any such type of instrument and security with underlying Indian market securities are required to report on a quarterly basis (January–March, April–June, July–September, and October–December).
- FIIs and sub-accounts that do not issue participatory notes but trade and hold Indian securities during a reporting quarter (January–March, April–June, July–September, and October–December) are required to submit “nil” undertaking on a quarterly basis.
- FIIs and sub-accounts that do not issue participatory notes and do not have trades or holdings in Indian securities during a reporting quarter (January–March, April–June, July–September, and October–December) are not required to report for that reporting quarter.

American Depositary Receipts (ADRs) and Global Depositary Receipts (GDRs)

Foreign investors can also access shares of certain Indian companies without any form of registration or Indian regulation through the use of American Depositary Receipts (ADRs) and Global Depositary Receipts (GDRs) listed in the United States, London, and elsewhere. Purchasing Depositary Receipts is the fastest and easiest way for a foreign investor to gain investment exposure and is available to all investors in the United States, both institutional and retail, who can purchase local U.S. stocks. Depositary Receipts are similar to the abovementioned participatory notes in that they are equity-linked instruments that track the performance of their underlying security. The issuances of ADRs/GDRs for Indian companies are deemed by the Indian authorities to be a form of foreign direct investment (FDI) and thus issuers must abide by applicable existing FDI policy as set by the Ministry of Finance and Reserve Bank of India. All ADRs and most GDRs are denominated in U.S. dollars, although GDRs can be denominated in another currency. The *Issue of Foreign Currency Convertible Bonds and Ordinary Shares (Through Depositary Receipt Mechanism) Scheme, 1993* addresses many of the issues surrounding GDRs and ADRs.

Definitions

American Depositary Receipt (ADR) An American Depositary Receipt (ADR) is a certificate issued by a U.S. bank that represents a fixed ratio of shares of a foreign ordinary[u] stock. ADRs trade in the U.S. markets either listed on an exchange or on NASDAQ. Furthermore, they are quoted, traded, and settled in U.S. dollars, regardless of the currency of the underlying ordinary share. The concept of Depositary Receipts was created by the legendary banker J. P. Morgan in the 1920s to assist American investors to purchase shares listed in London. At the time, Mr. Morgan sought to ease the foreign investment process for Americans by handling such aspects as currency conversion, settlement, and dividend collection. The success of the first ADR spawned what is today an entire security class and may be one of the first derivatives ever created.

ADRs are initially created when a corporate issuer issues to a U.S. bank underlying ordinary shares that are kept at the ADR-issuing bank's local custodian bank. The U.S. bank then issues receipts against these deposited shares, and it is these receipts that are the American Depositary Receipts. As noted above, the ADRs represent a fixed ratio of ordinary shares that can be greater than or equal to 1:1. For example, if the ratio is 3:1, then each ADR represents 3 underlying shares. If the ratio is 0.5:1, two ADRs would represent 1 underlying share. In theory, the price of an ADR should be exactly equivalent to its intrinsic price—the aggregate price of the corresponding number of underlying shares. In reality, ADRs tend to trade around the intrinsic price, often at a premium but occasionally at a discount. This is discussed in greater depth below, in the section titled "ADR/Ordinary Arbitrage."

American Depositary Share (ADS) An American Depositary Share (ADS) is the actual underlying ordinary share held by the U.S. depositary bank that issued the ADR and is the share(s) for which the ADR certificate is the receipt. Many people use the term ADS and ADRs interchangeably.

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[u] An *ordinary* stock refers to the shares trading in the local domestic primary exchange where the issuing company is listed. Ordinary shares are distinguished from overseas listings and other instruments/derivatives representing the primary shares.

Global Depositary Receipt (GDR) Global Depositary Receipts (GDRs) are certificates issued outside of the United States by a non-U.S. bank that represent a fixed ratio of shares of a foreign ordinary stock. GDRs are very similar to ADRs. The key differences are that they are issued by a non-U.S. bank, they may trade in currencies other than U.S. dollars, they are not listed on the U.S. exchanges, and they are not subject to the U.S. SEC registration requirements and U.S. regulations such as Sarbanes-Oxley. Some issuers might prefer issuing GDRs over ADRs to avoid the SEC requirements, even if it means forgoing access to the retail U.S. investor.

Sponsored ADRs Sponsored ADRs are those that were created and managed by the underlying company. Unsponsored ADRs are created by banks without the company's involvement. The NYSE and NASDAQ in the United States trade only sponsored ADRs.

Benefits of ADRs/GDRs to Investors ADRs are purchased by U.S. investors for several reasons, most of which revolve around the ease with which they provide exposure to foreign stocks; they cater to investors either unfamiliar with or uncomfortable with overseas investment. Specifically, the benefits include:

- *U.S. dollar denominated:* ADRs are quoted, trade, and settle in U.S. dollars. The investor does not need to worry about currency conversion when quoting the stock or to effect settlement. Furthermore, the investor does not need to maintain a foreign currency account at his or her broker to hold the position, as might be required if holding the foreign ordinary shares. All this said, however, the investor is still subject to the risks of currency fluctuations in terms of converting the intrinsic value of the ADR's underlying shares into U.S. dollars.
- *SEC regulated:* ADRs listed and traded in the United States are registered with and subject to the rules and regulations of the U.S. Securities and Exchange Commission, giving investors some peace of mind regarding the legitimacy of the shares they are purchasing/holding.
- *U.S. dollar dividends:* For those underlying companies that pay dividends to shareholders, owners of ADRs receive their dividends in U.S. dollars and need not worry about handling the currency conversion of locally denominated dividends.
- *Corporate actions:* Any corporate actions instituted by the underlying company get addressed by the ADR-issuing Depositary Bank on behalf of the ADR owner. Corporate actions might include such actions as stock splits, non-cash dividends, and rights offerings.

- *Institutional investor restrictions:* Many institutional investors were created under charters limiting their investment to U.S.-listed or -traded securities. ADRs provide the only ability for such institutions to gain foreign exposure.
- *U.S. trading hours:* Since ADRs trade in the U.S. markets, investors can quote them and bid for/offer the ADRs during normal U.S. daytime hours, rather than having to trade in foreign local hours. For instance, the Indian stock exchanges' trading hours are between 11:55 P.M. and 6 A.M. New York DST, the middle of the night and somewhat inconvenient for most investors in the United States.
- *No lead time:* Particularly in the case of investing in India, the purchase of ADRs/GDRs can be done immediately by any investor. The lead time for registering as an FII could be six weeks when including the time to complete the application, hire attorneys, accountants, and custodians, and open brokerage accounts, not to mention putting together a tax-efficient structure for the FII entity. Even participatory notes require some lead time to set up the arrangement with an issuing investment bank.

Benefits of ADRs/GDRs to Foreign Corporations There are several reasons typically presented for a foreign corporation to issue ADRs and/or GDRs:

- *Access vast U.S. investor liquidity:* The primary reason companies issue depositary receipts (DRs) is to gain access to the tremendous pool of international investment capital located in the United States and Europe, particularly from investors legally or in practice limited to their home market products. Many U.S. institutional funds are limited by their prospectus to investments in U.S.-traded products; thus their only way to obtain exposure to foreign markets is through U.S.-listed and -traded ADRs. The great majority of the 91 million individual investors and 57 million equity-owning households in America currently limit their investments to U.S. funds or U.S.-traded products. The most recent statistics available from the Investment Company Institute indicate that 63 percent of equity-owning households, or almost 36 million households, own foreign equities and do so both through global mutual funds or by owning individual stocks.[6] The form of this ownership is overwhelmingly through DRs. As noted in the above section about ADR benefits to investors, most of this huge investment pool will only consider ADRs when seeking foreign exposure.
- *Enhance foreign visability:* A second significant reason to issue ADRs or GDRs is for foreign corporations to build their visibility with foreign investors.

- *Create U.S. valued currency:* A third reason, also significant to the corporations, is to create a currency with which to participate in takeover activity in the listing country. Should an Indian corporation wish to purchase U.S. corporations but not do so primarily using cash, U.S. shareholders of the U.S. corporation would view a bid using U.S.-listed, U.S.-dollar-denominated ADRs similarly to a U.S.-listed, U.S.-dollar-denominated share of a U.S. corporation. In other words, the U.S.-listed, U.S.-dollar-denominated ADRs would act as a currency with which to purchase U.S.-traded companies.
- *Boost credibility with investors:* Finally, some companies listed in the United States also gain a measure of credibility with U.S. investors and to some extent with their local investment community.

Having noted the above reasons, recent events and realities of the global investment climate have made the issuance of U.S. ADRs less valuable to Indian corporations than it might once have been, thus explaining to some extent the relatively small number of only 13 Indian corporations sponsoring ADRs.

- Indian corporations now have the ability to raise significant capital in their home markets, thus forestalling their need to seek capital from overseas markets such as the United States.
- The implementation of the U.S. Sarbanes-Oxley Bill in 2002 dramatically increased the costs and liability that a U.S.-registered security issuer faces in complying with U.S. corporate law. This increased burden on all corporations, domestic and foreign-based, and the concurrent negative impact that the new regulation has on the ability of the U.S. capital markets to compete with other international markets for foreign listings, further reduce the likelihood of new Indian ADRs getting issued.

The primary reasons Indian companies now seek ADR listings is to establish a currency in the United States, as previously discussed.

Disadvantages of ADRs to Investors Although ADRs provide a number of benefits to investors, there are two significant disadvantages to limiting one's foreign investment capability to available ADRs:

- *Limited ADR availability:* Only a very small percentage of foreign companies have issued ADRs and/or GDRs when compared with the universe of foreign listed companies. In the case of India, where there are in excess of 7,000 listed companies, there are only 10 NYSE-listed and 3 NASDAQ-listed ADRs and 19 London Stock Exchange-listed

GDRs.[v] Thus, investors limiting themselves to ADRs or GDRs are very limited in their investment options when seeking exposure to the Indian market.

- *Imperfect pricing:* As noted above, Depositary Receipts should theoretically trade at the intrinsic aggregate value of their underlying shares. Realistically, though, they tend to trade around the intrinsic value, predominantly at a premium. Thus, investors purchasing ADRs are likely to pay a higher price than they might otherwise pay if buying the ordinary shares as FIIs in the local market. Contributing to the imperfect pricing are issues such as a restricted number of available ADRs. If the demand for ADRs by foreign investors exceeds the demand for local shares, and no more ADRs can be created,[w] the ADRs will trade to a premium over the ordinaries. Practically speaking, the premium or discount to the intrinsic value will be controlled by the actions of arbitrageurs, as discussed below.

ADR Two-Way Fundability: Creation and Breakup ADRs are certificates representing a fixed number of underlying ordinary shares. For every ADR issued, there are a fixed number of shares that are represented by that ADR held in a depositary. ADRs are initially created by an ADR-issuing U.S. bank by their purchasing the shares, placing them with a custodian bank, and issuing Depositary Receipts against those shares. Because India regards ADR issuance as a form of FDI, and there are company and industry limits on permitted FDI, the number of shares eligible to be purchased for creation of ADRs is limited and controlled, ultimately, by the Ministry of Finance and the RBI.

A 2002 amendment to the *Issue of Foreign Currency Convertible Bonds and Ordinary Shares (Through Depositary Receipt Mechanism) Scheme, 1993*[7] opened the door to limited two-way convertibility of ADRs and GDRs. The result was that not only could corporations and ADR-sponsoring U.S. banks create ADRs, but investors owning ADRs had the option to break them into ordinary shares or, interestingly, purchase ordinary shares

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[v]See Table 2.2 for a list of the NYSE- and NASDAQ-listed ADRs and LSE-listed GDRs.

[w]In India, ADR/GDR issuance falls under the FDI rules of the Ministry of Finance and the RBI, and are subject to foreign investment limits imposed on certain industry sectors. Thus, there is a limit to the number of Depositary Receipts (DRs) that can be created for any particular approved issue. Once the limit of available and approved underlying shares used for DRs is reached, no more DRs will be created and the DRs will trade to a premium.

to reconvert them back into ADRs.[x] The mechanisms to affect the breaking up or reconversion of ADRs is beyond the scope of this book. For purposes of understanding the existence of price differentials between ordinaries and ADRs, however, the reader should understand that there is a cost associated with these mechanisms that, although small, does exist.

ADRs and GDRs Available for Trading At the time of the writing of this book,[y] there are a total of 32 ADRs and GDRs listed and available for trading in the United States and the United Kingdom: 10 NYSE-listed ADRs, 3 NASDAQ-quoted ADRs, and 19 London Stock Exchange–listed GDRs. Table 2.2 lists the names of the underlying companies, their ADR/GDR local symbols, and the ratio of underlying ordinaries to Depositary Receipt. Of these, two of the listings occurred in 2006, one on the NYSE and another on the LSE.

ADR/Ordinary Arbitrage U.S.-listed ADRs and foreign locally listed ordinary shares are linked financial instruments that have a fixed ratio between them and thus should theoretically trade in such a way that the ADR is valued at exactly the aggregate value of the underlying ordinary shares.

$$\text{Theoretical Price of ADR} = [\text{Price of Ordinary}] \times [\text{Conversion Ratio}]$$

Thus, if each ADR represents three ordinary shares, then the price of the ADR should equal the price of the ordinary share times three. However, several factors exist that result in a differential between the actual and theoretical price of the ADR. The factors creating this differential are both of the inefficient and efficient kind and include:

- *Market trading times differentials:* At any point in time, trading on an exchange reflects micro and macro events that are occurring at that moment. These can be non-company-specific industry related, local market related, local economy related, or even global issues that will move individual stock prices away from the value of related securities listed on other markets. The related security would not be trading at the same time given that its market is closed; thus price differentials will open up. These differentials may be arbitrage opportunities.

[x]The reconversion of broken ADR shares back into new ADRs is limited to the shares previously created by breaking other ADRs and subject to FDI limitations. The mechanism for this process is beyond the scope of this book and interested readers should consult the bank sponsors of particular ADRs or GDRs; www.adr.com, a unit of JP Morgan Chase Bank, and www.adrbny.com, a unit of the Bank of New York, are particularly good sources for Depositary Receipt information.
[y]As of October 2006.

TABLE 2.2 US- and UK-listed ADRs and GDRs

Company Name	Symbol	Ratio (Ord: DR)	Exchange	Industrial Sector	Listing Date
U.S. Exchange-Listed ADRs					
Dr. Reddy's Laboratories Ltd.	RDY	1: 1	NYSE	Pharmaceuticals	4/11/01
HDFC Bank Ltd.	HDB	3: 1	NYSE	Banks	7/20/01
ICICI Bank Ltd.	IBN	2: 1	NYSE	Banks	3/28/00
Mahanagar Telephone Nigam	MTE	2: 1	NYSE	Telecommunications	10/26/01
Patni Computer Systems Limited	PTI	2: 1	NYSE	Semiconductors, Software	12/8/05
Satyam Computer Service Ltd	SAY	2: 1	NYSE	Computer Services, Software	5/15/01
Tata Motors Ltd.	TTM	1: 1	NYSE	Commercial Vehicles & Trucks	9/27/04
Videsh Sanchar Nigam Ltd.	VSL	2: 1	NYSE	Telecommunications	8/15/00
Wipro Ltd.	WIT	1: 1	NYSE	Computer Services, Software	10/19/00
WNS Holdings Ltd.	WNS	1: 1	NYSE	Business Support Services	7/26/06
U.S. NASDAQ-Listed ADRs					
Infosys Technologies Ltd.	INFY	1: 1	NASDAQ	Software	3/11/99
Rediff.com India Ltd.	REDF	0.5: 1	NASDAQ	Internet	6/14/00
Sify Ltd.	SIFY	1: 1	NASDAQ	Internet	10/19/99

LSE-Listed Indian GDRs					
Acc Ltd.	AMCD	1: 1	LSE	Building Materials & Fixtures	3/19/2004
Amtek Auto	AMKD	2: 1	LSE	Auto Parts	11/25/2004
Ashok Leyland	AKLD	3: 1	LSE	Commercial Vehicles & Trucks	3/22/1995
Bajaj Auto	BAUD	1: 1	LSE	Automobiles	11/4/1994
Crompton Greaves	CGVD	5:1	LSE	Electrical Components & Equipment	7/11/1996
EIH	EIHD	1: 1	LSE	Hotels	10/18/1994
Gail (India)	GAID	6: 1	LSE	Gas Distribution	11/15/1999
Hexaware Technologies Ltd.	HEXD	0.5: 1	LSE	Computer Services	7/31/2000
Himachal Futuristic Communications	HFCD	4: 1	LSE	Telecommunications Equipment	8/8/1995
The Indian Hotels Company	IHTD	1: 1	LSE	Hotels	5/9/1995
Rei Agro	REA	2: 1	LSE	Food Products	11/18/2005
Reliance Energy	REYD	3: 1	LSE	Electricity	3/8/1996
Rolta India	RTI	1: 1	LSE	Computer Services	4/18/2006
Siel	SLGD	3: 1	LSE	Food Products	10/31/1994
SSI	SSBD	0.10: 1	LSE	Computer Services	3/30/2000
State Bank of India	SBID	2: 1	LSE	Banks	10/11/1996
Steel Authority of India	SAUD	15: 1	LSE	Steel	3/15/1996
Tata Tea	TTED	1: 1	LSE	Farming & Fishing	6/5/2000
UTI Bank	UTI	1: 1	LSE	Banks	3/22/2005

Sources: JPM's ADR.com, London Stock Exchange.

- *Inefficient markets:* Perfect theoretical pricing relies on completely efficient markets, including equal dissemination of information to all parties in the market. We do not yet live in such a world, and uniform information dissemination around the world, between markets and time zones, is still not a reality. Thus, information differentials between markets and investors lead to price differentials. These differentials may be arbitrage opportunities.

While arbitrage opportunities arise due to price discrepancies, and the arbitrage trades result in such spreads narrowing, the market is not so efficient that arbitrageurs act to close the slightest spreads. In fact, some practical considerations come into play that allow a spread to persist without arbitrage activity. These practical considerations include:

- *ADR supply limits:* As already noted, ADRs are considered a form of FDI in India and thus subject to restrictions on supply. Should the ADR issue limit be reached in the face of continued strong demand by ADR buyers, a premium in the ADR price will arise. These differentials may be arbitrage opportunities.
- Costs of Arbitrage
  - *ADR creation/breakup costs:* Although small, the costs associated with breaking ADRs or reconverting shares back into ADRs creates a price differential that arbitrageurs must factor in when assessing the opportunity to make money. These differentials are not arbitrage opportunities.
  - *Commission costs:* Transaction fees on both sides of an arbitrage transaction must be factored in before calculating whether a given price differential is a profit opportunity.
  - *Currency conversion costs:* Although very small, there does exist a spread in the currency markets and this spread is a cost of conversion and thus will create a differential that will not alone be an arbitrage opportunity.
- *Inability to short one side:* An arbitrage involves buying the cheaper instrument and shorting the more expensive instrument, locking in the spread, and then converting one instrument to the other to close the position and realize the locked-in spread. This is dependent on being able to short one side of the trade. Since shorting of securities is still not permitted in India, the arbitrage can be one way: buying ordinaries and shorting ADRs. Should ADRs ever trade to a discount, arbitrage activity cannot be performed to close the discount and, all else equal, the

> discount price differential will persist.[z] In cases where the ADRs trade to a premium, the strategy is to buy the ordinaries and short the ADR, then reconvert shares into a new ADR to cover the short. However, if there are no ADRs available to borrow, the short side of the transaction cannot be executed. Similarly, if there is no ADR capacity in the system to create new ADRs,[aa] no ADRs can be created to cover the short. In this last situation, however, the trade might still be put on and the position would be left open, anticipating the large premium to close.[bb]

Price differential thus may create arbitrage opportunities between the two instruments that can be a source of profit for traders. Such arbitrage opportunities do exist between Indian ADRs and India-listed ordinaries, and arbitrage trading does occur between the two instruments, taking place over the U.S. ADR market and the India-listed ordinary market (arbitrage activity also occurs between the U.K. GDR market and the India-listed ordinary market). Appendix K of this book takes the reader through an example of ADR/ordinary arbitrage.

INVESTMENT LIMITS

Foreign investors are subject to limits on the size of their investments in Indian securities and derivatives regardless of whether they invest in India through the primary and secondary capital markets or through foreign direct investment. These investment limits are set by SEBI and the RBI. These limits are periodically changed and, during the economic liberalization process from 1991 through 2006, the changes have largely reflected a loosening of the investment limits.

Investments by nonresident Indians and persons of Indian origin are subject to limits that are different from other FIIs; some are stricter and some are looser limits. The regulations, rules, and limits discussed in this book apply primarily to investors not falling under the status of nonresident Indians and persons of Indian origin. For investors who are interested in more details about the restrictions and advantages applicable specifically to

[z]As of the time of this writing, short selling is not permitted. Sophisticated traders can get around this problem by creating a synthetic short, one method of which entails maintaining a large perfectly hedged portfolio and then selling the ordinaries from the portfolio to create the synthetic short.
[aa]e.g., if the ADR limit as per FDI limits is reached.
[bb]While a good strategy, large premiums do get larger, spreads widen, and such a trade can lose money.

nonresident Indians and persons of Indian origin, please consult the RBI Web site at www.rbi.org.in.

Aggregate FII Investment Limits

For FII investments, the following limits currently apply to aggregate foreign investment in an Indian company:

- Twenty percent of the paid-up capital can be owned in public sector banks, including the State Bank of India.
- Twenty-four percent of the paid-up capital can be owned aggregately by all FIIs, inclusive of their sub-accounts.

The 24 percent ceiling can be raised up to sectoral cap and statutory ceilings, subject to the approval of the company's board and shareholders passing a special resolution to that effect. A number of companies have increased percentages to 30 percent, 40 percent, and 49 percent. In addition, other companies have raised their FII investment limits to between 50 percent and 74 percent (referred to as intermediate limits), and a smaller group have approved FII investment up to 100 percent of the paid-up capital.

Monitoring Aggregate Foreign Investment Limits The RBI monitors the holdings of FII investments in Indian companies on a daily basis to ensure that the investment limits are not breached. The RBI has set alert points that are 2 percent below the investment limits to act as a warning that the limit is being approached. For example, the alert point for companies with a 24 percent ceiling is set at 22 percent. Once the aggregate FII net purchases of equity shares of the company reach the alert point (2 percent below the actual limit), the RBI issues a "caution." Following this, additional purchases of the company in question are prohibited without prior approval from the RBI. When the banks receive further orders to buy shares in the company, they are required to inform the RBI about the total number and value of equity shares and convertible debentures they have orders to buy on behalf of FIIs. On receipt of this information, the RBI provides clearances on a first-come-first-served basis until such investments in companies reach their ultimate approved limits. On reaching the aggregate investment limit, the RBI issues a "stop purchase" advisory to all designated banks with regard to purchases in that stock on behalf of their FII clients. These "caution" and "stop purchase" advisories are disseminated to the general public through a press release and maintained by the RBI in an up-to-date list of all limit levels on its Web site at www.fiilist.rbi.org.in. Investors interested in the limits of a particular company, or whether that company is nearing or at its limit, should consult this Web site.

Individual Investor Limits

In addition to the limits imposed for aggregate foreign investment in Indian companies, there are limits for individual FIIs and sub-accounts.[8] These include:

Equity Investments:

- Ten percent of total issued capital of an Indian company by an FII, on its own behalf.
- Ten percent of total issued capital of an Indian company on behalf of each sub-account.
- Five percent of issued capital for each sub-account registered under foreign companies/individual category.

Derivative Investments:

- Individual stock derivative contracts (including options contracts and single stock futures contracts):
  - Twenty percent of the marketwide limit for stocks in which the marketwide position limit is less than or equal to Rs250 crore (~US$55 million).[cc]
  - Rs50 crore (~US$11 million) for stocks in which the marketwide position limit is greater than Rs250 crore (~US$55 million).
- Index option contracts:
  - On a particular underlying index, Rs250 crore (~US$55 million), or 15 percent of the total open interest of the market in index options, whichever is higher, per exchange. This limit applies to open positions in all options contracts on a particular underlying index.
- Index futures contracts:
  - The limit for all index futures contracts on a particular underlying index is Rs250 crore (~US$55 million), or 15 percent of the total open interest of the market in index futures, whichever is higher, per exchange. This limit applies to open positions in all futures contracts on a particular underlying index.

[cc]Throughout this book a rupee:U.S.-dollar exchange rate of 45:1 is used, regardless of the date on which the rupee-denominated statistic was released. The exchange rate of 45:1 represents the approximate midpoint of the f/x rate in calendar 2006.

- Interest rate derivative contracts:
  - For an FII, the notional value of the gross open position of an FII in an exchange-traded interest rate derivative contract is US$100 million. In addition, the FII may take exposure in exchange-traded interest rate derivative contracts to the extent of the book value of the cash market exposure in government securities.
  - For a sub-account, the position limits in near-month exchange-traded interest rate derivative contracts will be the higher of Rs100 crore (~US$23 million) or 15 percent of the total open interest in the market in exchange-traded interest rate derivative contracts.

BROKERAGE FEES

The maximum brokerage fee that can be charged by a broker is specified by SEBI and is currently set at a maximum of 2.5 percent brokerage to clients. This maximum brokerage is inclusive of the brokerage charged by a sub-broker. In addition, the *SEBI (Stock Brokers and Sub-Brokers) Regulation 1992* stipulates that a sub-broker cannot charge clients a commission that is more than 1.5 percent of the value mentioned in the respective purchase or sale note.

Stock brokers and sub-brokers may charge investors:

- Brokerage charges by member brokers
- Penalties arising on specific defaults on behalf of clients (investors)
- Service tax as stipulated
- Securities transaction tax

The *securities transaction tax* (STT) was created by the *Finance Act (No. 2), 2004*. As a tax on the value of certain transactions, it applies to the Indian stock exchange for: (1) purchases and sales of equity shares and units of equity-oriented mutual funds (delivery-based), (2) the sale only of equity shares and units of equity-oriented mutual funds (non-delivery based), and (3) the sale of derivatives. At the time of this writing, typical purchases and sales of equity shares were subject to an STT of 0.10 percent and derivative sales-only were subject to an STT of 0.01 percent.[9] These rates are subject to change by the government.

The brokerage charge, service tax, and securities transaction tax must be indicated separately in contracts.

FII APPLICATION PROCEDURES

How to Register to Be an FII

SEBI has attempted to make the registration process clear and straightforward, and it has provided a lot of information on its Web site at www.sebi.gov.in to assist prospective applicants. What follows is information provided by SEBI on its Web site or obtained by the author from discussions with key SEBI officials.

To register as an FII:

1. Applicants must use Form A of the *SEBI (FII) Regulations Act 1995*, approval of which is valid for three years and can be renewed. (A copy of Form A from the SEBI can be viewed on the SEBI Web site at www.sebi.gov.in/fii/fii5.pdf).
2. The application form and all supporting documents must be submitted in duplicate, one set each for SEBI and the RBI. Both sets of applications are to be sent only to SEBI.
3. Applications should be sent to:
   The Division Chief
   FII Division
   Securities and Exchange Board of India
   224, Mittal Court, B Wing, 1st Floor
   Nariman Point, Mumbai 400 021
   India

If the applicant meets the eligibility requirements and all of the documents are submitted with the application, SEBI has set an approval time of seven days as its benchmark.

The registration procedure operates as a single-window procedure through SEBI in which the following steps are involved:

1. SEBI forwards one set to the RBI.
2. The application is processed by SEBI to determine the eligibility of the applicant.
3. After the initial processing is completed and eligibility is determined, the SEBI writes to the RBI noting the eligibility of the applicant. At the same time, a letter is sent to the applicant asking him to pay a registration fee

of US$10,000 by a demand draft to the "Securities and Exchange Board of India," payable in New York.

4. The RBI gives approval to the FII through its designated bank. This approval is granted through the Foreign Exchange Management Act (FEMA) and enables the FII to open a bank account. As noted earlier, this is a special nonresident rupee account of the FII meant purely for inward remittances and meeting payment obligations with regard to the securities market. All balances in this account can be repatriated in full.
5. Upon receipt of fees from the applicant and FEMA approval from the RBI, the SEBI grants a certificate of registration that is valid for three years and can be renewed.

SEBI registration transferability: The SEBI FII registration is not transferable. In the case of a registered FII losing its existence, such as in a merger or takeover, the SEBI FII registration cannot be transferred to the surviving entity. The surviving entity must obtain new registration as an FII from the SEBI.

Registration renewal procedure: The FII has to apply for renewal three months before the registration expires. The application for renewal is the same as an application for the FII registration. The renewal period is three years.

Sub-Accounts

There are two categories of sub-accounts:

1. *Broad-based*[dd] *and proprietary sub-accounts:* These are allowed to individually buy up to 10 percent of the total issued capital of a company.
2. *Foreign corporates and foreign individuals:* Investment by each sub-account in this category should not exceed 5 percent of the issued capital.

Sub-Account Registration To register a sub-account:

- Applicants must submit Annexure B of the FII application Form A signed by both the FII and the sub-account.

[dd] A fund established or incorporated outside of India that has at least 20 investors, no one of which holds more than 10 percent of the shares or units of the fund. If one of the investors is an institutional investor, the 20-investor rule will no longer apply if the institution is itself a broad-based fund.

- A fee of US$2,000[ee] must be paid by demand draft to the "Securities and Exchange Board of India," payable in New York, and should be submitted along with the Annexure B. (A copy of this form can be viewed on the SEBI web site at www.sebi.gov.in/fii/fii7.pdf.)

Sub-Account Eligibility Entities that are eligible to register as a sub-account include:

- Institutions or funds or portfolios established outside India, regardless of whether incorporated
- Proprietary funds of FIIs
- Foreign corporates
- Foreign individuals

While individuals are technically eligible to become sub-accounts, to date SEBI has not approved any sub-account application for an individual.

Nonresident Indians and overseas corporate bodies[ff] are not entitled to be registered as a sub-account. A sub-account does not need to be registered with an overseas regulatory body, and an applicant does not need to submit a custodian agreement. It needs only to declare that it has entered into a custodian agreement and should submit the particulars of the domestic custodian.

Sub-Account Application Process There is no requirement for a sub-account applicant to submit any documents with the application form. However, SEBI may request additional information or documents. The applicant does affirm the following:

- The applicant sub-account or its directors have not been convicted by a court for any offense involving "moral turpitude" or fraud and sentenced in respect thereof to imprisonment for a period greater than six months.
- No dissolution orders have been passed against the applicant.
- No orders suspending or debarring the applicant from permanently carrying on activities in the financial sector have been passed by any regulatory authority.

[ee]The cost of sub-account registration increased from US$1,000 to US$2,000 as one of the changes affecting FII registration, as amended in the June 26, 2006, SEBI (Foreign Institutional Investors) (Amendment) Regulations, 2006.
[ff]Entities that are at least 60 percent owned by nonresident Indians or persons of Indian origin and include overseas companies, partnership firms, societies, and other corporate entities.

- No order withdrawing or refusing to grant any license/approval to the applicant that has a bearing on the securities market has been passed by any authority in the preceding five years.
- Any penalty (including monetary) imposed by any regulatory authority has been carried out.
- The applicant is subject to the jurisdiction of outside tax authorities and regularly files tax returns.
- The income of the sub-account applicant is from known and legitimate sources.
- The applicant is not a nonresident Indian or an overseas corporation registered with the Reserve Bank of India.

Sub-Account Registration Time Validity The registration of the sub-account is concurrent with the FII with which it is registered, and the registration of the sub-account expires with the expiry of registration of the FII with which it is registered. Further, if the registration of the FII is suspended or canceled, the registration of its sub-account is also suspended or canceled.[gg]

Sub-Accounts Changing FIIs If a registered sub-account wants to transfer from one registered FII to another, the FII to whom it proposes to be transferred has to request a transfer from SEBI along with:

- A declaration that it is authorized to invest on behalf of the sub-account.
- A no-objection letter for the transfer of the sub-account from the FII from which it is transferring.

Converting a Sub-Account to an FII If a registered sub-account wants to become a registered FII, then it has to apply with Form A to SEBI and satisfy all of the eligibility criteria norms in the *SEBI (Foreign Institutional Investor) Regulations 1995* as amended. It must also submit a letter from the old FII indicating no objection to such registration.

[gg]This is a noteworthy rule that impacts the willingness of FIIs to be sponsors, and thus responsible for the activities, of a sub-account. Should one sub-account of an FII with numerous other sub-accounts run into trouble with the SEBI or another regulatory agency, thereby leading to a restriction on that sub-account, it is entirely possible that the sponsoring FII will also come under fire for poor supervision. Should the FII's registration be canceled due to the activity of one of its sub-accounts, all of the sub-accounts of that FII will have their registration canceled, as well. Thus, sub-accounts subject their sponsoring FII to potential financial and reputation risk.

TRADING AND SETTLEMENT-RELATED ISSUES

Trading with an Expired Registration

An FII and sub-account cannot trade in India's securities market with an expired registration, unless it obtains a renewal from the SEBI. If it is not interested in renewal but has certain residual assets, it can apply for disinvestment from SEBI.

Share Registration

When purchasing and registering securities, the FII has a choice to register securities among the following ways:

- In the name of the FII if the FII is investing on his own behalf
- In the name of the sub-account if the FII is investing on behalf of the sub-account
- In the name of the "FII a/c sub-account" if the FII is investing on behalf of the sub-account

FII and Sub-Accounts Changing Custodians

Custodian changes must be reported to the SEBI by the FII. On receipt of no objection from the existing custodian and acceptance from the proposed custodian, the change of custodian would be approved by the SEBI.

Multiple Custodians

An FII having an account with one custodian can open accounts with different custodians for different sub-accounts. However, one sub-account cannot be custodied with more than one custodian.

SUMMARY OF FII INVESTMENT

SEBI is very much a pro-market, pro-investment organization. Growth of the domestic involvement in the markets has increased the comfort level for increased foreign participation, and SEBI views the growth of FII activity in India as being a positive factor for the markets. The large number of methods and instruments by which foreign investors, both those registered directly with SEBI as well as those not, can access the market provide ample ability to gain investment exposure to India. The rigorous registration requirements imposed and processed by SEBI give it confidence that India will remain a dynamic and vibrant marketplace, with an environment of strong institutions and high-quality participation in the markets.

CHAPTER 3

Foreign Direct Investment

CHAPTER HIGHLIGHTS

- FDI in India totaled approximately US$7.691 billion in FY2006, an increase of 37 percent year-over-year from FY2005.
- Most FDI applications enjoy an *automatic approval* route through the RBI.
- Certain industries have maximum foreign investment caps.
- Investment restrictions have been loosening over the last several years.

Foreign direct investment (FDI) has been a preferred method of investing in India for a number of years, and India has been the beneficiary of some very large private equity transactions by some of the world's largest investors. A truly comprehensive examination of FDI would require a dedicated book of its own. The following chapter has been included to give the reader a useful overview of some of the issues surrounding FDI in India.

FDI is defined by the Ministry of Finance in India as "direct investment in an Indian company either through a joint venture agreement or as a wholly owned subsidiary with management interest."

The *International Monetary Fund* (IMF), in its fifth edition of the IMF's *Balance of Payment Manual,* defines FDI as "a category of international investment that reflects the objective of a resident in one economy (the direct investor) obtaining a lasting interest in an enterprise resident in another economy (the direct investment enterprise). The lasting interest implies the existence of a long-term relationship between the direct investor and the direct investment enterprise, and a significant degree of influence by

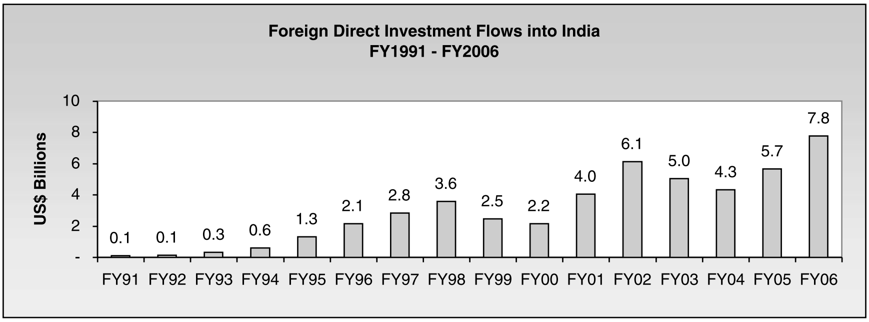

FIGURE 3.1 Indian foreign direct investment, FY1991–FY2006.
Source: RBI Annual Report 2005–2006.

the investor on the management of the enterprise.[a] A direct investment relationship is established when the direct investor has acquired 10 percent or more of the ordinary shares or voting power of an enterprise abroad." FDI is further defined by the IMF[1] in greater detail as the sum of numerous statistics including equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. This detail is significant, as the reader will see below, when comparing FDI in India to FDI in other countries, particularly China.

FDI in India totaled approximately US$7.751 billion in FY2006, an increase of 37 percent year-over-year from FY2005. FDI in India has been a valuable source of much-needed funds as the economy develops, but it is still relatively modest when compared with China's world-leading FDI of US$60.6[2] billion in 2005, or even to *remittances* from overseas Indians that totaled US$24.6[3] billion in FY2006 (India is the largest remittance-receiving country in the world). Figure 3.1 illustrates FDI in India from FY1991 until FY2006.

While considering this huge difference between China and India, the reader should note the above-stated difference in the definition of FDI by India's Ministry of Finance and the IMF, namely that India's calculations do not include such statistics as equity capital, reinvestment of earnings, long-term capital, and short-term capital as shown in the balance of payments. While India does not currently calculate FDI on the basis of IMF- and OECD-set international standards, the latest RBI Annual Report, for FY2006, does state that "data on FDI have been revised since 2000–01 with expanded coverage to *approach* [author's emphasis] international best

[a]The interest in management distinguishes FDI from portfolio investment, where investment is passive and there is no interest in management or operational control.

practices. FDI data for previous years would not be comparable with these figures." Thus, India's FDI is still underestimated by the exclusion of some statistics in its measurements. In all likelihood, Indian FDI measured exactly by international standards would result in a higher figure, although no estimate is currently available as to the extent of such an adjustment.

MINISTRIES AND DEPARTMENTS ADMINISTERING FDI

FDI policy falls under several ministries and departments in India. These include the Reserve Bank of India (RBI), the Ministry of Finance, and the Ministry of Commerce and Industry. Two ministry departments noteworthy and involved in FDI are the *Department of Industrial Policy and Promotion* (DIPP), a division of the Ministry of Commerce and Industry; and the *Foreign Investment Promotion Board* (FIPB), a division of the Department of Economic Affairs of the Ministry of Finance.

The Department of Industrial Policy and Promotion, which was established in 1995 as part of the government's reforms and liberalization, is responsible for facilitating and increasing investment and technology flows into India and monitoring industrial development. The Department of Industrial Policy and Promotion also formulates FDI policy and promotion and approves and facilitates FDI.

In the department's *Foreign Direct Investment Policy 2006,*[b] an annual report, the up-to-date investment rules concerning FDI are presented for every industry, sector, and activity. Among the rules listed are the investment limits for each industry, the approval process required for that industry, and any other conditions to which foreign investments are subject with regard to each particular industry.

In other functions of the department, the *Foreign Investment Implementation Authority* (FIIA) resolves problems faced by foreign investors about implementing projects and interacts on behalf of investors directly with the ministry and state government concerned. The *Foreign Investment Promotion Board* (FIPB) approves certain FDI investment proposals.

FDI applications and further details regarding specific policy issues can be obtained from the Department of Industrial Policy and Promotion at www.dipp.gov.in.

FDI issues and policies specified by the RBI, Ministry of Finance, and Ministry of Commerce and Industry follow.

[b]This report can be viewed in its entirety at www.dipp.nic.in/publications/fdi_policy_2006.pdf.

Permitted FDI

FDI is permitted in India under the following types of investments:

- Financial collaborations
- Joint ventures and technical collaborations
- Capital markets via euro issues
- Private placements or preferential allotments

Restricted Industries

For national security and other reasons, many countries have restrictions on foreign investment in certain industries. In India, FDI is not permitted in the following industrial sectors:

- Retail trading (except for *single-brand product* retailing)[c]
- Atomic energy
- Lottery business
- Gambling and betting

In addition, FDI for the following sectors must go through the government's Foreign Investment Promotion Board (FIPB) rather than under an automatic approval route, the two approval processes for foreign investment:

- Some housing and real estate businesses
- Agriculture (excluding floriculture, horticulture, development of seeds, animal husbandry, pisiculture and cultivation of vegetables and mushrooms under controlled conditions, and services related to agro and allied sectors) and plantations
- Atomic minerals
- Broadcasting industries
- Courier services
- Defense production
- Refining (in the case of public service undertakings)

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[c]This exception for single-brand product retailing was implemented in early 2006. The retailing industry is a very sensitive political issue concerning the viability of the approximately 12 million small retail outlets in the face of the sophisticated capabilities of such huge international retailers as Wal-Mart and Carrefour. As of the writing of this book, such large multiproduct retailers are still excluded from directly owning multibrand retailers in India. In November 2006, however, a significant inroad was made when Wal-Mart entered into a joint venture agreement with India's Bharti Enterprises Ltd. whereby Bharti would open and operate a retailing chain while Wal-Mart would handle all of the retail chain's supply chain technology, logistics, and wholesale operations.

- Print media
- Tea sector
- Telecommunications (beyond a 49 percent ownership)

As infrastructure development is a major priority for the government to ensure continued economic growth, projects such as power generation, telecommunications, petroleum exploration, refining, ports, airports, and roads enjoy a reduced standard of approval.

FOREIGN INVESTMENT THROUGH GLOBAL DEPOSITARY RECEIPTS (EURO ISSUES)

Indian companies are allowed to raise equity capital in the international markets through the issue of Global Depositary Receipts (GDRs). Foreign investment through GDRs is treated as FDI. GDRs are often designated in U.S. dollars and are not subject to any ceilings on investment. An applicant company seeking the government's approval to issue GDRs should have a track record of good performance (financial and otherwise) for a minimum of three years.

Permitted Use of GDR Proceeds

GDR proceeds can be used for financing capital goods imports; capital expenditure including domestic purchases and the installation of plant, equipment, and buildings; investment in software development; prepayment or scheduled repayment of external borrowings; and equity investment in joint ventures and wholly owned subsidiaries in India. Companies can retain the proceeds abroad or may remit funds to India for approved purposes.

Restrictions on GDR Proceeds

GDR proceeds cannot be used to invest in the stock market or real estate. Any such investment from a foreign firm into India requires approval from the government.

APPROVAL PROCESS FOR FDI

Approval for FDI can be obtained through two routes:

1. Automatic approval by the RBI
2. Processing by the FIPB

Automatic Approval by the RBI[4]

The RBI grants automatic approval for FDI for up to 100 percent in all activities and sectors except the following, which require approval from the government:

- Activities and items that require an industrial license
- Proposals in which the foreign collaborator has an existing financial or technical collaboration in India in the same field
- All proposals falling outside of specified sectoral policy or caps or under sectors in which FDI is not permitted[d]

FDI in sectors and activities permitted under the automatic route does not require any prior approval by the RBI or any other department of the government. Investors and companies are required to notify only the RBI within 30 days of issue of shares to foreign investors.

Foreign Investment Promotion Board: Processing of Nonautomatic Approval Cases

FDI in activities not covered under the automatic route requires prior government approval. Such approval is evaluated and granted by the Foreign Investment Promotion Board (FIPB) of the Ministry of Finance. Specifically, prior approval is required for:

- Activities and items that require an industrial license
- Proposals for which the foreign investor already has an existing financial or technical collaboration in India in the same field or industry[e]
- Proposals for the acquisition of shares in an existing Indian company in the financial services sector and where the *Securities and Exchange Board of India (Substantial Acquisition of Shares and Takeovers) Regulations 1997* is applicable
- All proposals falling outside specified sectoral policy and caps or under sectors in which FDI is not permitted[f]

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[d]For an up-to-date list of such sectors, see the most recent annual report on FDI issued by the DIPP at www.dipp.nic.in/publications/fdi_policy_2006.pdf.

[e]This clause becomes important when an investor seeks a second investment in a competing business or, as has happened, seeks to leave a joint venture with one partner and enter into another investment in the same business with another partner. Not only does the government require approval of this second investment, but the investor may need the agreement/permission of the first joint venture partner to exit the original investment. Appropriate legal advice should be sought for further clarification of this issue.

[f]For details, see the most recent annual report on FDI issued by the DIPP at www.dipp.nic.in/publications/fdi_policy_2006.pdf.

FDI applications to the FIPB are made using Form FC-IL, which can be downloaded from http://www.dipp.gov.in. Normal processing time is four to six weeks. The FIPB tries to have a liberal approach for all sectors and types of proposals, and there are few rejections. Foreign investors do not need to have a local partner even if the foreign investor wishes to hold less than the entire equity of the company. To be more investment friendly, the RBI stopped a requirement to obtain prior "in principle" permission before receiving overseas investment or at a last stage for issuing shares to foreign investors. As noted earlier, companies are required to report to the RBI within 30 days after issuing shares to foreign investors.

INDUSTRIAL SECTOR PREFERENCE

As FDI is recognized by the government as being important for India's economic growth, the government continues to update its FDI policies and increase the number of industries for which investment is permitted and, to whatever extent possible, increase the allowed ownership stakes in sectors that are eligible to receive FDI investment. This loosening of restrictions, however, requires a careful balancing of competing interests within the country.

On the one hand, reformers acknowledge the long-term benefits of FDI for India to provide capital infusions for economic growth and imports of international best practices in areas such as corporate governance, efficiency, supply-chain management, and technology. On the other hand, reformers are careful about addressing the concerns of those who are less inclined toward loosening investment restrictions. Defense- and media-related industries continue to enjoy a level of protection similar to the restrictions found in other countries. The more difficult industries to address are those likely to experience large transition costs associated with FDI. Transition costs might include short-term dislocations and hardships experienced by local interests whose current methods and protected businesses will likely be negatively impacted by greater competition.

Two examples of this gradualist approach toward liberalizing FDI, in an effort to minimize transition costs, include the retail food and general merchandise (including clothing) industries. Many acknowledge that the introduction of modern retailing practices will lead to significant improvements to be enjoyed by consumers, but this would likely come at the cost of the initial dislocation of the country's 12 million individually owned small retail outlets. A gradualist approach has been pursued for sectors that are slowly allowing FDI, and investment caps are slowly being raised. An example of the gradualist approach is the government granting permission for FDI for single-brand foreign retail outlets to open in

India in early 2006 while still excluding much larger global multibrand department stores such as Wal-Mart[g] of the United States and Carrefour of France.

Industries that have recently seen an easing of FDI restrictions include many infrastructure-related sectors such as real estate, power, airports, construction and maintenance of roads, highways, vehicular tunnels, and ports and harbors. One hundred percent foreign equity has already been approved for electricity generation, transmission, and distribution. These changes are examples of the government's efforts to steer capital and foreign expertise to the much-needed infrastructure improvements necessary for India.

SUMMARY

While the tremendous growth of domestic demand and consumer spending has been a key driver behind India's explosive economic growth over the last five years, FDI remains a valuable source of much-needed funds for the economy to continue its expansion. The government is very conscious that its policies must continue to attract overseas investment, and the transfer of international best practices and technology that accompanies it, and to target that investment with policies to ensure that the upgrading of infrastructure continues unabated. The government of Prime Minister Manmohan Singh supports continued economic reform and globalization, and overseas investors should continue to experience a receptive welcome and a gradual, but consistent, liberalization of investment policies.

[g]Footnote c in the Restricted Industries section discusses how Wal-Mart is attempting to enter the Indian retail market not as a retailer but rather as a coordinator of-supply-chain technology, logistics, and wholesale operations.

CHAPTER 4

Safety and Integrity

The Regulator and Market Safeguards

CHAPTER HIGHLIGHTS

- The Securities and Exchange Board of India, with internationally recognized stature, is the market regulator.
- The stock exchanges are the primary regulator of the stock markets.
- Tight market oversight includes:
  - Strict disclosure and transparency rules.
  - Vigilant online and dynamic market monitoring and surveillance.
  - Sophisticated margin controls.
  - Continuous member capital adequacy maintenance.
- Market and individual security circuit breakers contain volatility.
- Guarantee funds provide a safety net to the market:
  - Guarantee settlement of bona fide trades.
  - Instill confidence in secondary market participants.
  - Eliminate counterparty risk.
  - Protect investors.

India has made great efforts to create an investment environment that is comparable with the safest markets in the world. To develop the markets, India (1) created a world-class regulator, the Securities and Exchange Board of India; and (2) implemented state-of-the-art market surveillance and safeguard mechanisms to ensure the safety and integrity of the markets.

The fact that India's capital markets are well-regulated and tightly controlled from a safety standpoint is due both to the implementation of several important government reforms made in the 1990s that created an effective body of regulations, and to innovative market professionals who designed exceptionally sophisticated exchange systems to ensure market safety and integrity. The reforms and systems that made India's financial markets strong and safe include:

- ***Regulation and enforcement:*** Strict rules and regulations along with reasonable enforcement have been implemented to maintain the integrity of the system.
- ***Disclosure and transparency:*** More stringent disclosure requirements and stricter "know-your-customer" rules contribute to a more transparent investing environment.
- ***Settlement and trading:*** The entire trading and settlement process is fully electronic and has been streamlined to be extremely robust and efficient.
- ***Risk mechanisms:*** Risk control mechanisms have been built into the exchange trading systems, which are online and real time to provide fast responses to problems as they develop.

This chapter will discuss the various aspects of India's capital markets that contribute to the solid foundations upon which the markets stand. The Securities and Exchange Board of India, the internationally recognized regulator of India's capital markets, is discussed along with the risk management policies they implement. Next, the risk management systems and policies of the two primary stock exchanges, the Bombay Stock Exchange and the National Stock Exchange, are discussed, including continuous and online price and position monitoring, member capital adequacy monitoring, daily price movement controls for both the market and individual securities, and the very sophisticated, individual security-specific, multiple margin system that has proven to be extremely effective in ensuring timely settlement and few defaults. Derivative-specific controls and risk management are addressed, followed by a discussion of the underappreciated but immensely important and valuable *guarantee funds* maintained by the exchanges that further ensure settlement on a timely basis.

THE SECURITIES AND EXCHANGE BOARD OF INDIA (SEBI)

India's financial markets are regulated by the *Securities and Exchange Board of India (SEBI)*. SEBI is the regulatory authority established under Section 3 of the *Securities and Exchange Board of India Act in 1992* to:

- Protect the interests of investors in securities.
- Promote the development of India's securities markets.
- Regulate the securities markets.

Besides the act that created SEBI, several other government acts, including two enacted before the creation of SEBI, help SEBI meet its objectives and exercise its powers. These include the:

- Securities Contracts (Regulations) Act 1956
- Depositories Act 1996
- Companies Act 1956

SEBI regulates securities market activities through four departments:

1. ***Market Intermediaries Registration and Supervision Department (MIRSD):*** The MIRSD oversees the registration, supervision, compliance monitoring, and inspection of all market intermediaries for all segments of the market, including equity, derivatives, and debt.
2. ***Market Regulation Department (MRD):*** The MRD is responsible for formulating new policies and supervising the operation of securities exchanges, their subsidiaries, and market institutions such as clearing and settlement organizations and depositories for all instruments except derivatives.
3. ***Derivatives and New Products Departments (DNPD):*** The DNPD approves the creation and introduction of new derivative products and supervises trading for derivative operations of the stock exchanges.
4. ***Integrated Surveillance Department:*** The Integrated Surveillance Department monitors the activities of the cash, and futures and options markets and generates detailed reports at the end of each day concerning such issues as the identity of the most active scrips, clients, and brokers. The department monitors market movements, analyzes abnormal trading patterns, and, if suspecting that something is amiss, initiates appropriate action.

Rigorous risk management methodology is used by the stock exchanges and SEBI's four departments to regulate securities market activities.

Market Surveillance

The stock exchanges are the first and primary regulator for detection of market manipulation, price rigging, and other regulatory breaches regarding capital market functions. Unusual deviations from normal behavior are reported to the SEBI. In addition, SEBI, through the Integrated Surveillance Department, also initiates surveillance cases based on references received from other regulatory agencies, and from investors and corporations.

SEBI Risk Management

In its quest to enhance investor protection and encourage market development, SEBI regularly reviews and updates its policies and systems to anticipate, monitor, and address market risk, operational risk, and systemic risk in the financial market. The risk management procedures used by SEBI include:

- Imposing varying margin requirements based on liquidity and volatility of securities, and then categorizing securities into these groups for the imposition of margins.
- Specifying mark-to-market margins.[a]
- Specifying intraday trading limits and gross exposure limits.
- Real-time monitoring of intraday trading limits and gross exposure limits by the stock exchanges.
- Specifying time limits for the payment of margins.
- Collecting margins on a T+1 basis.
- Using index-based marketwide circuit breakers.
- Automatically deactivating trading terminals in case of breach of exposure limits.
- Using a VaR-based margin system[b] that addresses 99 percent of the statistical risks in the market.
- Specifying extreme loss margins to address on-balance 1 percent risks.

Enforcement

SEBI is a highly regarded regulator throughout the global investment world with policies and practices that are more than adequate to address the safety needs of the market. However, the enforcement of policies is still considered by some market participants to require greater vigilance with a more financially astute enforcement team. While the enforcement division was initially

[a] Mark-to-market margin refers to margins determined by the daily fluctuation in the price of a financial instrument and is used both pre- and post-settlement. This and other margin types will be discussed in greater detail later in the chapter.
[b] VaR, or Value-at-Risk margin and other margin types will be discussed in greater detail later in the chapter.

created using civil servants from other areas of the government, including the tax department, this division needs financially trained officers, law experts, and accounting and trading professionals to more effectively prevent, detect, and curtail market abuse.

There have been few, if any, significant enforcement cases of any scale. As most market participants believe the markets are not without their problems, this leaves the assumption that enforcement is not as robust as it could be. SEBI officials unofficially acknowledge this shortcoming while at the same time noting the steady improvement.

MARKET SAFETY AND SAFEGUARDS

The safety and integrity of the financial market is important for SEBI and the government to maintain a well-functioning, highly regarded financial market. Investor protection in India's markets is safeguarded and addressed through preventive measures, instantaneous automatic response mechanisms to ongoing situations, and remedial relief for problems. Preventive measures include:

- Strict *know-your-customer* requirements and comprehensive initial margin requirements.
- Systems to monitor, detect, and react to unusual, potentially illegal market activity.
- Systems to anticipate and mitigate potentially destabilizing market movements. Safeguards designed to address the consequences of problems that have already occurred include settlement and investor protection funds.

DISCLOSURE AND TRANSPARENCY RULES

Preventive market safeguards include greater disclosure and transparency by requiring market participants to be readily identifiable across brokers and accounts, and the ability to monitor the activity of every market participant. The measures begin with account opening procedures for all clients. Strict know-your-customer requirements have been enforced to provide a mechanism whereby illegal, unusual, or manipulative market activity can be traced across firms and account names directly to the party involved.

All brokerage account forms require a permanent account number (PAN), which is a unique 10-digit alphanumeric number issued by the Income Tax Department (similar to a Social Security number in the United

States). All orders entered into exchange trading systems must include a client's PAN before being accepted by the system. Surveillance systems have the ability to monitor unusual trading activity and marketwide positions across brokerage firms and brokerage accounts by looking at individual and entity-specific PANs.

EXCHANGE SURVEILLANCE

The markets are monitored by surveillance systems built into the trading systems of each exchange. The stock exchanges created independent surveillance departments under a 1995 SEBI directive. Surveillance activity is divided broadly into three major segments:

1. ***Price monitoring:*** Price movements and volumes of individual stocks are monitored for abnormal activity that is not consistent with normal trading patterns. Trading in newly listed scrips is watched closely.
2. ***Position monitoring:*** Member-brokers' positions and exposures, as well as underlying client exposures, are monitored on a daily basis to ensure that overextension beyond financial settlement capacity does not occur. Also, default risk is managed by taking timely action.
3. ***Investigations:*** Snap investigations, examinations, and detailed investigations are conducted where manipulation or aberrations are suspected.

Detecting and Responding to Market Abuse

Markets are monitored to first understand normal behavior in the market and then, based on deviations from this observed norm to detect market abuses such as abnormal price and volume movements, artificial transactions (i.e., wash sales), and insider trading. When market surveillance departments suspect abnormal behavior, preliminary investigations are conducted. SEBI can also request an investigation in cases where it has concerns. Should such investigations determine that something is awry and find market abuses or suspect behavior, the exchanges have numerous tools at their disposal to address the situation. These include:

- Imposition of special margins on specific stock issues
- Narrowing of price movement circuit filters
- Imposition of trade-to-trade settlement
- Suspensions
- Deactivation of trading terminals

The surveillance departments maintain an active monitoring program to assess market risk. This program includes extensive and sophisticated price and position monitoring.

Price Monitoring

Price monitoring to detect abnormal price fluctuations is carried out in several ways, through:

- Online surveillance
- Offline surveillance
- Derivative market surveillance
- Surveillance action
- Rumor verification
- Proactive measures

Online Surveillance The main objective of online surveillance is to detect potential market abuse at an early stage with the goal of quickly addressing such abuse and minimizing its impact on the market. An alert is generated when a particular metric behaves significantly differently from its benchmark, or normal behavior. Alerts are generated online, in real time, based on preset parameters such as:

- Like-price and volume variations in shares; this is a sign of potential wash sales.
- Members taking large positions that are not commensurate with their financial positions; this is an indication of possible insider trading, as well as a potential settlement risk.
- Members having large concentrated positions in one or a few scrips; this is another indication of both insider trading and settlement risk.

Offline Surveillance Offline surveillance systems consist of preparing and analyzing reports based on different parameters, such as:

- Percentage changes in prices over a week, fortnight, and month
- Most actively traded stocks
- Activity in infrequently traded scrips
- Stocks hitting new highs and lows
- Shares identified as the subject of rumors
- Shares identified in investor complaints

Derivative Market Surveillance The derivative markets are scrutinized with an additional set of criteria that look at the relative movements between the prices of the derivatives versus their underlying shares and include monitoring trading activity at the close, where great potential exists for price manipulation.

Surveillance Action Once the surveillance systems identify or suspect unusual trading in a particular issue, there are a number of different responses that may be initiated, including:

- ***Special margins:*** Special margins may be imposed on specific stocks that have demonstrated abnormal price or volume movements. Margins of 25 or 50 percent of a client's net outstanding purchase or sale position or both can be imposed.
- ***Trade-to-trade:*** The surveillance departments can impose a trade-to-trade settlement basis versus the standard settlement basis on specific stocks to control excessive volatility or abnormal trading volume. If a stock is shifted to a trade-to trade settlement basis, the selling and buying of shares in that stock would require giving or taking delivery of shares at the gross level with no intraday settlement netting-off capability permitted.
- ***Suspension of trading:*** Shares can be suspended by the surveillance departments in exceptional cases pending investigation or if a stock is suspended by another stock exchange for surveillance action.
- ***Warning to members:*** The surveillance departments may issue verbal and written warnings to members suspected of market manipulation.
- ***Imposition of a penalty, suspension, and deactivation of terminals:*** The surveillance departments may impose penalties, deactivate trading terminals to deny trading access, or suspend members who are involved in market manipulation. Habitual offenders are taken to a Disciplinary Action Committee.
- ***Rumor verification:*** If a stock is the subject of market rumors leading to unusual trading activity, the surveillance departments must investigate to verify or refute the rumors.

Proactive Measures The surveillance departments perform proactive measures to detect and minimize problems before they impact the market. Some of these measures include:

- Compiling and disseminating a list of companies that have changed their names to mislead investors as to their actual business. Changes to suggest that business interests are in the software industry are prime examples.

- Compiling and disseminating a list of non-banking financial companies that had their registration applications rejected by the Reserve Bank of India.
- Issuing notices advising members not to deal on behalf of debarred clients and to exercise due diligence when registering a new client.

Position Monitoring

The surveillance departments monitor the outstanding exposures of members on a daily basis to avoid settlement defaults as well as to track irregular and possibly illegal market activity. Reports are generated and evaluated for excessive purchase or sale positions compared with the normal business of that member to determine: (1) whether there have been abnormally concentrated purchases or sales, (2) whether the purchases have been made by inactive or financially weak members, and (3) whether the quality of the positions held suggests inordinate exposure risk. Based on an analysis of these factors, the margins already paid, and the capital deposited by a member-broker, early settlement calls can be required and members can be advised to reduce their outstanding exposure in the market. Trading restrictions can be placed on financially weak members.

The reports generated include the following:

- ***Reports detailing the top 100 purchasers and sellers:*** Reports detailing the largest 100 net purchasers and 100 net sellers in the A, B1, B2, and Z groups of scrips (see Appendix G: BSE and NSE Equity Classifications) are prepared and evaluated daily. This enables the surveillance departments to monitor the exposure of members, ascertain the quality of exposure, measure the risk vis-à-vis the cover available by way of margins and capital, and initiate action such as calling for early settlement or imposing trading restrictions on members. A detailed report on the net outstanding positions of top purchasers and top sellers with exposure to individual scrips above certain limits and margin cover available is prepared daily.
- ***Concentrated purchases and sales:*** The concentration of purchases and sales by a member in one or a limited number of scrips is monitored. The fundamentals of the scrips, their daily turnover, and the nature of the transactions are evaluated and, if deemed warranted, appropriate surveillance action is taken.
- ***Purchases and sales of scrips with thin trading:*** Purchases and sales of illiquid stocks are closely scrutinized. Details of trades in such stocks are requested from members to assess the market risk involved.

- ***Settlement liabilities of members above a threshold limit:*** The liability of members with respect to settlement funds that are due is monitored when the funds exceed a certain threshold limit with respect to the member's current liability, the member's capital, and the margin cover available to the exchange against the member's settlement liability. In cases of inadequate margin cover, the reasons for the excessive liability are ascertained. If warranted, an advance margin can be called to ensure that settlement is completed smoothly.

In addition to the reports generated, position monitoring also entails the following proactive monitoring:

- ***Verification of institutional trade:*** Unduly large institutional trades executed by member-brokers may be subject to scrutiny.
- ***Scrutiny:*** The surveillance departments conduct preliminary investigations of particular transactions to ascertain irregularities. If deemed appropriate, the transactions can be referred for a more detailed investigation to the Disciplinary Action Committee of an exchange and to the Scrutiny Committee of an exchange to reassess the financial soundness of the member.
- ***Bulk deal disclosure and monitoring:*** Member-brokers are required to disclose by 5 P.M. daily all transactions in a stock for a client where the total quantity bought or sold is more than 0.5 percent of the company's outstanding listed equity shares. "All transactions" is clarified as:
  - ***Single trades:*** Member-brokers must immediately report the execution of an order where the traded quantity is more than 0.5 percent of the listed shares.
  - ***Cumulative trades for the day:*** Member-brokers must report within one hour from the close of trading where the cumulative quantity traded under any single client code on that day either purchased or sold is more than 0.5 percent of the listed shares.

Investigations

If the surveillance departments conclude that some monitored activity or market situation requires further scrutiny, it will conduct the following types of analysis and, if necessary, take appropriate and timely action:

- ***Snap investigations:*** A preliminary analysis of the trading pattern and corporate developments in a security is performed and a determination is made as to whether the price or volume variation represents possible manipulation.

- ***Examinations:*** A more detailed analysis of the trading pattern and various company developments is prepared upon receiving a request from SEBI, any department of the exchange, or an investor.
- ***Investigations:*** If an examination suggests further review, a complete analysis is conducted to resolve whether the suspected manipulation occurred. Considerable resources are used for such an investigation.

STOCK EXCHANGE RISK SYSTEMS

Bombay Online Surveillance System (BOSS)

The Bombay Stock Exchange (BSE) developed the *Bombay Online Surveillance System* (BOSS) to generate online alerts in real time. When an order is entered into the exchange trading system, it simultaneously goes to BOSS. In BOSS, the order, security name, and client are evaluated for anything abnormal, such as circular trading (wash trades), manipulation, and excessive trade sizes. If the system detects anything abnormal, it generates an immediate alert to the BOSS staff and exchange, who then evaluate whether further action is necessary.

BSE Online Trading (BOLT) Risk Management

Trading on the BSE takes place in the *BSE Online Trading (BOLT) System*. Numerous risk management alerts, indicating a breach of any particular monitored risk characteristic, are built into the BOLT system to permit the exchanges to monitor and control their member-brokers and the member-brokers to closely monitor and control their employee-traders' activities. Risk management features in this system include:

- Order-size controls:
    - If a single order exceeds a certain value, a warning is issued to the trader who entered the order. This feature prevents data-entry errors.
    - No single order greater than 2.5 percent of a member's liquid capital is accepted by the system.
- Capital adequacy checks:
    - If a member exceeds liquid capital limits, the system will flash a message on BOLT terminals saying "capital adequacy limit violated," and all of the BOLT terminals will be deactivated (as discussed later, there are numerous warnings prior to deactivation to give the member an opportunity to increase its liquid capital).

- Gross exposure limit norms for members:
  - Members are allowed to set trading limits for traders. Members can selectively grant these trading rights. The following types of limits are available:
    - Grant or remove trader access to the BOLT trading system, and thus trading.
    - Maximum gross buy and maximum gross sell limits (in rupees lakhs).
    - Net value limits (in rupees lakhs).
    - Maximum order quantity and value (in rupees lakhs).
    - Scrip limits on selected stocks.
    - Default buying and selling limits for scrips on which an explicit limit has not been set.
    - Scrip control.
  - Group control:
    - Members can specify buy-side and sell-side value limits on trading for groups such as the A, B1, B2, Z, and F groups. Traders are not allowed to trade in those groups once the value is exceeded. If the buy value is exceeded, the trader will not be allowed to buy, and when the sell value is exceeded, the trader will not be allowed to sell.

National Stock Exchange (NSE) Risk Management

The *National Securities Clearing Corporation Ltd.* (NSCCL), the clearing and settlement subsidiary of the National Stock Exchange (NSE), also maintains a comprehensive risk management system that seeks to ensure that trading members have adequate capital to meet their obligations. These risk-containment measures include:

- Stringent margin requirements.
- Position limits based on capital.
- Online monitoring of member positions.
- Automatic disablement from trading when limits are breached.
- Capital adequacy requirements for members.
- Monitoring of member performance and track record.

MARKET-EMBEDDED SAFEGUARDS TO CONTROL ABNORMAL STOCK AND MARKET BEHAVIOR

Market safety mechanisms built into the trading and settlement systems instantaneously and automatically respond to abnormal trading events as they are happening. These mechanisms are triggered automatically when predetermined safety levels are breached. In addition, SEBI, the NSE, and BSE, acting together, have the ability to tighten the safety levels of different embedded mechanisms if they deem it prudent to do so, given the circumstances. These mechanisms act to reduce volatility as well as to reduce any chance of settlement default. The primary safety mechanisms built into the trading and settlement systems are:

- Individual stock circuit filters
- Market circuit filters
- Real-time monitoring of exchange members' available capital
- Margin adjustment controls:
  - VaR margin
  - Mark-to-market margin
  - Extreme loss margin

Price Movement Controls and Market Circuit Breakers

The exchanges have built two types of price movement controls into their trading systems: (1) individual stock daily movement limits, and (2) market index daily movement limits. Both are designed to reduce stock and market volatility and enhance investor safety.

Individual Stock Movement Limits The exchanges have the ability to control the daily price volatility of individual stocks. These controls take the form of price bands above and below the previous day's closing price within which executions may occur and orders may be accepted by the trading system. The trading systems will reject all orders with buy limits below the bottom range of the band and sell orders with limits above the top range of the band. In addition, the system will not execute any trades outside the band.

Typically, the individual stock price movement limit is set at ± 20 percent from the previous trading day's closing price, implying that a stock price is permitted to fall a maximum of 20 percent below the previous closing price and is permitted to rise a maximum of 20 percent above the previous day's closing price. A stock trading to its limit is not suspended from trading, but only halted from trading outside the ± 20 percent band. At any time during the trading day, executions may occur at or within the band.

Individual Circuit Limit Bands If a stock closes at 100 on the previous day, its price movement is limited to a trading band of 80 to 120. In the extreme

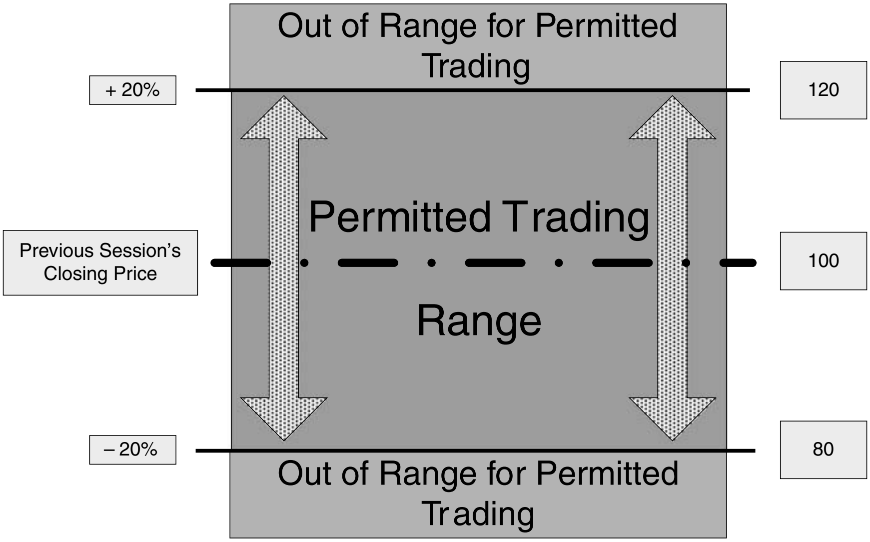

FIGURE 4.1 Individual stock daily price movement limits.

case if the stock falls to 80, then orders to buy or sell at a price below 80 will be rejected by the system, limit orders to buy or sell at 80 will be accepted by the system, and market sell orders will also be accepted. However, no executions will occur below 80, despite the existence of an unfilled market order. The stock will not trade again the rest of the day unless a buyer who is prepared to pay 80 or above enters an order into the system. Thus, price movements of individual stocks can be controlled without suspending trading in that stock for the day (see Figure 4.1).

Tightening Circuit Filter Bands As noted above, the typical stock has a price band of ± 20 percent. However, this level can be reset either for the market as a whole or for specific individual stocks. The circuit filters can be reduced to 10 percent, 5 percent, or 2 percent based on the prevailing circumstances. A reset of the band, and thus a reduction in a security's potential daily volatility, may be applied for illiquid scrips or related to abnormal trading behavior, speculation, fear of manipulation, or any number of other reasons. However, the exchanges must agree and act in unison to change a circuit filter trading band and may not do so unilaterally. This rule is significant given that the large bulk of companies listed on the BSE and NSE exchanges, the nation's two principal stock exchanges, are dually listed. If both exchanges do not agree, then the active limit remains in effect with no change on either exchange.

Circuit filters do not apply to all securities trading on the exchanges. Futures and options do not have circuit filters and can trade freely without limits. In addition, scrips on which derivative products are available and scrips that are included in indexes on which derivative products are available (i.e., the 30 constituent stocks of the Sensex, for which an index future exists) have no circuit filters. However, the exchanges have imposed dummy circuit filters on these scrips to avoid input errors such as keypunch errors.

There are also other methods that can be used by SEBI and the exchanges to reduce volatility:

- Applying extra margins to individual securities
- Applying extra limits to individual brokers
- Imposing limits on individual client exposure

Marketwide Circuit Breakers SEBI created a set of market circuit filters in an effort to control excessive market movements and their indexes due to potential panic among market participants. This ability is similar to market circuit breakers on international exchanges. These circuit breakers will result in a coordinated trading halt on both the equity and derivative markets with the express purpose of providing a cooling-off period for market participants to digest the market's behavior and rationally react to the cause of excessive market movements.

SEBI has mandated that the marketwide circuit breakers trigger at 10 percent, 15 percent, and 20 percent movements on either the BSE Sensex or the NSE Nifty, the key market index barometers for these two exchanges. The circuit breakers would go into effect on both exchanges simultaneously regardless of which index band is breached first.

A trading halt on all stock exchanges would take place in the situations for the noted time periods as given in Table 4.1.

Market Circuit Breaker Trigger Points The percentage movements for which these circuit breaker limits become effective are calculated and set quarterly based on the closing index value of the last trading session of the previous quarter. They are not calculated based on the previous session's closing value. The percentage movement triggers of 10 percent, 15 percent, and 20 percent are translated into absolute points of index variation (rounded off to the nearest 25 points for the Sensex). The calculation using the quarter-end index close then applies for the entire following quarter until a new level is set at the end of that quarter, applicable to the subsequent quarter.

TABLE 4.1 Marketwide Circuit Breakers

	Time of Circuit Breaker Breach		
Size of Movement	**Before 1 p.m.**	**1 p.m.–2:30 p.m.**	**After 2:30 p.m.**
10%	1 hour	1/2 hour	None
15%	2 hour	1 hour	Remainder of the day
20%	Trading halted the remainder of the day		

Source: The Bombay Stock Exchange.

Application of Market Circuit Breakers A greater understanding of the application of market circuit breakers can be gained from real-value examples of how they have been used. For example, the December 2005 Sensex closed at 9397.93, of which 10 percent of that level is 939. This is then rounded to the nearest 25 points, or 950. Thus, the marketwide circuit breakers applicable for the entire next quarter, January to March 2006, are as follows:

Circuit Filter	Absolute Index Points
10%	950
15%	1,425
20%	1,900

In the quarter January to March 2006, if the index had moved 950 points on a single day, regardless of the then-level of the index, it would trigger the 10 percent marketwide circuit breaker and lead to a trading halt on the nation's stock exchanges.

On March 31, 2006, the Sensex closed at 11,279.96, of which 10 percent of that level is 1,128. Rounding off to the nearest 25 points leads to a circuit breaker absolute number of 1,125. A new calculation of the circuit breakers was then performed with new absolute index points being set as the circuit filter levels. These levels, applicable for the entire quarter of April to June 2006, were set at:

Circuit Filter	Absolute Index Points
10%	1,125
15%	1,687
20%	2,250

On July 1, new levels were set for the July-to-September quarter based on the closing index levels on June 30. These would be applicable until October 1, when the September 30 close determines the new break levels, and so on.

Broker Capital Account Monitoring

The central factor upon which the exchanges manage intraday risk revolves around the availability of members' capital to meet their actual or potential settlement liabilities. All stock exchange members are required to maintain adequate liquid capital balances to retain their trading privileges and have access to the exchanges' trading systems. These balances are continually monitored by the exchanges and updated on a real-time basis. If a broker has insufficient available capital at any point of the trading day, he is unable to enter orders into the exchange trading systems.

When an order is entered into the exchange trading terminal, the system calculates the required initial margin for that particular trade and then immediately debits the broker's capital account by the calculated margin amount before placing the order into the trading system order book. There are three possibilities:

1. The broker has more than sufficient capital to cover the debited margin, and the order is then accepted by the trading system and placed into the exchange trading book.
2. The broker does not have sufficient capital with the exchange to cover the required margin for this particular trade, and the trade is rejected.
3. The broker has used up his available capital. The moment this occurs, the broker's trading terminals will be deactivated in order to make them incapable of accepting or entering new orders.

The system generates a number of warnings to the broker regarding the real-time balances of available liquid capital. Warnings are generated by the system when 70 percent, 80 percent, and 90 percent of the available liquid capital has been utilized. At 100 percent, the terminals are deactivated until the liquid capital is increased. Deactivation of terminals due to insufficient liquid assets results in the imposition of fines and penalties, increasing with the frequency of such occurrences.

The exchanges provide a facility for member-brokers to increase liquid capital intraday online to respond to the warnings and avoid deactivation and the imposition of fines.

The result of this safety mechanism is that the trading system accepts orders only from members that have sufficient capital on hand to provide the

TABLE 4.2 Eligible Forms of Capital to Meet Margin Requirements

	Form of Capital	Percent Applicable Against Requirements
1	Cash	100% (i.e., no haircut)
2	Fixed Deposit Receipts from Banks	100%
3	Government Securities	100%
4	Bank Guarantees	100%
5	Mutual Fund Units	NAV minus 10%
6	Group 1 Shares*	100% minus margin requirement

*Highly liquid shares, as defined by the exchanges.

required up-front margins for every entered trade. This minimizes the chance of settlement default and the ability of brokers to overextend themselves.

Brokers' capital can be categorized as base minimum capital and liquid capital. Base minimum capital for every broker is equal to Rs10 lakh (US$23,000) and must be on deposit with the exchange at all times. Very importantly, this base minimum capital is not applicable to meet margin requirements. Margin requirements must be funded by additional capital over and above the base minimum capital. This additional capital may be held in various forms. Each form is subject to its own haircut[c] with regard to the percentage that is used to meet capital requirements. Table 4.2 shows the different forms in which the capital can be held and the haircut applied to each form.

There are two additional stipulations about member capital. At all times, 50 percent of a member's capital must be in the most liquid forms, which are forms 1 through 4 in Table 4.2. In addition, 5 percent of total aggregate member capital with the exchange cannot be greater than 5 percent for a single bank, with regard to bank guarantees and deposits. This avoids the eventuality of a single bank's insolvency impacting more than 5 percent of the aggregate exchange-members' capital.

MARGIN CONTROLS

The Indian capital markets have built into their trading and settlement systems a very sophisticated set of margin requirements. These

[c]A "haircut" with regard to capital refers to the percent of the asset used for capital purposes that does not apply to the liquid capital computation. An asset subject to a 10 percent haircut means that only 90 percent of the asset value can be applied to the capital computation.

requirements, in combination with the real-time monitoring of broker capital accounts discussed above, are extremely effective in (1) reducing volatility and speculation in stocks, (2) ensuring that brokers and investors do not overextend themselves by taking on additional exposure without adequate capital, and (3) minimizing any possibility of settlement default on pre-settled trades.

Every trade executed on the Bombay Stock Exchange and National Stock Exchange is subject to a combination of different types of margins, including:

- VaR margin
- Mark-to-market margin
- Extreme loss margin
- Special margins

Derivatives trades are additionally subject to:

- Premium margin
- Assignment margin

The margins required for any particular trade can vary and are associated very specifically with the particular security and instrument traded, with the trading characteristics of the particular security used to determine the required margins for that trade. Furthermore, the regulator and exchanges acting together have the ability to tighten beyond the standard requirement certain of these margins for the market as a whole, or for individual securities if they deem it necessary or beneficial to the proper functioning of the market. In addition, the exchanges have the ability to selectively impose a gross exposure margin in cases where they are concerned about too much exposure by a particular broker or client or in too concentrated a set of positions.

This stock-specific determination of applicable margins yields margin rates that can range from a low of as little as 7.5 percent for large, extremely liquid, blue-chip companies to as much as 100 percent for the smaller, illiquid, less financially sound companies. The result and benefits include the fact that in the instance of a severe market correction or the default of a member-broker, settlement risk will have been effectively minimized for a large majority of executed but pre-settled trades that either will be settled with already-deposited funds or will involve easily liquidated securities.

This section discusses these different requirements, how and why they are applied, and the contribution they make to the safety and integrity of the Indian capital markets.

Margins for Equities

There are some differences in the margin requirements for equities versus derivatives. In this section, those requirements pertaining to equities are discussed.

VaR Margin As mandated by the SEBI, the stock exchanges apply a *value-at-risk (VaR) margin system* to all outstanding, pre-settled trades. The VaR margin is intended to cover the largest loss that could be expected for a given share with a 99 percent probability (99% VaR). Because VaR margin calculations are based on each individual stock's trading history, *each individual stock has its own margin requirement.* The most liquid stocks have VaR margins below 10 percent, and many illiquid stocks are subject to 100 percent VaR margins. Specific stock VaR margins are regularly recalculated and can be found on the Web sites of both primary exchanges on a daily basis. They can be found on the BSE Web site at www.bseindia.com/mktlive/market_summ/margin.asp and on the NSE Web site at www.nse-india.com/content/nsccl/nsccl_eqvarrates.htm.

There are three categories of shares with regard to VaR margin calculations, each with its own formula for determining a particular stock's margin requirement: Group 1, Group 2, and Group 3 stocks, with Group 1 stocks considered the most liquid. The categories are distinguished by the different liquidity and market impact characteristics of their traded shares.

As noted above, the VaR margin is intended to cover with 99 percent probability a negative price movement. For the most liquid stocks, the margin covers a one-day loss, whereas for illiquid stocks, it covers a three-day loss (to allow the exchange three days to liquidate an illiquid position). This three-day requirement leads to a scaling factor of the square root of three for illiquid stocks. For liquid stocks, the VaR margins are based only on the volatility of the stock itself, whereas for illiquid stocks the formula also includes the volatility of the market index in the calculations. Details of the formulas can be found on the BSE and NSE Web sites.

Defining Liquidity Groups Stocks are deemed *liquid* if they have traded on 80 percent of the trading days over an 18-month period, and they are deemed *illiquid* if they have traded fewer than 80 percent of the days over the last 18 months. Illiquid stocks are defined as Group 3 stocks. Liquid stocks are further characterized and divided based on the market impact they exhibit during trading. Specifically, the market impact is measured by *impact cost*, a measure of how much a stock price is moved by a market order of Rs500,000 (~US$11,000) coming into the market.

TABLE 4.3 Liquidity Groups

Group 1	Liquid	Traded > 80% of days over the last 18 months	Impact cost* < 1%
Group 2			Impact cost* > 1%
Group 3	Illiquid	Traded < 80% of days over the last 18 months	

*The impact cost is a measure of how much a stock price is moved by a market order of 500,000 shares coming into the market.

This is evaluated by examining four randomly chosen snapshots of the order book depth every day over the trailing six months. Stocks exhibiting an impact cost consistently less than 1 percent are deemed the most liquid, the Group 1 stocks. Those exhibiting an impact cost greater than 1 percent, but still trading for more than 80 percent of the days for the trailing 18 months, are deemed Group 2 stocks. Table 4.3 summarizes the liquidity groups.

A key feature of the VaR margin is that it is an *upfront margin*, calculated immediately upon the broker entering an order on a trading terminal and instantaneously collected from the member-broker's liquid capital account *before* the order is accepted for execution. For example, in the case of a Group 3 stock with 100 percent VaR margin, the entire cost of a purchase order is collected by the exchange from the broker before the order is even executed, meaning that there is a 100 percent chance of the trade settling or, put another way, zero chance of the settlement failing. As noted above in the discussion of broker capital monitoring, this upfront feature prevents brokers from overextending themselves beyond their available liquid capital.

Mark-to-Market Margins *Mark-to-market margins* in reference to stock trading refer to margin requirements post-execution but pre-settlement, and they apply on trade date, T, as well as T+1. For mark-to-market margins, investors are required to put up additional margin equal to the paper loss resulting from the difference between the execution price and the closing price (on T), and the closing price on T+1 versus the closing price on T. On settlement day T+2, the trade is settled. No credit is issued for net paper profits on T or T+1.

For example, if a stock purchase is executed at 100 in the morning and the stock closes on that trade day at 95, the investor must post an additional mark-to-market margin of 5, representing the mark-to-market loss. If the stock price falls to 91 on T+1, the investor must post an additional 4 mark-to-market margin to cover the additional mark-to-market difference from T. If on T the stock closes at 103, no credit is given for the mark-to-market profit. Similarly, if the stock closes on T at 95, requiring the 5 mark-to-market margin, and then at a price above 95 (whether 96 or 106), there is no return of the previous day's margin payment and no credit is generated.

On an intraday basis, individual clients are permitted to net out their various mark-to-market losses against mark-to-market profits across all their securities, either to partially reduce their mark-to-market margin requirement or to completely offset any mark-to-market payment. Again, no credit is generated from net mark-to-market gains. Clients cannot net across days, using T gains to offset T+1 mark-to-market losses.

On the broker level, there is no netting of one client versus another. From a broker point of view, all netted client positions are grossed up, and payments are debited from the member's capital the following morning.

Extreme Loss Margins *Extreme loss margins* are imposed to cover unusual instances where losses fall outside the VaR-addressed 99 percent probability of loss. The extreme loss margin for each stock is the greater of 5 percent of the price and 1.5 times the standard deviation of daily logarithmic returns of the stock price over the previous six months. (Specific extreme loss margins applicable to any specific stock can be found on the above noted BSE and NSE Web sites.)

Special Margins Exchanges have the ability to impose an additional special margin on particular stocks to contain volatility, speculation, or other abnormal trading activity. An additional margin may be imposed on a specific member-broker or specific investor if there is too much exposure in general or in too concentrated a set of positions.

Margin Obligations for Equities

In all instances, the member-broker's capital is debited the upfront margin before an order is accepted by the exchange trading system. However, in the equity market, the broker has the discretion as to when the client has to put up the margin. If the broker does not require the client to fund the margin, the broker funds it with his own liquid capital on behalf of the client. While brokers have the discretion to sell out client positions in the case of nonpayment, it is important to note that there is no required forced selling of client positions. This loophole in the regulations is one of the few in an otherwise very tight system of control that could, in a worst-case scenario, cause the default of a broker who has chosen to extend payment dates and excessive credit to a client who subsequently fails to cover his own margin requirements. In such an instance, numerous clients of the broker could be affected.[d]

Margins in the Futures and Options Segment of the Exchanges

The risk management mechanisms for the futures and options segments of the markets also use online position monitoring and sophisticated online, real-time systems. The futures and options margin requirements differ somewhat from the cash segment rules. In the futures and options segment of the market, clients are required to pay upfront margins. Thus, the loophole in equities discussed above, whereby a broker may elect to extend excessive credit to a client, is closed in the case of derivatives.

There are three types of futures and options margins:

1. ***Exposure margin:*** This is an initial, upfront margin, equal to 10 percent of the contract size.
2. ***VaR-based 99 percent margin:*** In the case of futures contracts, this VaR margin may be computed for a two-day period.
3. ***Mark-to-market margin:*** This continues for the life of the position.

Risk management for the futures and options segments of the BSE and NSE stock exchanges entails online, intraday position monitoring and a sophisticated margin system. There are different margin calculations and position limits for the market's aggregate outstanding derivative position for any particular underlying security for (1) individual member-brokers, and (2) different types of end-clients. These calculations and limits may be adjusted by regulators to tighten market security.

Initial Exposure Margin An initial exposure margin is collected upfront for all of the open positions of a clearing member based on the internationally accepted *Standard Portfolio Analysis of Risk (SPAN[1]) methodology*. The objective of SPAN is to identify overall risk in a portfolio of futures and options contracts for each investor. The system treats futures and options contracts uniformly, while at the same time recognizing the unique exposure associated with options portfolios such as extremely deep out-of-the-money short positions, intermonth risk, and intercommodity risk. A more detailed explanation of the SPAN margin can be found on the Web site of the NSE at www.nse-india.com/content/nsccl/nsccl_fospan.htm.

[d]It is the opinion of the author that this is a serious loophole that should be addressed, and closed, by the regulatory authorities.

SPAN evaluates scenarios of probable changes in underlying prices and volatilities in order to identify the largest loss, with a 99 percent probability, that a portfolio might suffer, and then it sets the margin requirement at a level sufficient to cover this one-day loss.

While initial margin requirements are based on 99 percent VaR over a one-day time horizon, in the case of futures contracts (on index or individual securities) the initial margin may be computed over a two-day time horizon. The methodology for the computation of VaR is determined by the SEBI.

Minimum Initial Margins Minimum initial margins in the derivative market vary depending upon the product. For all of the products, the following apply:

- A derivative product upfront initial margin is required to be collected from end-clients. This differs from the cash segment, where the broker must provide the upfront margin, but has the discretion of collecting it, or not, from the end-client.
- For initial margin requirements, netting is permitted at the level of individual client, but grossed across all clients, at the trading/clearing-member level. Trading/clearing members may net their own proprietary positions, but not net against client positions.
- The exchanges and SEBI have the discretion to impose stricter requirements for tighter risk management in instances where they deem it appropriate and beneficial to the smooth functioning of the markets. This might occur in times of excessive volatility or excessive speculation, in an effort to reduce such activity.

Product-specific initial margins are as follows:

Stock Futures There is a minimum initial margin equal to 7.5 percent of the notional value of the contract based on the last available price of the futures contract. This minimum initial margin is further scaled up by the square root of three for stocks that have a mean value of impact cost of more than 1 percent.

Calendar spread margins are calculated to give credit for the hedged nature of the position. However, a calendar spread is treated as a naked position in the far-month contract as the near-month contract approaches expiry. The calendar-spread margin is charged in addition to the VaR margin.

Stock Options A minimum margin on short option positions is equal to 7.5 percent of the notional value of all short stock options if the sum of the VaR margin and the calendar-spread margin is lower than the short option minimum margin. A net option value is calculated for each member as the net current market value of options in the portfolio. A member's liquid capital is then either debited (for net short positions) or credited the amount of the net option value.

For unsettled option positions, the value of the premium is deducted from the member's liquid capital on a real-time basis until the buyer settles (pays for) the trade.

Index Futures The minimum initial margin is 5 percent of the notional value of the contract. This value is monitored real time, and the margin is calculated and applied against a member's capital on an intraday basis.

Index derivatives are also subject to a spread charge of 0.5 percent per month for the difference between the two sides of the spread, subject to a minimum of 1 percent and maximum of 3 percent.

Index Options A short option minimum margin is 3 percent of the notional value of all short index options held. This is applicable if the VaR margin plus the calendar spread margin is less than 3 percent. The net option value (the value of long options minus short options) is calculated and added to the member's liquid capital. Negative values are deducted against capital.

Premium Margin In addition to an initial margin, a *premium margin* is charged to members and must be paid by the buyer until the premium settlement is complete.

Assignment Margin An *assignment margin* is levied on a member in addition to the SPAN margin and premium margin. This is required to be paid on assigned positions of members toward interim and final exercise settlement obligations for option contracts on individual securities, until such obligations are fulfilled.

Daily Mark-to-Market Margin Clients are assessed mark-to-market margins on a daily basis. These can be netted out on a member level.

ADDITIONAL RISK CONTROLS FOR DERIVATIVES

Exposure Limits on Capital

In addition to the various margin requirements imposed by the exchanges to limit the risk of settlement default that might roil the markets, additional controls have been instituted to further safeguard the markets. Among these are exposure limits on positions taken by exchange members for individual stock and index futures and options. These safeguards are as follows:

Individual Stock Futures and Options The notional value of gross open positions carried by a firm may not be greater that 20 times the available net worth of the member. The member's liquid capital will be debited on a real-time basis by an amount of 5 percent or 1.5 standard deviations of notional value of gross open positions in single stock derivatives (futures and options), whichever is higher. This debit will be over and above the margin collected for the SPAN margin.

Index Futures and Index Options The notional value of gross open positions may not exceed $33^{1}/_{3}$ times the available liquid net worth of a member. For index futures contracts and gross short open index option positions, 3 percent of the notional value of gross open positions is collected from a member's capital on a real-time basis. This is in addition to the SPAN margin.

These exposure limits on capital may be tightened by the exchanges for risk-management purposes.

Position Limits

Another mechanism employed by the exchanges to minimize risk in the markets is to limit the size of positions taken by exchange members for individual stock and index futures and options. The position limits are as follows:

Individual Stock Futures and Individual Stock Options Position limits are imposed: (1) on the number of marketwide outstanding positions that may exist, (2) on the maximum positions that a member-broker may hold, and (3) on the maximum positions that individual investors may hold.

Marketwide Limits Marketwide limits on open positions on stock options and futures contracts are based on the number of shares of underlying stock and are the lower of: (1) 30 times the average daily volume of the underlying stock during the previous month, or (2) 20 percent of the free-float of shares (i.e., non-insider shares) trading in the market.

Broker Limits Broker limits are calculated on a gross basis for all of a broker's clients. They are related to the marketwide position limits and vary depending on whether the marketwide position limit is less than or greater than Rs250 crore (US$56 million). The limits are: (1) 20 percent of the marketwide limit for stocks with marketwide position limits less than or equal to Rs250 crore, or (2) Rs50 crore (US$11 million) for stocks with a position limit greater than Rs250 crore.

Once brokers reach the position limit, they are permitted only to execute offsetting positions that lower their gross open positions.

Client Limits An individual client is subject to a position limit with respect to the underlying shares of all derivative positions that are the *greater* of: (1) 1 percent of the free-float number of shares, or (2) 5 percent of the open interest in the underlying stock.

Index Derivative Limits Position limits for index derivatives are:

Broker Limits The position limit for a broker is based on the gross positions of all of its clients and the aggregate of all open interest positions in all index derivatives contracts, futures, and options existing in the market for that particular index. The limit is the *higher* of: (1) 15 percent of the aggregate open positions, or (2) Rs250 crore (US$56 million).

Client Limits One entity or a group of entities acting in concert are not subject to a maximum holding, but are required to report in a timely manner any holding exceeding 15 percent of the open interest in any particular index.

> ***There are different limits that apply to foreign-based investors, and these are addressed in Chapter 2, "Foreign Institutional Investors."***

Option Exercise Limits

There are currently no limits on the number of individual stock or index option contracts that can be exercised. However, the exchanges do have the ability to set limits in the interest of risk management.

STOCK EXCHANGE CENTRAL COUNTERPARTY ROLE

The stock exchanges in India play a *central counterparty* role on all transactions executed on their trading systems. Thus, the buyer and seller of a particular transaction have no direct contractual relationship with each

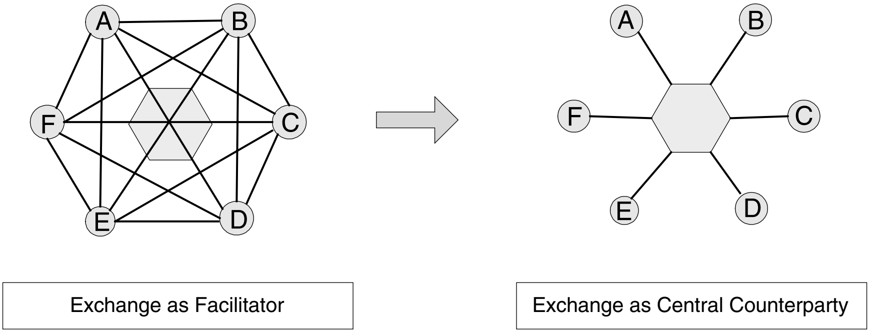

FIGURE 4.2 The central counterparty role of the exchanges.

other, but rather, each separately has as its counterparty to the transaction only the stock exchange (or one of its subsidiaries). The significance of this system is that each member no longer is subject to the counterparty risk and settlement risk associated with the various other trading members of the exchange. Each member-broker has as its counterparty only the exchange and thus is concerned only with the ability of the exchange to settle the transaction. As is explained in the next section about guarantee funds, the exchanges have taken the final step of removing any settlement risk on their own part. As a consequence, credit risk no longer poses any threat in the Indian marketplace. The market has full confidence that settlement will occur on time and will be completed irrespective of defaults by isolated trading members.

Figure 4.2 illustrates the advantages of this system. The left side of Figure 4.2 illustrates a system whereby the exchange, represented as a hexagon in the middle, acts as a facilitator of every transaction and each member has as its counterparty the member on the other side of each of its transactions. As such, each member assumes the settlement/counterparty risk associated with that member. In the figure, only six members are presented and each may have trades with the other five members; thus each assumes settlement risk with the five counterparties. A default or failure by one member impacts each of its counterparties, or all five other members in the example. The right side of Figure 4.2 illustrates a system whereby the exchange acts as the central counterparty for every trade and thus each member has only one counterparty—the exchange. In the event of default or failure by one member, no other member is impacted as the exchange will still settle every transaction, whether settlement entails funds to be delivered or shares to be delivered. Only the central counterparty will be impacted.

The central counterparty dealing with a settlement default with one of the members has several tools at its disposal to mitigate the impact of that default. First, the margin system, discussed earlier in this chapter, ensured that the defaulting member had already deposited with the exchange significant funds to cover settlement, ranging up to 100 percent of the settlement requirement for illiquid securities. Second, tight monitoring of the cash position of the member minimizes the number of transactions for which settlement is at risk. Third, the exchanges maintain settlement guarantee funds, discussed below, to cover shortages in the event of such a default occurring. And finally, the exchanges are in a strong position with significant leverage over the defaulting member to press for a speedy resolution to any default.

The exchanges as counterparties provide an additional valuable feature: Because the exchanges are the counterparty to every transaction, a member knows only the exchange as the other side of his trade, not the member who entered the contra-order. Thus, all trades on the exchanges are done anonymously to all other parties.

In summary, the exchanges acting as a central counterparty, in conjunction with automatic margin collection and settlement guarantee funds, significantly reduce, if not eliminate, settlement counterparty risk in the Indian capital markets.

GUARANTEE FUNDS

A little known and underappreciated, yet extremely valuable feature of India's markets is the existence of guarantee funds. There are three types of guarantee funds:

- ***The Trade Guarantee Fund*** of the BSE and the *Settlement Guarantee Fund* of the NSE insure/guarantee the settlement of all trades executed on these two exchanges.
- ***The Broker Contingency Fund*** of the BSE makes temporary cash advances to member-brokers who are facing short-term financial difficulties.
- ***The Investor Protection Funds*** of the BSE and NSE insure investors against losses due to the default of their broker (similar to the Securities Investor Protection Corporation (SIPC) in the United States).

As noted in the section above discussing the central counterparty role of the exchanges in India's capital markets, each member-broker has as its counterparty to every transaction the exchange on which the trade was executed and thus is concerned only with the ability of the exchange to settle the transaction. This has limited the counterparty risk of trading on the NSE and BSE exchanges to the exchanges themselves. The settlement guarantee takes the final step of removing any settlement risk associated with the exchanges.

The trade and settlement guarantee funds effectively guarantee settlements and eliminate all counterparty risk for securities transactions executed on the NSE and the BSE. The creation of these funds can be traced to 1997, when the SEBI stipulated that the exchanges should introduce a system to guarantee settlement of bona fide transactions by members to ensure that market equilibrium is not disturbed in the case of payment default by members.

Both the NSE and the BSE have reported that there has never been a year since the trade guarantee funds were established when the balance of the funds was not higher than the previous year. Furthermore, there has never been a case where any money from the guarantee funds used to settle transactions was not replaced with assets of the defaulting broker.

The guarantee funds are regularly tapped to complete settlements on behalf of brokers who miss the T+2 pay-in settlement deadline. While these funds are usually replaced the same or next day, the commonly accepted reason given for payment delays is an inefficient national banking system, particularly outside of major cities.

CASE STUDY: Thailand 1997—Effectiveness of Trade Guarantee Funds

On July 2, 1997, Thailand devalued the baht and inadvertently set off a regionwide rout of the financial markets, leading to what became known as the Asian Economic Crisis. As a result of the devaluation, the financial fundamentals of many Thai companies, particularly those with debt denominated in currencies other than the baht, took a nosedive leading to a quick and severe drop in share prices on the Stock Exchange of Thailand. The result was the default and/or bankruptcy of approximately 44 Thai brokerage firms, and in turn their default on their unsettled trades executed over the previous two days. Because of the Exchange's Securities Investor Protection Fund, a settlement guarantee fund with balances equivalent to approximately three times the average daily turnover, every trade for every brokerage firm was settled on time and in full. The system survived the sharp correction and default by numerous members because of the existence of the settlement guarantee fund.

BSE Trade Guarantee Funds

The BSE trade guarantee funds were implemented in 1997 with the following objectives:

- To guarantee the settlement of bona fide transactions between members of the exchange that form part of the stock exchange settlement system and to ensure timely settlements of executions, thereby protecting the interests of investors and members of the exchange.

- To instill confidence in secondary market participants and global investors in order to attract more players into the capital markets.
- To protect the interests of investors and to promote the development of and regulation of the secondary market.

The balance of the trade guarantee funds (TGF) as of November 30, 2006 was Rs2,643.76 crore (~US$590 million), which represents 57 percent of the November 2006 average daily equity turnover on the exchange. Since India trades in a T+2 environment, at any one time there are two days of unsettled trades outstanding; thus the coverage ratio is approximately 28.5 percent of the total value of all unsettled trades outstanding. In other words, brokerage firms representing 28.5 percent of all trades executed over a two-day period could default, and the total value of all of the trades would be covered and settled. Since many of the S, T, and Z-classified shares are subject to 100 percent margin collected by the exchange prior to execution (thus are fully paid for), virtually no settlement risk exists in those shares[e]. Since these trades constitute approximately only 4.5 percent of all trades, the TGF then represents in excess of 30 percent of the total aggregated average A, B1, and B2 share two-day turnover. Since these shares are also subject to pretrade margin, including VaR-based margin and extreme loss margin, the outstanding funds due are substantially less than the total value of the trades, thus raising the coverage ratio of the TGF even higher. Since the value at risk for a defaulted settlement is not 100 percent of the value of the shares but rather considerably less (in all likelihood less than 15 percent), the practical ability of the trade guarantee funds to settle all unsettled balances of pre-settled executed trades would represent significantly more than the 30 percent of unsettled trades, and probably many multiples of average daily turnover. Thus, the TGF provides a valuable and important cushion of safety to the market.

The balances in the BSE trade guarantee funds come from the following sources:

- The exchange contributed an initial sum of approximately Rs170 crore (US$38.5 million).
- All active members are required to make an initial contribution of Rs10,000 (US$225) in cash to the fund.
- All active members also contribute Rs0.25 for every Rs1 lakh (US$2,300) of gross turnover in all of the groups of scrips through continuous contributions that are debited to their settlement accounts in each settlement.

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[e]See Table 5.4 for a full description of these classifications, and the section on margin controls earlier in this chapter for a discussion about margins on illiquid shares.

- Active members are required to maintain a base minimum capital of Rs10 lakh (US$23,000) with the exchange. This contribution is transferred to the fund and treated as a refundable contribution of members.
- Each member is required to provide the fund with a bank guarantee of Rs10 lakh (US$23,000) from a scheduled commercial or cooperative bank as an additional contribution to the fund.

The trade guarantee funds totaled Rs2643.76 crore (~US$590 million) as of November 30, 2006.

NSE Settlement Guarantee Funds

Settlement guarantee funds of the National Securities Clearing Corporation Ltd. (NSCCL) assume the counterparty risk for trades executed on the NSE. The total value of the settlement guarantee fund as of March 31, 2006, was Rs4,055.18 crore (~US$905 million). This represents 58.4 percent of the FY06 average daily turnover for the NSE, implying that member-brokers representing more than 29 percent of all trades over a two-day period could default and the fund could fully settle every trade in its entirety. Further, as noted above when discussing the BSE TGF, given the margin collected by the exchanges prior to execution, and the fact that many securities carry an upfront 100 percent margin, the funds available in the settlement guarantee fund would represent significantly more than 58 percent of the daily outstanding balances.

A separate settlement guarantee fund is maintained for the futures and options segment. The total value of the futures and options settlement guarantee fund was US$2.606 billion as of March 31, 2006.

Brokers' Contingency Fund

The brokers' contingency fund was established in 1997 to:

- Make temporary refundable advances to members facing temporary financial shortfalls.
- Protect the interests of investors dealing through members of the exchange by ensuring timely completion of settlement.
- Instill confidence in investors regarding the safety of exchange transactions.

The balance for the brokers' contingency fund comes from the following:

- The exchange contributed an initial sum of Rs9.51 crore (US$2.2 million).
- Active members are required to make an initial nonrefundable contribution of Rs1,000,000 (~US$23,000).
- Active members contribute Rs0.125 (US$0.0027) for every Rs1 lakh (US$2,300) of gross turnover through continuous contributions that are debited to their settlement accounts for each settlement.

The fund totaled Rs50.69 crore (US$11.3 million) as of November 30, 2006.

Members are eligible to get advances from the fund for up to a maximum of Rs25 lakh (US$57,000) at a rate of 21 percent per annum.

The fund ensures that settlement cycles at the exchange are not affected due to temporary financial problems faced by members. This helps to contribute to the credibility of the stock exchange settlement system.

Investor and Customer Protection Funds

As mandated by the Ministry of Finance, the BSE and NSE established investor protection funds to meet the claims of investors against defaulting members. Funds come from:

- Members contribute Rs0.15 per Rs100,000 (US$2,200) of gross turnover.
- The stock exchange contributes 2.5 percent of the listing fees that it collects on a quarterly basis.
- Total interest earned by the exchange from 1 percent security deposits made by companies making public and rights issues is credited to the fund.
- Auction proceeds from instances of price manipulation or rigging are impounded and transferred to the fund.
- The surplus in accounts of defaulters after meeting their liabilities on the exchange is released to them after transferring 5 percent of the surplus amount to the fund.

The BSE fund totaled Rs269.92 crore (US$60.1 million) as of November 30, 2006, and the NSE fund was about Rs173.7 crore (~US$43 million) as of April 30, 2007.

In the event of default by a member, the maximum amount payable to an investor from the investor protection funds of the BSE and NSE is Rs10 lakh (US$23,000).

INSPECTION OF BROKERS' BOOKS

As stipulated by the Ministry of Finance, the stock exchanges are required to inspect accounts of at least 10 percent of their active members during each financial year. The number of inspections carried out by the exchanges every year tends to far exceed the requirements. The purpose of these inspections is to verify that members have maintained the required books of accounts as per the *Securities Contracts (Regulation) Rule 1957* and that members have adhered to the rules, regulations, and bylaws of the exchange and SEBI.

The findings of the inspections are reported to the examined members, and follow-up action is taken based on the responses and clarifications provided by members. If the violations are serious, the matter is referred to the Disciplinary Action Committee of the exchange. Members are required to have their annual accounts audited by a chartered accountant and to submit an audit certificate as well as profit-and-loss and balance sheet statements to the exchange. Members are also required to submit net-worth certificates at the end of every March and September. The filing of these documents by members is monitored by the Inspection Department.

CASE STUDY: Effectiveness of the Risk Management Mechanisms

In May 2004, the Indian market experienced extreme volatility and on May 17, 2004, the benchmark Sensex Index fell quickly and sharply, providing a real-time stress test for the embedded market safety mechanisms. "The risk management system withstood volatility of 8 sigma or above as against the normal built-in capacity of withstanding only the 3–6 sigma variations internationally."[2] The risk systems all worked as designed, no brokers defaulted, and the settlement guarantee funds were not tapped. This event is often referred to as proof and confirmation of the safety of the markets and the effectiveness of the security systems.

On that day, the Sensex declined dramatically, but then rallied to finish 564.71 points, or 11 percent, lower. This occurred in response to an upset win by the United Progressive Alliance party in a federal election. At the time, there were fears that the party was in a position to unduly influence the coalition government and possibly reverse some of the valuable reforms that were behind the economic growth being enjoyed by the country. When the market initially fell 10 percent in the morning, the market circuit breaker was triggered, and a one-hour halt went into effect. This was the first time the circuit breaker had been tripped since the imposition of the circuit breaker rules. The market reopened, and then the 15 percent down two-hour halt went into effect. When the market reopened after the two-hour halt, the circuit breaker achieved its intended effect: The investor public had time to reflect on the market-moving event, in this case election results, and conclude that the situation was not as bad as initially feared. The buyers came back and the market moved higher before the close.

In addition to the circuit breakers being triggered to temper overreaction, other risk mechanisms including intraday margins and intraday capital calls to brokers all functioned as planned, keeping the market operating and the participants trading only when they had adequate capital to do so, as determined by the various margining systems.

SUMMARY

The capital markets of India have been vigilant in developing and implementing very sophisticated safeguards that ensure the integrity of the market. System-embedded position and price monitoring, individual stock and broad market circuit breakers, multilayered and upfront margining, and guarantee funds all contribute to a market system that has withstood extreme stress and volatility, emerging strong, intact, and viable. Such robust controls put India's exchanges in league with the world's safest and most respected trading and settlement systems.

CHAPTER 5

The Equity Market

Stock Exchanges, Trading, and Settlement

CHAPTER HIGHLIGHTS

- The Bombay Stock Exchange and the National Stock Exchange are the two primary stock exchanges of India.

Trading:

- The trading systems are electronic, screen based, and order driven.
- Trading hours are Monday through Friday from 9:55 A.M. to 3:30 P.M.
- Trading is conducted in an anonymous environment.
- There is a capability for basket trading and index arbitrage.
- Short selling has been approved but will not be implemented until the second half of 2007.

Settlement:

- Settlement is T+2.
- Shares are dematerialized.
- There are two clearinghouses: the NSCCL on the NSE and the BOISL on the BSE.
- There are two depositories: the NSDL and the CDSL.

The equity market in India has undergone profound change over the last 15 years that has justly resulted in the perception that the capital markets have obtained world-class status. Earlier chapters of this book have discussed the development of an internationally respected regulator in SEBI and the significant risk controls that maximize the safety and integrity of the markets. This chapter looks more closely at the equity market specifically, centered in Bombay (Mumbai) around its two primary stock exchanges, the *Bombay Stock Exchange* and the *National Stock Exchange*, and the trading and settlement systems and processes under which they operate.

Two of the most significant developments include the introduction of screen-based electronic trading platforms and the *dematerialization* of shares and shareholding. These developments have permitted the implementation of a global standard T+2 *straight-through-processing* settlement as well as enabling risk management to develop the very sophisticated automatic mechanisms discussed in the previous chapter. The capability and efficiency of trading and settling large volumes of shares through this streamlined process have made India's financial markets significantly more attractive to global investors.

This chapter addresses numerous issues involved in trading and settlement of trades executed on the stock exchanges. In the trading sections, the electronic platforms and their systems and methodologies are discussed, as are the order matching rules used, acceptable order types, and trading capabilities such as basket trading. The discussion on settlements looks at the clearing and settlement process and the role of the clearinghouses, custodians, and depositories.

> ***The exchanges' trading systems are known by their acronyms. The NSE trading system is referred to as the*** **NEAT** ***system (National Exchange for Automated Trading). The BSE trading system is known as*** **BOLT** ***(BSE Online Trading). While there are some subtle differences underpinning the two systems and some nomenclature differences when referring to similar concepts, the client/investor elements are largely alike and thus will be transparent to the user. For instance, the BSE refers to its equity trading system as the "Equity Segment," and the NSE refers to a "Capital Market Segment." In this chapter, the trading and settlement systems of the two exchanges will be presented together, where possible, to present information needed by traders, portfolio managers, and risk control managers. For settlement clerks and settlement practitioners who need to learn about the individual exchange trading and settlement systems in intricate detail, please refer to the exchange web sites at www.bseindia.com and www.nse-india.com or contact the exchanges directly.***

INDIA'S STOCK EXCHANGES

India's financial markets have evolved from a decentralized and fragmented system of 23 regional stock exchanges into two dominant, primary exchanges: the Bombay Stock Exchange (BSE) and the National Stock Exchange (NSE).

Exchange History

The Bombay Stock Exchange (BSE), the oldest stock exchange in Asia, was founded in 1875 and began as a regional exchange centered in Bombay. A number of other regional stock exchanges developed throughout the country and were supported by a government requirement that all companies had to initially list on their local regional exchange. This created a captive set of listed companies and made the local exchanges viable. The BSE, located in Bombay, the commercial center of India, became the dominant regional exchange with access to the most capital among its members. Over time, many of the regionally listed companies sought BSE listings, resulting in the BSE effectively becoming India's primary exchange.

A government study in the early 1990s recommended the creation of a stock exchange with nationwide interests and, unlike the BSE, no regional roots. The National Stock Exchange (NSE), founded in 1992, was the result.

Changes in the listing rules of the nation's exchanges led to the removal of two key factors that made the regional stock exchanges viable and reshaped the stock exchange landscape of India. The changes were (1) the removal of a requirement that companies must initially list on their local exchange, and (2) the removal of a requirement that companies list on any regional exchange. Immediately following the removal of these requirements, all companies that could qualify to list on both or either the BSE or NSE soon did so to access the superior liquidity found on these exchanges. Inevitably, liquidity dried up on the regional exchanges.

In an effort by the regional exchanges to revive liquidity and create a viable business for their respective regional members, 14 of the exchanges created the Interconnected Stock Exchange of India (ISE) as an electronic platform to give regional members access to trading other exchanges' listed companies and thereby enhance liquidity of all of the companies. Although the ISE and the regional exchanges still exist, the centralization of the BSE and NSE has made them all but obsolete. The ISE now functions primarily as a vehicle through which regional exchange members have access to enter trades for their clients on the NSE and BSE. The ISE is trying to reestablish itself as the market for small and medium-sized enterprises but as of this writing has been unable to gain much traction.

TABLE 5.1 BSE and NSE Trading Statistics: Year-End FY2006

	No. of Members	No. of Listed Companies	No. of Trades in 2006	Turnover (US$ Bn)	Avg. Daily Turnover (US$ Mn)	Market Capitalization (US$ Bn)
NSE	953	1,158	746,800,000	$425.83	$1.708	$761
BSE	913	4,796	328,246,360	$214.62	$864	812

Sources: The National Stock Exchange; the Bombay Stock Exchange.

Stock Exchange Structure

Both of the primary exchanges are *demutualized* corporations run by a board of directors. This structure, mandated by the *Securities Laws (Amendment) Act of January 7, 2005*, effectively segregated the ownership, management and trading rights at the exchange from one another, removing concern about conflicts of interest.

Stock Exchange Competition

The BSE and NSE are competing organizations. Most market participants believe that the existence of two exchanges rather than one, merged exchange leads to a better performing marketplace. Competition between the two exchanges has led to reduced costs, faster innovation, and greater efficiencies, and most participants would be opposed to a merger of the exchanges.

As the first and oldest exchange in India, BSE had 4,796 listed companies and 7,500 different scrips listed as of December 31, 2006, considerably higher than the NSE's 1,158 listed companies, although many of them are very small entities. On any given day, approximately 50 percent of the BSE's listed companies do not trade, and of those that do trade, more than 1,000 of them trade very infrequently.[1] Among the larger, more significant companies in India, virtually all are listed on both exchanges. As such, arbitrage[a] trading between dual-listed shares regularly occurs between the two exchanges and has been estimated to reach 30 percent of turnover on some days. Table 5.1 shows that while the NSE's number of listings is significantly less than the BSE, the NSE has more members, transacted more than twice the

[a] Arbitrage refers to the practice of taking advantage of the price discrepancy of the same item trading in two different marketplaces, buying the item in the less expensive market and instantaneously selling it in the higher-priced market.

number of trades, and had an average daily turnover and gross annual turnover of two times that of the BSE in 2006.

Foreign Brokers in India

A number of non-Indian brokerage firms and investment banks have established a presence in the Indian market through their own local corporate entities or through joint venture agreements with local firms. In the growing and dynamic environment in Indian capital markets, relationships are constantly evolving. In 2006 alone, U.S. investment bank Merrill Lynch bought out 90 percent of its Indian partner DSP, and Goldman Sachs ended a joint venture with its local partner Kotak Mahindra, presumably to begin their own venture. Foreign individual and joint ventures have sought and received membership in India's two primary stock exchanges. Tables 5.2 and 5.3 list the foreign members of each exchange, current at the time of this writing but with the recognition that new foreign investment banks continue to enter India and likely seek exchange memberships.

TABLE 5.2 Foreign Broker Members of the Bombay Stock Exchange

SEBI Reg. No.	Clearing No.	Trade Name
INB010706931	278	ABN AMRO Asia Equities (India) Ltd.
INB011205730	576	Brics Securities Ltd.
INB011141331	670	Citigroup Global Markets India Pvt. Ltd.
INB010826432	152	CLSA India Ltd.
INB010970631	497	Credit Suisse First Boston (India) Securities Ltd.
INB011196830	905	Deutsche Equities India Pvt. Ltd.
INB010706833	276	Dresdner Kleinwort Wasserstein Securities (India) Pvt. Ltd.
INB010935530	130	DSP Merill Lynch Ltd.
INB011095636	157	Dundee Securities Company Pvt. Ltd.
INB010791730	66	HSBC Securities & Capital Markets India Pvt. Ltd.
INB011054831	325	JM Morgan Stanley Financial Services Pvt. Ltd.
INB011054237	457	JM Morgan Stanley Securities Pvt. Ltd.
INB010675237	324	JP Morgan India Pvt. Ltd.
INB010599037	165	Jacob Ballas Securities India Pvt. Ltd.
INB011246734	46	Macquarie Securities India Pvt. Ltd.
INB011250330	416	Man Financial–Sify Securities India Pvt. Ltd.
INB010792034	472	Peregrine Securities (India) Pvt. Ltd.
INB010925237	668	SG Asia Securities India Pvt. Ltd.
INB010951437	691	UBS Securities India Pvt. Ltd.

Source: Bombay Stock Exchange.

TABLE 5.3 Foreign Broker Members of the National Stock Exchange

SEBI Reg. No.	Member Code	Member Name
INB230608032	06080	ABN AMRO Asia Equities (India) Ltd.
INB230920030	09200	ASK–Raymond James & Associates Pvt. Ltd.
INB231205734	12057	Brics Securities Ltd
INB230854633	08546	Brilliant Securities Ltd.
INB231222036	12220	BSV Securities Pvt. Ltd
INB230781538	07815	Bulls & Bears Portfolios Ltd.
INB231094237	10942	CD Integrated Services Ltd.
INB230769433	07694	C. Mackertich Ltd.
INB231203234	12032	Citicorp Capital Markets Ltd.
INB231141335	11413	Citigroup Global Markets India Pvt. Ltd.
INB230826436	08264	CLSA India Ltd.
INB230970637	09706	Credit Suisse First Boston (I) Securities Pvt. Ltd.
INB230647738	06477	DBS Capital Markets Pvt. Ltd.
INB231196834	11968	Deutsche Equities India Pvt. Ltd.
INB230597934	05979	DSP Merrill Lynch Ltd.
INB230653732	06537	Fortis Securities Ltd.
INB230791734	07917	HSBC Securities & Capital Markets (India) Pvt. Ltd.
INB230852332	08523	ING Baring Securities (i) Pvt. Ltd.
INB231055337	10553	JM Morgan Stanley Fixed Income Securities Pvt. Ltd.
INB231054835	10548	JM Morgan Stanley Retail Services Pvt. Ltd.
INB231054231	10542	JM Morgan Stanley Securities Pvt. Ltd.
INB230675231	06752	JP Morgan India Pvt. Ltd.
INB230599031	05990	Jacob Ballas Securities India Pvt. Ltd.
INB230753135	07531	Nikko Capital Market Pvt. Ltd.
INB231217234	12172	Refco Capital India Pvt. Ltd.
INB231123333	11233	Refco–Sify Securities India Pvt. Ltd.
INB230886230	08862	SG Stock Services Ltd.
INB230655838	06558	UAE Exchange & Finance Ltd.
INB230951431	09514	UBS Securities India Pvt. Ltd.

Source: National Stock Exchange.

EXCHANGE TRADING RUDIMENTS

Trading Hours

Trading on the BSE BOLT system and NSE NEAT system is conducted from Monday to Friday from 9:55 A.M. to 3:30 P.M.

Trading System Methodology and Characteristics

In the mid-1990s, the National Stock Exchange (NSE) and the Bombay Stock Exchange (BSE) introduced screen-based electronic trading systems based on the principle of an *order-driven market*. Orders are entered into the trading systems using computer terminals provided by the exchanges. Currently, all orders input into the trading systems must be manually released into the system. Computer-generated automatic order entry is not permitted. Furthermore, no systems are permitted to interface with both the BSE and NSE order entry terminals to evaluate and choose the most appropriate (i.e., best price) market to send the order, which is a valuable tool for dually listed stocks. Instead, investors must decide which market to send a particular order. As such, some inefficiency exists among the prices of dually listed shares, and therefore arbitrage opportunities appear between the two exchanges. While proprietary electronic systems interfacing with the exchange trading terminals have been prohibited to protect the markets from excessive computer-generated trading, some market participants anticipate a loosening of this restriction in the near future as market liquidity continues to grow and as domestic demand rises.

Trading Anonymity

Trading is conducted in an anonymous environment. The counterparty to every trade is the exchange,[b] and thus the identity of the broker-member representing the other side of a trade is not revealed.

Trade Entries

Trade entries into the two exchange trading systems are conducted on trading terminals provided by the exchanges and installed in member-broker offices that link directly to the exchanges. The member-brokers' trading personnel enter orders to buy or sell securities through these terminals. The member-brokers of the exchange are free to install trading terminals anywhere in the country. The trading terminals are unique for each exchange, so a broker who is a member of both exchanges is required have two separate trading terminals, each dedicated to one of the exchange's trading systems., The BSE had 14,440 *trader workstations* installed in 414 different cities as of December, 2006,[2] and the NSE had 2,769 terminals installed in 311 cities as of March 2006, the most recent data available.[3]

[b]The central counterparty role of the exchanges, and the benefits accruing from such a role, are discussed more fully in Chapter 4.

All orders inputted into the terminals must be placed by a person manually by "hitting the enter key" rather than placed automatically by another computer. Aside from the perceived control of having a person be responsible for entering all trades into the system, this rule impacts three trading functions:

1. ***Best execution:*** For dually listed stocks where price discrepancies between the exchanges might exist, a person must first check both exchange terminals for the best price and then manually enter and release that order into the exchange's terminal that offers the best price.
2. ***Exchange arbitrage:*** As many stocks are dually listed on the BSE and NSE, price discrepancies and thus arbitrage opportunities between like issues on the two exchanges regularly occur. Such arbitrage is estimated to constitute up to 30 percent of volume on some days, but is currently a manual process. The exchanges and SEBI do not permit automated computer-generated arbitrage between the two exchanges.
3. ***Computer-generated trading:*** The exchanges and SEBI still appear to be concerned that non-arbitrage computer-generated and entered trades into the terminals for instantaneous transmission into the exchange trading system may overwhelm the markets.

Trading Segments

The BSE has divided the issues traded on the exchange into several classifications based on certain qualitative and quantitative parameters. The quantitative parameters include such statistics as the market capitalization, liquidity, consistency of revenue and income streams, and impact cost of the stock. Qualitative parameters include such issues as the quality of a company's corporate governance, the number of investor complaints concerning the stock or the company, and any general perceptions, good or bad, pertaining to the stock. A review committee meets two times a year to review the stocks assigned to each classification and make changes as necessary. The highest-quality classification is A and at the time of the semiannual review the number of A-classified companies is set at exactly 200. The 200 A-classified companies are characterized as being 200 of the safest, highest-market-capitalized, highest-liquidity companies, with the strongest corporate governance and consistently strong financials. Between the semiannual reviews, the number of A companies may be slightly below 200, indicating either companies taken over, merged, or delisted, or slightly above 200, indicating possible IPOs of very strong companies deserving of an A classification. At the semiannual review, however, the 200 number is strictly adhered to and companies are added or deleted accordingly to achieve the

TABLE 5.4 BSE Scrip Classifications

Classification		Description
A	Equity	The 200 strongest, highest-market-capitalized, highest-liquidity companies on the BSE, with strong financials and high-quality corporate governance.
B1		Also strong companies, but not in the top 200. Many may compare favorably with A-classification companies based on the objective and subjective parameters, but not be in the top 200 and thus receive a B1 classification. There is no fixed number of B1 companies.
B2		B2 companies represent the lowest tier of listed equities in terms of market cap, liquidity, financials, and the subjective measures such as corporate governance and complaints. Investors should be wary of B2 companies in terms of management, quality of earnings, and the financial soundness of the business.
S		S shares are also known as "BSE Indonext"shares. This classification consists of scrip from the B1 and B2 groups and companies exclusively listed on regional stock exchanges that have capital of Rs3 to 30 crores (US$700,000 to US$7 million).
Z		Z shares include companies that either: (1) have failed to comply with the listing requirements of the exchange; (2) have failed to resolve investor complaints; or (3) have not made the required arrangements with both of the depositories for the dematerialization of their securities.
T		These are shares that settle on a trade-to-trade basis for market-surveillance reasons.
TS		These are a subclassification of S shares that settle on a trade-to-trade basis for market-surveillance reasons.
F	Debt	These are fixed income securities.
G		These are government securities for retail investors.

correct number. Table 5.4 lists the BSE scrip classifications and a description of the companies so classified.

The distinction between the various classifications can be seen by looking at the trading statistics on any random day. Table 5.5 looks at March 20, 2007, when 7,637 scrips were listed on the exchange and only 34.5 percent, or 2,633 scrips, traded that day. A scrips, totaling 216 on this day, represent only 8 percent of the number of traded scrips, but account for

TABLE 5.5 BSE Scrip Equity Classification Trading Distinctions

Classification	No. of Scrips	% of Scrips	No. of Trades	% of Trades	% of Volume	% Avg. Daily Turnover	Market Capitalization (Equity US$ mn)	
Total Traded	2,633	100	1,233,179	100	100	100	790.2	
A	216	8	498,526	40	28	54	608.0	77%
B1	709	27	626,685	51	51	40	128.0	16%
B2	890	34	52,862	4	10	2.59	15.4	1.9%
BSE Indonext	496	19	44,803	4	6	3.23	17.2	2.2%
Z	103	3.9	991	0.1	0.6	0.04	12.0	1.5%
T	214	8	9,248	1	3.9	0.43	9.6	1.2%

Source: Bombay Stock Exchange Limited, March 20, 2007 data. Market capitalizations are for February 2007.

40 percent of the number of trades, representing 54 percent of the average daily turnover and approximately 77 percent of the market capitalization. A and B1 equity shares together represent 91 percent of the number of trades, 94 percent of the average daily turnover, and 93 percent of the market capitalization. Within these numbers, it is interesting to note that A and B1 stocks have declined slightly as a percentage of total equity numbers, and that A stocks represent a progressively smaller percentage of equity business while B1 stocks represent a progressively greater percentage of equity business. The percentage ratio of A to B1 was as high as 93 percent to 7 percent in 2000 and had declined to almost 58 percent to 42 percent by late 2006. The implication is that the market is becoming more broad based as the second tier stocks are beginning to attract greater interest among investors.

Lot Sizes

Company scrip that is in dematerialized form can be traded in a market lot of one. Scrip that is still in the physical form is traded in a market lot of either 50 or 100. Most scrip now trade in the dematerialized form.

Tick Sizes

There is a 5 paise[c] tick size for standard trading in listed scrip quoted at more than Rs15.

[c] A paise is the smallest unit in the Indian numbering system, representing one hundredth of a rupee. See Appendix B: India's Unique Numbering System for a further discussion on India's numbering system.

There is a 1 paise tick size for:

- Units of mutual funds.
- Securities traded in the F group.
- Equity shares having closing prices up to Rs15 on the last trading day of the calendar month. Accordingly, the tick size in various stocks up to Rs15 is revised to 1 paise on the first trading day of the subsequent month. The tick size that is revised on the first trading day of the month remains unchanged during the month even if the price of the share surpasses the Rs15 level.

Listed Securities

Listed securities are securities of companies traded on the exchanges that have signed listing agreements with the exchanges. With very few exceptions, discussed below, most issues fall into this category.

Permitted Securities

Permitted securities are securities of companies that are listed and actively traded on regional stock exchanges and are not listed on either the BSE or NSE. The BSE and NSE allow trading in such securities on their exchanges provided they meet the requirements specified by the exchange. They trade on the exchanges as permitted securities.

Computation of the Closing Price in the Cash Segment

The closing price of a stock is the weighted-average price of all trades executed during the final 15 minutes of the continuous trading session. If there is no trade recorded during the last 15 minutes, the last traded price in the continuous trading session is taken as the official closing price.

Limited Physical Market

The *limited physical market* is the trading facility for small investors holding physical shares in securities mandated for compulsory dematerialized settlement. Trading should not exceed 500 shares.

- Trading is conducted in the odd lot market (market type O).
- The base price and price bands applicable in the limited physical market are the same as those for the corresponding normal market on that day.

- The trading hours are the same as those of the normal market, and order entry during the pre-open and post-close sessions is not allowed.
- Settlement for all trades is done on a trade-for-trade basis, and delivery obligations arise out of each trade.
- Trading members are required to ensure that shares are duly registered in the name of investors.

EXCHANGE TRADING SYSTEMS

BOLT—BSE Online Trading System

The *BSE's online trading system* (BOLT) converted the open-outcry system of trading to a screen-based trading system. On March 14, 1995, the first group of 818 scrips was traded on the BOLT system. At regular intervals, additional scrips were added, and all 5,000 scrips were shifted to the BOLT system within 50 days.

Highlights of BOLT

- Dissemination of information within less than two seconds.
- Current maximum of 4 million trades a day.[4]
- Average execution time is 100 orders/second with a peak speed of 200 orders/quotes per second.[5]
- Fault-tolerance features at each level.
- Proprietary open interface that allows members to connect directly to BOLT using third-party-developed applications.
- Integrated risk management alert system.

Benefits of BOLT

- Makes trading accessible anywhere and any time.
- Facilitates a fast response time.
- Disseminates data at a fast rate.
- Facilitates the transparency of information.
- Provides global connectivity.
- Increases awareness of market participants through the provision of information.

Risk Management Risk management is an integral part of the BOLT system (see Chapter 4, "Safety and Integrity," for more details).

BS7799 Certification for BSE BS7799 is the standard for securing information, managing risk, and protecting technical and people assets. It certifies the confidentiality, integrity, and availability of information. BSE achieved the BS7799–2:2002 certification for BOLT. Det Norske Veritas (DNV) conducted the BS7799 audit at BSE. The following are the benefits of BOLT receiving the BS7799 certification:

- Gives confidence to clients, investors, and business partners who entrust their financial information to BSE's custody by maintaining information confidentiality and integrity.
- Provides internationally recognized best practices for maintaining information security.
- Strengthens BSE's competitive edge by creating trust in the firm, externally as well as internally.
- Ensures business continuity from a trading operations perspective and minimizes losses for BSE as a whole, even in the case of a disaster.
- Demonstrates compliance with standards for information security in addition to helping to safeguard vital information.
- Motivates management and employees to demonstrate adherence to best international security practices.

NEAT—National Exchange for Automated Trading

The National Stock Exchange has named its trading system *NEAT,* an acronym for the *N*ational *E*xchange for *A*utomated *T*rading. NEAT is a fully automated screen-based trading system operating with an order-driven market methodology.

Risk Management Risk management is an integral part of the NEAT trading system. As discussed more fully in Chapter 4, "Safety and Integrity," a number of online, real-time safety mechanisms are incorporated into NEAT.

TRADING FEATURES OF THE EXCHANGES

Order Books

All orders entered into the exchange trading systems are time-stamped and assigned a unique identification number to facilitate a verifiable audit trail. The exchanges adhere to a *price/time priority,* whereby better prices (higher bids and lower offers) have first priority, and at the same price orders entered first have priority over those entered later.

The trading systems of both exchanges accommodate numerous order sizes and types and maintain different order books to handle the various types.

Normal market: All NSE orders of regular lot size or multiples thereof are traded in the normal market. The market lot of these shares is one.

Odd-lot market: All NSE orders whose order size is less than the regular lot size are traded in the odd-lot market.

The BSE maintains the following trading books:

Regular lot book: The regular lot book contains all regular lot orders such as market and limit orders, but there are no contingencies, such as all-or-none or minimum fill conditions, attached to the orders.

Special terms book: The special terms book contains all orders that are either all-or-none or minimum fill. However, all-or-none and minimum fill orders are not always permissible by SEBI.

Negotiated trade book: The negotiated trade book contains all negotiated order entries captured by the system before they have been matched against their counterparty trade entries. These are similar to prearranged cross trades. These entries are matched with identical counterparty entries only. These entries contain a counterparty code in addition to other order details.

Stop-loss book: The stop-loss order book stores all stop-loss orders until they are triggered, after which the order is released to the regular lot book as live orders for execution.

Odd-lot book: The odd-lot book contains all odd-lot orders (orders with quantities less than the marketable lot) in the system. Currently, pursuant to a SEBI directive, the odd-lot market is used for orders that have quantities of less than or equal to 500 shares.

Spot-lot book: The spot-lot book, not currently active, contains all spot orders in the system.

Auction book: The auction book contains orders that are entered for all auctions. The matching process for auction orders in this book is initiated only at the end of the solicitor period.

Order Matching Rules

The best (i.e., highest-priced) buy order is matched with the best (i.e., lowest-priced) sell order. A standard order with no contingencies may match partially with another order resulting in partial executions and/or multiple trades to fill the order. The system views all buy orders available from the point of view of a seller and all sell orders from the point of view of a buyer in the market.

Members can proactively enter orders in the system, which will be displayed in the system until either (1) the full quantity is matched against one or more subsequently entered contra-orders, resulting in trades, or (2) is canceled. Alternatively, members may be reactive and put in orders that match with existing orders in the system. Orders lying unmatched in the system are called *passive orders,* and orders that come in to match the existing, passive orders are called *active orders*.

Order Types

The exchange trading systems accommodate various order types whose attributes can be broadly classified into four categories:

1. Time
2. Price
3. Quantity
4. Additional

Time The two stock exchange trading systems accommodate four different time conditions attached to an order:

1. ***Day order:*** An order is valid only for the day on which it is entered. Unexecuted day orders are canceled automatically at the end of each trading day.
2. ***Good till canceled:*** This is an order that remains in the system until it is canceled by the trading member. It will therefore be able to span trading days if it does not become matched. The maximum number of days a good-till-canceled order can remain in the system is set by the exchanges.
3. ***Good till days/date:*** This is an order that remains valid and in the system until a specific date, or a specific number of days, specified in the order. At the end of this period, the order will be automatically canceled. Each day/date counted is a calendar day and inclusive of holidays. The days/date counted are inclusive of the day/date on which the order is placed. The maximum number of days a good-till-days/date order can remain in the system is set by the exchanges.
4. ***Immediate or cancel:*** This is an order to buy or sell a security immediately upon the order being released into the market. Any unexecuted remainder of the order is then automatically and immediately canceled.

Price The three types of price attributes accepted by the exchanges are:

1. ***Limit price order:*** This is an order eligible for execution at or better than the specified limit price.
2. ***Market order:*** This is an order with no price limit and is to be executed at the best price obtainable, whatever it is, at the time of entering the order.
3. ***Stop loss price order:*** This is an order that is dormant and becomes activated only when the market price of the relevant security reaches or crosses a threshold, which is a trigger price specified on the order. Until triggered, the order is a dormant order not eligible for execution.

A sell order in the stop loss book is triggered when the last traded price in the normal market reaches or falls below the trigger price of the order. A buy order in the stop loss book becomes triggered when the last traded price in the normal market reaches or exceeds the trigger price of the order. Stop loss orders are often used to preserve profits or limit losses.

Quantity The trading systems recognize and accept several quantity attributes and conditions on orders:

- ***No quantity restriction:*** An order is considered to have no quantity restriction unless marked otherwise and is therefore available for execution in any quantity from the smallest permissible trading lot to the full quantity of the order, subject, of course, to meeting the order's other attributes.
- ***Disclosed quantity or drip-feed mechanism:*** This is an order that allows members to disclose only a part of the order quantity to the market. For example, an order of 1,000 with a disclosed quantity condition of 200 means that 200 is displayed to the market at a time. After this is traded, another 200 is automatically released and so on until the full order is executed. The exchange may set a minimum disclosed quantity periodically. Traders often use this mechanism to avoid showing the market that there is a large quantity for sale/to buy and then causing the buyers/sellers to get nervous and back away.
- ***Minimum fill:*** This is an order allowing members to specify the minimum quantity by which an order should be filled. For example, an order of 1,000 units with a minimum fill of 200 requires that each trade be for at least 200 units. In other words, there will be a maximum of five trades of 200 each or a single trade of 1,000. The exchange may set norms for minimum fills periodically.
- ***Hit and take order mechanism:*** Minimum fill/rest kill orders (a combination of immediate or cancel [IOC] and minimum fill) will be matched

at a specified price to a quantity greater than or equal to the minimum quantity/less than or equal to the total quantity (orders being satisfied at least up to the minimum fill quantity are executed; the unexecuted quantity of the order will be canceled).

- ***All or none:*** This is an order imposing the condition that only the full order should be executed. No partial executions are accepted.

> ***At the time of writing, all-or-none and minimum fill orders were not permitted by the SEBI.***

Additional Order Type

Batch Orders The BOLT trading system provides a facility for a batch upload of orders all at one time that is often used before the opening so that the orders are ready for entry into the trading system at the start of trading. This function may also be used during trading hours and is an effective tool when doing index arbitrage.[d] The maximum number of orders the user may submit at one time is 500. There are two ways in which the user can input orders in a batch:

1. Through screen entry of orders and later submission
2. By loading a pre-created batch file into the system

Price Bands

As discussed more fully in Chapter 4, "Safety and Integrity," most securities are subject to *price bands* that define their maximum permissible daily price movements. No price bands are applicable to securities for which derivative products are available or for securities included in indexes for which derivative products are available. All other securities are subject to daily price bands of ±2 percent, ±5 percent, ±10 percent, or ±20 percent. Most securities, including debentures, warrants, and preference shares, are subject to the 20 percent bands. Those subject to smaller price movement bands are usually those in which SEBI or the BSE and NSE exchanges, acting together, wish to limit or control volatility. A list of the securities subject to these tighter bands can be found daily on the NSE exchange Web

[d]Index arbitrage is the strategy whereby traders attempt to take advantage of price discrepancies between an index and the basket of underlying stocks in that index.

site at http://www.nse-india.com/content/equities/eq_pricebands.htm. Note that although derivative-related securities are not subject to price bands, the exchange trading systems use the 20 percent control feature to prevent order-entry errors for such securities.

Basket Trading System

The BOLT trading system was designed to accommodate *basket trading* and utilizes the batch upload mechanism to do so. Initially created to provide investors with a facility for trading Sensex-linked portfolios and to create a linkage of market prices of the underlying securities of Sensex in the cash segment and futures on Sensex,[e] the system has evolved to provide a facility for investors to create and trade custom baskets. In the basket trading system:

- Investors, through member-brokers, are able to buy and sell all 30 Sensex stocks with a single order in the proportion of their respective weights in the Sensex.
- Investors can customize baskets, specifying the constituent securities and their respective weightings.

To use this system for the Sensex 30, member-brokers need to indicate the number of Sensex baskets to be bought or sold, where the value of one Sensex basket is arrived at by the system by multiplying Rs50 by the prevailing Sensex index value. For example, if the Sensex is 10,000, then the value of one basket of Sensex would be $10{,}000 \times 50 =$ Rs500,000. Investors can also place orders by entering a value of the Sensex portfolio to be bought or sold with a minimum value of Rs50,000 for each order.

The basket trading system provides index arbitrage opportunities by simultaneously buying and selling baskets comprising the Sensex scrips in the cash segment and Sensex futures. Index arbitrage ensures that underlying cash prices and futures prices do not vary significantly from each other.[f]

The trades executed under the basket trading system on BOLT are subject to intraday trading and gross exposure limits applicable to member-brokers. The VaR, MTM and other applicable margins apply.

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[e] This linkage is the means of effecting index arbitrage.

[f] If the prices varied, index arbitrageurs would quickly take advantage of the discrepancy by purchasing the cheaper side of the trade and selling the more expensive, thereby once again bringing the prices in line with each other.

Short Selling

Currently short selling by institutions is prohibited in the Indian equity market, although traders and investors have been able to use the futures and options markets to affect a downside position in the market. In a long anticipated policy shift, the Minister of Finance, Palandiappan Chidambaram, announced on February 28, 2007 in his 2007–2008 Budget Speech that he proposed "*to . . . allow short selling settled by delivery, and securities lending and borrowing to facilitate delivery, by institutions . . .*" (Ministry of Finance, 2007–2008 Budget Speech, Section 94). This was followed by a similar announcement from SEBI on March 22, 2007, supporting short selling in the cash market by domestic and foreign institutional investors. While approved by the market's two primary regulatory bodies, the rules and regulations surrounding short selling are yet to be finalized. In addition, the infrastructure to support short selling, in particular a regime for stock lending and borrowing of securities, has yet to be implemented and could take several months to establish. Early indications are that short selling will initially be limited to only those stocks eligible for derivatives trading. In addition, institutions may find themselves subject to margin payments for short selling; currently they do not have to pay margin for market trades. With regard to timing, some market professionals estimate that the rules will not be finalized for three to six months and that a useful short selling regime will not be in place for almost one year from the announcements.

EXCHANGE SETTLEMENT SYSTEMS

Securities settlement in India has improved dramatically since reforms began in 1992 and is similar to that found in more advanced developed markets. Strong institutions have built robust, sophisticated systems that allow fast, efficient straight-through-processing from the time of execution to the funds and securities pay-out. These institutions include the exchanges, clearinghouses, custodians, and depositories.

Introduction to Settlement

At the end of each trading day, details of all executed trades and the security obligations of members are downloaded to members and custodians by the exchange clearinghouses. The clearinghouses then determine the cumulative and net obligations of each member, and they electronically transfer this data to the clearing members. All of the trades executed during a particular trading period are settled together. A multilateral netting procedure is adopted to determine the *net settlement* obligations (delivery/receipt positions) of clearing members. The clearinghouses then allocate or assign delivery of securities to/from the members to arrive at the delivery and receipt obligation of funds and securities by each member.

The process of receiving securities from member-brokers against their sale obligations is called *securities pay-in*. On the securities pay-in day, delivering members are required to deliver securities to the clearinghouse. On *securities pay-out* day (usually the same day as the pay-in day), securities are delivered by members/custodians to the respective receiving members. Exceptions to this process may arise because of short delivery (i.e., fewer shares than have been contracted to be delivered) of securities by clearing members, bad deliveries, or company objections on the pay-out day. Settlement is deemed to be complete upon the declaration and release of pay-out of funds and securities.

Settlement Timing

Delivering members are required to deliver all documents to the clearinghouse (in the case of physical settlement) during business hours from 10 A.M. to 5 P.M., but no later than 10 A.M. on the pay-in day. Receiving members are allotted specific time slots on pay-out day to collect the documents from the clearinghouse.

In the case of dematerialized settlement, representing most trading activity, clearinghouses for the two exchanges (discussed in detail below) have slightly different timings for settlement activities. For the *National Securities Clearing Corporation Ltd. (NSCCL)*, the wholly owned subsidiary of the NSE that settles all NSE executions, the delivering member should have balances of securities in his delivery account within his clearing member clearing account with the depository on or before 10 A.M. on the pay-in day. The depository would debit the delivering member's account on or after 10 A.M. The depository would credit the receiving member's receipt account within his clearing member clearing account with the depository on or after 2:30 P.M. on the pay-out day.

The *BOI Shareholding Ltd. (BOISL)*, a joint venture between the Bank of India and the BSE that settles all BSE executions, requires member-brokers to submit the pay-in instructions for funds and securities to banks and depositors by 10:30 A.M. on T+2. The pay-in of funds and securities must occur by 11 A.M., and the pay-out of funds and securities must occur by 1:30 P.M.

Members may pass the responsibility of settling trades to their custodians by way of a mechanism known as *6A/7A,* which refers to the transfer of the settlement responsibility from the clearing member-broker who executed the trade on the stock exchange to a custodian.[g] Custodians were granted clearing member status to be able to do so. The custodian can confirm the trades done by the member-brokers online and up to 11 A.M. on the next trading day. However, late confirmation of transactions by the custodian after 11 A.M. up to 12:15 P.M. on the next trading day is permitted, subject to payment of charges for late confirmation at 0.01 percent of the value of trades confirmed or Rs10,000, whichever is less.

Settlement Cycle

The settlement cycle is a complex system where all of the required participants transmit trade information and settlement instructions to the relevant parties on trade date T, confirm the instructions on T+1, and settle on T+2 (see Figure 5.1):

1. The client enters the trade to the member-broker.
2. The broker enters the trade into the exchange trading terminal.
3. After execution, the exchange confirms the execution to the broker.
4. The broker:
   a. Confirms the trade to the client.
   b. Issues a contract note to the custodian.
   c. Issues a contract note to the clearinghouse.
5. The client sends the trade details to the custodian with settlement instructions.
6. The exchange:
   a. Sends trade details to its clearinghouse with settlement instructions.
   b. Sends each custodian a list of trades executed for that custodian.
7. The clearinghouse instructs the appropriate depository to either receive or deliver shares and at the same time instructs the clearing bank to either receive or deliver funds.
8. The custodian instructs the depository to receive or deliver shares and at the same time instructs the client's clearing bank to receive or deliver funds.

[g] The name "6A/7A" refers to the forms previously used by the BSE clearing members to request the clearinghouse to transfer the settlement obligations of trades, particularly institutional trades, executed on the BSE from the clearing members to the custodians. Form 6A was used for Sales and Form 7A was used for Purchases. Although the forms were discontinued when the transfer of settlement obligations from clearing member to broker was accomplished electronically, such transfer of settlement obligations has continued to be referred to as 6A/7A trades and now refers to NSE trades, as well.

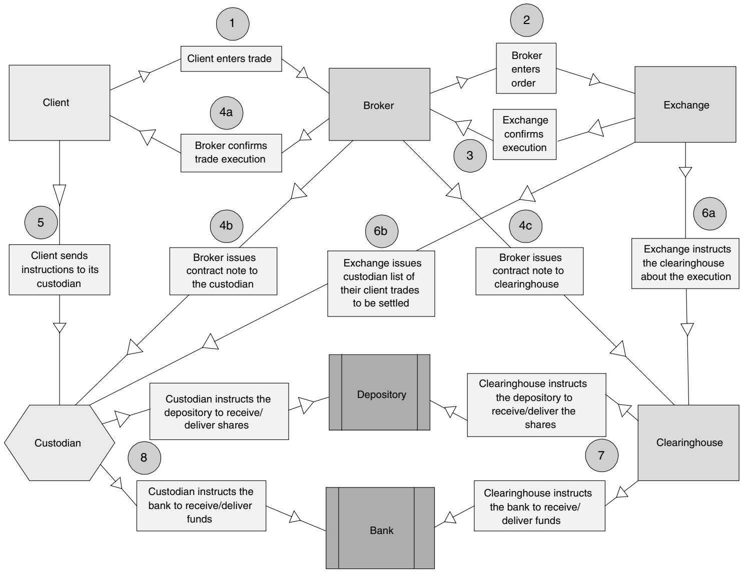

FIGURE 5.1 The settlement cycle.

Compulsory Rolling Settlement

Compulsory rolling settlement refers to the settling of trades at a standard fixed period of days after the execution occurred.[h] Before compulsory rolling settlement was implemented in India, trades settled in a batch system whereby all trades executed over a particular two-week period would be settled at the same time. This was moved to one-week batches before compulsory rolling settlement was implemented. The batch settlement process was problematic for numerous reasons, and the implementation of compulsory rolling settlement was an important step in the development of the financial markets.

The introduction of settlement on a T+2 basis reduced the time to settlement, lowered settlement risk, ensured early receipt of securities and monies by buyers and sellers, and brought the capital market on par with internationally accepted standards of settlement.

The settlement systems in India are efficient enough and capable of moving to a T+1 settlement, but this is unlikely to occur any time in the near future because:

[h]The fixed number of days for settlement is often expressed using the terminology "T", for the day of the trade, then a "+" sign, and then the number of days to settlement. Thus, "T+2" refers to settlement occurring two days following the date of the trade.

1. The intracountry banking system is still not efficient enough outside of the major cities to ensure timely payment of purchases on T+1.
2. Time-zone differences for foreign investors would, in essence, require settlement by foreign institutional investors on T, which is currently not practical.

Net versus Gross Settlement Securities

Net Settlement Securities Securities that qualify for net settlement permit member-brokers to net out the quantities and monies due when settling trades in these securities occurring on the same trade date. For example, when settling two trades in the same security on the same day, in which the broker purchased 2,000 shares for Rs100 and sold 1,000 shares for Rs101, the member-broker may net the shares received (2,000 purchased minus 1,000 sold, or net 1,000 to be received in) and the monies due (2,000 shares times Rs100, or Rs200,000 owed minus 1,000 shares times Rs101, or Rs101,000, or net Rs99,000 cash due).

Gross Settlement Securities Transactions in securities of companies in the BSE-categorized Z group[i] or companies that have been placed under "trade-to-trade" by the exchanges as a surveillance measure are settled only on a gross basis, and netting of buy and sell transactions is not permitted. For example, if a member-broker buys and sells 100 shares from the Z group, trade-to-trade basis company on the same day, the two trades may not be netted, as with net settlement securities discussed above, but rather the member-broker has to first deliver 100 shares at the time of pay-in of securities and then receive 100 shares at the time of pay-out of securities on the same day. Thus, if one fails to deliver the securities sold at the time of pay-in, the transaction is treated as a shortage and the relevant quantity is subject to short-delivery penalties and procedures as per exchange rules.

Statements and Transmitted Trade Settlement Details

The exchanges generate the following statements on a daily basis for member-brokers:

- Daily transaction statements with details of transactions by member-brokers.

[i]Z Group securities, as categorized and defined by the BSE, include the companies that either (1) have failed to comply with the listing requirements of the Exchange; (2) have failed to resolve investor complaints, or (3) have not made the required arrangements with both the depositories for dematerialization of their securities.

- Margins-payable statements with details from member-brokers about executed trades.
- Securities and fund obligation statements.
- Delivery and receive order statements for delivery and receipt of securities.

Settlement of the trades done by a member-broker on his own account or on behalf of his individual, corporate, or institutional clients may be either through the member-broker or through an SEBI-registered custodian appointed by a client. In case the delivery/payment for a transaction executed by a member-broker is to be given or taken by a registered custodian, then the latter has to confirm that the trade was done by a member-broker on the trading system through the 6A/7A settlement mechanism. For this purpose, the custodians are connected to the exchange trading systems and have been admitted as clearing members of the clearinghouses. In case a transaction done by a member-broker is not confirmed by a registered custodian within the time permitted, the liability for pay-in of funds or securities is the responsibility of the member-broker.

APPROVED CLEARING BANKS

Every clearing member is required to maintain and operate a clearing account with a clearing bank. The clearing account is to be used exclusively for clearing and settlement operations. The bank accounts of members maintained with the clearing banks are directly credited and debited through computerized posting for their fund settlement obligations. Approved clearing banks as of March 2007 are:

- Bank of India
- Canara Bank
- Citibank
- HDFC Bank Ltd.
- ICICI Bank
- IDBI Bank
- IndusInd Bank Ltd.
- Kotak Mahindra Bank
- Standard Chartered Bank
- State Bank of India
- HSBC
- Union Bank of India
- UTI Bank Ltd.

> ***Contact details for these clearing banks are provided in Appendix M.***

EXCHANGE CLEARINGHOUSES

In September 2005, SEBI mandated that all institutional trades must be settled through the clearinghouses of the exchanges. Each exchange has its own clearinghouse. BOISL conducts clearing and settlement for trades on the BSE, and NSCCL clears and settles trades on the NSE. If a broker does not settle through a clearinghouse, the broker is subject to a fine.

BOISL—The BSE Clearinghouse

BOI Shareholding Ltd. (BOISL) was established in 1989 as a joint venture enterprise between Bank of India and the Bombay Stock Exchange (BSE). Bank of India holds a 51 percent stake, and BSE holds a 49 percent stake. BOISL is popularly known as the BSE clearinghouse, but the company is a subsidiary of Bank of India and conducts clearing and settlement for trades executed on the BSE.

NSCCL—The NSE Clearinghouse

The National Securities Clearing Corporation Ltd. (NSCCL) is a wholly owned subsidiary of the National Stock Exchange (NSE). It was incorporated in August 1995 and commenced clearing operations in April 1996. Both equity and derivative trades executed on the NSE clear and settle through the NSCCL.

Facilities provided by the clearinghouses include:

- Settlement of securities and money to the clearing members of the exchange.
- Clearing and settlement of all dematerialized (demat[j]) and physical share trades.
- Settlement of derivatives (futures and options) executed on the exchanges.
- Connectivity to all approved clearing banks.

[j]The term *demat* is used in India's capital markets to refer to dematerialized securities.

- Connectivity and services for clearing members and clients to the NSDL and CDSL depositories.[k]
- Direct payout into the end-client's depository account.
- Licensed to frank stamp duty on documents by the government of Maharashtra (the home state of Mumbai). The franking time is 10 A.M. to 2 P.M. There is a charge of Rs10 if the franked value per document is less than Rs1,000. There are no charges if the franked value per document is more than Rs1,000.

The NSCCL does not clear and/or settle trades executed in the trade-for-trade subsegment of the equities segment of the NSE exchange. The primary responsibility of settling these trades rests directly with the members, and the exchange only monitors settlement. The parties are required to report settlement of these transactions to the exchange.

Securities and Funds Pay-In and Pay-Out

For the purpose of securities and funds payments and deliveries, the following terms used are from the perspective of the clearinghouses:

- *Securities pay-in:* The process of delivering securities to the clearinghouses to effect settlement of a sale transaction.
- *Funds pay-in:* The process of payment of funds to the clearinghouses to pay for purchase transactions.
- *Securities pay-out:* The process of receiving securities from the clearinghouses to complete the securities settlement of a purchase transaction.
- *Funds pay-out:* The process of payment of funds from the clearinghouses to complete the money settlement of a sale transaction.

Securities Pay-In All pay-in (deliveries) of securities is required to go through the clearinghouse, with the exception of certain off-market transactions. These may be settled directly between member-brokers, but they are required to be reported to the exchange. Members that do not settle exchange transactions through the clearinghouse are subject to fines. Member-brokers can effect pay-in of securities to the clearinghouses through the depositories. There are currently two depositories in India: the National Securities Depository Ltd. (NSDL) and the Central Depository Services Ltd. (CDSL). (See section titled "Depositories" for more details.)

[k]The National Securities Depository Ltd. and the Central Depository Services Ltd., respectively. These are discussed more fully later in the chapter.

Member-brokers who are not *depository participants*[1] (DPs) are required to give instructions to their DPs specifying the settlement number, settlement type, effective pay-in date, and quantity of a trade. The securities are transferred by the depository to a clearing member's principal account. Member-brokers are required to give confirmation to their depository, so that securities are processed toward pay-in obligations. Alternatively, member-brokers may also effect pay-in from clients' beneficiary accounts. To do this, clients are required to provide the settlement details and clearing member-broker ID of the member-broker through whom they have sold the securities. Thus, in such cases, clearing members are not required to give any delivery instructions for their own accounts.

Funds Pay-In Once the reconciliation of securities is completed by the clearinghouse, the bank accounts of member-brokers maintained with the approved clearing banks are directly debited through computerized linkages between the clearinghouse and the clearing bank.

In case members' pay-in obligations are returned by their clearing banks due to insufficient funds in their bank accounts, the member's trading terminals will be immediately deactivated, effectively prohibiting the member from further trading. The trading terminals remain deactivated until the pay-in obligations are met.

Once the pay-in of securities and funds is complete, the clearinghouse arranges for the pay-out of securities and funds.

Securities Pay-Out The process of the clearinghouse passing on to member-brokers the delivery of securities purchased by them is called securities pay-out. Securities are credited by the clearinghouse into the principal accounts of member-brokers. The exchanges also provide a facility to member-brokers so they can transfer pay-out securities directly to their clients without routing the securities through their principal accounts in the NSDL or CDSL.

To do this, member-brokers are required to provide a client break-up file, which is uploaded by member-brokers to the clearinghouse. Based on the break-up provided by the member-brokers, the clearinghouse instructs depositories to credit the securities to the clients' accounts. In case the

[1]Depository participants are members of the depository who hold depository accounts. Eligibility and definitions of DPs are discussed more fully in the section on Depositories. Many member-brokers of each exchange are DPs. While all member-brokers do not need to be DPs, those who are not will have to operate through a DP to access the depository services.

delivery of securities received from one depository is to be credited to an account in another depository, the clearinghouse does an interdepository transfer.

Funds Pay-Out Bank accounts of member-brokers having pay-out funds are credited by the clearinghouse with the clearing banks on the same day.

In case a member-broker fails to deliver securities, the value of shares delivered short is recovered from the member-broker at the closing price of the scrips on the trading day.

In the case of rolling settlements, pay-in and pay-out of both funds and securities, as stated earlier, are completed on the same day.

Member-brokers are required to make payment for securities that are sold or delivered for their clients within one working day after the pay-out of the funds and securities for the settlement is completed by the exchange.

The settlement calendar, which indicates the dates of settlement activities, is prepared by each exchange on a quarterly basis and is distributed to market participants. The settlement calendars are strictly adhered to, and there have been no cases of postponement of pay-in or pay-out since 1999.

Failed Deliveries—Shortage Handling On the securities pay-in day, clearing members communicate to the clearinghouse the securities that the clearing member will deliver and those that the clearing member is unable to deliver. The clearinghouses debit the clearing member who is unable to deliver an amount equivalent to the securities not delivered by him and valued at a valuation price. This is called a valuation debit. A valuation debit is also conducted for bad delivery by clearing members.

Auctions Short deliveries result in the clearinghouses conducting a buying-in auction on the day after the pay-out day through the relevant exchange trading system. If the buy-in auction price is more than the valuation price, the member is required to pay the difference.

The clearing member is debited an amount equivalent to the securities not delivered and valued at a valuation price (the closing price on the day previous to the day of the valuation). If the buy-in auction price is more than the valuation price, the clearing member is required to pay the difference. All shortages not bought in are deemed closed out at the highest price between the first day of the trading period until the day of final settlement or at the closing price on the auction day plus 20 percent, whichever is higher. This amount is credited to the receiving member's account on the auction pay-out day.

Bad Deliveries (in the Case of Physical Settlement) Bad deliveries are required to be reported to the clearinghouse within two days from the receipt of documents. The delivering member is required to correct the problem within two days. Unrectified bad deliveries are auctioned on the next day.

Valuation Prices Valuation prices at which valuation debits are conducted are calculated as follows:

- ***Valuation price for failure to deliver for regular market trades, depository trades/limited physical market:*** The valuation price for securities that were not delivered on the settlement day will be the closing price of such securities on the immediate trading day preceding the pay-in day for the securities unless prescribed otherwise by the relevant authority.
- ***Valuation price for bad delivery for regular market trades and the limited physical market:*** The valuation price for securities that constitute bad deliveries will be the closing price of such securities on the immediate trading day preceding the bad delivery rectification day for the securities unless prescribed otherwise by the relevant authority.

Closeout Procedures All shortages not bought in are deemed closed out at the highest price between the first day of the trading period until the day of squaring off or closing price on the auction day plus 20 percent, whichever is higher. This amount is credited to the receiving member's account on the auction pay-out day.

The prices at which shortages are closed out are:

For Regular Market, Depository Trades:

- ***In the case of failure to give delivery:*** At the highest price prevailing on the exchange from the first day of the relevant trading period until the day of closing out or 20 percent above the official closing price on the auction day, whichever is higher.
- ***In the case of nonrectification/replacement for bad delivery:*** At the highest price prevailing on the exchange from the first day of the relevant trading period until the day of the closing out or 20 percent above the official closing price on the auction day, whichever is higher.

For Limited Physical Market Trades:

- ***In the case of failure to give delivery:*** 20 percent over the actual trade price.

- ***In the case of nonrectification/replacement for bad delivery:*** 20 percent over the actual trade price.
- ***In the case of nonrectification/replacement for objection cases:*** 20 percent above the official closing price in the regular market on the auction day.

Auction Market *In the case of auction nondelivery:* When the auction seller fails to deliver in part or full on auction pay-in day, the trade will be settled at the highest price prevailing on the exchange from the first day of the relevant trading period until the day of closing out or 20 percent over the official closing price on the closeout day, whichever is higher, and the price will be charged to the auction seller unless otherwise specified.

In the case of an auction bad delivery: An auction delivery reported as bad delivery will be settled at the highest price prevailing on the exchange of the clearinghouse from the first day of the relevant trading period until the day of closing out or 10 percent over the official closing price on the closeout day, whichever is higher, and will be charged to the auction seller unless otherwise specified.

CUSTODIANS

Custodians serve a very important role for institutions, particularly foreign institutions, in the settlement and clearing function in the securities markets. Custodians are clearing members of the exchanges, but they are not trading members. On behalf of their clients, they settle trades that are executed through other trading members. A trading member may assign a particular trade to a custodian for settlement. The custodian is required to confirm whether he is going to settle that trade. If a trade is confirmed, the clearing corporation assigns the obligation to the custodian. If the custodian rejects the trade, the obligation is assigned back to the trading member.

As mandated by the SEBI, all mutual funds and foreign institutional investors (FIIs) in India must use a custodian to assist them in the clearing and settlement of executed trades. Some FIIs choose to use a global custodian, often the one they use for clearing and settlement around the world. Others choose to use a local custodian in India. There are benefits for using both, and each institution makes its own choice on how it wants to operate in India. In some cases, FIIs rely on their custodian to assist them through the entire process of investing in India, beginning with shepherding them through the FII registration process and liaising with SEBI on their application. The custodian often assists the FII in choosing the brokers with whom the FII might want to execute trades, sets up the accounts, chooses the local depository, and might recommend local legal, accounting, and tax advice service providers.

Many FIIs choose to deal with a global custodian because of the familiarity of dealing with them in other markets and because they prefer having just one point of contact in their home country for all of their worldwide custodial needs. Furthermore, particularly when operating in India, once an FII chooses a global custodian to represent their interests there, the global custodian takes care of most of the other needs of the client.

The other option for FIIs in India is to choose and operate through a domestic local custodian. The advantages of this is that FIIs have more control over how they are represented in the markets and can deal directly with the Indian custodian, rather than having to always go through their global custodian home country intermediary when issues arise. This is often the difference between dealing in market time and dealing in home hours that coincide with the middle of the night in India. In addition, the custodial costs of a local custodian tend to be less than global custodians. FIIs entering the Indian markets must weigh the pros and cons of each option and decide which more closely addresses their particular needs.

Currently, FIIs have concentrated their custodial business among a handful of global custodians. Table 5.6 is a rough approximation of the breakdown of custodial business among FIIs, gleaned through interviews with market participants.

Local settlement of institutional trades among the custodians, clients, and brokers goes through the locally mandated straight-through-processing (STP) systems. There are two or three currently available, and they are totally interoperable.

TABLE 5.6 FII Custodian Concentration

Name of Custodian	Estimated Market Share
HSBC	40 percent
Citigroup	33 percent
Deutsche Bank	10 percent
Standard Chartered	10 percent
Miscellaneous	7 percent

For international clients, cash instructions, transfers, and security instructions typically are transmitted through SWIFT.

DEPOSITORIES

Introduction

The introduction of electronic depositories to enable the dematerialization of shareholdings was another essential reform of the 1990s that has contributed to the strength of India's financial markets. There are currently two depositories in India, the National Securities Depository Ltd. (NSDL) and the Central Depository Services Ltd. (CDSL).

The depository system within a dematerialized environment is a book-entry system whereby securities are electronically held in depository accounts. After a buy/sell transaction, the transfer of ownership of securities is accomplished through the simple debiting of the seller's depository account and the simultaneous credit to the buyer's depository account. The benefits of this system are many, including the possibility of the now-standard T+2 settlements, the virtual elimination of lost certificates, and the elimination of problems and risks associated with paper-based settlement.

History

India's financial markets were once infamous for a very long, inefficient, and unreliable paper-based settlement system, yielding bad deliveries and title transfers. This inability to settle transactions in any kind of timely manner kept many potential foreign investors away from the market. In the mid-1990s, SEBI mandated the dematerialization of securities holdings in a phased approach. More than 99 percent of the settlement of securities now occurs in dematerialized form. The *SEBI (Depositories and Participants) Regulations 1996* was enacted to streamline the growing volume of securities transactions through the creation of the depository system.

The NSDL came into existence in 1996 and participated in the beginning of the dematerialization, as shares were being destroyed and replaced by the electronic book entry form maintained by the depositories. In January 1999, in recognition of the future for dematerialization, all market participants were required to have depository accounts.

The CDSL was launched in March 1999 and was fully active by January 2000, three years after the NSDL. Therefore, the NSDL, as the only existing depository in existence at the launch of dematerialization, had the first-entrant advantage of signing up virtually all of the then-eligible parties.

Depository Participants

The clients of depositories are referred to as depository participants (DPs). *The Depositories Act 1996* defines the following entities as being eligible to become a depository participant:

- Public financial institutions
- Banks including foreign banks
- State financial corporations
- Custodians of securities
- Stock brokers
- Nonbanking financial companies
- Registrars and transfer agents
- The clearing corporation or clearinghouse of a stock exchange
- An institution engaged in providing financial services such as those provided by the abovementioned institutions

Depository participants typically have a number of clients for whom they set up depository accounts. There are approximately 9.3 million clients of depository participants at the depositories.

Investor-Level Records

In India, there is no omnibus account structure. Thus, the depositories maintain investor-level records rather than omnibus records of the depository participants, as is done in the United States. All investor records are based on a permanent account number that every client must present to open a trading account. The permanent account number is a unique 10-digit alphanumeric identification number issued for all taxpayers by the Income Tax Department. Because of the investor-level records kept by the depositories for every investor in Indian securities, their beneficial holder lists are considered the most accurate in the country and are often provided to the custodians and issuing companies for purposes such as dividend payments to shareholders.

Depository Competition

For the first several years of dematerialization, the NSDL was the only depository, and all market participants opened accounts with it. The CDSL was a later entrant, so it missed the initial signup for existing institutions and found itself playing catch-up in building its business. Currently, CDSL has more depository participants but NSDL has more accounts. Table 5.7 illustrates the relative businesses of the two custodians.

TABLE 5.7 Comparative Depository Statistics

	NSDL[6]	CDSL[7]
No. of Depository Participants	240	360
No. of Investor Accounts	7,891,507 (77%)	2,351,361 (23%)
Value of Shares in Custody	US$532 billion	US$63.3 billion
Value of Trades*	86%	14%
Volume of Shares	79%	21%

* An exact calculation of the value and number of trades handled by each depository is a difficult task given the procedures of settlement. When settling a trade, the selling investor must deliver shares to a pooled account at his broker's depository, who in turn delivers the shares to the clearinghouse. Often, the investor might have shares in his depository account at one depository yet delivers the shares to the pooled account at the other depository. The question then might arise as to which depository handled the trade. It could be said that the investor's depository should get credit, but also that the broker's depository should get it. The figures provided are estimates only by knowledgeable market participants and should be used for indicative purposes only.

The 8:1 ratio of value compared to the 3:1 ratio of trades is a result of the NSDL accounts being some of the larger institutions that do fewer trades of significantly more value, while the CDSL's depository participants, although more numerous, are smaller brokers with a smaller number of accounts. The NSDL's accounts also consist of a large number of retail investors and brokers who are not depository participants.

The launch of CDSL led to a dramatic reduction in depository pricing to the market as CDSL used an aggressive pricing strategy to attract new depository participants. From 1996 to 2005, depository costs declined from the NSDL's initial 2 basis points charged to the seller of every transaction to a flat fee of Rs5 (US$0.11) per transaction charged to the issuer by CDSL (NSDL's price is a flat fee of Rs6).

NSDL's earlier launch and head start in signing up depository participants gave the NSDL an important advantage over CDSL in that all of the early depository participants built electronic interfaces to the NDSL and thus their systems are all well integrated with NDSL. As a result, most FIIs open depository accounts with NSDL. Interestingly, though, the pricing structure is such that depository revenue is now based on a per-transaction charge, rather than a value of transaction charge, so a depository earns more with a retail investor trading a large number of small executions than an institution trading a fewer number of large executions. That said, the depositories both seek FII clients for the prestige that they provide.

Settlement in India is done by a very efficient electronic system whereby virtually all of the participants are electronically connected. The depository participants' systems are electronically interfaced with the depositories, the depositories are linked to each other for interdepository transfers of shares, and the custodians are linked to the depositories through the depository electronic system.

SETTLEMENT PREPARATION FOR SHORT SELLING

The legalization and introduction of short selling in India was announced by the Minister of Finance in his 2007–2008 Annual Budget Speech, and will be a significant development in the continuing evolution of India's capital markets. However, the implementation of short selling will require the development of new processes and procedures in the settlement system, particularly the creation of a stock lending and borrowing regime. As such, the settlement community—custodians, exchange clearinghouses, and depositories—must build the infrastructure and systems necessary to support the shorting of stocks.

SUMMARY

India's capital market settlement system is made up of strong, competitive institutions that have developed into time-tested efficient operators over the last 15 years. The clearinghouses, custodians, and depositories comprise a very smooth system that exhibits few problems in the processing, clearing, and settling of more than 5.5 million trades per day. The clearing and settlement capabilities continue to increase capacity, and the quality of the institutions and processes should ensure that they will remain world class.

CHAPTER 6

Derivatives

CHAPTER HIGHLIGHTS

- BSE derivatives trading is screen-based through the Derivatives Trading and Settlement System (DTSS).
- DTSS is an order-driven market.
- BSE offers weekly options with a two-week maturity.
- BSE trades futures and options on 89 underlying stocks.
- NSE trades futures and options on 155 underlying stocks.

The Bombay Stock Exchange (BSE) introduced derivative trading in India with the launch of the Sensex futures contract in June 2000. Over the next two years, the BSE and the National Stock Exchange (NSE) launched the trading of futures and options contracts for various indexes, specific sectors, and individual stocks. Beginning with virtually no derivatives turnover in 2001, the NSE has become India's dominant derivatives marketplace and has witnessed explosive growth: derivatives turnover was more than double that of the equity markets turnover by 2004, and at US$1,565.91 billion in 2006, derivatives turnover was more than three and one half times the US$425 billion equity markets turnover in 2006. Interestingly, in 2006, 88 percent of the derivatives turnover was in futures, two-thirds of which were stock futures, with options turnover representing only 11 percent of derivatives turnover. This derivatives turnover growth is illustrated in Figure 6.1.

This chapter addresses the derivatives market in India, beginning with an introduction to some derivatives terms and followed by an in-depth discussion of the derivatives offerings by the Bombay Stock Exchange and the National Stock Exchange, respectively. The topics covered include the derivatives trading system, a description of the derivatives products available as well as their underlying stocks and indexes, eligibility requirements for

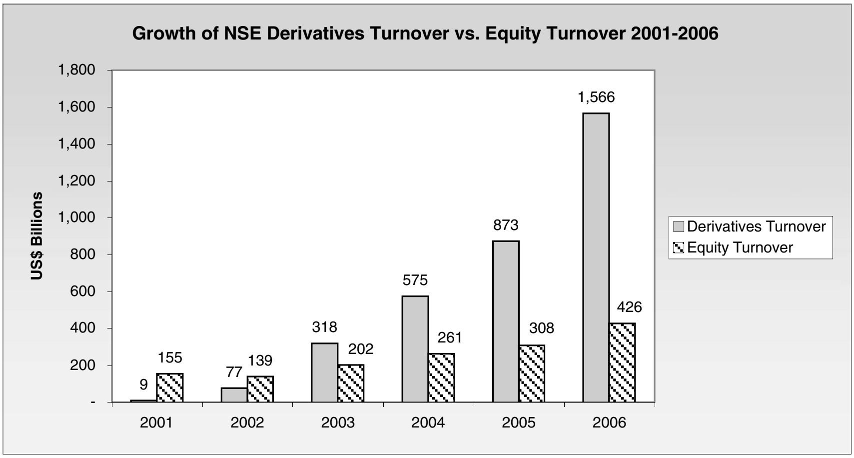

FIGURE 6.1 Growth of NSE derivatives versus equities 2001–2006.
Source: The National Stock Exchange.

underlying stocks, the different attributes of traded options and futures, and contract specifications for both options and futures. Finally, interest rate derivatives are addressed.

INDIAN DERIVATIVES MARKET FUNDAMENTALS

Table 6.1 lists the derivative products available for trading on the BSE and the NSE, organized by futures first, then options, and within those categories, the underlying instruments upon which the derivative is linked.

History of Derivatives in India

The dates on which these products were launched are listed below:

June 9, 2000	BSE launched the BSE Sensex—the first exchange-traded index derivative contract.
June 12, 2000	NSE commenced trading in S&P CNX Nifty index futures.
June 1, 2001	BSE commenced trading in index options on the Sensex.
June 4, 2001	NSE introduced trading in index options.
July 2, 2001	NSE commenced trading in options on individual securities.
July 9, 2001	BSE stock options were introduced on 31 stocks.

November 9, 2001	NSE commenced trading in futures on individual securities. The futures contracts are available on 117 securities stipulated by the Securities and Exchange Board of India (SEBI). These securities are traded in the capital market segment of the exchange.
November 9, 2002	BSE single stock futures were launched.
September 13, 2004	BSE launched weekly options, a unique product in the domestic and international derivative markets. BSE permitted trading in weekly contracts in options in the shares of four leading companies—Reliance Industries, Satyam, State Bank of India, and TISCO—in addition to the flagship Sensex index.

Derivatives Definitions and Attributes

Futures Contract A futures contract is a legally binding agreement to buy or sell an underlying security at an agreed-upon price on a future date. Futures contracts are standardized contracts in terms of quantity, quality

TABLE 6.1 Derivative Products Available for Trading on the BSE and NSE

	BSE Derivatives	NSE Derivatives
Futures	Sensex index BSE TEC*k* Index BSE Bankex Index BSE Oil & Gas Index BSE PSU Index BSE Metal Index BSE FMCG Individual securities	S&P CNX Nifty Index CNXIT Index BANK Nifty Index Individual securities
Options	Sensex index BSE TEC*k* Index BSE Bankex Index BSE Oil & Gas Index BSE PSU Index BSE Metal Index BSE FMCG Individual securities	S&P CNX Nifty CNXIT BANK Nifty Individual securities Interest rate derivatives

Sources: The Bombay Stock Exchange; the National Stock Exchange.

(in the case of commodities), delivery time, and place for settlement on any date in the future. The contracts expire on a prespecified date, which is called the *expiry date* of the contract. On expiry, futures can be settled by delivery of either the underlying asset or cash. *Cash settlement* entails paying or receiving the difference between the price at which the contract was entered and the price of the underlying asset at the time of the expiry of the contract. The futures traded on the exchanges are financial futures, representing financial assets, as opposed to commodity futures, representing hard commodities.

Options Contract An options contract is a contract that gives the buyer or holder of the contract the right (but not the obligation) to buy or sell the underlying asset at a predetermined price within, or at the end of, a specified period. The buyer or holder of the option purchases the right from the seller or writer for a consideration, which is called the premium. The seller, or writer, of an option is obligated to settle the option as per the terms of the contract when the buyer or holder exercises his right. The underlying asset could include securities or an index of prices of securities.

Attributes A particular options contract has four attributes:

1. The *underlying* security
2. *Put* or *call*
3. American- or European-style exercisability
4. *Strike price* (or exercise price)

The underlying security is the asset that is contracted to be bought or sold by the option. There are two types of options:

1. ***Call option:*** An option to buy a fixed number of shares at the specified price.
2. ***Put option:*** An option to sell a fixed number of shares at the specified price.

Options, both calls and puts, are also classified as either *American*-style options or *European*-style options, distinguished by the eligible time period during which the option can be exercised:

- ***American option:*** An option that is exercisable on or before the expiry date.
- ***European option:*** An option that is exercisable only on the expiry date.

The strike price or exercise price is the price at which the option is to be exercised.

Additional Derivatives Attributes Additional definitions and attributes applicable to derivatives are as follows:

- ***Exercising an option:*** This is the act by which an option owner uses its right to either buy (in the case of a call option) or sell (put option) an underlying asset at the strike price stated on the contract. The request for an exercise is submitted to the exchange, which randomly assigns the exercise request to the sellers of the options, who are obligated to settle the terms of the contract within a specified time frame.
- ***Option settlement:*** Option contracts can be settled by delivery of the underlying security or cash. Cash settlement in option contracts entails paying or receiving the difference between the strike, or exercise, price and the price of the underlying asset either at the time of expiry of the contract or at the time of the exercise or assignment of the option contract.
- ***Index futures underlyings:*** Index futures contracts are based on an index such that the underlying asset is the index.
- ***Index futures settlement:*** Index futures contracts are cash settled on expiry.
- ***Index option contracts:*** Options contracts are based on an underlying index as opposed to an underlying single security as in an individual stock option. Index options contracts are generally European-style options. These contracts are cash settled on expiry.
- ***Minimum contract size:*** SEBI specifies that the value of a derivative contract should not be less than Rs200,000 (~US$4,500) when introducing the contract in the market.
- ***Lot size of a contract:*** For stock-specific derivative contracts, SEBI specifies that the lot size of the underlying individual security should be in multiples of 100, and fractions, if any, should be rounded off to the next higher multiple of 100. This requirement, together with the requirement for minimum contract sizes, forms the basis of arriving at the lot size of a contract. For example, if shares of XYZ Ltd. are quoted at Rs1,000 each and the minimum contract size is Rs200,000, then the lot size for that particular scrip is 200,000/1,000 = 200 shares so that one contract in XYZ Ltd. covers 200 shares.
- ***Trading cycle:*** The BSE and NSE trade futures and options on a monthly expiration period with a maximum maturity of three months. At any one time there are three contracts trading. These contracts are known as the "near-month," "next-month," and "far-month" contracts. The

TABLE 6.2 Summary of Derivative Attributes

	Type	Settlement	Maximum Maturity	Expiration
Index future	American	Cash	3 months	Last Thursday of the month
Index option	European	Cash	3 months/ 2 weeks	Last Thursday of the month/ Friday of expiring week
Stock future	American	Cash	3 months	Last Thursday of the month
Stock option	American	Cash/shares	3 months/ 2 weeks	Last Thursday of the month/ Friday of expiring week

BSE also trades a limited number of options with a unique, two-week expiration period.

- *Expiration period:* Standard futures and options contracts expire on the last Thursday of the expiring month. If the last Thursday is a trading holiday, the contracts expire on the previous trading day. A new contract is introduced on the trading day following the expiry of the near-month contract. The new contract will be introduced for a duration of three months. The BSE two-week expiration options expire on the Friday of the expiring week.
- *Contract exercise type:* BSE options are the European and American styles.
- *Price steps:* The tick size for futures and options contracts is Rs 0.05 (US$0.001).

Table 6.2 summarizes the four key attributes of NSE and BSE derivative contracts.

Futures and Options Eligibility Criteria for the Selection of Securities and Indexes

SEBI determines the eligibility criteria for introducing futures and options contracts on stocks and indexes. The following criteria for selecting stocks and indexes as underlyings for futures and options contracts were adopted in September 2004:

Eligibility Criteria for Listed Stocks

- *Market capitalization:* Stocks are chosen from among the top 500 stocks in terms of average daily market capitalization in the previous six months on a rolling basis. The average daily market capitalizations are computed on the 15th of each month, on a rolling basis, to arrive at the list of the top 500 securities.

- ***Liquidity:*** Stocks are chosen from among the top 500 stocks in terms of average daily traded value in the previous six months on a rolling basis. The average daily traded values are computed on the 15th of each month, on a rolling basis, to arrive at the list of top 500 securities. In addition, quarter-sigma size is evaluated, defined as the order size (in value terms) required to change the stock price by one-quarter of a standard deviation.[a] The stock's median quarter-sigma order size over the last six months shall not be less than Rs100,000 (US$2,300).
- ***Position limits:*** The marketwide position limit in the stock shall not be less than Rs500 million (US$11 million). The marketwide position limit (the value of shares) is valued by taking the closing prices of stocks in the underlying cash market on the date of expiry of contract in the month.

An existing security must continue to meet the eligibility criteria for three consecutive months. If it fails to meet the requirements, then no fresh monthly contract will be issued for that security.

The NSE has taken the position that "a stock that has remained subject to a ban on new positions for a significant part of the month consistently for three months shall be phased out from trading in the futures and options segment." However, all existing unexpired contracts will be permitted to continue trading until they expire; new strike prices may also be introduced for the existing contract months.

The number of securities eligible for futures and options may vary from month to month depending upon changes in quarter-sigma order sizes, average daily market capitalization and average daily traded value calculated every month on a rolling basis for the past six months, and the marketwide position limit in that security. Contracts may be introduced on new securities that meet the eligibility criteria, subject to approval by SEBI. Again, the Web sites of the two exchanges should be consulted for the up-to-date list of stocks for which futures and options are available.

Eligibility Criteria for Unlisted Stocks For unlisted companies making initial public offerings, if the net public offer is Rs500 crore (US$111 million)

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[a] Further details on the definition and methodology for calculating quarter-sigma can be found on the NSE Web site at http://www.nse-india.com/content/fo/fo_selection.htm, or the BSE Web site at http://www.bseindia.com/about/derivati.asp#Eligible.

or more, then the exchange may consider introducing stock options and stock futures on the stocks at the time of listing in the cash market.

Eligibility Criteria of Indexes

- The exchange may consider introducing derivative contracts on an index if the stocks contributing to 80 percent of the weighting of the index are individually eligible for derivative trading. However, no single ineligible stocks in the index shall have a weighting of more than 5 percent in the index.
- The above criteria are applied every month. If the index fails to meet the eligibility criteria for three consecutive months, then no fresh monthly contract will be issued for that index, However, the existing unexpired contacts will be permitted to trade until expiry, and new strikes may also be introduced in the existing contracts.

BSE DERIVATIVES PRODUCTS

The information contained in this section, including the details for contract specifications, options- and futures-eligible underlying stocks, and their symbols, is presented with the generous permission of the Bombay Stock Exchange Ltd.

BSE Trading System

Derivative trading at the BSE takes place through a *Derivative Trading and Settlement System* (DTSS), which is a fully automated screen-based trading platform. The DTSS is designed to allow trading on a real-time basis. In addition to generating trades by matching opposite orders, the DTSS also generates various reports for member participants.

- ***Order matching rules:*** Matching orders is prioritized by price and then time. All orders are time-stamped when accepted by the DTSS. A unique trade-ID is generated for each order, and the complete trade information is sent to the members involved in the order.
- ***Order conditions:*** The derivatives market is order driven so traders can place only orders in the system. For derivative products, the order types

available have characteristics that are similar to order types in the cash market, and include:

- ***Limit order:*** An order eligible for execution at or better than the specified limit price.
- ***Market order:*** There are two types of market orders:
  - *Partial fill rest kill (PF):* Execute the available quantity and cancel any unexecuted portion (similar to immediate-or-cancel [IOC] in the United States).
  - *Partial fill rest convert (PC):* Execute the available quantity and convert any unexecuted portion into a limit order at the traded price.
- ***Stop loss order:*** This is an order that is dormant and becomes activated only when the market price of the relevant security reaches or crosses a threshold, which is a trigger price specified on the order. Until triggered, the order is a dormant order not eligible for execution. Stop loss orders are often used to preserve profits or limit losses.
  - A sell order in the stop loss book is entered at a trigger price below the then-current price and triggered when the last traded price in the normal market reaches or falls below the trigger price of the order.
  - A buy order in the stop loss book is entered with a trigger price above the then-current price and becomes triggered when the last traded price in the normal market reaches or exceeds the trigger price of the order.

  An additional order type is used only in special circumstances.
- ***Risk-reducing orders*** are used when a member's collateral falls below Rs5,000,000 (US$114,000); he will be allowed to enter only risk-reducing orders and not initiate any new positions. This status for a member is imposed only when the member violates his collateral limit. A member who has this status will be allowed to enter only one risk-reducing order at a time.

All orders entered into the trading system need to have the following attributes to be accepted for execution:

- Order type (limit/market PF/market PC/stop loss).
- Asset code, product type, maturity, call/put and strike price.
- Buy/sell indicator.
- Order quantity.
- Price.
- Client type (own/institutional/normal).

- Client code.
- Order retention/time type:
  - Good till canceled (GTC).
  - Good for day (GFD).
  - Good till date (GTD): Order retention period. For GTD orders, the number of calendar days for which the order is good must be stated.
- Protection points. This is a field relevant in market orders and stop loss orders. The value will be in absolute underlying points and specify the band from the touchline price or the trigger price within which the market order or the stop loss order, respectively, can be traded.

BSE Options

The BSE trades both index and single stock options.

Index Options Index options are generally European style and trade with a monthly expiration period and a three-month maximum maturity. At the time of this book's printing, the BSE traded options for seven[1] different underlying indexes. Table 6.3 lists the underlying indexes for which options are available, the option codes, and the specific contract multipliers for each options contract.

Individual Stock Options Individual stock options trade American style with a maximum three-month maturity, except for the few *weekly* options as noted below. Stocks for which options are available are selected based on the previously listed eligibility criteria and are subject to approval by SEBI. These contracts are cash settled. At the time of this book's

TABLE 6.3 Underlying Index Options Contracts

Underlying Index	Option Product	Security Symbol	Option Code	Contract Multiplier
BSE Sensex	BSE 30 Sensex	BSX	SENOPT	25
BSE TEC*k*	BSE TEC*k*	TEK	TECKOPT	125
BSE Bankex	BSE Bankex	BNK	BNKXOPT	50
BSE Oil & Gas	BSE Oil & Gas	OGX	ONGXOPT	38
BSE PSU	BSE PSU	PSU	PSUOPT	50
BSE Metal	BSE Metal	MET	METLOPT	25
BSE FMCG	BSE FMCG	FMC	FMCGOPT	175

Source: The Bombay Stock Exchange, as of November 2006.

TABLE 6.4 Underlying Index and Four Stocks that Currently Offer Weekly Options

Product	Product Code
Sensex Options	SENOPT
RIL Options	RILOPT
Satyam Options	SATOPT
SBI Options	SBIOPT
TISCO Options	TISOPT

Source: The Bombay Stock Exchange.

printing, the BSE traded options for 89 different individual underlying stocks.[2] Appendix D, Table D.1 lists the underlying stocks for which options are available, the option codes, and the specific contract multipliers for each option.

Weekly Options Sensing a market for options of shorter maturity, the BSE launched weekly options in September 2004 on four stocks and the BSE Sensex.

Weekly options have the same characteristics as monthly stock options (stocks and indexes) except that these options settle on Friday of every week. These options are introduced on Monday of every week and have a maturity of two weeks, expiring on Friday of the expiring week. Table 6.4 lists the one index and four stocks for which weekly options trade.

Options Contract Specifications

Tables 6.5 and 6.6 list the contract specifications of BSE index options contracts and BSE stock options contracts, respectively.

BSE Futures

The BSE trades both index and single stock futures.

Index Futures At the time of this writing, the BSE traded futures for seven different underlying indexes. Table 6.7 lists the underlying indexes for which futures are available, the product codes, and the specific contract multipliers for each futures contract.

TABLE 6.5 Contract Specifications for BSE Index Options Contracts (Monthly and Weekly)

Security symbol	[*Symbol of the index option*]
Underlying	[*Symbol of the underlying index*]
Contract multiplier	[*See Table 6.3*]
Contract period	1, 2, and 3 months and 1 and 2 weeks
Exercise style	European
Settlement style	Cash
Tick size	0.05 index points
Premium quotation	In index points
Strike price intervals	Shall have a minimum of 3 strikes (1 in-the-money, 1 near-the-money, and 1 out-of-the-money)
Trading hours	9:30 A.M. to 3:30 P.M.
Last trading/ expiration day	In the case of monthly expiration, the last Thursday of the contract month is used, and in the case of weekly options, the last Friday of the contract maturity is used. If there is a holiday, then the preceding business day is used. (*Note*: A business day is a day during which the underlying stock market is open for trading.)
Final settlement	The final settlement of the expiring options contracts would be taken as the closing value of the underlying index. The following algorithm is used for calculating the closing value of the individual stocks in the cash segment of the BSE including the stocks constituting the Sensex: the weighted average price of all of the trades in the last 30 minutes of the continuous trading session. If there are no trades during the last 30 minutes, then the last traded price in the continuous trading session would be taken as the official closing price.
Exercise notice time	This would be a specified time (exercise session) on the last trading day of the contract. All in-the-money options by certain specified ticks would be deemed to be exercised on the day of expiry unless the participant communicates otherwise in the manner specified by the derivatives segment.

Source: The Bombay Stock Exchange Ltd.

Individual Stock Futures At the time of this writing, the BSE traded individual stock futures for 89[b] different individual underlying stocks. Appendix D, Table D.1 lists the underlying stocks for which futures are

[b]*Source:* The Bombay Stock Exchange.

TABLE 6.6 Contract Specifications for BSE Stock Options Contracts (Monthly and Weekly)

Security symbol	[*Symbol of the single stock option*]
Underlying	[*Symbol of the stock underlying the option*]
Contract multiplier	[*See Appendix D, Table D.1*]
Contract period	1, 2, and 3 months and 1 and 2 weeks
Exercise style	American
Settlement style	Cash
Tick size	0.05 (5 paisa)
Premium quotation	Rupees per share
Strike price intervals	Shall have a minimum of 3 strikes (1 in-the-money, 1 near-the-money, 1 out-of-the-money)
Trading hours	9:30 A.M. to 3:30 P.M.
Last trading/ expiration day	In the case of monthly expiration, the last Thursday of the contract month is used, and in the case of weekly options, the last Friday of the contract maturity is used. If there is a holiday, then the preceding business day is used. (*Note:* A business day is a day during which the underlying stock market is open for trading.)
Final settlement	The final settlement of the expiring options contracts would be based on the closing price of the underlying stock. The following algorithm is used for calculating closing value of the individual stocks in the cash segment of BSE including the stocks constituting the Sensex: the weighted average price of all the trades in the last 30 minutes of the continuous trading session. If there are no trades during the last 30 minutes, then the last traded price in the continuous trading session would be taken as the official closing price.
Exercise notice time	This is a specified time (exercise session) every day. All in-the-money options would be deemed to be exercised on the day of expiry unless the participant communicates otherwise in the manner specified by the derivatives segment.

Source: The Bombay Stock Exchange Ltd.

available, the product codes, and the specific contract multipliers for each futures contract.

Futures Contract Specifications

Tables 6.8 and 6.9 list the contract specifications of BSE index futures contracts and BSE single stock futures contracts, respectively.

TABLE 6.7 Underlying BSE Index Futures Contracts

Underlying	Security Symbol	Product	Product Code	Contract Multiplier
BSE Sensex	BSX	BSE 30 Sensex Futures	SENFUT	25
BSE TEC*k* Index	TEK	BSE TEC*k* Futures	TECKFUT	125
BSE Bankex	BNK	BSE Bankex Futures	BNKXFUT	50
BSE Oil & Gas Index	OGX	BSE Oil & Gas Futures	ONGXFUT	38
BSE PSU Index	PSU	BSE PSU Futures	PSUFUT	50
BSE Metal Index	MET	BSE Metal Futures	METLFUT	25
BSE FMCG Index	FMC	BSE FMCG Futures	FMCGFUT	175

Source: The Bombay Stock Exchange.

TABLE 6.8 Contract Specifications for BSE Index Futures Contracts

Security symbol	[*Symbol of the index future*]
Underlying	[*Symbol of the underlying index*]
Contract multiplier	[*See Table 6.7*]
Contract period	1, 2, and 3 months
Tick size	0.05 index points
Price quotation	Index points
Trading hours	9:30 A.M. to 3:30 P.M.
Last trading/ expiration day	The last Thursday of the contract month. If there is a holiday, the preceding business day. (*Note:* A business day is a day during which the underlying stock market is open for trading.)
Final settlement	Cash settlement. On the last trading day, the closing value of the underlying index would be the final settlement price of the expiring futures contract.

Source: The Bombay Stock Exchange Ltd.

TABLE 6.9 Contract Specifications for BSE Single Stock Futures

Security symbol	[*Symbol of the stock future*]
Underlying	[*Symbol of the underlying stock*]
Multiplier	[*See Table D.1*]
Contract period	1, 2, and 3 months
Tick size	0.05 points (5 paisa)
Price quotation	Rupees per share
Trading hours	9:30 A.M. to 3:30 P.M.
Last trading/ expiration day	The last Thursday of the contract month. If there is a holiday, then the immediately preceding business day.
Final settlement	Cash settlement. On the last trading day, the closing value of underlying stock is the final settlement price of the futures contract.

Source: The Bombay Stock Exchange Ltd.

NSE DERIVATIVES PRODUCTS

> ***The information contained in this section, including the details for contract specifications, options- and futures-eligible underlying stocks, and their symbols, is presented with the generous permission of the National Stock Exchange Ltd.***

NSE Trading System

NSE derivatives are traded on the NEAT screen-based trading system. NEAT has the following characteristics:

- ***Order matching rules:*** NEAT is an order-driven market and operates with a price-time priority for matching orders.
- ***Order conditions:*** NEAT accepts orders with time-related and price-related parameters similar to those accepted in the cash market. These are:
  - ***Time-related parameters:***
    - ***Day order:*** This order is valid only for the day on which it is entered. At the end of that trading day, any unmatched (unexecuted) part of the order is canceled.
    - ***Immediate-or-cancel (IOC) order:*** This order is valid only at the moment at which it is exposed to the market, to execute at the price parameters under which it is entered against any orders in the system meeting those requirements. Any part of the order unexecuted at the moment after entry is canceled from the market.
  - ***Price-related parameters:***
    - ***Limit order:*** An order eligible for execution at or better than the specified limit price.
    - ***Market order:*** An order eligible for execution at the best price then available in the market
    - ***Stop loss order:*** This is an order that is dormant and becomes activated only when the market price of the relevant security reaches or crosses a threshold, which is a trigger price specified on the order. Until triggered, the order is a dormant order not eligible for execution. A sell order in the stop loss book is entered at a trigger price below the then-current price and triggered when the last traded price in the normal market reaches or falls below the trigger price of the order. A buy order in the stop loss book is entered with

a trigger price above the then-current price and becomes triggered when the last traded price in the normal market reaches or exceeds the trigger price of the order. Stop loss orders are often used to preserve profits or limit losses.

NSE Trading System Trade Verification The NSE provides a facility for members and investors to verify all trades on the NSE Web site. Using this facility, an investor who has received a contract note from a trading member of the exchange can verify whether the trade has been executed on the exchange.

This facility is available on the NSE web site for the capital market, derivatives (futures and options), and retail debt market segments.

Trade details are available for verification on the trade date after 19:00 hours IST[c] until T+4. To receive verification, the investor inputs the following minimum details of the trade: (1) client code (provided by the trading member), (2) security details (description of the contract), (3) order number, (4) trade number, (5) trade quantity, and (6) executed price (i.e., excluding brokerage). If an identical match is found for the details provided, confirmation along with the details of the trade is displayed by the NSE to the investor. If no match is found, a message is displayed to that effect. In instances where no match is found by the NSE, the investor is strongly advised to contact the trading member for clarification as to the genuineness of the execution report.

Options

In addition to the characteristics common to both the futures and options contracts, the following characteristics apply to all NSE options contracts:

Price Bands There are no daily minimum or maximum price ranges applicable for options contracts. However, in order to prevent order-entry errors, operating ranges and day minimum or maximum ranges for options contracts are kept at 99 percent of the base price. Members cannot place orders at prices that are beyond 99 percent of the base price. Members who want to place orders in options contracts beyond the day minimum or maximum operating range have to send a request to the exchange. The base prices for options contracts may be modified at the discretion of the exchange, based on requests received from trading members.

[c]That is, 7 P.M. India Standard Time. See Appendix C, The India Time Zone, for simultaneous world times.

Base Prices The base price of options contracts used for pricing the introduction of new contracts is the theoretical value of the options contract derived from the Black-Scholes model of calculation of options premiums (see Appendix J for details about the Black-Scholes option pricing model).

The base price of the contracts on subsequent trading days will be the daily closing price of the options contracts.

Closing Price Methodology The closing price of options is calculated as follows:

- If the contract is traded in the last half hour, the closing price shall be the last-half-hour weighted-average price.
- If the contract is not traded in the last half hour, but traded during any time of the day, then the closing price will be the last traded price of the contract.
- If the contract is not traded for the day, the base price of the contract for the next trading day shall be the theoretical price of the options contract derived from the Black-Scholes model.

Index Options The following information applies specifically to the index options that trade on the NSE.

Strike Price Intervals:

- ***S&P CNX Nifty options:*** The number of contracts provided in options on the Nifty is related to the index range in which the previous day's closing value of Nifty falls. Table 6.10 lists the number of traded contracts associated to given levels of the index. For instance, if the Nifty index is trading at a level between 1500 and 2000, there will be trading

TABLE 6.10 Nifty Strike Intervals and Number of Options in Series

Nifty Index Level	Strike Interval	Strikes to be introduced (ITM-ATM-OTM)*
Up to 1500	10	3-1-3
>1500 up to 2000	10	5-1-5
>2000 up to 2500	10	7-1-7
>2500	10	9-1-9

*In-the-money, at-the-money, out-of-the-money.
Source: The National Stock Exchange Ltd.

five contracts in-the-money, one at-the-money, and five contracts out-of-the-money.[d]

New contracts with new strike prices for existing expiration dates are introduced for trading on the next working day based on the previous day's closing Nifty values, as and when required. In order to decide on the at-the-money strike price, the Nifty closing value is rounded off to the nearest 10.

- ***CNXIT and BANK Nifty options:*** At any point in time, there are a minimum of seven contracts: three contracts in-the-money (ITM), three contracts out-of-the-money (OTM), and one contract at-the-money (ATM). The strike price interval is 10. New contracts with new strike prices for existing expiration dates are introduced for trading on the next working day based on the previous day's closing index values, as and when required. In order to decide on the at-the-money strike price, the index closing value is rounded off to the nearest 10.

Individual Stock Options NSE options contracts for individual securities are available for 155 securities, as approved by SEBI. See Appendix D, Table D.2 for a list of the securities.

Strike Price Intervals For individual stock options, there is always a minimum of seven strike prices for every option type (call and put) during the trading month: three contracts in-the-money (ITM), three contracts out-of-the-money (OTM), and one contract at-the-money (ATM). The strike price intervals vary depending on the price of the underlying security, widening with increasing prices, as noted in Table 6.11.

New contracts with new strike prices for existing expiration dates are introduced for trading on the next working day based on the previous day's underlying close values, as and when required. In order to decide on the at-the-money strike price, the underlying closing value is rounded off to the nearest strike price interval.

Futures

In addition to the common characteristics of all of the futures and options contracts that trade on the NSE, the following characteristics apply to all NSE futures contracts:

Price Bands There are no daily minimum/maximum price ranges applicable for NSE futures contracts. However, in order to prevent order entry

[d]The S&P CNX NIFTY last traded below 2500 on November 9, 2005, thus there have been at least 19 strike prices available for trading since that time.

TABLE 6.11 NSE Options Strike Price Intervals

Price of Underlying Security	Strike Price Interval (Rs)
Less than or equal to Rs50	2.50
> Rs50 to less than or equal to Rs250	5
> Rs250 to less than or equal to Rs500	10
> Rs500 to less than or equal to Rs1,000	20
> Rs1,000 to less than or equal to Rs2,500	30
> Rs2,500	50

Source: The National Stock Exchange Ltd.

errors by trading members, operating ranges are kept at ±10 percent for the three index futures and ±20 percent for the 155 individual stock futures. For orders entered that exceed this operating range, members are required to confirm to the exchange that the order is good and that there is no error in the order entry. Upon confirmation, the exchange may approve such an order.

Base Prices The base price of all futures contracts on the first day of trading is the theoretical futures price. The base price of the contracts on subsequent trading days is the daily settlement price of the futures contracts.

Individual Stock Futures Futures contracts are currently available on 155 individual underlying stocks trading on the NSE and were subject to approval by SEBI. See Appendix D, Table D.2 for a list of the securities.

NSE Derivatives Contract Specifications Table 6.12 lists the contract specifications of NSE index and single stock derivatives contracts.

Interest Rate Derivatives

The NSE makes a market in interest rate futures contracts. Interest rate futures contracts are based on the list of underlying fixed income instruments as specified by the exchange and approved by SEBI. Interest rate futures contracts are currently available on notional T-bills, notional 10-year zero-coupon bonds, and notional 10-year coupon-bearing bonds. (See Table 6.13.)

Contract Specifications for Interest Rate Derivatives

Trading cycles: Interest rate futures contracts have maturities of one year with three-month continuous contracts for the first three months

TABLE 6.12 Contract Specifications for NSE Derivatives Contracts*

Parameter	Index Futures	Index Options	Futures on Individual Securities	Options on Individual Securities
Underlying	3 indexes	3 indexes	155 securities	155 securities
Security Descriptor:				
Instrument	FUTIDX	OPTIDX	FUTSTK	OPTSTK
Underlying	Symbol of underlying index	Symbol of underlying index	Symbol of underlying security	Symbol of underlying security
Expiry date**	dd-mm-yyyy	dd-mm-yyyy	dd-mm-yyyy	dd-mm-yyyy
Option type	—	CE/PE	—	CA/PA
Strike price	—	Strike price	—	Strike price

* *Trading cycle:* Three-month trading cycle—the near month (one), the next month (two), and the far month (three).
** *Expiry day:* Last Thursday of the expiry month. If the last Thursday is a trading holiday, then the expiry day is the previous trading day.
Source: The National Stock Exchange.

and fixed quarterly contracts for the entire year. New contracts are introduced on the trading day following the expiry of the near-month contract.

Expiry day: Contracts expire on the last Thursday of the expiry month. If that day is a trading holiday, the contract will expire on the previous trading day. In addition, if the last Thursday falls on the annual or half-yearly closing dates of the bank, the expiry and last trading day in respect of these derivatives contracts would be moved to the previous trading day.

Settlement: Interest rate futures contracts settle on T+1.

TABLE 6.13 Securities on which Interest Rate Futures Contracts Are Available and Their Symbols for Trading

Symbol	Description
NSETB91D	Futures contract on notional 91-day T-bills
NSE10Y06	Futures contract on notional 10-year coupon-bearing bonds
NSE10YZC	Futures contract on notional 10-year zero-coupon bonds

Source: The National Stock Exchange.

Trading Parameters

Price Steps: The price step for all interest rate futures contracts is Rs 0.01.

Quotation method: Futures contracts with face values of Rs100 on notional 10-year coupon-bearing bonds and notional 10-year zero-coupon bonds are based on price quotations, and futures contracts with a face value of Rs100 (US$2.22) on notional 91-day Treasury bills are based on the discounted percent from par, or Rs100 minus the yield.

Base price: Base prices of interest rate futures contracts for new contracts are the theoretical futures prices based on the previous day's closing price of the notional underlying security. The base price of the contracts on subsequent trading days will be the closing price of the futures contracts. However, on days when the contracts are not traded, the base price will be the daily settlement price of the futures contracts.

Price ranges: There will be no day minimum/maximum price ranges for futures contracts. However, in order to prevent order-entry errors, the operating ranges for interest rate futures contracts are ±2 percent of the base price. For orders that exceed these operating ranges, members are required to confirm that the order is valid, and upon confirmation, the exchange has the discretion to approve the order. If confirmation is not given by a member, the order will not be processed.

Order conditions:

- Time conditions:
  - Immediate-or-cancel
  - Good until day
  - Good till canceled (GTC)[e]
  - Good till date (GTD)
- Price conditions:
  - Stop loss order
  - Spread order

Interest Rate Derivative Contract Specification See Table 6.14 for characteristics of interest rate derivatives.

[e]Good-till-canceled orders will be canceled at the end of the period of seven calendar days from the date of entering an order.

TABLE 6.14 Product Characteristics of Interest Rate Derivatives

Contract Underlying	Notional 10-Year Bond (6% Coupon)	Notional 10-Year Zero-Coupon Bond	Notional 91-Day T-Bill
Contract Description	N FUTINT NSE10Y06 26JUN2003	N FUTINT NSE10YZC 26JUN2003	N FUTINT NSETB91D 26JUN2003
Contract Value	Rs2,00,000		
Lot Size	2,000		
Tick Size	Rs0.01		
Expiry Date	Last Thursday of the month		
Contract Months	Contracts have maturities of one year with three-month continuous contracts for the first three months and fixed quarterly contracts for the entire year		
Price Limits	Not applicable		
Settlement Price	Stipulated by the NSCCL		

Source: The National Stock Exchange Ltd.

SUMMARY

Derivatives play an important and growing role in the capital markets of India, as evidenced by the significant trading volume they represent and the continually increasing number of scrips underlying both futures and options. Derivatives offer investors a method to play the short side of the market as well as to trade the volatility of the market and individual shares. It is anticipated that the activity in derivatives will continue to play a large role in the market as the number of foreign investors registered to trade in India employ ever-more-sophisticated trading strategies.

CHAPTER 7

The Indian Debt Market

CHAPTER HIGHLIGHTS

- The Reserve Bank of India (RBI) is the primary regulator of the government securities market and issues by banks.
- The Securities and Exchange Board of India (SEBI) is the primary regulator of the corporate debt market.
- Government securities operate within a strong primary dealer system.
- Government securities account for:
  - 70 to 75 percent of the outstanding value of all Indian-issued securities.
  - 90 to 95 percent of trading volume among all Indian securities.
- The Clearing Corporation of India Ltd. (CCIL) is a central counterparty assuming all counterparty risk.
- Settlement for government securities is T+1.
- The corporate debt market is largely a private placement market with most of the corporate bond issues being privately placed among wholesale investors.
- Government debt trading is largely conducted through the RBI trading system: Negotiated Dealing System–Order Match (NDS-OM).
- Short positions of dated government securities are permitted for up to five trading days.

India's debt market plays a vital role in the current and future development of the Indian economy. There is a thriving government securities market, a small but growing corporate debt market, and very importantly, a set of foundations and institutions upon which further growth can develop. This chapter first discusses the background and reforms supporting and leading up to this growth of the Indian debt market. An examination of the fundamentals of the market follows, including a look at the various issuers in the market, the regulatory oversight, the available instruments, and the trading and settlement processes. The government securities market, currently dominating debt trading in India, is examined along with the corporate debt market, and the chapter looks at the two stock exchanges' wholesale and retail debt markets. Finally, the Indian reference rates and development of a credible yield curve is addressed.

INDIAN DEBT MARKET FUNDAMENTALS

Background

An integral aspect of the financial liberalization initiated in the early 1990s was the process of reforming the debt market. Two of the main catalysts for this reform were: (1) the realization that the growing budget deficit would have to be funded through a liquid, efficient government securities market, and (2) the recognition that sustained economic growth will require a significant improvement of the nation's infrastructure, which itself will require a deep source of funding. Funding on the scale envisioned necessitated the development of a deep and liquid domestic debt market.

The Reserve Bank of India (RBI) took the lead in these efforts. It focused on an overhaul of the government securities market, commonly referred to as the G-Sec market. This includes issues of both the central and state governments. The reforms instituted have dramatically transformed the government securities market in numerous ways. Before the reforms, the market was characterized by administered interest rates, illiquidity, and captive holders, but it is now characterized by:

- An increasingly broad investor base
- A smooth, elongated 30-year yield curve
- Active benchmark securities
- Sophisticated government securities auctions
- Significant liquidity
- Narrowed bid-ask spreads
- A variety of instruments

Annual turnover in the secondary market for government securities was approximately US$633 billion[1] for the 12 months ending July 2006 on an outstanding government securities size of approximately US$355 billion.[2]

The government securities market is now a well-functioning market with adequate benchmark issues; strong, sophisticated regulatory, legal, and technological infrastructure; and well-developed clearing and settlement systems.

Having successfully improved the government securities market, which represents a large bulk of the total outstanding debt, both the RBI and SEBI are now focused on building a viable and vibrant corporate debt market. This will be imperative for the funding of many infrastructure projects taken on by private industry. While the corporate market will be able to build on the foundations of the government securities market, it will undoubtedly prove to be a more difficult process given the issues revolving around the wide range of issuers, the wide range of creditworthiness, and legal reforms that will need to be addressed.

Reforms Impacting the Debt Market Since 1991

In the 1990s, the RBI implemented reforms to make a transition from an administered to a market-determined interest rate environment. The debt market along the lines envisioned by the government required addressing certain key elements of a vibrant market and the development of key foundations and institutions upon which the market could operate. These included:

- ***New legislation:*** New laws were created to support the market reforms.
- ***Primary dealer system:*** A strong primary dealer system was created to promote secondary market liquidity, market making, and price discovery in government securities. Primary dealers were expected to actively promote greater retail participation in the government securities market. There are currently 18 primary dealers (a list of the primary dealers is in the Important Contacts section).
- ***Auctions:*** Auctions were needed to broaden the primary market with an appropriate methodology for market-determined price discovery.
- ***Market making:*** Market making was needed to promote depth and liquidity in the secondary market and to encourage market making in the new primary dealer system.
- ***Trading systems:*** The Negotiated Dealing System (NDS) was implemented and trading of government securities on stock exchanges was introduced.
- ***Settlement systems:*** The Clearing Corporation of India Ltd. (CCIL) was created as a central counterparty assuming all counterparty risk. A

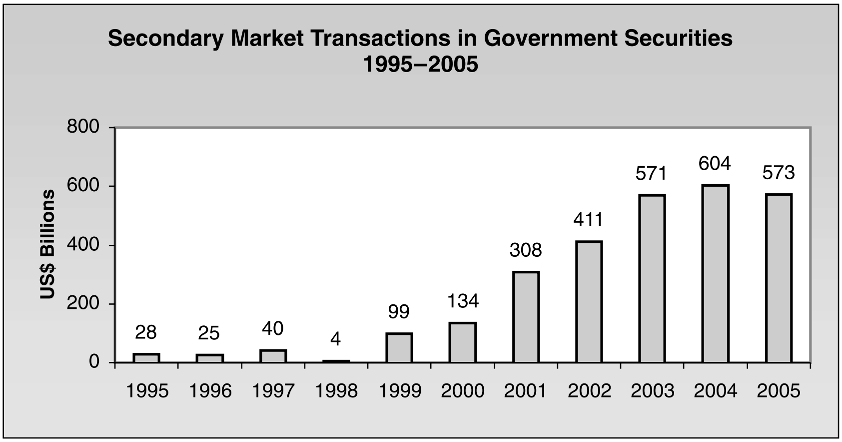

FIGURE 7.1 Volume of secondary market transactions in the government securities market 1995–2005.
Source: The Reserve Bank of India, *Handbook of Statistics on the Indian Economy.*

uniform T+1 settlement cycle was adopted for the settlement of outright transactions in government securities. A new settlement program known as DvP III enables net settlement of both the funds and securities settlement in the government securities market and permits the rollover of repos. Under DvP III, traders can sell pre-settled positions (i.e., execute a buy trade and sell the position later the same day T+0 or T+1, before they have actually settled the trade and taken possession of the security). This facility has significantly enhanced liquidity in the market.

- *Debt instrument expansion:* Many new financial instruments were introduced, including 91-day T-bills for managing liquidity and benchmarking, exchange traded interest rate futures, zero-coupon bonds, floating rate bonds, repos in government securities, capital indexed bonds, and over-the-counter interest rate derivatives.
- *Improved regulatory systems:* Regulatory systems were implemented to ensure adequate institutional, legal, and risk management systems.
- *Greater transparency:* Greater transparency was imposed and implemented in the debt market so as to instill greater confidence in the workings of the erstwhile opaque market.

The result of these reforms has been a deep and liquid government securities market, with the market becoming increasingly broad based, characterized by an efficient auction process, an active secondary market, and a liquid yield curve up to 30 years. There has been a near 20-fold increase in the volume of transactions in the 10 years from 1995 to 2005. Market liquidity has improved to a point where bid-offer spreads in liquid securities are a very tight 1–3 bps. The market is now supported by an active primary dealer system and electronic trading and settlement technology that ensure safe settlement with straight-through-processing and central counterparty guarantee. Figure 7.1 shows the growth of government securities turnover over the reform period.

Recent Trends and Current Initiatives

The reform process is ongoing in the debt market. Significant reforms recently initiated include:

- The ending of RBI's subscription to government securities in the primary market. This will complete the transition to fully market-based issuance of government securities.
- The role of the central government as a financial intermediary for state governments is effectively ending. This means the state governments will need to issue debt directly to the market at their own respective credit ratings, rather than enjoying the national sovereign debt credit rating at which, up until this point, they have been pricing their debt issuance. Thus, their borrowing rates will become market determined. This may eventually result in the emergence of a vibrant subnational debt market.
- An amendment to the Banking Regulation Act has been introduced in Parliament that would remove the 25 percent minimum statutory liquidity ratio when feasible.

Characteristics and Further Reform Efforts of the Debt Market

The government continues to propose and implement additional reforms in its effort to bring the debt market up to the finest international standards, and to provide the underpinnings for a vibrant, liquid corporate and public debt-raising platform. The continuing needs for financing growth, both public infrastructure as well as private industry, require a viable means of raising and trading debt. These reforms will help realize this goal.

Broadening the Investor Base The government has raised the foreign institutional investor (FII) limit for government securities to US$2.6 billion in January 2007 from US$2 billion in order to accommodate the increased FII demand for government securities. Trading access through the NDS-OM trading facility (discussed below) has been extended beyond the initial

RBI-regulated entities to include mutual funds, provident funds, and pension funds.

Traditionally, the investor base for government securities in India had been spread among banks, financial institutions, insurance funds, and pension funds, but when the reform process began in 1991, the large bulk of government security holdings seem to be concentrated among the commercial banks, the Life Insurance Corporation of India, and some smaller pension plans. In 1995, this group owned 95% of all government securities. This concentration in holdings was a result of the commercial banks and life insurance industry being statutorily mandated to hold a significant percentage of assets in government securities while the other traditional investors became free to seek higher returns in alternative investment opportunities. Over the ten years from 1995 to 2005, this concentration in holdings has decreased to where the commercial banks own 52 percent of the outstanding government securities, the Life Insurance Corporation of India owns 20 percent, with the balance of holdings spread among numerous others.[3] The investor base has diversified by the entry of cooperative banks, regional rural banks, mutual funds, and non-banking finance companies, as well as by the increasing interest among FII's, as evidenced by the higher investment limits granted by SEBI in response to growing FII demand. In addition, the entry of 100 percent gilt mutual funds has broadened the retail investor base.

Policy initiatives have been focused on developing the retail segment of the market. To enable small- and medium-sized investors to participate in the primary auction of government securities, a "Scheme of Noncompetitive Bidding" was introduced in January 2002, which is open to any entity approved by the RBI. The program provides for the allocation of up to 5 percent of the auctioned amount at the weighted average rate of accepted bids. Investors can bid through banks or primary dealers with a minimum amount of Rs10,000 (US$225) to a maximum amount of Rs20 million (US$450,000).

Screen-based order-driven trading on the stock exchanges has also been introduced to encourage retail participation in the government securities market, but this has had limited success to date. While the bulk of government securities holdings still resides with the commercial banks and life insurance industry, all of these measures have collectively resulted in more diversified holdings of government securities among market participants, which now include banks, financial institutions, provident funds, insurance and pension funds, primary dealers, 100 percent gilt mutual funds, corporate bodies, trusts, individuals, FIIs, and nonresident Indians.

Creating an Elongated Yield Curve For most of the 1990s, the maturities of central government issuance ranged up to 10 years, resulting in redemption pressure and refinancing risk. To create an elongated yield curve that could effectively determine benchmark rates, the government increased the maturity of its bond issuance. In the early 2000s, the RBI succeeded in increasing maturities up to 30 years, resulting in the weighted-average maturity of bonds issued increasing to 15.17 years by end-January 2004 from approximately 5.5 years in 1996–1997.

Consolidating Government Securities to Enhance Liquidity The number of liquid outstanding government securities was relatively low in relation to the total number of issues. At the end of 2005, there were 111 different issues, of which 44, with a minimum issuance of Rs100 billion (US$2.2 billion), represented 71 percent of the outstanding total issuance. Of these, only 10 to 12 traded on a daily basis, of which just 4 or 5 trade actively. To achieve the goal of a liquid market with a number of securities across maturities trading actively—a necessity for a smooth, valid yield curve—the government is actively consolidating issues through a purchase and reissuance process. Of the 25 loans issued (excluding private placements) during 2002–2003, 15 were reissues.

Promoting Liquidity in State Government Securities Promoting liquidity in state government paper is crucial for large anticipated funding requirements. Liquidity of state paper represented less than 1 percent of total government securities turnover prior to 2004 and in the first six months of 2006 still represented only 3.9 percent of turnover.[4] Efforts to enhance state paper liquidity include: (1) direct access to the market with state-specific, market-determined rates, (2) the possibility of permitting repo-status to state securities, (3) permitting noncompetitive bidding in the primary market, and (4) the securitization of various state government paper.

Short Selling The Reserve Bank of India (RBI) has been progressively loosening the rules surrounding the short selling of government securities in an effort to create more liquidity, enable more effective management of interest rate risk, and permit the implementation of a downward investment view in the market. From a strict prohibition of short selling, in February 2006 the RBI issued a circular granting permission for banks and primary dealers to short central government dated securities, subject to the provision (among others) that the short be covered on the same trading day by the purchase of the same security. In January of 2007, the RBI further loosened the rules by permitting short positions to be maintained for up to five trading days. Short positions assumed on trade date T must be covered by the end of trading on T+4. Readers interested in further details of this ruling and all associated provisions are encouraged to view the ruling circular on the RBI Web site at http://rbi.org.in/scripts/NotificationUser.aspx?Id=3255&Mode=0.

Creating a When-Issued Market The government is considering the introduction of a when-issued market in government securities to extend the distribution period and allow more time for the market to absorb new issues.

Diversifying Instrument Types Recognizing that investors have a variety of investment horizons, risk appetites, and needs, the market is introducing various financial products. While plain-vanilla bonds still represent the bulk of issuance, the current new and proposed instruments include:

- Zero-coupon bonds
- Capital- and inflation-indexed bonds
- Floating rate bonds
- Bonds with call and put options
- STRIPS[a]

Introducing Corporate Debt Repos The RBI is considering the introduction of repurchase agreements (repos) for corporate bonds to be settled through the Clearing Corporation of India Ltd (CCIL). Participation of corporates in the repo market is also being considered.

Developing a Securitization Market The securitization market has been growing rapidly, particularly after the SEBI and RBI introduced regulations for private placements in the debt market. To encourage the growth of this market, the RBI excluded investments in asset-backed securities and mortgage-backed securities from the 10 percent ceiling on the investment of banks in unlisted non-SLR[b] securities.

Expanding Repo Market Eligibility The repo market was expanded by widening the participant base to include non-bank entities such as mutual funds, insurance companies, housing companies, and non-banking financial companies.

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[a]STRIPS is the acronym for Separate Trading of Registered Interest and Principal of Securities.
[b]Government securities are referred to as *SLR* (Statutory Liquidity Ratio) securities in India as they are eligible securities for the maintenance of the statutory reserve ratio by banks. Nongovernment securities are called non-SLR securities.

Debt Issuers

The central government is the largest issuer of debt. As noted earlier, the growing national budget deficit has required the increased issuance of government securities. The annual primary issuance of central government debt increased 18 times during the 15 years since the reform process began, from Rs90 billion (US$2 billion) in FY1991 to Rs1,600 billion (US$36 billion) in FY2006. In addition, the growing needs of the state governments have led to their growing issuance in the debt market. The annual issuance of state government debt has increased as much as 20 times, from Rs26 billion (US$ 0.57 billion) in FY1991 to a peak of Rs505 billion (US$11 billion) in FY2004.[5] This growth is illustrated in Figure 7.2.

Sources of possible future issuance include:

- *Infrastructure financing:* The need for significant infrastructure upgrading to permit the economy to continue on its fast growth track will depend on debt market access for both public and private enterprises.

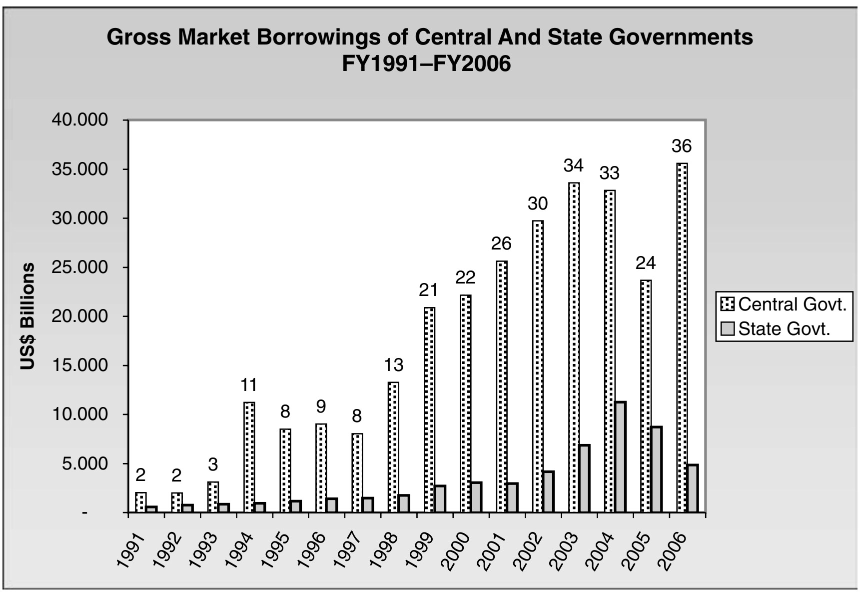

FIGURE 7.2 Gross market borrowings of central and state governments FY1991–FY2006.
Source: Reserve Bank of India, *Handbook of Statistics on the Indian Economy*.

- ***Housing:*** Economic growth has been responsible for a vast expansion of the middle class to 300 million, who are enjoying new and growing wages. With 25 percent of the population below 15 years of age, India is experiencing a major housing boom, along with very large increases in housing finance. Securitization of mortgages will be an important funding source to support this long-term trend.
- ***Municipal bonds:*** India has about 35 cities with populations greater than 1 million and about 400 cities with populations exceeding 100,000. There is an urgent need to upgrade urban infrastructure, and the development of a municipal bond market will be an invaluable source of funding.
- ***Corporates:*** India's industrial sector has been growing dramatically over the last several years, largely funded by internal cash flows and the equity markets. Banks are currently the only source of credit, but the expanding domestic and international business will demand expansion that will require a deeper source of funds.

Corporate Debt Market The corporate debt market is largely a private placement market with most of the corporate bond issues being privately placed among wholesale investors such as banks, financial institutions, mutual funds, large corporates, and other large investors. The public market is a barely viable marketplace characterized by inactivity, poor to no market making, securities held to maturity, and illiquidity.

The development of the corporate debt market is the next area of focus for the RBI and SEBI. A viable corporate market is imperative to support continued industrial growth and to fund new, large projects, both in the infrastructure space and in manufacturing. The development of a corporate market would be helped by the foundations and institutions already put in place during the development of the government securities market. However, the corporate bond market would differ from the government securities market as there would be a large number of issuers versus just the central government, issuers would each have their own creditworthiness versus the single sovereign rating of the government, and issue sizes would be smaller.

Reforms and advancements planned to enhance the corporate debt market include:

- Dematerialization and electronic transfer of securities
- Rolling settlement
- New trading systems with better transparency, low cost, and improved liquidity
- New settlement systems
- Appropriate risk management systems

- Reform of corporate bankruptcy laws to define and protect the rights of creditors
- Improvement in the interest rate derivatives market to provide enhanced hedging opportunities
- Development of credit-enhancement institutions and processes

MARKET INFRASTRUCTURE

Regulation

The RBI has the primary regulatory responsibility of the government securities market, issues by other government institutions, and issues by banks. SEBI has the primary responsibility of the corporate debt market.

Debt Instruments

Instruments traded in the debt market include:

- Floating rate bonds
- Zero-coupon bonds
- Commercial paper
- Certificates of deposit
- Corporate debentures
- Convertible debentures
- Secured premium notes
- Debentures with warrants
- Deep-discount bonds
- PSU bonds/tax-free bonds
- State government loans
- Securitized debt
- Units of mutual funds
- SLR[c] and non-SLR bonds issued by institutions

In Table 7.1, these instruments are classified into segments based on the characteristics of the identity of the issuer.

In addition to the above instruments, capital indexed bonds (CIBs) are to be introduced and will offer inflation-linked returns both on the coupons and on the principal repayments.

[c]Government securities are referred to as SLR (Statutory Liquidity Ratio) securities in India as they are eligible securities for the maintenance of the statutory reserve ratio by banks. Nongovernment securities are called non-SLR securities.

TABLE 7.1 Available Fixed Income Instruments

Market Segment	Issuer	Instruments
Government securities	Central government	Zero-coupon bonds, coupon-bearing bonds, Treasury bills, STRIPS
	State governments	Coupon-bearing bonds
Public sector bonds	Government agencies and statutory bodies	Government-guaranteed bonds, debentures
	Public sector units	PSU bonds, debentures, commercial paper
Private sector bonds	Corporates	Debentures, bonds, commercial paper, floating rate bonds, convertibles, zero-coupon bonds, intercorporate deposits
	Banks	Certificates of deposit, debentures, bonds
	Financial institutions	Certificates of deposit, bonds

The world over, the debt markets are dominated by government securities, which represent between 50 and 75 percent of trading volume and market capitalization, when aggregating all markets. In India, the debt market accounts for 70 to 75 percent of the outstanding value of issued securities, the top of that range, and 90 to 95 percent of the trading volume. India's state government securities and Treasury bills account for only 3 to 4 percent of the daily trading volume, up from less than 1 percent prior to 2005.[6] India's corporate debt market is still in its infancy and relatively small.

Traditionally, banks in India have been the largest category of investors in government securities, accounting for more than 60 percent of the transactions in the wholesale debt market. Banks are a prime and captive investor base for government securities as SLR requirements mandate that they must maintain 25 percent of their net time and demand liabilities as SLR. Banks typically invest 10 to 15 percent more than the normal requirement in government securities because of the risk-free nature of government securities and their greater returns compared to other comparable investments.

Government-Issued Securities: Central and State

Debt instruments are issued at both the central government level as well as the state government level. The term *government securities,* also referred to in India as *G-Secs,* typically refers to all debt instruments issued by the Reserve Bank of India (RBI) on behalf of the central government. Furthermore, these are generally characterized by longer maturities. *T-bills,* also issued by the central government, is the term used for shorter-term issues, while those instruments issued on behalf of the local state governments are referred to as *state government securities.*

Government Securities Government securities are characterized as having maturities ranging from five to 30 years and have the following attributes:

- Carry a face value of Rs10,000 (US$222).
- Normally are coupon bearing.
- Typically have semiannual coupon or interest payments.

Bond Description Example

- An 11.50 percent government of India 2007
  - Carries an annual coupon rate (interest rate) of 11.50 percent.
  - Has a face value per unit of Rs10,000 (US$222).
  - Is payable semiannually.
  - Matures in 2007.

Treasury Bills Treasury bills, issued by the RBI on behalf of the central government, are characterized as such and:

- Have maturities that range from 91 days and 364 days.
- Have a face value of Rs100 (US$2.22).
- Are issued at a discount to the face value and redeemed at par.

The low face value is aimed at encouraging greater retail participation in the T-bill market.

State Government Securities As discussed above, the state governments throughout India have a growing need for funds to upgrade infrastructure. While currently representing a very small percentage of total issuance and trading volume, as noted above, efforts are being made to invigorate this class of debt. State government debt:

- Is issued by the RBI on behalf of each of the state governments.
- Is coupon bearing.
- Has a face value of Rs100 (US$2.22).

MARKET STRUCTURE

The secondary debt market is differentiated by the characteristics of the investors and the structure of the market. The two segments are:

1. ***Wholesale debt market:*** Investors are mostly banks, financial institutions, the RBI, primary dealers, insurance companies, mutual funds, corporations, and FIIs.
2. ***Retail debt market:*** Investors include individuals, provident funds, pension funds, private trusts, nonbank financial companies and other legal entities, in addition to the wholesale investor classes.

Wholesale Debt Market Segment (WDS)

The RBI permits banks, primary dealers, and financial institutions in India to trade debt instruments among themselves or with nonbank clients through members of the stock exchanges. The most prominent investors in the wholesale debt market are commercial banks and financial institutions. During the past few years, the investor base has widened to include cooperative banks, investment institutions, cash-rich corporates, non-banking finance companies, mutual funds, and high-net-worth individuals. FIIs have also been permitted to invest 100 percent of their funds in the debt market, which is a significant increase from the earlier limit of 30 percent, and as noted above, these investors can now invest up to US$2.6 billion in bonds from the previous US$2 billion. The government also allows FIIs to invest in T-bills.

Growth in the Wholesale Debt Market The wholesale debt market has more than tripled in market capitalization outstanding to US$348.35 billion between FY2000 and FY2006. Yet, while the average trade size continued

TABLE 7.2 Trading Statistics of the NSE Wholesale Debt Market, 2000–2006

	Market Capitalization (US$ Billions)	Number of Trades	Net Traded Value (US$ Billions)	Average Daily Value (US$ Billions)	Average Trade Size (US$ Millions)
2000	$ 109.79	46,987	$ 67.6	$ 0.230	$ 1.44
2001	$ 129.07	64,470	$ 95.2	$ 0.330	$ 1.48
2002	$ 168.18	144,851	$ 210.5	$ 0.728	$ 1.45
2003	$ 192.11	167,778	$ 237.5	$ 0.800	$ 1.42
2004	$ 270.19	189,518	$ 292.5	$ 0.995	$ 1.54
2005	$ 324.83	124,308	$ 197.2	$ 0.673	$ 1.59
2006	$ 348.35	61,891	$ 105.7	$ 0.390	$ 1.71

Source: The National Stock Exchange.

FIGURE 7.3 Growth of the market capitalization in the NSE wholesale debt market, 2000–2006.
Source: The National Stock Exchange.

to grow over the same period of time, the number of trades and the value of those trades initially rose, peaked in 2003–2004, and have declined since then, over the same period. Table 7.2 details this market capitalization growth in conjunction with the trading statistics of the NSE Wholesale Debt Market over the 2000 to 2006 period. Figures 7.3, 7.4, and 7.5 illustrate the growth patterns of the individual parameters.

Figure 7.3 illustrates the gradual but consistent growth in market capitalization.

Secondary market turnover showed very consistent growth through 2004 with increased participation from the mainstream banking sector and new entrants into the market. Since 2004, however, the wholesale debt market has shown a reduction in the number of trades and daily turnover accompanied by larger trades transacted. Figures 7.4 and 7.5 illustrate this.

Retail Debt Market (RDM)

Retail Market Participants The main investors permitted to participate in the retail debt market include:

- Mutual funds
- Provident funds
- Pension funds

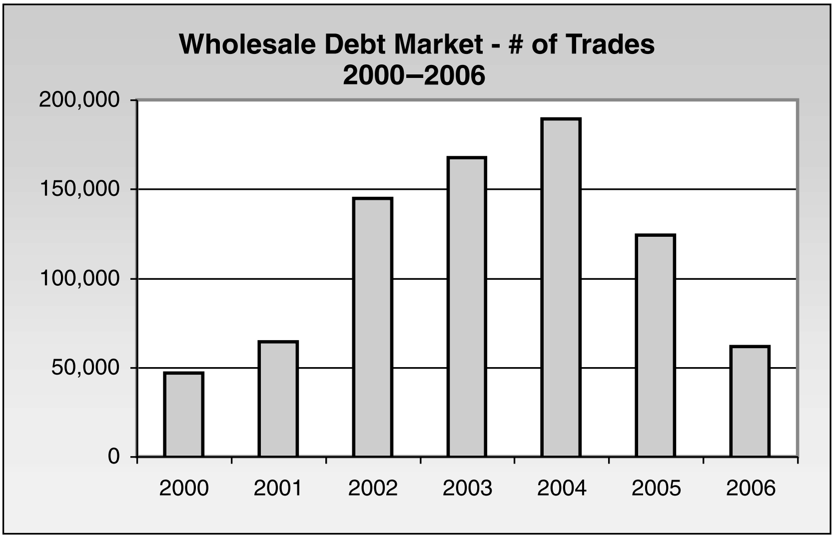

FIGURE 7.4 Growth of the wholesale debt market: number of trades.
Source: The National Stock Exchange.

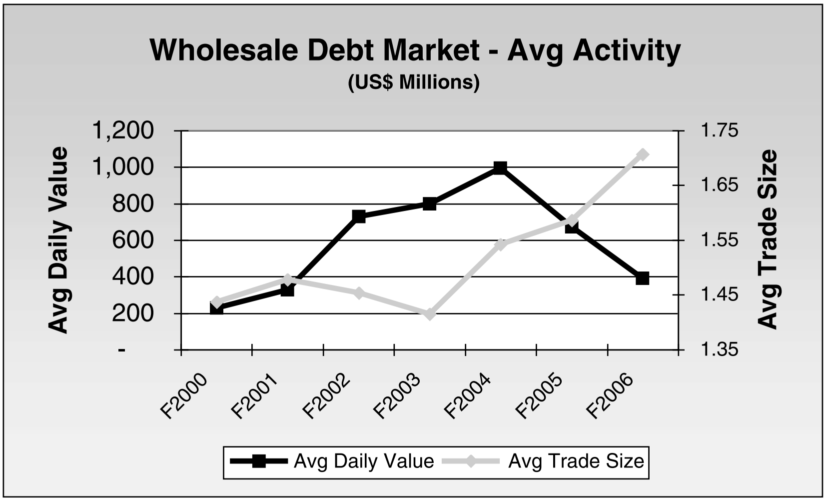

FIGURE 7.5 Growth of the wholesale debt market: average activity.
Source: The National Stock Exchange.

- Private trusts
- Housing finance companies
- Corporate treasuries
- Hindu-undivided families
- Individual investors
- State-level and district-level cooperative banks
- Large religious trusts and charitable organizations
- Non-Banking Financial Companies[d] (NBFC) and Residuary Non-Banking Companies[e] (RNBC)

DEBT TRADING

Debt trading is largely conducted through the RBI trading system known as the *Negotiated Dealing System* (NDS). This system was upgraded in 2005 to the NDS-OM system, which includes anonymous order matching, and it is integrated with the Clearing Corporation of India Ltd. (CCIL). In 2003, in an effort to facilitate easier access and wider retail participation in the government securities markets, the RBI permitted trading through the stock exchanges' (NSE, BSE, and OTCEI) extensive national network of trading terminals. Each exchange has its own debt trading modules. The NDS-OM order matching system now accounts for a significant share of the total traded volume in government securities.

[d]As defined by the Reserve Bank of India, a Non-Banking Financial Company (NBFC) is "a company registered under the Companies Act, 1956 and is engaged in the business of loans and advances, acquisition of shares/stock/bonds/debentures/ securities issued by Government or local authority or other securities of like marketable nature, leasing, hire-purchase, insurance business, chit business but does not include any institution whose principal business is that of agriculture activity, industrial activity, sale/purchase/construction of immovable property. A non-banking institution which is a company and which has its principal business of receiving deposits under any scheme or arrangement or any other manner, or lending in any manner, is also a non-banking financial company (Residuary non-banking company)."

[e]As defined by the Reserve Bank of India, a Residuary Non-Banking Company (RNBC) is "a class of NBFC which is a company and has as its principal business the receiving of deposits, under any scheme or arrangement or in any other manner and not being an Investment, Leasing, Hire-Purchase, Loan Company. These companies are required to maintain investments as per directions of RBI, in addition to liquid assets. The functioning of these companies is different from those of NBFCs in terms of method of mobilization of deposits and requirement of deployment of depositors' funds."

Auctions

As part of the reform process and to create a market-driven price-discovery mechanism, the RBI implemented an auction process for the primary market issuance of government securities. The primary dealer system was implemented, and as of April 2006, the RBI no longer participates in auctions. In the auctions, government securities are bid for two ways: (1) a yield-based basis where participants bid for the coupon payable, and (2) a price-based auction basis where participants bid a price for a bond with a fixed coupon. The auction can be either a multiple price (participants get allotments at their quoted prices/yields) or a uniform price (all participants get allotments at the same price).

To further encourage retail participation in the government securities market, the RBI instituted noncompetitive bidding for retail investors through which noncompetitive bids are allowed up to 5 percent of the amount in the specified auctions of dated securities.

Negotiated Dealing System–Order Matching (NDS-OM)

The negotiated dealing system includes:

- An online electronic bidding facility for the primary auctions of central and state government securities
- Secondary market transactions in government securities
- An anonymous order matching system
- Screen-based electronic dealing and reporting of transactions in money market instruments (including repos)
- Dissemination of information on trades with a minimal time lag
- Facilitation of straight-through processing

The implementation of the NDS-OM coincided with the launch of, and is fully integrated with, the Clearing Corporation of India Ltd. (CCIL). The CCIL, discussed below, becomes the central counterparty to each trade done on the system.

The NDS-OM, which was initially accessible only for RBI-regulated entities, has been extended to all insurance entities.

Transactions in the Debt Market

Transactions are executed over-the-counter and on the exchanges:

Direct transactions: Banks and other wholesale market participants trade directly between themselves either on the telephone or on the NDS system. This type of trading accounts for approximately 25 percent of the wholesale market volume.

Broker-intermediated transactions: These types of transactions account for around 70 to 75 percent of trades in the market. Brokers need to be members of a recognized stock exchange for RBI to allow banks, primary dealers, and institutions to trade through them.

There are normally two types of transactions executed in the wholesale debt market:

1. ***An outright sale or purchase:*** This is a standard execution in which the buyer purchases with no predetermined agreement to sell the position or the seller sells to close out a position.
2. ***Repurchase agreement trades:*** This type of transaction is when a trade is intended to be reversed at a specific point of time at a rate that will include the interest component for the period between the two opposite legs of the transactions. Repos, short for repurchase agreements, are also known in India as ready forward trades. Trades are called repo transactions from the point of view of the seller, and they are called reverse repo transactions from the point of view of the buyer. Repos and reverse repos are commonly used in the money markets as instruments for short-term liquidity management and can also be considered a collateralized lending and borrowing mechanism. Banks and financial institutions usually enter into reverse repo transactions to manage their reserve requirements or to manage liquidity.

Trading Methodology

Government securities trade and settle inclusive of the accrued interest (i.e., the "dirty price" as per market parlance in the wholesale debt market). This is similar to the trading of corporate debentures at a cum-interest price. The minimum order size is 10 units of government securities, each with a face value of Rs100,000 (~US$2,200) for a total order value of Rs1,000,000 (~US$22,000), and subsequent orders will be in lots of 10 securities each.

Debt Trading on Stock Exchanges

The stock exchanges have offered facilities to trade corporate debt since 1994 and added government securities in 2003 to encourage retail participation. Keeping in view the interests of small investors, the minimum order size for government securities was reestablished by RBI to

Rs1,000 (US$22) face value, or a permitted lot size of ten Rs100 face value bonds.

The exchanges segregate debt trading among the wholesale debt market and the retail debt market. The wholesale debt market provides trading facilities for government securities, Treasury bills, and bonds issued by public sector undertakings, corporations, and banks. The secondary market for corporate debt can be accessed through the electronic order-matching platform offered by the exchanges. Retail debt trading at the NSE takes place in a screen-based electronic environment called the RETDEBT market facility. The BSE offers wholesale debt market trading in government securities on its GILT trading system and provides access to the retail debt market through BOLT. Government securities trade under the "G" security classification. Corporate debt instruments issued by development financial institutions, public sector units, and public companies trade in the "F" group on the BSE. BSE's trade guarantee fund covers all of the trades in the F group on the exchange's electronic BOLT system.

Retail Trading in Government Securities

Trading in the RDM of the BSE occurs in the GILT trading system and, like equities, is an electronic order matching system based on price-time priority. Continuous trading operates from 9:55 A.M. to 3:30 P.M.

BSE's GILT Trading System

The GILT system, which at the time of this writing trades only government securities, will eventually provide trading facilities for all available debt instruments: central and state government securities, Treasury bills, institutional bonds, public-service undertakings bonds, commercial paper, certificates of deposit, corporate debt instruments, and new instruments such as municipal securities, securitized debt, mortgage loans, and STRIPS.

Trade executions in the GILT trading system are conducted three ways:

1. ***Order-grabbing system:*** This method is characterized by one participant responding and matching with an order that is already in the trading system.
2. ***Negotiated-deal module:*** This system permits the reporting of trades undertaken by market participants through members of the exchange.
3. ***Cross-deal module:*** This system permits the reporting of trades undertaken by two different market participants through a single member of the exchange.

Exchange Member Eligibility to Trade in the Retail Debt Market Segment

NSE trading members who are registered members in the capital market segment and wholesale debt market segment are allowed to trade in the retail debt market subject to fulfilling capital adequacy norms.

Members of the BSE are automatically granted membership in the debt segment of the BSE, permitting them to trade debt in the trading systems.

Trading Parameters

Trading parameters for the NSE retail debt market segment are:

Face value	Rs100
Permitted lot size	10
Tick size	Rs0.01
Operating range	±5%
Market type indicator	D (RETDEBT)
Book type	RD

BSE Corporate Debt Market Trading

The corporate debt market has yet to demonstrate any liquidity on the exchanges and, as noted above, remains a priority for development by the RBI and SEBI. While corporate issuance is expected to improve, most corporate issuance is still in the form of private placements, and investors tend to hold the securities to maturity. For transactions that occur on the BSE, securities are traded in the F group and are settled on a rolling settlement basis with a T+2 cycle. F group trading remains extremely thin, with 2006 turnover totaling only US$45 million and the average daily turnover a paltry US$181 thousand. To put this into some perspective, the NSE wholesale debt market had FY2006 turnover of US$105 billion and an average daily turnover of $390 million.

CLEARING AND SETTLEMENT

Trades executed in the BSE RDM are subject to rolling settlement with a T+2 delivery cycle. Trades executed throughout the continuous trading sessions will be netted out at the end of the trading hours through a process of multilateral netting. Transactions will be netted out by members and then by scrip to determine the net settlement and payment obligations of the members.

Accounts Used for Holding and Settlement of Government Securities

Government securities can be held in any of the following forms:

- *Subsidiary General Ledger (SGL):* This is an account with the RBI that can only be opened by a select few entities, including primary dealers, banks, and financial institutions. The account is used to hold their investments in government securities and Treasury bills in electronic book-entry form. These accounts can also be used to settle trades using a delivery-versus-payment (DvP) mechanism.
- *Constituent Subsidiary General Ledger (CSGL):* Also known as an SGL-II account, this is an account at the RBI held by banks or primary dealers on behalf of their smaller investors who are not eligible, as per the RBI, to have their own SGL accounts. The SGL-II account is used to hold the investors' government securities positions. The SGL-II accounts provide investors with a DvP settlement capability.
- *Physical security:* This refers to securities still in physical form as certificates. In the dematerialized environment, there are very few debt instruments still in physical form. Those that do exist are held in a physical security account.

Government securities can be held by investors in the same account at the depositories, the CDSL and NSDL, that is used for holding equities. The depositories will hold the government securities in their own Constituent Subsidiary General Ledger (SGL-II) accounts at the RBI. These SGL-II accounts can be used only for their client holdings.

Settlement

Government Securities Settlement of government securities and funds is being done on a DvP basis by the Clearing Corporation of India Ltd. (CCIL), an entity established to provide a "safe institutional structure for the clearing and settlement of trades for government securities, foreign exchange, currency and debt markets." The CCIL started clearing transactions in government securities and repos reported on the NDS in February 2002. The CCIL acts as a clearinghouse and central counterparty for all trades.

In acting as a central counterparty, through novation[f] the CCIL provides guaranteed settlement and has in place risk management systems to limit settlement risk. It also operates a settlement guarantee fund backed by lines of credit from commercial banks. The netting of funds by CCIL reduces the liquidity requirements of the market and thereby liquidity risk of the system. All transactions in government securities concluded or reported on the National Dealing System (NDS) have to be settled through the CCIL.

Clearing and Settlement in the Wholesale Debt Market The following characterize settlement for securities traded in the GILT trading system, the BSE system through which all government securities are traded:

- Settlement is on a trade-by-trade *delivery-versus-purchase* (DvP) basis.
- The primary responsibility of settling trades concluded in the wholesale debt market rests directly with the participants who settle trades on their behalf through the subsidiary ledger account of the RBI or the CCIL account through the NDS.
- For broker-intermediated transactions, the settlement responsibility for trades in the wholesale debt market primarily rests with clients. A member has to only report settlement details to the exchange for monitoring purposes. The exchange reports trades to the RBI regularly and monitors the settlement of these trades.
- Each transaction is settled individually.
- Netting of transactions is not allowed.
- Members need to report settlement details to the BSE for all trades undertaken by them on the GILT system.
- Settlements for all trades executed on the GILT system are on a rolling basis.
- The exchange permits settlement periods ranging from the same day (T+0) to a maximum of six working days (T+5).

[f]*Novation* is the process by which the CCIL steps out of two complementary transactions and replaces itself with the name of the counterparty to each of the complementary transactions. When a trade occurs on an exchange, there is a buyer and a seller, each of whom has as its counterparty the CCIL, which stands in the middle of the trade. In the process of novation, the CCIL steps away for settlement so all netting is done between members without the presence of the CCIL.

TABLE 7.3 Settlement Schedule for the Retail Debt Market for Government Securities

Sr. No.	Day	Description
1	T	Trade date
2	T + 1 (11:00 A.M.)	Custodial confirmation
3	T + 2 (10.30 A.M.)	Securities & funds pay-in
4	T + 2	Securities & funds pay-out

Source: The National Stock Exchange.

Clearing and Settlement for the Retail Debt Market The following applies to all trades executed in the retail debt market on the NSE:

- Trades are cleared through the National Securities Clearing Corporation Ltd. (NSCCL).
- Trades settle on a T+2 basis.
- Trades are under rolling settlement.
- Net settlement is permitted.
- The NSCCL computes member obligations and makes reports available by T+1. Obligations are computed separately for this market from the obligations of the equity market.
- The exchange allows settlement periods ranging from same day (T+0) to a maximum of T+2 for nongovernment securities.
- Settlement of all outright secondary market transactions in government securities is standardized at T+1.
- For repo transactions in government securities, the first leg can be settled on a T+0 basis or T+1 basis.

The typical settlement schedule for the RDM in government securities is summarized in Table 7.3.

Fund Settlement Fund settlement and securities settlement for debt trades executed on the NSE are conducted through the clearing banks and depositories of the NSCCL, in a manner similar to the equity segment. The existing clearing bank accounts are used for funds settlement.

Government Securities:

- The actual settlements of funds and securities are effected directly between participants or through the RBI.
- All trades in government securities are reported to the RBI-SGL through the NDS.
- The trades are settled on a net basis through the DvP-III system.

Nongovernment Securities:

- Trades are settled on a gross basis directly between participants on a DvP basis.
- On the scheduled settlement date, the exchange provides data to the respective members regarding trades to be settled on that day with details such as security, counterparty, and funds owed or due.

RISK MANAGEMENT

Risk management in the debt market, like the equity market, is a vital priority of the regulators. As such, several layers of control are utilized to maintain the safety and integrity of the market. These controls include stringent base capital and net-worth requirements, trading and exposure limits, and margins.

Base Capital and Net-Worth Requirements

Membership in the BSE debt segment is granted to members with a minimum net worth of Rs1.5 crores (US$340,000).

Clearing members of the NSE wholesale debt market segment of the exchange are allowed to participate in clearing and settlement of trades done in government securities, subject to a minimum net worth of Rs1 crore (US$ 220,000). An initial contribution to the settlement guarantee fund (SGF) by way of interest-free security deposit (IFSD) of Rs500,000 (US$11,000) is required to be kept with the NSCCL. A member wishing to participate in the RDM may opt to set aside a contribution of Rs500,000 from his additional base capital available on the capital market segment and/or futures and options segment toward this IFSD.

Trading and Exposure Limits

BSE members of the retail debt segment are permitted up to 15 times their additional capital deposited with the exchange in gross exposure in government securities along with their gross exposure in the equity segment. However, no gross exposure is permitted for members against their base minimum capital plus contribution of Rs1, 000,000 (US$22,222) toward the trade guarantee fund in the cash segment. Transactions done by the members in this segment along with their transactions in the equity segment would form part of their intraday trading limits and are subject to a limit of 33.33 times the capital deposited with the exchange. However, institutional business would not form part of these intraday and gross exposure limits.

NSE Value-at-Risk for Government Securities

Value-at-risk (VaR) is widely accepted in the financial community as an effective way of monitoring and managing market risk and as a basis for setting regulatory minimum capital standards. The NSE developed a VaR system, using the NSE ZCYC,[g] for measuring the market risk inherent in government securities in India.

The NSE-VaR system provides measures of VaR using five alternative methods: (1) variance-covariance (normal), (2) historical simulation methods, (3) weighted normal, (4) weighted historical simulation, and (5) the recently developed extreme value method (more information about these methods is available on the NSE Web site). While the first set of methods is easier to implement and therefore more popular, they may not provide an accurate assessment of risk in volatile market conditions. The five methods provide a range of options for market participants.

Margins and Gross Exposure Limits

Mark-to-market margins, payable on T+1, are applicable to all open positions in government securities and are calculated on the basis of ZCYC prices.

Participation in the debt segment of the NSE requires an initial contribution to the Settlement Guarantee Fund of the NSE of a minimum of Rs500,000 (~US$11,000) in the form of an interest-free security deposit (IFSD) to the NSCCL. The gross exposure in government securities cannot exceed 20 times this IFSD. Any member desiring greater exposure will need to increase its additional base capital, similar to the process in the capital market segment.

BROKERAGE RATES

The NSE has specified the maximum rates of brokerage charges by trading members in relation to trades done in securities available on the wholesale debt market segment of the exchange. These rates vary depending on the size of the order and the issue. Table 7.4 lists these brokerage rates.

[g]The *zero-coupon yield curve* (ZCYC) is explained more fully later in this chapter under the Reference Rates section.

TABLE 7.4 NSE Wholesale Debt Market Brokerage Rates

Government of India Securities and T-Bills	
Order value < Rs10 million	25 ps* per Rs100
Rs10 million–50 million	15 ps per Rs100
Rs50 million–100 million	10 ps per Rs100
>Rs100 million	5 ps per Rs100
State government Securities and Institutional Bonds	
Order value < Rs2.5 million	50 ps per Rs100
Rs2.5 million–5 million	30 ps per Rs100
Rs5 million–10 million	25 ps per Rs100
Rs10 million–50 million	15 ps per Rs100
Rs50 million–100 million	10 ps per Rs100
>Rs100 million	5 ps per Rs100
Public Service Undertakings and Floating Rate Bonds	
Order value < Rs10 million	50 ps per Rs100
Rs10 million–50 million	25 ps per Rs100
Rs50 million–100 million	15 ps per Rs100
>Rs100 million	10 ps per Rs100
Commercial Paper and Debentures	1% of the order value

*Ps refers to paise, or Rs0.01.
Source: The National Stock Exchange.

REFERENCE RATES

Mumbai Inter-Bank Bid Rate (MIBID) and Mumbai Inter-Bank Offer Rate (MIBOR)

The key overnight interest rate benchmarks in India are the *MIBID/MIBOR* rates initially developed by the NSE and later co-branded/sponsored by the Fixed Income Money Market and Derivative Association of India (FIMMDA). With the goal of bringing uniformity to the marketplace, the overnight MIBID and MIBOR rates are the benchmark rates for a majority of trades among interest rate swaps, forward rate agreements, floating rate notes, and term deposits.

The methodology behind the MIBID/MIBOR rates consists of a poll sampling a panel of 33 banks and primary dealers in India. This sample is then run through a formula and system that trims the data of outliers and computes a mean and standard deviation. The reference rate is then simultaneously released to all market participants through various media. Dissemination of the reference rate information occurs every business day at 9:55 A.M. for the overnight rates and at 12:15 P.M. for the 14-day, one-month, and three-month rates.

A number of fixed income products are now linked to the MIBID/MIBOR rates including floating rate notes issued by GE Capital, corporate debentures issued by Larsen and Toubro and GE Capital, term deposits issued by ICICI Bank, forward rate agreements issued by HSBC, and a number of interest rate swaps issued by Standard Chartered, HSBC, HDFC, ABN AMRO, and Deutsche Bank.

BSE Inter-Bank Offer Rate (BIBOR)

The BSE offers a reference rate to provide a short-term benchmark interest rate. While not as widely quoted as the MIBOR/MIBID rates, the *BIBOR* computation methodology includes a poll sampling of exactly 20 contributing banks, a screening of the data to eliminate outliers, and then dissemination of the resulting reference rate to the market.

NSE Zero-Coupon Yield Curve (ZCYC)

In an effort to create a standard by which government securities across all maturities could be effectively valued, the NSE created the zero-coupon yield curve (ZCYC). The ZCYC is now increasingly being used by market participants as an acceptable basis for the valuation of debt instruments.

NSE Government Securities Index

The NSE created the NSE Government Securities Index as a bond index for India's markets to measure returns in the bond market and to provide a benchmark for portfolio management. The index prices components off of the NSE benchmark ZCYC, so that movements reflect returns to an investor on account of a change in interest rates only and not those arising from trading factors such as illiquidity. Features[h] of the index include:

- The base date for the index is January 1, 1997.
- The base date index value is 100.
- The index is calculated on a daily basis for all trading days from January 1, 1997, onward.

[h] Additional information about the NSE Government Securities Index, ZCYC, Mibid/Mibor rates or the current day's Daily View, can be found on the NSE Web site at www.nse-india.com, under Debt > Products & Services.

TABLE 7.5 Example of a Daily View of the NSE Government Securities Index

Index	Total Returns Index	Principal Returns index	Avg. Coupon	Avg. Residual Maturity	Portfolio YTM	Portfolio Duration	Portfolio Modified Duration	Portfolio Convexity
ALL	238.3	120.61	8.644	9.496	8.143	5.716	5.493	58.685
1–3	201.8	94.1	9.325	2.356	7.512	2.130	2.053	5.002
3–8	240.46	110.8	8.866	5.753	7.775	4.525	4.355	24.860
8+	281.79	134.55	8.139	15.102	8.301	8.312	7.981	101.719
TB	211.4	211.4	0.000	0.329	6.040	0.325	0.315	0.181
GS	241.53	112.34	8.644	10.223	8.151	6.120	5.880	63.048

Source: The National Stock Exchange.

- The index uses all Government of India bonds issued after April 1992. These were issued on the basis of an auction mechanism that imparted some amount of market-relatedness to their pricing. Bonds issued prior to 1992 were on the basis of administered interest rates.
- Each day, the prices for all of these bonds are estimated off of the NSE benchmark zero-coupon yield curve for the day.
- The index is a market capitalization–weighted index of its constituents.
- Computations are based on arithmetic and not geometric calculations.
- The index uses a chain-link methodology (i.e., today's values are based on the previous value times the change since the previous calculations). This gives the index the ability to add new issues and also remove old issues when redeemed.
- Coupons and redemption payments are assumed to be reinvested back into the index in proportion to the constituent weights.
- Both the Total Returns Index and the Principal Returns Index are computed.
- The indexes provided are: Composite, 1–3, 3–8, 8+ years, a Treasury bill index, and defined dated Government Securities Index.

Table 7.5 illustrates a view of the NSE Government Securities Index and all the information that is available every day.

SUMMARY

The debt market of India, like others throughout the Asian region, is still a developing market that has demonstrated tremendous growth over the past 10 years but still has a long way to go to meet the needs of the Indian economy. While indicators such as issuance, number of trades, and turnover grow in the government securities market, the corporate debt market is still in its infancy and suffers from minimal liquidity. The foundations of a strong market are all in place, including good trading and settlement systems, debt-specific risk management processes, and the development of a viable yield curve and a set of benchmark rates. Given the significant capital needs of the economy to improve infrastructure, India will undoubtedly continue to drive regulatory reform that enhances the attractiveness and demand for debt, resulting in investors witnessing a steady growth in the Indian debt market.

CHAPTER 8

Indexes: General Market and Sector Specific

CHAPTER HIGHLIGHTS

- The BSE Sensex of 30 stocks is the benchmark for India's financial markets.
- All BSE indexes are calculated based on a free-float methodology except the PSU Index.
- The Sensex is updated every 15 seconds.
- Dollex indexes are indexes expressed in U.S. dollar terms. For example, the Dollex 200 is the BSE 200 expressed in U.S. dollar terms.
- The BSE 500 represents nearly 97 percent of the total market cap on the BSE and represents all 20 major industries.

The Bombay Stock Exchange (BSE) and National Stock Exchange (NSE), India's two most important stock exchanges, have each compiled a number of different stock indexes to serve as benchmarks of performance for investors. Indexes have been created both for the general market as well as for specific key industries in India's economy. In this chapter, both the free-float and full market capitalization methodologies are discussed, as are the features and selection criteria of the various indexes of the BSE and the NSE. Every index offered by each exchange, both general market and industry

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The indexes are the proprietary property of each exchange. The BSE, NSE, and India Index Services & Products Ltd. (IISL) have generously given permission for their information to be presented in this book.

sector–specific, is addressed together with a listing of their constituents and, where available, the applicable free-float factor associated with each constituent. The chapter is organized by the index-sponsoring exchange, beginning with the indexes of the BSE and followed by those of the NSE.

The constituents of the various indexes are regularly updated by their respective sponsors. The constituents listing for each index was up-to-date at the date listed on each table. The reader should remember that in all likelihood there will have been some amendments to either the constituents or their free-float factor by the time of this book's printing. The most up-to-date constituents listings can be found on the Web sites of the respective exchange-sponsors.

BSE-SPONSORED INDEXES

The Bombay Stock Exchange is the sponsor of 6 general market and 11 sector-specific indexes. In addition, the BSE has created three indexes, known as the *Dollex* indexes, which are U.S.-dollar denominated. The best-known BSE index is the Sensex, the most widely quoted and internationally watched benchmark of the Indian capital markets. A full list of the BSE indexes is in Table 8.1.

TABLE 8.1 BSE Indexes

Market Indexes	Sector-Specific Indexes	
Sensex	BSE Auto Index	BSE IT Index
Midcap	BSE Bankex Index	BSE Metal Index
Small Cap	BSE Capital Goods Index	BSE Oil & Gas Index
	BSE Consumer Durables Index	BSE Public Service Undertakings Index
BSE 100		
BSE 200	BSE FMCG Index	BSE TEC*k* Index
BSE 500	BSE Healthcare Index	
Dollex 30		
Dollex 100		
Dollex 200		

Source: The Bombay Stock Exchange.

Each of these indexes are described below. The discussion of the indexes begins with an explanation of the methodologies used to develop the indexes.

Index Methodologies, Computations, and Related Details

Free-Float Methodology Initially, indexes in India, and elsewhere throughout the world, were calculated based on the full market capitalization methodology whereby the capitalization of a stock was based on the number of issued shares multiplied by the closing price of the stock. The rationale of this methodology came into question when analysts began to question the impact of the huge holdings of stocks that never came to the market for trading in the normal course of events. These holdings included those of *promoters*,[a] government entities, strategic investors, and other locked-in shares.

To adjust for this issue, a new methodology was devised to look at capitalizations based on only those shares commonly available to, or freely floating in, the market. This new approach became known as the modified market capitalization–weighted method and free-float adjustment method, or the more common *free-float capitalization* method. BSE pioneered the free-float concept in India by launching the BSE TEC*k* in 2001 and the Bankex in June 2003.[b] The BSE has since shifted all of its indexes, except the PSU Index,[c] to the free-float methodology.

Free-float market capitalization is based on the free-float factor, or proportion of total shares issued by the company that are readily available for trading in the market. Using this methodology, the market capitalization of a company is determined first by multiplying the price of its stock by the number of shares issued by the company (the standard market capitalization). Then, second, this market capitalization is further multiplied by the free-float factor to determine the free-float market capitalization. In other words, the market capitalization of each company in a free-float index is reduced to the extent of its readily available shares in the market.

For example, if a company has 45 percent of its shares held by the public, and 55 percent of the shares are still held by the company's founding family,

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[a] "Promoters" of a company in India generally refers to the company founders, who typically retain a large portion of the shares when a company goes public. These shares tend to be closely held and do not tend to trade in the market; thus they are not considered part of the free-float.

[b] The BSE TEC*k* Index is a benchmark for technology, media, and telecommunications; the Bankex is a benchmark for bank stocks.

[c] The PSU Index is the benchmark for public-sector undertakings, India's description and name for state-owned enterprises.

then the free float factor of the company would be .45 and only 45 percent of the total market capitalization of the company would be considered for the purpose of calculating the index.

$$\text{Free-Float Factor} = \frac{[\text{Issued Shares of a Company Readily Available to Trade in the Market}]}{[\text{Total Issued Shares of the Company}]}$$

$$\text{Free-Float Market Capitalization} = [\text{Full Market Capitalization}] \times [\text{Free-Float Factor}]$$

Using the free-float methodology, the level of an index at any time reflects the free-float market value of an index's component stocks relative to a base period. The free-float capitalization methodology as a method to measure market capitalization of indexes is now used by many stock exchanges around the world.

Free-Float Exclusions Shareholdings held by investors that would not come into the open market for trading are treated as controlling/strategic holdings and are not included in the free-float. Specifically, the following holdings are generally excluded when determining a company's free-float:

- Holdings by founders, directors, and acquirers that have some control element.
- Holdings by persons and bodies with a "controlling interest."
- Government holdings as a promoter and acquirer.
- Holdings through the FDI route.
- Strategic stakes by private corporate bodies and individuals.
- Equity held by associate and group companies (cross-holdings).
- Equity held by employee welfare trusts.
- Locked-in shares and shares that would not normally be sold in the open market.

The remaining shareholders would fall under the free-float category.

Free-Float Capitalization Methodology A company's free-float in India is determined according to a shareholding format specified by the Securities Exchange Board of India (SEBI). The format is:

A. Promoters:
   - Indian
   - Foreign
   - Persons acting in concert

TABLE 8.2 The Impact of Differing Index Weighting Methodologies

Company	Free-Float Adj Factor	Full Mkt Cap	Free-Float Adjusted Mkt Cap	Full Mkt Cap Weighting	Free-Float Mkt Cap Weighting
A	0.25	10,000	2,500	59%	42%
B	0.5	7,000	3,500	41%	58%

B. Nonpromoters:
- Financial institutions and foreign institutional investors
- Corporations
- Public

Example of Weightings for Full Market Capitalization versus Free-Float Methodologies A greater appreciation of the impact of the free-float methodology on index component weightings can be gained from the example in Table 8.2, where an index of two constituent stocks, A and B, will have very different weightings in the index depending on whether the index methodology is based on full market capitalizations versus free-float market capitalizations.

Note that while the straight full market capitalization weighting would suggest company A's weighting would be 59 percent compared to B's 41 percent, the free-float methodology, utilizing the free-float adjustment factor, results in company A's weighting of only 42 percent versus B's 58 percent.

Index Oversight Two bodies within the BSE are responsible for the exchange's index-related matters. The Index Committee of the BSE is charged with setting the policies and framework of the index-related issues, and the Index Cell is responsible for the daily maintenance of the BSE indexes. The Index Committee is made up of experts in all areas of the capital markets and includes academics, fund managers, journalists, BSE executives, and other market participants. The Index Committee meets every quarter to review all of the BSE indexes. In case there is a revision in the index constituents, an announcement of the incoming and outgoing stocks is made six weeks in advance of the actual implementation of the index revision.

The Sensex

In 1986, the BSE introduced the BSE Sensitive Index, commonly known as the Sensex and widely recognized as the benchmark index of India's capital markets and the index most often quoted in the world's financial press when reporting on India's capital market performance. Much like the Dow Jones Industrial Average in the United States, the Sensex is made up of only 30 stocks. The Sensex is the oldest index in India and provides time series data going back to 1979.

In 1989, in response to the perceived need for an index representing a more broad-based cross-section of the Indian economy, the BSE launched the BSE National Index, representing 100 stocks that are multilisted on various Indian exchanges. In 1996, the name was changed to the BSE 100 Index.

In 1994, the BSE launched two new index series: the BSE 200 and the Dollex 200 indexes. These were followed by the launch of the BSE 500 Index and five sectoral indexes in 1999. In 2001, BSE launched the BSE-PSU Index, Dollex-30, and the country's first free-float-based index—the BSE TEC*k* Index.

Sensex Calculation Methodology The Sensex was initially calculated based on the full market capitalization methodology, but it shifted to the free-float methodology in 2003. With this methodology, the level of the index at any time reflects the free-float market value of the 30 component stocks relative to a base period. The market capitalization of a company is determined by multiplying the price of its stock by the number of shares issued by the company. This market capitalization is further multiplied by the free-float factor of the company to determine the free-float market capitalization.

The base period of the Sensex is 1978–1979, and the base value is 100 index points. This is often indicated by the notation 1978–79 = 100. The Sensex calculation divides the free-float market capitalization of 30 companies in the index by a number called the index divisor. The divisor is the only link to the original base period value of the Sensex. It keeps the index comparable over time and is the adjustment point for all index adjustments arising out of corporate actions and replacement of components. During market hours, prices of the index components, determined by the latest executions, are used by the trading system to calculate the Sensex every 15 seconds and are disseminated in real time.

Computation of the Sensex

Closing Value Computation: The closing value of the Sensex is computed by taking the weighted average of all of the trades on each Sensex constituent in the last 30 minutes of the trading session. If a Sensex constituent has not traded in the last 30 minutes, the last traded price is used. If a Sensex constituent has not traded at all during the day, then the previous day's

TABLE 8.3 Sensex Constituents and Their Free-Float Adjustment Factors

Code	Name	Sector	Free-Float Adj. Factor
500410	Associated Cement Cos Ltd.	Housing Related	0.65
500490	Bajaj Auto Ltd.	Transport Equipment	0.70
500103	Bharat Heavy Electricals Ltd.	Capital Goods	0.35
532454	Bharti Airtel Ltd.	Telecom	0.35
500087	Cipla Ltd.	Healthcare	0.65
500124	Dr. Reddy's Laboratories Ltd.	Healthcare	0.75
500300	Grasim Industries Ltd.	Diversified	0.75
500425	Gujarat Ambuja Cements Ltd.	Housing Related	0.80
500010	HDFC	Finance	0.90
500180	HDFC Bank Ltd.	Finance	0.80
500182	Hero Honda Motors Ltd.	Transport Equipment	0.50
500440	Hindalco Industries Ltd.	Metal & Mining	0.75
500696	Hindustan Lever Ltd.	FMCG	0.50
532174	ICICI Bank Ltd.	Finance	1.00
500209	Infosys Technologies Ltd.	Info Technology	0.80
500875	ITC Ltd.	FMCG	0.70
500510	Larsen & Toubro Ltd.	Capital Goods	0.90
532500	Maruti Udyog Ltd.	Transport Equipment	0.40
532555	NTPC Ltd.	Power	0.15
500312	ONGC Ltd.	Oil & Gas	0.20
500359	Ranbaxy Laboratories Ltd.	Healthcare	0.70
532712	Reliance Communications Ltd.	Telecom	0.35
500390	Reliance Energy Ltd.	Power	0.75
500325	Reliance Industries Ltd.	Oil & Gas	0.55
500376	Satyam Computer Svcs. Ltd.	Info Technology	0.95
500112	State Bank of India	Finance	0.45
532540	Tata Consultancy Svcs. Ltd.	Info Technology	0.20
500570	Tata Motors Ltd.	Transport Equipment	0.60
500470	Tata Steel Ltd.	Metal & Mining	0.70
507685	Wipro Ltd.	Info Technology	0.20

As of March 2007.
Source: The Bombay Stock Exchange Ltd.

closing price is used. The index closure algorithm is intended to prevent intentional manipulation of the closing index value.

Intraday Value Computation: During market hours, the execution prices of index stocks are used to automatically calculate the Sensex every 15 seconds. The newly calculated index is continuously updated on all trading workstations connected to the BSE trading computer in real time.

Selection Criteria for Sensex Constituents General guidelines for the selection of constituent stocks of the Sensex are as follows:

Quantitative Criteria:

1. ***Final rank:*** The stock should figure in the top 100 companies listed by final rank. The final rank is arrived at by assigning a 75 percent weighting to the rank on the basis of the six-month average full market capitalization and 25 percent weighting to the liquidity rank based on the six-month average daily turnover and six-month average impact cost.
2. ***Trading frequency:*** The stock should have been traded on every trading day for the last three months, although exceptions can be made for unusual circumstances such as stock suspensions.
3. ***Free-float market capitalization weighting:*** The weight of each stock in the Sensex based on a three-month average free-float market capitalization should be at least 0.5 percent of the index.
4. ***Industry representation:*** The Index Committee seeks a balanced representation of the listed companies in the BSE universe. The index companies should be leaders in their industry group.
5. ***Listed history:*** The stock should have a listing history of at least three months on the BSE, but the criteria may be relaxed in exceptional circumstances.

Qualitative Criteria:

6. ***Track record:*** In the subjective opinion of the Index Committee, the company should have “an acceptable track record.”

Sensex Index Constituents Table 8.3 lists the component stocks of the BSE Sensex Index, the industrial sectors that each stock represents, and the free-float adjustment factors applied to each component’s capitalization.

BSE 500

The BSE 500 Index is the most important BSE benchmark of performance for the broader market. By design, it represents nearly 93 percent of the total market capitalization on the BSE and represents all 20 major industries of the economy. The index is calculated based on the free-float methodology only as of August 16, 2005.

Appendix I contains various tables listing the component stocks of the various market indexes. Table I.1 lists the components of the BSE 100, Table I.2 the components of the BSE 200, and Table I.3 the components of the BSE 500.

BSE Mid-Cap and BSE Small-Cap Index

The BSE created the BSE Mid-Cap Index and BSE Small-Cap Index as benchmarks for the performance of the smaller companies trading on the stock exchange. The free-float market capitalization methodology applies to both indexes. The components of these indexes are determined and reviewed quarterly. The selection methodology and criteria are based on the size of the average market capitalization and is as follows:

1. Any companies in the Z group, traded as *permitted securities,* or trading less than 60 percent of the days in the preceding three months are excluded.[d]
2. All remaining stocks in the BSE universe are ranked by their average market capitalization.
3. The bottom 1.5 percent of companies are excluded from inclusion, leaving the top 98.5 percent of companies.
4. Those companies that fall between 80 percent and 95 percent of the remaining aggregated market capitalization are included in the BSE Mid-Cap Index.
5. Those companies that fall in the bottom 5 percent of the remaining aggregated market capitalization are included in the BSE Small-Cap Index.

The above selection methodology results in a varying number of component stocks after each quarterly review. The two indexes track the large-cap BSE 500 index with a correlation greater that 0.90. Appendix I, Table I.4 lists the component stocks of the BSE Mid-Cap. Table I.5 lists the components of the BSE Small-Cap.

Summary of BSE Market Index Features

A brief summary of the features of each of the general market indexes is presented in Table 8.4.

Dollex

The standard indexes of the BSE are always expressed in terms of rupees and all changes in value of the indexes are expressed in stable rupee terms. In recognition of the growth in foreign portfolio investment, as well as the

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[d]See Appendix G or Chapter 5 for a definition of "Z group" securities and the Glossary for a definition of "permitted securities."

TABLE 8.4 BSE Market Index Features

	Sensex	BSE 100	BSE 200	BSE 500	BSE Mid-Cap	BSE Small-Cap
Weighting criteria	Market capitalization weighted					
Capitalization Methodology	Free-float					
Number of Component Stocks	30	100	200	500	Varies	Varies
Base Year/Date of Index	1978–79	1983–84	1989–90	Feb 1, 1999	2002–03	2002–03
Base Value of Index	100	100	100	1,000	1,000	1,000

Source: The Bombay Stock Exchange.

most common global investment industry practice of monitoring and reporting investment performance in U.S.-dollar-based terms, the BSE thought it valuable to provide foreign investors with an easy method to monitor Indian market performance in stable U.S.-dollar terms. With this in mind, in 1994 the BSE introduced a dollar-linked version of the BSE 200 and called it the Dollex—in which the formula for the calculation of the BSE 200 is modified to express the current and base market values in dollar terms by dividing the current rupee market value by the current rupee–dollar conversion rate and the base value by a constant average rupee–dollar conversion rate in the base year. In 2001, the BSE introduced a Dollex version of the Sensex, called the Dollex 30, and then in 2006 they introduced the Dollex 100, the US$ version of the BSE 100.

BSE Sector-Specific Indexes

Sector-specific indexes use the free-float methodology and each sector index represents approximately 90 percent of the market capitalization for its sector. The selection criteria for the sector indexes are as follows:

1. Only present constituents of the BSE 500 are eligible for inclusion in a sector index.
2. Stocks must have a 90 percent trading frequency during the previous six months.

TABLE 8.5 BSE Sector-Specific Indexes

BSE Index Name	Sector Focus
BSE Auto	Auto industry
BSE Bankex	Banking
BSE Capital Goods	Fast-moving consumer goods
BSE Consumer Durables	Consumer durables
BSE FMCG	Fast-moving consumer goods
BSE Healthcare	Healthcare industry
BSE IT	Software technology
BSE Metal	Metal
BSE Oil & Gas	Energy
BSE PSU	Companies owned or controlled by the central government
BSE TEC*k*	Information technology, media, & telecom

Source: The Bombay Stock Exchange Ltd.

3. Sector constituents representing a minimum of 90 percent of the aggregate free-float market capitalization of the stocks in the particular sector will make up the index.
4. Within the above criteria, there is a ±2 percent *buffer* whereby a stock will not necessarily be included in the index unless it falls within 88 percent coverage and will not necessarily be excluded unless if falls below the 92 percent coverage level. The purpose of this buffer is to reduce the changes into and out of each index.

Table 8.5 lists the 11 BSE-sponsored sector-specific indexes that have been developed to provide benchmarks to track the performance of specific sectors of India's economy.

BSE Bankex Index The BSE Bankex Index is an index exclusively made up of Indian bank stocks.

Features

- The index comprises 12 stocks.
- The Bankex tracks the performance of the leading banking sector stocks listed on the BSE.
- The Bankex is based on the free-float methodology of the index construction.

TABLE 8.6 Constituents of the Bankex Index

Code	Name	Free-Float Adj. Factor
532480	Allahabad Bank Ltd.	0.45
532418	Andhra Bank	0.50
532134	Bank of Baroda	0.50
532149	Bank of India	0.35
532483	Canara Bank	0.30
532273	Centurion Bank Ltd.	0.70
500469	Federal Bank Ltd	1.00
500180	HDFC Bank Ltd.	0.80
532174	ICICI Bank Ltd.	1.00
532388	Indian Overseas Bank	0.40
500247	Kotak Mahindra Bank Ltd.	0.45
500315	Oriental Bank of Commerce	0.50
532461	Punjab National Bank	0.45
500112	State Bank of India	0.45
532477	Union Bank Ltd.	0.45
532215	UTI Bank Ltd.	0.75

As of March 2007.
Source: The Bombay Stock Exchange.

- The BSE has calculated the historical index values of Bankex since January 2002.
- The Bankex stocks represent 90 percent of the total market capitalization of all banking sector stocks listed on the BSE.

Base

- The Bankex's base date is 1 January 2002.
- The Bankex's base value is 1,000 points.

Table 8.6 lists the index's component stocks.

BSE TECk Index The BSE TEC*k* is made up of companies in the information technology, media, and telecom (TMT) sectors.

Features

- The BSE TEC*k* Index comprises 21 stocks.
- The BSE TEC*k* index represents around 90 percent of the market capitalization of the TMT sector and includes the sector leaders as its constituents.

TABLE 8.7 BSE TEC*k* Index Constituents

Stock Code	Name	Sector	Free-Float Adjustment Factor
532399	Adlabs Films Ltd.	Media & Publishing	0.3
532382	Balaji Telefilms Ltd.	Media & Publishing	0.35
532454	Bharti Airtel Ltd.	Telecom	0.25
532608	Deccan Chronicle Holdings Ltd.	Media & Publishing	0.3
526881	Financial Technologies (I) Ltd.	Information Technology	0.55
500144	Finolex Cables Ltd.	Telecom	0.55
532281	HCL Technologies Ltd.	Information Technology	0.35
500183	Himachal Futuristic Comm.	Telecom	1
532662	HT Media Ltd.	Media & Publishing	0.2
532466	I-Flex Solutions Ltd.	Information Technology	0.2
500209	Infosys Technologies Ltd.	Information Technology	0.85
532706	Inox Leisure Limited	Media & Publishing	0.35
532705	Jagran Prakashan Ltd.	Media & Publishing	0.2
500108	Mahanagar Telephone Nigam Ltd.	Telecom	0.45
526299	Mphasis BFL Ltd.	Information Technology	0.4
532529	New Delhi Television Ltd.	Media & Publishing	0.4
532529	Paramount Communications Ltd.	Telecom	0.7
532517	Patni Computer Systems Ltd.	Information Technology	0.4
532689	PVR Ltd.	Media & Publishing	0.6
532712	Reliance Communications Ltd.	Telecom	0.35
532663	Sasken Communication Techno.	Telecom	0.5
500376	Satyam Computer Services Ltd.	Information Technology	0.95
532374	Sterlite Optical Technol'S Ltd.	Telecom	0.65
532733	Sun TV Ltd.	Media & Publishing	0.1
532540	Tata Consultancy Services Ltd.	Information Technology	0.2
532371	Tata Teleservices (Maharashtra) Ltd.	Telecom	0.35
532755	Tech Mahindra Ltd.	Information Technology	0.15
500483	Videsh Sanchar Nigam Ltd.	Telecom	0.25
507685	Wipro Ltd.	Information Technology	0.2
505537	Zee Telefilms Ltd.	Media & Publishing	0.6

As of March 2007.
Source: Copyright © 2000, The Bombay Stock Exchange.

TABLE 8.8 BSE PSU Index Constituents

Code	Name	Sector	Code	Name	Sector
532480	Allahabad Bank	Finance	530965	Indian Oil Corporation Ltd.	Oil & Gas
532418	Andhra Bank	Finance	532388	Indian Overseas Bank	Finance
523319	Balmer Lawrie & Co. Ltd.	Miscellaneous	500116	Industrial Dev Bank of India	Finance
532134	Bank of Baroda	Finance	532209	Jammu & Kashmir Bank Ltd.	Finance
532149	Bank of India	Finance	500108	Mahanagar Telephone Nigam Ltd.	Telecom
532525	Bank of Maharashtra	Finance	500109	Mangalore Refinery & Petro Ltd.	Oil & Gas
500048	Bharat Earth Movers Ltd.	Capital Goods	513377	M M T C Ltd.	Miscellaneous
500049	Bharat Electronics Ltd.	Capital Goods	532234	National Aluminium Co. Ltd.	Metal & Mining
500103	Bharat Heavy Electricals Ltd.	Capital Goods	532555	Nat'l Thermal Power Corporation	Power
500547	Bharat Petroleum Corp. Ltd.	Oil & Gas	513683	Neyveli Lignite Corpn.	Power
500072	Bongaingaon Refinery & Petro.	Oil & Gas	500312	ONGC Ltd.	Oil & Gas
532483	Canara Bank	Finance	500315	Oriental Bank of Commerce	Finance
500110	Chennai Petroleum Corporation Ltd.	Oil & Gas	532461	Punjab National Bank	Finance
531344	Container Corporation of India	Transport Services	524230	Rashtriya Chem. & Fert. Ltd.	Agriculture
532179	Corporation Bank	Finance	523598	Shipping Corp. of India Ltd.	Transport Services
532121	Dena Bank	Finance	500112	State Bank of India	Finance
523618	Dredging Corporation of India	Capital Goods	500113	Steel Authority of India Ltd.	Metal & Mining
532178	Engineers India Ltd.	Miscellaneous	532276	Syndicate Bank	Finance
532155	Gail (India) Ltd.	Oil & Gas	532505	UCO Bank	Finance
500191	Hindustan Machine Tools Ltd.	Capital Goods	532477	Union Bank of India	Finance
500104	Hindustan Petroleum Corp. Ltd.	Oil & Gas	532401	Vijaya Bank	Finance
500198	I.B.P Co. Ltd.	Oil & Gas			

As of March 2007.

Source: Copyright © 2000, The Bombay Stock Exchange.

- Approximately 68 percent of the turnover on the stock exchanges occurs in TMT sector stocks.
- These stocks collectively account for 23 percent of the total market capitalization.

Base

- The base date for the BSE TEC*k* Index is April 2, 2001.
- The base value for the BSE TEC*k* Index is 1,000 points.

TEC*k* stands for the following:

T—Technology (BSE sector: information technology)

E—Entertainment (BSE sector: media and publishing)

C—Communication (BSE sector: telecom)

k—Other knowledge-based companies

Table 8.7 lists the index's component stocks.

BSE PSU Index The BSE PSU Index constitutes listed companies, institutions, and corporations owned or controlled by the central government under Section 619-B of the Companies Act 1956. PSU stands for public-sector undertakings.

Features

- The index consists of all PSU stocks in the BSE 500 Index, which currently includes 34 major public-sector undertakings, listed on the exchange.
- The index was launched in June 2001.

Base

- The base date is February 1, 1999.
- The base value is 1,000.

Table 8.8 lists the index's component stocks.

BSE Sectoral Indexes Tables 8.9 through 8.16 list the constituents for each of the BSE sectoral indexes.

TABLE 8.9 BSE Capital Goods Index

Code	Name	FF Factors
500002	ABB Ltd.	0.50
532683	AIA Engineering Limited	0.35
505885	Alfa Laval (India) Ltd.	0.40
522275	Alstom Ltd.	0.35
532309	Alstom Power India Ltd.	0.35
532493	Astra Microwave Products	0.50
503960	Bharat Bijlee Ltd.	0.65
500048	Bharat Earth Movers Ltd.	0.40
500049	Bharat Electronics Ltd.	0.25
500103	Bharat Heavy Electricals Ltd.	0.35
513375	Carborundum Universal Ltd.	0.60
500093	Crompton Greaves Ltd.	0.60
509550	Gammon India Ltd.	0.65
501455	Greaves Cotton Ltd.	0.50
513250	Jyoti Structures Ltd.	0.75
522287	Kalpataru Power Transmission	0.4
500241	Kirloskar Brothers Ltd.	0.40
500243	Kirloskar Oil Engines Ltd.	0.4
500252	Lakshmi Machine Works Ltd.	0.65
500510	Larsen & Toubro Limited	0.90
522205	Praj Industries Ltd.	0.70
532693	Punj Lloyd	0.35
523445	Reliance Industrial Infrastruc	0.55
500550	Siemens Ltd.	0.45
500472	Skf India Ltd.	0.50
532667	Suzlon Energy Limited	0.35
500411	Thermax Ltd.	0.35

As of March 2007.
Source: The Bombay Stock Exchange.

TABLE 8.10 BSE Auto Index

Code	Name	FF Factors
520077	Amtek Auto Ltd.	0.70
500877	Apollo Tyres Ltd.	0.50
500477	Ashok Leyland Ltd.	0.50
500490	Bajaj Auto Ltd.	0.70
500493	Bharat Forge Ltd.	0.65
500480	Cummins India Ltd.	0.50
500495	Escorts Ltd.	0.70
500086	Exide Industries Co. Ltd.	0.50
500182	Hero Honda Motors Ltd.	0.50
500500	Hindustan Motors Ltd.	0.75
500520	Mahindra & Mahindra Ltd.	0.80
532500	Maruti Udyog Ltd.	0.40
500530	MICO Ltd.	0.40
500290	Mrf Ltd.	0.65
500344	Punjab Tractors Ltd.	0.80
500570	Tata Motors Ltd.	0.60
504973	Tube Investments of India Ltd.	0.60
532343	TVS Motors Ltd.	0.45

As of March 2007.
Source: The Bombay Stock Exchange.

TABLE 8.11 BSE Consumer Durables Index

Code	Name	FF Factors
500067	Blue Star Ltd.	0.6
532715	Gitanjali Gems Ltd.	0.3
517518	Lloyd Electric & Engineering	0.7
531500	Rajesh Exports Ltd.	0.4
500114	Titan Industries Ltd.	0.5
511389	Videocon Industries Ltd.	0.3

As of March 2007.
Source: The Bombay Stock Exchange.

TABLE 8.12 BSE Healthcare Index

Code	Name	FF Factors
508869	Apollo Hospitals Enterprises Ltd.	0.65
524804	Aurobindo Pharma Ltd.	0.45
500674	Aventis Pharma Ltd.	0.40
532523	Biocon Ltd.	0.40
532321	Cadila Healthcare Ltd.	0.30
500087	Cipla Ltd.	0.65
532488	Divi's Laboratories Ltd.	0.50
500124	Dr Reddy's Laboratories Ltd.	0.75
500660	Glaxo Ltd.	0.50
532296	Glenmanrk Pharmaceuticals Ltd.	0.50
500257	Lupin Ltd.	0.50
524794	Matrix Laboratories Ltd.	0.45
500302	Nicholas Piramal India	0.45
500672	Novartis India Ltd.	0.50
532391	Opto Circuits (India) Ltd.	0.65
524372	Orchid Chemicals Pharmaceuticals	0.60
531349	Pacacea Biotec Ltd.	0.35
500680	Pfizer Ltd.	0.60
500359	Ranbaxy Laboratories Ltd.	0.70
512299	Sterling Biotech Ltd.	0.70
524715	Sun Pharmaceutical Inds. Ltd.	0.30
532300	Wockhardt Ltd.	0.30
500095	Wyeth Ltd.	0.45

As of March 2007.
Source: The Bombay Stock Exchange.

TABLE 8.13 BSE IT Index

Code	Name	FF Factors
526881	Financial Technologies (I) Ltd.	0.55
532281	HCL Technologies Ltd.	0.55
532466	I-Flex Solutions Ltd.	0.45
500209	Infosys Technologies Ltd.	0.8
526299	Mphasis BFL Ltd.	0.4
532517	Patni Computer Systems Ltd.	0.4
500376	Satyam Computer Services Ltd.	0.95
532540	Tata Consultancy Services Ltd.	0.2
532755	Tech Mahindra Ltd.	.15
507685	Wipro Ltd.	0.2

As of March 2007.
Source: The Bombay Stock Exchange.

TABLE 8.14 BSE Metal Index

Code	Name	FF Factors
500440	Hindalco Industries Ltd.	0.75
500188	Hindustan Zinc Ltd.	0.10
500378	Jindal Saw Ltd.	0.50
532508	Jindal Stainless Ltd.	0.60
532286	Jindal Steel & Powers Ltd.	0.50
500228	JSW Steel Ltd.	0.50
500265	Maharashtra Seamless Ltd.	0.45
532234	National Aluminium Co. Ltd.	0.15
500295	Sesa Goa Ltd.	0.50
513349	Shree Precoated Steels Ltd.	0.35
500113	Steel Authority of India Ltd.	0.15
500900	Sterlite Industries Ltd.	0.20
500470	Tata Steel Ltd.	0.75

As of March 2007.
Source: The Bombay Stock Exchange.

TABLE 8.15 BSE Oil & Gas Index

Code	Name	FF Factors
500547	Bharat Petroleum Corp. Ltd.	0.35
500134	Essar Oil Ltd.	0.8
532155	Gail (India) Ltd.	0.4
500104	Hindustan Petroleum Corp. Ltd.	0.5
530965	Indian Oil Corporation Ltd.	0.1
500312	ONGC Ltd.	0.2
532522	Petronet Lng. Ltd.	0.4
500325	Reliance Industries Ltd.	0.55
532709	Reliance Natural Resources Limited	0.55
532743	Reliance Petroleum Ltd.	.010

As of March 2007.
Source: The Bombay Stock Exchange.

TABLE 8.16 BSE FMCG Index

Code	Name	FF Factors
500043	Bata India Ltd.	0.5
500825	Britannia Industries Ltd.	0.5
500830	Colgate Palmolive (India)	0.5
500096	Dabur India Ltd.	0.3
500676	GlaxoSmithkline Consumer	0.6
532424	Godrej Consumer Products	0.35
500696	Hindustan Lever Ltd.	0.5
500875	ITC Ltd.	0.7
531642	Marico Limited.	0.35
532432	Mcdowell & Co. Ltd.	0.65
500790	Nestle India Ltd.	0.4
500459	Procter & Gamble	0.35
500800	Tata Tea Ltd.	0.75
532478	United Breweries Ltd.	0.25

As of March 2007.
Source: The Bombay Stock Exchange.

NSE-SPONSORED INDEXES

The National Stock Exchange, as part of a joint venture called *India Index Services & Products Ltd.* (IISL), is the sponsor of six general market and eight sector-specific indexes. The *S&P CNX Nifty* is the benchmark of the NSE and, together with the BSE Sensex, a determinant for triggering the circuit-breakers built into the market's risk management features (discussed more fully in Chapter 4). A full list of the NSE indexes is given in Table 8.17.

This section begins with a description of the joint venture India Index Services & Products Ltd., along with the products and services it offers. Each of the specific indexes are then described below.

India Index Services & Products Ltd. (IISL)

India Index Services & Products Ltd. (IISL) is a joint venture between the National Stock Exchange of India Ltd. (NSE) and CRISIL Ltd.[e] to provide a variety of indexes and index-related services and products for the capital

[e]CRISIL is the official name of the company and is an acronym for Credit Rating Information Services of India Ltd.

TABLE 8.17 NSE-Listed Indexes

Market Indexes	Sector-Specific Indexes	
S&P CNX Nifty	CNX IT	CNX Pharma
CNX Nifty Junior	CNX Bank	CNX PSE
CNX 100	CNX Energy	CNX Service
S&P CNX 500	CNX FMCG	S&P CNX Industry Indexes
CNX Midcap*	CNX MNC	Customized indexes
S&P CNX Defty		

Source: The National Stock Exchange.

markets. The IISL indexes are identified by the prefix CNX before the index descriptor to reflect the identities of both of the partners. CNX stands for *C*RISIL, *N*SE, and inde*X*.

IISL Products and Services

- ***Data subscription:*** IISL provides index data on a daily, weekly, or ad-hoc basis as a paid service. Data include index values, index constituents, and historical growth trends.
- ***Customized indexes:*** IISL develops and maintains "customized indexes for clients to track the performance of portfolios vis-à-vis objectively defined benchmarks or for benchmarking the net asset value performance to customized indexes. The customized indexes can be subsets of existing indexes or a completely new index such as sector indexes, individual business group indexes and industry indexes."
- ***Consulting:*** IISL provides consulting services for index funds, exchange-traded funds, derivatives, and index options, and alerts for rebalancing index funds.
- ***Market updates:*** IISL provides specialized clients with facts, figures, reports, and equity market updates in regular intervals.
- ***Research:*** IISL undertakes research activities for its clients on the equity and derivative markets.

S&P CNX Nifty

The S&P CNX Nifty is the benchmark index of the National Stock Exchange and represents the most liquid stocks on the NSE. It is further characterized as follows:

- The Nifty Fifty is always made up of the 50 most liquid stocks traded on the NSE.
- The index constituents account for 22 sectors of the economy.

- The average total traded value for the last six months of all Nifty stocks is approximately 49.61 percent of the traded value of all stocks on the NSE.
- Nifty stocks represented about 57.66 percent of the total market capitalization as of December 29, 2006.

Appendix I, Table I.6 contains a list of the component stocks of the S&P CNX Nifty. Table I.7 lists the market capitalizations, weightings, betas, R2, and volatility of the Nifty component stocks.

CNX Nifty Junior

The next level of liquid securities after the S&P CNX Nifty is the CNX Nifty Junior. The S&P CNX Nifty and the CNX Nifty Junior make up the 100 most liquid stocks trading on the National Stock Exchange.

- The CNX Nifty Junior represented about 10 percent of the total market capitalization as of September 29, 2006.
- The average traded value for the six months prior to March 31, 2005, of all Nifty Junior stocks is approximately 9.88 percent of the traded value of all stocks on the NSE.

Appendix I, Table I.8 contains a list of the component stocks of the S&P CNX Nifty Junior.

S&P CNX 500

The S&P CNX 500 was India's first broad-based benchmark of the Indian capital market for comparing portfolio returns vis-à-vis market returns.

- The S&P CNX 500 represents about 92.66 percent of total market capitalization.
- The S&P CNX 500 represents about 86.44 percent of total turnover on the NSE.

Appendix I, Table I.9 contains a list of the component stocks of the S&P CNX 500 organized in alphabetical order.

S&P CNX 500 companies are categorized into 72 industry indexes. Industry weightings in the index reflect the industry weightings in the market. For example, if the banking sector has a 5 percent weighting in the universe of stocks traded on the NSE, banking stocks in the index would also have an approximate representation of 5 percent in the index. Appendix I, Table I.10 lists the S&P CNX 500 organized by the 72 industry groups and their respective component stocks.

CNX Midcap

The medium-capitalized segment of the stock market is increasingly perceived as an attractive investment segment with high growth potential. The objective of the CNX Midcap Index is to capture the movement of and be a benchmark for the midcap segment of the market. The CNX Midcap is made up of 100 constituent stocks.

Method of Computation The CNX Midcap is computed using a market capitalization–weighted method, wherein the level of the index reflects the total market value of all of the stocks in the index relative to a particular base period. The method also takes into account constituent changes in the index and corporate activities such as stock splits and rights without affecting the index value.

Base Date and Value The CNX Midcap Index has a base date of January 1, 2003. The base value = 1,000.

Criteria for the Selection of Constituent Stocks

1. All of the stocks that constitute more than 5 percent market capitalization of the universe (after sorting the securities in descending order of market capitalization) are excluded in order to reduce the skewness in the weightings of the stocks in the universe.
2. The weightings of the remaining stocks in the universe are determined again.
3. The cumulative weighting is calculated.
4. Companies that form part of the cumulative percentage in ascending order up to the first 75 percent (i.e., up to 74.99 percent) of the revised universe are ignored.
5. Next, all of the constituents of the S&P CNX Nifty are ignored.
6. From the universe of companies remaining (i.e., 75 percent and above), the first 100 companies in terms of highest market capitalization constitute the CNX Midcap Index subject to meeting the additional criteria mentioned below.

Trading Liquidity Requirement All of the constituents of the CNX Midcap Index must have a minimum listing record of six months. In addition, all candidates for the index are also evaluated for trading interest, in terms of volume and trading frequency.

Financial Performance All companies in the CNX Midcap Index must have a minimum track record of three years of operations with a positive net worth.

Other Issues A company that comes out with an IPO will be eligible for inclusion in the index if it fulfills the normal eligibility criteria for the index for a three-month period instead of a six-month period.

Appendix I, Table I.11 contains a list of the component stocks of the S&P CNX Midcap Index organized in alphabetical order.

S&P CNX Defty

To accommodate foreign institutional investors and offshore funds that might like to measure the return on their India equity investments in U.S.-dollar terms, IISL created the S&P CNX Defty Index, which is the dollar-denominated version of the S&P CNX Nifty.

Benefits

- Indicates performance for foreign institutional investors and offshore funds.
- Provides an effective tool for hedging Indian equity exposure.
- Provides fund managers with an instrument to measure returns on equity investment in U.S.-dollar terms.

Calculation of the S&P CNX Defty Computations are done using the S&P CNX Nifty Index calculated on the NEAT trading system of the NSE and the end of the previous day's exchange rate (USD/RS).

$$\text{S\&P CNX Defty} = \frac{\text{S\&P CNX Nifty at Time } t * \text{Exchange Rate as on Base Date}}{\text{Exchange Rate at Time } t}$$

Specifications of the S&P CNX Defty

- Base date: November 3, 1995.
- Base S&P CNX Defty Index value: 1,000.
- S&P CNX Nifty value as on the base date: 1,000.
- Exchange rate as on the base date: 34.65.
- Adjustment factor as on the base date: 1.00.

NSE Sector-Specific Indexes

Several sector specific indexes have been developed to provide an appropriate benchmark that captures the performance of various sectors of India's economy. Sector-specific indexes are shown in Table 8.18.

TABLE 8.18 NSE Sector-Specific Indexes

NSE Index Name	Sector Focus
CNX IT Sector	Information technology
CNX Bank Sector	Banking
CNX FMCG Sector	Fast-moving consumer goods
CNX PSE Sector	Public-service enterprises
CNX MNC Sector	Multinational corporations
CNX Service Sector	Services
CNX Energy Index	Energy stocks
CNX Pharma	Pharmaceutical companies

Methodology All of the indexes are calculated using a full market capitalization–weighted method.

Selection Criteria All of the indexes use the following selection criteria for their constituents:

- A company's market capitalization rank in the universe should be less than 500.
- A company's turnover rank in the universe should be less than 500.

A company that issues an IPO will be eligible for inclusion in the index, if it fulfills the normal eligibility criteria for the index for a three-month period instead of a six-month period.

In addition, the specific indexes have additional criteria related to profitability and net worth. These index-specific criteria are noted along with the other index specifics.

CNX IT Sector Index Companies in the information technology (IT) index have more than 50 percent of their turnover from IT-related activities such as software development, hardware manufacture, vending, support, and maintenance.

Features

- There are 20 stocks in the index.
- The average total traded value for CNX IT stocks is approximately 91 percent of the traded value of the IT sector.
- CNX IT stocks represented about 96 percent of the total market capitalization of the IT sector as of March 31, 2005.

- The average total traded value of all CNX IT constituents is approximately 14 percent of the traded value of all of the stocks on the NSE.
- The CNX IT Index constituents represented about 14 percent of the total market capitalization as of March 31, 2005.

Methodology

- The index base period is December 1995.
- The base date is January 1, 1996.
- The base value is 100 from May 28, 2004.

Selection Criteria Selection of the index constituents is based on the following:

- A company's trading frequency should be at least 90 percent in the last six months.
- A company should have a positive net worth.

Table 8.19 lists the component stocks of the CNX IT Sector Index.

TABLE 8.19 CNX IT Sector Index: Constituent Stocks

Company Name	Symbol	Company Name	Symbol
CMC Ltd.	CMC	Mastek Ltd.	MASTEK
Financial Technologies (India) Ltd.	FINANTECH	Moser Baer India Ltd.	MOSERBAER
GTL Ltd.	GLOBALTELE	Mphasis BFL Ltd.	MPHASISBFL
HCL Infosystems Ltd.	HCL-INSYS	Patni Computer Systems Ltd.	PATNI
HCL Technologies Ltd.	HCLTECH	Polaris Software Lab Ltd.	POLARIS
Hexaware Technologies Ltd.	HEXAWARE	Rolta India Ltd.	ROLTA
Hinduja TMT Ltd.	HTMT	Satyam Computer Services Ltd.	SATYAMCOMP
I-Flex Solutions Ltd.	I-FLEX	Tata Elxsi Ltd.	TATAELXSI
iGate Global Solutions Ltd.	IGS	Tata Consultancy Services Ltd.	TCS
Infosys Technologies Ltd.	INFOSYSTCH	Wipro Ltd.	WIPRO

As of December 2006.
Source: The National Stock Exchange.

CNX Bank Index The CNX Bank Index comprises the most liquid and highly capitalized Indian bank stocks.

Features

- The index includes 12 stocks from the banking sector that trade on the NSE.
- The average total traded value of CNX bank stocks is approximately 74 percent of the traded value of the banking sector.
- CNX bank stocks represented about 79 percent of the total market capitalization of the banking sector as of March 31, 2005.
- The average total traded value of all of the CNX bank constituents is approximately 10 percent of the traded value of all stocks on the NSE.
- CNX Bank Index constituents represented about 9 percent of total market capitalization as of March 31, 2005.

Methodology

- The index has a base date of January 1, 2000.
- The base value is 1,000.

Selection Criteria Selection of the index set is based on the following:

- A company's trading frequency should be at least 90 percent in the last six months.
- A company should have a positive net worth.

Table 8.20 lists the component stocks of the CNX Bank Index.

CNX FMCG Index The CNX FMCG Index comprises 15 stocks from the *F*ast-*M*oving *C*onsumer *G*oods sector that trade on the NSE.

Features Fast-moving consumer goods are goods and products that are nondurable, mass-consumption products, available off the shelf.

Methodology

- The base period is December 1995.
- The base value is 1,000.

Selection Criteria Selection of the index set is based on the following:

- A company's trading frequency should be at least 90 percent in the last year.
- A company should have a minimum track record of three years of operations with a positive net worth.

Table 8.21 lists the component stocks of the CNX CMCG Index.

TABLE 8.20 CNX Bank Index: Constituent Stocks

Company Name	Symbol
Bank of Baroda	BANKBARODA
Bank of India	BANKINDIA
Canara Bank	CANBK
Corporation Bank	CORPBANK
HDFC Bank Ltd.	HDFCBANK
ICICI Bank Ltd.	ICICIBANK
Oriental Bank of Commerce	ORIENTBANK
Punjab National Bank Ltd.	PNB
State Bank of India	SBIN
Syndicate Bank	SYNDIBANK
Union Bank of India	UNIONBANK
UTI Bank Ltd.	UTIBANK

As of December 2006.
Source: The National Stock Exchange.

TABLE 8.21 CNX FMCG Index: Constituent Stocks

Company Name	Industry	Symbol
Britannia Industries Ltd.	Food and Food Processing	BRITANNIA
Colgate-Palmolive (India) Ltd.	Personal Care	COLGATE
Dabur India Ltd.	Personal Care	DABUR
Godrej Consumer Products Ltd.	Personal Care	GODREJCP
Hindustan Lever Ltd.	Diversified	HINDLEVER
Gillette India Ltd.	Personal Care	INDSHAVING
ITC Ltd.	Cigarettes	ITC
Marico Industries Ltd.	Solvent Extraction	MARICOIND
Mcdowell & Company Ltd.	Brew/Distilleries	MCDOWELL-N
Nirma Ltd.	Detergents	NIRMA
Pantaloon Retail (India) Ltd.	Retail	PANTALOONR
Radico Khaitan Ltd.	Brew/Distilleries	RADICO
GlaxoSmithkline Consumer Healthcare Ltd.	Food and Food Processing	SMITKLBECH
Tata Tea Ltd.	Tea and Coffee	TATATEA
Trent Ltd.	Retail	TRENT

As of December 2006.
Source: The National Stock Exchange.

CNX PSE Index The CNX PSE Index is made up of *P*ublic-*S*ervice *E*nterprises and includes only companies defined as having more than 51 percent of their outstanding share capital held by the central government and/or state government, directly or indirectly.

Features The CNX PSE Index comprises 20 public-service enterprise stocks.

Methodology

- The base period is December 1994.
- The base value is 1,000.

Selection Criteria Selection of the index set is based on the following:

- A company's trading frequency should be at least 90 percent in the last six months.
- A company should have a minimum track record of three years of operations with a positive net worth.

Table 8.22 lists the component stocks of the CNX PSE Index.

CNX MNC Index The CNX MNC Index is made up of *M*ulti-*N*ational *C*ompanies and comprises listed companies with foreign shareholdings of more than 50 percent and/or management control vested in the foreign company.

Features The CNX MNC Index comprises 50 stocks.

Methodology

- The base value is 1,000.
- The base period is December 1994.

Selection Criteria Selection of the index set is based on the following:

- A company's trading frequency should be at least 90 percent in the last six months.
- A company should have a minimum track record of three years of operations with a positive net worth.

Table 8.23 lists the component stocks of the CNX MNC Index.

TABLE 8.22 CNX PSE Index: Constituent Stocks

Company Name	Industry	Symbol	ISIN Code
Bharat Earth Movers Ltd.	Engineering	BEML	INE258A01016
Bharat Electronics Ltd.	Electronics—Industrial	BEL	INE263A01016
Bharat Heavy Electricals Ltd.	Electrical Equipment	BHEL	INE257A01018
Bharat Petroleum Corporation Ltd.	Refineries	BPCL	INE029A01011
Chennai Petroleum Corporation Ltd.	Refineries	CHENNPETRO	INE178A01016
Container Corporation of India Ltd.	Miscellaneous	CONCOR	INE111A01017
Engineers India Ltd.	Construction	ENGINERSIN	INE510A01010
GAIL (India) Ltd.	Gas	GAIL	INE129A01019
Hindustan Petroleum Corporation Ltd.	Refineries	HINDPETRO	INE094A01015
HMT Ltd.	Automobiles—4 Wheelers	HMT	INE262A01018
Indian Oil Corporation Ltd.	Refineries	IOC	INE242A01010
Mahanagar Telephone Nigam Ltd.	Telecommunication Services	MTNL	INE153A01019
Mangalore Refinery & Petrochemicals Ltd.	Refineries	MRPL	INE103A01014
National Aluminium Co. Ltd.	Aluminium	NATIONALUM	INE139A01026
Neyveli Lignite Corporation Ltd.	Power	NEYVELILIG	INE589A01014
NTPC Ltd.	Power	NTPC	INE733E01010
Oil & Natural Gas Corporation Ltd.	Oil Exploration/Production	ONGC	INE213A01011
Rashtriya Chemicals & Fertilizers Ltd.	Fertilizers	RCF	INE027A01015
Shipping Corporation of India Ltd.	Shipping	SCI	INE109A01011
Steel Authority of India Ltd.	Steel and Steel Products	SAIL	INE114A01011

As of December 2006.
Source: The National Stock Exchange.

TABLE 8.23 CNX MNC Index: Constituent Stocks

Company Name	Symbol	Company Name	Symbol
3M India Ltd.	3MINDIA	Goodlass Nerolac Paints Ltd.	GOODLASNER
Aban Loyd Chiles Offshore Ltd.	ABANLOYD	Gujarat Gas Co. Ltd.	GUJRATGAS
ABB Ltd.	ABB	Hindustan Lever Ltd.	HINDLEVER
Alfa Laval (India) Ltd.	ALFALAVAL	Hindustan Oil Exploration Co. Ltd.	HINDOILEXP
Alstom Power India Ltd.	APIL	Honeywell Automation India Ltd.	HONAUT
Associated Cement Companies Ltd.	ACC	ICI India Ltd.	ICI
AstraZenca Pharma India Ltd.	ASTRAIDL	I-Flex Solutions Ltd.	I-FLEX
Aventis Pharma Ltd.	AVENTIS	iGate Global Solutions Ltd.	IGS
BASF India Ltd.	BASF	Ingersoll Rand (India) Ltd.	INGERRAND
Bata India Ltd.	BATAINDIA	KSB Pumps Ltd.	KSBPUMPS
Blue Dart Express Ltd.	BLUEDART	Macmillan India Ltd.	MACMILLAN
BOC India Ltd.	BOC	Maruti Udyog Ltd.	MARUTI
Britannia Industries Ltd.	BRITANNIA	Monsanto India Ltd.	MONSANTO
Colgate-Palmolive (India) Ltd.	COLGATE	Motor Industries Co. Ltd.	MICO
Colour-Chem Ltd.	COLORCHEM	Pfizer Ltd.	PFIZER
Crisil Ltd.	CRISIL	Polaris Software Lab Ltd.	POLARIS
Cummins India Ltd.	CUMMINSIND	Procter & Gamble Hygiene & Health Care Ltd.	PGHH
D-Link India Ltd	D-LINK	Sesa Goa Ltd.	SESAGOA
E.Merck (India) Ltd.	EMERCK	Siemens Ltd.	SIEMENS
ESAB India Ltd.	ESABINDIA	SKF India Ltd.	SKFINDIA
Everest Industries Ltd.	EVERESTIND	South East Asia Marine Engineering & Construction Ltd.	SEAMECLTD
Fag Bearings India Ltd.	FAGBEARING	Thomas Cook (India) Ltd.	THOMASCOOK
Gillette India Ltd.	INDSHAVING	Vesuvius India Ltd.	VESUVIUS
GlaxoSmithkline Consumer Healthcare Ltd.	GSKCONS	Wyeth Ltd.	WYETHLEDE
GlaxoSmithkline Pharmaceuticals Ltd.	GLAXO	Zensar Technolgies Ltd.	ZENSARTECH

As of December 2006.
Source: The National Stock Exchange.

CNX Service Sector Index The CNX Service Sector Index includes companies in the service sector. This includes computer software, banks, telecommunications services, financial institutions, power, media, and courier and shipping. According to RBI data, the service sector is the principal driver of India's economy, contributing 57 percent of the growth of real GDP in 2003–2004 and representing almost 30 percent of GDP at factor cost.[f]

Features The CNX Service Sector Index comprises 30 stocks.

Methodology

- The base period is May 1999.
- The base value is 1,000.

Selection Criteria Selection of the index set is based on the following:

- A company's trading frequency should be at least 90 percent in the last six months.
- A company should have a positive net worth.

Table 8.24 lists the component stocks of the CNX Service Sector Index.

CNX Energy Index The CNX Energy Index includes companies involved in the petroleum, natural gas, and power sectors. The index represents 85.06 percent of the market capitalization of the energy sector over the six months ending October 31, 2006, and 82.03 percent of the aggregate turnover of the sector during the same period. The average total traded value over the period represented 13.91 percent of the total traded value of all stocks on the NSE and approximately 18.75 percent of the total NSE market capitalization on October 31, 2006.

Features The CNX Energy Sector Index comprises 10 stocks.

Methodology

- Market capitalization weighted index
- The base period is January 1, 2001.
- The base value is 1,000.

[f]*Source*: Reserve Bank of India, *Handbook of Statistics on the Indian Economy*.

TABLE 8.24 CNX Service Sector Index: Constituent Stocks

Company Name	Symbol	Company Name	Symbol
Bank of Baroda	BANKBARODA	Oriental Bank of Commerce	ORIENTBANK
Bank of India	BANKINDIA	Punjab National Bank	PNB
Bharti Airtel Ltd.	BHARTIARTL	Reliance Energy Ltd.	REL
Canara Bank	CANBK	Reliance Capital Ltd.	RELCAPITAL
GAIL (India) Ltd.	GAIL	Reliance Communications Ltd.	RCOM
HCL Technologies Ltd.	HCLTECH	Satyam Computer Services Ltd.	SATYAMCOMP
HDFC Bank Ltd.	HDFCBANK	Shipping Corporation of India Ltd.	SCI
Housing Development Finance Corporation Ltd.	HDFC	State Bank of India	SBIN
ICICI Bank Ltd.	ICICIBANK	Tata Power Co. Ltd.	TATAPOWER
I-Flex Solutions Ltd.	I-FLEX	Tata Consultancy Services Ltd.	TCS
Industrial Development Bank of India	IDBI	Union Bank of India	UNIONBANK
Infosys Technologies Ltd.	INFOSYSTCH	UTI Bank Ltd.	UTIBANK
Mahanagar Telephone Nigam Ltd.	MTNL	Videsh Sanchar Nigam Ltd.	VSNL
Neyveli Lignite Corporation Ltd.	NEYVELILIG	Wipro Ltd.	WIPRO
National Thermal Power Corporation Ltd.	NTPC	Zee Telefilms Ltd.	ZEETELE

As of December 2006.
Source: The National Stock Exchange.

TABLE 8.25 CNX Energy Sector Index: Constituent Stocks

Company Name	Symbol
Bharat Petroleum Corporation Ltd.	BPCL
GAIL (India) Ltd.	GAIL
Hindustan Petroleum Corporation Ltd.	HINDPETRO
Indian Oil Corporation Ltd.	IOC
National Thermal Power Corporation Ltd.	NTPC
Neyveli Lignite Corporation Ltd.	NEYVELILIG
Oil & Natural Gas Corporation Ltd.	ONGC
Reliance Energy Ltd.	REL
Reliance Industries Ltd.	RELIANCE
Tata Power Co. Ltd.	TATAPOWER

As of March 2007.
Source: The National Stock Exchange.

Selection Criteria Selection of the index set is based on the following:

- A company's market capitalization rank should be less than 500.
- A company's turnover rank rank should be less than 500.
- A company's trading frequency should be at least 90 percent in the last year.
- A company should have a minimum track record of three years with a positive net worth.
- An IPO may be eligible for inclusion in the index if it fulfills the normal eligibility criteria for a three-month period.

Table 8.25 lists the component stocks of the CNX Energy Sector Index.

CNX Pharma Index The CNX Pharma Index includes companies involved in the pharmaceutical sector, healthcare services including outsourcing, and biotechnology sectors. The index represents 65 percent of the market capitalization of the pharma sector over the six months ending October 31, 2006, and 64.9 percent of the aggregate turnover of the sector during the same period. The average total traded value over the period represented 3.7 percent of the total traded value of all stocks on the NSE and approximately 3 percent of the total NSE market capitalization on October 31, 2006.

Features The CNX Pharma Sector Index comprises 10 stocks.

Methodology

- Market capitalization weighted index
- The base period is January 1, 2001.
- The base value is 1,000.

Selection Criteria Selection of the index set is based on the following:

- A company's market capitalization rank should be less than 500.
- A company's turnover rank rank should be less than 500.
- A company's trading frequency should be at least 90 percent in the last year.
- A company should have a minimum track record of three years with a positive net worth.
- An IPO may be eligible for inclusion in the index if it fulfills the normal eligibility criteria for a three-month period.

Table 8.26 lists the component stocks of the CNX Pharma Sector Index.

CNX Industry Indexes The components of the S&P CNX 500 Equity Index are part of 72 different industrial sectors that are separately maintained by IISL. The IISL makes every effort to ensure that the industry representation of the entire universe of securities is reflected in the S&P CNX 500. Thus, if a

TABLE 8.26 CNX Pharma Sector Index: Constituent Stocks

Company Name	Symbol
Biocon Ltd.	BIOCON
Cadila Healthcare Ltd.	CADILAHC
Cipla Ltd.	CIPLA
Dr. Reddy's Laboratories Ltd.	DRREDDY
Glaxosmithkline Pharmaceuticals Ltd.	GLAXO
Glenmark Pharmaceuticals Ltd.	GLENMARK
Nicholas Piramal India Ltd.	NICOLASPIR
Ranbaxy Laboratories Ltd.	RANBAXY
Sun Pharmaceutical Industries Ltd.	SUNPHARMA
Wockhardt Ltd.	WOCKPHARMA

As of March 2007.
Source: The National Stock Exchange.

TABLE 8.27 CNX Industry Sectors

	Industry Name		Industry Name
1	Abrasives	37	Hotels
2	Air Conditioners	38	Industrial Gas
3	Aluminum	39	Leather and Leather Products
4	Auto Ancillaries	40	Media & Entertainment
5	Automobiles—2 and 3 Wheelers	41	Metals
6	Automobiles—4 Wheelers	42	Mining
7	Banks	43	Miscellaneous
8	Bearings	44	Oil Exploration/Production
9	Brew/Distilleries	45	Packaging
10	Cables—Telecom	46	Paints
11	Castings/Forgings	47	Paper and Paper Products
12	Cement and Cement Products	48	Personal Care
13	Chemicals—Inorganic	49	Pesticides and Agrochemicals
14	Chemicals—Organic	50	Petrochemicals
15	Chemicals—Specialty	51	Pharmaceuticals
16	Cigarettes	52	Photographic Products
17	Compressors/Pumps	53	Plastic and Plastic Products
18	Computers—Hardware	54	Power
19	Computers—Software	55	Printing and Publishing
20	Construction—Civil	56	Refineries
21	Consumer Durables	57	Refractories
22	Cycles	58	Shipping
23	Detergents	59	Solvent Extraction
24	Diesel Engines	60	Steel and Steel Products
25	Diversified	61	Sugar
26	Dyes and Pigments	62	Tea and Coffee
27	Electrical Equipment	63	Telecommunication—Equipment
28	Electrodes	64	Telecommunication—Services
29	Electronics—Industrial	65	Textile Machinery
30	Engineering	66	Textile Products
31	Fasteners	67	Textiles—Cotton
32	Fertilizers	68	Textiles—Synthetic
33	Finance	69	Trading
34	Finance—Housing	70	Transmission Towers
35	Financial Institution	71	Travel and Transport
36	Food and Food Processing	72	Tyres

Source: The National Stock Exchange.

particular sector has a 7 percent weighting in the entire universe of securities, then that sector (as determined by the stocks of that particular sector that are in the S&P CNX 500) would have a similar 7 percent weighting in the S&P CNX 500. The sector index would be derived from that sector's stocks in the S&P CNX 500. When the weightings of various sectors change in the entire universe of securities, these changes become reflected in the weightings of the S&P CNX 500 industry sectors. Table 8.27 lists the 72 industry sectors contained in the S&P CNX 500 Index.

Customized Indexes The IISL develops and maintains customized indexes for clients as well as offers consultancy services for developing indexes. Customized indexes can be used for tracking the performance of a client's stock portfolio vis-à-vis objectively defined benchmarks or for benchmarking the net asset value performance to customized indexes.

The customized indexes can be subsets of existing indexes or a completely new index. Some of the indexes that can be constructed include:

- Sector indexes
- Individual business group indexes
- Portfolios
- Industry indexes

Methodology Customized indexes are computed as per the methodology specified by a client, if they are not market capitalization–weighted indexes.

Maintenance The IISL maintains indexes for an annual fee. A study will be conducted by IISL in consultation with clients to review the specified criteria, number of constituent companies in an index, and their performance based on the selection criteria at periodic intervals.

Services to Clients Reports and other information are provided according to clients' requirements.

SUMMARY

The National Stock Exchange and the Bombay Stock Exchange have created and maintained numerous indexes that provide useful benchmarks to monitor India's capital markets. For overall market performance, the currently available indexes cover the most liquid and the highest capitalization stocks, as well as the mid-cap and small cap stocks. For investors seeking to monitor the specific industries and sectors that are driving the growth of India's economy, the exchanges have provided 20 sector-specific indexes. The exchanges' respective index committees regularly evaluate and update the constituent stocks in these indexes and create new indexes to reflect the importance of emerging sectors of the economy. Investors who seek to monitor India's markets have a wonderful selection of valuable tools to keep them informed and on top of general and specific market performance.

APPENDIX A

Facts and Figures about India

The following facts have been sourced from the *CIA World Factbook*. The information in the *Factbook* is updated approximately every six months, and the information contained here was updated on March 15, 2007. The *Factbook* is an invaluable resource of information for every country in the world. It was created as a summary for annual classified National Intelligence Survey studies. The *Factbook* was unclassified in 1971 and became available to the public in 1975. The *Factbook* can be viewed on the Internet at www.cia.gov/cia/publications/factbook/index.html.

TABLE A.1 The *CIA World Factbook*: India

Historical Background

The Indus Valley civilization, one of the oldest in the world, dates back at least 5,000 years. Aryan tribes from the northwest invaded about 1500 B.C., and their merger with the earlier Dravidian inhabitants created the classical Indian culture. Arab incursions in the 8th century and Turkish invasions in the 12th century were followed by European traders beginning in the late 15th century. By the 19th century, Britain had assumed political control of virtually all Indian lands. Indian armed forces in the British army played a vital role in both world wars. Nonviolent resistance to British colonialism led by Mohandas Gandhi and Jawaharlal Nehru brought independence in 1947. The subcontinent was divided into the secular state of India and the smaller Muslim state of Pakistan. A war between India and Pakistan in 1971 resulted in East Pakistan becoming the separate nation of Bangladesh. Despite impressive gains in economic investment and output, India faces pressing problems such as an ongoing dispute with Pakistan over the territory of Kashmir, massive overpopulation, environmental degradation, extensive poverty, and ethnic and religious strife.

TABLE A.1 (*Continued*)

Geography	
Location	Southern Asia, bordering the Arabian Sea and the Bay of Bengal, between Burma and Pakistan
Geographic coordinates	20 00 N, 77 00 E
Map references	Asia
Area	*Total*: 3,287,590 sq km *Land*: 2,973,190 sq km *Water*: 314,400 sq km
Area—comparative	Slightly more than one-third the size of the United States
Land boundaries	*Total*: 14,103 km *Border countries*: Bangladesh 4,053 km, Bhutan 605 km, Burma 1,463 km, China 3,380 km, Nepal 1,690 km, Pakistan 2,912 km
Coastline	7,000 km
Maritime claims	*Territorial sea*: 12 nm *Contiguous zone*: 24 nm *Exclusive economic zone*: 200 nm *Continental shelf*: 200 nm or to the edge of the continental margin
Climate	Varies from tropical monsoon in south to temperate in north
Terrain	Upland plain (Deccan Plateau) in the south, flat to rolling plain along the Ganges, deserts in the west, and the Himalayas in the north
Elevation extremes	*Lowest point*: Indian Ocean, 0 m *Highest point*: Kanchenjunga, 8,598 m
Natural resources	Coal (fourth-largest reserves in the world), iron ore, manganese, mica, bauxite, titanium ore, chromite, natural gas, diamonds, petroleum, limestone, and arable land
Land use	*Arable land*: 48.83% *Permanent crops*: 2.8% *Other*: 48.37% (2005)
Irrigated land	558,080 sq km (2003)
Natural hazards	Droughts; flash floods, as well as widespread and destructive flooding from monsoonal rains; severe thunderstorms; and earthquakes
Environment—current issues	Deforestation; soil erosion; overgrazing; desertification; air pollution from industrial effluents and vehicle emissions; water pollution from raw sewage and runoff of agricultural pesticides; tap water is not potable throughout the country; huge and growing population is overstraining natural resources.

(*Continued*)

TABLE A.1 (*Continued*)

Environment—international agreements	*Party to*: Antarctic-Environmental Protocol, Antarctic–Marine Living Resources, Antarctic Treaty, Biodiversity, Climate Change, Climate Change–Kyoto Protocol, Desertification, Endangered Species, Environmental Modification, Hazardous Wastes, Law of the Sea, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94, Wetlands, and Whaling
Geography	Dominates the South Asian subcontinent; near the important Indian Ocean trade routes; Kanchenjunga, the third tallest mountain in the world, lies on the border with Nepal.
People	
Population	1,095,351,995 (July 2006 estimate)
Age structure	*0–14 years*: 30.8% (male 173,478,760/female 163,852,827) *15–64 years*: 64.3% (male 363,876,219/female 340,181,764) *65 years and over*: 4.9% (male 27,258,020/female 26,704,405) (2006 estimate)
Median age	*Total*: 24.9 years *Male*: 24.9 years *Female*: 24.9 years (2006 estimate)
Population growth rate	1.38% (2006 estimate)
Birth rate	22.01 births/1,000 population (2006 estimate)
Death rate	8.18 deaths/1,000 population (2006 estimate)
Net migration rate	−0.07 migrant(s)/1,000 population (2006 estimate)
Sex ratio	*At birth*: 1.05 male(s)/female *Under 15 years*: 1.06 male(s)/female *15–64 years*: 1.07 male(s)/female *65 years and over*: 1.02 male(s)/female *Total population*: 1.06 male(s)/female (2006 estimate)
Infant mortality rate	*Total*: 54.63 deaths/1,000 live births *Male*: 55.18 deaths/1,000 live births *Female*: 54.05 deaths/1,000 live births (2006 estimate)
Life expectancy at birth	*Total population*: 64.71 years *Male*: 63.9 years *Female*: 65.57 years (2006 estimate)
Total fertility rate	2.73 children born/woman (2006 estimate)
HIV/AIDS—adult prevalence rate	0.9% (2001 estimate)
HIV/AIDS—people living with HIV/AIDS	5.1 million (2001 estimate)
HIV/AIDS—deaths	310,000 (2001 estimate)

TABLE A.1 (*Continued*)

Major infectious diseases	*Degree of risk*: high
	Food or waterborne diseases: bacterial diarrhea, hepatitis A and E, and typhoid fever *Vectorborne diseases*: dengue fever, malaria, and Japanese encephalitis are high risks in some locations *Animal contact disease*: rabies
Nationality	*Noun*: Indian(s) *Adjective*: Indian
Ethnic groups	Indo-Aryan, 72%; Dravidian, 25%; Mongoloid and other 3% (2000)
Religions	Hindu, 80.5%; Muslim, 13.4%; Christian, 2.3%; Sikh, 1.9%; other, 1.8%; unspecified, 0.1% (2001 census)
Languages	English enjoys associate status, but it is the most dominant language for national, political, and commercial communication. Hindi is the national language and primary tongue of 30% of the people; there are 14 other official languages: Bengali, Telugu, Marathi, Tamil, Urdu, Gujarati, Malayalam, Kannada, Oriya, Punjabi, Assamese, Kashmiri, Sindhi, and Sanskrit. Hindustani is a popular variant of Hindi/Urdu spoken widely throughout northern India, but it is not an official language.
Literacy	*Definition*: age 15 and over can read and write *Total population*: 59.5% *Male*: 70.2% *Female*: 48.3% (2003 estimate)
Government	
Country name	*Conventional long form*: Republic of India *Conventional short form*: India
Government type	Federal republic
Capital	New Delhi
Administrative divisions	28 states and 7 union territories*; Andaman and Nicobar Islands*, Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Chandigarh*, Chhattisgarh, Dadra and Nagar Haveli*, Daman and Diu*, Delhi*, Goa, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Jharkhand, Karnataka, Kerala, Lakshadweep*, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Orissa, Pondicherry*, Punjab, Rajasthan, Sikkim, Tamil Nadu, Tripura, Uttaranchal, Uttar Pradesh, West Bengal
Independence	15 August 1947 (from the United Kingdom)

(*Continued*)

TABLE A.1 (*Continued*)

National day holiday	Republic Day, 26 January (started in 1950)
Constitution	26 January 1950; amended many times
Legal system	Based on English common law; limited judicial review of legislative acts; accepts compulsory International Commission of Jurists jurisdiction, with reservations; separate personal law codes apply to Muslims, Christians, and Hindus.
Suffrage	18 years of age; universal
Executive branch	*Chief of state*: President A.P.J. Abdul Kalam (since 26 July 2002); Vice President Bhairon Singh Shekhawat (since 19 August 2002) *Head of government*: Prime Minister Manmohan Singh (since 22 May 2004) *Cabinet*: Appointed by the president on the recommendation of the prime minister *Elections*: The president is elected by an electoral college consisting of elected members of both houses of Parliament and the legislatures of the states for a five-year term. The last election was held in July 2002, and the next one will be held on 18 July 2007. The vice president is elected by both houses of Parliament for a five-year term. The last election was held on 12 August 2002, and the next one will be held in August 2007. The prime minister is chosen by parliamentary members of the majority party following legislative elections. The last election was on held in April–May 2004, and the next one will be held in May 2009. *Election results*: Abdul Kalam was elected president; the percentage of the electoral college vote was 89.6%. Bhairon Singh Shekhawat was elected vice president; the percentage of the parliamentary vote was 59.8%.
Legislative branch	A bicameral Parliament or *Sansad* consists of the Council of States or *Rajya Sabha* (a body consisting of not more than 250 members, up to 12 of whom are appointed by the president and the remainder is chosen by the elected members of the state and territorial assemblies; members serve six-year terms) and the People's Assembly or *Lok Sabha* (545 seats of which 543 are elected by popular vote and two are appointed by the president; members serve five-year terms). *Elections*: The People's Assembly elections were last held on 20 April–10 May 2004, and the next one must be held before May 2009.

TABLE A.1 (*Continued*)

	Election results: The People's Assembly—percent of vote by party—NA%; seats by party—INC 145, BJP 138, CPI(M) 43, SP 36, RJD 24, BSP 19, DMK 16, SS 12, BJD 11, CPI 10, NCP 9, JDU 8, SAD 8, PMK 6, TDP 5, TRS 5, JMM 5, LJSP 4, MDMK 4, independents 5, other 30.
Judicial branch	The Supreme Court has one chief justice and 25 associate justices who are appointed by the president and remain in office until they reach the age of 65 or are removed for "proved misbehavior."
Political parties	India has dozens of national and regional political parties; only parties with four or more seats in the People's Assembly are listed; Bahujan Samaj Party (BSP); Bharatiya Janata Party (BJP); Biju Janata Dal (BJD); Communist Party of India (CPI); Communist Party of India (Marxist) [CPI (M)]; Dravida Munnetra Kazagham (DMK); Eqtedar-e-Melli-Eslami (National Islamic Empowerment); Indian National Congress (INC); Janata Dal (United) (JDU); Jharkhand Mukti Morcha (JMM); Lok Jan Shakti Party (LJSP); Marumalarchi Dravida Munnetra Kazhagam (MDMK); Nahzat-e-Faragir-e-Democracy Wa Taraqi-e-Afghanistan (Afghanistan's Democracy and Progress Movement); Nationalist Congress Party (NCP); Pattali Makkal Katchi (PMK); Rashtriya Janata Dal (RJD); Samajwadi Party (SP); Shiromani Akali Dal (SAD); Shiv Sena (SS); Telangana Rashtra Samithi (TRS); Telugu Desam Party (TDP).
Political pressure groups and leaders	There are numerous religious or militant/chauvinistic organizations, including the Vishwa Hindu Parishad, Bajrang Dal, and Rashtriya Swayamsevak Sangh; and there are various separatist groups seeking greater communal and/or regional autonomy, including the All Parties Hurriyat Conference in the Kashmir Valley and the National Socialist Council of Nagaland in the Northeast.
Diplomatic representation in the United States	*Chief of mission*: Ambassador Ranendra SEN *Chancery*: 2107 Massachusetts Avenue NW, Washington, DC 20008 *Note*: The Consular Wing is located at 2536 Massachusetts Avenue NW, Washington, DC 20008 *Telephone*: [1] (202) 939-7000 *Fax*: [1] (202) 265-4351 *Consulates general*: Chicago, Houston, New York, and San Francisco

(*Continued*)

TABLE A.1 (*Continued*)

Diplomatic representation from the United States	*Chief of mission*: Ambassador David C. Mulford *Embassy*: Shantipath, Chanakyapuri, New Delhi 110021 *Mailing address*: Use the embassy's street address *Telephone*: [91] (11) 2419-8000 *Fax*: [91] (11) 2419-0017 *Consulates general*: Chennai (Madras), Kolkata (Calcutta), and Mumbai (Bombay)
Flag description	There are three equal horizontal bands of saffron (subdued orange) (top), white, and green with a blue chakra (24-spoked wheel) centered in the white band; it is similar to the flag of Niger, which has a small orange disk centered in a white band.
Economy	
Economy—Overview	India's diverse economy encompasses traditional village farming, modern agriculture, handicrafts, a wide range of modern industries, and a multitude of services. Services are the major source of economic growth, accounting for half of India's output with less than one-quarter of its labor force. About three-fifths of the workforce is in agriculture, leading the Congress-led coalition government, referred to as the United Progressive Alliance (UPA), to develop an economic reform program that includes developing basic infrastructure to improve the lives of the rural poor and boost economic growth. Government controls on foreign trade and investment have been reduced in some areas, but high tariffs (averaging 20% on nonagricultural items in 2004) and limits on foreign direct investment are still in place. The government in 2005 liberalized investment in the civil aviation, telecom, and construction sectors. Privatization of government-owned industries essentially came to a halt in 2005 and continues to generate political debate; continued social, political, and economic rigidities hold back needed initiatives. The economy has posted an excellent average growth rate of more than 7 percent in the decade since 1994, reducing poverty by about 10 percentage points. India achieved 7.6 percent GDP growth in 2005, significantly expanding manufacturing. India is capitalizing on its large numbers of well-educated people skilled in the English language to become a major exporter of software services and software workers. Despite strong growth, the World Bank is worried about the combined state and federal budget deficit running at approximately 9 percent of GDP; government borrowing has kept interest rates high. Economic deregulation would help attract additional foreign capital and lower interest rates. The huge and growing population is the fundamental social, economic, and environmental problem.

TABLE A.1 (*Continued*)

GDP (purchasing power parity)	$4.042 trillion (2006 estimate)
GDP (official exchange rate)	$796.1 billion (2006 estimate)
GDP—real growth rate	8.5% (2005 estimate)
GDP—per capita (PPP)	$3,700 (2006 estimate)
GDP—composition by sector	*Agriculture*: 19.9% *Industry*: 19.3% *Services*: 60.7% (2005 estimate)
Labor force	509.3 million (2006 estimate)
Labor force—by occupation	*Agriculture*: 60% *Industry*: 12% *Services*: 28% (2003)
Unemployment rate	7.8% (2006 estimate)
Population below poverty line	25% (2002 estimate)
Household income or consumption by percentage share	*Lowest 10%*: 3.5% *Highest 10%*: 33.5% (1997)
Distribution of family income—Gini index	32.5 (2000)
Inflation rate (consumer prices)	5.3% (2006 estimate)
Investment (gross fixed)	29.2% of GDP (2006 estimate)
Budget	*Revenues*: $109.4 billion *Expenditures*: $143.8 billion; including capital expenditures of $15 billion (2006 estimate)
Public debt	52.8% of GDP (federal and state debt combined) (2006 estimate)
Agriculture—products	Rice, wheat, oilseed, cotton, jute, tea, sugarcane, potatoes; cattle, water buffalo, sheep, goats, poultry; fish
Industries	Textiles, chemicals, food processing, steel, transportation equipment, cement, mining, petroleum, machinery, software
Industrial production growth rate	7.5% (2006 estimate)
Electricity—production	630.6 billion kWh (2004)
Electricity—production by source	*Fossil fuel*: 81.8% *Hydro*: 14.5% *Nuclear*: 3.4% *Other*: 0.3% (2001)
Electricity consumption	587.9 billion kWh (2004)

(*Continued*)

TABLE A.1 (*Continued*)

Electricity exported	60 million kWh (2004)
Electricity imported	1.5 billion kWh (2004)
Oil production	785,000 bbl/day (2005 estimate)
Oil consumption	2.45 million bbl/day (2004 estimate)
Oil exports	350,000 bbl/day NA (2005 estimate)
Oil imports	2.09 million bbl/day NA (2005 estimate)
Proven oil reserves	5.6 billion bbl (2006 estimate)
Natural gas—production	28.2 billion cu m (2004 estimate)
Natural gas—consumption	30.83 billion cu m (2004 estimate)
Natural gas exports	0 cu m (2001 estimate)
Natural gas imports	2.63 billion cu m (2004 estimate)
Natural gas—proved reserves	853.5 billion cu m (2005)
Current account balance	$26.4 billion deficit (2006 estimate)
Exports	US$112 billion f.o.b. (2006 estimate)
Exports—commodities	Textile goods, gems and jewelry, engineering goods, chemicals, leather
Exports—partners	United States 16.7%, UAE 8.5%, China 6.6%, Singapore 5.3%, UK 4.9%, Hong Kong 4.4% (2005)
Imports	$187.9 billion f.o.b. (2006 estimate)
Imports—commodities	Crude oil, machinery, gems, fertilizer, chemicals
Imports—partners	China 7.3%, United States 5.6%, Switzerland 4.7% (2005)
Reserves of foreign exchange and gold	$165 billion (2006 estimate)
Debt—external	$132.1 billion (2006 estimate)
Economic aid—recipient	US$2.9 billion (FY98/99)
Currency	Indian rupee
Currency code	INR
Exchange rates	Indian rupees per U.S. dollar: 45.3 (2006), 44.101 (2005), 45.317 (2004), 46.583 (2003), 48.61 (2002), 47.186 (2001)
Fiscal year	1 April to 31 March
Communications	
Telephones—main lines in use	49.75 million (2005)
Telephones—mobile cellular	69,193,321 (2006)
Telephone system	*General assessment*: Recent deregulation and liberalization of telecommunications laws and policies have prompted rapid change; local and long distance service provided throughout all regions of the country, with services primarily concentrated in the urban areas; steady

TABLE A.1 (*Continued*)

	improvement is taking place with the recent admission of private and private-public investors, but telephone density remains low at about 7 for each 100 persons nationwide and only 1 per 100 persons in rural areas and a national waiting list of over 1.7 million; fastest growth is in cellular service with modest growth in fixed lines.
	Domestic: Expansion of domestic service, although still weak in rural areas, resulted from increased competition and dramatic reductions in price led in large part by wireless service; mobile cellular service (both CDMA and GSM) was introduced in 1994 and organized nationwide into four metropolitan cities and 19 telecom circles each with about three private service providers and one state-owned service provider; in recent years significant trunk capacity has been added in the form of fiber-optic cable and one of the world's largest domestic satellite systems, the Indian National Satellite system (INSAT), with five satellites supporting 33,000 very small aperture terminals (VSAT).
	International: Country code—91; satellite earth stations—8 Intelsat (Indian Ocean) and 1 Inmarsat (Indian Ocean region); 9 gateway exchanges operating from Mumbai (Bombay), New Delhi, Kolkata (Calcutta), Chennai (Madras), Jalandhar, Kanpur, Gandhinagar, Hyderabad, and Ernakulam; 5 submarine cables, including Sea-Me-We-3 with landing sites at Cochin and Mumbai (Bombay), Fiber-Optic Link Around the Globe (FLAG) with landing site at Mumbai (Bombay), South Africa–Far East (SAFE) with landing site at Cochin, i2icn linking to Singapore with landing sites at Mumbai (Bombay) and Chennai (Madras), and Tata Indicom linking Singapore and Chennai (Madras), provide a significant increase in the bandwidth available for both voice and data traffic (2004).
Radio broadcast stations	AM 153, FM 91, shortwave 68 (1998)
Radios	116 million (1997)
Television broadcast stations	562 (of which 82 stations have 1 kW or greater power and 480 stations have less than 1 kW of power) (1997)
Internet country code	.in
Internet hosts	1,543,289 (2006)
Internet users	60 million (2005)

(*Continued*)

TABLE A.1 (*Continued*)

Transportation	
Airports	341 (2006)
Airports—with paved runways	*Total*: 243 over 3,047 m: 17 2,438 to 3,047 m: 51 1,524 to 2,437 m: 73 914 to 1,523 m: 81
Airports—with unpaved runways	*Total*: 98 2,438 to 3,047 m: 1 1,524 to 2,437 m: 7 914 to 1,523 m: 42 under 914 m: 48 (2006)
Heliports	28 (2006)
Pipelines	condensate/gas 8 km; gas 5,184 km; liquid petroleum gas 1,993 km; oil 6,500 km; refined products 6,152 km (2006)
Railways	*Total*: 63,230 km *Broad gauge*: 45,718 km 1.676 m gauge (16,528 km electrified) *Narrow gauge*: 14,406 km 1.000 m gauge (165 km electrified); 3,106 km 0.762 m gauge and 0.610 m gauge (2005)
Roadways	*Total*: 3,383,344 km *Paved*: 1,603,705 km *Unpaved*: 1,779,639 km (2002)
Waterways	14,500 km *Note*: 5,200 km on major rivers and 485 km on canals suitable for mechanized vessels (2005)
Merchant marine	*Total*: 316 ships (1000 GRT or over) 7,772,313 GRT/13,310,858 DWT *By type*: bulk carrier 96, cargo 72, chemical tanker 13, container 8, liquefied gas 17, passenger 3, passenger/cargo 10, petroleum tanker 96, roll on/roll off 1 *Foreign-owned*: 10 (China 2, Hong Kong 1, UAE 6, UK 1) *Registered in other countries*: 46 (Bahamas 1, Comoros 1, Cyprus 5, North Korea 1, Liberia 3, Malta 1, Mauritius 2, Panama 19, Saint Vincent and the Grenadines 6, Singapore 5, Venezuela 1, unknown 1) (2006)
Ports and terminals	Chennai, Haldia, Jawaharal Nehru, Kandla, Kolkata (Calcutta), Mumbai (Bombay), New Mangalore, Vishakhapatnam

TABLE A.1 (*Continued*)

Military	
Military branches	Army, Navy (includes naval air arm), Air Force, Coast Guard, various security or paramilitary forces (includes Border Security Force, Assam Rifles, National Security Guards, Indo-Tibetan Border Police, Special Frontier Force, Central Reserve Police Force, Central Industrial Security Force, Railway Protection Force, and Defense Security Corps)
Military service age and obligation	16 years of age for voluntary military service (2001)
Manpower available for military service	Males age 16–49: 287,551,111 Females age 16–49: 268,524,835 (2005 estimate)
Manpower fit for military service	Males age 16–49: 219,471,999 Females age 16–49: 209,917,553 (2005 estimate)
Manpower reaching military service age annually	Males age 18–49: 11,446,452 Females age 16–49: 10,665,877 (2005 estimate)
Military expenditures—percent of GDP	2.7% (2006 estimate)
Transnational Issues	
Disputes—international	Since China and India launched a security and foreign policy dialogue in 2005, consolidated discussions continue that are related to the dispute over most of their rugged, militarized boundary, regional nuclear proliferation, and Indian claims that China transferred missiles to Pakistan. Various talks and confidence-building measures have cautiously begun to defuse tensions over Kashmir, particularly since the October 2005 earthquake in the region. Kashmir nevertheless remains the site of the world's largest and most militarized territorial dispute with portions under the de facto administration of China (Aksai Chin), India (Jammu and Kashmir), and Pakistan (Azad Kashmir and Northern Areas). In 2004, India and Pakistan instituted a cease-fire in Kashmir, and in 2005, they restored bus service across the highly militarized Line of Control. Pakistan has taken its dispute on the impact and benefits of India's building the Baglihar Dam on the

(*Continued*)

TABLE A.1 (*Continued*)

	Chenab River in Jammu and Kashmir to the World Bank for arbitration. A UN Military Observer Group in India and Pakistan (UNMOGIP) has maintained a small group of peacekeepers since 1949. India does not recognize Pakistan's ceding historic Kashmir lands to China in 1964. Disputes persist with Pakistan over Indus River water sharing. To defuse tensions and prepare for discussions on a maritime boundary, in 2004, India and Pakistan resurveyed a portion of the disputed boundary in the Sir Creek estuary at the mouth of the Rann of Kutch. Pakistani maps continue to show its Junagadh claim in Indian Gujarat State. Discussions with Bangladesh remain stalled to delimit a small section of river boundary, to exchange 162 minuscule enclaves in both countries, to allocate divided villages, and to stop illegal cross-border trade, migration, violence, and transit of terrorists through the porous border. Bangladesh protests India's attempts to fence off high-traffic sections of the border. A dispute with Bangladesh over New Moore/South Talpatty/Purbasha Island in the Bay of Bengal deters maritime boundary delimitation. India seeks cooperation from Bhutan and Burma to keep Indian Nagaland and Assam separatists from hiding in remote areas along the borders. A Joint Border Committee with Nepal continues to demarcate minor disputed boundary sections. India maintains a strict border regime to keep out Maoist insurgents and control illegal cross-border activities from Nepal.
Refugees and internally displaced persons	*Refugees (country of origin)*: 92,394 (Tibet/China), 57,274 (Sri Lanka), 9,761 (Afghanistan) *Internally displaced persons*: 600,000 (resulting from the 26 December 2004 tsunami); 500,000 (Jammu and Kashmir conflicts; most internally displaced persons are Kashmiri Hindus) (2005)
Illicit drugs	India is the world's largest producer of licit opium for the pharmaceutical trade, but an undetermined quantity of opium is diverted to illicit international drug markets. It serves as a transit point for illicit narcotics produced in neighboring countries; it is an illicit producer of methaqualone; and it is vulnerable to narcotics money laundering through the hawala system.

TABLE A.1 (*Continued*)

Culture	
Architecture	The early Indian civilization of the Indus valley produced the great cities of Harappa and Mohenjo Daro (now part of Pakistan) built from mud brick. Mohenjo Daro is famous for its giant granaries, drainage systems, and the Great Bath, which measured about 12 meters by seven meters. The lavishly decorated Hindu temples, such as those at Hoysala in Karnataka, are representative of one of the most famous styles of Indian architecture. Islam, though opposed to the representative sculpture of Hindu art, brought its own architectural style, typified by mosques, minarets, and geometric decoration. The Moghuls built many beautiful palaces and gardens. The Moghul Emperor Shah Jahan built the Taj Mahal and India's largest mosque as well as many other buildings. European-style architecture is a reminder of the days of the British Raj. One of the most famous examples of modern architecture is the town of Chandigarh, built in the 1950s from plans made by Le Corbusier, the French architect. Lutyens was responsible for the planning of New Delhi.
Food	Religion has had a major impact on regional food. Many Hindus are strict vegetarians, although some eat fish and chicken. The cow is sacred to Hindus around the world, and Muslims do not eat any pig products. As in regional cooking around the world, recipes depend on what is grown, caught or otherwise available locally. Rice, millet, and bread (nan and chapattis) are staple foods. Food is flavored with spices such as chilli, coriander, ginger, and tumeric. Milk-based desserts and gulab jamuns are popular. Tea, which is also one of the country's major exports, is universally available; in some areas, tea is flavored with spices.

Source: CIA World Factbook, 2006.
*Indicates a territory.

FUN FACTS ABOUT INDIA

The following information was obtained with generous permission from www.indianchild.com.

- National animal: Tiger, *Panthera tigris*
- National bird: Peacock
- National flower: Lotus
- National tree: Banyan
- National fruit: Mango
- The official Sanskrit name for India is *Bharat*.
- The name *India* is derived from the River Indus, the valleys around which were the home of the early settlers. The Aryan worshippers referred to the River Indus as the Sindhu. The Persian invaders converted the Sindhu into Hindu. The name *Hindustan* combines Sindhu and Hindu and thus refers to the land of the Hindus.
- Chess was invented in India.
- The place value system and the decimal system were developed in 100 B.C. in India.
- India is the largest democracy in the world, the sixth largest country in the world, and one of the most ancient living civilizations (at least 10,000 years old).
- India has the most post offices in the world! There were 155,516 as of March 2005 compared to approximately 27,000 in the United States.[a]
- The world's first university was established in Takshila in 700 B.C. More than 10,500 students from all over the world studied more than 60 subjects when it flourished during the first to the fifth centuries A.D.
- Ayurveda is the earliest school of medicine known to mankind. The father of medicine, Charaka, consolidated Ayurveda 2,500 years ago.
- Although modern images and descriptions of India often show poverty, India was one of the richest countries until the time of British rule in the early 17th century. Christopher Columbus was attracted by India's wealth and was looking for a route to India when he discovered America by mistake.
- The art of navigation and navigating was born on the River Sindh more than 6,000 years ago. The word *navigation* is derived from the Sanskrit word *navgatih*. The word *navy* is also derived from the Sanskrit word *Nou*.
- Bhaskaracharya, the great Indian mathematician who represented the peak of mathematical and astronomical knowledge in the 12th century, correctly calculated the time taken by the earth to orbit the sun hundreds of years before anyone else. His calculation for the time taken by earth to orbit the sun: 365.258756484 days. The modern accepted measurement is 365.2596 days, a difference of just one minute. The value of

[a]From the Web sites of the India Post and United States Postal Service, respectively.

pi was first calculated by the Indian mathematician Budhayana, and he explained the concept of what is known as the Pythagorean Theorem. He discovered this in the 6th century, which was long before European mathematicians.

- Algebra, trigonometry, and calculus also originated from India. Quadratic equations were used by Sridharacharya in the 11th century. The largest numbers the Greeks and the Romans used were 106, whereas Hindus used numbers as big as 10*53 (i.e., 10 to the power of 53) with specific names as early as 5,000 B.C. during the Vedic period. Even today, the largest used number is Tera: 10*12 (10 to the power of 12).
- Until 1896, India was the world's only source for diamonds (Gemological Institute of America).

APPENDIX **B**

India's Unique Numbering System

The most common units used in India's numbering and currency system are the *rupee*, *lakh*, and *crore*. Very importantly, most financial data issued in India uses this system. These units of currency are defined as:

- **Paisa—**One-hundredth subdivision of a rupee
- **Rupee—**The base unit of the currency
- **Lakh—**A unit equal to 100,000 rupees
- **Crore—**A unit equal to 10,000,000 rupees

India has an ancient numbering system using a unique grouping of two decimal places, rather than the three decimal places more commonplace in the West. This system of measurement uses separators in numbers in a different place than what is common outside India. For example, 30 million (three crore) would be written as 3,00,00,000.

Crore and lakh are the most widely used higher denominations, but there are even higher denominations, as shown in Table B.1. Arab and kharab, two of the higher denominations, are sometimes used in Hindi. General usage of higher denominations is recursive, such as 2 lakh crores: 2 × [100,000] × [10,000,000], or 2 followed by 12 zeros (2,000,000,000,000, or 2 trillion in U.S. terms).

TABLE B.1 India's Unique Number System

Term	Indian Writing Figure	No. of Zeros	Western Writing Figure	In Words	In US$ Equivalent*	In US$ Equivalent*
Lakh	1,00,000	5	100,000	Hundred thousand	$2,222	22 hundred
Crore	1,00,00,000	7	10,000,000	10 million	$222,222	222 thousand
Arab	1,00,00,00,000	9	1,000,000,000	1 billion	$22,222,222	22.222 million
Kharab	1,00,00,00,00,000	11	100,000,000,000	100 billion	$2,222,222,222	2.222 billion
Neel	1,00,00,00,00,00,000	13	10,000,000,000,000	10 trillion	$222,222,222,222	222.2 billion
Padam	1,00,00,00,00,00,00,000	15	1,000,000,000,000,000	1 quadrillion	$22,222,222,222,222	22.222 trillion
Shank	1,00,00,00,00,00,00,00,000	17	100,000,000,000,000,000	100 quadrillion	$2,222,222,222,222,220	2.222 quadrillion

*Rupee/US$ = 45.

TABLE B.2 Simple Rupee Conversion Tables

Rs.	Crore Rupees	US$	Rs.	Lakh Rupees	US$
1	10,000,000	$ 222,222	1	100,000	$ 2,222
2	20,000,000	$ 444,444	2	200,000	$ 4,444
3	30,000,000	$ 666,667	3	300,000	$ 6,667
4	40,000,000	$ 888,889	4	400,000	$ 8,889
5	50,000,000	$ 1,111,111	5	500,000	$ 11,111
6	60,000,000	$ 1,333,333	6	600,000	$ 13,333
7	70,000,000	$ 1,555,556	7	700,000	$ 15,556
8	80,000,000	$ 1,777,778	8	800,000	$ 17,778
9	90,000,000	$ 2,000,000	9	900,000	$ 20,000
10	100,000,000	$ 2,222,222	10	1,000,000	$ 22,222
100	1,000,000,000	$ 22,222,222	100	10,000,000	$ 222,222
1000	10,000,000,000	$222,222,222	1000	100,000,000	$2,222,222

Rupee/US$ Exchange Rate = 45.

APPENDIX C

The Indian Time Zone

The entire country of India operates within one time zone that is 4 1/2 hours ahead of Greenwich Mean Time (GMT+4 1/2). India does not change its clocks during the year for Daylight Savings, as do Europe and the United States. Table C.1 presents several time charts to assist the reader in understanding Indian market trading hours in relationship to New York time (both EST[a] and DST[b] are presented), London's Greenwich Mean Time (GMT[c]), and Hong Kong/Singapore time.

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[a]EST = Eastern Standard Time. This is the time zone in effect on the Eastern part of the United States during the winter hours. Daylight Savings Time (DST), so-called "summer hours," begins for most of the United States at 2:00 A.M. on the first Sunday of April. Time reverts to standard time at 2:00 A.M. on the last Sunday of October. In an effort to save energy, the United States has decided to extend DST beginning in 2007. The 2007 start date will be the second Sunday in March (currently first Sunday in April), to the first Sunday in November (currently last Sunday in October), at which point EST will then come into effect.

[b]DST = Daylight Savings Time.

[c]In the *European Union,* Summer Time begins and ends at 1:00 A.M. Universal Time (Greenwich Mean Time). It begins the last Sunday in March and ends the last Sunday in October. In the EU, all time zones change at the same moment.

TABLE C.1 Comparative Indian Time Zones versus Global Money Center Time Zones

	India	NY EST	India	NY DST	India	London GMT	India	Hong Kong/ Singapore	
	Midnight	13:30	Midnight	14:30	Midnight	19:30	Midnight	2:30	
	1:00	14:30	1:00	15:30	1:00	20:30	1:00	3:30	
	2:00	15:30	2:00	16:30	2:00	21:30	2:00	4:30	
	3:00	16:30	3:00	17:30	3:00	22:30	3:00	5:30	
	4:00	17:30	4:00	18:30	4:00	23:30	4:00	6:30	
	5:00	18:30	5:00	19:30	5:00	0:30	5:00	7:30	
	6:00	19:30	6:00	20:30	6:00	1:30	6:00	8:30	
	7:00	20:30	7:00	21:30	7:00	2:30	7:00	9:30	
	8:00	21:30	8:00	22:30	8:00	3:30	8:00	10:30	Typical Indian Work Day
	9:00	22:30	9:00	23:30	9:00	4:30	9:00	11:30	
BSE & NSE Exchange Open Hours	9:55	22:25	9:55	23:25	9:55	4:55	9:55	11:55	
	10:00	23:30	10:00	0:30	10:00	5:30	10:00	12:30	
	11:00	0:30	11:00	1:30	11:00	6:30	11:00	13:30	
	Noon	1:30	Noon	2:30	Noon	7:30	Noon	14:30	
	13:00	2:30	13:00	3:30	13:00	8:30	13:00	15:30	
	14:00	3:30	14:00	4:30	14:00	9:30	14:00	16:30	
	15:00	4:30	15:00	5:30	15:00	10:30	15:00	17:30	
	15:30	5:00	15:30	6:00	15:30	11:00	15:30	18:00	
	16:00	5:30	16:00	6:30	16:00	11:30	16:00	18:30	
	17:00	6:30	17:00	7:30	17:00	12:30	17:00	19:30	
	18:00	7:30	18:00	8:30	18:00	13:30	18:00	20:30	
	19:00	8:30	19:00	9:30	19:00	14:30	19:00	21:30	
	20:00	9:30	20:00	10:30	20:00	15:30	20:00	22:30	
	21:00	10:30	21:00	11:30	21:00	16:30	21:00	23:30	
	22:00	11:30	22:00	12:30	22:00	17:30	22:00	0:30	
	23:00	12:30	23:00	13:30	23:00	18:30	23:00	1:30	
	0:00	13:30	0:00	14:30	0:00	19:30	0:00	2:30	
	1:00	14:30	1:00	15:30	1:00	20:30	1:00	3:30	
	2:00	15:30	2:00	16:30	2:00	21:30	2:00	4:30	
	3:00	16:30	3:00	17:30	3:00	22:30	3:00	5:30	
	4:00	17:30	4:00	18:30	4:00	23:30	4:00	6:30	
	5:00	18:30	5:00	19:30	5:00	0:30	5:00	7:30	
	6:00	19:30	6:00	20:30	6:00	1:30	6:00	8:30	
	7:00	20:30	7:00	21:30	7:00	2:30	7:00	9:30	
	8:00	21:30	8:00	22:30	8:00	3:30	8:00	10:30	
	9:00	22:30	9:00	23:30	9:00	4:30	9:00	11:30	
	10:00	23:30	10:00	0:30	10:00	5:30	10:00	12:30	
	11:00	0:30	11:00	1:30	11:00	6:30	11:00	13:30	
	12:00	1:30	12:00	2:30	12:00	7:30	12:00	14:30	

APPENDIX D

BSE and NSE Derivatives Underlying Stock Details

TABLE D.1 Product Details for BSE Single Stock Monthly Options and Futures

Underlying	Security Symbol	Futures Code	Options Code	Contract Multiplier
Associated Cement Companies Ltd.	ACC	ACCFUT	ACCOPT	375
Allahabad Bank	ALBK	ALBKFUT	ALLOPT	2450
Alok Industries Ltd.	ALOK	ALOKFUT	ALOKOPT	3350
Arvind Mills Ltd.	ARVML	ARVFUT	ARVOPT	4300
Ashok Leyland Ltd.	ASHOK	ASHFUT	ASHOPT	4775
Areva T & D India Ltd.	ATD	ATDFUT	ATDOPT	250
Bajaj Auto Ltd.	BAJAUTO	BAJFUT	BAJOPT	100
Bharat Heavy Electricals Ltd.	BHEL	BHEFUT	BHEOPT	150
Bank of Baroda	BOB	BOBFUT	BOBOPT	1400
Bank of India	BOI	BOIFUT	BOIOPT	1900
Bharat Petroleum Corporation Ltd.	BPCL	BPCFUT	BPCOPT	1100
Bharti Tele-Ventures Ltd.	BTELE	BTLFUT	BTLOPT	500
Cairn India Ltd.	CAIRN	CNLFUT	CNLOPT	2500
Canara Bank	CANBNK	CNBFUT	CNBOPT	1600
Century Textiles & Industries Ltd.	CEN	CENFUT	CENOPT	425
Cipla Ltd.	CIPLA	CIPFUT	CIPOPT	1250
Castrol India Ltd.	CRL	CRLFUT	CRLOPT	950
Dr. Reddys Laboratories Ltd.	DRREDDY	DRRFUT	DRROPT	400

(*Continued*)

TABLE D.1 (*Continued*)

Underlying	Security Symbol	Futures Code	Options Code	Contract Multiplier
Gujarat Ambuja Cement Ltd.	GACL	GACFUT	GACOPT	2062
Gail India Ltd.	GAIL	GAILFUT	GAILOPT	750
Great Eastern Shipping Company Ltd.	GESHIP	GESFUT	GESOPT	1200
GMR Infrastructure	GMR	GMRFUT	GMROPT	1000
Gujarat Narmada Valley Fertilizers Company Ltd.	GNFC	GNFCFUT	GNFCOPT	2950
Grasim Industries Ltd.	GRASIM	GRSFUT	GRSOPT	88
HCL Technologies Ltd.	HCLTECH	HCLTFUT	HCLTOPT	325
HDFC Bank Ltd.	HDBK	HDBKFUT	HDBKOPT	200
Housing Development Finance Corporation Ltd.	HDFCLTD	HDFFUT	HDFOPT	150
Hero Honda Motors Ltd.	HEROHON	HEROFUT	HEROOPT	400
Hindustan Lever Ltd.	HLEVER	HLLFUT	HLLOPT	1000
Hindalco Industries Ltd.	HNDALCO	HNDFUT	HNDOPT	1595
Hindustan Petroleum Corporation Ltd.	HPCL	HPCFUT	HPCOPT	1300
Hindustan Zinc Ltd.	HZN	HZNFUT	HZNOPT	500
ICICI Bank Ltd.	ICICIBA	ICICFUT	ICICOPT	350
Industrial Development Bank of India Ltd.	IDBI	IDBIFUT	IDBIOPT	2400
Idea Cellular Ltd.	IDEA	IDEAFUT	IDEAOPT	2700
Infrastructure Development Finance Company Ltd.	IDFC	IDFCFUT	IDFCOPT	2950
i-Flex Solutions Ltd.	IFLEXSL	IFLXFUT	IFLXOPT	150
IndusInd Bank Ltd.	INBK	INBKFUT	INBKOPT	3850
India Cements Ltd.	INCEM	INCMFUT	INCMOPT	1450
Indian Bank	INDNBK	INDBFUT	INDBOPT	2200
Infosys Technologies Ltd.	INFOSYS	INFFUT	INFOPT	100
Indian Oil Corporation Ltd.	IOCL	IOCLFUT	IOCLOPT	600
Indian Petrochemicals Corporation Ltd.	IPCL	IPCLFUT	IPCLOPT	1100
ITC Ltd.	ITC	ITCFUT	ITCOPT	2250
Jet Airways Ltd.	JET	JETFUT	JETOPT	400
Jaiprakash Hydro Power Ltd.	JHPL	JHPFUT	JHPOPT	6250
Jindal Steel & Power Ltd.	JINST	JNSTFUT	JNSTOPT	125
Kalyani Steel Ltd.	KLS	KLSFUT	KLSOPT	500
Lanco Infratech Ltd.	LNC	LNCFUT	LNCOPT	850
LNT	LNT	LNTFUT	LNTOPT	200

TABLE D.1 (*Continued*)

Underlying	Security Symbol	Futures Code	Options Code	Contract Multiplier
Mahindra & Mahindra Ltd.	MAHMAH	MNMFUT	MNMOPT	312
Maruti Udyog Ltd.	MARUTI	MULFUT	MULOPT	400
Mahanagar Telephone Nigam Ltd.	MTNL	MTNFUT	MTNOPT	1600
National Aluminium Company Ltd.	NALCO	NALCFUT	NALCOPT	1150
National Thermal Power Corporation Ltd.	NTPC	NTPCFUT	NTPCOPT	1625
Oriental Bank of Commerce	OBC	OBCFUT	OBCOPT	1200
Oil and Natural Gas Corporation Ltd.	ONGC	ONGCFUT	ONGCOPT	225
Orchid Chemicals & Pharmaceuticals Ltd.	ORC	ORCHFUT	ORCHOPT	1050
Power Finance Corporation Ltd.	PFC	PFCFUT	PFCOPT	2400
Punjab National Bank	PNBNK	PNBFUT	PNBOPT	600
Punj Lloyd Ltd.	PNJ	PNJFUT	PNJOPT	300
Polaris Software Ltd.	POLARIS	POLAFUT	POLAOPT	1400
Parsvnath Developers Ltd.	PSN	PSNFUT	PSNOPT	700
Ranbaxy Laboratories Ltd.	RANBAXY	RBXFUT	RBXOPT	800
Reliance Capital Ltd.	RCAP	RCAPFUT	RCAPOPT	550
Reliance Comm. Ltd.	RCOM	RCOMFUT	RCOMOPT	700
Reliance Energy Ltd.	RELENRG	RENFUT	RENOPT	550
Reliance Petroleum Ltd.	RELPETR	RPLFUT	RPLOPT	3350
Reliance Industries Ltd.	RIL	RILFUT	RILOPT	150
SAIL	SAIL	SAILFUT	SAILOPT	2700
Satyam Computer Serivices Ltd.	SATYAM	SATFUT	SATOPT	600
State Bank of India	SBI	SBIFUT	SBIOPT	250
Sobha Developers Ltd.	SDL	SDLFUT	SDLOPT	350
Siemens Ltd.	SIEMN	SIEMFUT	SIEMOPT	188
Sun TV Ltd.	SUNTV	SNTVFUT	SNTVOPT	125
Spicejet Ltd.	SPJ	SPJFUT	SPJOPT	4000
Sterlite Industries (India) Ltd.	STER	STERFUT	STEROPT	438
Suzlon Energy Ltd.	SUZ	SUZFUT	SUZOPT	200
Tata Chemicals Ltd.	TCHEM	TCHMFUT	TCHMOPT	1350
Tata Power Company Ltd.	TATAPWR	TPWFUT	TPWOPT	400
Tata Tea Ltd.	TATEA	TTEFUT	TTEOPT	550
Tata Consultancy Services Ltd.	TCS	TCSFUT	TCSOPT	250
Tata Iron & Steel Company Ltd.	TISCO	TISFUT	TISOPT	675

(*Continued*)

TABLE D.1 (*Continued*)

Underlying	Security Symbol	Futures Code	Options Code	Contract Multiplier
Tata Motors Ltd.	TELCO	TELFUT	TELOPT	412
Union Bank of India	UBI	UBIFUT	UBIOPT	2100
UTI Bank Ltd.	UTIBK	UTIBFUT	UTIBOPT	450
Videsh Sanchar Nigam Ltd.	VSNL	VSNLFUT	VSNLOPT	525
Wipro Ltd.	WIPRO	WIPRFUT	WIPROPT	600
Zee Telefilms Ltd.	ZEE	ZEEFUT	ZEEOPT	700

As of March 2007
Source: The Bombay Stock Exchange.

TABLE D.2 Individual Securities with Approved Futures and Options Currently Traded on the NSE

Underlying	Underlying Security Symbol
ABB Ltd.	ABB
Aban Offshore Ltd.	ABAN
Associated Cement Co. Ltd.	ACC
Allahabad Bank	ALBK
Alok Industries Ltd.	ALOKTEXT
Amtek Auto Ltd.	AMTEKAUTO
Andhra Bank	ANDHRABANK
Arvind Mills Ltd.	ARVINDMILL
Ashok Leyland Ltd.	ASHOKLEY
Aurobindo Pharma Ltd.	AUROPHARMA
Bajaj Auto Ltd.	BAJAJAUTO
Bajaj Hindustan Ltd.	BAJAJHIND
Balrampur Chini Mills Ltd.	BALRAMCHIN
Bank of Baroda	BANKBARODA
Bank of India	BANKINDIA
Bata India Ltd.	BATAINDIA
Bharat Electronics Ltd.	BEL
Bharat Earth Movers Ltd.	BEML
Bharat Forge Co Ltd.	BHARATFORG
Bharti Airtel Ltd.	BHARTIARTL
Bharat Heavy Electricals Ltd.	BHEL
Ballarpur Industries Ltd.	BILT

TABLE D.2 (*Continued*)

Underlying	Underlying Security Symbol
Bombay Dyeing & Mfg. Co Ltd.	BOMDYEING
Bongaigaon Refinery Ltd.	BONGAIREFN
Bharat Petroleum Corporation Ltd.	BPCL
Canara Bank	CANBK
Cairn India Ltd.	CAIRN
Century Textiles Ltd.	CENTURYTEX
CESC Ltd.	CESC
Chambal Fertilizers Ltd.	CHAMBLFERT
Chennai Petroleum Corporation Ltd.	CHENNPETRO
Cipla Ltd.	CIPLA
Colgate Palmolive (I) Ltd.	COLGATE
Corporation Bank	CORPBANK
Crompton Greaves Ltd.	CROMPGREAV
Cummins India Ltd.	CUMMINSIND
Dabur India Ltd.	DABUR
Divi's Laboratories Ltd.	DIVISLAB
Dr. Reddy's Laboratories Ltd.	DRREDDY
Escorts India Ltd.	ESCORTS
Essar Oil Ltd.	ESSAROIL
Federal Bank Ltd.	FEDERALBNK
GAIL (India) Ltd.	GAIL
Gateway Distriparks Ltd.	GDL
The Great Eastern Shipping Co. Ltd.	GESHIP
Glaxosmithkline Pharma Ltd.	GLAXO
GMR Infrastructure Ltd.	GMRINFRA
Gujarat Narmada Fertilizer Co. Ltd.	GNFC
Grasim Industries Ltd.	GRASIM
GTL Ltd.	GTL
Gujarat Alkalies & Chem	GUJALKALI
Gujarat Ambuja Cement Ltd.	GUJAMBCEM
Hindustan Construction Co	HCC
HCL Technologies Ltd.	HCLTECH
Housing Development Finance Corporation Ltd.	HDFC
HDFC Bank Ltd.	HDFCBANK
Hero Honda Motors Ltd.	HEROHONDA
Hindalco Industries Ltd.	HINDALC0
Hindustan Lever Ltd.	HINDLEVER
Hindustan Petroleum Corporation Ltd.	HINDPETRO
Hinduja TMT Ltd.	HTMT

(*Continued*)

TABLE D.2 (*Continued*)

Underlying	Underlying Security Symbol
I-FLEX Solutions Ltd.	I-FLEX
ICICI Bank Ltd.	ICICIBANK
Industrial development bank of India Ltd.	IDBI
Idea Cellular Ltd.	IDEA
Infrastructure Development Finance Company Ltd.	IDFC
IFCI Ltd.	IFCI
Indian Hotels Co. Ltd.	INDHOTEL
India Cements Ltd.	INDIACEM
Indian Bank	INDIANB
Indusind Bank Ltd.	INDUSINDBK
Infosys Technologies Ltd.	INFOSYSTCH
Indian Petrochemicals Corpn. Ltd.	IPCL
Indian Overseas Bank	IOB
Indian Oil Corporation Ltd.	IOC
ITC Ltd.	ITC
IVRCL Infrastructure & Projects Ltd.	IVRCLINFRA
J & K Bank Ltd.	J&KBANK
Jet Airways (India) Ltd.	JETAIRWAYS
Jindal Steel & Power Ltd.	JINDALSTEL
Jaiprakash Associates Ltd.	JPASSOCIAT
Jaiprakash Hydro-Power Ltd.	JPHYDRO
Jindal Stainless Ltd.	JSTAINLESS
JSW Steel Ltd.	JSWSTEEL
Kotak Mahindra Bank Ltd.	KOTAKBANK
The Karnataka Bank Ltd.	KTKBANK
LIC Housing Finance Ltd.	LICHSGFIN
Lanco Infratech Ltd.	LITL
Larsen & Toubro Ltd.	LT
Lupin Ltd.	LUPIN
Mahindra & Mahindra Ltd.	M&M
Maharashtra Seamless Ltd.	MAHSEAMLES
Maruti Udyog Ltd.	MARUTI
Matrix Laboratories Ltd.	MATRIXLABS
United Spirits Ltd.	MCDOWELL-N
Mphasis BFL Ltd.	MPHASIS
Mangalore Refinery and Petrochemicals Ltd.	MRPL
Mahanagar Telephone Nigam Ltd.	MTNL
Nagarjuna Constrn. Co. Ltd.	NAGARCONST
Nagarjuna Fertiliser & Chemicals Ltd.	NAGARFERT
National Aluminium Co. Ltd.	NATIONALUM
NDTV Ltd.	NDTV

TABLE D.2 (*Continued*)

Underlying	Underlying Security Symbol
Neyveli Lignite Corporation Ltd.	NEYVELILIG
Nicolas Piramal India Ltd.	NICOLASPIR
National Thermal Power Corporation Ltd.	NTPC
Oil & Natural Gas Corp. Ltd.	ONGC
Orchid Chemicals Ltd.	ORCHIDCHEM
Oriental Bank of Commerce	ORIENTBANK
Parsvnath Developers Ltd.	PARSVNATH
Patni Computer Syst Ltd	PATNI
Power Finance Corporation Ltd.	PFC
Punjab National Bank	PNB
Polaris Software Lab Ltd.	POLARIS
Praj Industries Ltd.	PRAJIND
Punj Lloyd Ltd.	PUNJLLOYD
Ranbaxy Laboratories Ltd.	RANBAXY
Reliance Communications Ltd.	RCOM
Reliance Energy Ltd.	REL
Reliance Capital Ltd.	RELCAPITAL
Reliance Industries Ltd.	RELIANCE
Shree Renuka Sugars Ltd.	RENUKA
Reliance Petroleum Ltd.	RPL
Steel Authority of India Ltd.	SAIL
Satyam Computer Services Ltd.	SATYAMCOMP
State Bank of India	SBIN
Shipping Corporation of India Ltd.	SCI
Sesa Goa Ltd.	SESAGOA
Siemens Ltd.	SIEMENS
Sobha Developers Ltd.	SOBHA
SRF Ltd.	SRF
Strides Arcolab Ltd.	STAR
Sterlite Industries (I) Ltd.	STER
Sun Pharmaceuticals India Ltd.	SUNPHARMA
Sun TV Ltd.	SUNTV
Suzlon Energy Ltd.	SUZLON
Syndicate Bank	SYNDIBANK
Tata Chemicals Ltd.	TATACHEM
Tata Consultancy Services	TCS
Tata Motors Ltd.	TATAMOTORS
Tata Power Co. Ltd.	TATAPOWER
Tata Steel Ltd.	TATASTEEL
Tata Tea Ltd.	TATATEA

(*Continued*)

TABLE D.2 (*Continued*)

Underlying	Underlying Security Symbol
Titan Industries Ltd.	TITAN
Triveni Engg. & Inds. Ltd.	TRIVENI
Tata Teleserv(Maharastra)	TTML
TVS Motor Company Ltd.	TVSMOTOR
Ultratech Cement Ltd.	ULTRACEMCO
Union Bank of India	UNIONBANK
UTI Bank Ltd.	UTIBANK
Vijaya Bank	VIJAYABANK
Voltas Ltd.	VOLTAS
Videsh Sanchar Nigam Ltd.	VSNL
Wipro Ltd.	WIPRO
Wockhardt Ltd.	WOCKPHARMA
Zee Entertainment Enterprises Ltd.	ZEEL

As of March 2007
Source: The National Stock Exchange Ltd.

APPENDIX E

Economic Statistics

The two primary sources of information and statistics for India's economy are the Reserve Bank of India (RBI) and the Economic Division of the Department of Economic Affairs, Ministry of Finance. Both institutions issue numerous statistics covering many aspects of the Indian economy. This information is posted on their Web sites daily, weekly, or monthly, as noted below.

The key Web sites to view the government-provided information are:

- ***www.rbi.org.in:*** The Web site of the Reserve Bank of India (RBI). Information is readily available in the "Database" and "Press Release" sections of this Web site.
- ***http://finmin.nic.in:*** The Web site of the Department of Economic Affairs, Economic Division, of the Ministry of Finance. The department issues a *Monthly Economic Report* containing extensive statistics and data. The report can be downloaded at this Web address: http://finmin.nic.in/stats_data/monthly_economic_report.

The Reserve Bank of India issues data on a daily, weekly, and monthly basis. Below is a sample of the information readily accessible on its Web site:

Daily:
- Liquidity Adjustment Facility (LAF)—Information, including applications and calendar, for daily repo and reverse repo auctions.
- Daily money market operations.

Weekly:
- The *Weekly Statistical Supplement* includes information on:
  - Foreign exchange reserves
  - Cash reserve ratio

  - Interest rates
  - Foreign exchange rates
  - Government securities auctions
  - Index numbers for wholesale prices
  - Government securities turnover
  - Corporate debt volume on the National Stock Exchange debt segment
- The *National Summary Data Page* includes information on:
  - Balance of payment data such as the current account and capital account
  - International reserves
  - International investment position
  - External debt

Monthly (RBI Monthly Bulletin):

- Government securities market information, including T-Bill and repo auctions, and turnover
- Industrial production numbers:
  - Gross industrial production
  - Industry-specific numbers, including:
    - Mining
    - Manufacturing
    - Electricity
    - Food products
    - Textiles
    - Basic chemicals and chemical products
    - Basic metal and alloy industries
    - Machinery
- Consumer Price Index numbers for industrial workers, urban nonmanual employees, and agricultural/rural laborers
- Wholesale prices
- Trade and balance of payments

The statistics issued by the Ministry of Finance are compiled in their *Monthly Economic Report,* which is released during the first week of every month and contains information regarding the preceding month. The report includes:

- Quarterly GDP growth
- Index of industrial production

- Production and performance of infrastructure industries
- Monetary statistics
- Foreign trade
- Monthly inflation statistics, as measured by wholesale prices and consumer prices
- Public finance statistics

APPENDIX F

Order Types

TABLE F.1 Orders Recognized by the Exchanges

Price Conditions	
Market Order	An order entered that is to be executed immediately at the prevailing market price.
Limit Order	An order that is to be executed at or better than the stated limit.
Stop Order	An order that becomes activated only when the market price of the relevant security reaches or crosses the trigger price specified on the order. Until triggered, the order is not eligible for execution.
	Buy stop: An order entered above the prevailing market price that is dormant until the stock price touches or exceeds the trigger price, at which point the order becomes a normal, live buy order.
	Sell stop: An order entered below the prevailing market price that is dormant until the stock price touches or goes below the trigger price, at which point the order becomes a normal, live sell order.
Time Conditions	
Day Order	An order that is valid only for the day on which it is entered. Unexecuted day orders are canceled automatically at the end of the trading day.
Good Till Canceled (GTC)	An order that remains in the system until it is canceled by a trading member. It will, therefore, be able to span trading days if it does not become matched. The maximum number of days a GTC order can remain in the system is set by the exchanges.

(*Continued*)

TABLE F.1 (*Continued*)

Good Till Days/Date (GTD)	An order that remains valid and in the system until a specific date, or a specific number of days, specified on the order. At the end of this period, the order will be automatically canceled. Each day/date counted is a calendar day and inclusive of holidays. The days/dates counted are inclusive of the day/date on which the order is placed. The maximum number of days a GTD order can remain in the system is set by the exchanges.
Immediate or Cancel (IOC)	An order to buy or sell a security as soon as the order is released into the market. Any unexecuted remainder of the order is then automatically and immediately canceled.
Quantity Conditions	
Disclosed Quantity (DQ) or Drip-Feed Mechanism	An order that reveals only part of the order's total quantity to the market at any one time. For example, a DQ buy order for a total of 80,000 shares with a disclosed quantity condition of 10,000 will result in only 10,000 shares being bid for at any one time, concealing the 70,000 share balance of the order from the market. After the 10,000 is purchased, the trading system will then bid for only another 10,000 shares more in the market, concealing the balance of 60,000 shares. This process continues until all 80,000 shares have been executed. This methodology is also known as the "Drip-Feed Mechanism" because, metaphorically, the order is slowly dripped into the market, as opposed to poured in all at once. This order type is used for clients who are concerned that exposing their entire order to the market at one time may adversely affect their ability to obtain the most favorable execution on the entire order.
Minimum Fill (MF)	An order that specifies the minimum quantity acceptable for any execution toward fulfillment of the entire order. For example, an order to buy 5,000 shares with a minimum fill of 1,000 mandates that any execution against this order must be for at least 1,000 shares.
All or None (AON)	An order imposing the condition that only the full order should be executed; no partial executions will be accepted.

APPENDIX **G**

NSE and BSE Equity Classifications

TABLE G.1 NSE and BSE Scrip Classifications

Classification	Description
O	Trading conducted in the odd-lot market.
	BSE Scrip Classifications
Classification	**Description**
Equity	
A	The 200 strongest, highest-market-capitalized, highest-liquidity companies on the BSE, with strong financials and high-quality corporate governance.
B1	Also strong companies, but not in the top 200. Many may compare favorably with A classification companies based on the objective and subjective parameters, but not be in the top 200 and thus receive a B1 classification. There is no fixed number of B1 companies.
B2	B2 classified companies represent the lowest tier of listed equities in terms of market cap, liquidity, financials, and subjective measures such as corporate governance and complaints. Investors should be wary of B2 companies in terms of management, quality of earnings, the financial soundness of the business, and thus the investment safety of such a company.

(*Continued*)

TABLE G.1 (*Continued*)

Classification	Description
S	S shares are also known as BSE Indonext shares. This classification consists of scrip from the B1 and B2 groups and companies exclusively listed on regional stock exchanges that have capitalization of Rs3 to 30 crore (US$700,000 to US$7 million).
Z	Includes companies that either: (1) have failed to comply with the listing requirements of the exchange, (2) have failed to resolve investor complaints, or (3) have not made the required arrangements with both the depositories for the dematerialization of their securities.
T	Shares that settle on a trade-to-trade basis for market-surveillance reasons.
TS	These shares are a subclassification of the S shares that settle on a trade-to-trade basis for market-surveillance reasons.
Debt	
F	Fixed income securities.
G	Government securities for retail investors.

APPENDIX H

Exchange Trading and Clearing Holidays

Table H.1 notes the trading and clearing holidays that have been posted by the NSE and BSE exchanges for the calendar year of January to December 2007.

TABLE H.1 2007 Market Holidays

			National Stock Exchange			Bombay Stock Exchange		
Date	Day	NSE clearing holidays	Trading	Clearing	Debt	Equities	Derivatives	Debt
1-Jan-07	Monday	Bakri Id	√	√	√	√	√	√
26-Jan-07	Friday	Republic Day	√	√	√	√	√	√
30-Jan-07	Tuesday	Moharum	√	√	√	√	√	√
16-Feb-07	Friday	Mahashivratri	√	√	√	√		√
4-Mar-07	Sunday	Holi (2nd day)	√	√	√		√	√
19-Mar-07	Monday	Gudi Padwa		√	√			√
27-Mar-07	Tuesday	Ram Navami	√	√	√	√	√	√
31-Mar-07	Saturday	Mahavir Jayanti	√	√	√			√
1-Apr-07	Sunday	Bank Closing & Id-E-Milad	√	√	√		√	√
6-Apr-07	Friday	Good Friday	√	√	√	√	√	√
14-Apr-07	Saturday	Dr. Babasaheb Ambedkar Jayanti	√	√	√			√
1-May-07	Tuesday	Maharashtra Day	√	√	√	√	√	√
2-May-07	Wednesday	Buddha Pournima	√	√	√	√		
15-Aug-07	Wednesday	Independence Day	√	√	√	√	√	
20-Aug-07	Monday	Parsi New Year		√	√			√
15-Sep-07	Saturday	Ganesh Chaturthi	√	√	√			√
30-Sep-07	Sunday	Half Yearly Bank Closing		√				
2-Oct-07	Tuesday	Mahatma Gandhi Jayanti	√	√	√	√	√	√
14-Oct-07	Sunday	Ramzan Id	√	√	√		√	
21-Oct-07	Sunday	Dasara	√	√	√		√	
9-Nov-07	Friday	Diwali (Laxmi Puja)*	√	√	√	√		√
11-Nov-07	Sunday	Diwali (Bhaubeej)	√	√	√		√	
24-Nov-07	Saturday	Guru Nanak Jayanti	√	√	√			√
21-Dec-07	Friday	Bakri ID (falls twice in 2007)	√			√		
25-Dec-07	Tuesday	Christmas	√	√	√	√	√	√

*Muhurat trading for the Diwali Amavasya/Laxmi Puja holidays is an occasion for an auspicious beginning to the traditional Hindu new year and will be held on Friday, November 9, 2007.

TABLE H.2 Market Trading Times

Exchange	Days	Open	Close
BSE Equity	M–F	9:55 A.M.	3:30 P.M.
NSE Equity	M–F	9:55 A.M.	3:30 P.M.
Limited Physical Market	M–F	9:55 A.M.	3:30 P.M.
Derivatives	M–F	9:55 A.M.	3:30 P.M.

TABLE H.3 Derivative Session Daily Schedule

Session	From	To
Beginning of the Day	8 A.M.	9 A.M.
Login	9 A.M.	9:30 A.M.
Trading	9:30 A.M.	3:30 P.M.
Position Transfer	3:30 P.M.	3:50 P.M.
Closing	3:50 P.M.	4:05 P.M.
Option Exercise	4:05 P.M.	4:35 P.M.
Margin	4:35 P.M.	4:50 P.M.
Query	4:50 P.M.	5:35 P.M.
End of Day	5:35 P.M.	5:35 P.M.

APPENDIX I

Index Constituents

TABLE I.1 BSE 100 Index Constituents

Code	Name	Sector	Adj. Factor
500002	ABB Ltd.	Capital Goods	0.5
500303	Aditya Birla Nuvo Ltd.	Diversified	0.7
532418	Andhra Bank	Finance	0.5
500101	Arvind Mills Ltd.	Textile	0.7
500477	Ashok Leyland Ltd.	Transport Equipments	0.5
500820	Asian Paints Ltd.	Chemical & Petrochemical	0.55
500410	Associated Cement Companies Ltd.	Housing Related	0.65
500490	Bajaj Auto Ltd.	Transport Equipments	0.7
500032	Bajaj Hindustan Ltd.	Agriculture	0.65
500038	Balrampur Chini Mills Ltd.	Agriculture	0.6
532134	Bank of Baroda	Finance	0.5
532149	Bank of India	Finance	0.35
500048	Bharat Earth Movers Ltd.	Capital Goods	0.4
500049	Bharat Electronics Ltd.	Capital Goods	0.25
500493	Bharat Forge Ltd.	Transport Equipments	0.65
500103	Bharat Heavy Electricals Ltd.	Capital Goods	0.35
500547	Bharat Petroleum Corp. Ltd.	Oil & Gas	0.35
532454	Bharti Airtel Ltd.	Telecom	0.35
532483	Canara Bank	Finance	0.3
500040	Century Textiles Ind. Ltd.	Textile	0.6
500087	Cipla Ltd.	Healthcare	0.65
500830	Colgate Palmolive(India)	FMCG	0.5
500093	Crompton Greaves Ltd.	Capital Goods	0.6
500480	Cummins India Ltd.	Transport Equipments	0.5
500124	Dr Reddy’s Laboratories Ltd.	Healthcare	0.75

(*Continued*)

TABLE I.1 (*Continued*)

Code	Name	Sector	Adj. Factor
526881	Financial Technologies (India) Ltd.	Information Technology	0.55
532155	Gail (India) Ltd.	Oil & Gas	0.4
500660	Glaxo Ltd.	Healthcare	0.5
532296	Glenmark Pharmaceuticals Ltd.	Healthcare	0.5
500300	Grasim Industries Ltd.	Diversified	0.75
500425	Gujarat Ambuja Cements Ltd.	Housing Related	0.8
532281	HCL Technologies Ltd.	Information Technology	0.35
500010	HDFC	Finance	0.9
500180	HDFC Bank Ltd.	Finance	0.8
500182	Hero Honda Motors Ltd.	Transport Equipments	0.5
500440	Hindalco Industries Ltd.	Metal & Mining	0.75
500696	Hindustan Lever Ltd.	FMCG	0.5
500104	Hindustan Petroleum Corp Ltd.	Oil & Gas	0.5
532174	ICICI Bank Ltd.	Finance	1
532466	I-Flex Solutions Ltd.	Information Technology	0.45
500850	Indian Hotels Co Ltd.	Tourism	0.75
530965	Indian Oil Corporation Ltd.	Oil & Gas	0.1
500105	Indian Petrochemicals Corp Ltd.	Chemical & Petrochemical	0.55
500116	Industrial Dev Bank of India	Finance	0.5
500209	Infosys Technologies Ltd.	Information Technology	0.8
532659	IDFC Ltd.	Finance	0.4
500875	ITC Ltd.	FMCG	0.7
532532	Jaiprakash Associates Ltd.	Housing Related	0.6
532617	Jet Airways (India) Ltd	Transport Services	0.2
500228	JSW Steel Ltd.	Metal & Mining	0.5
500247	Kotak Mahindra Bank Ltd.	Finance	0.45
500510	Larsen & Toubro Ltd.	Capital Goods	0.9
500257	Lupin Ltd.	Healthcare	0.5
500108	Mahanagar Telephone Nigam Ltd.	Telecom	0.45
500520	Mahindra & Mahindra Ltd.	Transport Equipments	0.8
532500	Maruti Udyog Ltd.	Transport Equipments	0.4
524794	Matrix Laboratories Ltd.	Healthcare	0.45
532432	McDowell & Company Ltd.	FMCG	0.65
500530	MICO Ltd.	Transport Equipments	0.4

TABLE I.1 (*Continued*)

Code	Name	Sector	Adj. Factor
532234	National Aluminum Co. Ltd.	Metal & Mining	0.15
500790	Nestle India Ltd.	FMCG	0.4
500302	Nicholas Piramal India	Healthcare	0.45
532555	NTPC Ltd.	Power	0.15
500312	ONGC Ltd.	Oil & Gas	0.2
500315	Oriental Bank of Commerce	Finance	0.5
532517	Patni Computer Systems Ltd.	Information Technology	0.4
532522	Petronet lng. Ltd.	Oil & Gas	0.4
532693	Punj LLoyd Ltd.	Capital Goods	0.35
532461	Punjab National Bank	Finance	0.45
500359	Ranbaxy Laboratories Ltd.	Healthcare	0.7
500330	Raymond Ltd.	Textile	0.65
500111	Reliance Capital Ltd.	Finance	0.3
532712	Reliance Communications Ltd.	Telecom	0.6
500390	Reliance Energy Ltd.	Power	0.5
500325	Reliance Industries Ltd.	Oil & Gas	0.55
532709	Reliance Natural Resources Ltd.	Oil & Gas	0.55
500376	Satyam Computer Services Ltd.	Information Technology	0.95
500295	Sesa Goa Ltd.	Metal & Mining	0.5
500550	Siemens Ltd.	Capital Goods	0.45
500112	State Bank of India	Finance	0.45
500113	Steel Authority of India Ltd.	Metal & Mining	0.15
500900	Sterlite Industries Ltd.	Metal & Mining	0.2
524715	Sun Pharmaceutical Inds. Ltd.	Healthcare	0.3
532667	Suzlon Energy Ltd.	Power	0.15
500770	Tata Chemicals Ltd.	Diversified	0.7
532540	Tata Consultancy Services Ltd.	Information Technology	0.2
500570	Tata Motors Ltd.	Transport Equipments	0.6
500400	Tata Power Co. Ltd.	Power	0.7
500470	Tata Steel Ltd.	Metal & Mining	0.75
500800	Tata Tea Ltd.	FMCG	0.75
532371	Tata Teleservices (Maharashtra) Ltd.	Telecom	0.35

(*Continued*)

TABLE I.1 (*Continued*)

Code	Name	Sector	Adj. Factor
500114	Titan Industries Ltd. Consumer	Consumer Durables	0.5
532538	Ultratech Cement Ltd.	Housing Related	0.4
532477	Union Bank of India	Finance	0.45
512070	United Phosphorus Ltd.	Agriculture	0.75
532215	UTI Bank Ltd.	Finance	0.75
500483	Videsh Sanchar Nigam Ltd.	Telecom	0.3
507685	Wipro Ltd.	Information Technology	0.2
532300	Wockhardt Ltd.	Healthcare	0.3
505537	Zee Telefilms Ltd.	Media & Publishing	0.55

As of August 2006.
Source: Copyright © 2000, The Bombay Stock Exchange.

TABLE I.2 BSE 200 Index and Dollex 200 Constituents

Code	Name	Sector	Adj. Factor
523204	Aban Loyd Chiles Offshore Ltd.	Capital Goods	0.4
500002	ABB Ltd.	Capital Goods	0.5
500303	Aditya Birla Nuvo Ltd.	Diversified	0.7
532480	Allahabad Bank	Finance	0.45
521070	Alok Industries Ltd.	Textile	0.6
532309	Alstom Power India Ltd.	Capital Goods	0.35
520077	Amtek Auto Ltd.	Transport Equipment	0.7
532418	Andhra Bank	Finance	0.5
508869	Apollo Hospitals Enterprises Ltd.	Healthcare	0.65
522275	Areva T&D India Ltd.	Capital Goods	0.35
500101	Arvind Mills Ltd.	Textile	0.7
500477	Ashok Leyland Ltd.	Transport Equipments	0.5
500820	Asian Paints Ltd.	Chemical & Petrochemical	0.55
500410	Associated Cement Companies Ltd.	Housing Related	0.65
524804	Aurobindo Pharma Ltd.	Healthcare	0.45
500674	Aventis Pharma Ltd.	Healthcare	0.4
500490	Bajaj Auto Ltd.	Transport Equipments	0.7
500032	Bajaj Hindustan Ltd.	Agriculture	0.65

TABLE I.2 (*Continued*)

Code	Name	Sector	Adj. Factor
500102	Ballarpur Industries Ltd.	Miscellaneous	0.6
500038	Balrampur Chini Mills Ltd.	Agriculture	0.6
532134	Bank of Baroda	Finance	0.5
532149	Bank of India	Finance	0.35
500043	Bata India Ltd.	FMCG	0.5
532430	BF Utilities Ltd.	Miscellaneous	0.5
500048	Bharat Earth Movers Ltd.	Capital Goods	0.4
500049	Bharat Electronics Ltd.	Capital Goods	0.25
500493	Bharat Forge Ltd.	Transport Equipments	0.65
500103	Bharat Heavy Electricals Ltd.	Capital Goods	0.35
500547	Bharat Petroleum Corp. Ltd.	Oil & Gas	0.35
532454	Bharti Airtel Ltd.	Telecom	0.35
532523	Biocon Ltd.	Healthcare	0.4
500335	Birla Corporation Ltd.	Housing Related	0.4
500020	Bombay Dyeing & Mfg Co Ltd.	Textile	0.6
500825	Britannia Industries Ltd.	FMCG	0.5
532321	Cadila Healthcare Ltd.	Healthcare	0.3
532483	Canara Bank	Finance	0.3
500870	Castrol India Ltd.	Oil & Gas	0.3
532273	Centurion Bank Ltd.	Finance	0.7
500040	Century Textiles Ind. Ltd.	Textile	0.6
500084	CESC Ltd.	Power	0.65
500085	Chambal Fertilisers & Chemical	Agriculture	0.5
500110	Chennai Petroleum Corporation Ltd.	Oil & Gas	0.35
500087	Cipla Ltd.	Healthcare	0.65
500830	Colgate Palmolive(India)	FMCG	0.5
531344	Container Corporation of India	Transport Services	0.4
532179	Corporation Bank	Finance	0.2
500093	Crompton Greaves Ltd.	Capital Goods	0.6
500480	Cummins India Ltd.	Transport Equipments	0.5
500096	Dabur India Ltd.	FMCG	0.3
532488	Divi's Laboratories Ltd.	Healthcare	0.5
500124	Dr Reddy's Laboratories Ltd.	Healthcare	0.75
523618	Dredging Corporation of India	Capital Goods	0.25

(*Continued*)

TABLE I.2 (*Continued*)

Code	Name	Sector	Adj. Factor
500125	E.I.D. Parry (India) Ltd.	Agriculture	0.65
500840	EIH Ltd.	Tourism	0.55
532178	Engineers India Ltd.	Miscellaneous	0.1
500134	Essar Oil Ltd.	Oil & Gas	0.8
500630	Essar Shipping Ltd.	Transport Services	0.25
500469	Federal Bank Ltd.	Finance	1
526881	Financial Technologies (India) Ltd.	Information Technology	0.55
532155	Gail (India) Ltd.	Oil & Gas	0.4
509550	Gammon India Ltd.	Capital Goods	0.65
532622	Gateway Distriparks Ltd.	Transport Services	0.65
507815	Gillette India Ltd.	FMCG	0.15
500660	Glaxo Ltd.	Healthcare	0.5
500676	GlaxoSmithKline Consumer Healthcare	Healthcare	0.6
532296	Glenmanrk Pharmaceuticals Ltd.	Healthcare	0.5
532424	Godrej Consumer Products Ltd.	FMCG	0.35
500300	Grasim Industries Ltd.	Diversified	0.75
500160	GTL Ltd.	Information Technology	0.65
530001	Gujarat Alkalies & Chem Ltd.	Chemical & Petrochemical	0.65
500425	Gujarat Ambuja Cements Ltd.	Housing Related	0.8
500670	Gujarat Narmada Valley Fertiliser	Agriculture	0.6
500690	Gujarat State Fertilisers & Chem. Ltd.	Agriculture	0.6
500179	HCL Infosystems Ltd.	Information Technology	0.5
532281	HCL Technologies Ltd.	Information Technology	0.35
500010	HDFC	Finance	0.9
500180	HDFC Bank Ltd.	Finance	0.8
500182	Hero Honda Motors Ltd.	Transport Equipments	0.5
532129	Hexaware Technologies Ltd.	Information Technology	0.75
500440	Hindalco Industries Ltd.	Metal & Mining	0.75
500189	Hinduja TMT Ltd.	Information Technology	0.35
500185	Hindustan Construction Co. Ltd.	Housing Related	0.5
500696	Hindustan Lever Ltd.	FMCG	0.5

TABLE I.2 (*Continued*)

Code	Name	Sector	Adj. Factor
500104	Hindustan Petroleum Corp Ltd.	Oil & Gas	0.5
500188	Hindustan Zinc Ltd.	Metal & Mining	0.1
500193	Hotel Leela Venture Ltd.	Tourism	0.55
532174	ICICI Bank Ltd.	Finance	1
500106	IFCI Ltd.	Finance	0.9
532466	I-Flex Solutions Ltd.	Information Technology	0.45
530005	India Cements Ltd. H	Housing Related	0.65
532544	Indiabulls Financial Services Ltd.	Finance	0.65
500850	Indian Hotels Co Ltd.	Tourism	0.75
530965	Indian Oil Corporation Ltd.	Oil & Gas	0.1
532388	Indian Overseas Bank	Finance	0.4
500105	Indian Petrochemicals Corp Ltd.	Chemical & Petrochemical	0.55
532514	Indraprastha Gas Ltd.	Oil & Gas	0.55
532187	Indusind Bank Ltd.	Finance	0.6
500116	Industrial Dev Bank of India	Finance	0.5
500209	Infosys Technologies Ltd.	Information Technology	0.8
532659	IDFC Ltd.	Finance	0.4
500875	ITC Ltd.	FMCG	0.7
530773	IVRCL Infrastructures & Projects Ltd.	Housing Related	0.9
532532	Jaiprakash Associates Ltd.	Housing Related	0.6
532209	Jammu & Kashmir Bank Ltd.	Finance	0.5
532617	Jet Airways (India) Ltd.	Transport Services	0.2
500378	Jindal Saw Ltd.	Metal & Mining	0.5
532508	Jindal Stainless Ltd.	Metal & Mining	0.6
532286	Jindal Steel & Powers Ltd.	Metal & Mining	0.45
500228	JSW Steel Ltd.	Metal & Mining	0.5
530019	Jubilant Organosys Ltd.	Chemical & Petrochemical	0.45
532714	KEC International Ltd.	Power	0.7
500241	Kirloskar Brothers Ltd.	Capital Goods	0.4
500243	Kirloskar Oil Engines Ltd.	Transport Equipment	0.4
500873	Kochi Refineries Ltd.	Oil & Gas	0.45
500247	Kotak Mahindra Bank Ltd.	Finance	0.45
500510	Larsen & Toubro Ltd.	Capital Goods	0.9
500253	LIC Housing Finance Ltd.	Finance	0.65

(*Continued*)

TABLE I.2 (*Continued*)

Code	Name	Sector	Adj. Factor
500257	Lupin Ltd.	Healthcare	0.5
500260	Madras Cements Ltd.	Housing Related	0.6
500108	Mahanagar Telephone Nigam Ltd.	Telecom	0.45
500520	Mahindra & Mahindra Ltd.	Transport Equipments	0.8
500109	Mangalore Refinery & Petro Ltd.	Oil & Gas	0.15
531642	Marico Ltd.	FMCG	0.35
532500	Maruti Udyog Ltd.	Transport Equipments	0.4
524794	Matrix Laboratories Ltd.	Healthcare	0.45
500271	Max India Ltd.	Diversified	0.45
532432	McDowell & Company Ltd.	FMCG	0.65
500530	MICO Ltd.	Transport Equipments	0.4
523886	Micro Inks Ltd.	Chemical & Petrochemical	0.25
517140	Moser Baer India Ltd.	Information Technology	0.5
526299	Mphasis BFL Ltd.	Information Technology	0.4
500290	MRF Ltd.	Transport Equipment	0.65
500294	Nagarjuna Construction Co. Ltd.	Housing Related	0.75
532234	National Aluminum Co. Ltd.	Metal & Mining	0.15
500790	Nestle India Ltd.	FMCG	0.4
532529	New Delhi Television Ltd.	Media & Publishing	0.4
513683	Neyveli Lignite Corp.	Power	0.1
500302	Nicholas Piramal India	Healthcare	0.45
500308	Nirma Ltd.	FMCG	0.25
500672	Novartis India Ltd.	Healthcare	0.5
532555	NTPC Ltd.	Power	0.15
500312	ONGC Ltd.	Oil & Gas	0.2
524372	Orchid Chemicals Pharmaceuticals	Healthcare	0.6
500315	Oriental Bank of Commerce	Finance	0.5
523574	Pantaloon Retail (India) Ltd.	Miscellaneous	0.6
532517	Patni Computer Systems Ltd.	Information Technology	0.4
532522	Petronet lng Ltd.	Oil & Gas	0.4
500680	Pfizer Ltd.	Healthcare	0.6
500459	Procter & Gamble	FMCG	0.35
532693	Punj Lloyd Ltd.	Capital Goods	0.35
532461	Punjab National Bank	Finance	0.45
500344	Punjab Tractors Ltd.	Transport Equipment	0.8

TABLE I.2 (*Continued*)

Code	Name	Sector	Adj. Factor
500359	Ranbaxy Laboratories Ltd.	Healthcare	0.7
524230	Rashtriya Chem & Fert. Ltd.	Agriculture	0.1
500330	Raymond Ltd.	Textile	0.65
500111	Reliance Capital Ltd.	Finance	0.3
532712	Reliance Communications Ltd.	Telecom	0.6
500390	Reliance Energy Ltd.	Power	0.5
500325	Reliance Industries Ltd.	Oil & Gas	0.55
532709	Reliance Natural Resources Ltd.	Oil & Gas	0.55
500366	Rolta India Ltd.	Information Technology	0.6
500376	Satyam Computer Services Ltd.	Information Technology	0.95
500295	Sesa Goa Ltd.	Metal & Mining	0.5
523598	Shipping Corp. of India Ltd.	Transport Services	0.2
532670	Shree Renuka Sugars Ltd.	Agriculture	0.55
500550	Siemens Ltd.	Capital Goods	0.45
500472	SKF Bearings Ltd.	Capital Goods	0.5
500285	SpiceJet Ltd.	Transport Services	0.65
503806	SRF Ltd.	Chemical & Petrochemical	0.65
500112	State Bank of India	Finance	0.45
500113	Steel Authority of India Ltd.	Metal & Mining	0.15
512299	Sterling Biotech Ltd.	Healthcare	0.7
500900	Sterlite Industries Ltd.	Metal & Mining	0.2
524715	Sun Pharmaceutical Inds Ltd.	Healthcare	0.3
532667	Suzlon Energy Ltd.	Power	0.15
532276	Syndicate Bank	Finance	0.35
500770	Tata Chemicals Ltd.	Diversified	0.7
532540	Tata Consultancy Services Ltd.	Information Technology	0.2
500570	Tata Motors Ltd.	Transport Equipments	0.6
500400	Tata Power Co. Ltd.	Power	0.7
500470	Tata Steel Ltd.	Metal & Mining	0.75
500800	Tata Tea Ltd.	FMCG	0.75
532371	Tata Teleservices (Maharashtra) Ltd.	Telecom	0.35
500411	Thermax Ltd.	Capital Goods	0.35
500114	Titan Industries Ltd. Consumer	Consumer Durables	0.5

(*Continued*)

TABLE I.2 (*Continued*)

Code	Name	Sector	Adj. Factor
504973	Tube Investments of India Ltd.	Transport Equipment	0.6
532343	TVS Motors Ltd.	Transport Equipment	0.45
532505	UCO Bank	Finance	0.3
532538	Ultratech Cement Ltd.	Housing Related	0.4
532477	Union Bank of India	Finance	0.45
512070	United Phosphorus Ltd.	Agriculture	0.75
532215	UTI Bank Ltd.	Finance	0.75
511389	Videocon Industries Ltd.	Consumer Durables	0.3
500483	Videsh Sanchar Nigam Ltd.	Telecom	0.3
532401	Vijaya Bank	Finance	0.5
500575	Voltas Ltd.	Diversified	0.75
507685	Wipro Ltd.	Information Technology	0.2
532300	Wockhardt Ltd.	Healthcare	0.3
500095	Wyeth Ltd.	Healthcare	0.45
505537	Zee Telefilms Ltd.	Media & Publishing	0.55

As of August 14, 2006.
Source: The Stock Exchange, Mumbai, India.

TABLE I.3 BSE 500 Index Constituents

3M India Ltd.
Aarti Drugs Ltd.
Aarti Industries Ltd.
Aban Lloyd Chiles Offshore Ltd.
ABB Ltd.
Abbott India Ltd.
ABG Shipyard Limited
Abhishek Industries Ltd.
Adani Exports Ltd.
Aditya Birla Nuvo Limited
Adlabs Films Ltd.
Ador Welding Ltd.
Aegis Logistics Ltd.
Aftek Infosys Ltd.
Ahmednagar Forgings Ltd.
AIA Engineering Ltd.
Alembic Ltd.
Alfa Laval (India) Ltd.
All Cargo Global Logistics Ltd.
Allahabad Bank
Alok Industries Ltd.
Alstom Power India Ltd.
Amtek Auto Ltd.
Amtek India Ltd.
Anant Raj Industries Ltd.
Andhra Bank
Apollo Hospitals Enterprises Ltd.
Apollo Tyres Ltd.
Aptech Ltd.
Areva T & D India Ltd.

TABLE I.3 (*Continued*)

- Arvind Mills Ltd.
- Asahi India Glass Ltd.
- Ashok Leyland Ltd.
- Asian Electronics Ltd.
- Asian Hotels Ltd.
- Asian Paints (I) Ltd.
- Assam Company Ltd
- Associated Cement Companies Ltd.
- Astra Microwave Products Ltd.
- Atlas Copco (India) Ltd.
- Atul Ltd.
- Aurobindo Pharma Ltd.
- Automotive Axles Ltd.
- Avaya Globalconnect Ltd.
- Aventis Phrama Ltd.
- Aztec Software & Techno. Services
- B L Kashyap & Sons Ltd.
- Bajaj Auto Finance Ltd.
- Bajaj Auto Ltd.
- Bajaj Hindustan Ltd.
- Balaji Telefilms Ltd.
- Balkrishna Industries Ltd.
- Ballarpur Industries Ltd.
- Balmer Lawrie & Co. Ltd.
- Balrampur Chini Mills Ltd.
- Bank of Baroda
- Bank Of India
- Bank of Maharashtra
- Bank of Rajasthan Ltd.
- Bannari Amman Sugars Ltd.
- BASF India Ltd.
- Bata India Ltd.
- Bayer CropScience Ltd.
- Berger Paints India Ltd.
- BF Utilities
- Bharat Bijlee Ltd.
- Bharat Earth Movers Ltd.
- Bharat Electronics Ltd.
- Bharat Forge Ltd.
- Bharat Heavy Electricals Ltd.
- Bharat Petroleum Corp. Ltd.
- Bharti Shipyard Ltd.
- Bharti Tele Ventures Ltd.
- Bhushan Steel & Strips Ltd.
- Bilcare Ltd.
- Binani Industries Ltd.
- Biocon Ltd.
- Birla Corporation Ltd.
- Blue Star Ltd.
- BOC (I) Ltd.
- Bombay Dyeing & Mfg Co Ltd.
- Bombay Rayon Fashions Ltd.
- Bongaingaon Refinery & Petro.
- Britannia Industries Ltd.
- Cadila Healthcare Ltd.
- Canara Bank
- Carborundum Universal Ltd.
- Castrol India Ltd.
- CCL Products (India) Ltd.
- Ceat Ltd.
- Centurion Bank Ltd.
- Century Enka Ltd.
- Century Textiles
- CESC Ltd.
- Chambal Fertilisers & Chemical
- Chennai Petroleum Corporation Ltd.
- Ciba Speciality Chem.
- Cipla Ltd.
- City Union Bank Ltd.
- CMC Ltd.
- Colgate Palmo-live(India)
- Container Corporation of India
- Coromandel Fertilizers Ltd.
- Corporation Bank
- Cranes Software International Ltd.
- CRISIL Ltd.
- Crompton Greaves Ltd.
- Cummins India Ltd.
- Dabur India Ltd.
- Dabur Pharma Limited
- Dalmia Cements (Bharat) Ltd.
- DCM Shriram Consolidated Ltd.
- Deccan Chronicle Holdings Limited
- Deepak Fert. & Petrochemicals
- Dena Bank
- Dhampur Sugar Mills Ltd.

Continued

TABLE I.3 (*Continued*)

Dishman Pharmaceuticals & Chemicals Ltd.
Divi's Laboratories Ltd.
DlSl Kulkami Developers Ltd.
Dr Reddy's Laboratories Ltd.
Dredging Corporation of India
Dwarikesh Sugar Industries Ltd.
Dynamatic Technologies Ltd.
E.I.D. Parry (I) Ltd.
Educomp Solutions Ltd.
Eicher Motors Ltd.
EIH Ltd.
Elder Pharmaceuticals Ltd.
Elecon Engineering Co. Ltd.
Electrosteel Castings Ltd.
Elgi Equipments Ltd.
Emami Ltd.
EMCO Ltd.
Engineers India Ltd.
Entertainment Network (India) Ltd
Era Constructions (India) Ltd.
Esab India Ltd.
Escorts Ltd.
Essar Oil Ltd.
Essar Shipping Ltd.
Essar Steel Limited
Essel Propack Ltd.
Eveready Industries Limited
Everest Industries Ltd.
Exide Industries Co. Ltd.
F D C Ltd.
Fag Bearings India Ltd.
Federal Bank Ltd.
Federal Mogul Goetze (India) Ltd.
Financial Technologies Ltd.
Finolex Cables Ltd.
Finolex Industries Ltd.
Forbes Gokak Ltd.
Force Motors Limited
Gail (India) Ltd.
Gammon India Ltd.
Gateway Distriparks Ltd..
Gati Ltd.
Geodesic Information Systems Ltd.
Geometric Software Solut.
GHCL Ltd.
Gillette India Ltd.
Gitanjali Gems Ltd.
Glaxo Ltd.
GlaxoSmithKline Consumer Healthcare
Glenmanrk Pharmaceuticals Ltd.
GMR Infrastructure Ltd.
Godfrey Phillips India Ltd.
Godrej Consumer Products Ltd.
Godrej Industries Ltd.
Gokaldas Exports limited
Goldiam International Ltd.
Graphite India Ltd.
Grasim Industries Ltd.
Greaves Cotton Ltd.
GTC Industries Ltd.
GTL Ltd.
Gujarat Alkalies & Chem Ltd.
Gujarat Ambuja Cements Ltd.
Gujarat Fluorochemicals Ltd.
Gujarat Gas Company Ltd.
Gujarat Industries Powerco. Ltd.
Gujarat Mineral Development Corp.
Gujarat Narmada Valley Fertiliser
Gujarat NRE Coke Ltd.
Gujarat State Fertilisers & Chem. Ltd.
Gujarat State Petronet Ltd
Gulf Oil Corporation
GVK Power & Infrastructure Ltd
H.E.G Ltd.
Havell'S India Ltd.
HCL Infosystems Ltd.
HCL Technologies Ltd.
HDFC

TABLE I.3 (*Continued*)

HDFC Bank Ltd.	Honeywell Automation India Ltd.	Indraprastha Medical Corp. Ltd.	Jaiprakash Hydro-Power
Helios & Matheson Information Technology Ltd.	Hotel Leela Venture Ltd.	Ind-Swift Laboratories Ltd.	Jammu & Kashmir Bank Ltd.
Hero Honda Motors Ltd.	HT Media Limited	Indusind Bank Ltd.	Jct Ltd.
Hexaware Technologies Ltd.	I.B.P Co. Ltd.	Industrial Dev Bank of India	Jet Airways (India) Limited
Hikal Ltd.	I.C.S.A. (India) Ltd.	Infosys Technologies Ltd.	Jindal Poly Flims Ltd.
Himachal Futuristic Communication	ICI India Ltd.	Infotech Enterprises Ltd.	Jindal Saw Ltd.
Himatsingka Seide Ltd.	ICICI Bank Ltd.	ING Vysya Bank Ltd.	Jindal Stainless Ltd.
Hindalco Industries Ltd.	IDFC Ltd.	Ingersoll - Rand (India) Ltd.	Jindal Steel & Powers Ltd.
Hinduja TMT Ltd.	IFCI Ltd.	Inox Leisure Ltd.	JK Corporation Ltd.
Hindustan Construction Co Ltd.	I-Flex Solutions Ltd.	Ipca Laboratories Ltd.	JM Financial Ltd.
Hindustan Lever Ltd.	IL&FS Investmart Ltd.	ISMT Ltd.	JSW Steel Ltd.
Hindustan Machine Tools Ltd.	India Cements Ltd.	Ispat Industries Ltd.	Jubilant Organosys Ltd.
Hindustan Motors Ltd.	India Glycols Ltd.	ITC Ltd.	Jyoti Structures Ltd.
Hindustan Oil Exploration Co. Ltd.	India Infoline Ltd.	IVRCL Infrastructures & Projects	K S B Pumps Ltd.
Hindustan Petroleum Corp Ltd.	Indiabulls Financial Services Ltd.	J. B. Chemicals & Pharma Ltd.	Kalpataru Power Transmission Ltd.
Hindustan Zinc Ltd.	Indian Hotels Co Ltd.	J. K. Cement Ltd.	Kalyani Brakes Ltd.
	Indian Oil Corporation Ltd.	J. K. Industries Ltd.	Kalyani Steels Ltd.
	Indian Overseas Bank	Jagran Prakashan Ltd.	Kansai Nerolac Paints Ltd.
	Indian Petrochemicals Corp Ltd.	Jain Irrigation Systems Ltd.	Karnataka Bank Ltd.
	Indian Rayon & Industries Ltd.	Jaiprakash Associates Ltd.	KEC International Ltd.
	Indraprastha Gas Ltd.		KEI Industries Ltd.
			Kernex Microsystems (India) Ltd.

Continued

TABLE I.3 *(Continued)*

Kesoram Industries Ltd.
Kirloskar Brothers Ltd.
Kirloskar Electrical Co. Ltd.
Kirloskar Ferrous Industries Ltd.
Kirloskar Oil Engines Ltd.
Kirloskar Pneumatic Co. Ltd.
Kotak Mahindra Bank Ltd.
KPIT Infosystems Ltd.
Lakshmi Machine Works Ltd.
Lakshmi Overseas Industries Ltd.
Larsen & Toubro Limited
LIC Housing Finance Ltd.
Lloyd Electric & Engineering Ltd
Lupin Ltd.
Madhucon Projects Ltd.
Madras Cements Ltd.
Mahanagar Telephone Nigam Ltd.
Maharashtra Seamless Ltd.
Mahavir Spg. Mills
Mahindra & Mahindra Financial Services Ltd.
Mahindra & Mahindra Ltd.
Mahindra Gesco Developers Ltd.
Mahindra Ugine Steel Co. Ltd.
Man Industries (I) Ltd.
Mangalam Cement Ltd.
Mangalore Refinery & Petro Ltd.
Manugraph India Ltd.
Marico Ltd.
Marksons Pharma Ltd.
Maruti Udyog Ltd.
Mascon Global Ltd.
Mastek Ltd.
Matrix Laboratories Ltd.
Mawana Sugars Ltd.
Max India Ltd.
Mcdowell & Co. Ltd.
McLeod Russel India Ltd.
McNally Bharat Engineering Company
Megasoft Std.
Mercator Lines Ltd
Merck Ltd.
MICO Ltd.
Micro Inks Ltd.
Mid-Day Multimedia Ltd.
Monnet Ispat Ltd.
Monsanto India Ltd.
Moser Baer India Ltd.
Motherson Sumi Systems Ltd.
Mphasis BFL Ltd.
MRF Ltd.
Mukand Ltd.
Mysore Cements Ltd.
Nagarjuna Construction Co Ltd.
Nagarjuna Fertilz. & Chem. Ltd.
Nahar Exports Ltd.
National Aluminium Co. Ltd.
National Organic Chemicals Inds. Ltd.
National Thermal Power Corporation
Nava Bharat Ferro Alloys Ltd.
Navin Fluorine International Ltd.
Navneet Publications Ltd.
Nestle India Ltd.
New Delhi Television Ltd.
Neyveli Lignite Corp.
Nicholas Piramal India
NIIT Ltd.
NIIT Technologies Ltd.
Nirma Ltd.
Nitco Tiles Ltd.
Noida Toll Bridge Company
Novartis India Ltd.
Nucleus Software Exports Ltd.
ONGC Ltd.
Opto Circuits (India) Ltd.
Orchid Chemicals Pharmaceuticals
Orient Paper & Industries Ltd.
Oriental Bank of Commerce
Oudh Sugar Mills Ltd.
Panacea Biotec Ltd.
Pantaloon Retail (India) Ltd.

TABLE I.3 (*Continued*)

Patel Engineering Ltd.
Patni Computer Systems Ltd.
Peninsula Land Ltd.
Petronet LNG Ltd.
Pfizer Ltd.
Phoenix Lamps Ltd.
Phoenix Mills Ltd.
Pidilite Industries Ltd.
Piramyd Retail Ltd.
Polaris Software Lab Ltd.
Praj Industries Ltd.
Prajay Engineers Syndicate Ltd.
Pratibha Industries Ltd.
Premier Instruments & Controls Ltd.
Prism Cement Ltd.
Prithvi Information Solutions Ltd.
Procter & Gamble
Provogue (India) Ltd.
PSL Ltd.
PTC India Ltd.
Punj Lloyd Limited
Punjab National Bank
Punjab Tractors Ltd.
PVR Ltd.
Radico Khaitan Ltd.
Rain Calcining Ltd.
Rajesh Exports Ltd.
Rallis India Ltd.
Ranbaxy Laboratories Ltd.
Rashtriya Chem & Fert. Ltd.
Rayban Sun Optics India Ltd.
Raymond Ltd.
Reliance Capital Ltd.
Reliance Communications Limited
Reliance Energy Ltd.
Reliance Industrial Infrastructure
Reliance Industries Ltd.
Reliance Natural Resources Limited
Reliance Petroleum Limited
Rico Auto Industries Ltd.
Rolta India Ltd.
Royal Orchid Hotels Ltd
Ruchi Soya Industries Ltd.
S. Kumars Nationwide Ltd.
Sadbhav Engineering Ltd.
Sakthi Sugars Ltd.
Sanghvi Movers Ltd.
Saregama India Ltd.
Sasken Communication Techno. Ltd.
Satyam Computer Services Ltd.
Scandent Solutions Corporation Ltd.
Sesa Goa Ltd.
Shanti Gears Ltd.
Shasun Chemicals & Drugs Ltd.
Shaw Wallace & Co. Ltd.
Shipping Corp. of India Ltd.
Shoppers Stop Ltd.
Shree Cements Ltd.
Shree Precoated Steels Ltd.
Shree Renuka Sugars Limited
Shriram Transport Fin Co. Ltd.
Sical Logistics Ltd.
Siemens Ltd.
Simbhaoli Sugar Mills Ltd.
Simplex Infrastructures Ltd.
Sintex Industries Ltd.
SKF Bearings Ltd.
Sona Koyo Steering Systems Ltd.
Sonata Software Ltd.
South Indian Bank Ltd.
Southern Iron & Steel Co. Ltd
Spicejet Ltd.
Srei Infrastructure Finance Ltd.
SRF Ltd.
State Bank of India
Steel Authority of India Ltd.
Sterling Biotech Ltd.
Sterlite Industries Ltd.

Continued

TABLE I.3 (*Continued*)

Sterlite Optical Technologies Ltd.
Strides Arcolab Ltd.
Subex Systems Ltd.
Sun Pharmaceutical Inds Ltd.
Sun TV Ltd.
Sundaram Clayton Ltd.
Sundaram Fastners Ltd.
Supreme Industries Ltd.
Suzlon Energy Ltd.
Syndicate Bank
Syngenta India Ltd.
T.V. Today Network Ltd.
Taj GVK Hotels & Resorts Ltd.
Tamil Nadu Newsprint & Papers
Tata Chemicals Ltd.
Tata Coffee Ltd.
Tata Consultancy Services Ltd.
Tata Elxsi Ltd.
Tata Investment Corporation Ltd.
Tata Iron & Steel Co. Ltd.
Tata Motors Ltd.
Tata Power Co. Ltd.
Tata Tea Ltd.
Tata Teleservices (Maharashtra) Ltd.
Tech Mahindra Ltd.
Tele Data Informatics Ltd.
Television Eighteen India Ltd.
Teneja Aerospace & Aviation Ltd.
Texmaco Ltd.
Thermax Ltd.
Thomas Cook (India) Ltd.
Timken India Ltd.
Titan Industries Ltd.
Torrent Pharma Ltd.
Transgene Biotex Ltd.
Trent Ltd.
Triveni Engineering & Industries Ltd.
Tube Investments Of India Ltd.
Tulip IT Services Ltd.
TVS Motors Ltd.
UCO Bank
Ugar Sugar Works Ltd.
Ultratech Cement Limited
Unichem Laboratories Ltd.
Union Bank of India
Unitech Ltd.
United Breweries (Holdings) Ltd.
United Breweries Ltd.
United Phosphorus Ltd.
Usha Martin Ltd.
UTI Bank Ltd.
Uttam Galva Steels Ltd.
Uttam Sugar Mills Ltd.
Varun Shipping Co. Ltd.
Vertex Spinning Ltd.
Vesuvius India Ltd.
Videocon International Ltd.
Videsh Sanchar Nigam Ltd.
Vijaya Bank
Visualsoft (India) Ltd.
Voltas Ltd.
Welspun Gujarat Stahl Rohren Ltd.
Welspun India Ltd.
Wipro Ltd.
Wockhardt Ltd.
Wyeth Ltd.
Yes Bank Ltd.
Zee Telefilms Ltd.
Zuari Industries Ltd.

As of September 22, 2006.
Source: The Stock Exchange, Mumbai, India.

TABLE I.4 BSE Mid-Cap Index Constituents

Code	Name	Adj. Factor
532628	3i Infotech Ltd.	0.5
523395	3M India Ltd.	0.2
500488	Abbott India Ltd.	0.4
532682	ABG Shipyard Ltd.	0.2
512599	Adani Exports Ltd.	0.45
532399	Adlabs Films Ltd.	0.3
532683	AIA Engineering Ltd.	0.3
506235	Alembic Ltd.	0.4
505885	Alfa Laval (India) Ltd.	0.4
532749	Allcargo Global Logistics Ltd.	0.15
521070	Alok Industries Ltd.	0.6
532309	Alstom Power India Ltd.	0.35
532201	Ambuja Cement Eastern Ltd.	0.05
520077	Amtek Auto Ltd.	0.7
532282	Amtek India Ltd.	0.5
515055	Anant Raj Industries Ltd.	0.35
508869	Apollo Hospitals Enterprises Ltd.	0.65
500877	Apollo Tyres Ltd.	0.5
522275	Areva T & D India Ltd.	0.35
500101	Arvind Mills Ltd	0.7
515030	Asahi India Glass Ltd.	0.45
527001	Ashapura Minechem Ltd.	0.25
500023	Asian Hotels Ltd.	0.4
532493	Astra Microwave Products Ltd.	0.5
506820	Astrazeneca Pharma Ltd.	0.1
526991	Atlas Copco (India) Ltd.	0.2
524804	Aurobindo Pharma Ltd.	0.45
505010	Automotive Axles Ltd.	0.3
532385	Aztec Software & Techno. Services Ltd.	0.6
532719	B L Kashyap and Sons Ltd.	0.3
523457	B O C Ltd.	0.5
500034	Bajaj Auto Finance Ltd.	0.55
532382	Balaji Telefilms Ltd.	0.35
502355	Balkrishna Industries Ltd.	0.5
500102	Ballarpur Industries Ltd.	0.6
523319	Balmer Lawrie & Co. Ltd.	0.4
500038	Balrampur Chini Mills Ltd.	0.7
532525	Bank of Maharashtra	0.25
500041	Bannari Amman Sugars Ltd.	0.55
500042	BASF India Ltd.	0.5
500043	Bata India Ltd.	0.5
506285	Bayer Cropscience Ltd.	0.3

TABLE I.4 (*Continued*)

Code	Name	Adj. Factor
509480	Berger Paints India Ltd.	0.3
532609	Bharti Shipyard Ltd.	0.6
500055	Bhushan Steel & Strips Ltd.	0.35
526853	Bilcare Ltd.	0.55
500335	Birla Corporation Ltd.	0.4
526612	Blue Dart Express Ltd.	0.2
500067	Blue Star Ltd.	0.6
500020	Bombay Dyeing & Mfg Co Ltd.	0.6
532678	Bombay Rayon Fashions Ltd.	0.3
500072	Bongaingaon Refinery & Petro Ltd.	0.3
505185	Bosch Chassis Systems Ltd.	0.2
500825	Britannia Industries Ltd.	0.5
513375	Carborundum Universal Ltd.	0.6
500870	Castrol	0.3
532273	Centurion Bank Ltd.	0.7
500084	CESC Ltd.	0.65
500085	Chambal Fertilisers & Chemical	0.5
511243	Cholamandalam Invt. & Fin. Ltd.	0.3
517326	CMC Ltd.	0.5
506395	Coromandel Fertilisers Ltd.	0.3
512093	Cranes Softward Ltd.	0.65
500092	CRISIL Ltd.	0.45
532545	Dabur Pharma Ltd.	0.25
500097	Dalmia Cements (Bharat) Ltd.	0.5
523367	DCM Shriram Consolidated Ltd.	0.5
532747	Deccan Aviation Ltd.	0.2
532608	Deccan Chronicle Holdings Ltd.	0.25
500645	Deepak Fert. & Petrochemicals	0.6
532121	Dena Bank	0.5
532488	Devi's Laboratories Ltd.	0.5
500119	Dhampur Sugar Mills Ltd.	0.65
532526	Dishman Pharmaceuticals & Chemicals	0.3
523618	Dredging Corporation of India	0.25
500125	E.E.D. Parry (I) Ltd.	0.65
505200	Eicher Motors Ltd.	0.4
500840	EIH Ltd.	0.55
500128	Electrosteel Castings Ltd.	0.5
531162	Emami Ltd.	0.15
532700	Entertainment Network (India) Ltd.	0.3
500133	Esab India Ltd.	0.65
500495	Escorts Ltd.	0.75
500630	Essar Shipping Ltd.	0.25

TABLE I.4 (*Continued*)

Code	Name	Adj. Factor
500627	Essar Steel Ltd.	0.3
500135	Essel Propack Ltd.	0.45
531508	Eveready Industries (I) Ltd.	0.6
532684	Everest Kanto Cylinder Ltd.	0.35
500086	Exide Industries Co. Ltd.	0.5
531599	F D C Ltd.	0.4
505790	Fag Bearings India Ltd.	0.5
500469	Federal Bank Ltd.	1
505744	Federal-Mogul Goetz (India) Ltd.	0.5
500144	Finolex Cables Ltd.	0.55
500940	Finolex Industries Ltd.	0.5
502865	Forbes Gokak Ltd.	0.3
500033	Force Motors Ltd.	0.3
509550	Gammon India Ltd.	0.65
532622	Gateway Distriparks Ltd.	0.5
503699	Geodesic Information Systems Ltd.	0.75
500171	GHCL Ltd.	0.6
507815	Gillette India Ltd.	0.15
532715	Gitanjali Gems Ltd.	0.3
500676	GlaxoSmithKline Consumer Healthcare	0.6
500163	Godfrey Phillips India Ltd.	0.3
532424	Godrej Consumer Products Ltd.	0.35
500164	Godrej Industries Ltd.	0.15
532630	Gokaldas Exports Ltd.	0.25
509488	Graphite India Ltd.	0.4
501455	Greaves Cotton Ltd.	0.5
506076	Grindwell Norton Ltd.	0.25
500160	GTL Ltd.	0.65
530001	Gujarat Alkalies & Chem Ltd.	0.65
500670	Gujarat Barmada Val Fer Co. Ltd.	0.6
500173	Gujarat Fluorochemicals Ltd.	0.35
523477	Gujarat Gas Company Ltd.	0.35
517300	Gujarat Industries Power Co. Ltd.	0.35
532181	Gujarat Mineral Development Corp.	0.3
512579	Gujarat NRE Coke Ltd.	0.55
500690	Gujarat State Fertilisers & Chem Ltd.	0.6
532702	Gujarat State Petronet Ltd.	0.4
506480	Gulf Oil Corporation Ltd.	0.4
509631	H.E.G. Ltd.	0.45
517354	Havell'S India Ltd.	0.35
500179	HCL Infosystems Ltd.	0.5
532129	Hexaware Ltd.	0.75

(*Continued*)

TABLE I.4 (*Continued*)

Code	Name	Adj. Factor
524735	Hikal Ltd.	0.25
500183	Himachal Futuristic Comm.	1
514043	Himatsingka Seide Ltd.	0.55
500189	Hinduja TMT Ltd.	0.35
500185	Hindustan Construction Co. Ltd.	0.5
500500	Hindustan Motors Ltd.	0.75
500186	Hindustan Oil Exploration Co. Ltd.	0.7
517174	Honeywell Automation India Ltd.	0.2
500193	Hotel Leela Venture Ltd.	0.55
532662	HT Media Ltd.	0.2
500198	I.B.P. Co. Ltd.	0.5
500710	ICI India Ltd.	0.4
500106	IFCI Ltd.	0.9
532337	Igate Global Solutions Ltd.	0.2
532653	Il&Fs Investmart Ltd.	0.55
530005	India Cements Ltd.	0.65
532636	India Infoline Limited.	0.65
500207	Indo Rama Synthetics (India) Ltd.	0.45
532514	Indraprastha Gas Ltd.	0.55
532187	Indusind Bank Ltd.	0.6
532175	Infotech Enterprises Ltd.	0.6
531807	ING Vysya Bank Ltd.	0.6
500210	Ingersoll - Rand (India) Ltd.	0.3
532706	Inox Leisure Ltd.	0.35
524494	IPCA Laboratories Ltd.	0.5
532479	ISMT Ltd.	0.5
500305	Ispat Industries Ltd.	0.5
530773	IVRCL Infrastructures & Projects	0.9
506943	J.B. Chemicals & Pharma Ltd.	0.45
532644	J. K. Cement Ltd.	0.4
532705	Jagran Prakashan Ltd.	0.2
500219	Jain Irrigation Systems Ltd.	0.7
532627	Jaiprakash Hydro-Power Ltd.	0.4
532209	Jammu & Kashmir Bank Ltd.	0.5
500227	Jindal Poly Films Ltd.	0.45
500378	Jindal Saw Ltd.	0.5
532508	Jindal Stainless Ltd.	0.6
523405	JM Financial Ltd	0.15
530019	Jubilant Organosys Ltd.	0.45
500249	K S B Pumps Ltd.	0.35
522287	Kalpataru Power Transmission	0.25
500235	Kalyani Steels Ltd.	0.45

TABLE I.4 (*Continued*)

Code	Name	Adj. Factor
500165	Kansai Nerolac Paints Ltd.	0.4
532652	Karnataka Bank Ltd.	1
504807	KEC International Ltd.	0.7
502937	Kesoram Industries Ltd.	0.8
500243	Kirloskar Oil Engines Ltd.	0.4
500252	Lakshmi Machine Works Ltd.	0.65
519570	Lakshmi Overseas Industries	0.5
500253	LIC Housing Finance Ltd.	0.7
532440	MacMillan India Ltd.	0.3
531497	Madhucon Projects Ltd.	0.5
504580	Madras Aluminum Co. Ltd.	0.2
500260	Madras Cements Ltd.	0.6
500265	Maharashtra Seamless Ltd.	0.45
502986	Mahavir Spg. Mills	0.35
532720	Mahindra & Mahindra Financial Services Ltd.	0.3
532313	Mahindra Gesco Developers Ltd.	0.45
505324	Manugraph India Ltd.	0.45
531642	Marico Ltd.	0.35
524404	Marksans Pharma Ltd.	0.55
523704	Mastek Ltd.	0.6
500271	Max India Ltd.	0.45
532432	McDowell & Co. Ltd.	0.65
526235	Mercator Lines Ltd.	0.6
500126	Merck Ltd.	0.5
523886	Micro Inks Ltd.	0.4
513446	Monnet Ispat Ltd	0.5
524084	Monsanto India Ltd.	0.3
517140	Moser Baer India Ltd.	0.5
517334	Motherson Sumi Systems Ltd.	0.3
526299	Mphasis BFL Ltd.	0.4
500290	MRF Ltd.	0.65
500460	Mukand Ltd.	0.55
500294	Nagarjuna Construction Co Ltd.	0.75
523630	National Fertilisers Ltd.	0.05
532529	New Delhi Television Ltd.	0.4
500304	NIIT Ltd.	0.6
532541	NIIT Technologies Ltd.	0.6
532481	Noida Toll Bridge Co. Ltd.	0.65
500672	Novartis India Ltd.	0.5
502165	OCL India Ltd.	0.4
532391	Opto Circuits (India) Ltd.	0.65
524372	Orchid Chemicals Pharmaceuticals	0.6

(*Continued*)

TABLE I.4 (*Continued*)

Code	Name	Adj. Factor
531349	Panacea Biotec Ltd.	0.25
531120	Patel Engineering Ltd.	0.4
503031	Peninsula Land Ltd.	0.3
500680	Pfizer Ltd.	0.6
503100	Phoenix Mills Ltd.	0.2
500331	Pidilite Industries Ltd.	0.3
532739	Plethico Pharmaceuticals Ltd.	0.15
532254	Polaris Software Lab Ltd.	0.3
522205	Praj Industries Ltd.	0.7
500338	Prism Cement Ltd.	0.4
532675	Prithvi Information Solutions Ltd.	0.6
500459	Procter & Gamble Hygiene & Health	0.35
526801	PSL Ltd.	0.3
532524	PTC India Ltd.	0.7
500344	Punjab Tractors Ltd.	0.8
532689	PVR Ltd.	0.6
532497	Radico Khaitan Ltd.	0.45
531500	Rajesh Exports Ltd.	0.4
524230	Rashtriya Chem & Fert. Ltd.	0.1
500330	Raymond Ltd.	0.65
523445	Reliance Industrial Infrastructures Ltd.	0.55
520008	Rico Auto Industries Ltd.	0.6
500368	Ruchi Soya Industries Ltd.	0.75
514304	S. Kumars Nationwide Ltd.	0.5
532663	Sasken Communication Techno. Ltd.	0.45
501379	Shaw Wallace & Co. Ltd.	0.25
532638	Shoppers Stop Ltd.	0.35
500387	Shree Cements Ltd.	0.3
513349	Shree Precoated Steels Ltd.	0.3
503205	Shree Ram Mills Ltd.	0.15
532670	Shree Renuka Sugars Ltd.	0.55
511218	Shriram Transport Fin Co. Ltd.	0.5
520086	Sical Logistics Ltd.	0.35
523838	Simplex Infrastructure Ltd.	0.55
502742	Sintex Industries Ltd.	0.45
500472	SKF India Ltd.	0.5
500285	SpiceJet Ltd.	0.65
503806	SRF Ltd.	0.65
512299	Sterling Biotech Ltd.	0.7
532374	Sterlite Optical Technol'S Ltd.	0.65
532531	Strides Arcolab Ltd.	0.4
532348	Subex Systems Ltd.	0.9

TABLE I.4 (*Continued*)

Code	Name	Adj. Factor
520056	Sundaram Clayton Ltd.	0.2
500403	Sundaram Fastners Ltd.	0.55
532276	Syndicate Bank Ltd.	0.35
532409	Syngenta India Ltd.	0.2
532390	Taj GVK Hotels & Resorts Ltd.	0.3
531426	Tamil Nadu Newsprint & Papers	0.65
500408	Tata Elxsi Ltd.	0.65
501301	Tata Investment Corporation Ltd.	0.4
532299	Television Eighteen India Ltd.	0.75
505400	Texmaco Ltd.	0.5
500411	Thermax Ltd.	0.35
500413	Thomas Cook (India) Ltd.	0.35
522113	Timken India Ltd.	0.2
500114	Titan Industries Ltd.	0.5
500366	Tolta India Ltd.	0.6
500420	Torrent Pharma Ltd.	0.3
500251	Trent Ltd.	0.75
532356	Triveni Engineering & Industries Ltd.	0.35
504973	Tube Investments of India Ltd.	0.6
532691	Tulip IT Services Ltd.	0.35
532343	TVS Motors Ltd.	0.45
532505	UCO Bank	0.3
506690	Unichem Laboratories Ltd.	0.55
507458	United Breweries (Holdings) Ltd.	0.45
532478	United Breweries Ltd.	0.25
517146	Usha Martin Ltd.	0.65
532729	Uttam Sugar Mills Ltd.	0.2
500465	Varun Shipping Co. Ltd.	0.6
531544	Vertex Spinning Ltd.	0.25
532401	Vijaya Bank	0.5
500575	Voltas Ltd.	0.75
509966	VST Industries Ltd.	0.3
514162	Wellspun India Ltd.	0.65
532144	Welspun Gujarat Stahl Rohren Ltd.	0.55
500095	Wyeth Lederle Ltd.	0.45
532648	Yes Bank Ltd.	0.3

As of September 22, 2006.
Source: The Bombay Stock Exchange.

TABLE I.5 BSE Small-Cap Index Constituents

Code	Name	Adj. Factor
524208	Aarti Industries Ltd.	0.6
514274	Aarvee Denims & Exports Ltd.	0.25
520155	ABG Heavy Industries Ltd	0.35
521064	Abhishek Industries Ltd.	0.4
532727	Adhunik Metaliks Ltd.	0.4
517041	Ador Welding Ltd.	0.45
500003	Aegis Logistics Ltd.	0.4
530707	Aftek Infosys Ltd.	0.9
500215	Agro Tech Foods Ltd.	0.4
513335	Ahmednagar Forgings Ltd	0.5
532351	Aksh Optifibre Ltd.	0.45
526707	Alchemist Ltd.	0.65
532633	Allsec Technologies Ltd.	0.5
530715	Alps Industries Ltd.	0.65
532664	Amar Remedies Ltd.	0.6
500008	Amara Raja Batteries	0.5
531978	Ambika Cotton Mills Ltd.	0.75
532141	Andhra Cement Ltd.	0.2
502330	Andhra Pradesh Paper Mills Ltd.	0.35
526173	Andrew Yule & Company Ltd.	0.1
530721	Ang Auto Ltd.	0.5
531683	Ankur Drugs and Pharma Ltd.	0.7
505665	Antifriction Bearings Corp. Ltd.	0.45
506260	Anuh Pharma Ltd.	0.3
532259	Apar Industries Ltd.	0.35
532475	Aptech Ltd.	0.85
531381	Arihant Foundations & Hsg Ltd.	0.6
514193	Arrow Webtex Ltd.	0.3
523716	Ashiana Hsg & Finance (I) Ltd.	0.35
503940	Asian Electronics Ltd.	0.6
500024	Assam Company Ltd.	0.45
500027	Atul Ltd.	0.65
505036	Automobile Corp. of Goa Ltd.	0.65
500463	Avaya Globalconnect Ltd.	0.45
500031	Bajaj Electricals Ltd.	0.35
532485	Balmer Lawrie Investment Ltd.	0.45
500019	Bank of Rajasthan Ltd.	0.6
532674	Bannari Amman Spinning Mills Ltd.	0.45
522004	Batliboi Ltd.	0.2
500046	Best & Crompton Engg. Ltd.	0.1
512296	Bhagyanagar India Ltd.	0.35
500052	Bhansali Engineering Polymers Ltd.	0.6

TABLE I.5 (*Continued*)

Code	Name	Adj. Factor
503960	Bharat Bijlee Ltd.	0.65
500059	Binani Industries Ltd.	0.6
500066	Blow Plast Ltd.	0.4
501425	Bombay Burmah Trg. Corp. Ltd.	0.3
532123	BSEL Infrastructure Realty Ltd.	0.7
500446	Carol Info. Services Ltd.	0.4
519600	CCL Products (India) Ltd.	0.55
500878	CEAT Ltd.	0.6
532695	Celebrity Fashions Ltd.	0.35
500280	Century Enka Ltd.	0.75
532548	Century Plyboards (India) Ltd.	0.3
522059	Champagne Indage Ltd.	0.5
506355	Chemplast Sanmar Ltd.	0.25
526817	Cheviot Company Ltd.	0.3
532184	CIBA Speciality Chem.	0.3
532210	City Union Bank Ltd.	1
506390	Clariant Chemicals (India) Ltd.	0.4
523200	Classic Diamonds (I) Ltd.	0.3
505052	Clutch Auto Ltd.	0.65
500226	Consolidated Finvest & Hldgs. Ltd.	0.35
508814	Cosmo Films Ltd.	0.6
526785	Crest Animation Studios Ltd.	0.85
532542	Crew B.O.S. Products Ltd.	0.5
523890	D. S. Kulkarni Developers Ltd.	0.65
532528	Datamatics Technologies Ltd.	0.35
502817	Dawn Mills Co. Ltd.	0.3
500099	DCL Polyester Ltd.	0.55
502820	DCM Ltd.	0.7
523369	DCM Shriram Industries Ltd.	0.75
500117	DCW Ltd.	0.6
506401	Deepak Nitrate Ltd.	0.5
520022	Denso India Ltd.	0.3
511072	Dewan Hsg. Finance Corp. Ltd.	0.45
507442	Dharani Sugars & Chemicals Ltd.	0.55
500089	DIC India Ltd.	0.35
532419	D-Link (India) Ltd.	0.4
522261	Dolphin Offshore Ent. (I) Ltd.	0.3
512519	Donear Inds. Ltd.	0.05
532610	Dwarikesh Sugar Industries Ltd.	0.6
505242	Dynamatic Technologies Ltd.	0.45
532696	Educomp Solutions Ltd	0.3

(*Continued*)

TABLE I.5 (*Continued*)

Code	Name	Adj. Factor
531835	Eicher Ltd.	0.3
523127	EIH Associated Hotels Ltd.	0.45
523708	EIMCO Elecon (I) Ltd.	0.3
532322	Elder Pharmacueticals Ltd.	0.65
505700	Elecon Engineering Co. Ltd.	0.6
526608	Electrotherm (India) Ltd.	0.45
522074	Elgi Equipments Ltd.	0.7
504008	Emco Ltd.	0.5
532737	Emkay Share & Stock Brokers Ltd.	0.3
526560	English Indian Clays Ltd.	0.2
531147	Enkei Castalloy Ltd.	0.25
505982	Ennore Foundries Ltd.	0.2
530323	Era Constructions (India) Ltd.	0.8
514118	Eskay K'n'it (India) Ltd.	0.4
508906	Everest Industries Ltd.	0.35
532511	Excel Crop Care Ltd.	0.7
532657	Facor Steel Ltd.	0.05
520145	Fairfield Atlas Ltd.	0.2
504250	FCI OEN Connectors Ltd.	0.35
532666	FCS Software Solutions Ltd.	0.25
500139	Fedders Lloyd Corporation Ltd.	0.7
500141	Ferro Alloys Corp. Ltd.	0.25
500148	Flex Industries Ltd.	0.55
500150	Foseco India Ltd.	0.15
532521	Four Soft Ltd.	0.5
506803	Fulford (I) Ltd.	0.6
505714	Gabriel India Ltd.	0.4
506186	Galaxy Entertainment Corp. Ltd.	0.55
513108	Gandhi Special Tubes Ltd.	0.3
526367	Ganesh Housing Corp. Ltd.	0.25
500155	Garden Silk Mills Ltd.	0.45
501848	Garware Offshore Services Ltd.	0.55
532345	Gati Ltd.	0.35
500398	GE Capital Transportation Fin. Services	0.25
532318	Gemini Communications Ltd.	0.65
530343	Genus Overseas Electronics Ltd.	0.5
532285	Geojit Financial Services Ltd.	0.5
532312	Geometric Software Solutions Co. Ltd.	0.65
511676	GIC Housing Finance Ltd.	0.5
532716	Gillanders Arbuthnot & Co. Ltd.	0.3
505255	GMM Pfaudler Ltd.	0.25
500162	GMR Industries Ltd.	0.3

TABLE I.5 (*Continued*)

Code	Name	Adj. Factor
532734	Godavari Power & Ispat Ltd.	0.35
526729	Goldiam International Ltd.	0.4
500166	Goodricke Group Ltd.	0.3
500168	Goodyear India Ltd.	0.3
511288	Gruh Finance Ltd.	0.4
500151	GTC Industries Ltd.	0.6
524226	Gujarat Ambuja Exports Ltd.	0.4
522217	Gujarat Apollo Equipment Ltd.	0.55
518029	Gujarat Sidhee Cement Ltd.	0.55
532708	Gvk Power & Infrastructure Ltd.	0.4
500177	Hanil Era Textiles Ltd.	0.45
500467	Harrisons Malyalam Ltd.	0.55
517271	HBL NIFE Power Systems Ltd.	0.25
532347	Helios & Matheson Info. Technology	0.55
532671	Henkel India Ltd.	0.35
500181	Herbertsons Ltd.	0.3
505720	Hercules Hoists Ltd.	0.2
519552	Heritage Foods (India) Ltd.	0.55
500184	Himadri Chemicals & Inds. Ltd.	0.35
509627	Hindustan Dorr-Oliver Ltd.	0.5
500449	Hindustan Organic Chemical Ltd.	0.45
500187	Hindustan Sanitaryware & Inds.	0.35
523398	Hitachi Home & Life Soln. (I) Ltd.	0.35
522073	Hi-Tech Gears Ltd.	0.5
522064	Honda Siel Power Products Ltd.	0.35
509675	Hyderabad Industries Ltd.	0.6
531524	ICSA India Ltd.	0.85
532133	IFGL Refractors Ltd.	0.3
517380	Igarashi Motors India Ltd.	0.45
511208	Il & Fs Investment Managers Ltd.	0.45
524652	IND Swift Ltd.	0.65
500201	India Glycols Ltd.	0.55
532240	India Nippon Electricals Ltd.	0.35
509692	Indian Card Clothing Ltd.	0.45
504741	Indian Hume Pipe Co. Ltd.	0.35
509706	Indian Resort Hotels Ltd	0.5
532658	Indo Asian Fusegear (India) Ltd.	0.6
532501	Indo Rama Textiles Ltd.	0.2
532717	Indo Tech Transformers Ltd.	0.4
532612	Indoco Remedies Ltd.	0.45
532150	Indraprastha Medical Corp. Ltd.	0.55

(*Continued*)

TABLE I.5 (*Continued*)

Code	Name	Adj. Factor
532305	IND-Swift Laboratories Ltd.	0.75
500213	International Travel House Ltd.	0.4
504786	Invest & Precision Casting Ltd.	0.55
500214	Ion Exchange (I) Ltd.	0.6
509496	ITD Cementation India Ltd.	0.2
523610	ITI Ltd.	0.1
507155	Jagatjit Industries Ltd.	0.1
512237	Jai Corp Ltd.	0.15
520066	Jay Bharat Maruti Ltd.	0.45
509715	Jayshree Tea & Industries Ltd.	0.65
514034	JBF Industries Ltd.	0.4
500223	JCT Ltd.	0.5
532624	Jindal Photo Ltd.	0.3
532642	Jindal Southwest Holdings Ltd.	0.45
531543	Jindal Worldwide Ltd.	0.15
530007	JK Industries Ltd.	0.45
500380	JK Lakshmi Cement Ltd.	0.65
532162	JK Paper Ltd.	0.4
522263	JMC Projects (India) Ltd.	0.5
504076	Jyoti Ltd.	0.8
513250	Jyoti Structures Ltd.	0.75
505283	K. G. Khosla Compressors Ltd.	0.5
526209	K. S. Oil Ltd.	0.7
532673	K. M. Sugar Mills Ltd.	0.35
500233	Kajaria Ceramics Ltd.	0.55
532268	Kale Consultants Ltd.	0.6
513509	Kalyani Forge Ltd.	0.45
526668	Kamat Hotels (India) Ltd.	0.3
506525	Kanoria Chemicals & Inds. Ltd.	0.3
504807	KEC Infrastructures Ltd.	0.7
517569	KEI Industries Ltd.	0.6
505890	Kennametal Widia India Ltd.	0.15
532686	Kernex Microsystems (India) Ltd.	0.35
507180	Kesar Enterprises Ltd.	0.5
532732	Kewal Kiran Clothing Ltd.	0.3
504269	Khaitan Electricals Ltd.	0.75
590052	Kirloskar Electrical Company Ltd.	0.55
500245	Kirloskar Ferrous Industries Ltd.	0.55
532536	Kojam Fininvest Ltd.	0.4
524280	Kopran Ltd.	0.6
530299	Kothari Products Ltd.	0.2
532400	KPIT Infosystems Ltd.	0.55

TABLE I.5 (*Continued*)

Code	Name	Adj. Factor
530813	KRBL Ltd.	0.35
500250	L. G. Balkrishnan & Bros. Ltd.	0.6
513605	Lanco Industries Ltd.	0.45
506222	Lanxsee ABS Ltd.	0.3
526596	Liberty Shoes Ltd.	0.4
512349	Linkhouse Industries Ltd.	0.8
507912	LKP Merchant Financing Ltd.	0.45
517518	Lloyd Electric & Engineering	0.7
500254	Lloyds Steel Industries Ltd.	0.8
500255	LML Ltd.	0.6
532341	Logix Microsystems Ltd.	0.65
532740	Lokesh Machines Ltd.	0.3
514036	Loyal Textiles Mills Ltd.	0.3
522241	M. M. Forgings Ltd.	0.4
524000	Magma Leasing Ltd.	0.2
530059	Maharaja Shree Umaid Mills Ltd.	0.2
500266	Maharashtra Scooters Ltd.	0.5
504823	Mahindra Ugine Steel Co. Ltd.	0.45
513269	Man Industries (India) Ltd.	0.65
500268	Manali Petrochemicals Ltd.	0.65
502157	Mangalam Cement Ltd.	0.7
530011	Mangalore Chemicals & Fert. Ltd.	0.7
531131	Mascon Global Ltd.	1
532469	Mather & Platt Pump Ltd.	0.4
532512	Mawana Sugars Ltd.	0.6
532613	Maxwell Industries Ltd.	0.4
532654	Mcleod Russel India Ltd.	0.6
532629	Mcnally Bharat Engineering Co. Ltd.	0.7
532408	Megasoft Ltd.	0.55
532494	Micro Technologies (I) Ltd.	0.65
532416	Mid-Day Multimedia Ltd.	0.5
532539	Minda Industries Ltd.	0.3
500279	Mirc Electronics Ltd.	0.4
526642	Mirza Tanners Ltd.	0.35
532723	Monnet Sugar Ltd.	0.35
500288	Morepen Laboratories Ltd.	0.95
532407	MOSCHIP Semiconductors Technology	0.7
531096	Mount Everest Mineral Water	0.8
532376	MRO-Tek Ltd.	0.65
532553	MSK Projects (India) Ltd.	0.45
520043	Munjal Showa Ltd.	0.35

(*Continued*)

TABLE I.5 (*Continued*)

Code	Name	Adj. Factor
519323	Murli Agro Products Ltd.	0.3
515037	Murudeshwar Ceramics Ltd.	0.55
500292	Mysore Cements Ltd.	0.75
524709	Nagarjuna Agrichem Ltd.	0.25
500075	Nagarjuna Fertilz. & Chem. Ltd.	0.65
523391	Nahar Exports Ltd.	0.4
519136	Nahar Industrial Enterprises Ltd.	0.45
500296	Nahar Spinning Mills Ltd.	0.45
532256	Nalwa Sons Investments Ltd.	0.45
532641	Nandan Exim Ltd.	0.3
524650	Narmada Chematur Petrochem Ltd.	0.45
524816	Natco Pharma Ltd.	0.4
500730	National Organic Chemicals Inds. Ltd	0.75
500298	National Peroxide Ltd.	0.35
513023	Nava Bharat Ferro Alloys Ltd.	0.5
532504	Navin Fluorine International Ltd.	0.65
508989	Navneet Publications Ltd.	0.4
532649	Nectar Lifesciences Ltd.	0.3
504112	NELCO Ltd.	0.5
500301	Nepc India Ltd.	0.9
505355	Nesco Ltd.	0.35
523385	Nilkamal Plastics Ltd.	0.45
504058	Nippo Batteries Co. Ltd.	0.2
500307	Nirlon Ltd.	0.9
532722	Nitco Tiles Ltd.	0.55
590057	Northgate Technologies Ltd.	0.6
530605	Nova Petrochemicals Ltd.	0.4
530367	NRB Bearings Ltd.	0.2
503780	NRC Ltd.	0.5
531209	Nucleus Software Exports Ltd.	0.45
532051	Numeric Power Systems Ltd.	0.35
531092	Om Metals Ltd.	0.25
520021	Omax Autos Ltd.	0.5
524101	Onedo Nalco India Ltd.	0.05
517195	ORG Informatics Ltd.	0.4
504879	Orient Abrasives Ltd.	0.5
502420	Orient Paper & Industries Ltd.	0.75
500314	Oriental Hotels Ltd.	0.45
507260	Oudh Sugar Mills Ltd.	0.55
531816	Panoramic Universal Ltd.	0.3
521153	Pantaloon Industries Ltd.	0.45
509820	Paper Products Ltd.	0.4

TABLE I.5 (*Continued*)

Code	Name	Adj. Factor
530555	Paramount Communications Ltd.	0.7
508184	Parry Agro Industries Ltd.	0.2
532676	PBA Infrastructure Ltd.	0.35
530381	Petron Engineering Construction Ltd.	0.4
517296	Phoenix Lamps Ltd.	0.55
532366	PNB Gilts Ltd.	0.3
532486	Pokarna Ltd.	0.4
524051	Polyplex Corporation Ltd.	0.6
531746	Prajay Engineers Syndicate Ltd.	0.8
506022	Prakash Industries Ltd.	0.4
532718	Pratibha Industries Ltd.	0.3
526109	Pricol Ltd.	0.55
532748	Prime Focus Ltd.	0.25
532647	Provogue (India) Ltd.	0.5
532679	Pyramid Retail Ltd.	0.4
532735	R Systems International Ltd.	0.35
532140	R. M. Mohitex Textiles Ltd.	0.3
532153	Rain Calcining Ltd.	0.5
500339	Rain Commodities Ltd.	0.5
504614	Raipur Alloys & Steels Ltd.	0.3
532503	Rajapalayam Mills Ltd.	0.5
500350	Rajasthan Spg. & Wvg. Mills Ltd.	0.5
500354	Rajshree Sugars & Chemicals Ltd.	0.6
500355	Rallis India Ltd.	0.55
532369	Ramco Industries Ltd.	0.45
532370	Ramco Systems Ltd	0.4
532527	Ramkrishna Forgings Ltd.	0.6
532690	Ramsarup Industries Ltd.	0.35
507490	Rana Sugars Ltd.	0.7
532661	Rane (Madras) Ltd.	0.5
532328	Rane Brake Linings Ltd.	0.5
532490	Rane Engine Valves Ltd.	0.4
505800	Rane Holdings Ltd.	0.6
520111	Ratnamani Metals & Tubes Ltd.	0.35
500044	Rayban Sun Optics India Ltd.	0.6
500362	Recron Synthetics Ltd.	0.5
532687	Repro India Ltd.	0.3
505368	Revathi Equipment Ltd.	0.4
517496	Ricoh India Ltd.	0.3
532731	Rohit Ferro-Tech Ltd.	0.3
532699	Royal Orchid Hotels Ltd.	0.35

(*Continued*)

TABLE I.5 (*Continued*)

Code	Name	Adj. Factor
500384	RPG Life Sciences Ltd.	0.6
503169	Ruby Mills Ltd.	0.3
509020	Ruchi Infrastructure Ltd	0.4
532604	SAL Steel Ltd.	0.5
532710	Sadbhav Engineering Ltd.	0.3
503691	Sahara One Media and Entert. Ltd.	0.05
515043	Saint-Gobain Sekurit India Ltd.	0.15
507315	Sakthi Sugars Ltd	0.65
500372	Samtel Colour Ltd.	0.5
514234	Sangam India Ltd.	0.5
526521	Sanghi Industries Ltd.	0.55
530073	Sanghvi Movers Ltd.	0.55
532163	Saregama India Ltd.	0.45
512559	Satnam Overseas Ltd.	0.6
502175	Saurashtra Cement Ltd.	0.2
524667	Savita Chemicals Ltd.	0.3
532616	Scandent Solutions Corporation Ltd.	0.55
500123	Schenectady-Beck India Ltd.	0.15
506460	Schenectady Herdillia Ltd.	0.2
513436	Shah Alloys Ltd.	0.4
522034	Shanti Gears Ltd.	0.55
511413	Sharyans Resources Ltd.	0.5
524552	Shasun Chemicals & Drugs Ltd.	0.45
530549	Shilpa Medicare Ltd.	0.55
522175	Shiv Vani Oil & Gas Explo Serv. Ltd.	0.35
502180	Shree Digvijay Cement Ltd.	0.45
523236	Shrenuj & Co. Ltd.	0.3
520151	Shreyas Shipping Ltd.	0.3
532631	Shringar Cinemas Ltd.	0.55
532498	Shriram City Union Finance Ltd.	0.3
530515	Shriram Overseas Finance Ltd.	0.3
523371	Siel Ltd.	0.35
507446	Simbhaoli Sugar Mills Ltd.	0.65
502455	Sirpur Paper Mills Ltd.	0.6
503811	Siyaram Silk Mills Ltd.	0.35
532725	Solar Explosives Ltd.	0.3
517544	Solectron Centum	0.4
532447	Solvay Pharma India Ltd.	0.35
520057	Sona Koyo Steering Systems Ltd.	0.55
532221	Sonata Software Ltd.	0.45
532452	South Asian Petrochem Ltd.	0.5
526807	South East Asia Marine Engg. Const.	0.25

TABLE I.5 (*Continued*)

Code	Name	Adj. Factor
530491	Southern Iron & Steel Co. Ltd.	0.6
521082	Spentex Industries Ltd.	0.2
532651	SPL Industries Ltd.	0.4
523756	SREI Infrastructure Finance Ltd.	0.8
532468	SRF Polymers Ltd.	0.35
517556	SSI Ltd.	0.7
530017	Standard Industries Ltd.	0.45
512531	State Trading Corp. of India Ltd.	0.1
513262	Steel Strips Wheels Ltd.	0.3
523363	Sterling Holiday Resort (I) Ltd.	0.6
522085	Stone India Ltd.	0.65
526733	Suashish Diamonds Ltd.	0.15
517168	Subros Ltd.	0.35
513414	Sujana Metal Products Ltd.	0.7
500404	Sunflag Iron & Steel Co. Ltd.	0.6
532711	Sunil Hitech Engineers Ltd.	0.4
521180	Super Spinning Mills Ltd.	0.65
532509	Suprajit Engineering Ltd.	0.55
509930	Supreme Industries Ltd.	0.6
500405	Supreme Petrochem Ltd.	0.4
507892	Su-Raj Diamonds (I) Ltd.	0.6
513597	Surana Industries Ltd.	0.25
532516	Surya Pharmaceuticals Ltd.	0.6
500336	Surya Roshni Ltd.	0.8
521200	Suryalakshmi Cotton Mills Ltd.	0.3
521194	Sutlej Industries Ltd.	0.25
530239	Suven Life Sciences Ltd.	0.45
500407	Swaraj Engines Ltd.	0.5
505192	Swaraj Mazda Ltd.	0.3
504920	Swil Ltd.	0.9
526169	Synergy Multibase Ltd.	0.2
505854	TRF Ltd.	0.55
532515	T.V. Today Network Ltd.	0.45
500777	Tamilnadu Petroproducts Ltd.	0.65
522229	Taneja Aerospace & Aviation	0.55
532738	Tantia Constructions Ltd.	0.4
532301	Tata Coffee Ltd.	0.45
513434	Tata Metaliks Ltd.	0.55
513010	Tata Sponge Iron Ltd.	0.6
505397	Techno Electric & Engg. Co. Ltd.	0.4
532358	Tele Data Informatics Ltd.	1
590054	The Jeypore Sugar Company Ltd.	0.6

(*Continued*)

TABLE I.5 (*Continued*)

Code	Name	Adj. Factor
532218	The South Indian Bank Ltd.	1
500430	The United Western Bank Ltd.	0.85
530199	Themis Medicare Ltd.	0.35
507450	Thiru Arooran Sugars Ind. Ltd.	0.55
500412	Thirumalai Chemicals Ltd.	0.5
505196	TIL Ltd.	0.6
500414	Timex Watches	0.3
504966	Tinplate Company of India Ltd.	0.7
504096	Torrent Cables Ltd.	0.4
526139	Transgene Biotek Ltd.	0.45
532349	Transport Corporation of India Ltd.	0.3
508998	Transworld Infotech Ltd.	0.5
531675	Tricom India Ltd.	0.8
517506	TTK Prestige Ltd.	0.3
509960	UP Hotels Ltd.	0.15
500464	UCAL Fuel Systems Ltd.	0.55
530363	Ugar Sugar Works Ltd.	0.6
506685	Ultra Marine & Pigments Ltd.	0.5
532746	Unity Infraprojects Ltd.	0.3
504212	Universal Cables Ltd.	0.5
530505	Upper Ganges Sugar & Indus. Ltd.	0.55
513216	Uttam Galva Steels Ltd.	0.55
532619	UTV Software Communications Ltd.	0.6
507880	VIP Industries Ltd.	0.45
511431	Vakrangee Software Ltd.	0.8
532389	Valecha Engineering Ltd.	0.65
500439	Vardhaman Spg. & Gen Mills Ltd.	0.4
523261	Venkey'S (I) Ltd.	0.5
526953	Venus Remedies Ltd.	0.85
520113	Vesuvius India Ltd.	0.45
523796	Viceroy Hotels Ltd.	0.8
524394	Vimta Laboratories Ltd.	0.45
517015	Vindhya Telelinks Ltd.	0.5
532721	Visa Steel Ltd.	0.3
509055	Visaka Industries Ltd.	0.5
532411	Visesh Infotecnics Ltd.	0.45
532618	Vishal Export Overseas Ltd.	0.45
532214	Visualsoft (India) Ltd.	0.85
532660	Vivimed Labs Ltd.	0.5
507410	Walchandnagar Industries Ltd.	0.55
524212	Wanbury Ltd.	0.55

TABLE I.5 (*Continued*)

Code	Name	Adj. Factor
500443	Wartsila India Ltd.	0.15
517498	Webel-Sl Energy Systems Ltd.	0.6
505412	Wendt (I) Ltd.	0.25
500444	West Coast Paper Mills Ltd.	0.5
500238	Whirpool of India Ltd.	0.2
517216	Yokogawa India Ltd.	0.2
506720	Zandu Pharma Works Ltd.	0.6
532298	Zenith Infotech Ltd.	0.35
504067	Zensar Technologies Ltd.	0.2
505163	ZF Steering Gear (I) Ltd	0.3
531404	Zicom Electronic Security Systems	0.75
521163	Zodiac Clothing Co. Ltd.	0.4
500780	Zuari Industries Ltd.	0.4

As of September 22, 2006.
Source: The Bombay Stock Exchange.

TABLE I.6 S&P CNX Nifty Constituent List

Company Name	Industry	Symbol	ISIN Code
ABB Ltd.	Electrical Equipment	ABB	INE117A01014
Associated Cement Companies Ltd.	Cement and Cement Products	ACC	INE012A01025
Bajaj Auto Ltd.	Automobiles—2 and 3 Wheelers	BAJAJAUTO	INE118A01012
Bharti Tele-Ventures Ltd.	Telecommunications—Services	BHARTIARTL	INE397D01016
Bharat Heavy Electricals Ltd.	Electrical Equipment	BHEL	INE257A01018
Bharat Petroleum Corporation Ltd.	Refineries	BPCL	INE029A01011
Cipla Ltd.	Pharmaceuticals	CIPLA	INE059A01026
Dabur India Ltd.	Personal Care	DABUR	INE016A01026
Dr. Reddy's Laboratories Ltd.	Pharmaceuticals	DRREDDY	INE089A01023
GAIL (India) Ltd.	Gas	GAIL	INE129A01019

(*Continued*)

TABLE I.6 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
GlaxoSmithKline Pharmaceuticals Ltd.	Pharmaceuticals	GLAXO	INE159A01016
Grasim Industries Ltd.	Cement and Cement Products	GRASIM	INE047A01013
Gujarat Ambuja Cements Ltd.	Cement and Cement Products	GUJAMBCEM	INE079A01016
HCL Technologies Ltd.	Computers—Software	HCLTECH	INE860A01027
Housing Development Finance Corporation Ltd.	Finance—Housing	HDFC	INE001A01028
HDFC Bank Ltd.	Banks	HDFCBANK	INE040A01018
Hero Honda Motors Ltd.	Automobiles—2 and 3 Wheelers	HEROHONDA	INE158A01026
Hindalco Industries Ltd.	Aluminum	HINDALC0	INE038A01012
Hindustan Lever Ltd.	Diversified	HINDLEVER	INE030A01027
Hindustan Petroleum Corporation Ltd.	Refineries	HINDPETRO	INE094A01015
ICICI Bank Ltd.	Banks	ICICIBANK	INE090A01013
Infosys Technologies Ltd.	Computers—Software	INFOSYSTCH	INE009A01021
Indian Petrochemicals Corporation Ltd.	Petrochemicals	IPCL	INE006A01019
ITC Ltd.	Cigarettes	ITC	INE154A01017
Jet Airways (India) Ltd.	Travel & Transport	JETAIRWAYS	INE802G01018
Larsen & Toubro Ltd.	Engineering	LT	INE018A01030
Mahindra & Mahindra Ltd.	Automobiles—4 Wheelers	M&M	INE101A01018
Maruti Udyog Ltd.	Automobiles—4 Wheelers	MARUTI	INE585B01010
Mahanagar Telephone Nigam Ltd.	Telecommunications—Services	MTNL	INE153A01019
National Aluminum Co. Ltd.	Aluminum	NATIONALUM	INE139A01026

TABLE I.6 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Oil & Natural Gas Corporation Ltd.	Oil Exploration/ Production	ONGC	INE213A01011
Oriental Bank of Commerce	Banks	ORIENTBANK	INE141A01014
Punjab National Bank	Banks	PNB	INE160A01014
Ranbaxy Laboratories Ltd.	Pharmaceuticals	RANBAXY	INE015A01010
Reliance Communications Ltd.	Telecommunications—Services	RCOM	INE330H01018
Reliance Energy Ltd.	Power	REL	INE036A01016
Reliance Industries Ltd.	Refineries	RELIANCE	INE002A01018
Steel Authority of India Ltd.	Steel and Steel Products	SAIL	INE114A01011
Satyam Computer Services Ltd.	Computers—Software	SATYAMCOMP	INE275A01028
State Bank of India	Banks	SBIN	INE062A01012
Siemens Ltd.	Electrical Equipment	SIEMENS	INE003A01024
Sun Pharmaceutical Industries Ltd.	Pharmaceuticals	SUNPHARMA	INE044A01028
Suzlon Energy Ltd.	Electrical Equipment	SUZLON	INE040H01013
Tata Motors Ltd.	Automobiles—4 Wheelers	TATAMOTORS	INE155A01014
Tata Power Co. Ltd.	Power	TATAPOWER	INE245A01013
Tata Steel Ltd.	Steel and Steel Products	TATASTEEL	INE081A01012
Tata Consultancy Services Ltd.	Computers—Software	TCS	INE467B01029
Videsh Sanchar Nigam Ltd.	Telecommunications—Services	VSNL	INE151A01013
Wipro Ltd.	Computers—Software	WIPRO	INE075A01022
Zee Entertainment Enterprises Ltd.	Media & Entertainment	ZEEL	INE256A01028

As of March 2007.
Source: The National Stock Exchange.

TABLE I.7 NIFTY Market Capitalization, Weighting, and Beta

Security Name	Symbol	Industry	Market Capitalization Rs. Crore	Market Capitalization US$ Billion[a]	Weighting %	Beta[b]	R^2	Volatility[c] %
ABB Ltd.	ABB	Electrical Equipment	15,363	3.41	0.82%	0.93	0.45	1.72
Associated Cement Companies Ltd.	ACC	Cement & Cement Products	16,895	3.75	0.90%	1.02	0.46	2.44
Bajaj Auto Ltd.	BAJAJAUTO	Automobiles—2 and 3 wheelers	26,495	5.89	1.42%	1	0.52	3.01
Bharti Tele-Ventures Ltd.	BHARTIARTL	Telecommunications—Services	136,292	30.29	7.29%	0.92	0.5	2.74
Bharat Heavy Electricals Ltd.	BHEL	Electrical Equipment	53,402	11.87	2.86%	1.03	0.55	1.79
Bharat Petroleum Corporation Ltd.	BPCL	Refineries	11,253	2.50	0.60%	0.64	0.2	1.76
Cipla Ltd.	CIPLA	Pharmaceuticals	18,029	4.01	0.96%	0.78	0.37	2.1
Dabur India Ltd.	DABUR	Personal Care	8,413	1.87	0.45%	0.99	0.34	2.41
Dr. Reddy's Laboratories Ltd.	DRREDDY	Pharmaceuticals	11,365	2.53	0.61%	0.67	0.25	1.48
GAIL (India) Ltd.	GAIL	Gas	23,923	5.32	1.28%	0.78	0.3	2.03
GlaxoSmithKline Pharmaceuticals Ltd.	GLAXO	Pharmaceuticals	9,835	2.19	0.53%	0.91	0.44	1.77
Grasim Industries Ltd.	GRASIM	Cement & Cement Products	20,282	4.51	1.08%	1.19	0.56	2.58
Gujarat Ambuja Cements Ltd.	GUJAMBCEM	Cement & Cement Products	17,565	3.90	0.94%	0.99	0.46	2.88

HCL Technologies Ltd.	HCLTECH	Computers—Software	19,540	4.34	1.05%	0.98	0.45	2.76
HDFC Ltd.	HDFC	Finance—Housing	37,751	8.39	2.02%	0.94	0.44	2.56
HDFC Bank Ltd.	HDFCBANK	Banks	29,556	6.57	1.58%	0.78	0.36	2.04
Hero Honda Motors Ltd.	HEROHONDA	Automobiles—2 and 3 Wheelers	13,534	3.01	0.72%	0.69	0.31	2.26
Hindalco Industries Ltd.	HINDALCO	Aluminum	16,137	3.59	0.86%	1.3	0.56	4.03
Hindustan Lever Ltd.	HINDLEVER	Diversified	38,916	8.65	2.08%	1.02	0.56	1.69
Hindustan Petroleum Corporation Ltd.	HINDPETRO	Refineries	9,216	2.05	0.49%	0.75	0.21	1.82
ICICI Bank Ltd.	ICICIBANK	Banks	74,178	16.48	3.97%	0.89	0.42	2.64
Infosys Technologies Ltd.	INFOSYSTCH	Computers—Software	115,896	25.75	6.20%	0.85	0.55	2.06
Indian Petrochemicals Corporation Ltd.	IPCL	Petrochemicals	7,839	1.74	0.42%	1.17	0.55	1.51
ITC Ltd.	ITC	Cigarettes	64,567	14.35	3.45%	0.98	0.58	1.78
Jet Airways (India) Ltd.	JETAIRWAYS	Travel and Transport	5,160	1.15	0.28%	0.87	0.27	2.43
Larsen & Toubro Ltd.	LT	Engineering	41,810	9.29	2.24%	1.09	0.56	2.59
Maruti Udyog Ltd.	MARUTI	Automobiles—4 Wheelers	24,318	5.40	1.30%	1.17	0.62	2.44
Mahindra & Mahindra Ltd.	M&M	Automobiles—4 Wheelers	19,836	4.41	1.06%	1.01	0.49	2.3

(*Continued*)

TABLE I.7 *(Continued)*

			Market Capitalization					
Security Name	Symbol	Industry	Rs. Crore	US$ Billion[a]	Weighting %	Beta[b]	R^2	Volatility[c] %
Mahanagar Telephone Nigam Ltd.	MTNL	Telecommunications—Services	8,398	1.87	0.45%	1.33	0.55	2.82
National Aluminium Co. Ltd.	NATIONALUM	Aluminum	13,531	3.01	0.72%	1.11	0.46	2.98
Oil & Natural Gas Corporation Ltd.	ONGC	Oil Exploration	168,554	37.46	9.02%	0.94	0.55	1.67
Oriental Bank of Commerce	ORIENTBANK	Banks	4,457	0.99	0.24%	0.98	0.37	3.15
Punjab National Bank	PNB	Banks	13,369	2.97	0.72%	0.94	0.41	2.47
Ranbaxy Laboratories Ltd.	RANBAXY	Pharmaceuticals	12,594	2.80	0.67%	0.79	0.34	2.02
Reliance Energy Ltd.	REL	Power	10,961	2.44	0.59%	0.98	0.48	2.04
Reliance Industries Ltd.	RELIANCE	Refineries	188,472	41.88	10.08%	1	0.62	1.29
Steel Authority of India Ltd.	SAIL	Steel & Steel Products	44,918	9.98	2.40%	1.51	0.49	3.06
Satyam Computer Services Ltd.	SATYAMCOMP	Computers—Software	27,265	6.06	1.46%	1.04	0.52	2.71
State Bank of India	SBIN	Banks	54,832	12.18	2.93%	0.83	0.44	2.04
Siemens Ltd.	SIEMENS	Electrical Equipment	18,551	4.12	0.99%	1.26	0.5	2.29
Sun Pharmaceutical Industries Ltd.	SUNPHARMA	Pharmaceuticals	17,833	3.96	0.95%	0.73	0.41	1.38

Suzlon Energy Ltd.	SUZLON	Electrical Equipment	29,994	6.67	1.60%	1.26	0.41	3.89
Tata Power Co. Ltd.	TATAPOWER	Power	10,741	2.39	0.57%	0.71	0.35	1.56
Reliance Communications Ltd.	RCOM	Telecommunications—Services	83,328	18.52	4.46%	1.24	0.45	2.95
Tata Motors Ltd.	TATAMOTORS	Automobiles—4 Wheelers	30,152	6.70	1.61%	1.13	0.59	1.97
Tata Consultancy Services Ltd.	TCS	Computers—Software	116,787	25.95	6.25%	0.95	0.61	1.77
Tata Steel Ltd.	TATASTEEL	Steel & Steel Products	25,686	5.71	1.37%	1.41	0.59	1.98
Videsh Sanchar Nigam Ltd.	VSNL	Telecommunications—Services	10,425	2.32	0.56%	1.47	0.53	3.96
Wipro Ltd.	WIPRO	Computers—Software	81,051	18.01	4.34%	1.15	0.62	2.69
Zee Zee Entertainment Enterprises Ltd	ZEEL	Media & Entertainment	10,204	2.27	0.55%	0.89	0.16	7.22
(As of February 28, 2007.)		Totals:	1,869,473	415.44	100.00%			

Source: The National Stock Exchange.

[a]F/X rate used is Rs45 to the US$.

[c]Beta & R2 are calculated for the period March 1, 2006 to Febr 28, 2007. Beta measures the degree to which any portfolio of stocks is affected as compared to the effect on the market as a whole. The coefficient of determination (R^2) measures the strength of the relationship between two variables: the return on a security versus that of the market.

[c]Volatility is the std. deviation of the daily returns for the period February 1, 2007 to February 28, 2007.

TABLE I.8 CNX Nifty Junior Constituent List

Company Name	Industry	Symbol	ISIN Code
Andhra Bank	Banks	ANDHRABANK	INE434A01013
Apollo Tyres Ltd.	Tires	APOLLOTYRE	INE438A01014
Ashok Leyland Ltd.	Automobiles—4 Wheelers	ASHOKLEY	INE208A01029
Asian Paints Ltd.	Paints	ASIANPAINT	INE021A01018
Aurobindo Pharma Ltd.	Pharmaceuticals	AUROPHARMA	INE406A01029
Aventis Pharma Ltd.	Pharmaceuticals	AVENTIS	INE058A01010
Bank of Baroda	Banks	BANKBARODA	INE028A01013
Bank of India	Banks	BANKINDIA	INE084A01016
Bharat Electronics Ltd.	Electronics—Industrial	BEL	INE263A01016
Bharat Forge Ltd.	Castings/Forgings	BHARATFORG	INE465A01025
Biocon Ltd.	Pharmaceuticals	BIOCON	INE376G01013
Bongaigaon Refinery & Petrochemicals Ltd.	Refineries	BONGAIREFN	INE241A01012
Cadila Healthcare Ltd.	Pharmaceuticals	CADILAHC	INE010B01019
Canara Bank	Banks	CANBK	INE476A01014
Chennai Petroleum Corporation Ltd.	Refineries	CHENNPETRO	INE178A01016
Container Corporation of India Ltd.	Travel and Transport	CONCOR	INE111A01017
Corporation Bank	Banks	CORPBANK	INE112A01015
Cummins India Ltd.	Diesel Engines	CUMMINSIND	INE298A01020
I-Flex Solutions Ltd.	Computers—Software	I-FLEX	INE881D01027
IBP Co. Ltd.	Refineries	IBP	INE261A01010
Industrial Development Bank of India Ltd.	Financial Institution	IDBI	INE008A01015
Infrastructure Development Finance Co. Ltd.	Financial Institution	IDFC	INE043D01016
IFCI Ltd.	Financial Institution	IFCI	INE039A01010
Indian Hotels Co. Ltd.	Hotels	INDHOTEL	INE053A01029
Ingersoll Rand (India) Ltd.	Compressors/Pumps	INGERRAND	INE177A01018

TABLE I.8 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
ING Vysya Bank Ltd.	Banks	INGVYSYABK	INE166A01011
Indian Overseas Bank	Banks	IOB	INE565A01014
Jaiprakash Associates Ltd.	Construction	JPASSOCIAT	INE455F01017
Kotak Mahindra Bank Ltd.	Banks	KOTAKBANK	INE237A01010
LIC Housing Finance Ltd.	Finance—Housing	LICHSGFIN	INE115A01018
Lupin Ltd.	Pharmaceuticals	LUPIN	INE326A01029
Moser Baer India Ltd.	Computers—Hardware	MOSERBAER	INE739A01015
Mphasis BFL Ltd.	Computers—Software	MPHASISBFL	INE356A01018
Nicholas Piramal India Ltd.	Pharmaceuticals	NICOLASPIR	INE140A01024
Nirma Ltd.	Detergents	NIRMA	INE091A01011
Patni Computer Systems Ltd.	Computers—Software	PATNI	INE660F01012
Pfizer Ltd.	Pharmaceuticals	PFIZER	INE182A01018
Polaris Software Lab Ltd.	Computers—Software	POLARIS	INE763A01023
Punjab Tractors Ltd.	Automobiles—4 Wheelers	PUNJABTRAC	INE170A01013
Raymond Ltd.	Textile Products	RAYMOND	INE301A01014
Reliance Capital Ltd.	Finance	RELCAPITAL	INE013A01015
Reliance Petroleum Ltd.	Refineries	RPL	INE475H01011
Sterlite Industries (India) Ltd.	Metals	STER	INE268A01031
Syndicate Bank	Banks	SYNDIBANK	INE667A01018
Tata Teleservices (Maharashtra) Ltd.	Telecommunications—Services	TTML	INE517B01013
TVS Motor Company Ltd.	Automobiles—2 and 3 Wheelers	TVSMOTOR	INE494B01023
Union Bank of India	Banks	UNIONBANK	INE692A01016
UTI Bank Ltd.	Banks	UTIBANK	INE238A01026
Vijaya Bank	Banks	VIJAYABANK	INE705A01016
Wockhardt Ltd. (As of March 2007.)	Pharmaceuticals	WOCKPHARMA	INE049B01025

Source: The National Stock Exchange.

TABLE I.9 S&P CNX 500 Constituent List

Company Name	Industry	Symbol	ISIN Code
3M India Ltd.	Trading	3MINDIA	INE470A01017
Aarti Industries Ltd.	Chemicals—Organic	AARTIIND	INE769A01020
Aban Offshore Ltd.	Oil Exploration/Production	ABAN	INE421A01028
ABB Ltd.	Electrical Equipment	ABB	INE117A01014
Abhishek Industries Ltd	Textiles—Cotton	ABSHEKINDS	INE064C01014
ACC Ltd.	Cement and Cement Products	ACC	INE012A01025
Adani Enterprises Ltd.	Trading	ADANIENT	INE423A01024
Aditya Birla Nuvo Ltd.	Textiles—Synthetic	ABIRLANUVO	INE069A01017
Adlabs Films Ltd.	Media & Entertainment	ADLABSFILM	INE540B01015
Ador Welding Ltd.	Electrodes	ADORWELD	INE045A01017
Aftek Infosys Ltd.	Computers—Software	AFTEKINFO	INE796A01023
Agro Dutch Industries Ltd.	Food and Food Processing	AGRODUTCH	INE135B01014
Agro Tech Foods Ltd.	Solvent Extraction	ATFL	INE209A01019
Ajanta Pharmaceuticals Ltd.	Pharmaceuticals	AJANTPHARM	INE031B01015
Aksh Optifibre Ltd.	Cables—Telecom	AKSHOPTFBR	INE523B01011
Alembic Ltd.	Pharmaceuticals	ALEMBICLTD	INE426A01027
Alfa Laval (India) Ltd.	Engineering	ALFALAVAL	INE427A01017
Allahabad Bank	Banks	ALBK	INE428A01015
Alok Industries Ltd.	Textiles—Synthetic	ALOKTEXT	INE270A01011
Alstom Projects India Ltd.	Power	APIL	INE878A01011
Amara Raja Batteries Ltd.	Auto Ancillaries	AMARAJABAT	INE885A01016
Amtek Auto Ltd.	Auto Ancillaries	AMTEKAUTO	INE130C01021
Andhra Bank	Banks	ANDHRABANK	INE434A01013
Andhra Sugars Ltd.	Diversified	ANDHRSUGAR	INE715B01013
Ansal Properties & Infrastructure Ltd.	Construction	ANSALINFRA	INE436A01026
Apollo Hospitals Enterprises Ltd.	Miscellaneous	APOLLOHOSP	INE437A01016

TABLE I.9 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Apollo Tyres Ltd.	Tyres	APOLLOTYRE	INE438A01014
Aptech Ltd.	Computers—Software	APTECHT	INE266F01018
Archies Ltd.	Printing and Publishing	ARCHIES	INE731A01012
Arvind Mills Ltd.	Textile Products	ARVINDMILL	INE034A01011
Asahi India Glass Ltd.	Auto Ancillaries	ASAHIINDIA	INE439A01020
Ashok Leyland Ltd.	Automobiles—4 Wheelers	ASHOKLEY	INE208A01029
Asian Electronics Ltd.	Electronics—Industrial	ASIANELEC	INE441A01018
Asian Hotels Ltd.	Hotels	ASIANHOTEL	INE363A01014
Asian Paints Ltd.	Paints	ASIANPAINT	INE021A01018
AstraZenca Pharma India Ltd.	Pharmaceuticals	ASTRAIDL	INE203A01020
Atlas Cycle (Haryana) Ltd.	Cycles	ATLASCYCLE	INE446A01017
Atul Ltd.	Dyes and Pigments	ATUL	INE100A01010
Aurobindo Pharma Ltd.	Pharmaceuticals	AUROPHARMA	INE406A01029
Automotive Axles Ltd.	Auto Ancillaries	AUTOAXLES	INE449A01011
Avaya GlobalConnect Ltd.	Telecommunications—Equipment	AVAYAGCL	INE676A01019
Aventis Pharma Ltd.	Pharmaceuticals	AVENTIS	INE058A01010
Aztecsoft Ltd.	Computers—Software	AZTECSOFT	INE651B01010
B L Kashyap & Sons Ltd.	Construction	BLKASHYAP	INE350H01016
Bajaj Auto Finance Ltd.	Finance	BAJAUTOFIN	INE296A01016
Bajaj Auto Ltd.	Automobiles—2 and 3 Wheelers	BAJAJAUTO	INE118A01012
Bajaj Hindusthan Ltd.	Sugar	BAJAJHIND	INE306A01021
Balaji Telefilms Ltd.	Media & Entertainment	BALAJITELE	INE794B01026
Ballarpur Industries Ltd.	Paper and Paper Products	BILT	INE294A01011
Balmer Lawrie & Co. Ltd.	Miscellaneous	BALMLAWRIE	INE164A01016

(*Continued*)

TABLE I.9 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Balrampur Chini Mills Ltd.	Sugar	BALRAMCHIN	INE119A01028
Bank of Baroda	Banks	BANKBARODA	INE028A01013
Bank of India	Banks	BANKINDIA	INE084A01016
Bannari Amman Sugars Ltd.	Sugar	BANARISUG	INE459A01010
BASF India Ltd.	Chemicals—Specialty	BASF	INE373A01013
Bata India Ltd.	Leather and Leather Products	BATAINDIA	INE176A01010
Berger Paints India Ltd.	Paints	BERGEPAINT	INE463A01020
Bhansali Engineering Polymers Ltd.	Petrochemicals	BEPL	INE922A01025
Bharat Earth Movers Ltd.	Engineering	BEML	INE258A01016
Bharat Electronics Ltd.	Electronics—Industrial	BEL	INE263A01016
Bharat Forge Ltd.	Castings/Forgings	BHARATFORG	INE465A01025
Bharat Heavy Electricals Ltd.	Electrical Equipment	BHEL	INE257A01018
Bharat Petroleum Corporation Ltd.	Refineries	BPCL	INE029A01011
Bharti Airtel Ltd.	Telecommunications—Services	BHARTIARTL	INE397D01016
Bhushan Steel & Strips Ltd.	Steel and Steel Products	BHUSANSTL	INE824B01013
Biocon Ltd.	Pharmaceuticals	BIOCON	INE376G01013
Birla Corporation Ltd.	Cement and Cement Products	BIRLAJUTE	INE340A01012
Birla Ericsson Optical Ltd.	Cables—Telecom	BIRLAERIC	INE800A01015
Blue Dart Express Ltd.	Miscellaneous	BLUEDART	INE233B01017
Blue Star Infotech Ltd.	Computers—Software	BLUESTINFO	INE504B01011
Blue Star Ltd.	Air Conditioners	BLUESTARCO	INE472A01039
BOC India Ltd.	Gas	BOC	INE473A01011
Bombay Dyeing & Manufacturing Co. Ltd.	Textiles—Cotton	BOMDYEING	INE032A01015

TABLE I.9 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Bongaigaon Refinery & Petrochemicals Ltd.	Refineries	BONGAIREFN	INE241A01012
Bosch Chassis Systems India Ltd.	Auto Ancillaries	BOSCHCHASY	INE053B01019
BPL Ltd.	Consumer Durables	BPL	INE110A01019
Britannia Industries Ltd.	Food and Food Processing	BRITANNIA	INE216A01014
Cadila Healthcare Ltd.	Pharmaceuticals	CADILAHC	INE010B01019
Can Fin Homes Ltd.	Finance—Housing	CANFINHOME	INE477A01012
Canara Bank	Banks	CANBK	INE476A01014
Carborundum Universal Ltd.	Abrasives	CARBORUNIV	INE120A01026
Carol Info Services Ltd.	Pharmaceuticals	CAROLINFO	INE198A01014
Ceat Ltd.	Tires	CEAT	INE482A01012
Century Enka Ltd.	Textiles—Synthetic	CENTENKA	INE485A01015
Century Textile & Industries Ltd.	Diversified	CENTURYTEX	INE055A01016
CESC Ltd.	Power	CESC	INE486A01013
Chambal Fertilizers & Chemicals Ltd.	Fertilizers	CHAMBLFERT	INE085A01013
Chemplast Sanmar Ltd.	Petrochemicals	CHEMPLAST	INE488A01027
Chennai Petroleum Corporation Ltd.	Refineries	CHENNPETRO	INE178A01016
Cholamandalam DBS Finance Ltd.	Finance	CHOLADBS	INE121A01016
Cinevistaas Ltd.	Media & Entertainment	CINEVISTA	INE039B01018
Cipla Ltd.	Pharmaceuticals	CIPLA	INE059A01026
City Union Bank Ltd.	Banks	CUB	INE491A01013
Clariant Chemicals (India) Ltd.	Dyes and Pigments	CLNINDIA	INE492A01029
CMC Ltd.	Computers—Hardware	CMC	INE314A01017
Colgate-Palmolive (India) Ltd.	Personal Care	COLGATE	INE259A01014

(*Continued*)

TABLE I.9 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Consolidated Finvest & Holdings Ltd.	Finance	CONSOFINVT	INE025A01027
Container Corporation of India Ltd.	Miscellaneous	CONCOR	INE111A01017
Coromandel Fertilisers Ltd.	Fertilizers	COROMNFERT	INE169A01023
Corporation Bank	Banks	CORPBANK	INE112A01015
Cosmo Films Ltd.	Packaging	COSMOFILMS	INE757A01017
Crest Animation Studios Ltd.	Media & Entertainment	CRESTANI	INE774A01012
CRISIL Ltd.	Miscellaneous	CRISIL	INE007A01017
Crompton Greaves Ltd.	Electrical Equipment	CROMPGREAV	INE067A01029
Cummins India Ltd.	Diesel Engines	CUMMINSIND	INE298A01020
Dabur India Ltd.	Personal Care	DABUR	INE016A01026
Dabur Pharma Ltd.	Pharmaceuticals	DABURPHARM	INE575G01010
Dalmia Cement (Bharat) Ltd.	Cement and Cement Products	DALMIACEM	INE495A01022
DCM Shriram Consolidated Ltd.	Diversified	DCMSRMCONS	INE499A01024
DCW Ltd.	Petrochemicals	DCW	INE500A01029
Deccan Chronicle Holdings Ltd.	Printing and Publishing	DCHL	INE137G01019
Deepak Fertilisers & Petrochemicals Corp. Ltd.	Fertilizers	DEEPAKFERT	INE501A01019
Dena Bank	Banks	DENABANK	INE077A01010
Dhampur Sugar Mills Ltd.	Sugar	DHAMPURSUG	INE041A01016
DIC India Ltd.	Miscellaneous	DICIND	INE303A01010
Dishman Pharmaceuticals & Chemicals Ltd.	Pharmaceuticals	DISHMAN	INE353G01020
Divi's Laboratories Ltd.	Pharmaceuticals	DIVISLAB	INE361B01016
D-Link India Ltd	Computers—Hardware	D-LINK	INE178C01020
Dr. Reddy's Laboratories Ltd.	Pharmaceuticals	DRREDDY	INE089A01023

TABLE I.9 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Dredging Corporation of India Ltd.	Miscellaneous	DREDGECORP	INE506A01018
DS Kulkarni Developers Ltd.	Construction	DSKULKARNI	INE891A01014
Dwarikesh Sugar Industrial Ltd.	Sugar	DWARKESH	INE366A01033
E.I.D. Parry (India) Ltd.	Diversified	EIDPARRY	INE126A01023
E.Merck (India) Ltd.	Pharmaceuticals	EMERCK	INE199A01012
Eicher Ltd.	Finance	EICHER	INE065A01023
Eicher Motors Ltd.	Automobiles—4 Wheelers	EICHERMOT	INE066A01013
EIH Ltd.	Hotels	EIHOTEL	INE230A01023
Elder Pharmaceuticals Ltd.	Pharmaceuticals	ELDERPHARM	INE975A01015
Electrosteel Castings Ltd.	Castings/Forgings	ELECTCAST	INE086A01011
Elgi Equipments Ltd.	Compressors/Pumps	ELGIEQUIP	INE285A01027
Elgitread (India) Ltd.	Auto Ancillaries	ELGITYRE	INE257B01024
Engineers India Ltd.	Construction	ENGINERSIN	INE510A01010
Era Constructions (India) Ltd.	Construction	ERACONS	INE039E01012
ESAB India Ltd.	Electrodes	ESABINDIA	INE284A01012
Escorts Ltd.	Automobiles—4 Wheelers	ESCORTS	INE042A01014
Essar Oil Ltd.	Refineries	ESSAROIL	INE011A01019
Essar Steel Ltd.	Steel and Steel Products	ESTL	INE127A01021
Essel Propack Ltd.	Packaging	ESSELPACK	INE255A01020
Everest Industries Ltd.	Cement and Cement Products	EVERESTIND	INE295A01018
Exide Industries Ltd.	Auto Ancillaries	EXIDEIND	INE302A01020
Fag Bearings India Ltd.	Bearings	FAGBEARING	INE513A01014
FCI OEN Connectors Ltd.	Electronics—Industrial	OENCONNECT	INE669B01012
FDC Ltd.	Pharmaceuticals	FDC	INE258B01022

(*Continued*)

TABLE I.9 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Federal Bank Ltd.	Banks	FEDERALBNK	INE171A01011
Federal-Mogul Goetze (India) Ltd.	Auto Ancillaries	FMGOETZE	INE529A01010
Financial Technologies (India) Ltd.	Computers—Software	FINANTECH	INE111B01023
Finolex Cables Ltd.	Miscellaneous	FINCABLES	INE235A01014
Finolex Industries Ltd.	Petrochemicals	FINPIPE	INE183A01016
First Leasing Co. of India Ltd.	Finance	FIRSTLEASE	INE492B01019
Flex Industries Ltd.	Packaging	FLEX	INE516A01017
Foseco India Ltd.	Chemicals—Specialty	FOSECOIND	INE519A01011
GAIL (India) Ltd.	Gas	GAIL	INE129A01019
Gammon India Ltd.	Construction	GAMMONIND	INE259B01020
Garden Silk Mills Ltd.	Textiles—Synthetic	GARDENSILK	INE526A01016
Gateway Distriparks Ltd.	Travel and Transport	GDL	INE852F01015
Geometric Software Solutions Co. Ltd.	Computers—Software	GEOMETRIC	INE797A01021
GHCL Ltd.	Chemicals—Inorganic	GHCL	INE539A01019
Gillette India Ltd.	Personal Care	GILLETTE	INE322A01010
Gitanjali Gems Ltd.	Gems	GITANJALI	INE346H01014
GlaxoSmithkline Consumer Healthcare Ltd.	Food and Food Processing	GSKCONS	INE264A01014
GlaxoSmithkline Pharmaceuticals Ltd.	Pharmaceuticals	GLAXO	INE159A01016
Glenmark Pharmaceuticals Ltd.	Pharmaceuticals	GLENMARK	INE935A01027
GMR Infrastructure Ltd.	Construction	GMRINFRA	INE776C01013
Godavari Fertilisers & Chemicals Ltd.	Fertilizers	GODAVRFERT	INE507C01012
Godfrey Phillips India Ltd.	Cigarettes	GODFRYPHLP	INE260B01010

TABLE I.9 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Godrej Consumer Products Ltd.	Personal Care	GODREJCP	INE102D01028
Godrej Industries Ltd.	Chemicals—Inorganic	GODREJIND	INE233A01035
Gokaldas Exports Ltd.	Textile Products	GOKEX	INE887G01019
Graphite India Ltd.	Electrodes	GRAPHITE	INE371A01017
Grasim Industries Ltd.	Cement and Cement Products	GRASIM	INE047A01013
Greaves Cotton Ltd.	Diesel Engines	GREAVESCOT	INE224A01018
GTL Ltd.	Computers—Software	GTL	INE043A01012
GTN Industries Ltd.	Textiles—Cotton	GTNIND	INE537A01013
Gujarat Alkalies & Chemicals Ltd.	Chemicals—Inorganic	GUJALKALI	INE186A01019
Gujarat Ambuja Cements Ltd.	Cement and Cement Products	GUJAMBCEM	INE079A01024
Gujarat Ambuja Exports Ltd.	Trading	GAEL	INE036B01022
Gujarat Fluorochemicals Ltd.	Gas	GUJFLUORO	INE538A01029
Gujarat Gas Co. Ltd.	Gas	GUJRATGAS	INE374A01011
Gujarat Industries Power Co. Ltd.	Power	GIPCL	INE162A01010
Gujarat Mineral Development Corporation Ltd.	Mining	GMDCLTD	INE131A01023
Gujarat Narmada Valley Fertilisers Co. Ltd.	Fertilizers	GNFC	INE113A01013
Gujarat NRE Coke Ltd.	Mining	GUJNRECOKE	INE110D01013
Gujarat State Fertilizers & Chemicals Ltd.	Fertilizers	GSFC	INE026A01017
H.E.G. Ltd.	Electrodes	HEG	INE545A01016
Harrisons Malayalam Ltd.	Tea and Coffee	HARRMALAYA	INE544A01019

(*Continued*)

TABLE I.9 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Havell's India Ltd.	Electrical Equipment	HAVELLS	INE176B01026
HCL Infosystems Ltd.	Computers—Hardware	HCL-INSYS	INE236A01020
HCL Technologies Ltd.	Computers—Software	HCLTECH	INE860A01027
HDFC Bank Ltd.	Banks	HDFCBANK	INE040A01018
Heritage Foods (India) Ltd.	Food and Food Processing	HERITGFOOD	INE978A01019
Hero Honda Motors Ltd.	Automobiles—2 and 3 Wheelers	HEROHONDA	INE158A01026
Hexaware Technologies Ltd.	Computers—Software	HEXAWARE	INE093A01033
Hikal Ltd.	Chemicals—Organic	HIKAL	INE475B01014
Himachal Futuristic Communications Ltd.	Telecommunications—Equipment	HIMACHLFUT	INE548A01010
Himatsingka Seide Ltd.	Textile Products	HIMATSEIDE	INE049A01027
Hindalco Industries Ltd.	Aluminum	HINDALC0	INE038A01020
Hinduja TMT Ltd.	Computers—Software	HTMT	INE353A01015
Hindustan Construction Co. Ltd.	Construction	HCC	INE549A01026
Hindustan Lever Ltd.	Diversified	HINDLEVER	INE030A01027
Hindustan Motors Ltd.	Automobiles—4 Wheelers	HINDMOTOR	INE253A01017
Hindustan Oil Exploration Co. Ltd.	Oil Exploration/Production	HINDOILEXP	INE345A01011
Hindustan Petroleum Corporation Ltd.	Refineries	HINDPETRO	INE094A01015
Hindustan Sanitaryware & Industries Ltd.	Construction	HINDSANIT	INE415A01038
HMT Ltd.	Automobiles—4 Wheelers	HMT	INE262A01018
Honda SIEL Power Products Ltd.	Electrical Equipment	HONDAPOWER	INE634A01018

TABLE I.9 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Honeywell Automation India Ltd.	Electronics—Industrial	HONAUT	INE671A01010
Hotel Leelaventure Ltd.	Hotels	HOTELEELA	INE102A01024
Housing Development Finance Corporation Ltd.	Finance—Housing	HDFC	INE001A01028
HT Media Ltd.	Printing and Publishing	HTMEDIA	INE501G01016
I T C Ltd.	Cigarettes	ITC	INE154A01025
IBP Co. Ltd.	Refineries	IBP	INE261A01010
ICI India Ltd.	Paints	ICI	INE133A01011
ICICI Bank Ltd.	Banks	ICICIBANK	INE090A01013
I-Flex Solutions Ltd.	Computers—Software	I-FLEX	INE881D01027
iGate Global Solutions Ltd.	Computers—Software	IGS	INE177B01016
IL&FS Investsmart Ltd.	Finance	INVSTSMART	INE800B01013
India Cements Ltd.	Cement and Cement Products	INDIACEM	INE383A01012
India Glycols Ltd.	Petrochemicals	INDIAGLYCO	INE560A01015
India Nippon Electricals Ltd.	Auto Ancillaries	INDNIPPON	INE092B01017
Indiabulls Financial Services Ltd.	Finance	INDIABULLS	INE894F01025
Indian Card Clothing Co. Ltd.	Textile Machinery	INDIANCARD	INE061A01014
Indian Hotels Co. Ltd.	Hotels	INDHOTEL	INE053A01029
Indian Oil Corporation Ltd.	Refineries	IOC	INE242A01010
Indian Overseas Bank	Banks	IOB	INE565A01014
Indian Petrochemicals Corporation Ltd.	Petrochemicals	IPCL	INE006A01019
Indo Rama Synthetics Ltd.	Textiles—Synthetic	INDORAMA	INE156A01020
Indraprastha Gas Ltd.	Gas	IGL	INE203G01019

(*Continued*)

TABLE I.9 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Indraprastha Medical Corporation Ltd.	Miscellaneous	INDRAMEDCO	INE681B01017
Ind-Swift Laboratories Ltd.	Pharmaceuticals	INDSWFTLAB	INE915B01019
IndusInd Bank Ltd.	Banks	INDUSINDBK	INE095A01012
Industrial Development Bank of India Ltd.	Banks	IDBI	INE008A01015
Infosys Technologies Ltd.	Computers—Software	INFOSYSTCH	INE009A01021
Infotech Enterprises Ltd.	Computers—Software	INFOTECENT	INE136B01020
Infrastructure Devlopment Finance Co. Ltd.	Financial Institution	IDFC	INE043D01016
ING Vysya Bank Ltd.	Banks	INGVYSYABK	INE166A01011
Ingersoll Rand (India) Ltd.	Compressors/Pumps	INGERRAND	INE177A01018
Inox Leisure Ltd.	Media & Entertainment	INOXLEISUR	INE312H01016
Ipca Laboratories Ltd.	Pharmaceuticals	IPCALAB	INE571A01012
IVRCL Infrastructures & Projects Ltd.	Construction	IVRCLINFRA	INE875A01025
J.B. Chemicals & Pharmaceuticals Ltd.	Pharmaceuticals	JBCHEPHARM	INE572A01028
Jagsonpal Pharmaceuticals Ltd.	Pharmaceuticals	JAGSNPHARM	INE048B01027
Jain Irrigation Systems Ltd.	Plastic and Plastic Products	JISLJALEQS	INE175A01020
Jain Studios Ltd.	Media & Entertainment	JAINSTUDIO	INE486B01011
Jaiprakash Associates Ltd.	Construction	JPASSOCIAT	INE455F01017
Jammu & Kashmir Bank Ltd.	Banks	J&KBANK	INE168A01017

TABLE I.9 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Jay Shree Tea & Industries Ltd.	Tea and Coffee	JAYSREETEA	INE364A01012
Jet Airways (India) Ltd.	Travel and Transport	JETAIRWAYS	INE802G01018
Jindal Poly Films Ltd.	Textiles—Synthetic	JINDALPOLY	INE197D01010
Jindal Saw Ltd.	Steel and Steel Products	JINDALSAW	INE324A01016
Jindal Stainless Ltd.	Steel and Steel Products	JSTAINLESS	INE220G01021
Jindal Steel & Power Ltd.	Steel and Steel Products	JINDALSTEL	INE749A01022
JSW Steel Ltd.	Steel and Steel Products	JSWSTEEL	INE019A01020
Jubilant Organosys Ltd.	Pharmaceuticals	JUBILANT	INE700A01033
Jyoti Structures Ltd.	Transmission Towers	JYOTISTRUC	INE197A01024
Kajaria Ceramics Ltd.	Construction	KAJARIACER	INE217B01028
Kakatiya Cement Sugar & Industries Ltd.	Sugar	KAKATCEM	INE437B01014
Kale Consultants Ltd.	Computers—Software	KALECONSUL	INE793A01012
Kalpataru Power Transmission Ltd.	Transmission Towers	KALPATPOWR	INE220B01014
Kansai Nerolac Paints Ltd.	Paints	KANSAINER	INE531A01016
Karnataka Bank Ltd.	Banks	KTKBANK	INE614B01018
Karur Vysya Bank Ltd.	Banks	KARURVYSYA	INE036D01010
KCP Ltd.	Cement and Cement Products	KCP	INE805C01010
KEC Infrastructures Ltd.	Construction	KECINFRA	INE852A01016
Kesoram Industries Ltd.	Tires	KESORAMIND	INE087A01019
Kirloskar Brothers Ltd	Compressors/Pumps	KBL	INE732A01028

(*Continued*)

TABLE I.9 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Kirloskar Oil Engines Ltd.	Diesel Engines	KIRLOSOIL	INE250A01021
Kohinoor Foods Ltd.	Food and Food Processing	KOHINOOR	INE080B01012
Kopran Ltd.	Pharmaceuticals	KOPRAN	INE082A01010
Kotak Mahindra Bank Ltd.	Banks	KOTAKBANK	INE237A01010
Kothari Products Ltd.	Food and Food Processing	KOTHARIPRO	INE823A01017
KPIT Cummins Infosystem Ltd.	Computers—Software	KPIT	INE836A01027
KSB Pumps Ltd.	Compressors/Pumps	KSBPUMPS	INE999A01015
L.G. Balakrishnan & Bros. Ltd.	Metals	LGBROS	INE337A01026
Lakshmi Machine Works Ltd.	Textile Machinery	LAXMIMACH	INE269B01011
Lakshmi Vilas Bank Ltd.	Banks	LAKSHVILAS	INE694C01018
LANXESS ABS Ltd.	Petrochemicals	LANABS	INE189B01011
Larsen & Toubro Ltd.	Engineering	LT	INE018A01030
LIC Housing Finance Ltd.	Finance—Housing	LICHSGFIN	INE115A01018
Lumax Industries Ltd.	Auto Ancillaries	LUMAXIND	INE162B01018
Lupin Ltd.	Pharmaceuticals	LUPIN	INE326A01029
Maars Software International Ltd.	Computers—Software	MAARSOFTW	INE390A01017
Macmillan India Ltd	Printing and Publishing	MACMILLAN	INE943D01017
Madras Cements Ltd.	Cement and Cement Products	MADRASCEM	INE331A01029
Mahanagar Telephone Nigam Ltd.	Telecommunications—Services	MTNL	INE153A01019
Maharashtra Scooters Ltd.	Automobiles—2 and 3 Wheelers	MAHSCOOTER	INE288A01013
Maharashtra Seamless Ltd.	Steel and Steel Products	MAHSEAMLES	INE271B01025

TABLE I.9 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Mahindra & Mahindra Financial Services Ltd.	Finance	M&MFIN	INE774D01016
Mahindra & Mahindra Ltd.	Automobiles—4 Wheelers	M&M	INE101A01018
Mahindra Gesco Corporation Ltd.	Construction	GESCOCORP	INE813A01018
Mahindra Ugine Steel Co. Ltd.	Steel and Steel Products	MAHINDUGIN	INE850A01010
Mangalore Refinery & Petrochemicals Ltd.	Refineries	MRPL	INE103A01014
Maral Overseas Ltd.	Textiles—Cotton	MARALOVER	INE882A01013
Marico Ltd.	Solvent Extraction	MARICO	INE196A01018
Maruti Udyog Ltd.	Automobiles—4 Wheelers	MARUTI	INE585B01010
Mastek Ltd.	Computers—Software	MASTEK	INE759A01021
Matrix Laboratories Ltd.	Pharmaceuticals	MATRIXLABS	INE604D01023
Max India Ltd.	Packaging	MAX	INE180A01012
Mcdowell & Company Ltd.	Brew/Distilleries	MCDOWELL-N	INE854D01016
Melstar Information Technologies Ltd.	Computers—Software	MELSTAR	INE817A01019
Mercator Lines Ltd.	Shipping	MLL	INE934B01028
Micro Inks Ltd.	Miscellaneous	MICRO	INE056A01014
Mid-Day Multimedia Ltd	Printing and Publishing	MID-DAY	INE747B01016
Mirc Electronics Ltd.	Consumer Durables	MIRCELECTR	INE831A01028
Mirza International Ltd.	Leather and Leather Products	MIRZAINT	INE771A01018
Monnet Ispat Ltd.	Steel and Steel Products	MONNETISPA	INE743C01013
Monsanto India Ltd.	Pesticides and Agrochemicals	MONSANTO	INE274B01011
Moser Baer India Ltd.	Computers—Hardware	MOSERBAER	INE739A01015

(*Continued*)

TABLE I.9 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Motherson Sumi Systems Ltd.	Auto Ancillaries	MOTHERSUMI	INE775A01035
Motor Industries Co. Ltd.	Auto Ancillaries	MICO	INE323A01026
Mphasis BFL Ltd.	Computers—Software	MPHASISBFL	INE356A01018
MRF Ltd.	Tires	MRF	INE883A01011
MRO-TEK Ltd.	Computers—Hardware	MRO-TEK	INE398B01018
Mukta Arts Ltd.	Media & Entertainment	MUKTAARTS	INE374B01019
Munjal Showa Ltd.	Auto Ancillaries	MUNJALSHOW	INE577A01027
Nagarjuna Construction Co. Ltd.	Construction	NAGARCONST	INE868B01028
Nagarjuna Fertilizers & Chemicals Ltd.	Fertilizers	NAGARFERT	INE580A01013
Nahar Exports Ltd.	Textiles—Cotton	NAHAREXP	INE308A01019
Nahar Spinning Mills Ltd.	Textiles—Synthetic	NAHARSPG	INE290A01019
Narmada Chematur Petrochemicals Ltd.	Petrochemicals	NARMDCHEMA	INE693B01012
National Aluminium Co. Ltd.	Aluminum	NATIONALUM	INE139A01026
Nava Bharat Ventures Ltd.	Metals	NBVENTURES	INE725A01022
Navneet Publications (India) Ltd.	Printing and Publishing	NAVNETPUBL	INE060A01024
NDTV Ltd.	Media & Entertainment	NDTV	INE155G01029
NELCO Ltd.	Electronics—Industrial	NELCO	INE045B01015
NEPC India Ltd.	Electrical Equipment	NEPCMICON	INE588A01016
Neyveli Lignite Corporation Ltd.	Power	NEYVELILIG	INE589A01014
Nicholas Piramal India Ltd.	Pharmaceuticals	NICOLASPIR	INE140A01024
Nilkamal Plastics Ltd.	Plastic and Plastic Products	NILKAMPLST	INE310A01015
Nirma Ltd.	Detergents	NIRMA	INE091A01011

TABLE I.9 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Nova Petrochemicals Ltd.	Textiles—Synthetic	NOVAPETRO	INE787A01014
NRB Bearings Ltd.	Bearings	NRBBEARING	INE349A01013
NTPC Ltd.	Power	NTPC	INE733E01010
Oil & Natural Gas Corporation Ltd.	Oil Exploration/Production	ONGC	INE213A01011
Omax Autos Ltd.	Auto Ancillaries	OMAXAUTO	INE090B01011
Onward Technologies Ltd.	Computers—Hardware	ONWARDTEC	INE229A01017
Orchid Chemicals & Pharmaceuticals Ltd.	Pharmaceuticals	ORCHIDCHEM	INE191A01019
Orient Information Technologies Ltd.	Computers—Software	ORIENTINFO	INE067B01019
Orient Paper & Industries Ltd.	Diversified	ORIENTPPR	INE592A01018
Oriental Bank of Commerce	Banks	ORIENTBANK	INE141A01014
Oriental Hotels Ltd.	Hotels	ORIENTHOT	INE750A01012
Panacea Biotec Ltd.	Pharmaceuticals	PANACEABIO	INE922B01023
Pantaloon Retail (India) Ltd.	Miscellaneous	PANTALOONR	INE623B01019
Paper Products Ltd.	Paper and Paper Products	PAPERPROD	INE275B01018
Patel Engineering Ltd.	Construction	PATELENG	INE244B01030
Patni Computer Systems Ltd.	Computers—Software	PATNI	INE660F01012
Patspin India Ltd.	Textiles—Cotton	PATSPINLTD	INE790C01014
Petronet LNG Ltd.	Gas	PETRONET	INE347G01014
Pfizer Ltd.	Pharmaceuticals	PFIZER	INE182A01018
Pidilite Industries Ltd.	Chemicals—Organic	PIDILITIND	INE318A01026
PNB Gilts Ltd.	Finance	PNBGILTS	INE859A01011
Polaris Software Lab Ltd.	Computers—Software	POLARIS	INE763A01023
Praj Industries Ltd.	Engineering	PRAJIND	INE074A01025
Pricol Ltd.	Auto Ancillaries	PRICOL	INE605A01026
Prism Cement Ltd.	Cement and Cement Products	PRISMCEM	INE010A01011

(*Continued*)

TABLE I.9 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Pritish Nandy Communications Ltd.	Media & Entertainment	PNC	INE392B01011
Procter & Gamble Hygiene & Health Care Ltd.	Personal Care	PGHH	INE179A01014
PSL Ltd.	Miscellaneous	PSL	INE474B01017
Pudumjee Pulp & Paper Mills Ltd.	Paper and Paper Products	PDUMJEPULP	INE606A01016
Punj Lloyd Ltd.	Construction	PUNJLLOYD	INE701B01013
Punjab National Bank	Banks	PNB	INE160A01014
Punjab Tractors Ltd.	Automobiles—4 Wheelers	PUNJABTRAC	INE170A01013
Radico Khaitan Ltd.	Brew/Distilleries	RADICO	INE944F01028
Rain Calcining Ltd.	Petrochemicals	RAINCALCIN	INE329A01015
Rajesh Exports Ltd.	Trading	RAJESHEXPO	INE343B01022
Rallis India Ltd.	Pesticides and Agrochemicals	RALLIS	INE613A01012
Ramco Industries Ltd.	Cement and Cement Products	RAMCOIND	INE614A01010
Ramco Systems Ltd.	Computers—Software	RAMCOSYS	INE614A01010
Ranbaxy Laboratories Ltd.	Pharmaceuticals	RANBAXY	INE015A01028
Rane Brake Linings Ltd.	Auto Ancillaries	RANEBRAKE	INE413A01017
Rane Engine Valves Ltd.	Auto Ancillaries	REVL	INE385A01017
Rashtriya Chemicals & Fertilizers Ltd.	Fertilizers	RCF	INE027A01015
Raymond Ltd.	Textile Products	RAYMOND	INE301A01014
Reliance Capital Ltd.	Finance	RELCAPITAL	INE013A01015
Reliance Communications Ltd.	Telecommunications—Services	RCOM	INE330H01018
Reliance Energy Ltd.	Power	REL	INE036A01016
Reliance Industrial Infrastructure Ltd.	Engineering	RIIL	INE046A01015
Reliance Industries Ltd.	Refineries	RELIANCE	INE002A01018

TABLE I.9 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Reliance Natural Resources Ltd.	Gas	RNRL	INE328H01012
Rico Auto Industries Ltd.	Auto Ancillaries	RICOAUTO	INE209B01025
Rolta India Ltd.	Computers—Software	ROLTA	INE293A01013
RPG Life Sciences Ltd.	Pesticides and Agrochemicals	SEARLEIND	INE629A01018
RSWM Ltd.	Textiles—Synthetic	RSWM	INE611A01016
Ruchi Soya Industries Ltd.	Solvent Extraction	RUCHISOYA	INE619A01019
S. Kumars Nationwide Ltd.	Textile Products	SKUMARSYNF	INE772A01016
S.B. & T. International Ltd.	Gems	SB&TINTL	INE465B01015
Sakthi Sugars Ltd.	Sugar	SAKHTISUG	INE623A01011
Salora International Ltd.	Consumer Durables	SALORAINTL	INE924A01013
Samtel Color Ltd.	Consumer Durables	SAMTEL	INE381A01016
Sandesh Ltd.	Printing and Publishing	SANDESH	INE583B01015
Saregama India Ltd	Media & Entertainment	SAREGAMA	INE979A01017
Satyam Computer Services Ltd.	Computers—Software	SATYAMCOMP	INE275A01028
Sesa Goa Ltd.	Mining	SESAGOA	INE205A01017
Seshasayee Paper & Boards Ltd.	Paper and Paper Products	SESHAPAPER	INE630A01016
Shanthi Gears Ltd.	Auto Ancillaries	SHANTIGEAR	INE631A01022
Shasun Chemicals & Drugs Ltd.	Pharmaceuticals	SHASUNCHEM	INE317A01028
Shipping Corporation of India Ltd.	Shipping	SCI	INE109A01011
Shoppers Stop Ltd.	Miscellaneous	SHOPERSTOP	INE498B01016
Shree Cement Ltd.	Cement and Cement Products	SHREECEM	INE070A01015
Shree Renuka Sugars Ltd.	Sugar	RENUKA	INE087H01014
Shrenuj & Co. Ltd.	Gems	SHRENUJ	INE633A01028
Shriram Transport Finance Co. Ltd.	Finance	SRTRANSFIN	INE721A01013

(*Continued*)

TABLE I.9 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Siemens Ltd.	Electrical Equipment	SIEMENS	INE003A01024
Simplex Infrastructures Ltd.	Construction	SIMPLEXINF	INE059B01024
Sintex Industries Ltd.	Plastic and Plastic Products	SINTEX	INE429C01027
Sirpur Paper Mills Ltd.	Paper and Paper Products	SIRPAPER	INE202C01010
SKF India Ltd.	Bearings	SKFINDIA	INE640A01023
Sona Koyo Steering Systems Ltd.	Auto Ancillaries	SONASTEER	INE643A01027
Sonata Software Ltd.	Computers—Software	SONATSOFTW	INE269A01021
South East Asia Marine Engineering & Construction Ltd.	Oil Exploration/Production	SEAMECLTD	INE497B01018
South Indian Bank Ltd.	Banks	SOUTHBANK	INE683A01015
SREI Infrastructure Finance Ltd.	Finance	SREINTFIN	INE872A01014
SRF Ltd.	Textiles—Synthetic	SRF	INE647A01010
Sri Adhikari Brothers Television Network Ltd.	Media & Entertainment	SRIADIKARI	INE416A01028
SSI Ltd.	Computers—Software	SOFTSOLINT	INE362A01016
State Bank of India	Banks	SBIN	INE062A01012
State Trading Corporation of India Ltd.	Trading	STCINDIA	INE655A01013
Steel Authority of India Ltd.	Steel and Steel Products	SAIL	INE114A01011
Sterling Biotech Ltd	Pharmaceuticals	STERLINBIO	INE324C01038
Sterlite Industries (India) Ltd.	Metals	STER	INE268A01031
Sterlite Optical Technologies Ltd.	Cables—Telecom	STROPTICAL	INE089C01011
Strides Arcolab Ltd.	Pharmaceuticals	STAR	INE939A01011
Sun Pharmaceutical Industries Ltd.	Pharmaceuticals	SUNPHARMA	INE044A01028

TABLE I.9 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Sun TV Ltd.	Media & Entertainment	SUNTV	INE424H01019
Sundaram Brake Linings Ltd.	Auto Ancillaries	SUNDRMBRAK	INE073D01013
Sundaram Fasteners Ltd.	Fasteners	SUNDRMFAST	INE387A01021
Sundaram Finance Ltd.	Finance	SUNDARMFIN	INE660A01013
Sundaram-Clayton Ltd.	Auto Ancillaries	SUNDRMCLAY	INE105A01019
Supreme Industries Ltd.	Plastic and Plastic Products	SUPREMEIND	INE195A01010
Supreme Petrochem Ltd.	Petrochemicals	SUPPETRO	INE663A01017
Surya Roshni Ltd.	Steel and Steel Products	SURYAROSNI	INE335A01012
Suzlon Energy Ltd.	Electrical Equipment	SUZLON	INE040H01013
Swaraj Engines Ltd.	Diesel Engines	SWARAJENG	INE277A01016
Swaraj Mazda Ltd.	Automobiles—4 Wheelers	SWARAJMAZD	INE294B01019
Syndicate Bank	Banks	SYNDIBANK	INE667A01018
Taj GVK Hotels & Resorts Ltd.	Hotels	TAJGVK	INE586B01026
Tamil Nadu Newsprint & Papers Ltd.	Paper and Paper Products	TNPL	INE107A01015
Tamilnadu Petroproducts Ltd.	Petrochemicals	TNPETRO	INE148A01019
Tata Chemicals Ltd.	Chemicals—Inorganic	TATACHEM	INE092A01019
Tata Coffee Ltd.	Tea and Coffee	TATACOFFEE	INE493A01019
Tata Consultancy Services Ltd.	Computers—Software	TCS	INE467B01029
Tata Elxsi Ltd.	Computers—Hardware	TATAELXSI	INE670A01012
Tata Investment Corporation Ltd.	Finance	TATAINVEST	INE672A01018
Tata Metaliks Ltd.	Steel and Steel Products	TATAMETALI	INE056C01010
Tata Motors Ltd.	Automobiles—4 Wheelers	TATAMOTORS	INE155A01014
Tata Power Co. Ltd.	Power	TATAPOWER	INE245A01013

(*Continued*)

TABLE I.9 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Tata Sponge Iron Ltd.	Metals	TATASPONGE	INE674A01014
Tata Steel Ltd.	Steel and Steel Products	TATASTEEL	INE081A01012
Tata Tea Ltd.	Tea and Coffee	TATATEA	INE192A01017
Thermax Ltd.	Electrical Equipment	THERMAX	INE152A01029
Thiru Arooran Sugars Ltd.	Sugar	THIRUSUGAR	INE409A01015
Thomas Cook (India) Ltd.	Miscellaneous	THOMASCOOK	INE332A01019
Tips Industries Ltd.	Media & Entertainment	TIPSINDLTD	INE716B01011
Titan Industries Ltd.	Gems	TITAN	INE280A01010
Today's Writing Products Ltd.	Miscellaneous	TODAYS	INE944B01019
Torrent Pharmaceuticals Ltd.	Pharmaceuticals	TORNTPHARM	INE685A01028
Tourism Finance Corporation of India Ltd.	Financial Institution	TFCILTD	INE305A01015
Trent Ltd.	Miscellaneous	TRENT	INE849A01012
Trigyn Technologies Ltd.	Computers—Software	TRIGYN	INE948A01012
Triveni Engineering & Industries Ltd.	Sugar	TRIVENI	INE256C01024
Tube Investments of India Ltd.	Cycles	TUBEINVEST	INE149A01025
TV Today Network Ltd.	Media & Entertainment	TVTODAY	INE038F01029
TVS Motor Company Ltd.	Automobiles—2 and 3 Wheelers	TVSMOTOR	INE494B01023
UCAL Fuel Systems Ltd.	Auto Ancillaries	UCALFUEL	INE139B01016
UCO Bank	Banks	UCOBANK	INE691A01018
UltraTech Cement Ltd.	Cement and Cement Products	ULTRACEMCO	INE481G01011
Unichem Laboratories Ltd.	Pharmaceuticals	UNICHEMLAB	INE351A01027
Union Bank of India	Banks	UNIONBANK	INE692A01016
Unitech Ltd.	Construction	UNITECH	INE694A01020

TABLE I.9 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
United Phosphorous Ltd.	Pesticides and Agrochemicals	UNIPHOS	INE628A01036
Usha Martin Ltd.	Steel and Steel Products	USHAMART	INE228A01027
UTI Bank Ltd.	Banks	UTIBANK	INE238A01026
Uttam Galva Steels Ltd.	Steel and Steel Products	UTTAMSTL	INE699A01011
V.I.P. Industries Ltd.	Plastic and Plastic Products	VIPIND	INE054A01019
Vardhman Polytex Ltd.	Textiles—Cotton	VARDMNPOLY	INE835A01011
Vardhman Textiles Ltd.	Textiles—Cotton	VTL	INE825A01012
Venky's (India) Ltd.	Miscellaneous	VENKEYS	INE398A01010
Vesuvius India Ltd.	Refractories	VESUVIUS	INE386A01015
Videocon Appliances Ltd.	Consumer Durables	VDOCONAPPL	INE352A01017
Videocon Industries Ltd.	Consumer Durables	VIDEOIND	INE703A01011
Videsh Sanchar Nigam Ltd.	Telecommunications—Services	VSNL	INE151A01013
Vijaya Bank	Banks	VIJAYABANK	INE705A01016
Vindhya Telelinks Ltd.	Cables—Telecom	VINDHYATEL	INE707A01012
Visaka Industries Ltd.	Cement and Cement Products	VISAKAIND	INE392A01013
Vishal Exports Overseas Ltd.	Trading	VISHALEXPO	INE167C01023
Visualsoft Technologies Ltd.	Computers—Software	VISUALSOFT	INE755A01011
Voltas Ltd.	Air Conditioners	VOLTAS	INE226A01021
VST Industries Ltd.	Cigarettes	VSTIND	INE710A01016
Welspun Gujarat Stahl Rohren Ltd.	Steel and Steel Products	WELGUJ	INE191B01025
Welspun India Ltd.	Textile Products	WELSPUNIND	INE192B01023
West Coast Paper Mills Ltd.	Paper and Paper Products	WSTCSTPAPR	INE976A01013
Wheels India Ltd.	Auto Ancillaries	WHEELS	INE715A01015
Wipro Ltd.	Computers—Software	WIPRO	INE075A01022
Wockhardt Ltd.	Pharmaceuticals	WOCKPHARMA	INE049B01025
Wyeth Ltd.	Pharmaceuticals	WYETH	INE378A01012

(*Continued*)

TABLE I.9 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Zandu Pharmaceutical Works Ltd.	Pharmaceuticals	ZANDUPHARM	INE719A01017
Zee Entertainment Enterprises Ltd	Media & Entertainment	ZEEL	INE256A01028
Zenith Computer Ltd.	Computers—Hardware	ZENITHCOMP	INE598B01013
Zensar Technologies Ltd.	Computers—Hardware	ZENSARTECH	INE520A01019
Zodiac Clothing Co. Ltd.	Textile Products	ZODIACLOTH	INE206B01013
Zuari Industries Ltd.	Fertilizers	ZUARIAGRO	INE217A01012

As of December 2006.
Source: The National Stock Exchange.

TABLE I.10 S&P CNX 500 Industry Groups

Industry	Companies
Abrasives	Carborundum Universal Ltd.
Air Conditioners	Blue Star Ltd.
	Voltas Ltd.
Aluminum	Hindalco Industries Ltd.
	National Aluminium Co. Ltd.
Auto Ancillaries	Amara Raja Batteries Ltd.
	Amtek Auto Ltd.
	Asahi India Glass Ltd.
	Automotive Axles Ltd.
	Bosch Chassis Systems India Ltd.
	Elgitread (India) Ltd.
	Exide Industries Ltd.
	Federal-Mogul Goetze (India) Ltd.
	India Nippon Electricals Ltd.
	Lumax Industries Ltd.
	Motherson Sumi Systems Ltd.
	Motor Industries Co. Ltd.
	Munjal Showa Ltd.
	Omax Autos Ltd.

TABLE I.10 (*Continued*)

Industry	Companies
	Pricol Ltd.
	Rane Brake Linings Ltd.
	Rane Engine Valves Ltd.
	Rico Auto Industries Ltd.
	Shanthi Gears Ltd.
	Sona Koyo Steering Systems Ltd.
	Sundaram Brake Linings Ltd.
	Sundaram-Clayton Ltd.
	UCAL Fuel Systems Ltd.
	Wheels India Ltd.
Automobiles—2 and 3 Wheelers	Bajaj Auto Ltd.
	Hero Honda Motors Ltd.
	Maharashtra Scooters Ltd.
	TVS Motor Company Ltd.
Automobiles—4 Wheelers	Ashok Leyland Ltd.
	Eicher Motors Ltd.
	Escorts Ltd.
	Hindustan Motors Ltd.
	HMT Ltd.
	Mahindra & Mahindra Ltd.
	Maruti Udyog Ltd.
	Punjab Tractors Ltd.
	Swaraj Mazda Ltd.
	Tata Motors Ltd.
Banks	Allahabad Bank
	Andhra Bank
	Bank of Baroda
	Bank of India
	Canara Bank
	City Union Bank Ltd.
	Corporation Bank
	Dena Bank
	Federal Bank Ltd.
	HDFC Bank Ltd.
	ICICI Bank Ltd.
	Indian Overseas Bank
	IndusInd Bank Ltd.
	Industrial Development Bank of India Ltd.
	ING Vysya Bank Ltd.
	Jammu & Kashmir Bank Ltd.
	Karnataka Bank Ltd.

(*Continued*)

TABLE I.10 (*Continued*)

Industry	Companies
	Karur Vysya Bank Ltd.
	Kotak Mahindra Bank Ltd.
	Lakshmi Vilas Bank Ltd.
	Oriental Bank of Commerce
	Punjab National Bank
	South Indian Bank Ltd.
	State Bank of India
	Syndicate Bank
	UCO Bank
	Union Bank of India
	UTI Bank Ltd.
	Vijaya Bank
Bearings	Fag Bearings India Ltd.
	NRB Bearings Ltd.
	SKF India Ltd.
Brew/Distilleries	Mcdowell & Company Ltd.
	Radico Khaitan Ltd
Cables—Telecom	Aksh Optifibre Ltd.
	Birla Ericsson Optical Ltd.
	Sterlite Optical Technologies Ltd.
	Vindhya Telelinks Ltd.
Castings/Forgings	Bharat Forge Ltd.
	Electrosteel Castings Ltd.
Cement and Cement Products	ACC Ltd.
	Birla Corporation Ltd.
	Dalmia Cement (Bharat) Ltd.
	Everest Industries Ltd.
	Grasim Industries Ltd.
	Gujarat Ambuja Cements Ltd.
	India Cements Ltd.
	KCP Ltd.
	Madras Cements Ltd.
	Prism Cement Ltd.
	Ramco Industries Ltd.
	Shree Cement Ltd.
	UltraTech Cement Ltd.
	Visaka Industries Ltd.
Chemicals—Inorganic	GHCL Ltd.
	Godrej Industries Ltd.
	Gujarat Alkalies & Chemicals Ltd.
	Tata Chemicals Ltd.

TABLE I.10 (*Continued*)

Industry	Companies
Chemicals—Organic	Aarti Industries Ltd.
	Hikal Ltd.
	Pidilite Industries Ltd.
Chemicals—Specialty	BASF India Ltd.
	Foseco India Ltd.
Cigarettes	Godfrey Phillips India Ltd.
	ITC Ltd.
	VST Industries Ltd.
Compressors/Pumps	Elgi Equipments Ltd.
	Ingersoll Rand (India) Ltd.
	Kirloskar Brothers Ltd
	KSB Pumps Ltd.
Computers—Hardware	CMC Ltd.
	D-Link India Ltd
	HCL Infosystems Ltd.
	Moser Baer India Ltd.
	MRO-TEK Ltd.
	Onward Technologies Ltd.
	Tata Elxsi Ltd.
	Zenith Computer Ltd.
	Zensar Technolgies Ltd.
Computers—Software	Aftek Infosys Ltd
	Aptech Ltd.
	Aztecsoft Ltd.
	Blue Star Infotech Ltd.
	Financial Technologies (India) Ltd.
	Geometric Software Solutions Co. Ltd.
	GTL Ltd.
	HCL Technologies Ltd.
	Hexaware Technologies Ltd.
	Hinduja TMT Ltd.
	I-Flex Solutions Ltd.
	iGate Global Solutions Ltd.
	Infosys Technologies Ltd.
	Infotech Enterprises Ltd.
	Kale Consultants Ltd.
	KPIT Cummins Infosystem Ltd.
	Maars Software International Ltd.
	Mastek Ltd.
	Melstar Information Technologies Ltd.
	Mphasis BFL Ltd.

(*Continued*)

TABLE I.10 (*Continued*)

Industry	Companies
	Orient Information Technologies Ltd.
	Patni Computer Systems Ltd.
	Polaris Software Lab Ltd.
	Ramco Systems Ltd.
	Rolta India Ltd.
	Satyam Computer Services Ltd.
	Sonata Software Ltd.
	SSI Ltd.
	Tata Consultancy Services Ltd.
	Trigyn Technologies Ltd.
	Visualsoft Technologies Ltd.
	Wipro Ltd.
Construction	Ansal Properties & Infrastructure Ltd.
	B. L. Kashyap & Sons Ltd.
	D. S. Kulkarni Developers Ltd.
	Engineers India Ltd.
	Era Constructions (India) Ltd.
	Gammon India Ltd.
	GMR Infrastructure Ltd.
	Hindustan Construction Co. Ltd.
	Hindustan Sanitaryware & Industries Ltd.
	IVRCL Infrastructures & Projects Ltd.
	Jaiprakash Associates Ltd.
	Kajaria Ceramics Ltd.
	KEC Infrastructures Ltd.
	Mahindra Gesco Corporation Ltd.
	Nagarjuna Construction Co. Ltd.
	Patel Engineering Ltd.
	Punj Lloyd Ltd.
	Simplex Infrastructures Ltd.
	Unitech Ltd.
Consumer Durables	BPL Ltd.
	Mirc Electronics Ltd.
	Salora International Ltd.
	Samtel Color Ltd.
	Videocon Appliances Ltd.
	Videocon Industries Ltd.
Cycles	Atlas Cycle (Haryana) Ltd.
	Tube Investments of India Ltd.
Detergents	Nirma Ltd.
Diesel Engines	Cummins India Ltd.

TABLE I.10 (*Continued*)

Industry	Companies
	Greaves Cotton Ltd.
	Kirloskar Oil Engines Ltd.
	Swaraj Engines Ltd.
Diversified	Andhra Sugars Ltd.
	Century Textile & Industries Ltd.
	DCM Shriram Consolidated Ltd.
	E.I.D. Parry (India) Ltd.
	Hindustan Lever Ltd.
	Orient Paper & Industries Ltd.
Dyes and Pigments	Atul Ltd.
	Clariant Chemicals (India) Ltd.
Electrical Equipment	ABB Ltd.
	Bharat Heavy Electricals Ltd.
	Crompton Greaves Ltd.
	Havell's India Ltd.
	Honda SIEL Power Products Ltd.
	NEPC India Ltd.
	Siemens Ltd.
	Suzlon Energy Ltd.
	Thermax Ltd.
Electrodes	Ador Welding Ltd.
	ESAB India Ltd.
	Graphite India Ltd.
	H.E.G. Ltd.
Electronics—Industrial	Asian Electronics Ltd.
	Bharat Electronics Ltd.
	FCI OEN Connectors Ltd.
	Honeywell Automation India Ltd.
	NELCO Ltd.
Engineering	Alfa Laval (India) Ltd.
	Bharat Earth Movers Ltd.
	Larsen & Toubro Ltd.
	Praj Industries Ltd.
	Reliance Industrial Infrastructure Ltd.
Fasteners	Sundaram Fasteners Ltd.
Fertilizers	Chambal Fertilizers & Chemicals Ltd.
	Coromandel Fertilisers Ltd.
	Deepak Fertilisers & Petrochemicals Corp. Ltd.
	Godavari Fertilisers & Chemicals Ltd.
	Gujarat Narmada Valley Fertilisers Co. Ltd.
	Gujarat State Fertilizers & Chemicals Ltd.

(*Continued*)

TABLE I.10 (*Continued*)

Industry	Companies
	Nagarjuna Fertilizers & Chemicals Ltd.
	Rashtriya Chemicals & Fertilizers Ltd.
	Zuari Industries Ltd.
Finance	Bajaj Auto Finance Ltd.
	Cholamandalam DBS Finance Ltd.
	Consolidated Finvest & Holdings Ltd.
	Eicher Ltd.
	First Leasing Co. of India Ltd.
	IL&FS Investsmart Ltd.
	Indiabulls Financial Services Ltd.
	Mahindra & Mahindra Financial Services Ltd.
	PNB Gilts Ltd.
	Reliance Capital Ltd.
	Shriram Transport Finance Co. Ltd.
	SREI Infrastructure Finance Ltd.
	Sundaram Finance Limited
	Tata Investment Corporation Ltd.
Finance—Housing	Can Fin Homes Ltd.
	Housing Development Finance Corporation Ltd.
	LIC Housing Finance Ltd.
Financial Institution	Infrastructure Devlopment Finance Co. Ltd.
	Tourism Finance Corporation of India Ltd.
Food and Food Processing	Agro Dutch Industries Ltd.
	Britannia Industries Ltd.
	GlaxoSmithkline Consumer Healthcare Ltd.
	Heritage Foods (India) Ltd.
	Kohinoor Foods Ltd.
	Kothari Products Ltd.
Gas	BOC India Ltd.
	GAIL (India) Ltd.
	Gujarat Fluorochemicals Ltd.
	Gujarat Gas Co. Ltd.
	Indraprastha Gas Ltd.
	Petronet LNG Ltd.
	Reliance Natural Resources Ltd.
Gems, Jewelry, and Watches	Gitanjali Gems Ltd.
	S.B. & T. International Ltd.
	Shrenuj & Co. Ltd.
	Titan Industries Ltd.
Hotels	Asian Hotels Ltd.
	EIH Ltd.

TABLE I.10 (*Continued*)

Industry	Companies
	Hotel Leelaventure Ltd.
	Indian Hotels Co. Ltd.
	Oriental Hotels Ltd.
	Taj GVK Hotels & Resorts Ltd.
Leather and Leather Products	Bata India Ltd.
	Mirza International Ltd.
Media and Entertainment	Adlabs Films Ltd.
	Balaji Telefilms Ltd.
	Cinevistaas Ltd.
	Crest Animation Studios Ltd.
	Inox Leisure Ltd.
	Jain Studios Ltd.
	Mukta Arts Ltd.
	NDTV Ltd.
	Pritish Nandy Communications Ltd.
	Saregama India Ltd
	Sri Adhikari Brothers Television Network Ltd.
	Sun TV Ltd.
	Tips Industries Ltd.
	TV Today Network Ltd.
	Zee Telefilms Ltd.
Metals	L.G. Balakrishnan & Bros Ltd.
	Nava Bharat Ventures Ltd.
	Sterlite Industries (India) Ltd.
	Tata Sponge Iron Ltd.
Mining	Gujarat Mineral Development Corporation Ltd.
	Gujarat NRE Coke Ltd.
	Sesa Goa Ltd.
Miscellaneous	Apollo Hospitals Enterprises Ltd.
	Balmer Lawrie & Co. Ltd.
	Blue Dart Express Ltd.
	Container Corporation of India Ltd.
	CRISIL Ltd.
	DIC India Ltd.
	Dredging Corporation of India Ltd.
	Finolex Cables Ltd.
	Indraprastha Medical Corporation Ltd.
	Micro Inks Ltd.
	Pantaloon Retail (India) Ltd.
	PSL Ltd.
	Shoppers Stop Ltd.

(*Continued*)

TABLE I.10 (*Continued*)

Industry	Companies
	Thomas Cook (India) Ltd.
	Today's Writing Products Ltd.
	Trent Ltd.
	Venky's (India) Ltd.
Oil Exploration/Production	Aban Offshore Ltd.
	Hindustan Oil Exploration Co. Ltd.
	Oil & Natural Gas Corporation Ltd.
	SE Asia Marine Engineering & Construction Ltd.
Packaging	Cosmo Films Ltd.
	Essel Propack Ltd.
	Flex Industries Ltd.
	Max India Ltd.
Paints	Asian Paints Ltd.
	Berger Paints India Ltd.
	ICI India Ltd.
	Kansai Nerolac Paints Ltd.
Paper and Paper Products	Ballarpur Industries Ltd.
	Paper Products Ltd.
	Pudumjee Pulp & Paper Mills Ltd.
	Seshasayee Paper & Boards Ltd.
	Sirpur Paper Mills Ltd.
	Tamil Nadu Newsprint & Papers Ltd.
	West Coast Paper Mills Ltd.
Personal Care	Colgate-Palmolive (India) Ltd.
	Dabur India Ltd.
	Gillette India Ltd.
	Godrej Consumer Products Ltd.
	Procter & Gamble Hygiene & Health Care Ltd.
Pesticides and Agrochemicals	Monsanto India Ltd.
	Rallis India Ltd.
	RPG Life Sciences Ltd.
	United Phosphorous Ltd.
Petrochemicals	Bhansali Engineering Polymers Ltd.
	Chemplast Sanmar Ltd.
	DCW Ltd.
	Finolex Industries Ltd.
	India Glycols Ltd.
	Indian Petrochemicals Corporation Ltd.
	LANXESS ABS Ltd.
	Narmada Chematur Petrochemicals Ltd.
	Rain Calcining Ltd.

TABLE I.10 (*Continued*)

Industry	Companies
	Supreme Petrochem Ltd.
	Tamilnadu Petroproducts Ltd.
Pharmaceuticals	Ajanta Pharmaceuticals Ltd.
	Alembic Ltd.
	AstraZenca Pharma India Ltd.
	Aurobindo Pharma Ltd.
	Aventis Pharma Ltd.
	Biocon Ltd.
	Cadila Healthcare Ltd.
	Carol Info Services Ltd.
	Cipla Ltd.
	Dabur Pharma Ltd.
	Dishman Pharmaceuticals & Chemicals Ltd.
	Divi's Laboratories Ltd.
	Dr. Reddy's Laboratories Ltd.
	E. Merck (India) Ltd.
	Elder Pharmaceuticals Ltd.
	FDC Ltd.
	GlaxoSmithKline Pharmaceuticals Ltd.
	Glenmark Pharmaceuticals Ltd.
	Ind-Swift Laboratories Ltd.
	Ipca Laboratories Ltd.
	J.B. Chemicals & Pharmaceuticals Ltd.
	Jagsonpal Pharmaceuticals Ltd.
	Jubilant Organosys Ltd.
	Kopran Ltd.
	Lupin Ltd.
	Matrix Laboratories Ltd.
	Nicholas Piramal India Ltd.
	Orchid Chemicals & Pharmaceuticals Ltd.
	Panacea Biotec Ltd.
	Pfizer Ltd.
	Ranbaxy Laboratories Ltd.
	Shasun Chemicals & Drugs Ltd.
	Sterling Biotech Ltd
	Strides Arcolab Ltd.
	Sun Pharmaceutical Industries Ltd.
	Torrent Pharmaceuticals Ltd.
	Unichem Laboratories Ltd.
	Wockhardt Ltd.
	Wyeth Ltd.

(*Continued*)

TABLE I.10 (*Continued*)

Industry	Companies
	Zandu Pharmaceutical Works Ltd.
Plastic and Plastic Products	Jain Irrigation Systems Ltd.
	Nilkamal Plastics Ltd.
	Sintex Industries Ltd.
	Supreme Industries Ltd.
	V.I.P. Industries Ltd.
Power	Alstom Projects India Ltd.
	CESC Ltd.
	Gujarat Industries Power Co. Ltd.
	Neyveli Lignite Corporation Ltd.
	NTPC Ltd.
	Reliance Energy Ltd.
	Tata Power Co. Ltd.
Printing and Publishing	Archies Ltd.
	Deccan Chronicle Holdings Ltd.
	HT Media Ltd.
	Macmillan India Ltd
	Mid-Day Multimedia Ltd
	Navneet Publications (India) Ltd.
	Sandesh Ltd.
Refineries	Bharat Petroleum Corporation Ltd.
	Bongaigaon Refinery & Petrochemicals Ltd.
	Chennai Petroleum Corporation Ltd.
	Essar Oil Ltd.
	Hindustan Petroleum Corporation Ltd.
	IBP Co. Ltd.
	Indian Oil Corporation Ltd.
	Mangalore Refinery & Petrochemicals Ltd.
	Reliance Industries Ltd.
Refractories	Vesuvius India Ltd.
Shipping	Mercator Lines Ltd.
	Shipping Corporation of India Ltd.
Solvent Extraction	Agro Tech Foods Ltd.
	Marico Ltd.
	Ruchi Soya Industries Ltd.
Steel and Steel Products	Bhushan Steel & Strips Ltd.
	Essar Steel Ltd.
	Jindal Saw Ltd.
	Jindal Stainless Ltd.
	Jindal Steel & Power Ltd.
	JSW Steel Ltd.

TABLE I.10 (*Continued*)

Industry	Companies
	Maharashtra Seamless Ltd.
	Mahindra Ugine Steel Co. Ltd.
	Monnet Ispat Ltd.
	Steel Authority of India Ltd.
	Surya Roshni Ltd.
	Tata Metaliks Ltd.
	Tata Steel Ltd.
	Usha Martin Ltd.
	Uttam Galva Steels Ltd.
	Welspun Gujarat Stahl Rohren Ltd.
Sugar	Bajaj Hindusthan Ltd.
	Balrampur Chini Mills Ltd.
	Bannari Amman Sugars Ltd.
	Dhampur Sugar Mills Ltd.
	Dwarikesh Sugar Industrial Ltd.
	Kakatiya Cement Sugar & Industries Ltd.
	Sakthi Sugars Ltd.
	Shree Renuka Sugars Ltd.
	Thiru Arooran Sugars Ltd.
	Triveni Engineering & Industries Ltd.
Tea and Coffee	Harrisons Malayalam Ltd.
	Jay Shree Tea & Industries Ltd.
	Tata Coffee Ltd.
	Tata Tea Ltd.
Telecommunications—Equipment	Avaya GlobalConnect Ltd.
	Himachal Futuristic Communications Ltd.
Telecommunications—Services	Bharti Airtel Ltd.
	Mahanagar Telephone Nigam Ltd.
	Reliance Communications Ltd.
	Videsh Sanchar Nigam Ltd.
Textile Machinery	Indian Card Clothing Co. Ltd.
	Lakshmi Machine Works Ltd.
Textile Products	Arvind Mills Ltd.
	Gokaldas Exports Ltd.
	Himatsingka Seide Ltd.
	Raymond Ltd.
	S. Kumars Nationwide Ltd.
	Welspun India Ltd.
	Zodiac Clothing Co. Ltd.
Textiles—Cotton	Abhishek Industries Ltd
	Bombay Dyeing & Manufacturing Co. Ltd.

(*Continued*)

TABLE I.10 (*Continued*)

Industry	Companies
	GTN Industries Ltd.
	Maral Overseas Ltd.
	Nahar Exports Ltd.
	Patspin India Ltd.
	Vardhman Polytex Ltd.
	Vardhman Textiles Ltd.
Textiles—Synthetic	Aditya Birla Nuvo Ltd.
	Alok Industries Ltd.
	Century Enka Ltd.
	Garden Silk Mills Ltd.
	Indo Rama Synthetics Ltd.
	Jindal Poly Films Ltd.
	Nahar Spinning Mills Ltd.
	Nova Petrochemicals Ltd.
	RSWM Ltd.
	SRF Ltd.
Tires	Apollo Tyres Ltd.
	Ceat Ltd.
	Kesoram Industries Ltd.
	MRF Ltd.
Trading	3M India Ltd.
	Adani Enterprises Ltd.
	Gujarat Ambuja Exports Ltd.
	Rajesh Exports Ltd.
	State Trading Corporation of India Ltd.
	Vishal Exports Overseas Ltd.
Transmission Towers	Jyoti Structures Ltd.
	Kalpataru Power Transmission Ltd.
Travel and Transport	Gateway Distriparks Ltd.
	Jet Airways (India) Ltd.

As of December 2006.
Source: The National Stock Exchange.

TABLE I.11 CNX Midcap Constituent List

Company Name	Industry	Symbol	ISIN Code
Amtek Auto Ltd.	Auto Ancillaries	AMTEKAUTO	INE130C01021
Asahi India Glass Ltd.	Auto Ancillaries	ASAHIINDIA	INE439A01020
Exide Industries Ltd.	Auto Ancillaries	EXIDEIND	INE302A01020
Motherson Sumi Systems Ltd.	Auto Ancillaries	MOTHERSUMI	INE775A01035
Sundaram-Clayton Ltd.	Auto Ancillaries	SUNDRMCLAY	INE105A01019
TVS Motor Company Ltd.	Automobiles—2 and 3 Wheelers	TVSMOTOR	INE494B01023
Ashok Leyland Ltd.	Automobiles—4 Wheelers	ASHOKLEY	INE208A01029
HMT Ltd.	Automobiles—4 Wheelers	HMT	INE262A01018
Punjab Tractors Ltd.	Automobiles—4 Wheelers	PUNJABTRAC	INE170A01013
Allahabad Bank	Banks	ALBK	INE428A01015
Andhra Bank	Banks	ANDHRABANK	INE434A01013
Bank of India	Banks	BANKINDIA	INE084A01016
Bank of Maharashtra.	Banks	MAHABANK	INE457A01014
Centurion Bank of Punjab Ltd.	Banks	CENTBOP	INE484A01026
Corporation Bank	Banks	CORPBANK	INE112A01015
IndusInd Bank Ltd.	Banks	INDUSINDBK	INE095A01012
Industrial Development Bank of India Ltd.	Banks	IDBI	INE008A01015
ING Vysya Bank Ltd.	Banks	INGVYSYABK	INE166A01011
Jammu & Kashmir Bank Ltd.	Banks	J&KBANK	INE168A01017
Syndicate Bank	Banks	SYNDIBANK	INE667A01018
UCO Bank	Banks	UCOBANK	INE691A01018
Union Bank of India	Banks	UNIONBANK	INE692A01016
Vijaya Bank	Banks	VIJAYABANK	INE705A01016
Birla Corporation Ltd.	Cement and Cement Products	BIRLAJUTE	INE340A01012
Madras Cements Ltd.	Cement and Cement Products	MADRASCEM	INE331A01029
Shree Cement Ltd.	Cement and Cement Products	SHREECEM	INE070A01015

(*Continued*)

TABLE I.11 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
HCL Infosystems Ltd.	Computers—Hardware	HCL-INSYS	INE236A01020
Moser Baer India Ltd.	Computers—Hardware	MOSERBAER	INE739A01015
Hexaware Technologies Ltd.	Computers—Software	HEXAWARE	INE093A01033
Hinduja TMT Ltd.	Computers—Software	HTMT	INE353A01015
Mphasis BFL Ltd.	Computers—Software	MPHASISBFL	INE356A01018
Patni Computer Systems Ltd.	Computers—Software	PATNI	INE660F01012
Polaris Software Lab Ltd.	Computers—Software	POLARIS	INE763A01023
Engineers India Ltd.	Construction	ENGINERSIN	INE510A01010
Gammon India Ltd.	Construction	GAMMONIND	INE259B01020
Nirma Ltd.	Detergents	NIRMA	INE091A01011
Cummins India Ltd.	Diesel Engines	CUMMINSIND	INE298A01020
Century Textile & Industries Ltd.	Diversified	CENTURYTEX	INE055A01016
Crompton Greaves Ltd.	Electrical Equipment	CROMPGREAV	INE067A01029
Thermax Ltd.	Electrical Equipment	THERMAX	INE152A01029
Alfa Laval (India) Ltd.	Engineering	ALFALAVAL	INE427A01017
Bharat Earth Movers Ltd.	Engineering	BEML	INE258A01016
Sundaram Fasteners Ltd.	Fasteners	SUNDRMFAST	INE387A01021
Chambal Fertilizers & Chemicals Ltd.	Fertilizers	CHAMBLFERT	INE085A01013
Rashtriya Chemicals & Fertilizers Ltd.	Fertilizers	RCF	INE027A01015
Indiabulls Financial Services Ltd.	Finance	INDIABULLS	INE894F01025
LIC Housing Finance Ltd.	Finance—Housing	LICHSGFIN	INE115A01018
Britannia Industries Ltd.	Food and Food Processing	BRITANNIA	INE216A01014
GlaxoSmithkline Consumer Healthcare Ltd.	Food and Food Processing	GSKCONS	INE264A01014

TABLE I.11 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Indraprastha Gas Ltd.	Gas	IGL	INE203G01019
Petronet LNG Ltd.	Gas	PETRONET	INE347G01014
EIH Ltd.	Hotels	EIHOTEL	INE230A01023
Hotel Leelaventure Ltd.	Hotels	HOTELEELA	INE102A01024
Gujarat NRE Coke Ltd.	Mining	GUJNRECOKE	INE110D01013
Sesa Goa Ltd.	Mining	SESAGOA	INE205A01017
Apollo Hospitals Enterprises Ltd.	Miscellaneous	APOLLOHOSP	INE437A01016
Dredging Corporation of India Ltd.	Miscellaneous	DREDGECORP	INE506A01018
Micro Inks Ltd.	Miscellaneous	MICRO	INE056A01014
Pantaloon Retail (India) Ltd.	Miscellaneous	PANTALOONR	INE623B01019
Aban Offshore Ltd.	Oil Exploration/ Production	ABAN	INE421A01028
Max India Ltd.	Packaging	MAX	INE180A01012
Asian Paints Ltd.	Paints	ASIANPAINT	INE021A01018
Kansai Nerolac Paints Ltd.	Paints	KANSAINER	INE531A01016
Ballarpur Industries Ltd.	Paper and Paper Products	BILT	INE294A01011
Colgate-Palmolive (India) Ltd.	Personal Care	COLGATE	INE259A01014
Gillette India Ltd.	Personal Care	GILLETTE	INE322A01010
Godrej Consumer Products Ltd.	Personal Care	GODREJCP	INE102D01028
Procter & Gamble Hygiene & Health Care Ltd.	Personal Care	PGHH	INE179A01014
Monsanto India Ltd.	Pesticides and Agrochemicals	MONSANTO	INE274B01011
United Phosphorous Ltd.	Pesticides and Agrochemicals	UNIPHOS	INE628A01036
Aurobindo Pharma Ltd.	Pharmaceuticals	AUROPHARMA	INE406A01029
Aventis Pharma Ltd.	Pharmaceuticals	AVENTIS	INE058A01010

(*Continued*)

TABLE I.11 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Cadila Healthcare Ltd.	Pharmaceuticals	CADILAHC	INE010B01019
Divi's Laboratories Ltd.	Pharmaceuticals	DIVISLAB	INE361B01016
Glenmark Pharmaceuticals Ltd.	Pharmaceuticals	GLENMARK	INE935A01027
Jubilant Organosys Ltd.	Pharmaceuticals	JUBILANT	INE700A01033
Lupin Ltd.	Pharmaceuticals	LUPIN	INE326A01029
Matrix Laboratories Ltd.	Pharmaceuticals	MATRIXLABS	INE604D01023
Pfizer Ltd.	Pharmaceuticals	PFIZER	INE182A01018
Sterling Biotech Ltd	Pharmaceuticals	STERLINBIO	INE324C01038
Wyeth Ltd.	Pharmaceuticals	WYETH	INE378A01012
Nicholas Piramal India Ltd.	Pharmaceuticals	NICOLASPIR	INE140A01024
Alstom Projects India Ltd.	Power	APIL	INE878A01011
CESC Ltd.	Power	CESC	INE486A01013
Bongaigaon Refinery & Petrochemicals Ltd.	Refineries	BONGAIREFN	INE241A01012
Chennai Petroleum Corporation Ltd.	Refineries	CHENNPETRO	INE178A01016
Essar Oil Ltd.	Refineries	ESSAROIL	INE011A01019
IBP Co. Ltd.	Refineries	IBP	INE261A01010
Marico Ltd.	Solvent Extraction	MARICO	INE196A01018
Jindal Saw Ltd.	Steel and Steel Products	JINDALSAW	INE324A01016
Jindal Steel & Power Ltd.	Steel and Steel Products	JINDALSTEL	INE749A01022
JSW Steel Ltd.	Steel and Steel Products	JSWSTEEL	INE019A01020
Bajaj Hindusthan Ltd.	Sugar	BAJAJHIND	INE306A01021
Balrampur Chini Mills Ltd.	Sugar	BALRAMCHIN	INE119A01028
Arvind Mills Ltd.	Textile Products	ARVINDMILL	INE034A01011
Raymond Ltd.	Textile Products	RAYMOND	INE301A01014

TABLE I.11 (*Continued*)

Company Name	Industry	Symbol	ISIN Code
Bombay Dyeing & Manufacturing Co. Ltd.	Textiles—Cotton	BOMDYEING	INE032A01015
Aditya Birla Nuvo Ltd.	Textiles—Synthetic	ABIRLANUVO	INE069A01017
MRF Ltd.	Tires	MRF	INE883A01011
Adani Enterprises Ltd.	Trading	ADANIENT	INE423A01024

As of December 2006.
Source: The National Stock Exchange.

APPENDIX J

Calculation of NSE Option Base Prices

The base price of options contracts used for pricing the introduction of new contracts is the theoretical value of the options contract derived from the Black-Scholes model of calculation of options premiums, as described here.

The options price for a call is computed as per the following Black-Scholes formula:

$$C = S * N(d_1) - X * e^{-rt} * N(d_2)$$

and the price for a put is computed as:

$$P = X * e^{-rt} * N(-d_2) - S * N(-d_1)$$

where:

$d_1 = [\ln(S/X) + (r + \sigma^2/2) * t]/\sigma * \text{sqrt}(t)$
$d_2 = [\ln(S/X) + (r - \sigma^2/2) * t]/\sigma * \text{sqrt}(t)$
$\quad = d_1 — \sigma * \text{sqrt}(t)$
C = Price of a call option
P = Price of a put option
S = Price of the underlying asset
X = Strike price of the option
r = Rate of interest
t = Time to expiration
σ = Volatility of the underlying

The variable N represents a standard normal distribution with mean = 0 and standard deviation = 1;

"ln" represents the natural logarithm of a number. Natural logarithms are based on the constant e (2.71828182845904).

The rate of interest use may be the relevant MIBOR rate or another specified rate.

APPENDIX K

ADR/GDR versus Ordinary Share Arbitrage

An Example

ADR/GDR arbitrage opportunities between India-listed ordinary shares and listed depositary receipts in the U.S. and U.K. do arise, as explained in Chapter 2. The following example illustrates an arbitrage trade and some of the considerations that the arbitrageur must consider when employing such a strategy.

ADR/GDR: ORDINARY ARBITRAGE

The following facts apply to the examples:

Company Issuer:	India Inc.
U.S. Bank Sponsor:	Bank USA
ADR/Ordinary Ratio:	10:1
Breakup/Reconvert Fee per ADR:	US$0.50
Value of Rs900 at given Rs/US$ FX Rate:	
44.5 =	US$20.22
45.0 =	US$20.00
45.5 =	US$19.78

Situation: ADR Trading at a Premium

India Inc. price =	Rs90
India Inc. ADR =	US$20.70
Intrinsic value of ADR at FX 45 =	US$20.00
Implied premium of ADR at FX 45 =	US$0.70

Arbitrage strategy is to buy 10 ordinary shares at Rs900, short 1 ADR at US$20.70, reconvert the 10 ordinaries into 1 ADR, use the new ADR to cover the short, and close out the position, locking in the arbitrage profit after expenses:

[Buy 10 Ordinaries] + [Short 1 ADR] – [Reconversion Cost] = Profit
[–Rs900[a]] + [+US$20.70] – [US$0.50] = Profit

At an FX rate of 45, Rs900 will cost US$20, so:

[–US$20.00] + [+US$20.70] – [US$0.50] = $0.20 Profit

Thus, when the ADR is trading at a US$0.70 premium and the FX rate is 45, the arbitrage yields a profit of US$0.20.[b] If done with 1,000,000 shares of ordinaries versus 100,000 ADRs, the profit would be US$20,000.

Is this a good trade? Net capital utilized is close to zero,[c] so the return on capital is high. The implications of the above example are that an ADR premium over the intrinsic value of the underlying ordinaries greater than US$0.50 would yield a profit, and a premium less than US$0.50 would not be a profitable trade.

Thus, in the above example, ADR premiums of up to US$0.50 could be expected to arise with no arbitrage activity occurring to narrow the spread. Yet for a long-only investor, it would still be prudent and less expensive to purchase the ordinary shares at Rs90 per share than the ADRs at US$20.70.

The trade does carry some time risk, given that the two markets are open in two different time zones. This is not a simultaneous riskless transaction, as it carries the risk that events, both macro or stock-specific, occurring between the close of one market and the opening of the other can negatively impact the relative prices.

[a]This purchase is negative to reflect a cost, money going out.
[b]Commissions, stamp duties, taxes, and other possible fees for doing the two sides of the trade have not been included and would further increase the costs of the trade.
[c]Before financing costs, required margins, borrowing costs, etc.

Another risk to the trade is currency risk if it is not addressed/hedged at the time of the first leg of the transaction. In the above example, at an FX rate of 45, the US\$0.70 premium implied a profitable trade yielding US\$0.20 per ADR shorted. However, if the rupee strengthened just 1 percent from 45 to the U.S. dollar to a rate of 44.5 to the U.S. dollar during the period between the first leg of the trade and the second without any hedging, the profit numbers would change dramatically. The cost of the 10 ordinary shares, while still Rs900, changes in U.S.-dollar terms from costing US\$20.00 to costing US\$20.22, and the trade results in a loss of US\$0.02 before miscellaneous costs. This is illustrated below:

[Buy 10 Ordinaries] + [Short 1 ADR] − [Reconversion Cost] = Profit
[−Rs900[d]] + [+US\$20.70] − [US\$0.50] = US\$0.50

At an FX rate of 44.5, Rs900 will cost US\$20, so:

[−US\$20.22] + [+US\$20.70] − [US\$0.50] = \$0.02 Loss

Conversely, depreciation of the rupee would yield a larger profit. In summary, then, ADR/ordinary arbitrage requires careful attention to the details of the costs associated with the strategy, one of the most important of which is the foreign exchange risk.

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[d]This purchase is negative to reflect a cost, money going out.

APPENDIX L

Major Financial Institutions in India

The strength and vitality of India's financial markets rest on the established foundations and key institutions that have developed over the last 15 years. Table L.1 lists a number of these institutions, their role in the markets and general contact information.

TABLE L.1 Major Financial Institutions in India

Organization	Role
Bank of India (BOI)	State-owned Bank of India (BOI) is the largest bank in India. www.bankofindia.com
BOI Shareholding Ltd. (BOISL)	BOI Shareholding Ltd. (BOISL) is the clearing house for all trades executed on the Bombay Stock Exchange. It is a joint venture between the Bank of India, the largest bank in India, and the Bombay Stock Exchange. www.bankofindia.com
Bombay Stock Exchange (BSE)	The Bombay Stock Exchange (BSE) is the oldest and, along with the National Stock Exchange, one of India's two primary stock exchanges. Located in the financial center of Mumbai, the BSE is discussed in detail in the text. www.bseindia.com
Central Depository Services Ltd.	The Central Depository Services Ltd. is one of the two central depositories for securities in India. www.cdslindia.com

(*Continued*)

TABLE L.1 (*Continued*)

Organization	Role
Clearing Corporation of India Ltd. (CCIL)	The Clearing Corporation of India Ltd. (CCIL) acts as a clearing house for the settlement of all trades of government securities. The settlement of government securities and funds is done on a DvP basis. In addition, the CCIL acts as a central counterparty for all trades. www.ccilindia.com
Credit Rating Information Services of India Ltd. (CRISIL)	Credit Rating Information Services of India Ltd. (CRISIL) is India's leading credit rating agency whose majority shareholder is Standard & Poor's. CRISIL has approximately 60% of the market in India. www.crisil.com
Department of Economic Affairs, Ministry of Finance	The Department of Economic Affairs (DEA) is responsible for developing and monitoring the nation's economic policies. The DEA oversees the Indian banking industry, insurance industry, and the capital markets, including the stock exchanges. It oversees market borrowings and the regulation of the money supply. Its subdivisions include the Banking Division, overseeing public sector banks and term lending financial institutions; the Budget Division, preparing the union budget; the Capital Market Division, responsible for policy issues related to the securities markets and the Securities Exchange Board of India; the Economic Division, formulating policy on macro management of the economy; the External Commercial Borrowing & Pension Reforms Division, relating to policies of pension reform and credit ratings, among other issues; the Foreign Investment Promotion Board; the Insurance Division, overseeing issues related to life insurance and general insurance, including the Insurance Regulatory Authority; and the Investment Division, overseeing foreign investment in India, both direct and portfolio investment, from foreign institutional investors and nonresident Indians. http://finmin.nic.in

TABLE L.1 (*Continued*)

Organization	Role
Department of Industrial Policy and Promotion (DIPP)	The Department of Industrial Policy and Promotion (DIPP) is a division of the Ministry of Commerce and Industry. The role of the department includes the formulation of foreign direct investment (FDI) policy and the promotion, approval, and facilitation of FDI; the formulation and implementation of overall industrial policy and strategies for industrial development in conformity with the development needs and national objectives; and responsibility for intellectual property rights relating to patents, designs, trademarks, and geographical indication of goods and including their promotion and protection. The department also plays a proactive role in resolving problems faced by foreign investors when implementing their projects through the Foreign Investment Implementation Authority (FIIA), which interacts directly with the relevant ministry and state government. http://dipp.nic.in
Foreign Investment Promotion Board (FIPB)	The Foreign Investment Promotion Board (FIPB) is a unit of the Department of Economic Affairs of the Ministry of Finance, but is also closely associated with the Department of Industrial Policy and Promotion. It approves foreign direct investment proposals when the parameters for automatic approval are not met. http://finmin.nic.in
India Index Services & Products Ltd. (IISL)	India Index Services & Products Ltd. (IISL), a joint venture between the National Stock Exchange and Credit Rating Information Services of India Ltd., provides a variety of indexes and index-related services and products for the capital markets. www.nse-india.com

(*Continued*)

TABLE L.1 (*Continued*)

Organization	Role
Ministry of Commerce and Industry	The Ministry of Commerce and Industry oversees the broad area of India's domestic and international trade. Areas of responsibility include international trade, tariffs, import and export trade policies, many commodities, and matters relating to special economic zones and investment policy. http://commerce.nic.in
Ministry of Finance	The Ministry of Finance is the government ministry charged with overseeing the financial activities of the country and includes the Department of Revenue, the Department of Expenditures, and the Department of Economic Affairs (DEA). http://finmin.nic.in
National Securities Clearing Corporation Ltd. (NSCCL)	The National Securities Clearing Corporation Ltd. (NSCCL) is the clearing house for all trades executed on the National Stock Exchange, in both the equity and retail debt markets. It is a wholly owned subsidiary of the National Stock Exchange. www.nse-india.com
National Service Depository Ltd.	The National Service Depository Ltd. is one of the two central depositories for securities in India. www.nsdl.com.in
National Stock Exchange (NSE)	Along with the Bombay Stock Exchange, the National Stock Exchange (NSE) is one of India's two primary stock exchanges. Located in the financial center of Mumbai, the NSE is discussed in detail in the text. www.nse-india.com
Reserve Bank of India (RBI)	The Reserve Bank of India (RBI) is the central bank of India. Its functions include regulating the currency and reserves, maintaining monetary stability, and operating the country's credit system. It is the primary regulator of the government debt markets, regulates the banking system, and sets monetary policy. www.rbi.org.in
Securities Exchange Board of India (SEBI)	The Securities Exchange Board of India (SEBI) is the securities regulator of India's financial markets, serving as the primary regulator of the corporate debt market and the ultimate regulator of the stock exchanges. www.sebi.gov.in

APPENDIX M

Contact Information for Important Financial Services Institutions

TABLE M.1 Important Financial Services Contact Information

Organization	Web Site	Address	Contact Person/Name	Telephone and E-Mail
Regulator				
The Securities Exchange Board of India	www.sebi.gov.in	Mittal Court, B Wing, 1st Floor, 224, Nariman Point, Mumbai 400021		Tel.: 91-22-2644-9000
Stock Exchanges				
Bombay Stock Exchange Ltd.	www.bseindia.com	Phiroze Jeejeebhoy Towers, Dalal Street, Mumbai 400001		Tel.: 91-22-22721233/4 Fax: 91-22-22721919
Arbitration			Mr. S. L. Crasto, Extn. 8237	crasto@bseindia.com
Complaints against member-brokers			Ms. Shobha Rao, Extn. 8293	shobhar@bseindia.com
Clearing and settlement issues			Mr. Prakash Bhat, Extn. 8466	prakashk@bseindia.com
Member-brokers of BSE			Mr. Rakesh Parekh, Extn. 8307	rakeshp@bseindia.com
Derivatives			Mr. Praneel Kothare, Extn. 8757	praneel@bseindia.com
Debt segment			Ms. Hetal Kotak, Extn. 8701	hetal.kotak@bseindia.com
National Stock Exchange of India Ltd.	www.nse-india.com	Exchange Plaza, Plot no. C/1, G Block, Bandra-Kurla Complex, Bandra (East), Mumbai 400051		Tel.: 022-26598100/8114 Fax: 022-26598120

Clearinghouses				
BOISL		Bank of India Star House C—5, "G" Block, Bandra Kurla Complex, Bandra (East), Mumbai 400051	Peter D'souza, Extn. 5065/5057 Daniel Lasrado, Extn. 5085/5060	Tel.: 022-66684444 boisl@bom3.vsnl.net.in boisl@vsnl.com clghouse@bseindia.com
NSCCL		NSCCL, Exchange Plaza, Bandra-Kurla Complex, Bandra (East), Mumbai 400051		Fax: 022-26598243/8244
Settlements (CM segment)			Ms. Rana Usman, Manager	Tel.: 022-26598268 rusman@nse.co.in
Margins & Funds (CM segment)			Ms. Loveena Khatwani, Ms. Rana Usman, Asst. Manager	Tel.: 022-26598168 loveenak@nse.co.in, rusman@nse.co.in
Futures & Options			Mr. Himanshu Malgaonkar, Manager	Tel.: 022-26598265 hmalgaonkar@nse.co.in,
Risk (CM segment)			Mr. Huzefa Asst. Manager	Tel.: 022-26598266 hm@nse.co.in
Depositories				
Central Depository Services (India) Ltd.	www.cdslindia.com	Phiroze Jeejeebhoy Towers, 28th Floor, Dalal Street, Mumbai 400023		Tel.: 22673333 Fax: 22673199
National Securities Depository Ltd.	www.nsdl.com	Trade World, 4th & 5th Floors, Senapati Bapat Marg, Lower Parel, Mumbai 400013		Tel.: 24972964 to 70 Fax: 24972993

(Continued)

TABLE M.1 (*Continued*)

Organization	Web Site	Address	Contact Person/Name	Telephone and E-Mail
Clearing Banks				
Bank of India Ltd.		Stock Exchange Branch, Dalal Street, Fort Mumbai 400023	Mr. B. Subramani, Dy. General Manager	Tel.: 22722400, 22722395 Fax: 22721788, 22721782
Canara Bank Ltd.		Varma Chambers, 1st Floor, Homji Street, Homiman Circle, Fort Mumbai 400001	Mr. A. M. Sequeira, Chief Manager	Tel.: 22693157, 22633006, 22651088, 22658291 Fax: 22675650, 22670033
Citibank N.A.		Cash Management Dept. Fort House Building, 4th Floor D.N. Road Fort Mumbai 400001	Mr. Srinivas Sishtla, Vice President	Tel. No.: (022) 40015619 Mobile: 9820188756
			Mr. Ravi Banta, Vice President	Tel. No.: (022) 40015669 Mobile: 9820318351
			Mr. Nirmal Khaderia, Vice President	Tel. No.: (022) 40015650 Mobile: 9820219521
			Mr. Satish Chandra, Sales Manager	Tel. No.: (022) 40015192 Mobile: 9867674099 Fax Nos.: (022) 26535872, 40065852

HDFC Bank Ltd.	Maneckji Wadia Building, 1st Floor, 65, Mumbai Samachar Marg, Mumbai 400023	Mr. P.V. Ananthakrishnan, Sr. Vice President	Tel.: 24922596 Fax: 24923411
		Mr. Srinivas Sishtla, Assistant Vice President	Tel.: 24988484 Extn. 3538 Mobile: 9323469162 Fax: 24929411
ICICI Bank Ltd.	Capital Market Division, 30, Mumbai Samachar Marg, Fort Mumbai 400001	Mr. Krishnan Iyer, Manager	Tel.: 22623382, 22655208, 22655209 Fax: 22611138
IDBI Bank Ltd.	Mumbai Branch, Mittal Tower, C Wing, Ground Floor, Nariman Point, Mumbai 400021	Mr. Kaushik Bagchi, Product Head Mr. Ashutosh Bhide, C.S.E.-Operations	Tel.: 24908350 Mobile: 9820080607 Tel.: 56336362 (Tele Fax) Mobile: 9820932911
IndusInd Bank Ltd.	Sonawalla Building, 57, Mumbai Samachar Marg, Fort Mumbai 400001	Mr. Pradeep Bhave, VP & Branch Head	Tel.: 56347722 Mobile: 9820550863 Board Nos.: 56366580-83 Fax: 56366590
Kotak Mahindra Bank	Bakhtawar, 12th Floor, 229, Nariman Point, Mumbai 400021	Mr. Rajiv Gurnani, Sr. Vice President-FIG Ms. Nandini Telang, Chief Manager	Tel.: 22026426 Tel.: 56596373, 22855644 Fax: 22817527
Standard Chartered Bank	90, M. G. Road, Fort Mumbai—400001	Mr. Himanshu Dhyani, Relationship Manager	Tel.: 22690726, 22690255 Fax: 22696925

(*Continued*)

TABLE M.1 (*Continued*)

Organization	Web Site	Address	Contact Person/Name	Telephone and E-Mail
State Bank of India		Mumbai Main Branch, Mumbai Samachar Marg, Mumbai 400023	Ms. Vidhya Krishnan, Asst. General Manager	Tel.: 022-22695272 Mobile: 9821078386
			Mr. A. B. Pote, Manager Extn. 278	Tel.: 022-22664342, 22662193, 22661765
			Mr. Manojkumar V. Singh, Dy. Manager, Mr. P. N. Raut, Dy. Manager, Mr. R. H. Hariani, Asst. Manager	Tel.: 022-22662193/ 22664342 Fax: 022-22652742
Hong Kong & Shanghai Banking Corporation Ltd.		52/60 M G Road, Fort Mumbai 400001	Mr. Shaleen Mahar, Sr. Relationship Manager, Non-Bank Financial Institutions	Tel.: 22681175 Fax: 22734388
Union Bank of India		Capital Market Cell, Mumbai Samachar Marg Branch, 66/80, M.S. Marg, Fort Mumbai 400023	Mr. A. K. Bansal, Dy. General Manager	Tel.: 022-22674115
			Mr. G. R. Lawhale, Asst. General Manager	Tel.: 022-22672131
			Mr. R. S. Majithia, Chief Manager	Tel.: 022-22670107
			Mr. G. M. Kashyap, Sr. Manager	Tel.: 022-22629335 Board: 22629332-35 Fax: 22642742

UTI Bank Ltd.	Ist Floor, Janmabhumi Bhavan, Janmabhumi Marg, Fort Mumbai 400001	Mr. Advait Majmudar, Asst. Vice President	Tel.: 22044010, 22043035, 22042655 Fax: 22844113, 22042640
Custodians			
ABN AMRO Bank N.V.	Custody & Depository Services, 7th Floor, Sakar Bhawan, 71/72 Nariman Point, Mumbai 400021		Tel.: 22812738/22029305 Fax: 22027969
Citibank N.A.	Custodial Services Dept., Ramnord House, 77, Dr. Annie Besant Road, Worli, Mumbai 400018		Tel.: 24978066-327 Fax: 24940331
Deutsche Bank AG	Custodial Services Dept., 222, Kodak House, Dr. D.N. Road, Fort Mumbai 400001		Tel.: 22080239/77/ 22075976 Fax: 22073077/5975
HDFC Bank Ltd.	Custodial Services Dept., Kamala Mills Compound, Senapati Bapat Marg, Lower Parel, Mumbai 400013		Tel.: 24910492/3010/3023 Fax: 24961636
Hong Kong & Shanghai Banking Corporation Ltd.	Custodian Clearing, Sudam Kalu Ahire Marg, Worli, Mumbai 400025		Tel.: 24980000/24917034 Fax: 24980040

(*Continued*)

TABLE M.1 (*Continued*)

Organization	Web Site	Address	Contact Person/Name	Telephone and E-Mail
ICICI bank Ltd.		Securities Processing Division, 2nd Floor, Zenith House, Keshavrao Khadye Marg, Mahalaxmi, Mumbai 400034		Tel.: 24906868/76/84 Fax: 24923443
IndusInd Bank Ltd.		Custodial Services Dept., 431, Dadasaheb Bhadkamdar Marg, Lamington Road, Mumbai 400004		Tel.: 23896709/10/ 23809934 Fax: 23808543
Infrastructure Leasing & Financial Services Ltd.		Custodial Services Division, Plot 14, IL&FS House, Raheja Vihar, Powai Andheri (East), Mumbai 400072		Tel.: 28570965/7742 Fax: 28570948
Standard Chartered Bank		Custody & Clearing Services, 23/25 MG Road, Fort Mumbai 400001		Tel.: 22815646/22829753 Fax: 22853857/22853858
State Bank of India		Securities Services Branch, 2nd Floor, Mumbai Main Branch Building, Mumbai Samachar Marg, Fort Mumbai 400023		Tel.: 22690058/22703798 Fax: 22657719/22661032

Stock Holding Corporation of India Ltd.	Custodial Services Dept., Mittal Court, B Wing, 2nd Floor 224, Nariman Point, Mumbai 400021	Tel.: 22853770/4507 Fax: 22829038
RBI-registered Primary Dealers in Government Securities		
Deutsche Securities (India) Pvt. Ltd.	5th Floor, Nicholas Piramal Tower, Ganpatrao Kadam Marg, Mumbai 400013	
Corpbank Securities Ltd.	Mezzanine Floor, Veena Chambers, 21, Dalal Street, Fort Mumbai 400023	
DSP Merrill Lynch Ltd.	Mafatlal Center, 10th Floor, Nariman Point, Mumbai 400021	
SBI DFHI Ltd	Voltas House, 3rd Floor, 23, J.N.Heredia Marg, Ballard Estate Mumbai 400001	
Securities Trading Corporation of India Ltd.	Krishna Chambers, 59, Sir Vithaldas Thackersey Marg, New Marine Lines Mumbai 400020	

(*Continued*)

TABLE M.1 (*Continued*)

Organization	Web Site	Address	Contact Person/Name	Telephone and E-Mail
Gilt Securities Trading Corporation Ltd.		1-1, First Floor, Kalpataru Heritage, Maneckji Wadia Building, 127, M.G.Road, Fort Mumbai 400023		
PNB Gilts Ltd.		5, Sansad Marg, New Delhi 110 001		
ABN AMRO Securities (India) Pvt. Ltd.		81, Sahkar Bhavan, Nariman Point Mumbai 400021		
Kotak Mahindra Bank Ltd.		36-38A Nariman Bhavan, 227, Nariman Point Mumbai 400021		
ICICI Securities Ltd.		ICICI Center, H.T. Parekh Marg, Churchgate Mumbai 400020		
IDBI Capital Market Services Ltd.		5th Floor, Mafatlal Centre, Nariman Point, Mumbai 400021		
Banc of America N.A.		Ground Floor, Express Towers, Nariman Point Mumbai 400001		

Bank of Baroda		Specialized Integrated Treasury Branch, 6th Floor, Kalpataru Heritage Building, Manik Motwani Marg Mumbai 400023	
Citibank N.A.		Citigroup Center, 5th Floor, Plot C-61, Bandra-Kurla Complex, Mumbai 400051	
Standard Chartered Bank		90, M.G. Road, 1st Floor, Mumbai 400001	
J.P. Morgan Chase Bank, N.A., Mumbai Branch		9th Floor, Mafatlal Centre, Nariman Point, Mumbai 400021	
HSBC Bank		52/60, Mahatma Gandhi Road Mumbai 400001	
Other			
CRISIL (Mumbai)	www.crisil.com	'CRISIL House', 121/122, Andheri Kurla Road, Andheri (East), Mumbai—400093	Tel: +91 22 66913001—09 Fax: +91 22 66913000
CRISIL (US)	www.irevna.com	Irevna LLC 1560, Broadway, 10th Floor, New York NY 10036. U.S.A.	Tel: +1 877 747 3862 Tel (Outside USA): +1 646 292 3520 Fax: +1 646 292 3521

(*Continued*)

TABLE M.1 (*Continued*)

Organization	Web Site	Address	Contact Person/Name	Telephone and E-Mail
CRISIL (UK)	www.irevna.com	Irevna Limited Winchester House 259-269, Old Marylebone Road London- NW1 5RA		Tel: +44 0 870 333 6336 Fax: +44 0 870 333 6337
India Index Services & Products Ltd.		Exchange Plaza Plot no. C/1, G Block, Bandra-Kurla Complex, Bandra (E), Mumbai—–400051	Jossie D'Souza, Gautam Rathor Paras Nagda	Tel.: 022-26598385 Fax: 022-26598120 jdsouza@nse.co.in grathor@nse.co.in pnagda@nse.co.in

APPENDIX N

Further Sources of Information

Further Sources of Information

Topic	Web Address	What You Will Find
ADRs	www.adr.com	The Web site of the unit of JP Morgan Chase Bank that maintains a lot of useful information about ADRs and GDRs.
ADRs	www.adrbny.com	The Web site of the unit of the Bank of New York, the largest depositary in the world is a wonderful source for Depositary Receipt information.
Benchmark interest rates (NSE)	www.nse-india.com, then Debt > Products & Services.	This describes more fully the details of the Mibid/Mibor rates, zero coupon yield curve, and government securities index.
CIA World Factbook	www.cia.gov/cia/publications/factbook/index.html.	The CIA World *Factbook* can be viewed on the Internet at this address and contains detailed information for virtually every country on earth.
FDI Industry limits and rules	www.dipp.nic.in/publications/fdi_policy_2006.pdf	The Department of Industrial Policy and Promotion's report *Foreign Direct Investment Policy 2006,* an annual report that contains the up-to-date investment rules concerning FDI for every industry, sector, and activity. Among the rules listed are the investment limits for each industry, the approval process required for that industry, and any other conditions to which foreign investments are subject with regard to each particular industry.

(*Continued*)

Topic	Web Address	What You Will Find
FDI policy	www.dipp.gov.in	The Web site of the Department of Industrial Policy and Promotion for FDI applications and details regarding specific FDI policy issues.
FII Sub-account registration	www.sebi.gov.in/fii/fii7.pdf	A copy of Annexure B, which is the application form for Sub-account registration
FII company limits	www.fiilist.rbi.org.in	This Web site is used to disseminate to the general public the "caution" and "stop purchase" advisories for companies reaching their foreign investor limits. Investors interested in the limits of a particular company, or whether that company is nearing or at its limit, should consult this Web site.
FII registration	www.sebi.gov.in/fii/fii5.pdf	A copy of Form A of the *SEBI (FII) Regulations Act 1995*, which is the application form for FII registration.
G Sec shorting	http://rbi.org.in/scripts/NotificationUser.aspx?Id=3255&Mode=0	This is the site of the Reserve Bank of India circular granting permission for shorting government securities for up to five days. Readers wanting full details of the ruling should review this circular.
NRI/POI restrictioins	www.rbi.org.in	For investors who are interested in more details about the restrictions and advantages applicable specifically to nonresident Indians and persons of Indian origin.
Quarter-sigma explained (BSE)	http://www.bseindia.com/about/derivati.asp#Eligible	The BSE Web site that provides details on the definition and methodology for calculating quarter-sigma, one of the eligibility requirements for futures & options underlying stocks.
Quarter-sigma explained (NSE)	http://www.nse-india.com/content/fo/fo_selection.htm	The NSE Web site that provides details on the definition and methodology for calculating quarter-sigma, one of the eligibility requirements for futures & options underlying stocks.
SPAN margin explained	www.nse-india.com/content/nsccl/nsccl_fospan.htm	This NSE site provides a somewhat detailed explanation of the SPAN margin that is applied to futures and options on the exchanges.

Topic	Web Address	What You Will Find
VaR margins and Extreme Loss margins by stock (BSE)	www.bseindia.com/mktlive/market_summ/margin.asp	This Web address displays the up-to-date BSE specific stock VaR margins and Extreme Loss margins, which are regularly recalculated on a daily basis.
VaR margins and Extreme Loss margins by stock (NSE)	www.nse-india.com/content/nsccl/nsccl_eqvarrates.htm	This Web address displays the up-to-date NSE specific stock VaR margins and Extreme Loss margins, which are regularly recalculated on a daily basis.

Notes

Chapter 1: India's Capital Markets

1. BOVESPA (Bolsa de Valores de Sao Paulo), the Sao Paulo Stock Exchange.
2. Reuters News.
3. The *New York Times*.
4. These *adjustments* might include adding extraordinary, one-time gains into continuing earnings, or not including in market earnings the performance of companies with large government ownership and mediocre performance on the justification that these companies don't necessarily reflect the economic realities, but rather reflect state-owned companies' inefficiency and bureaucracy. While some of these adjustments may have merit, it isn't clear where a line should be drawn regarding which company results to include when reporting the year-on-year performance of the market or particular indexes. Without quoted performance statistics of a particular index incorporating all index constituents, rosy performance numbers of those indexes must become suspect.

Chapter 2: Foreign Portfolio Investment in India

1. Reserve Bank of India, 2005–2006 Annual Report, Capital Account Inflows.
2. SEBI.
3. *Report of the Expert Group on Encouraging FII Flows and Checking the Vulnerability of Capital Markets to Speculative Flows*, November 2005, paragraph 159.
4. *Report of the Expert Group on Encouraging FII Flows and Checking the Vulnerability of Capital Markets to Speculative Flows*, November 2005, annex III. Available data covers the period through August 2005.
5. The Securities and Exchange Board of India.
6. The Investment Company Institute and Securities Industry Association report, *Equity Ownership in America, 2005*, page 23.
7. Ministry of Finance, Government of India.
8. The Securities and Exchange Board of India.

Chapter 3: Foreign Direct Investment

1. *The International Monetary Fund: Foreign Direct Investment Statistics—How Countries Measure FDI 2001* can be read in its entirety at http://www.imf.org/external/pubs/ft/fdis/2003/fdistat.pdf.
2. AT Kearney, FDI Confidence Index Survey 2005.
3. The RBI 2006 Annual Report, *The World Bank Global Economic Prospects 2006: Economic Implications of Remittances and Migration*.
4. The Reserve Bank of India.

Chapter 4: Safety and Integrity

1. SPAN® is a registered trademark of the Chicago Mercantile Exchange.
2. *Report of the Expert Group on Encouraging FII Flows and Checking the Vulnerability of Capital Markets to Speculative Flows*, November 2005.

Chapter 5: The Equity Market

1. The Bombay Stock Exchange.
2. ibid., as of December 2006.
3. The National Stock Exchange, as of April 2006.
4. The Bombay Stock Exchange.
5. ibid.
6. Published information by the NSDL.
7. Published information by the CDSL.

Chapter 6: Derivatives

1. The Bombay Stock Exchange.
2. ibid.

Chapter 7: The Indian Debt Market

1. Reserve Bank of India, 2006 Annual Report, Appendix Table 42: Secondary Market Transactions in Government Securities
2. Reserve Bank of India, Handbook of Statistics on Indian Economy
3. ibid.
4. ibid.
5. ibid.
6. ibid.

Acronyms and Abbreviations

Acronym or Abbreviation	Term
ABF	Asian Bond Fund
ADRs	American Depositary Receipts
ALBM	Automated Lending and Borrowing Mechanism
BLESS	Borrowing and Lending of Securities Scheme
BOI	Bank of India
BOISL	BOI Shareholding Ltd.
BOLT	BSE On-Line Trading System
BSE	Bombay Stock Exchange
CCIL	Clearing Corporation of India Ltd.
CDSL	Central Depository Services (I) Ltd.
CIB	Capital Indexed Bonds
CLA	Central Listing Authority
CRISIL	Credit Rating Information Services of India Ltd.
CRS	Compulsory Rolling Settlement
DNPD	Derivatives and New Products Department (of the Securities and Exchange Board of India)
DTSS	Derivatives Trading and Settlement System
DvP	Delivery vs. Payment
EDIFAR	Electronic Data Information Filing and Retrieval System
FDI	Foreign Direct Investment
FEMA	Foreign Exchange Management Act
FII	Foreign Institutional Investor
FIMMDA	Fixed Income Money Market and Derivative Association of India
FIPB	Foreign Investment Promotion Board
FMCG	Fast-Moving Capital Goods
GDRs	Global Depositary Receipts
G-Secs	Government Securities
HKEX	Hong Kong Exchanges and Clearing Ltd.
IFSD	Interest-Free Security Deposit
IISL	India Index Services and Products Ltd.
IMF	International Monetary Fund
IPF	Investor Protection Fund
KLSE	Kuala Lumpur Stock Exchange
KSE	Korean Stock Exchange

LPM	Limited Physical Market
LTP	Last Traded Price
MAPIN	Market Participants and Investors Integrated Database
MIBID	Mumbai Interbank Bid Rate
MIBOR	Mumbai Interbank Offer Rate
MIRSD	Market Intermediaries Registration and Supervision Department (of SEBI)
MRD	Market Regulation Department (of SEBI)
NBFC	Non-Bank Finance Company
NDS	Negotiated Dealing System
NEAT	National Exchange for Automated Trading (the National Stock Exchange trading system)
NRI	Non-Resident Indian
NSCCL	National Securities Clearing Corporation Ltd.
NSDL	National Securities Depository Ltd.
NSE	National Stock Exchange
OCB	Overseas Corporate Bodies
OLTP	On-Line Transaction Processing (on the BSE On-Line trading system)
OTCEI	Over-the-Counter Exchange of India
PIS	Portfolio Investment Scheme
PN	Participatory Notes
POI	Person of Indian Origin
PSU	Public-Sector Undertakings
RBI	Reserve Bank of India
RNBC	Residuary Non-Banking Companies
SEBI	The Securities and Exchange Board of India
SET	Stock Exchange of Thailand
SGL	Subsidiary General Ledger
SGX	Singapore Stock Exchange
SLR	Statutory Liquidity Ratio
SPIcE	Sensex Prudential ICICI Exchange Traded Fund
SRO	Self-Regulatory Organization
SSE	Shanghai Stock Exchange
STRIPS	Separate Trading for Registered Interest and Principal of Securities
SWIFT	Society for Worldwide Interbank Financial Telecommunication
SZSE	Shenzhen Stock Exchange
TEC*k*	Technology, Entertainment, Communications, Knowledge-Based Companies
TGF	Trade Guarantee Fund
TMT	Technology, Media, and Telecommunications
TSE	Taiwan Stock Exchange
TWS	Trader Workstations
UIN	Unique Identification Number
VaR	Value at Risk
YoY	Year-over-year
ZCYC	Zero-Coupon Yield Curve

Glossary

6A/7A. The term 6A/7A refers to the transfer of the settlement responsibility from the clearing member-broker who executed the trade on the stock exchange to a custodian. Custodians are granted clearing member status to be able to do so. The term 6A/7A refers to the forms previously used by the BSE clearing members to request the clearing house to transfer the settlement obligations of trades, particularly institutional trades, executed on the BSE from the clearing members to the custodians. Form 6A was used for sales, and Form 7A was used for purchases. Although these forms were discontinued when the transfer of settlement obligations from clearing member to broker started being done electronically, such transfer of settlement obligations has continued to be referred to as 6A/7A trades and refers to NSE trades, as well.

Asian Bond Fund (ABF). This fund is an intra-Asia initiative to promote the development of regional and domestic bond markets in Asia.

BOI Shareholding Ltd. (BOISL). BOISL, a joint venture between the Bank of India (BOI) and the Bombay Stock Exchange (BSE), conducts clearing and settlement of trades taking place on the BSE. Popularly referred to as the BSE clearing house, it was established in 1989 with BOI holding a 51 percent stake and BSE holding a 49 percent stake.

Bond. A bond is a negotiable certificate of indebtedness that is normally unsecured. A debt security is generally issued by a company, municipality, or government agency. A bond investor lends money to an issuer, and in exchange, the issuer promises to repay the loan amount on a specified maturity date. The issuer usually pays the bondholder periodic interest payments over the life of the loan.

Bonus shares. These are shares issued by companies to shareholders free of cost by capitalization of accumulated reserves from the profits earned in earlier years.

Capital-indexed bonds (CIBs). A CIB is a debt instrument that offers inflation-linked returns both on the coupons and the principal repayments.

The government of India previously issued a CIB December 1997 that matured in December 2002. A newly proposed CIB is likely to be offered with a market-determined real coupon rate, which would remain fixed for the duration of the bond. Semiannual coupon payments on the bonds would be made by applying the fixed real coupon rate to the inflation-adjusted principal. The principal repayment at maturity would be the inflation-adjusted principal amount or its original par value, whichever is greater, thus providing built-in insurance that at the time of redemption the principal value would not fall below par.

Capital market. This is a market for long-term debt and equity shares in which the capital funds comprising both equity and debt are issued and traded. This also includes private placement sources of debt and equity as well as organized markets such as stock exchanges. A capital market can be further divided into primary and secondary markets.

Central listing authority. A central listing authority (CLA) is set up to address the issue of multiple listings of the same security and to bring about uniformity in the due diligence exercise of scrutinizing all listing applications on any stock exchange. The functions of the CLA as stipulated in the SEBI (Central Listing Authority) Regulations, 2003, include:

- Processing applications made by a corporate body, mutual fund, or collective investment plan for a letter of recommendation to become listed on a stock exchange.
- Making recommendations about listing conditions.
- Fulfilling any other function specified by the Securities and Exchange Board of India.

Clearing Corp. of India Ltd. (CCIL). The Clearing Corp. of India Ltd. was set up at the behest of the RBI as a clearing house to modernize the clearing and settlement of government securities, foreign exchange, and money markets. The CCIL acts as the counterparty to all trades executed on the Negotiated Dealing System, the electronic trading system for government securities.

Commercial paper. This is a short-term promise to repay a fixed amount that is placed on the market either directly or through a specialized intermediary. It is usually issued by companies with high credit standing in the form of a promissory note redeemable at par to the holder on maturity and therefore doesn't require any guarantee. Commercial paper is a money market instrument issued for a tenure of 90 days.

Compulsory rolling settlement. This is the process by which securities are continually being settled for a specified number of days following the trade execution. This is in contrast to a former system of single-batch settlement of multidays of trading volume.

Constituent SGL (SGL-II) account. Also known as an SGL-II account, this is an account at the Reserve Bank of India (RBI) held by banks or primary dealers on behalf of small investors who are not permitted by the RBI to have their own SGL accounts. SGL-II accounts are used to hold an investor's government securities positions. SGL-II accounts provide investors with a DvP settlement capability.

Contract note. A contract note, also known as a *confirmation,* is a document detailing the specifics of an executed trade, such as the name of the executed financial instrument, the price, the commission, applicable taxes, the total monies due or to be received, the name of the executing broker, and other regulatory-mandated information.

Control. This includes the right to appoint a majority of directors for the board of a target company, directly or indirectly, or by virtue of agreements, or by any other manner. Control also includes the ability to control management or policy decisions affecting the target company.

Convertible bond. This type of bond gives the investor the option to convert the bond into equity at a fixed conversion price.

Corporatization. This is the process of converting the organizational structure of the stock exchange from a noncorporate structure to a corporate structure. Traditionally, some of the stock exchanges in India were established as an "association of persons" (e.g., BSE, ASE, and MPSE). Corporatization of such exchanges is the process of converting them into incorporated companies.

Cumulative convertible preference shares. This is a type of preferred shares where the dividend payable accumulates if not paid. After a specified date, these shares will be converted into the equity capital of a company.

Cumulative preference shares. This is a type of preferred shares on which the dividend accumulates if not paid. All arrears of preference dividends have to be paid out before paying dividends on equity shares.

Debentures. Debentures are bonds issued by a company bearing a fixed rate of interest usually payable half yearly on a specific date with the principal amount repayable on a particular date on redemption of the debentures. Debentures are normally secured/charged against the assets of the company in favor of the debenture holder.

Delivery-versus-payment. Also known by its initials DvP, this refers to a theoretically instantaneous exchange of a financial instrument (i.e., shares or bonds) for the payment of them. The purpose of DvP settlement is to remove the risk associated with one party to a transaction making a delivery of a security or cash and then having to wait for the other side to either pay for the security or deliver the already paid-for security. In such a two-step settlement process, the first part is known as a "free delivery" because at the time it is made there is nothing given back in return. The risk exists if the other side to the transaction subsequently fails to perform after the initial delivery of cash or securities thereby leaving the initial party exposed. In practice, DvP tends not to be instantaneous, but rather delivery and payment occur within a few hours of each other.

Demat. *Demat*erialized securities are a nonphysical, electronic book-entry form of share ownership whereby ownership information is stored in computers by a depository and trading and settlement of shares occur electronically, significantly improving and streamlining the entire settlement process.

Demutualization. Demutualization refers to the transition process of an exchange from a mutually owned association to a company owned by shareholders. In other words, transforming the legal structure of an exchange from a mutual form to a business corporation form is referred to as demutualization. This, in effect, means that after demutualization, the ownership, management, and trading rights at the exchange are segregated.

Dirty price. In the market parlance of the wholesale debt market, this refers to the cum-interest-traded price of government securities (i.e., is inclusive of the accrued interest).

DvP. Delivery-versus-purchase is a method of settlement that most closely approaches an instantaneous exchange of securities and funds between a buyer and a seller, or their agents. The purpose is so neither side of the transaction is exposed to the risk of settling their part of the transaction while receiving nothing in return. In reality, DvP settlements occur within hours of each other rather than as an instantaneous exchange.

Electronic Data Information Filing and Retrieval System (EDIFAR). This is a Web site launched by the Securities and Exchange Board of India in association with the National Informatics Center (NIC) in 2002 to facilitate the online filing of certain material information or documents by listed companies. This is similar to the SEC's EDGAR system in the United States.

Equity. Equity is the ownership interest in a company by holders of common and preferred shares.

Equity shares. An equity share, commonly referred to as an ordinary share, represents a form of fractional ownership in which a shareholder, as a fractional owner, undertakes the maximum entrepreneurial risk associated with a business venture. The holder of such shares is an owner of the company and typically has voting rights. A company may issue such shares with differential rights as to voting and dividend payments.

Foreign institutional investor (FII). An FII is an entity established or incorporated outside India that proposes to make investments in India.

Free-float factor. The proportion of total shares issued by a company that are readily available for trading in the market. *See* **Free-float methodology.**

Free-float methodology. Free-float is an index construction methodology that takes into consideration only the free-float market capitalization of a company for the purpose of index calculation and assigning weight to stocks in an index. Free-float market capitalization is defined as that proportion of total shares issued by the company that is readily available for trading in the market. It generally excludes promoters' holdings, government holdings, strategic holdings, and other locked-in shares that will not come to the market for trading in the normal course. In other words, the market capitalization of each company in a free-float index is reduced to the extent of its readily available shares in the market. For example, if a company has a 35 percent public holding, with 65 percent of the company's shares still held by the founding family, then only 35 percent of the total market capitalization of the company would be considered for the purpose of calculating the index.

GILT. The GILT system is the trading system of the Bombay Stock Exchange (BSE) for the wholesale debt market of the BSE debt segment.

Government securities (G-Secs). G-Secs are debt instruments issued by the central and state governments of India.

Independent directors. *Independent directors* is a term defined by the Bombay Stock Exchange listing agreement and refers to directors who, apart from receiving a director's remuneration, do not have any other material pecuniary relationship or transactions with the company, its promoters, its management, or its subsidiaries that may affect the independence of the judgment of the director.

Interest-free security deposit (IFSD). This is the capital available to a broker-member of the National Stock Exchange to be applied against gross fixed income position limits. A member's position is limited to 20 times the IFSD. Additional capital may be added to increase the exposure limit.

Letter of offer. A letter of offer is a document from a potential acquirer addressed to the shareholders of a target company containing disclosure of information regarding the offer for the target company; financial records; offer price; justification for the offer price; number of shares to be acquired from the public; purpose of the acquisition; future plans of the acquirer regarding the target company; change in control over the target company; procedure to be followed by the acquirer in accepting the shares tendered by the shareholders; and the period within which all of the formalities pertaining to the offer would be completed. The rules for a letter of offer are enumerated in Chapter III of the SEBI (Substantial Acquisition of Shares and Takeovers) Regulations, 1997, and subsequent amendments thereof. Interestingly, the statute requires that the "Letter of Offer.. . . . . . may not be technical in legal or financial jargon, but it shall be presented in simple, clear, concise and easily understandable language."

Limited physical market. This is the trading facility for small investors holding physical shares in securities mandated for compulsory dematerialized settlement, where trading cannot exceed 500 shares.

Market Participants and Investors Integrated Database (MAPIN). *SEBI (Central Database of Market Participants) Regulations, 2003*, was implemented in 2003. As per these regulations, all of the participants in India's securities market, including SEBI-registered intermediaries, listed companies and their associates, and investors, need to become registered and obtain a unique identification number (UIN). The system for the allotment of a UIN involves the use of biometric impressions for natural persons. The major objective of MAPIN is the creation of a comprehensive database of market participants. Once created, the database would not only help the regulator in establishing the identity of persons who have taken large exposures in the market and/or who are trading through a large number of different brokers, but also enable the regulator to take adequate risk-containment measures such as the imposition of margins and trading or exposure limits, depending on the exposure of various investors. Hence, in the event of the failure of market integrity, an immediate audit trail would be possible, and the regulator would be able to take early preventive and/or remedial measures and track down the defaulters and/or manipulators.

Market self-regulatory organizations. These are the securities exchanges, their subsidiaries, and market institutions such as clearing and settlement organizations and depositories.

Mumbai Inter-Bank Bid Rate (MIBID)/Mumbai Inter-Bank Offer Rate (MIBOR). The benchmark rate for the Indian call money market was developed by the NSE Committee for the Development of the Debt Market. Launched in 1998 by the National Stock Exchange for the overnight money market, the MIBID/MIBOR rate is used as a benchmark rate for a majority of interest rate swaps, forward rate agreements, floating rate debentures, and term deposits.

Money market. This is a market for debt securities that pay off in the short term (usually less than one year), such as the market for 90-day Treasury bills. This market encompasses the trading and issuance of short-term nonequity debt instruments, including Treasury bills, commercial paper, bankers' acceptances, and certificates of deposits.

National Exchange for Automated Trading (NEAT). The National Stock Exchange's NEAT trading system is a fully automated screen-based trading system that adopts the principle of an order-driven market.

Negotiated dealing system. This is an electronic dealing system for government securities to facilitate electronic bidding in auctions and secondary market transactions and for the dissemination of information on trades on a real-time basis.

Negotiated Dealing System (NDS). The NDS is an electronic trading and settlement system for Indian government securities and money market instruments. The NDS facilitates the electronic submission of bids for auctions of government securities by the Reserve Bank of India (RBI) and interfaces with the Securities Settlement System (SSS) of the Public Debt Office at the RBI to facilitate the settlement of government securities transactions. The Clearing Corp. of India Ltd. (CCIL) is the counterparty to all trades executed on the NDS.

Non-banking financial company (NBFC). As defined by the Reserve Bank of India, a non-banking financial company (NBFC) is "a company registered under the Companies Act, 1956, and is engaged in the business of loans and advances, the acquisition of shares/stock/bonds/debentures/securities issued by the government or local authority or other securities of like marketable nature, leasing, hire-purchase, insurance business and chit business, but does not include any institution whose principal business is that of agricultural activity, industrial activity, or sale/ purchase/construction of immovable property. A non-banking institution that is a company and that has its principal business receiving deposits under any scheme or arrangement or any other manner, or lending in any manner, is also a non-banking financial company and known as a residuary non-banking company."

Nonresident Indian (NRI). A nonresident Indian is technically defined as an "Indian citizen who stays abroad for employment/carrying on business or vocation outside India or stays abroad under circumstances indicating an intention for an uncertain duration of stay abroad." (Persons posted in UN organizations and officials posted abroad by the central and state governments and public sector undertakings on temporary assignments are also treated as nonresidents.) Nonresident foreign citizens of Indian origin are treated on par with nonresident Indian citizens.

Non-SLR securities. Non-SLR securities are not eligible for the maintenance of a bank's statutory liquidity ratio (SLR) imposed by the Reserve Bank of India. Nongovernment securities are non-SLR securities. *See* **statutory liquidity ratio**.

Novation. The process by which a central counterparty steps out of two complementary transactions and replaces itself with the name of the counterparty to each of the complementary transactions. When a trade occurs with a central counterparty, there is a buyer and a seller, each of whom has as its counterparty the central counterparty, which stands in the middle of the trade. In the process of novation, the central counterparty steps away for settlement so all netting is done between members without the presence of the CCIL.

Overseas corporate bodies (OCBs). OCBs are entities, including overseas companies, partnerships, societies, and other corporate bodies, that are at least 60 percent owned by individuals of Indian nationality or origin living outside of India. Overseas trusts in which at least 60 percent of the beneficial interest is irrevocably held by such persons are also deemed OCBs. The various facilities granted to nonresident Indians are also available with certain exceptions for OCBs as long as the ownership/beneficial interest held in them by nonresident Indians continues to be at least 60 percent.

Participating preference share. Certain preference shareholders have the right to participate in profits after a specified fixed dividend contracted for is paid. Participation right is linked with the quantum of dividend paid on the equity shares over and above a particular specified level.

Participatory notes. Equity-linked derivatives issued by foreign banks are often used by foreign investors to obtain exposure to local shares without directly purchasing the ordinary shares.

Permitted securities. Securities of companies that are not listed on the Bombay Stock Exchange (BSE) or National Stock Exchange (NSE), are actively traded on regional stock exchanges, and are permitted to trade on the BSE and NSE provided they meet the relevant norms specified by the exchanges are known as permitted securities.

Person of Indian origin (POI). This is an important status from the point of view of investment in India, and it is defined somewhat differently for bank accounts and investments in securities versus investments in property. For bank accounts and securities investments, a POI is a foreign citizen (other than a citizen of Pakistan or Bangladesh) who:

- Has held an Indian passport at any time.
- Has at least one parent or grandparent who was a citizen of India by virtue of the Constitution of India or the Citizenship Act, 1955 (57 of 1955). A spouse (not being a citizen of Pakistan or Bangladesh) of an Indian citizen or of a person of Indian origin is also treated as a person of Indian origin for the above purposes provided that bank accounts are opened or investments in shares/securities in India are made by such persons only jointly with their nonresident Indian spouses.

For investments in real estate, a foreign citizen (other than a citizen of Pakistan, Bangladesh, Afghanistan, Bhutan, Sri Lanka, or Nepal) is deemed a POI if this person:

- Has held an Indian passport at any time.
- Was, or his/her father or paternal grandfather was, a citizen of India by virtue of the Constitution of India or the Citizenship Act, 1955 (57 of 1955).

Permanent account number (PAN). A ten-digit alphanumeric number issued by the Income Tax Department of India must be quoted/presented whenever dealing with the income tax authority. A typical PAN is in the following form: ABCDE1234F.

Preferred stock/preference shares. Owners of this type of shares are entitled to a fixed dividend or dividend calculated at a fixed rate to be paid regularly before dividends can be paid in respect of equity shares. They also enjoy priority over equity shareholders in the payment of a surplus.

But in the event of liquidation, their claims rank below the claims of the company's creditors, bondholders, and debenture holders.

Promoters. This is the term used in India to refer to a company's insiders and generally refers to the company founders, who typically retain a large portion of the shares when a company goes public. Promoters shares are not considered part of the free-float of the company's shares because they tend to be closely held and do not to trade in the market.

Public Sector Undertakings. *Public sector undertakings* is the term used in India for "state-owned." Public sector undertakings are state-owned enterprises. For example, a public sector bank, i.e, State Bank of India, is a state-owned bank rather than a private bank.

Quarter-sigma size. A stock's quarter-sigma order size is a measure of a stock trading liquidity and refers to the order size (in value terms) required to cause a change in the stock price equal to one-quarter of a standard deviation. This measure of liquidity is a complementary approach to impact cost, which measures the size of a price change due to the fixed order size hitting the market. Quarter sigma measures varying order sizes causing the same price change, whereas impact cost measures various price changes caused by a fixed order size.

Ready forward trades. Another name for repurchase agreements, this is a transaction executed when the trade is intended to be reversed at a specific point of time at a rate that will include the interest component for the period between the two opposite legs of the transactions. *See* **Repurchase Agreement (repo)**.

Repurchase agreement (repo). This is a transaction where the trade is intended to be reversed at a specific, later point of time at a rate that will include the interest component for the period between the two opposite sides of the transaction. The trade is called a repo transaction from the point of view of the seller, and it is called a *reverse repo* transaction from the point of view of the buyer.

Residuary non-banking company (RNBC). As defined by the Reserve Bank of India (RBI), a residuary non-banking company (RNBC) is "a class of NBFC that is a company and has as its principal business the receiving of deposits, under any scheme or arrangement or in any other manner and not being investment, leasing, hire-purchase or loan company. These companies are required to maintain investments as per the directions of the RBI, in addition to liquid assets. The functioning of these companies is different from those of NBFCs in terms of method of mobilization of deposits and requirement of deployment of depositors' funds."

RETDEBT trading system. The National Stock Exchange's retail debt trading system takes place in a screen-based electronic environment.

Reverse repo. A repo is called a reverse repo from the point of view of the buyer.

Rights issue/rights shares. This is the issue of new securities to existing shareholders at a ratio to those already held.

Securities transaction tax (STT). The STT is a tax levied on all transactions executed on the stock exchanges. Rates are set by the central government. The STT came into effect with the enactment of the Finance (No. 2) Act, 2004, on October 1, 2004.

SGL-II account. *See* **constituent SGL accounts.**

Short selling. Selling borrowed securities and making delivery with those securities is done with the intention of returning them to the lender at some unspecified future time. Short sellers sell the borrowed securities with the anticipation that the price will drop, and they will replace the borrowed securities with lower-priced ones.

SLR securities. SLRs are securities that are eligible for the maintenance of the statutory liquidity ratio (SLR) by banks. Government securities are SLR securities.

Statutory liquidity ratio (SLR). This is the minimum percentage of a bank's total demand and time liabilities in India, as on the last Friday of the second preceding fortnight, which every banking company must maintain in the form of cash, gold, or unencumbered approved securities at the close of business on any day. The SLR is set by the Reserve Bank of India.

Sub-account. A sub-account is an individual or entity established or incorporated outside India who invests in India through an FII.

Sub-broker. A sub-broker is a person who is registered with the Securities and Exchange Board of India and is affiliated with a member of a recognized stock exchange.

Subsidiary General Ledger (SGL). The SGL is an account facility provided by the Reserve Bank of India to large banks and financial institutions to hold their investments in government securities and Treasury bills in electronic book-entry form.

Treasury bills. These are short-term (up to one year) bearer debt instruments issued by the government at a discount to par value as a means of financing its cash requirements.

Unique client code. This is an exclusive identification for a client used in financial transactions. The following are acceptable forms of unique identification: PAN, passport number, driving license, voter ID number, and ration card number coupled with a frequently used bank account number and a depository beneficiary account.

Zero-coupon bond. A zero-coupon bond is issued at a discount and repaid at face value. No periodic interest is paid. The difference between the issue price and redemption price represents the return to the holder. The buyer of these bonds receives only one payment, at the maturity of the bond.

Zero-coupon yield curve (ZCYC). The National Stock Exchange (NSE) developed a zero-coupon yield curve (ZCYC) to help with the valuation of sovereign securities across all maturities irrespective of liquidity. It aims to create uniform valuation standards in the market. The NSE ZCYC aims to help improve asset liability management of institutions with realistic valuations of portfolios of sovereign papers. It has been developed keeping in mind the emergence of a scientific forward curve for the market that will be useful in developing derivative products and STRIPS in the emerging scenario.

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