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Politics of Market Micro-Structure Towards a New Political Economy of India's Equity Market Reform*

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Rent-seeking is the most seminal concept in political economy in the last 30 years.² It transformed most economists' approach to economic development. Its normative implications have revised our understanding of the appropriate role of the state in economic development. Policy-makers have used arguments about rent-seeking as the rationale for a wide range of neoliberal policy reforms. The concept of rent-seeking has also transformed our understanding of the politics of economic reform by explaining why demonstrably inefficient policies persist.

Most who have applied the concept of rent-seeking to development have identified it with a neoclassical understanding of markets.³ James Buchanan defines rents as 'that part of the payment to an owner of resources over and above that which those resources could command in any alternative use', or, more elegantly, 'receipt in excess of opportunity cost'.⁴ He distinguishes between rents that occur in a market context and those created through state intervention. Buchanan contends that rents occurring in a market context are essentially rewards for innovation that enhance social welfare by promoting economic growth and development. Because these rents occur in a neoclassical 'market', they quickly dissipate as competitors emulate the innovator. In contrast, rents created by state intervention diminish social welfare because the intervention establishes rights that redistribute resources exclusively to the beneficiary of these rights. These rights constitute barriers to economic

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competition, and they interfere with the dynamic that promotes growth and development in the market context. Even worse, they create a rent-seeking dynamic that destroys value because rent-seeking dissipates resources in an unproductive manner.

In this chapter, I argue that Buchanan's distinction between 'intervention rents' and 'innovation rents' elides a third type of rent: market microstructure rents. The trading rules and institutions that comprise a market microstructure create rents when they benefit particular market participants, who then resist change to alternative rules that would create more efficient markets. The basic premise of market microstructure rents is that alternative trading rules create a variety of market microstructures with a range of consequences for efficiency and the distribution of rewards from competition. In contrast to intervention rents, which are produced by state interventions that restrict competition, market microstructure rents are created by market rules that shape competition in the absence of state intervention. In contrast to innovation rents that are dissipated by competition, market microstructure rents are reinforced by competition because the winners use their rewards to perpetuate existing institutions through new rounds of competition.

Eliminating market microstructure rents requires more than 'saving capitalism from the capitalists'. Ever since Adam Smith, political economists have been concerned that collaboration among capitalists can subvert market competition. Smith famously complained, 'People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends up in a conspiracy against the public, or in some contrivance to raise prices.'⁵ Economists Raghuram G. Rajan and Luigi Zingales have expanded on Smith's contentions by arguing,

Capitalism's biggest political enemies are not the firebrand trade unionists spewing vitriol against the system but the executives in pin-striped suits extolling the virtues of competitive markets with every breath while attempting to extinguish them with every action....Unfortunately, all too often and in all too many countries, the conspiracy enlists the help of the state in enforcing limitations on competition.⁶

Market microstructure rents do not require capitalists to secure state intervention to limit competition. Instead, the winners of market competition often resist state initiatives to reform market microstructures.⁷

In this chapter, I contend that the politics of India's equity market microstructure created strong resistance to reform. Part of this resistance was a result of the monopoly rents that India's brokers gained from limiting access to the market. However, analytically distinct conflicts arose from the politics of market microstructure, extending at least as far back as the highly critical Gorwala

Committee Report in 1951.⁸ The rapid technological change that characterized financial markets in the last three decades of the twentieth century exacerbated the conflict by increasing the opportunity costs of maintaining India's unreformed equity market microstructure.⁹ The informatics revolution made it possible to replace the quote-driven trading system with order-driven, computerized systems that automatically matched buyers and sellers.¹⁰ The new technologies enabled authorities to 'dematerialize' trading through electronic exchange of shareholder rights and payments and thereby banish trading in physical shares and cumbersome settlement rules. Finally, the capital market revolution was based on the development of new financial products. Equity trading was increasingly supplemented by trading in financial derivatives that enable traders to manage risk and speculate on future market trends.¹¹ India eventually adopted all these innovations, leapfrogging from archaic market institutions and practices in the early 1990s to international best practices at the beginning of the new millennium. But in an effort to defend their market microstructure rents, financial intermediaries and their allies resisted state-sponsored reforms every step of the way.

This chapter examines the politics of equity market microstructure in India. It argues that officials in the Ministry of Finance generated much of the impetus for reform. Three factors motivated these officials to become agents of change. First, their experience made them acutely aware that public sector resources were inadequate to meet India's developmental needs. Second, as the 1990s progressed they were increasingly aware of the global best practices that developed in the wake of technological change. Finally, the legal infrastructure that regulated Indian equity markets provided them tremendous authority over the exchanges. Under the Securities Contracts (Regulation Act) 1956, the Ministry of Finance enjoyed the power to grant or withdraw recognition to any stock exchange. It also had the power to direct the exchanges to make or amend their rules, supersede the governing body of any exchange, and suspend the business of an exchange.¹²

The main opponents to reform were those stockbrokers and their corporate allies whose speculative strategies took advantage of the opportunities presented by central institutions of India's equity market microstructure: account period settlement and *badla* finance.¹³ The speculative brokers gained control of the governing board of the Bombay Stock Exchange from 1988 through most of the 1990s. The brokers resisted reforms promoted by the Ministry of Finance by claiming a monopoly over market expertise and articulating an anti-government regulation ideology. While the Ministry of Finance was encouraged to

reform by changes in the global economy and foreign actors such as the World Bank and the foreign institutional investors who came to India in growing numbers during the 1990s, it received very little domestic support for reform. Investors were too dispersed and disorganized. Their presence was felt only in times of crisis when the Ministry of Finance took action to pre-empt popular discontent. Corporations listed on the market were also not major supporters of reform because many of them allied with the brokers to exploit opportunities for speculation and price manipulation.

The situation represented the kind of collective action problem that often impedes economic development—a case where a relatively small group resists reforms that would bring widespread benefits to their society because the reforms would undercut their privileged position. Rajan and Zingales are right to point out that market efficiency represents a public good whose provision is made precarious by the collective action problems that pervade the political process. But the problem is not so much that under competitive markets ‘no one in particular makes huge profits from keeping the system competitive and the playing field level. Thus, everyone has an incentives to take a free ride and let someone else defend the system.’¹⁴ Rather, the collective action problem arises because those securing market microstructure rents form a concentrated group of beneficiaries who resist change.

This chapter will begin its investigation of the impact of market microstructure rents on the politics of India’s equity market reform by demonstrating how these rents empowered a coalition of speculative brokers to gain control over the governance of the Mumbai Stock Exchange. Next, the chapter demonstrates how the resistance of the BSE ultimately incited the Ministry of Finance to sanction the creation of the National Stock Exchange. It then examines the creation of electronic depositories and dematerialized trading. Next, it analyses the reform of institutions that were at the heart of market microstructure rents: the badla or carry-forward system of finance and the account period settlement. It concludes by contending that the existence of market microstructure rents suggests the need for a more sophisticated understanding of the politics of economic institutions.

MARKET MICROSTRUCTURE RENTS AND POLITICS WITHIN THE BOMBAY STOCK EXCHANGE

Reforming the stock market required securing the cooperation of the brokers who managed India’s stock exchanges. Although under the Securities Contract

(Regulation) Act the Ministry of Finance exercised tremendous authority over the exchanges, it relied on the exchange management to ensure the smooth functioning of the markets, and many of the reforms proposed by the ministry would have to be implemented by the exchanges. The reforms were controversial among the brokers. Supporters tended to be those who were in a position to take advantage of the increasing trade volumes that were supposed to follow the reforms, especially from institutional traders. The opponents of reform were brokers whose business was based on the speculative opportunities provided by the market microstructure.

The speculative trading that thrived under India's equity market institutions not only made some brokers very wealthy, it was also a source of power in the politics of equity-market governance. Badla or 'carry-forward trading' provided brokers with financing to increase their trading volumes and magnify their returns from speculation. Since banks were prohibited from financing brokers, a small number of brokers specialized in providing badla finance. This placed them in central positions of power. Not only did other brokers depend on them for finance, but the badla brokers gained access to information about other brokers' strategies. Their control over finance and access to information put them in a position to assemble groups of brokers acting as bear or bull cartels. Payments crises further enhanced the power of these 'big brokers', because when speculations did not pan out and brokers had trouble making payments, they turned to them for financial help. Even the governing board of the exchanges would turn to the big brokers for assistance in bailing out brokers in order to resolve the payments crises that periodically occurred on the exchange.¹⁵ The result of the big brokers' control over finance was that they were able to lead networks of brokers and form powerful alliances in the elections to the governing board of the exchange.

On 30 March 1987, Mahendra Kampani, the vice-chairman of India's largest private sector merchant banking house, was elected president of the BSE governing board. Kampani was a reformer who advocated modernizing the BSE. He planned to reform the trading rules and upgrade trading technology as part of a long-term plan to facilitate the growth of the exchange. Kampani declared, 'I expect market capitalization will grow four times from Rs 25,000 crores [250 billion rupees] today to Rs 1,00,000 crores [Rs 1 trillion] by 1995. To handle the increased business, it is important to streamline systems, introduce new technologies, increase training, and speed the settlement process.'¹⁶

Kampani initiated an array of reforms. He had advocated setting up a central depository since 1985.¹⁷ As president of the governing board, he established a

training institute for brokers. Kampani negotiated an arrangement with the Bank of India to develop 'a stockholding depository facility'. He established a counter for transactions in odd-lot shares to increase liquidity. He allocated special space for trading debentures, and he initiated the development of a new all-India stock index based on 100 pivotal scrips.¹⁸ Under Kampani, the BSE staff was given the independence to run the exchange according to their managerial expertise.¹⁹ In contrast to most brokers, Kampani favoured permitting India's financial institutions to set up their own brokerages.²⁰ He welcomed the establishment of an independent regulatory agency.²¹ It was during Kampani's tenure as president that the BSE installed the Stockscan system that used a computerized display to report changing market prices. Kampani appointed Tandem, Arthur Anderson, and the Computer Maintenance Corporation to conduct studies on the viability of computerization. With BSE executive director M.R. Mayya, he was said to have gone as far as selecting the computer system that the BSE would purchase to computerize trading.²²

Kampani's tenure as president was abruptly ended despite his impressive accomplishments. His ouster from the BSE governing board in the March 1988 elections was not only the rejection of a large merchant banker who was viewed as not having the interests of the brokers at heart; it was also a refutation of state intervention in the markets. Many brokers were apprehensive about the changes that Kampani advocated. His view that financial institutions should be permitted to establish their own brokerages was particularly unpopular. Kampani aroused vehement opposition when he acquiesced to a temporary ban on short-selling and speculative trading that the Ministry of Finance imposed in the spring of 1987 after the market suffered a precipitous decline. Brokers began calling him a '*chamcha* [sycophant] of the Ministry of Finance'.²³ Trading plummeted, and business fell by two-thirds over the year. Later, Kampani ran afoul of a powerful cartel of brokers who were waging a bear campaign against Bombay Silk Mills, a textile firm that he served as a director. The company fought the bear attack by buying up its shares. When it asked for delivery, the over-committed brokers were unable to deliver. As was its practice at the time, the BSE governing board arranged for a settlement, but the terms were viewed as unfavourable to the brokers. Kampani got pinned with the blame, even though he had recused himself from the decisions made by the governing board.²⁴

The ouster of Kampani was led by brokers who reaped immense benefits from the BSE's market microstructure rents. Manu Manek, the prototypical 'badla king, led the opposition.'²⁵ This '*dalal of dalals*' was reported to control as

many as twelve membership cards on the Bombay Stock Exchange (BSE), and he had many other brokers who served as his agents in speculative strategies made possible by market institutions such as badla and account period settlements.²⁶ While Manek cultivated a range of contacts across India's parties and government bureaucracies, he was a quintessential businessman who kept a low profile and used his political contacts to advance his business aims. Manek's involvement in the politics of the BSE was intended to enforce his view that the operations of the stock market should be free of government interference. His laissez-faire views extended to the internal governance of the BSE, and he was known to oppose rental increases and what he considered exorbitant fines levied by the exchange. Manek also resisted computerized trading.²⁷ Prior to the 30 March 1988 governing board elections, Manek organized a dinner at which the brokers formed a slate of candidates in opposition to Mahendra Kampani. Though Manek himself did not run, his slate of candidates won control over the board, and was he able to be the president of the exchange.

Manek's influence at the BSE gradually waned in the years before his death in 1997. It was supplanted by that of M.G. Damani, who provided a very different type of leadership. Unlike Manek, who had traded for years on the exchange and whose business was his primary concern, M.G. Damani was never a big trader. In fact, he spent much of his early career managing textile mills. Damani was more interested in the politics of the BSE. He attempted to transform the BSE Sharebrokers Forum—an organization that had until then served as a liaison between brokers and the sharebrokers' staff union to address their labour relations—into the primary forum for representing the BSE brokers' interests. Unlike Manek, who was a non-partisan, Damani was known to attend various functions of the Bharatiya Janata Party (BJP), which shared Damani's aversion to government regulation and his suspicion of foreigners. During the early 1990s Damani built support among the brokers by vociferously opposing SEBI's efforts to register brokers and impose a hefty turnover tax. Despite the headlines he garnered, Damani could not win elections to the BSE governing board until 1993, when he reached an accommodation with Manu Manek who then allotted him a slot on his slate. Damani and his allies, Bhagirath Merchant and J.C. Parekh, served as presidents of the BSE from 1994 through March of 1999 with the exception of 1995–6 when Kamal Kabra presided over the office.²⁸ Under the leadership of Manek and Damani, the brokers' resistance to reforms initiated by SEBI and the Ministry of Finance was an important factor shaping the politics of reform.

COMPUTERIZED TRADING AND THE CREATION OF THE NATIONAL STOCK EXCHANGE

The leaders of the Bombay Stock Exchange had talked about computerizing its operations ever since 1979 when BSE chairman Jeejeebhoy raised the possibility. Computerization had been financially and technologically feasible in India for quite some time. Kanpur's computerized stock exchange was up and running in 1990. Yet the BSE, India's most prestigious exchange, only computerized its trading system in 1995. To explain why, we must examine how the forces with the BSE resisted the introduction of new trading technologies in order to protect their market microstructure rents.

Resistance to computerization at the BSE was particularly strong because computerization was perceived to be detrimental to the speculative brokers whose interests were safeguarded by the governing board. Computerized trading usually involves a shift from a quote-driven to an order-driven system. This shift eliminates the opportunities for brokers to make profits by serving as 'jobbers' quoting prices for purchases and sales.²⁹ Under the trading rules at the BSE, brokers were not required to inform investors of the exact time and price at which they transacted. This lack of accountability enabled brokers to take advantage of investors by overcharging them and by speculating with their shares or money. By replacing the manual entry of trades into the exchanges records, computerization would prevent the practice of illicit 'adjustment entries' made after transactions to the prices or number of shares traded in an effort to enhance their profits.³⁰ On-line trading would minimize opportunities to take advantage of price differentials among the exchanges by facilitating expeditious communication of trading at various exchanges. Computerization would create an easily accessible record of each transaction, thereby making it easier for the authorities to catch inside trading. Brokers were particularly unhappy with the fact that computerization would provide more detailed information about their trading activities to SEBI, the government regulator.³¹

The Ministry of Finance had long favoured the computerization of India's stock exchanges. It had been an important recommendation of the 1985 report of the High-Powered Committee on Stock Exchange Reform convened by the ministry.³² Under Manmohan Singh, the Ministry of Finance pushed harder. In August 1991, it approved the recommendations of the Pherwani Committee to set up a computerized 'National Stock Market System' that would create a computer network to integrate trading on India's 21 regional exchanges. In addition, the committee recommended the establishment of a National Clearing

and Settlement Corporation and a Central Depository Trust. It suggested that public sector enterprises could be listed on the exchange as a first step towards privatization. The Pherwani Committee also urged that the National Stock Market System develop a debt market, especially for long-term, fixed income securities. 75 per cent of the members of the new exchange were to be professionals meeting strict standards for their qualifications. Members of existing exchanges would be limited to 25 per cent of the seats on the new exchange. In an effort to assuage the concerns of the BSE, the Pherwani committee recommended that the National Stock Market System be restricted to medium-sized companies and 'companies that are initially listed on the NMS would eventually graduate for listing on the BSE.'³³

The BSE viewed the National Stock Market system as a threat. It responded in three ways. First, it gave the appearance of expediting the technological modernization of the exchange. BSE executive director M.R. Mayya declared, 'Our people have taken the implementation schedules for computerization of trading on a war footing...'³⁴ A reporter observed that the BSE was

panic-stricken at the thought that an outside agency...might decide what was best for the capital market...Modernization plans are being announced every day—so far, the BSE has unveiled plans to introduce screen-based trading by April 1992, have a separate trading floor/time for debentures and debt instruments, put in place a separate electronic exchange and introduce corporate membership with a single card.'³⁵

At the same time that it offered plans to modernize its own operations, the BSE attempted to discredit the Pherwani Committee proposals by hiring Arthur Anderson to conduct a study that criticized their report.³⁶ Finally, the BSE approached Murlidhar Deora, the Congress party member of parliament who represented Mumbai, to present their case to the government.³⁷

'The NSE was created only because of the BSE's resistance to the changes being promoted by the MoF and SEBI,' observed G.B. Desai, who served as BSE President during this period.³⁸ Key actors in SEBI and the Ministry of Finance resisted the creation of the NSE through much of 1992. G.V. Ramakrishna, the chair of SEBI, withheld his support to the proposal for a computerized national exchange, instead hoping that he could use it to pressure the BSE to modernize.³⁹ In the Ministry of Finance, the file concerning the creation of a computerized national exchange remained with Ashok V. Desai, special advisor to the ministry.⁴⁰ Desai also was inclined to give the BSE the benefit of the doubt and wait for it to modernize. However, during the year following the Pherwani report, the brokers at the BSE defiantly resisted SEBI

initiatives to register them and levy a turnover tax. The BSE became enmeshed in the Harshad Mehta scandal, the largest scam in India's history. As Desai's concerns about their plan to modernize grew, he decided to visit Mumbai to see for himself what was really happening. It soon became clear that the BSE board members had no idea what it meant to computerize, and there was little hope that the BSE would computerize on their own. It was then that he shifted his support to the creation of the National Stock Exchange.

There is an irony in the Government of India, the creator of one of the most regulated non-communist economies in the world, sponsoring the establishment of a new securities market. Yet there is also a certain consistency. If the Indian government could set up a financial system dominated by the public sector, why could it not establish a securities market? Officials from the Ministry of Finance met with executives of the public sector Industrial Development Bank of India (IDBI) at the end of 1992 to begin developing plans for the NSE. S.S. Nadkarni, chair of IDBI, placed R.H. Patil at the head of a small team of IDBI officials to plan for the NSE. The team enjoyed a great deal of autonomy for its project, in part because Nadkarni had enough clout within the government to protect it and in part because virtually everyone outside the government expected the project to fail. The team fashioned its project in a most ambitious manner nonetheless. It rejected the National Stock Market System model proposed in the Pherwani report because, in the words of Ravi Narain, who became managing director in 2000, 'It was a "patches and band-aids" approach. We wanted to create a new system.'⁴¹ The team also might have built on the electronic trading system that was already being operated by the Over the Counter Exchange of India (OTCEI). However, the IDBI team viewed the OTCEI, which was managed by its rival, the Industrial Credit and Investment Corporation of India, as being, 'based on a narrow vision...It was purely a market maker's market...It had a small capital base. Its technological base was not good enough. We thought everything was small. We conceptualized the NSE at the other end.'⁴²

The NSE model was created in reaction to the problems that pervaded the broker-dominated BSE. Unlike the BSE, which was a non-profit association of persons—as were virtually all other stock exchanges in the world at the time—the NSE is a publicly owned, for-profit corporation. In contrast to the BSE, where brokers, as partners of the association, elect the governing board that is responsible for managing the exchange, the NSE's management is autonomous from the brokers and is responsible to the owners of the exchange—primarily public sector financial institutions. The separation of management from the

brokers served to minimize the conflicts of interest that have impeded the adoption of new technologies on the BSE. Difference in the governance of the BSE and NSE also shaped their approach to membership. Concern to maximize the value of the brokers' membership cards led the BSE management to resist expanding the exchange's membership. The NSE's management, in contrast, was eager to attract professionally qualified members across the country. While the BSE attempted to protect the interests of its proprietor-owned or partnership-based brokerage firms by restricting membership to corporate-owned brokerages, the NSE encouraged corporate ownership. Corporations or individuals could become members at the NSE by making a Rs 10 million interest-free deposit with the exchange and agreeing to pay a fixed fee on their trading volume. The Rs 10 million deposit was substantially less than the price of a BSE membership card at the time. As of March 2004, 89 per cent of the NSE's 891 members were corporates.⁴³

The IDBI team was under pressure from the Ministry of Finance to get the system up and running as quickly as possible, and they put together a system with remarkable speed.⁴⁴ They hired Hong Kong-based International Securities Consultancy to assist with the project. It decided to use the TCAM System that was developed in the United States for the Vancouver Stock Exchange as the basis for their trading system. It selected a consortium of software developers led by Tata Consultancy Services to adapt the system. To overcome the problems of India's poor telecommunications infrastructure, the NSE became the first stock exchange in the world to use satellite communications to enable trading across the country. The trading system that was developed, the National Exchange for Automated Trading (NEAT), permits participants across the nation to simultaneously view the full market on a real-time basis, greatly improving the access of investors outside Mumbai, who previously had to work through multiple intermediaries to gain access to the country's largest market. By adding investors outside traditional centres, NEAT improved the market's depth and liquidity. NEAT permits investors to see prices on a computer screen before trading, and it automatically matches orders on a strict price/time priority. In doing so, it increases the transparency of the market. It promotes the efficiency of price discovery, and it minimizes the inefficiencies resulting from the vagaries of the open-outcry system. By enabling market participants to trade anonymously, the NSE's trading system promotes equal market access and curbs insider trading. At the same time, NEAT provides an audit trail that helps to resolve disputes and facilitates regulatory enforcement.⁴⁵

The first trading on the NSE took place in its wholesale debt market in June 1994. Trading in its capital market segment began in November 1994. Few, least of all the brokers of the BSE, expected the NSE to succeed. However, the advantages of the NSE's technological infrastructure along with the pent-up demand for trading in areas outside Mumbai—by 1996–7 almost 60 per cent of the NSE's trading came from outside Mumbai⁴⁶—contributed to the NSE's remarkable rapid growth. By October 1995—less than a year after it opened for trading—the NSE became India's largest stock exchange. In 2003–4, the NSE accounted for 67 per cent of India's trading volume, substantially exceeding turnover at India's second largest exchange, the BSE, where 31 per cent of trading occurred.⁴⁷ In terms of the number of transactions, the NSE has been the third largest exchange in the world since 2002.⁴⁸ In 2005, trading on the NSE was conducted in 345 cities through 2829 VSAT terminals.⁴⁹

The success of the NSE has established a competitive dynamic that has expedited equity market reform. In order to avoid losing out to the NSE, the BSE and other Indian exchanges have had to adopt similar innovations. Furthermore, the demonstration effect created by the NSE bolstered the commitment of the Ministry of Finance and SEBI to compel innovation at the other exchanges. After years of stonewalling, the BSE converted to electronic trading in March 1995. By the end of 1999, all 23 of India's stock exchanges had installed electronic trading systems. As the NSE and BSE have expanded their trading networks across the country, the share of trading on India's 21 regional exchanges has declined precipitously. In 2003–4, the NSE and BSE together accounted for 98 per cent of total turnover in value terms.⁵⁰

The NSE's Transformation of Clearing and Counter-Party Risk

The NSE developed important institutional innovations for clearing and risk management. Settlement and clearing at the BSE and India's other exchanges involved significant counter-party risk since trading partners often did not live up to their commitments. Brokers at the BSE attempted to control counter-party risk in primitive ways. They intuitively sized up their trading partners and assessed their reputation. The BSE governing board dealt with failure to meet commitments by negotiating some form of accommodation to make the commitment good, even when negotiating arrangements delayed trading and forced the exchange to close. The system worked to the disadvantage of investors—who suffered from the trading delays—and brokers who were not

well connected and therefore less likely to be awarded a favourable settlement. It also created moral hazard for speculative brokers, and it inadequately protected against systemic risk.

In 1996, the NSE established the National Securities Clearing Corporation Limited (NSCC) as a wholly owned subsidiary in an effort to alleviate these problems. The NSCC introduced clearing and risk management principles that were widely used outside India. It eliminated counter-party risk by becoming the legal counter-party to the obligations taken on by each party of a transaction. The NSCC made payments to the seller and then took payments from the buyer. It delivered shares to buyers and took delivery from the seller. It then managed this risk by building up a substantial Settlement Guarantee Fund from the contributions of brokers as well as by imposing a rigorous system of margins enforced by an innovative system of on-line position monitoring and automatic disablement. Since its establishment, the NSCC has never failed to make good on its fulfilment of trading obligations, and the NSE has consistently kept to its settlement schedule, not once suffering from the payments crises that have troubled other exchanges.⁵¹

Ending the Registration Bottleneck: From Physical Certificates to Electronic Depositories

Until the late 90s, equity transactions were completed only after the transfer of ownership was recorded by the registrar of the company whose equity had been traded. Before they could enjoy ownership rights, new owners were required to send transfer documents along with the equity certificates to the company registrar in order to have their name entered into the company's records as shareowners. The procedure presented two sets of problems. One had to do with the share certificates. During the 1990s, forgery of share certificates became an increasingly serious problem.⁵² In 1995 and 1996 duplicate share certificates for equity in Reliance Industries, India's largest private sector firm, created a major scandal.⁵³ There were also problems with *benami* shares, or floating share certificates that had not been properly registered. In 1995, the Income Tax Department reported that the value of improperly registered, *benami* shares was Rs 500 billion.⁵⁴ The second set of problems concerned the registration of new ownership with company registrars. Sending documents through the Indian postal service was a precarious proposition that often involved substantial delays. The problems of physically transferring share certificates became especially acute after 1992 when foreign institutional investors traded in unprecedented volumes. Part of the problem was simply the

slothfulness of the companies' departments for share registration. Companies often used discrepancies in the documents such as minor differences in signatures as a pretext for returning the documents without approval. At times, they deliberately withheld shares from the market to raise share prices.

Having created a reliable and expeditious clearing system, the NSE was able to eliminate registration problems by introducing share transfers through electronic depositories. A depository, in effect, functions as an electronic bank with accounts that hold an investor's securities. Having registered their securities with the depository, investors no longer need physical certificates. Registration is 'dematerialized' in the sense that transfer of ownership is registered through entries into the investors' electronic accounts.

During the summer of 1996 Parliament passed the Depositories Act enabling the establishment of electronic depositories. In October 1996, the NSE joined with the Industrial Development Bank of India and the Unit Trust of India to inaugurate the country's first depository, the National Securities Depository Ltd. (NSDL). To give dematerialized trading through the depository a jumpstart, SEBI ordered all institutional investors to settle their trades through a depository for a limited number of scrips beginning 15 January 1998. It further promoted dematerialized trading by making it mandatory in an increasing number of stocks. By March 2004, 5216 companies had joined the NSDL and dematerialized securities are valued at Rs 9662 billion. 5.2 million investor accounts had been opened with the NSDL. The NSDL serviced investors through 214 depository participants in 1719 locations.⁵⁵ By the end of June 2001, dematerialized settlement accounted for more than 99 per cent of turnover settled by delivery.⁵⁶ India's rapid conversion to dematerialized trading through a depository is a remarkable success by international standards.

One of the issues debated during passage of the Depositories Act of 1996 was whether the act should permit the establishment of one or more depository. Some analysts contend that a depository is very much like a natural monopoly with considerable advantages derived from its scale of operations. The benefits derived from the scale of operations justify having only a single depository. This position, for instance, is the basis for the American financial system allowing only a single depository. Others have contended that the benefits that can be derived from competition justify having multiple depositories. Wishing to avoid being left behind by the NSE and eager for the profits that a depository can bring, supporters of the Bombay Stock Exchange joined with those advocating multiple depositories. In February 1999, SEBI authorized the BSE in conjunction with its clearinghouse BOI Shareholding Ltd to launch the Central

Depository for Securities Ltd (CDSL) under the chairmanship of M.G. Damani, who completed his final term as president of the BSE in March of 1998. SEBI's authorization reflected a remarkable exercise of persuasion by the BSE in light of the fact that it came in the midst of a widely publicized SEBI investigation of the exchange's management after a payments crisis in June 1998. Rajendra Banthia, vice-president of the BSE, had been forced to resign in November 1998, and within weeks of SEBI's approval for the CDSL, the regulator ordered the removal of BSE president J.C. Parekh and BSE executive director, R.C. Mathur. Despite the controversy that surrounded its early days, 4810 companies agreed to make their securities available in dematerialized form through the CDSL by March 2004. The depository had 211 depository participants with 441 branches to service investors; however, the CDSL had attracted only 629,159 investor accounts.⁵⁷

Battle over Badla: The Politics of Introducing Derivatives and Rolling Settlement

Badla, or carry-forward trading and the ability to 'net' trades over extended account period settlements were central to the market microstructure rents that benefited many brokers at the BSE. The masters of badla won personal fortunes. They constructed networks of supporters to assist in their speculative plays, and they were able to translate their wealth and loyalty from brokers into influence over the governing boards of the exchanges. Two steps were required to effectively replace badla: reforms must offer alternative means for proper hedging, and they must replace account period settlements with a system that does not encourage excessive speculation.

The government had banned badla several times before the 1990s, but irresistible pressure always arose to restore it. After wild market gyrations, G.V. Ramakrishna, the controversial head of SEBI, imposed another ban on badla on 13 December 1993.⁵⁸ His successors S.S. Nadkarni and D.R. Mehta looked for a compromise that would reform badla to include safeguards to the market that were acceptable to the brokers. Restoring badla was such a top priority for Mehta that he convened the G.S. Patel Committee to consider the matter on the day after he assumed his post at SEBI. The Patel Committee took less than a month to issue its recommendations, and badla was reintroduced at most Indian exchanges on 19 January 1996. The National Stock Exchange initially refused to permit badla, but on 10 February 1999 it introduced its own carry-forward product, the Automatic Lending and Borrowing Mechanism (ALBM). The ALBM functioned very much like a computerized form of badla with the

difference that the NSSC served as an intermediary for all transactions and the ALBM functioned only for dematerialized stocks.⁵⁹ On 22 January 2001, the BSE replaced the modified carry-forward system that had been introduced according to the Patel Committee recommendations in 1996 with the Borrowing and Lending Securities Scheme (BLESS). The introduction of BLESS was in part a consequence of the fact that the ALBM had been taking business away from the BSE. It was also motivated by the fact that BLESS relaxed the restrictions on badla that had been imposed by the modified carry-forward system.⁶⁰

Exchange-traded derivatives provide an attractive alternative to badla. In essence, the weekly or fortnightly settlement system that prevailed in India until 2001 was a type of futures market. Traders enter into an agreement to buy or sell at an agreed upon price at the future settlement date. Traders do not have a facility for managing the risk between the date of their transaction and the settlement. Badla is at best only a very crude means of hedging. It only allows traders to manage their risk by postponing payment from one settlement to the next. And unlike derivatives, which are traded on a separate exchange, badla trading is mixed with the cash market and can therefore distort price discovery. In fact, this capacity to distort price discovery on the cash market is what makes badla attractive to speculators wishing to profit by creating false market signals.

The NSE has played a key role in bringing to India the revolution in risk management that follows the introduction of derivatives. The inherent difficulty of creating a liquid derivative market in a developing country and its sensitivity to the opposition of the BSE caused SEBI to treat the issue with extreme care. The NSE requested permission to begin trading in index futures as early as 14 December 1995. SEBI did not respond until November 1996 when it announced the formation of a committee headed by L.C. Gupta to make policy recommendations for derivatives trading. The Gupta committee included 24 members, an extraordinarily large size as such committees go, representing a broad range of opinion.⁶¹ The unwieldy committee deliberated for a lengthy period. It announced its recommendations in March 1998. Even after 17 months of deliberation, the recommendations were surrounded with controversy because one member, M.G. Damani, the president of the Bombay Stock Exchange, charged that the committee issued its recommendations prematurely.⁶² Damani added a lengthy dissenting note to the committee's recommendations, in which he vehemently expressed two concerns. First, he contended that the report did not prescribe the details of the regulatory framework for derivatives trading. He opposed the committee's decision to leave

this to SEBI and the exchanges, a position that contradicted his overall aversion to government regulation of stock exchanges. Second, Damani warned,

In the last two years, we have witnessed a new phenomenon in our [sic] stock markets which is FII's capacity to influence the movement of index... Our market may be bled white; instead of more foreign exchange coming in by way of FII portfolio investment, much more foreign exchange will be drained out by way of repatriation of profits... Between the hedging demand of the FIIs and interest of the nation, the latter is more important.⁶³

Once an enabling amendment was passed to the Securities Contracts Regulation Act in November 1999, SEBI gave its authorization. In June 2000, the NSE and the BSE initiated derivatives trading in the form of index futures. Futures based on the NSE's Nifty Index also began to be traded on Singapore's Simex Exchange. Trading in index options was authorized in June 2001, and trading in options on individual securities was initiated in July 2001. Futures trading on individual stocks was introduced in November 2001. Derivatives trading has grown rapidly. Total trading volume increased from Rs 1038 billion in 2001–2, its first full year of trading, to more than Rs 21,422 billion in 2003–4.⁶⁴

At the same time that derivative trading was being introduced, reforms were gradually moving India from its account period settlement to rolling settlement. Until 1994 when the settlement period was reduced to one week, India's stock exchanges operated on a two-week settlement system in which the period between a transaction and settlement could be as long as 14 days. During the interim, market participants could square off their trades and be responsible only for the net difference. The system promoted unhealthy speculation because it provided traders with 'infinite leverage' in the sense that if market trends moved in the direction anticipated, traders need not put up any cash or equity at all since they could net their earlier trade and collect the profits.⁶⁵ Rolling settlements, in contrast, fix the net position of all traders after the daily trading session and require them to settle each daily position after a fixed period. Under a T+5 rolling settlement, a net position at the end of any day (T) must be settled on the fifth working day after T. Reducing the period for netting to a day greatly limits the scope for intra-settlement speculation. By doing so, rolling settlements effectively separate the cash market from the futures market. Since netting occurs at the end of each day on every exchange, rolling settlement reduces the opportunity for arbitrage between exchanges.

Proponents contend that by distinguishing the market for delivery from speculation, rolling settlement promotes greater transparency and improves

price discovery. It is also said to promote better regulation and to reduce default and systemic risk. Finally, advocates point out that adopting rolling settlement moves India towards the international standard. India was one of the last major countries to adopt rolling settlements.⁶⁶

Opponents of rolling settlement countered that rolling settlements would reduce liquidity in markets that can ill afford such reductions. They also contended that India's market infrastructure is not ready for rolling settlement, citing, for instance, the need for more bank branches with electronic fund transfer facilities.

Measures to move from account period to rolling settlement enmeshed the Ministry of Finance and SEBI in the rivalry between the BSE and the NSE. At its founding, the NSE declared that shortening the settlement period would be one of its main objectives.⁶⁷ However, adopting rolling settlement along with index-based derivatives threatened to undermine the badla system prevailing on the BSE. It would transform institutions of market microstructure that shape the field of competition between India's two largest markets in ways that disadvantaged the more speculative brokers at the BSE.

The Ministry of Finance has consistently pushed for the adoption of rolling settlement. Finance Minister Yashwant Sinha publicly voiced his support. Implementation of rolling settlement is, however, under the jurisdiction of SEBI, and the regulatory agency moved equivocally in the face of efforts by the BSE to salvage badla.

SEBI's deference to the interest of the BSE was apparent in the manner it attempted to implement rolling settlement while allowing the BSE to develop a compatible form of badla. SEBI's reluctance to transfer shares traded in the BSE's badla system to rolling settlement threatened the success of the new settlement system. As long as the market's most liquid stocks remained in the less restricted badla system, there was little incentive to trade in rolling settlement stocks: thus, the move to rolling settlement could fail due to lack of liquidity.

On 15 January 1998 SEBI initiated a T+5 rolling settlement on an optional basis for eight stocks with dematerialized trading. On 15 September 1999, SEBI released a list of 45 stocks to be moved to rolling settlement.⁶⁸ 15 were from the BSE's 'A group' of 200 stocks traded on the badla market. Including scrips from this group of prestigious stocks that account for 85 to 94 per cent of the trading volume on the BSE is arguably vital to the success of rolling settlement.⁶⁹ However, before rolling settlement could be expanded, SEBI reduced the number of stocks placed under rolling settlement to 10, none of which were on the BSE's A list.⁷⁰ By August 2000, SEBI had placed 153

additional scrips under rolling settlement, but the list still did not include stocks traded under the BSE's badla system.⁷¹ The continued exclusion of 'A group' stocks placed SEBI in the position of appearing to protect the practice of badla to the detriment of rolling settlement.

SEBI had included 'A group' stocks in its list for rolling settlement with the hope that a modified badla system compatible with rolling settlement would be in place. The BSE had submitted a proposal for modified badla at the beginning of September 1999. However, snags delayed the implementation of the new system. In the last week of October, SEBI created a committee chaired by board member J.R. Varma to consider the transition to rolling settlement.⁷² The committee recommended implementation of the modified badla system, but the similarity of the proposal with futures on individual stocks incited controversy at a SEBI board meeting on 25 January 2000, and SEBI delayed issuing its approval of the revised badla system until 14 June 2000.⁷³ At this time, SEBI announced that 'A group' scrips would be included in rolling settlement as soon as the exchanges could modify their software to operationalize modified badla. The BSE told SEBI that it would take three months to ready the software for modified badla.⁷⁴ After meeting with the stock exchanges on 23 August, SEBI announced that the software would be ready by the end of November.⁷⁵ On 21 November 2000 the BSE finally initiated a modified badla system for 15 stocks on an experimental basis.⁷⁶

SEBI's approach to badla and rolling settlement changed dramatically with the securities scam that broke out in March 2001. Parliamentary debates put intense pressure on Finance Minister Yashwant Sinha to demonstrate that he was cleaning up the mess. SEBI itself was discredited by its failure to take measures to prevent the scam as well as by its initial measures to minimize its impact. The Ministry of Finance put intense pressure on SEBI to act, and SEBI was eager to oblige. On 13 March, Yashwant Sinha announced in the Rajya Sabha that rolling settlement would be extended to the 200 prestigious stocks that were under the ALBM/BLESS system. On 15 March, SEBI asked all stock exchanges to create the infrastructure necessary for rolling settlement in these stocks. On 26 April, a SEBI panel proposed that ALBM and BLESS be banned as of 2 July. The panel also urged that trading in futures and options be created for individual stocks. After SEBI head D.R. Mehta met with Finance Minister Sinha on 10 May to review the steps taken in the wake of the scam, the SEBI board met on 15 May and ratified the ban of ALBM and BLESS. On 2 July, the 200 'A list' stocks were moved to rolling settlement and ALBM and BLESS were banned.

The banning of ALBM and BLESS and the transfer of the badla stocks from account period to rolling settlement occurred at a time when brokers were financially hard pressed. Trading volumes had already declined by 80 per cent after the March 2001 securities scam, drastically curtailing the revenues of most brokers. The banning of the carry-forward systems imposed an additional decline of trading volumes and another blow to the viability of many brokers' businesses. Switching from badla to derivative trading required extra capital investment. Furthermore, in January 2001, the Supreme Court had decided against the brokers in a five-year old legal dispute over SEBI's right to impose a 0.01 per cent turnover tax, and now SEBI was insisting that brokers pay up their back taxes. All this took place in face of unfavourable long-term trends, especially for small and regional brokers. The spread of screen-based trading had increased competition and lowered brokerage fees. Internet trading, which the NSE had initiated in 2000, put further pressure on broker revenues. With the presence of foreign institutional investors and the growth of India's mutual fund sector, institutional trading accounted for a growing share of overall volumes. Smaller brokers were unlikely to get institutional business and were increasingly cut out of the action. The spread of the NSE and the BSE throughout the country meant that trading volumes at regional exchanges dried up, placing most regional brokers in unviable financial positions.

The brokers organized and protested against the changes imposed by the Ministry of Finance and SEBI. Brokers at the Ahmedabad and Kanpur stock exchanges began strikes at the beginning of July 2001. The Ahmedabad brokers were so incensed that they burned SEBI chair D.R. Mehta in effigy. Brokers in Mumbai marched on SEBI headquarters.⁷⁷ On 23 July, for the first time in history, brokers across India went on strike. They formed the Securities Industry Association of India (SIAI) and selected Deena Mehta, chairperson of the BSE Brokers Forum, as its spokesperson. The SIAI demanded the restoration of carry-forward trading, liberalization of finance to stockbrokers and investors, concessions from SEBI on the turnover tax issue, greater accountability of the regulator, and recognition of the brokers' domain of knowledge along with an end to 'broker bashing'.⁷⁸ The SIAI lobbied hard for its demands, meeting with regional strongman Sharad Pawar and Mumbai MPs Jaywantiben Mehta and Kirit Somaiya. On 27 August 2001 they met with Finance Minister Yashwant Sinha who sat patiently through the brokers' presentation but did not budge an inch.⁷⁹ Despite the brokers' demands, badla trading remained banned and rolling settlement moved forward. All remaining stocks were switched to rolling settlement on 31 December 2001. On 1 April 2002, the Indian markets

moved from rolling settlement on a T+5 basis to a T+3 basis. The settlement cycle was accelerated to T+2 on 1 April 2003. In a matter of ten years, India transformed the settlement system from one of the most archaic in the world to one that sits on the frontier of global best practices.

CONCLUDING REMARKS

By 2001, reforms brought India up to par with the global standards for virtually every aspect of its equity market microstructure. The 'open outcry' system that restricted trading to the floors of stock exchanges in India's metropolises was replaced by screen-based, electronic order-book systems that instantaneously linked traders across the country through the world's first satellite trading system. Virtually all trading took place on a dematerialized basis through a central depository. The deeply flawed account period settlement system was replaced by a T+2 rolling settlement that is one of the most efficient systems in the world, and badla or carry-forward trading gave way to a rapidly developing derivatives market. As a consequence of these changes, the total value of transactions in securities has grown dramatically over the last ten years from Rs 1.7 billion in 1994–5 to Rs 50.8 billion in 2003–4,⁸⁰ and in the wake of the implementation of rolling settlements, market liquidity has improved dramatically.⁸¹ All this is not to suggest that no problems remain. The micromarket structure of the primary market (despite its revival since 2003–4, in part because of the introduction of a screen-based book-building system) is still in need of reform.⁸² The share of household savings invested in securities is small and has declined since the early 1990s. The mutual fund industry remains underdeveloped, and the regulatory capacity of SEBI needs enhancement. Nonetheless, the transformation of Indian equity markets is a remarkably successful chapter in the story of India's economic reform.

Three factors help to explain this success. First, technological change in the form of electronic trading systems and the development of new financial products created substantial opportunity costs to maintaining the status quo. Second, in the context of India's balance of payments crisis in 1991, officials in the Ministry of Finance were motivated by their growing awareness of global best practices to use their authority to modernize India's capital market. Finally, India's politicians and reformers in the Ministry of Finance had a relatively low 'political cost-benefit ratio' for reforming equity markets.⁸³ Equity market reform promised to ease demands on India's budgetary resources and attract foreign investment. At the same time, the reformers were not confronted by

strong public sector institutions with vested interests in the status quo (such as in the banking sector) or the opposition of powerful political constituencies. Political resistance came primarily from India's broker community. Changes in the 1980s and 1990s contributed to a differentiation of interests in the community. While a faction intent on resisting reforms gained control over the governance of the BSE and other exchanges, its ability to resist was diminished by financial scandals. The brokers' resistance was, however, not without consequences. Their adamant refusal to modernize the BSE led the Ministry of Finance to support the creation of the National Stock Exchange. The NSE became an important impetus for reform, and its success compelled the BSE to follow.

The capacity of market microstructure rents to perpetuate inefficient market institutions undercuts the neoliberal position that economic development can be promoted by minimizing state intervention and maximizing the role of the market. Actors attempting to perpetuate market microstructure rents differ from rent-seekers as depicted by neoliberals. The brokers who resisted reforms did not rely on government intervention to give them exclusive rights. The institution of badla was not established through state intervention; rather, it evolved from competitive practices on the market. Nor was it sustained by state intervention. On the contrary, the pre-eminence of the BSE was perpetuated by the natural monopoly that it achieved through its superior liquidity and the social networks that formed from its patterns of trade.⁸⁴ Badla could not be terminated by turning matters over to the market. Ending the practice of badla necessitated state action, not just to prohibit it but also to create new market institutions such as derivatives and rolling settlement to supplant it.

The criticism that the neoliberal approach to markets fails to account for the impact of variable market institutions provides grounds for criticizing recent trends in comparative political economy. In recent years, political economists have focused on the economic impact of political institutions to the neglect of political impact of economic institutions. Their silence regarding the politics of market microstructure has inadvertently supported neoliberal claims that markets are inherently apolitical and efficient. Economists, having become increasingly interested in the consequences of imperfect information, multiple equilibria, and Pareto suboptimality, are more aware of the market imperfections. Recent work by leading economists such as Douglass North and Elhanan Helpman has noted the importance of proper economic institutions for promoting economic growth; however, they have not adequately analysed the political process by which these institutions are created or stifled.⁸⁵ This study suggests that political economy should analyse the politics of markets as well as the politics of

states. Since politics shapes the evolution of market institutions, political analysis has an important contribution to make in explaining variations in market institutions and ultimate developmental outcomes.

NOTES AND REFERENCES

1. An earlier version of this paper was presented at the annual meeting of the American Political Science Association, Boston, MA, 28 August–30 September 2002. The author wishes to express his appreciation to Durgesh Kasbekar, Alex Toma, and Jerry Meyerle for their outstanding research assistance. Thanks to Herman Schwartz, Lloyd Rudolph, Susanne Rudolph, Rob Jenkins, Sugata Bhattacharya, and the members of Network on South Asian Politics and Political Economy for their comments on an earlier version of this paper. Very special thanks to Ajay Shah and Susan Thomas for their gracious help and in some cases co-participation in fieldwork as well as for their generous sharing of their ideas about India's equity markets.

2. Seminal contributions to this huge literature are Anne O. Krueger, 'The Political Economy of the Rent-Seeking Society', *American Economic Review* 64: 3, June (1974), pp. 291–303; and Jagdish N. Bhagwati, 'Directly Unproductive, Profit-seeking (DUP) Activities', *Journal of Political Economy* 80: 5 (1982), pp. 988–1002. For a seminal development of the idea of rent-seeking to developing countries, see Robert H. Bates, *Markets and States in Tropical Africa* (Berkeley, University of California Press, 1981). For an interesting application to India, see Prem Shankar Jha, *India: A Political Economy of Stagnation* (New Delhi, Oxford University Press, 1980).

3. Of course, the concept of rents preceded the development of neoclassical economics, having been developed by classical political economists.

4. James M. Buchanan, 'Rent-seeking and Profit-seeking', in James M. Buchanan, R.D. Tollison and Gordon Tullock (eds), *Toward a Theory of the Rent-seeking Society* (College Station, Texas A&M University Press, 1980), p. 3.

5. Adam Smith, *The Wealth of Nations* (London, Penguin Books, [1776] 1999), p. 232.

6. Raghuram G. Rajan and Luigi Zingales, *Saving Capitalism from the Capitalists* (New York, Crown Business, 2003), p. 276.

7. The approach is similar to that of Neil Fligstein, *The Architecture of Markets: An Economic Sociology of Twenty-First Century Capitalist States* (Princeton, Princeton University Press, 2001). However, the notion of market microstructure rents differs from Fligstein's assertion that efficiency is socially constructed since it is premised on the notion that we can apply some objective standard to discern the relative levels of efficiency of different market microstructures.

8. John Echeverri-Gent, 'Governance Regimes and Equity Market Development', unpublished manuscript, University of Virginia. 5 October 2004.

9. Accessible discussions of the dramatic transformation of financial markets include Patrick Young and Thomas Theys, *Capital Market Revolution* (London, Financial Times–Prentice Hall, 1999); and Peter L. Bernstein, *Against the Gods: The Remarkable Story of Risk* (New York, John Wiley and Sons, 1996).

10. In a quote-driven system, 'market makers' (sometimes called 'specialists,' or 'jobbers') intermediate between buyers and sellers by offering to buy or sell securities at particular prices. The 'market makers' are remunerated for their service by the 'spread' between the prices at which they buy and sell. In an order-driven system, orders to buy and sell are matched without a market maker.

11. A derivative is a financial instrument whose value is based on some underlying price. Derivatives are often traded on their own markets, usually in the form of futures or options. Futures are contracts to buy or sell a fixed quantity at an agreed upon price on a designated date. Options are contracts that gives the holder the discretionary right to buy or sell a given quantity at an agreed upon price at a designated date.

12. 'Securities Contracts (Regulation) Act, 1956', in *Companies Act With SEBI Rules/Regulations/Guidelines* (New Delhi, Taxmann, 1999), pp. 2.3–2.24. The Ministry of Finance shared these powers with SEBI.

13. Until the implementation of rolling settlement in 2001, transactions on Indian markets did not have to be settled until the end of an official settlement period which lasted either one or two weeks. Shares and payment for transactions agreed upon during the period were exchanged only after the end of the period. *Badlawalas*, brokers who had finance or shares available for lending, negotiated deals with traders who wanted to carry forward their position until the end of the next settlement. Traders who owed payment for shares would negotiate a deal with a badlawala, who would make the payment in return for interest and payment at the end of the next period. Traders who wanted to sell shares could use a badlawala's shares on a similar basis. Often traders used the badla system to postpone payment for many consecutive settlements.

14. Rajan and Zingales, *Saving Capitalism*, p. 276.

15. Interview with M.R. Mayya, Mumbai, 28 August 1999; interview with G.B. Desai, former President, BSE of the BSE, Mumbai, 30 July 1999; Interview with J.C. Parekh, former President BSE, Mumbai, 11 August 1999; Interview with Bhupen Dalal, Mumbai, 31 July 1999.

16. Basudev Das and S.N. Vasuki, 'Brokers' badla', *Business India* (18 April 1988), p. 56.

17. Mukarram Bagat, 'Urgent need to reform', *Update* (March 1985).

18. Das and Vasuki, 'Brokers' badla', pp. 50–6.

19. Interview with M.R. Mayya, Mumbai, 28 August 1999. According to

the Executive Director of the BSE from 1983–93, 'Mahendra Kampani was a model person. He was an expert in computerization. He never interfered with administration.'

20. Das and Vasuki, 'Brokers' badla', p. 56.

21. Shrish Nadkarni and Ajit Agharkar, 'Securities board – Taking over from the CCI?' *Sunday Observer*, 15 November 1987.

22. Sucheta Dalal, 'Setting the Agenda for Change in Indian Capital Market', *Economic and Political Weekly*, 4 September 1999, pp. 254–64; Das and Vasuki, 'Brokers' badla', p. 56; and interview with G.B. Desai, former president of the BSE, Mumbai, 30 July 1999.

23. Interview with G.B. Desai, Mumbai, 7 August 1999.

24. The best account of Kampani's ouster is Das and Vasuki, 'Brokers' badla'.

25. Manek was described to me in these terms by C. Kamdar, broker, BSE, Mumbai, 10 June 1999.

26. S.N. Vasuki, 'Manu matters', *Business India* 18 April 1988, p. 55.

27. Ibid.

28. Bhagirath Merchant and J.C. Parikh were also active in the Sharebrokers Forum. Interview with G.B. Desai, Mumbai, 7 August 1999. Bhagirath Merchant served as president of the BSE in 1994–5. J.C. Parikh served as vice-president of the exchange in 1991–2, prior to the election of Damani to the governing board and during Damani's two terms as president in 1996–7 and 1997–8. He served as president of the BSE in 1998–9. Rajendra Bhandia was another supporter of efforts to represent the interests of speculative brokers. Bhandia served as treasurer in 1997–8 and vice-president in 1998–9.

29. The early version of the trading system software used at the BSE attempted to protect the interests of jobbers by including a window that enabled them to offer quotes. However, this window was never widely used. Interview with L. Hariharan, Deputy General Manager, Research, Statistics & Publications, Bombay Stock Exchange, Mumbai, 18 May 1999.

30. According to a report by the Securities and Exchange Board of India, 20 to 30 per cent of all transactions at the BSE had to be adjusted after each trading session. See 'SEBI indicts BSE for glaring lapses', *The Economic Times*, 11 March 1993. In its response to the SEBI report, the BSE conceded that this had previously been the case, but it declared that it had since brought down the number of adjustments to 5–8 per cent of all transactions. See 'BSE refutes several SEBI charges', *The Economic Times*, 3 April 1993.

31. Daksesh Parikh, 'Why brokers resist computerisation', *The Independent*, 15 June 1990; Devina Dutt and Anand, 'Stock Exchange: Insider Information', *Sunday*, 22 November 1992, pp. 60–4; 'In December, you might see a different shape for the market,' *Sunday*, 10 September 1995, pp. 52–3; and

Sucheta Dalal, 'Parallel SE in Bombay favoured', *The Economic Times*, 15 July 1991.

32. More precisely, the *Report of the High Powered Committee on Stock Exchange Reforms* recommended, '...the present method of recording the transactions and prices by the stockbrokers only in sauda book and thereafter the prices being broadcast or written on the black-board should be replaced by an electronic system whereby there is an instantaneous record of transactions...' Government of India, New Delhi, Ministry of Finance, Department of Economic Affairs, p. 135. See also pp. 211–28.

33. High Powered Study Group on Establishment of New Stock Exchanges, *Summary of Recommendations*, Mimeo., 30 June 1991, pp. 3, 9, 10.

34. 'National stock market system: The onus is on the BSE', *The Independent*, 30 November 1991.

35. Sucheta Dalal, 'Committee after Committee', *The Economic Times*, 8 September 1991.

36. 'Consultant debunks national SE plan', *Business Standard*, 22 January 1992.

37. 'Proposed national stock exchange: Finance ministry calls for debate', *The Economic Times*, 28 August 1991.

38. Interview with G.B. Desai, Mumbai, 30 July 1999.

39. Interview with G.V. Ramakrishna, New Delhi, 19 July 1999. According to one report, Ramakrishna sent a letter to the Ministry of Finance in May 1992 advising it to go slow on creating the NSE. See Debashis Basu and Roshni Jayakar, 'Battle for the NSE', *Business Today*, 22 April 1993, pp. 38–42.

40. Interview with Ashok Desai, New Delhi, 22 July 1999. The importance of Desai's visit was also confirmed by G.B. Desai, president of the BSE at the time, and M.R. Mayya, the executive director of the Bombay Stock Exchange at the time. See interviews with G.B. Desai, Mumbai, 30 July 1999 and M.R. Mayya, Mumbai, 28 August 1999.

41. Interview with Ravi Narain, Mumbai, 26 August 1999. From the founding of the NSE until 2001, Narain served as assistant managing director of the NSE.

42. Interview with Dr R.H. Patil, Mumbai, 18 August 1999. Dr Patil became the NSE's first managing director. His assessment concerning the drawbacks of the OTCEI's technological base was supported by Rafiq Dossani, who was a frequent trader on the exchange during the 1990s. Dossani says that the modem-based communication on the OTCEI was very slow, much slower than the VCAT technology of the NSE, and the OTCEI's software was also inferior. Telephone interview with Rafiq Dossani, 7 June 2002.

43. NSE, *Indian Securities Market, A Review – 2004* (Mumbai, National

Stock Exchange of India Ltd, 2004), p. 82. This document is available online at www.nse-india.com/archives/us/ismr/us_ismr2004.htm; and NSE, *Fact Book 2005* (Mumbai, National Stock Exchange of India Limited, 2001), p. 4. This volume is available on-line at www.nse-india.com.

44. Montek Ahluwalia said, 'We are pressing Nadkarni to get it going in around eight to ten months. We would like trading to begin in 1993-94—even if means starting the NSE on the very last day of the financial year.' Basu and Jayakar, 'Battle for the NSE'.

45. Ajay Shah, 'Institutional Change in India's Capital Markets', *Economic and Political Weekly*, 16 January 1999, p. 188.

46. The actual percentage was 59.2. NSE, *Fact Book 2001* (Mumbai; National Stock Exchange of India Limited, 2001), p. 40. This volume is available online at <http://www.nseindia.com/archives/us/fact/usfactbook2001.htm>.

47. NSE, *Indian Securities Market, A Review – 2004*, p. 91.

48. Ministry of Finance, Government of India, *Economic Survey 2004-05*, as accessed from <http://indiabudget.nic.in/es2004-05/esmain.htm> on July 21, 2005.

49. NSE, *Fact Book 2005*, p. 6.

50. NSE, *Indian Securities Market, A Review – 2004*, p. 91. Regional bourses continue to exist despite lack of turnover because they still collect listing fees. Government regulations mandate that companies list at two exchanges, and prior to the establishment of the NSE, it was the norm for companies to list at the BSE and a local exchange. Listing fees amounted to some Rs 6 billion in 2001-2. Regional exchanges received Rs 4 billion. See P. Vaidyanathan Iyer, 'Regional bourses: Listing to extinction', *Business Standard*, 14 May 2002.

51. Ajay Shah, 'India's National Stock Exchange (NSE) and India's Over the Counter Exchange (OTCEI)' (Mumbai, Indira Gandhi Institute for Development Research, working paper, c. 2000); and *Indian Securities Market: A Review* (Mumbai, National Stock Exchange of India Ltd, 2001), p. 26.

52. Dwijottam Bhattacharjee, 'Fake shares flood stock market', *Business Standard*, 12 January 1994; and Rahul Joshi, 'Fake share certificates available for a price', *Indian Express*, 26 April 1994.

53. For a concise summary of the scam, see Hamish McDonald, *The Polyester Prince: The Rise of Dhirubhai Ambani* (St. Leonards (Australia), Allen & Unwin, 1998), pp. 243-52.

54. 'Fear of the Week', *Sunday*, 18 June 1995, p. 59. Harshad Mehta is reported to have created benami shares worth billions of rupees in an attempt to conceal his trading activities during the 1992 scam. See Anand, 'A share of trouble', *Sunday*, 19 September 1993, p. 60.

55. Depository participants—usually banks, financial institutions, or certified brokerages—serve as agents of the depository by providing investors with access to the depository. This data was taken from NSE, *Indian Securities Market, A Review – 2004*, p. 88.

56. NSE, *Indian Securities Market: A Review* (Mumbai: National Stock Exchange of India Ltd, 2001), p. 25. This document is available online at www.nseindia.com.

57. NSE, *Indian Securities Market, A Review – 2004*, p. 88.

58. Interview with G.V. Ramakrishna, New Delhi, 19 July 1999.

59. For a description of how ALBM worked, see Krishnan Thiagarajan, 'Putting idle stocks to work', *Business Line*, 14 March 1999.

60. Specifically, BLESS offered the opportunity for brokers delivering finance to the system to withdraw securities by paying a 15–20 per cent margin. Ashok Jainani, 'SEBI may call for revamp of lending, borrowing system', *Business Line*, 26 January 2001; and Ashok Jainani, 'The Long and short of ALBM, BLESS', *Business Line*, 9 March 2001. According to Anand Rathi, president of the BSE, '...This is the same system which SEBI had banned. So we are back to the old days [pre-December 1992].' Lancelot Joseph, 'Completing full circle', *Business India*, 8 January 2001. The SEBI committee on risk management became concerned about the ability of financiers to withdraw securities and banned the practices at the beginning of March. See 'SEBI discontinues 2 lending schemes fearing misuse', *The Economic Times*, 2 March 2001. Its concerns about the reversion to this less restrictive system were borne out after the March 2001 stock scam when more than 400 investors complained that brokers at the BSE refused to return their investments in the BLESS system. Apparently, their funds had been taken out of the system and reinvested in the unregulated 'grey badla market' in Kolkata. See Ashok Jainani, 'Major badla abuse comes to light', *Business Line*, 15 May 2001.

61. Interview with L.C. Gupta, New Delhi, 21 July 1999.

62. For a description of delays caused by M.G. Damani and SEBI, see Vivek Law, 'L.C. Gupta committee members upset over delay in finalizing report', *Financial Express*, 14 February 1988.

63. M.G. Damani, 'Comments on the Report of the Committee on Derivatives', 26 December 1997, accessed at <http://www.sebi.gov.in/news/dissent.html> on 20 June 2002.

64. NSE, *Indian Securities Market, A Review -- 2004*, p. 10.

65. Ajay Shah and Susan Thomas, 'Developing the Indian Capital Market', in James A. Hanson and Sanjay Kathuria (eds), *India: A Financial Sector for the Twenty-first Century* (New Delhi, Oxford University Press, 1999), pp. 225–6.

66. For discussions of the benefits of rolling settlement, see Ajay Shah and

Susan Thomas, 'Policy issues in India's capital markets in 2000 AD', Indira Gandhi Institute for Development Research, Mumbai, 2000, pp. 2–5.

67. NSE, *Indian Securities Market: A Review*, p. 3.

68. The OCTEI adopted rolling settlement when it began operation in September 1992. In July 1997 the NSE established a rolling settlement for a set of dematerialized stocks. For early rolling settlement on the OTCEI and NSE, see S. Vaidyanathan, 'Rolling settlement: The next 'big development in market'', *Business Line*, 22 August 1999. A SEBI board meeting on 5 January 1998 decided that rolling settlement on a T+5 basis would be introduced for all scrips traded in the dematerialized segment of the stock exchanges with effect from 15 January 1998. SEBI press release accessed at <http://www.sebi.gov.in/test/powersearch.p...press/9801.html&search=rolling+settlement> on December 5, 2000.

At the annual meeting of stock exchanges on 9 August, SEBI announced that it was setting up a committee comprising representatives of various stock exchanges to draw up a plan for compulsory rolling settlement. The committee, which first met on 19 August, decided to introduce rolling settlement on a T+5 basis in about ten scrips that were not eligible for badla. Abhishek Bhuwarka, 'Rolling settlement – Regulating carry forward', *Financial Express*, 28 September 1999; and Abhishek Bhuwarka, 'India: Rolling to global standards', *Business Line*, 15 August 1999; 'Panel to name 10 scrips by Sept-end', *Business Standard*, 25 August 1999. On 15 September 1999 Pratip Kar, Executive Director, SEBI, stated that 45 scrips would be included in rolling settlement. See 'India: SEBI to introduce rolling settlement in 45 scrips', *Business Line*, 16 September 1999; and 'Roll on, cautiously', *The Economic Times*, 17 September 1999.

69. On the BSE's 'A' group see: 'India: SEBI must think forward', *Business Line*, 29 August 1999; 'Settlement in 45 scrips', *Business Line*, 16 September 1999; and 'Roll on, cautiously', *The Economic Times*, 17 September 1999.

70. These ten were originally supposed to be placed on rolling settlement during the first week of December; however, this was done only by 10 January 2000. 'Sebi approves 10 scrips for rolling settlement system from January 10', *The Economic Times*, 1 December 1999).

71. The initial plan was to add 156 more scrips to the rolling settlement by 26 June 2000. Janaki Krishnan, 'Stock Markets: Sebi adds 156 more scrips to the rolling settlement', *Financial Express*, 9 February 2000; and 'Sebi to shift 153 scrips to rolling settlement in phases', *The Economic Times*, 9 February 2000. But only a total of 163 scrips were reported to be under rolling settlement by the end of the summer of 2000. 'Rolling settlement from end-Nov', *Business Standard*, 24 August 2000.

72. Rajeshwari Adappa Thakur, 'Sebi sets up panel to study badla in rolling settlement', *The Economic Times*, 2 November 1999; and 'J R Varma committee to review badla mechanism', *The Economic Times*, 5 November 1999.

73. For the controversy at the SEBI meeting see Vivek Law, 'Rolling settlement in A group may be delayed', *Business Standard*, 5 April 2000. For the 14 June SEBI meeting that approved badla modified for rolling settlement, see 'India: Carry forward in rolling settlement cleared', *Business Line*, 15 June 2000; Janaki Krishnan, 'Stocks: Sebi puts A-group scrips under rolling mode', *Financial Express*, 15 June 2000; 'New badla system for rolling settlement', *Indian Express*, 15 June 2000.

74. Vivek Law, 'BSE told to hasten software for carryforward in rolling mode', *The Economic Times*, 24 June 2000.

75. 'India: Rolling settlement once facilities are in place', *Business Line*, 24 August 2000; and 'Rolling settlement from end-Nov', *Business Standard*, 24 August 2000.

76. Dheer Kothari and Rakesh P. Sharma, 'Common BSE, NSE "A" scrips list elusive', *Business Standard*, 8 November 2000.

77. 'Brokers take to street, submit memo to SEBI', *Business Line*, 13 July 2001.

78. 'Brokers resistance to market reforms', *The Hindu*, 2 August 2001.

79. Lancelot Joseph, 'Who's to blame?', *Business India*, 17 September 2001.

80. NSE, *Indian Securities Market, A Review – 2004*, p. 11.

81. Market liquidity is best measured in terms of a trades impact on prices with a declining impact reflecting improved liquidity. Since the implementation of rolling settlements, the impact cost of buying or selling Rs 0.5 crore of the Nifty index has steadily declined from 0.27 per cent in 2001 to 0.09 per cent in 2004. Ministry of Finance, *Economic Survey 2004–05*, p. 78.

82. The Securities Market Infrastructure Leveraging Expert Committee estimates that it often takes even longer than the 15-day maximum to complete the allotment of an issue. It notes that this compares unfavorably with international standards and the T+ 2 settlement cycle of the secondary market. (See Securities Market Infrastructure Leveraging Expert Task Force, *First Report* (Mumbai, Securities and Exchange Board of India, 25 August 2004). Accessed at <http://www.sebi.gov.in> on 22 July 2005.

83. For the concept of the 'political cost-benefit ratio' of a reform, see Dani Rodrik, 'The Rush to Free Trade in the Developing World: Why so Late? Why Now? Will it Last', in Stephan Haggard and Steven B. Webb (eds), *Voting For Reform* (New York, Oxford University Press, 1994), pp. 61–88. See also William B. Heller, Philip Keefer, and Mathew D. McCubbins, 'Political Structure and Economic Liberalization: Conditions and Cases from the Developing World', in Paul W. Drake and Mathew D. McCubbins (eds), *The Origins of Liberty and Economic Liberalization in the Modern World* (Princeton, Princeton University Press, 1998), pp. 146–78.

84. Ajay Shah and Susan Thomas, 'David and Goliath: Displacing a Primary Market', *Global Financial Markets*, Spring (2000), pp. 14–23.

85. Douglass C. North, *Understanding the Process of Economic Change*, Princeton, NJ, Princeton University Press, 2005; and Elhanan Helpman, *The Mystery of Economic Growth* (Cambridge, MA, Harvard University Press, 2004).