CHAPTER 2: INDIAN STOCK MARKET: AN OVERVIEW

2.1 INDIAN STOCK MARKET: A PARADIGM SHIFT

Indian stock market is one of the oldest stock market in Asia. The history of Indian stock market can be traced back when loan securities were transacted by East India Company during the 18\(^{th}\) century. Trading in corporate shares and stocks of banks and cotton presses used to take place in 1830s in Bombay\(^{11}\), India. Between 1840-1850, about half a dozen people used to trade in Bombay. The number of traders increased to 22, from the mid-1850s. Each stock broker had invested (then) an amount of Re 1. The group of brokers (then) used to meet and trade under a Banyan Tree opposite the Town Hall of Bombay. The tree still exists in the Horniman Circle Park, Mumbai. By 1860, the exchange had almost grown to a size of 60 member brokers.

Post the American civil war (1860-61), the ‘Share Mania’ in India began, thereby increasing the number of share brokers to 250. In 1875, ‘The Native Share and Stockbrokers Association’ was formed by the informal group of shareholders; which is now known as Bombay Stock Exchange (BSE). BSE was shifted to Dalal Street, Mumbai (where it stands today) in 1930. The initial members/ stock brokers were mainly family run business and they laid down the rules and procedures of trading, many of which are being followed today in a refined form.

The First and the Second World War saw an increased level of activity in trade and commerce which further increased trading in stocks. More stock exchanges were established in different centers like Delhi, Bangalore, Chennai, Hyderabad and Kanpur which promoted trading.

After the end of World War, the stock exchanges suffered from depression, as trade and commerce felt major setback. This was due to the fact that the major stock exchanges were at nascent stage and the procedures were not in place. Due to technical inefficiency and speculative nature of brokers; the stock exchanges were not able to fair well. There was a need to regulate stock exchanges and hence, Securities Contract Regulation Act (SCRA) 1956 gave powers to the Central government to

\(^{11}\) Now Mumbai
regulate the stock exchanges in Bombay, Calcutta, Chennai, Ahmedabad, Delhi, Hyderabad and Indore.

From the economic perspective, post-Independence there was a long way to go as India had only few basic industries. There was a need to develop all the aspects of the economy, be it education, infrastructure, basic industries, defense, etc. Industrial Policy of 1948 and Industrial Policy of 1956 were formulated to set up a path for the development of India. Both the policies emphasized on development of high priority industries by the public sector and very few industries were left for the private sector to work upon. By 1990, need was felt for opening up the economy to the global markets. Thus, the New Industrial Policy of 1991 was floated. The major objectives were to abolish industrial licensing, de-reservation of industries for public sector, reduction in the reservation for public sector, liberalized policy towards foreign capital and technology, changes in Monopolistic and Restrictive Trade Practices (MRTP) Act 1969 etc. to name a few. The most important motivation was to promote Liberalization, Privatization and Globalization (LPG). This opened the doors for foreign investors to invest in India and hence, the rules and procedures followed in the financial markets also needed to be revisited.

**Figure 2.1: Annual Net Foreign Institutional Investors (FIIs) Investment (Cr.) in India (1993 to 2011)**

![Annual Net FII Investment (Cr.) (1993-2011)](chart)

Data source: SEBI Website
Chart source: Author’s presentation
The reforms initiated in the financial sector of India truly made India an investment haven for Foreign Institutional Investors (FIIs). The FIIs regained faith in the functional advancements of the equity market in India and hence, FII grew many fold from 1993 to 2007 (Figure 2.1). Year 2008 saw fall in investment by FIIs as they started pulling out capital to fund shortfalls due to financial crisis in the US. However, the stock markets soon gained momentum and the lost faith.

Thus, over the last four decades, Indian stock market have seen complete transformation from transfer of physical share to depository settlement; from trading ring to trading on computers through internet; from trading in lot sizes to trading in index futures and options and more reforms. To sum up, India’s equity market has experienced drastic reforms over the last two decades. These reforms have built interest and confidence among investors; both domestic and foreign, and thus Indian stock market has gained an important position on the international financial map due to strong macro-economic fundamentals and cautious regulatory framework.

2.2 EVOLUTION OF INDIAN STOCK MARKET

2.2.1 Pre-1991 Era

By 1990, India had about 23 recognized stock exchanges; BSE and OTCEI being of national cadre. These stock exchanges bridged the gap between investors and corporate houses which were in need of funds. The Indian capital market played an important role for corporate as an important source of raising resources. It further attracted the attention of international investors who looked at India as an investment haven. The matter of concern for the market analysts was that whether the capital inflows would be absorbed properly in the financial system or that the financial system is not mature enough to sustain the capital inflows. The funds flowing into the system need to be monitored, used appropriately, paced and sequenced diligently so that it leads to systemic stability and benefits could be reaped from the opportunity. The management of capital inflows is important as it might have multi-dimensional macroeconomic implications on the financial and real sectors of the host country (Krishnamurti et al., 2003). If the inflows reap good returns, it would further attract international institutional investors to invest in the country. Few systems and
procedures that the Indian stock markets were following were not up to international standards and hence, it was the need of the hour to put all our systems in place.

For example, **open outcry system** was followed in trading of shares where trading ring had posts assigned. Each security had a trading post assigned where buying and selling of securities took place. Since the trading ring was a physical place, the brokers needed to have face to face contact with each other to trade in the market. This restricted the volume of trade and the number of participants who could trade. Due to these limitations, impact of new information to the market was slow. Further, the brokers took advantage of the investors who did not have minute-to-minute information, as the information was dispensed through news and newspapers only in the evening after the closing of markets or by next day morning. Hence, no investor would know the price-time details of any stock minute-by-minute as the market was physical in nature and the records were managed manually. Since, the brokers (members of the exchange) were only allowed to trade in the trading ring, each investor had to buy/sell through the broker. Since the records were maintained manually, manipulation of share prices was at its peak; trades done in the morning at some price were recorded in the evening at some other prices. The system lacked transparency and thus, reduced participation of investors in the stock markets. In case of any dispute, favoritism towards the brokers than the investors would follow (Thomas, 2006; Echeverri-Gent, 2004).

Another issue related to secondary market for stocks was **account period settlement** system. Account period for BSE was from Monday to Friday. This means that trades done on weekdays would be eligible for calculation of net settlement on each Friday only. Thus, whether a trade is done on Monday or Friday, would not impact the net settlement as the settlement of trades would be done on Friday only. Thus, an investor will not be able to reap benefits of rising/falling prices until the settlement of previous trade is done. Further, the shares had to be sent to Registrar and Transfer Agent (R&TA) or the company for getting the ownership changed, as the shares were in physical certificates issued by the company. Physical forms of shares were subject to many risks such as risk of loss, theft, counterfeit etc. Further, transfer of physical paper certificates was subject to risk and forgery. Delay in physical settlement of
shares in one cycle of settlement of dues would further delay next settlement cycle of shares.

Another aspect of the Indian stock market during the pre-1991 era was the ‘Badla’ system. The Badla system was invented as a result of perpetual lack of liquidity of shares in the stock market due to physical settlement of shares. Badla system or carry forward system provided leverage to the broker in buying stocks with borrowed money. The system is quite similar to futures contract that applies today in the stock market trading. In Badla trading, the stock exchange used to act as intermediary for buying underlying stocks with borrowed money on some interest rate. The interest rate is determined by the stock exchange which keeps on changing from time to time on the basis of demand of the underlying asset. In a Badla contract, the responsibility of maintaining Mark-to-Market (MTM) lies with the broker and not with the buyer / seller of the asset. Due to the above issues, it was difficult for the Indian economy to attract foreign investment and hence, many reforms were brought in the financial system of India (Raj and Kumari, 2004).

### 2.2.2 Post 1991 Era

As discussed in Section 2.1, the year 1991 and the phase post 1991 has proved to be historic for the Indian stock market. Post the Industrial Policy of 1991, which emphasized on Liberalization, Privatization and Globalization (LPG); it became essential for the markets to become more transparent so that they could attract foreign capital inflows. For FIIs to invest in India, it was required that the stock exchanges should be regulated through a body/Act. Thus, **Securities and Exchange Board of India** (SEBI) was established in 1988 but it got legal powers in 1992 only. The SEBI was set up with the fundamental objective, “to protect the interest of investors in Securities market for matters connected therewith or incidental thereto”\(^\text{12}\). Thus, SEBI was primarily established to protect the interest of investors, to regulate self-regulatory organizations, to promote awareness among investors and prohibit insider trading and fraudulent trade practices.

The Indian stock market started gaining importance in the international scenario when they shifted from floor based trading to **Screen Based Trading System** (SBTS) in

\(^{12}\text{SEBI Act 1992}\)
1994. This was the most important technological development which helped investors to get minute to minute information about the market. Further, the automated clearing and settlement system which is quite quick and efficient helped in closing the deliveries between the participants, further making the system paperless.

Another path breaking development in the Indian stock market was passing of Depositories Act 1996 and setting up of two depositories; National Securities Depository Limited (NSDL) and Central Depository Services Limited (CDSL). Both the depositories’ transfer shares in electronic form from one demat (dematerialized) account to another. All the physical share certificates were converted into electronic form; i.e. dematerialized form.

Moving away from account period settlement to introduction of rolling settlement of shares was another step towards internationalization of Indian stock market (Badhani, 2008; Echeverri-Gent, 2004). Rolling settlement would mean that the netting of obligations of buyers and sellers would be done on daily basis and pay-in and pay-out of funds would be done in next 2-3 working days. In April 2003, T+2\textsuperscript{13} rolling settlement was started which enabled each buyer to receive shares within next 2 working days following the day on which trade was done in the market. The role of Clearing Corporation increased which helped in smooth flow of funds and securities, so that it reached the buyers/sellers on time. The rolling settlement system further helped in curbing speculation in the market. Considering the account period settlement where it used to take almost a month to settle the trades; speculators would buy and sell securities without having to pay the amount in full. This increased the liquidity and speculation in the market as without having to pay in full, people could trade. This system worked exactly like the usage of credit cards where one can buy now without having to pay today; which has in turn led to increase in consumerism. Through introduction of rolling settlement, the investors have to pay in full for the securities that they have bought in the spot market; thus, reducing the risk.

In addition to the above mentioned initiatives, the securities market in India has gone through other important reform measures. The reforms have made the system robust and hence, the market has grown exponentially from USD 47.7 billion in 1991 to USD 131.01 billion in 2002 and then further to USD 1,015.37 billion in 2011. The

\textsuperscript{13} Trading day + 2 working days
percentage increase in market capitalization of India being 2028% from the year 1991 to year 2011. The growth has been in terms of number of trades, number of stocks listed in the stock exchanges, market capitalization, trading volumes, turnovers, number of intermediaries in the stock exchange etc. The market further witnessed reduction in time taken to settle trades, increase in market volatility, and reduction in transaction cost thereby increasing transparency, efficiency, and safety. Apart from the state of art information technology, several other advancements that have taken place in the Indian stock market since 1991 have been noted in Annexure 1.

2.2.3 Changing Dynamics of the Indian Stock Market in the Last Decade (2003-2015)

Post 1991, the government opened the doors of Indian economy for the rest of the world, more Foreign Direct Investment (FDI) and Foreign Institutional Investors (FIIs) started coming to India which increased their stake in the shares of Indian corporate. The number of Foreign Institutional Investors (FIIs) such as pension funds, insurance companies, mutual funds, asset management companies etc. which were registered with Securities Exchange Board of India (SEBI) was 489 as on 1 January 2003 and increased to 1753 as on 19 July 2012.14 Figure 2.1 suggests that post 2003, FII inflow in India gained momentum. This can be attributed to various factors like launch of T+3 rolling settlement, launch of Exchange Traded Funds (ETFs), BSE SENSEX crossing 6000 points (for the first time), BSE becoming a demutualized exchange, launching of currency derivatives and many more.15 All these initiatives taken by the exchanges increased transparency and faith in the financial system of India. This boosted the interest of FIIs in India as India was performing well from the financial perspective. The robustness of Indian stock market and the resulting increase in FII investment in India also coincided with the overall growth of the Indian economy (Figure 2.2).

---

14 http://www.sebi.gov.in/Index.jsp?contentDisp=FIITrends
15 See Appendix 1 for reforms in stock exchanges post 2003
During the sub-prime crisis of 2008, the FIIs who had invested in India, began to withdraw their investments as they were in need of funds back in US to fulfill their obligations. The people in US who had lost their jobs as an after-effect of the crisis started selling their investments to make good their obligations. In turn, the investment companies who had invested in various emerging economies like India had to dispose off their investments in India and other emerging economies to pay back their investors. This led to selling off of stocks in the stock market and further led to fall in the value of Indian rupee versus US Dollar as the demand for dollar increased. However, the market started gaining momentum within a short span of time, with investors regaining faith in the stock markets, backed by increase in GDP and economic driven by domestic demand activity. As a result, FII investment in India again started showing an upward trend. Net FII inflow in India in 2007 was USD 36.862 billion followed by an outflow of USD 15.03 billion in the year 2008; whereas the year 2009 again saw positive values of FII inflow to USD 24.6889 billion. The market capitalization of Indian stock market stood at USD 1819.1 billion in 2007 which declined to USD 645.477 billion in 2008. The year 2009 witnessed an increase in the market capitalization data which stood at USD 1179.235 billion which was nearly double that of 2008 figures. Thus, we can see that the Indian financial

---

16 One USD stood at Rs 40.35 on 14th September 2007 and the depreciated till it reached Rs 50.5063 for one USD on 20th March 2009.
markets appear to be strongly co-integrated with other world markets due to inflow of foreign capital and increasing interest of international investors in India.

2.2.4 Indian Stock Market viz Other Asian Markets: Comparative Study

The Indian stock market underwent lot of reforms post 1991 as discussed in the previous section. This gave the Indian financial market an edge over the rest of the Asian markets or at least be at par with some of the major financial markets of Asia. For example, there were many reforms that started in the other Asian markets well before Indian market, like the introduction of rolling settlement of trades (T+3)\textsuperscript{17} which started in Japan and Hong Kong in the year 1997 whereas in India, it was introduced quite late. T+2 rolling settlement was introduced in April 2003 in India after the markets had become quite familiar with the working of the system while Taiwan started settling it’s trading on T+2 basis in quite recently, i.e. in 2008. With reference to fully automating the trading system, Taiwan introduced it in 1989 while Indonesia started the same in 1995 followed by India in 1995. Trading in the stock Index options started in South Korea in 1992 and stock index futures in 1996 whereas in India it started quite late, i.e. in the year 2001 and 2000 respectively. Thus, we see that the reforms that were made in Indian stock market were the need of the hour as many of them were already implemented in other Asian markets. If India had to attract foreign capital by way of FIIs, then it had to change the age old procedures with latest technological advancements. Further advancements and reforms in all the Asian markets have been mentioned in Annexure 1 to 8.

Table 2.1 shows that India stands third amongst the selected Asian countries in terms of the percent share of market capitalization of India and other Asian markets in 2011. This is a significant jump given the fact that in 2000, India stood at 6\textsuperscript{th} position amongst all the Asian countries with only 2\% market capitalization in Asia. Thus, the reforms in the Indian financial sector have contributed to the growth of the Indian stock market and have placed India at a better position, so far as stock market performances are concerned.

\textsuperscript{17} Trading Day + 3 working days
Table 2.1: Market capitalization of Asian countries under study

<table>
<thead>
<tr>
<th>Country Name</th>
<th>Market capitalization</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(in percent of total of all Asian countries)</td>
</tr>
<tr>
<td></td>
<td>Year 2011</td>
</tr>
<tr>
<td>Japan</td>
<td>28.863</td>
</tr>
<tr>
<td>China</td>
<td>27.627</td>
</tr>
<tr>
<td>India</td>
<td>8.277</td>
</tr>
<tr>
<td>South Korea</td>
<td>8.105</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>7.252</td>
</tr>
<tr>
<td>Malaysia</td>
<td>3.221</td>
</tr>
<tr>
<td>Indonesia</td>
<td>3.180</td>
</tr>
</tbody>
</table>

Note: Calculations are done by author based on World Bank Data

Figure 2.3: Foreign Institutional Investment in few Asian countries (in million USD)

Note: Calculations and graphical presentation is done by author based on World Bank Data

**Figure 2.3** depicts the net FII inflows in selected Asian economies from 1991 to 2012. FII inflows India started in the year 1991. In 1991, FII inflows to India stood at USD 4.6365 million whereas in other advanced markets like Japan, the inflows stood...
at USD 46619.11 million. In the year 1991, the selected group of 8 Asian countries attracted 99.4% of the total FII towards all Asian countries (World Bank data). Since then, the percentage of capital inflow to these markets has been on the rise. Increase in the number of FIIs towards Asian countries shows that the interest of international investors and financial institutions has been on a rise. Reforms in the Asian financial markets have made the financial markets more attractive for investors, domestic and international both. The FII inflow has increased the market capitalization of all the Asian countries under study (Figure 2.4). Thus, reforms in the financial sector have led to its growth and participation of investors. A microscopic view of the market capitalization of the Indian stock market shows that the market capitalization increased tremendously especially after year 2000s when the market had become quite robust and the reforms seamlessly had become part of the system and procedures (Figure 2.5).

**Figure 2.4: Market capitalization of Asian stock market in USD** (Billion) from 1988 to 2012.
Figure 2.5: Market capitalization of Indian stock market in USD (Billion) from 1988 to 2012.

Figure 2.6 shows the stock market behavior of US and the selected eight Asian countries since 1986 till 2011. The graph is a plot of daily closing price of the above mentioned countries. By examining the graph, one can see that stock markets of countries, like Hong Kong, Taiwan, US, Malaysia and India show a downfall though the percentage fall is different for different countries during the October 1987 crisis. Few countries like South Korea and Indonesia did not react at all to the 1987 stock market crash may be as the degree of correlation between the markets was too less to be affected due to fall in the other stock markets. The brunt of Asian crisis of 1997 was felt by most of the Asian countries in different degrees as can be seen in the graph. The upward trending graph of the closing price shows that the depth of the markets has increased manifold over a period of time. The 9/11 US shock also affected stock markets of many countries. It gave a lesson to many of the emerging nations that they will have to frame policies so that they could insulate themselves from the ill-effects of shocks in other countries. Many countries formulated and implemented such policies and hence, in Figure 2.6, it can be seen that the effect of US Sub-prime crisis on Asian countries was in the year 2008-09; i.e. most of countries reacted quite late to the fall of US stock markets as they had insulated themselves from the crisis. Further, the policy changes and macroeconomic changes were very weak to withstand the effect of US Subprime crisis of 2007-08 and hence, the markets reacted little late.
2.3 OVERVIEW OF THE VARIOUS CRISES IN LAST 3 DECADES

The last three decades have witnessed many shocks in various parts of the globe. Most of them started in one country or region but as the markets have become more integrated over a period of time; impact of shocks has been felt in various parts of the world; even when the countries did not share any common fundamentals with each other. The next section gives a bird’s eye view of few crises that different countries have gone through and their impact on various other financial markets.

2.3.1 Stock Market Crash (October, 1987)

The stock market indices of the US fell by more than 30% during October 14, 1987 to October 19, 1987 which was the greatest loss at Wall Street (till then) in a single day.\(^{18}\) Prior to the crash the US stock market indices had rallied positively from 776 points in August 1982 to 2722.42 points in August 1987. The October 1987 crash ended the ‘bull’ period of the US stock markets. The markets further took about two long years to reach their previous levels. This episode gave food for thought to the researchers and practitioners to find whether crisis in one country affects financial

\(^{18}\) Calculated from data from Bloomberg
markets of the other countries or not; or what might be the level of impact of such country specific crisis. By applying a parametric and a flexible non-parametric GARCH model on emerging markets, it was found that majority of the emerging markets of the world had a significant impact of the 1987 crisis. Many researchers, on the other hand, found insignificant impact of this crisis on different global stock markets (Baillie and DeGennaro, 1990; Choudhry, 1996; De Santis and Imrohoroglu, 1997; Lee et al., 2001).

Further, impact of shocks on changes in returns on stock markets of various countries and the duration of shifts was examined (Aggarwal et al., 1999) using iterated cumulative sums of squares (ICSS) algorithm. It was found that most of the crisis from 1980-1995 were local in nature and the impact of the crisis was also limited to that region. Further, it was found that the ripple effect of the shock of 1987 was felt by several emerging stock markets (Aggarwal et al., 1999).

Post the stock market crash of 1987, the level of integration between many stock markets of the world changed drastically. Stronger co-movements were found between the US market and world national stock markets applying time-series methodologies like VAR and Impulse Response Function (IRF) analysis (Jeon and Von-Furstenberg, 1990; Lee and Kim, 1994). Few researchers, on the other hand, have found significantly different results. Using Bayesian method, Koop (1994) found that the markets were not interlinked. Further, on examining stock market integration in Australia, Japan, Hong Kong, New Zealand and Singapore, no common trends between the markets were found (Corhay et al., 1995).

“Indian stock markets remained unaffected during stock market crash of October 1987” Poshakwale (1996). In fact, studies done for the Indian stock markets before the 1991 Industrial Policy show that the Indian stock markets had weak correlation with the rest of the world. No evidence of systematic periodicity of the behavior of the Indian stock markets with US and UK markets was found. The researchers call the relationship as “statistically indistinguishable” between the above mentioned markets (Sharma and Kennedy, 1977). In few research studies, only a weak relationship was found between the Indian stock market and developed markets (Ignatius, 1992; Agarwal, 2000). Further, liberalization of the economies might have led to increased integration between stock markets.
2.3.2 Mexican Peso Crisis (1994)

The Mexican peso emergency (also known as the Tequila crisis or December mistake crisis) was a cash emergency originating due to the Mexican government's sudden devaluation of the peso against the US dollar in December 1994, which turned into one of the first worldwide money related emergencies due to capital flight. In the early 1990s, Mexico was an attractive place for foreign investment. The passage of North American Free Trade Agreement (NAFTA) reduced trade barriers among United States, Canada and Mexico and made many people confident about the future of the Mexican economy.

**Figure 2.7: BSE SENSEX Daily Close Price from 1985 to 2011**

Data source: Bloomberg  
Chart source: Author’s presentation

On 20th December, 1994, President Ernesto Zedillo announced the Mexican national bank's decision to devalue peso somewhere around 13% to 15%. Devaluing the peso after past guarantees drove investors to be suspicious and frightful of additional devaluations. Investors set much higher danger premia on domestic assets, putting upward market pressure on Mexican premium rates and additionally descending business sector pressure on the Mexican peso. Foreign investors foreseeing further currency devaluations started quickly withdrawing capital from Mexican Stock Exchange and auctioning off shares of stock as the Mexican Stock Trade plunged. To
dishearten such capital flight, especially from debt instruments, the Mexican central bank raised interest rates, but higher borrowing costs eventually prevented financial development prospects. Not able to offer new issues of public debt or proficiently buy dollars with devalued pesos, Mexico confronted a default. After two days, the bank permitted the peso to keep afloat unreservedly, after which it kept on depreciating. As a result, few of Mexico's banks collapsed. The Mexican economy encountered recession, poverty and unemployment. The country's GDP declined by 6.2% over the course of 1995.

The impacts spread to economies in Asia and Latin America. The shock has affected the Latin American markets more severely than the Asian markets where the impact seems to “pass through” the New York investor fund community (Forbes and Rigobon, 2000). It was further observed that the countries having weak fundamentals have a stronger impact of any crisis like the Mexican crisis (Frankel and Schmukler, 1996). For example, Philippines is more vulnerable to shocks due to its high debt/export ratio, despite its location in East Asia. Further, Chile having a low debt/export ratio and hence, was less vulnerable to shocks despite its location in South America (Frankel and Schmukler, 1996). Philippines was the most affected country by the Peso crisis in 1994 than Chile. Many factors attributed to this fact, one of the main reasons being that the growth rate of Philippines was very low (2.5%), just to barely keep the per capita income constant. There was very low rate of savings and very large current account deficit which could only be financed through foreign capital (Doyle et al., 1999). The United States sorted out a $50 billion bailout for Mexico in January 1995, directed by the IMF with the backing of the G7 and Bank for International Settlements. The December 1994 crisis of Mexico also impacted the Indian financial market (Figure 2.7). The Indian stock market felt the brunt in terms of fall in FIIs, decrease in terms of funds collected by Indian corporate through GDRs and gliding down of BSE Sensex till the last quarter of 1995 (Samal, 1997). The market capitalization of Indian stock market fell from USD 128 billion in the year 1994 to USD 127.199 billion in the year 1995 and reached USD 122.605 billion in the year 1996.
2.3.3 Asian Currency Crisis (1997-98)

The Asian monetary emergency grasped quite a bit of East Asia starting in July 1997 and raised apprehensions of an overall financial emergency because of its contagion effect. The crisis began in Thailand with the monetary breakdown of the Thai baht after the Thai government was compelled to buoy the baht because of absence of foreign currency to support its fixed exchange rate, cutting its peg to the US dollar. At that time, Thailand had added a burden of foreign debt that made the nation adequately bankrupt even before the breakdown of its currency. As the crisis spread, the vast majority of Southeast Asia and Japan saw slumping currencies, devalued stock exchanges and other resource costs, and a steep ascent in private debt.

Indonesia, South Korea and Thailand were the nations that were most influenced by the emergency (Baig and Goldfajn, 1999; Yang et al. 2003). Hong Kong, Laos, Malaysia and the Philippines were likewise hurt by the droop. Brunei, China, Singapore, Taiwan and Vietnam were less influenced, albeit all experienced a loss of investor confidence across region. Further, the Asian crisis did impact the Indian stock market and FII inflow to India reduced during that time (Chakrabarti, 2001). Though the greater part of the legislatures of Asia had apparently solid monetary framework, (IMF) ventured into a $40 billion bailout package to stabilize the currencies of South Korea, Thailand, and Indonesia, economies especially hard hit by the emergency. The impacts of the emergency stayed through 1998.

2.3.4 The US Crisis (2001)

The terrorist attack on the US twin towers, popularly known as the 9/11 terrorist attack renewed the interest of researchers in the field of terrorism risk and its impact on various financial markets. Empirical studies in the area of impact of terrorist attack on various stock markets reveal linkages between the two (Arin et al., 2008). On applying event study methodology, it was found that the terrorist attacks affect stock markets. Further, the recovery of markets can be explained by a stable banking/financial sector. If the markets are stable and liquid, they will be able to minimize the panic (Chen and Sims, 2004). Filtered GARCH and Extreme Value Theory (EVT) approaches were employed to examine the impact of terrorist attacks on financial markets (Chesney et al., 2011). The methodology was applied to look at the effect of
77 terrorist attacks that occurred in 25 countries over an eleven year time period. It was found that the majority of terrorist attacks have impacted the financial markets. Though on magnifying the research domain, it was found that few sectors were significantly negatively impacted; like the insurance and the airline sector than the banking sector which was more impacted due to financial crisis. Sectors like defense, pharmacy and oil and gas showed both positive and negative reactions to such attacks (Chesney et al., 2011). Long term and short term effects of the 9/11 attack were studied on 33 industrial and emerging economies using International Capital Asset Pricing Model (ICAPM) and statistically negative shocks was found in about 28 economies. Further, industrial unrest was seen due to industrial systematic risk in about 10 economies (Richman, Santos and Barkoulas, 2005).

On empirical examination of 9/11 attack in the US and attacks in Madrid in March 2004, it was found that the attacks not only impact the financial markets in the form of uncertainty and increased market volatility but also increased damage to property and communication systems (Nedelescu and Johnston, 2005). It was found that the attacks not of Madrid had a regional impact whereas impact of 9/11\textsuperscript{19} attack was felt globally (Nedelescu and Johnston, 2005). On studying the reaction of terrorist shocks on stock and foreign exchange markets, it was found that the stock markets get negatively impacted by the attacks than foreign exchange markets (Eldor and Melnick, 2004). On performing an event study analysis for examining the impact of unanticipated negative shocks like terrorist attack, natural calamities like earthquakes etc., it was found that the impact of terrorist attacks was more severe on the financial markets than other natural calamities, especially the impact of 9/11 attack was felt globally due to systematic risk (Brounen and Derwall, 2010). The terrorist attack on USA in September 2001 also affected the Indian stock markets (measured through Nifty and Sensex) (Mittal and Bishnoi, 2003; Saran et al., 2001).

### 2.3.5 US Sub-prime Crisis (2007-08)

The crisis of 2007-08 started in US due to inability of homeowners to make their mortgage payments on time. This was due to many factors, few of them are bad monetary and housing policies, speculation of housing prices, risky mortgage products, purchasing houses only for speculation in prices, inappropriate government

\textsuperscript{19} 11\textsuperscript{th} September 2001
regulation and the most important being sub-prime mortgage. Home loans were offered at very low interest rates to people having poor credit-worthiness for the amount taken as loan (Baker, 2008). However, in 2006-07, the interest rates in US started rising and the housing prices began to fall. This led to defaults and foreclosures of loans as the US borrowers were unable to refinance the loan. This triggered the bursting of US Sub-prime crisis in 2007 leading to higher number of defaults. This default in paying off debts not only led to financial depression conditions in the US but in other parts of the world too. From July 2007 to December 2008, the S&P 500 index fell by 40.50 percent. Other markets that followed suit were FTSE 100 index of UK stock market which fell by 31.30 percent, Nikkei 225 index of Japan fell by 50.39 percent, Jakarta Composite index of Indonesia fell by 43.39 percent, BSE SENSEX of India also fell by 34 percent, while KLSE index of Malaysia decreased by 36.45 percent (Bloomberg database, 2008). Further studies have shown mixed results as the methodologies applied and the period of study is different, making it important for further research and clarification. On examining interdependence and contagion from US stock markets to Asian and other stock markets during the US Sub-prime crisis, it was found that there was no contagion from US stock market to Chinese stock markets (Samarakoon, 2011). For India and Taiwan, it was found that the negative shock to US stock market led to positive shocks to these stock markets (Samarakoon, 2011). Thus, there was a need to examine the contagion effect from US stock market to Asian markets.

2.4 CONCLUSION

The chapter brings out the evolution of the Indian stock market from the pre-liberalization era to the current scenario. Though India got independence in the year 1947, trading in stocks started gaining importance quite late. Post-independence, India was characterized by very low per capita income and the sectors, be it manufacturing or service, had limited functioning. The industrial policies of 1948 and 1956 aimed at improving the structure of the Indian economy, gave due importance to licensing, role of government, industrialization, central planning etc. The distortions and weaknesses in the Indian economic system led to macro-economic imbalances during the late 1980s. Huge current account deficit forced the government to take up economic reforms in order to improve the situation of the Indian economy. Thus, New
Economic Policy was introduced in 1991 to achieve higher growth rates and stability at macro-economic level. The measures undertaken to make structural adjustments in the economy were efforts of IMF and the World Bank.

Post 1991, the economy and the financial markets saw umpteen numbers of reforms which helped the markets in gaining interest and confidence of individual as well as institutional investors. The number of investors trading in the Indian stock market has increased many folds over the past 2 decades. The number of FIIs investing in India has also increased to higher levels than before thus, increasing the competitiveness of the Indian economy in all aspects, whether it is exports or capital inflows. As India shares some common macro-economic fundamentals with China and the US, the Indian equity market may be related through investment and trade (Berikos, 2014). Further, it was suggested that India and China were the two Asian countries that are among the few countries which are the major drivers of world growth (Berikos, 2014). Over the years, India’s contribution to the world’s GDP has increased. In 2014, the contribution of India towards world’s GDP was 6.31% which shows that India is only behind China in terms of contribution towards world’s GDP at 16% \(^2\); rest all the Asian countries under study contribute lesser than India in terms of GDP towards world’s GDP. Further, the increase in bilateral trade between Asian countries has led to an increase in international market co-movements (Pretorius, 2002). Thus, increase in prominence of India as a trading partner and as an investment haven led to increase in correlation between markets; especially during volatile periods (Dalkir, 2009, Forbes and Rigobon, 1999 and Leong and Felmingham, 2003). Researchers have examined that the stock market correlation increases during financial crisis. For Asian markets, it was found by Baig and Goldfajn (1998) that during the Asian crisis there was an increase in the market correlations which was further an indication of contagion. Longer interdependence between markets was found during the Sub-prime crisis (Dooley and Hutchison (2009) and Hwang et al. (2011). Thus, during volatility the market correlations re-emerge leading to possibility of contagion. Post 1991, as the Indian stock market witnessed many reforms leading to transparency and increased foreign participation; interdependence on other international stock markets was also felt by Indian stock market. This was probably the beginning of the contagion with other world’s equity markets. The pinch of contagion is generally felt

\(^2\) IMF Data
when the markets are volatile, mostly because of the wrong reasons. The Sub-prime crisis gave a trigger to various economies of the world leading to systemic risk and financial instability (Lim, 2008). Thus, need was felt to further examine the interdependence and contagion between Indian and other Asian markets with the US stock markets. Rest of the chapters emphasize on examining the level of interdependence between markets and contagion between them during financially tough times.