



## ASHISHKUMAR CHAUHAN

BSE

# BSE: Catalyst for the Development of India's Capital Markets

## Introduction

At a time when many economies in the world are moving at a sluggish pace, India, in contrast, is seen as a vibrant economy with the prospect of strong long-term growth. Even as the global economy moves for imminent recovery, India has shown exemplary strength to bounce back with greater stability and sustainability.

The last four years have been marked by historic economic policy developments and structural reforms, notably, the passage of Bankruptcy and Insolvency Act and the implementation of the Goods and Services Tax (GST). India continues to remain a bright spot globally for investors, primarily led by confidence in the government, strong macroeconomic fundamentals, sharp focus on inflation, and efficient management of the current account and fiscal deficit.

### India regained economic growth momentum

The Indian economy posted a gross domestic product (GDP) growth rate of 7.7

percent during the January to March quarter of 2018, enabling the country to retain its position as the fastest growing major economy. The data released by the Central Statistics Office showed that India shot past China's 6.8 percent growth for the January-March quarter. According to the World Bank's report "Global Economic Prospects - The Turning of the Tide?" released in June 2018, India's GDP growth rate is expected to rise to 7.3 percent in FY2018-2019 and the Bank forecast GDP growth of 7.5 percent in FY2019-2020 and FY2020-2021. Further, an Organisation for Economic Co-operation and Development (OECD)\*1 economic outlook report released towards end of May 2018 estimated that the country's real GDP growth at 7.4 percent and 7.5 percent for FY2018-2019 and FY2019-2020 respectively, reinforcing the tag of fast growing major economy status for India.

## Growth of the Capital Markets in India

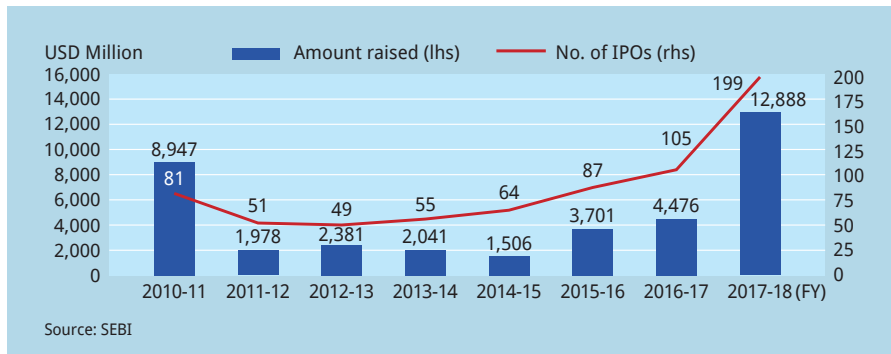
Indian capital markets have shown remarkable growth in the post-liberalisation era. The growth of Indian capital markets cannot be discussed without giving a mention to the Securities and Exchange Board of India

(SEBI). The establishment of SEBI in 1988 was an achievement for the Indian stock markets as it removed low levels of transparency and unreliable clearing and settlement systems. Through the SEBI Act of 1992, the organisation was given statutory powers, which played a huge role in the regulation of the securities market in India. Now, SEBI is the market watchdog and regulates everything that goes on in the Indian stock market.

The Indian market remains one of the most resilient markets globally and is one of the top destinations for domestic and global businesses to expand and invest into. Recently, a Sanctum Wealth Management report indicated that Indian stock markets will become the fifth largest in the world by 2018. As per the report, a major factor that has changed in Indian equity market is that the domestic buyer now sets market prices. Domestic mutual funds bought equities worth USD 15.3 billion against USD 8 billion by foreign investors in 2017. Additionally, India also benefits from a favorable contrast to other emerging markets. Especially, with the fact that China is moving to a slower pace of growth.

In fact, Morgan Stanley predicted that market capitalisation (market-cap) of Indian equities is likely to hit USD 6.1 trillion by 2027, up from USD 2.3 trillion in 2017. The report also stated that within the major markets in Asian region, India's equity market is expected to grow the fastest at 10.1 percent compounded annual growth rate (CAGR), reaching USD 6.1 trillion by 2027. While the market-cap of China and Hong Kong equities combined will increase

**Figure 1: Equity Listings and Equity Capital Raised in India**



at a 7.9 percent CAGR, from USD 13.8 trillion currently to USD 30 trillion, almost the current size of U.S. equity market-cap of USD 31 trillion. Japan would be the next largest equity market at USD 8 trillion.

### Capital markets to propel India's economic growth

The transformation that India needs across infrastructure must be driven by innovative solutions. While different agencies have estimated varying amounts of money required in infrastructure build out, one aspect is common – funding of a large magnitude. When the economy grows at a high rate, it is natural that there is huge pressure on infrastructure. Even though India has been building infrastructure, it has not kept pace with demand resulting in huge productivity losses. India will require close to USD 200 billion per annum in infrastructure investment for the next 10 years. Similarly, for other industries and services companies, an additional USD 50 billion per annum needs to be raised. The total fundraising requirement may therefore reach USD 250 billion per annum.

Capital markets are the avenue for long term fundraising for corporates. Due to the organised nature of capital markets in the form of exchanges, they have been amongst the easiest markets to transact on. In essence, raising of funds for debt or equity or a combination is why they are called capital markets. The capital markets in India can be explored in order to raise funds of this magnitude. In developing countries like India, the stock exchanges play a cardinal role in promoting the level of capital formation through effective mobilisation of savings and ensuring investment safety. India's mature, resilient and robust stock exchanges make available the financial resources available to the government, corporates and industries in the public and private sector through a wide gamut of products.

For instance, in FY2017-2018, Indian

corporates raised over USD 180 billion via equity and debt markets. Figure 1 conveys only the equity capital raised by corporates in India over the last eight years.

## Role of BSE in Developing India's Capital Markets

BSE, formerly known as the Bombay Stock Exchange, is one of the financial institutions that has played a prominent role in developing the Indian capital markets. Established in 1875, the BSE is the oldest of India's stock exchanges and three years older than the predecessor to the Tokyo Stock Exchange. It traces its roots to the 1850s, when commerce flourished in India under British rule. The story of BSE is the story of the Indian economy. The S&P BSE SENSEX is often referred to as the barometer of the Indian economy and is called "India's Index the World Tracks." As a major Asian stock market index, the S&P BSE SENSEX is a benchmark indicator of the swings in the Indian economy. BSE provides an efficient and transparent market for trading in equity, debt instruments, equity derivatives, currency derivatives, interest rate derivatives, mutual funds and stock lending and borrowing.

### A historical perspective of BSE

The advent of BSE took place when a few stockbrokers laid the foundations to the world's tenth-largest stock exchange\*<sup>2</sup> under a banyan tree at Horniman Circle in Mumbai in 1855. The first organised stock exchange in India "BSE" was founded in 1875 and is the oldest in Asia. In 1957,

the BSE was recognised as the first stock exchange in the country under the Securities Contracts (Regulation) Act 1956, of the Government of India. The SENSEX, which started with a base value of 100, crossed the 36,000-mark in January 2018.

Throughout these years, trading operations remained largely confined to the traditional open outcry system, until technological breakthroughs fostered growth in market participation. The development of new technology was arguably the driving force behind the fastest changes. Slowly, the telegraph, ticker tape, telephone and programmable digital computer laid the foundations for today's computerised trading systems.

### Digital transformation – A shot in the arm for the world's fastest stock exchange

For a trading venue, the faster and more efficiently it can carry out a deal and the more up-to-date information it can store and retrieve, the more attractive it is to investors. The shortening of the period between trades being initiated and completed, i.e., the reduction of latency as it is known, is the ultimate aim of any stock exchange. Effectively, "Speed and Execution" are the essence of the stock exchange business.

BSE by espousing the digital revolution, switched from a legacy system to transform into the world's fastest stock exchange. In the late 2000s, upgrading of its legacy trading systems became BSE's top priority. In 2010, BSE gave a response time of 300 milliseconds. It took three years to upgrade from 300 milliseconds to 10 milliseconds. Considering the competitive environment, soon BSE took a leap of faith and decided to go from 10 milliseconds to 200 micro-seconds. When BSE implemented its 200 micro-seconds response time in 2014 using the Deutsche Börse trading system based on Linux and MySQL open source technologies, it had not even envisioned reaching a six microseconds response time, which would make it the fastest in the world. Breaking traditional system or legacy infrastructure was difficult initially but the exchange adapted to change slowly and steadily and moved to complete open source to become the world's fastest stock exchange by 2015, handling 400,000 trading orders per six microseconds (up from the earlier 8,000 orders per 40 milliseconds). Today, BSE, the world's fastest exchange, is 10 times faster than its nearest rival. This success did not come without risk at the time.

A trading platform needs to be both superfast and accurate at the same time. BSE became the first trading platform in the world to make a complete switchover

in one night with over 5,000 listed companies, 1,200 brokers and over 50,000 logins. However, while the historic transformation was happening, the old system was still working on a standby basis, in case the switchover failed. BSE, which is known as the country's foremost investment hub and capital market catalyst, thus, became a technology trendsetter.

### BSE trudged beyond transformation of trading systems

The transformation of trading systems was just the beginning, since the mission of BSE is to be better than the best in the world and to keep India's flag flying high. After the launch of the new trading system, BSE very shortly switched from Network Time Protocol to Precision Time Protocol, which not only improved performance but also brought a high degree of transparency and fairness to all the stakeholders, from brokers to listed companies. Cheap and efficient trading is what securities traders wanted and that is what they got. Volumes transacted saw unprecedented increases, with the average daily number of trades surpassing previous highs.

Big data, social media analytics and identity and access management were the next major implementation items. The advent of algorithm and high frequency trading in the Indian stock markets has bought fresh challenges for regulators and capital market intermediaries, and tackling them became a top priority. With the implementation of big data solution, complex computations are now carried out in a reasonable response time, making it possible to get deeper insights into business conditions through market snap short, order log LTP analysis, and other analytical tools.

BSE is the only exchange to have implemented big data for social media analytics. Driven by highly competitive market conditions and the need to conduct fraud analysis, the exchange has formulated an extensive approach to develop an automated social media monitoring solution. As a part of this process, BSE monitors content on companies listed on its platform and looks for material information as well as possible rumours on social media sites like Twitter, Facebook and also on news websites. This solution is tuned to run on a specified frequency and provides an interface to BSE's dashboard eliminating manual process of monitoring social media.

BSE also implemented its home grown solution of identity and access management using open source technologies, which helps to achieve Single-Sign On (SSO) with Two-Factor Authentication. SSO solu-

tion was based on open source technology, integrated with its internal domain authentication mechanism. SSO facilitated unification of work-flow and access methodology. It reduces the overhead of maintaining multiple interfaces, reduces cost, simplifies processes and vastly reduces non-compliance related issues.

While BSE is set to achieve its next target of 200 nanoseconds much sooner than expected, a long-term strategy for technology transformation is a good idea as the technological dynamics are changing fast and every company should change with time. One thing is for sure, the technological evolution at BSE is far from over.

## BSE Thriving on Innovation

BSE has taken the lead in introducing newer products and offerings like currency derivatives, interest rate derivatives, Offer for Sale, e-IPO and sovereign gold bonds. BSE has also focused on being a wealth creation platform, which is evident in endeavours like developing the BSE SME platform to bridge the capital requirement for the small and medium enterprise (SME) sector and being the largest distribution platform for mutual funds and bond issuances. BSE commands the market leader position in these segments. All the above segments have been identified as priority areas by the Government of India for fund mobilisation.

Indian market capitalisation of listed firms is expected to rise from USD 2.3 trillion currently to USD 10 trillion over

the next ten years. This increase in investments is possible, if we enhance trust in the markets and distribute financial products to Indians who have never invested in the markets. It is also imperative that newcomers entering the capital markets are presented with the opportunity to invest in long-term, less risky instruments. For this purpose, BSE has been focusing on distribution of financial products for investment instead of speculation and trading. BSE has developed several market leading and innovative frameworks like e-IPO, Bond Distribution, BSE STAR MF platform, and BSE SME platform.

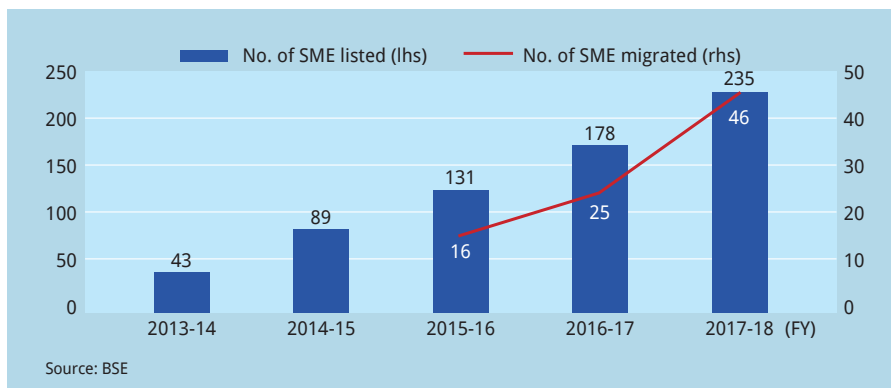
### BSE SME platform

Today, BSE has emerged as the preferred platform for companies to raise funds from as little as USD 150,000 to more than USD 1.5 billion. The BSE SME platform enables SME companies with post-issue face value capital of as low as USD 450,000 to access the capital market to raise funds. As of 15 June, 2018, BSE SME has raised over USD 370 million for 254 companies whose market capitalisation stands at more than USD 3.2 billion. BSE SME accounts for the majority of SME companies listed in India. Figure 2 shows the number of SMEs listing on the BSE SME platform and the number of companies, which have migrated to the main board of BSE.

### Currency derivatives at BSE

In India, currency derivatives trading commenced in August 2008 with USD-INR Futures. Subsequently, SEBI approved trading in currency futures contracts on EUR-INR, GBP-INR and JPY-INR pairs and currency options contracts on USD-INR in 2010. BSE was a late entrant and commenced trading operations only in November 2013. However, within a short time, BSE has assumed the leadership position in this segment. Figure 3 illustrates the

Figure 2: SME Listings at BSE



growth of the currency derivatives segment at BSE, which has grown at a CAGR of 57 percent in the last five years. As of March 2018, BSE's market share in the currency derivatives segment is 47 percent.

### BSE StAR MF

Similarly, the BSE StAR MF platform is India's largest digital platform to distribute mutual funds, commanding a market share of close to 80 percent amongst exchange distributed funds. More importantly, it accounts for more than 50 percent of all new retail funds flowing in to Indian mutual funds. Distribution of mutual funds via exchanges was optional. Due to better value and speed, comfort, consistency and low cost associated with BSE StAR MF platform, it has grown over 114 percent since inception. In FY2017-2018, the platform processed a record of more than ten million transactions with a total value of over USD 18 billion.

BSE StAR MF is now adding over 1,000 members per month and has more than 200,000 independent financial advisors, brokers, broker branches and associates in its network in over 3,000 cities and towns across India. Almost all the top distributors of mutual funds are part of BSE StAR MF

now. In essence, BSE has positioned itself as the investment exchange of India recently and achieved many of its objectives.

### BSE – To foray in to insurance distribution

To take this concept further, BSE now plans to provide insurance distribution through its nationwide distribution system available in more than 3,000 cities having more than 200,000 people connected with it who are highly compliant, literate and used to providing financial solutions. As a first step, BSE has signed a memorandum of understanding with Nasdaq-listed Ebix, Inc. to set up a joint venture to develop an insurance distribution network in India. The new venture, branded BSE-Ebix will deploy an insurance distribution exchange platform that will allow distribution outlets, stock brokers, wealth management advisors and financial institutions across the country to sell life and non-life products. BSE insurance distribution framework is expected to roll-out by the end of 2018. We hope it will be as useful to investors as to the agents and other intermediaries, who will get automated single-window framework for many insurance companies, and help them service their clients better than with the current manual framework.

### India INX – Building a global connect

Adding to this growing number of initiatives was the inauguration of India International Exchange (India INX). In January 2017, the country witnessed a major milestone, when India's first international exchange – India INX was operationalised. Wholly owned by the BSE, the new exchange operates 22 hours a day from within a special economic zone which circumvents India's strict capital controls and allows licensed international investors and non-resident Indians to trade domestic securities and equity, currency and commodities derivatives from anywhere around the world. This will help India to compete with other global financial centers such as Hong Kong, Singapore, Dubai and London. As seen in Figure 4, India INX has witnessed impressive growth in trading volumes since its inception, with average daily turnover growing from USD 1 million in January 2017 to USD 242 million as of March 2018.

Apart from the capabilities of India INX in creating a globally connected market, BSE is also forging working relations with its peer exchanges around the region and globally, including Korea Exchange, Dubai Financial Markets and Dhaka Stock Exchange. South Asian Federation of Exchanges (SAFE), a forum of 28 member entities from the South Asian Association for Regional Cooperation (SAARC) regions like Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka as well as Mauritius and UAE appointed the author as the chairman of this forum. Consequently, BSE assumed the leadership role in helping smaller bourse in the Sri Lanka, Nepal, Mauritius and Bhutan to develop. BSE will ensure that SAFE achieves its ambition to accelerate economic integration within the region by creating strong cross border capital market linkages and creating a conducive environment for cross border co-operation.

Figure 3: Average Daily Turnover of BSE Currency Derivatives

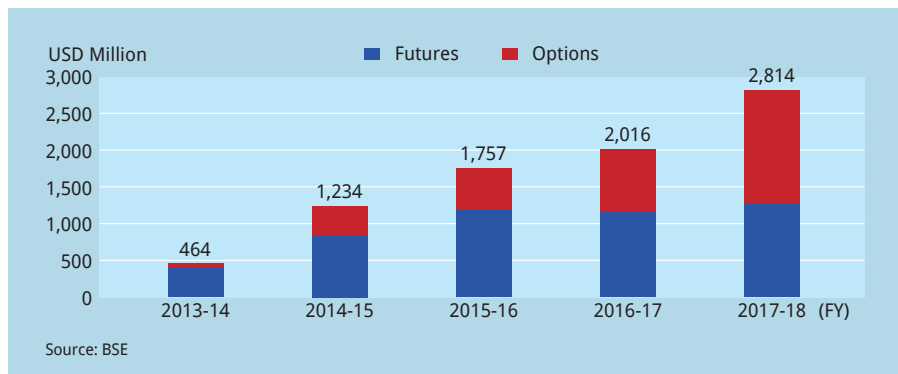
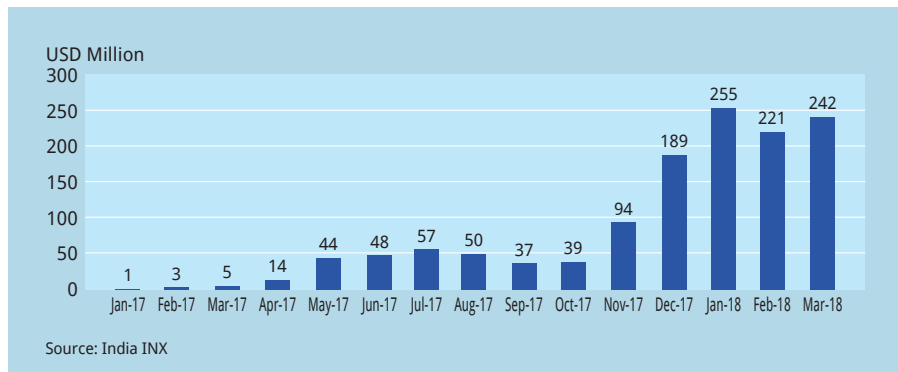


Figure 4: India INX - Average Daily Traded Value



### BSE – India's first listed stock exchange

The next logical step was to make BSE a publicly-listed company, for even better corporate governance, accountability and professional management. This was realised when, in February 2017, BSE became India's first listed stock exchange, amidst overwhelming support and stellar listing. The BSE initial public offering (IPO) had on offer 15.42 million shares representing 28.3 percent of its pre-share sale capital. The IPO was a major success being oversubscribed 51 times making it one of the most successful IPOs in recent years.



## BSE – Contribution towards financial inclusion through FinTech

The convergence of finance and technology to provide financial services by non-financial institutions, popularly known as FinTech, has come to dominate the financial landscape. BSE is playing a leadership role in adopting modern technologies to the growing and ever changing needs of India like it has done for over 143 years. India's financial distribution system is changing rapidly and BSE utilising FinTech is taking the entire process online to reduce the transaction processing and turnaround time.

The ongoing steady development in the FinTech space has facilitated all market intermediaries working towards making all payments and settlements happen electronically. Digital platforms like BSE StAR MF and BSE SME, have served as an opportunity for distributors to rapidly expand and reach potential investors in the financial services space. The digital platform has enabled BSE to establish a strong presence in mutual fund distribution, and to enable greater participation in the insurance sector, BSE intends to launch a framework similar to StAR MF in insurance distribution.

Similarly, in regulatory technology, BSE was an early mover to understand the importance of data and analytics. BSE has substantially invested to leverage the benefits of big data implementation. In FY2017-2018, the exchange introduced a data analytics-based solution that relies on artificial intelligence to track news related to listed companies on digital media using social media. The primary objective of the tool is to detect and mitigate potential risks of market manipulation and rumors, and to reduce information asymmetry arising on digital media platforms, including social media. During the initial implementation, print media and news websites were included, and it was later expanded to include Facebook and Twitter.

BSE is re-thinking and reviewing processes to cope with changing customer expectations, increasing competitive pressures, challenging macroeconomic conditions and dynamic regulatory environment. Transforming digitally will help in customer acquisition and retention, revenue generation, cost optimisation and operational efficiency. It will also assist in effective monitoring, regulatory compliance and risk mitigation. Thus the exchange can maximise customer experience and gain a competitive advantage in the market. In essence, the emergence of FinTech has provided an opportunity for BSE to make financial products more efficient and inclusive.

## Conclusion

India's capital markets have reached a high level of sophistication, maturity and robustness, but still there is a long journey ahead, one that aims at making the markets more vibrant, then achieving global competitiveness and finally claiming global leadership.

BSE is a catalyst for nation-building and not just a trading platform. BSE is poised to play a catalytic role in shaping the new India and bring solutions, which are of strategic importance and relevance to our business, economy, country and the common man as well. As India's leading stock exchange, BSE is an iconic institution and symbolic of India's economic prowess and resilience. BSE is taking a lead in bringing international standards in India, in technology, compliance, corporate governance, promoting SMEs, creation and trading of sustainable and other indices, including the oldest and most popular India based index, the S&P BSE SENSEX. With the BSE likely to keep growing, so too will the opportunities for an increasing number of investors.

## Notes

- \*1 OECD is a group of 34 member countries that discuss and develop economic and social policy.
- \*2 In terms of market capitalisation as per World Federation of Exchanges.

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## ASHISHKUMAR CHAUHAN

MD and CEO of BSE

Ashishkumar Chauhan is the MD and CEO of BSE, Asia's first stock exchange. He is credited with reviving BSE by making it the fastest Exchange globally. He was instrumental in setting up India's First International Exchange "India International Exchange", and completing the IPO of BSE.

He is one of the founders of India's National Stock Exchange (NSE) where he worked from 1992 to 2000. He was instrumental in setting up India's first fully automated screen-based trading system and first commercial satellite communications network. Due to his work at NSE, he is best known as the father of modern financial derivatives in India. From 2000 to 2009, he was President and Chief Information Officer of Reliance Group where he also served as Head of Corporate Communications from 2005-2006. He was also the CEO of the cricket team Mumbai Indians in its formative years.

A distinguished alumnus of IIT Bombay and IIM Ahmedabad, he has received several International and Indian awards. He is also the Chairperson of the Board of Governors (BOG) at the National Institute of Technology (NIT) Manipur, member of the BOGs at IIM Raipur and the National Institute of Financial Management Society. He is the Chairman of South Asian Federation of Exchanges (SAFE). He holds many advisory posts for government and business organisations.

