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INDIAN PHARMACEUTICAL INDUSTRY: THE CHANGING DYNAMICS

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The article discusses the evolution and growth of the Indian Pharmaceutical Industry. While dwelling on the historical background, it explains the drivers behind the growth and the policy support provided by the government. The article provides an industry analysis and the strategies adopted by the Indian Pharmaceutical companies to engineer growth primarily through generics, biosimilars and formulations. It ends with an understanding of the future growth and the challenges that need to be addressed by the industry and government to achieve Pharma Vision 2020.

Keywords: Active Pharmaceutical Ingredient, Abbreviated New Drug Application, Biosimilars, Drug Master File, DPCO, Formulations, Generics, Indian Pharmaceutical Exports, R&D, WTO

INTRODUCTION

First January 2005 is a turning point for the Indian Pharmaceutical Industry. Following the WTO agreement signed in the year 1995, India had to recognize the international patent laws getting implemented with effect from the New Year Day in the year 2005. This meant that Indian pharmaceutical companies had to adapt their product development processes that were not infringing and respected the patents of the MNCs on not only processes but also products, unlike the earlier period beginning the year 1970. From the year 2005, it required the Indian domestic companies to increase R&D spend to remain competitive in the global market marking a significant change in their operations. With well

educated scientists and technical know-how for the manufacture of bulk drugs and formulations, the Indian companies have braced themselves to the challenges despite inadequate funding available for drug discovery programs. To understand the current situation of the Indian Pharmaceutical industry and the unfolding future, it would help to review the historical past.

HISTORICAL BACKGROUND

In the early years following India's independence from the colonial rule of Britain in 1947, Multinational Companies (MNCs) were allowed to import drugs into India – mainly low-priced generics and a few high-priced specialty items. When the Indian government increased pressure

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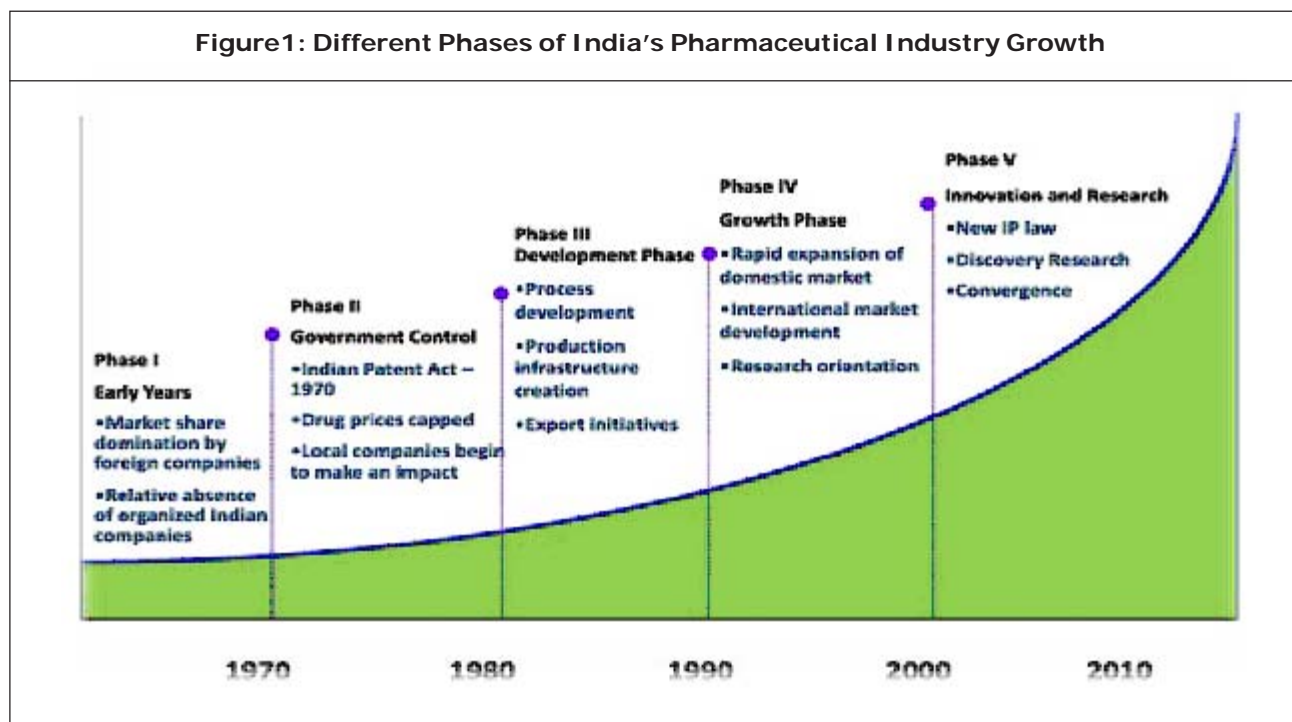
against the import of finished products, MNCs developed formulation units in India and imported only bulk drugs into India. In the early 1960s, the Indian government encouraged the indigenous manufacture of bulk drugs (cf. Hemant Joshi, 2003). In Figure 1, different phases of India’s Pharmaceutical Industry growth is depicted.

In the next decade, the Indian Patent Act, 1970 prevented the granting of product patents for substances used in pharmaceuticals and foods. This patent act removed composition patents from food and drugs, and though it kept process patents, these were shortened to a period of five to seven years. Only process patents were allowed for five years from the date of granting a patent or seven years from the date of filing the patent. Drug Price Control Order (DPCO) was introduced during the same period to prevent undue profiteering from essential medicines. MNCs were compelled to reduce their holdings to 40% of their Indian ventures (cf. Hemant Joshi, 2003).

The lack of patent protection made the Indian market undesirable to the MNCs that had dominated the market. While they streamed out, the Indian companies carved a niche in both the Indian and world markets with their expertise in reverse-engineering new processes for manufacturing drugs at low costs (cf. wikipedia).

In the 1980s-1990s domestic pharmaceutical companies flourished. As a result, the market share of MNCs fell down. The economic liberalization in 90s enabled the industry to become what it is today. Although some of the larger companies have taken baby steps towards drug innovation, the industry as a whole has been following the business model of reverse-engineering.

In 2002, over 20,000 registered drug manufacturers in India sold US\$9 bn worth of formulations and bulk drugs. 85% of these formulations were sold in India while over 60% of the bulk drugs were exported, mostly to the United States and Russia. Most pharmaceutical



companies operating in India, even the multinationals, employed Indians almost exclusively from the lowest ranks to high level management. Homegrown pharmaceuticals, like many other businesses in India, have been often a mix of public and private enterprise (cf. Pharmaceutical & Drug Manufacturers, website, <http://www.pharmaceutical-drug-manufacturers.com>).

The January 1, 2005 enactment of an amendment to India's patent law reinstated product patents for the first time since 1972, bringing a significant change. The legislation took effect on the deadline set by the WTO's Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreement, which mandated patent protection on both products and processes for a period of 20 years. Under this law, India had to recognize not only new patents but also any patents filed after January 1, 1995 (cf. Understanding WTO, website, <http://www.wto.org>).

Indian companies have started to adapt their product development processes to the new environment. For years, firms have made their ways into the global market by researching generic competitors to patented drugs and following up with litigation to challenge the patent. This approach remains untouched by the new patent regime and looks to increase in the future. However, those that can afford it have set their sights on an even higher goal: new molecule discovery. Although the initial investment is huge, companies are lured by the promise of hefty profit margins. Local firms have slowly been investing more money into their R&D programs or have formed alliances to tap into these opportunities.

In 2009, India had more than 120 US Food and

Drug Administration (FDA) approved plants and approximately 84 UK Medicines and healthcare products Regulatory Agency (MHRA) approved plants, with capabilities to manufacture products with exceptional quality standards (cf. Pharmaceuticals - Invest India).

Domestic and international pharmaceutical companies operating in India face issues ranging from the new DPCO, which prescribes a ceiling on the prices of several essential medicines, to drug and clinical trial quality, patent issues, and the misclassification of medical devices. In July 2013, the National Pharmaceutical Pricing Authority (NPPA) brought 348 drugs under price control through the DPCO 2013. A year later, further drugs were added to the list (cf. How new price control list impacts, website, <http://www.moneycontrol.com>).

India's pharmaceutical sales were an estimated US\$16.72 bn in 2013. They are forecast to rise at an average of 12.43% annually in 2015-19 to reach US\$32.01 bn from the current US\$20 bn in 2015. This growth will be driven by increasing personal incomes and the step up of chronic diseases (cf. Industry Report, Healthcare: India, The Economic Intelligence Unit, October 2015).

Out of the total India's pharmaceutical current sales of about US\$20 bn, 65% is from exports. In terms of the global market, India currently holds a modest 1.4% share in terms of value and 10% in terms of volume. India gained its foothold on the global scene with its innovatively engineered generic drugs and Active Pharmaceutical Ingredients (API), and it is now seeking to become a major player in outsourced clinical research as well as contract manufacturing and research. There are 546 US FDA-approved manufacturing facilities in India, the highest number outside the

US, India accounts for 20% of global exports in generics (cf. Pharmaceuticals March 2015, website, <http://www.ibef.org>).

TYPES OF DRUG SYSTEMS

In the study by Hemant N Joshi (2003), in addition to the allopathic system, prevalent in USA, Europe and Japan, there are other medical and pharmaceutical systems in India like Ayurveda, Siddha, Unani, Homeopathy, Yoga and Naturopathy.

Ayurveda: Ayurveda means the science of life. The knowledge of life, diseases and medicines is compiled in 'Charak Samhita' and 'Sushruta Samhita'. Drugs, diet and general mode of life constitute the elements of treatment.

Siddha: Siddha means achievement and is one of the oldest Indian system of medicine. It was developed by saints who achieved healing through the practice of yoga. The system does not look at merely the disease but takes into account a patient's age, sex, race, habits, diet, physiological constitution etc. Siddha medicines have been effective in curing some diseases, and further work is needed to truly understand how this system works.

Unani: The system originated in Greece and spread to India during the medieval period. The system is based on the humoral theory i.e. the presence of blood, phlegm, yellow bile and black bile. A person's temperament is accordingly expressed as sanguine, phlegmatic, choleric or melancholic. The system involves promotion of positive health and prevention of disease. Drugs derived from plant, metal, mineral and animal origin are used in this system.

Homeopathy: It flourished in Germany during the seventeenth and eighteenth centuries. Physicians

at the time of Hippocrates (400 BC) first observed that some substances produce symptoms of conditions that they were then used to treat. On the basis of this finding, a homeopathic medicinal agent, which can produce artificial symptoms in healthy human beings, can cure a similar set of symptoms of natural diseases. It normally uses a single medicine and the dosage is minimal. In India, it is one of the commonly used methods to treat diseases.

Yoga and Naturopathy: Yoga consists of eight components – restraint, observance of austerity, physical postures, breathing exercises, restraining of sense organs, contemplation, meditation and Samadhi. In Naturopathy, one applies the simple laws of nature. It advocates proper attention to eating and living habits. It also involves hydrotherapy, mud packs, baths, massage and so on.

The Department of Indian Systems of Medicines and Homeopathy was established in 1995 as a separate department in the Ministry of Health and Family Welfare. One of the goals is to prepare standards for ayurvedic, siddha, unani and homeopathy drugs. The department is involved in evolving good manufacturing practices by enhancing the availability of quality raw materials, database preparation of medicinal plants and collection of information from ancient texts.

With traditional medicines like ayurveda, unani and siddha having a solid ground in India and the majority of people using such medicines for primary healthcare the pharmaceutical statistics could hugely underestimate the significance of the segment.

HEALTH STATISTICS OF INDIA

According to the Industry Report, Healthcare India

(October, 2015) by the Economist Intelligence Unit, India has the second-largest population in the world, after China with an estimated 1.26bn in 2014. The population is primarily young with people aged 65 years and over accounting for just over 6%.

Population health: The average life expectancy is 66 years in 2014. The infant mortality rate is high, at 41.9 deaths per thousand in 2014. Levels of infant and adult mortality, varies hugely between states, reflecting differing levels of resourcing and efficiency.

Major disease trends: According to the World Health Organization (WHO), India's increasing life expectancy, wealth and urbanization have led to a rise in non-communicable diseases, which now account for 60% of deaths. Of these, cardiovascular diseases are the main cause of death (26%), followed by chronic respiratory diseases (13%) and cancer (7%).

Diabetes accounts for just 2% of deaths, but the prevalence is rising rapidly. The International Diabetes Federation estimates that 66.8m people in India suffer from diabetes, with over half of them undiagnosed.

With urbanization and poor sanitation bringing increasing threats of infection, Communicable diseases continue to be a serious health problem. Around 130 m households lack toilets.

Resistance to antibiotics is on the rise, with drug-resistant tuberculosis a particular concern. Given the rising number of HIV/AIDS sufferers, the Joint UN Program on HIV/AIDS estimates that 2.1 m people were living with HIV in India in 2012. This makes India second after South Africa in the world, in terms of the number of people infected with the virus.

Risk factors: United Nation's Children Fund (UNICEF) estimates that nearly one-half of Indian children remain malnourished. A significant improvement is likely to take years to achieve.

In 2013, tobacco smoking prevalence among men was higher at 21.9% than among women (2.3%), averaging 12.4% for both sexes, according to WHO estimates. However, smokeless tobacco use among adults (both men and women) is higher at 25.9%. India banned smoking in public spaces in 2008 and required tobacco firms to put statutory pictorial health warnings on all cigarette packets from mid-2009.

By the year 2019, India's population is expected to rise to 1.34 bn from an estimated 1.26 bn in 2014. The population will remain young. The average life expectancy is expected to rise to 67.2 years in 2019, from 66 years in 2014. The infant mortality rate will remain high, at 37 deaths per 1,000 births in 2019, but this will be down from an estimated 41.9 deaths in 2014.

CURRENT GLOBAL PHARMACEUTICAL MARKET

In a study by IMS Health Global Market Prognosis (May 2013), the global pharmaceutical market is expected to reach US\$ 1.3 trillion in 2018, up from US\$ 0.96 trillion in 2012, growing at the Compound Annual Growth Rate (CAGR) of around 5% over the past five years.

Higher growth is primarily on account of general economic well being, the effect of aging populations and chronic/lifestyle diseases on the demand side—and the introduction of new specialty medicines and increased accessibility of patients to medical infrastructure and funding, expansion of emerging markets and advances in treatment and allied technologies on the supply side.

USA continues to remain the largest pharmaceuticals market representing over one third of the global total. It is expected to grow at a CAGR of around 5% through 2018, significantly higher than the 3.6% growth over the past five years. Strong economic recovery in the USA coupled with the recent healthcare reforms through the 2010 Patient Protection and Affordable Care Act already had a positive impact on the use of medicines.

Because of variations of one form of the Eurozone crisis to another, European spending on healthcare is not expected to witness much growth. Across Latin America, spending is projected to increase at an average of 4.6% per year over 2015-2018, as several governments attempt to improve their public healthcare systems amid general budget constraints.

Developed markets will account for more than half of the business even in 2017.

Pharmerging markets: Pharmerging markets defined as those with more than US\$ 1 bn absolute spending and which have GDP per capita of less than US\$25,000 at Purchasing Power Parity (PPP) include: Tier 1: China; Tier 2: Brazil, India, Russia; and Tier 3: Mexico, Turkey, Venezuela, Poland, Argentina, Saudi Arabia, Indonesia, Colombia, Thailand, Ukraine, South Africa, Egypt, Romania, Algeria, Vietnam, Pakistan and Nigeria.

Pharmerging markets have long been regarded as the 'promised land' of the pharmaceutical industry. Given the slow growth of pharmaceutical sales in developed markets, multinational companies have made substantial investments in emerging markets in recent years. With their large populations, increasing prosperity, and improving longevity, these territories are very

attractive to companies that are suffering from stagnation of mature markets, patent expirations, and increased regulatory hurdles.

Pharmerging markets are expected to move from representing a fourth of the global pharmaceutical market in 2012 to a third by 2017. The growth will mainly be driven by government healthcare investment, private and out-of-pocket spend, and the increasing burden of chronic disease. The pharmerging markets will have growth rates far higher than mature markets, with all four BRIC countries (Brazil, Russia, India, China) ranking among the top10 by value of sales.

INDIAN PHARMACEUTICAL INDUSTRY

India's pharmaceutical sales were an estimated US\$16.72 bn in 2013. They are forecast to rise at an average of 12.43% annually in 2015-19 to reach US\$32.01 bn. This growth will be driven by epidemiological factors, increasing affordability, enhanced accessibility and rising acceptability—though partially offset by pricing controls put in place by the National Pharmaceutical Pricing Authority (NPPA) and high levels of competition due to existing market fragmentation (cf. Industry Report, Healthcare: India, The Economic Intelligence Unit, October 2015).

The government and regulatory authorities are expected to continue to focus on: (a) reduced taxes and import duties; (b) incentives for setting up manufacturing units through special economic zones and other facilities; (c) incentives for higher in-house research and development; and (d) improving the quality of healthcare infrastructure as well as the availability of medicines through the 'Jan Aushadhi' scheme at affordable prices.

International comparison: India's pharmaceuticals industry is the world's third largest in volume terms. The first largest in volume terms is US. India has established itself as a mass producer of generic copies of chemical medicines. There is an ongoing effort in the industry to move up the value chain through innovation in improved drug delivery mechanisms, biotechnology, vaccines and biopharmaceuticals.

The local pharmaceuticals industry accounts for around 10% of global production in volume terms as per the government estimates and ranks fourth in the world in the production of generic drugs. Pharmaceutical prices are among the lowest in the world because of intense generic competition as well as regulatory controls (cf. Industry Report, Healthcare: India, The Economic Intelligence Unit, October 2015).

Pharma and biotech supply dynamics: In value terms, India's pharmaceutical industry is ranked at number 13 and accounts for about 1.4% of global pharmaceuticals industry. The total turnover of the country's pharmaceutical industry is estimated at about US\$21 bn by Invest India. The local pharmaceutical industry consists of more than 24,000 firms, of which only 250 are deemed "organized" by Invest India, the country's foreign-investment agency. These 250 companies contribute to 70% of the market and focus mainly on generic drugs (cf. Industry Report, Healthcare: India, The Economic

Intelligence Unit, October 2015). Table 1 shows India's pharmaceutical sales.

It is likely and can be derived that the data in Table 1 do not include the Contract Research and Manufacturing Services (CRAMS) industry that is estimated to have reached US\$8.0 bn in 2015, up from around US\$4.25 bn in 2012. These CRAMS estimates are taken from Pharmaceuticals March 2015, India Brand Equity Foundation (IBEF) website.

As per the Pharmaceutical Sector in India: Emerging Markets Insight (September 2013), Prescription drugs sales account for more than 80% of total pharmaceutical sales in India, the share rising marginally in the past years.

Although patented drugs are gradually gaining share on the Indian market, they are still holding less than 10% of the total sales and the share is expected to remain practically unchanged in the coming years. The further expansion of the sector could be hindered by series of Government measures aimed at protecting the low-cost medicines in the country.

The "Over-The-Counter" drugs (OTC) include all drugs that are not in the list of "prescription-only" medicines, are freely traded on the market. OTC drugs include "Ayurvedic Medicines" (traditional Indian medicines with natural/herbal ingredients) and antibiotics, among other medicines.

Table 1: India's Pharmaceutical Sales

	2010 ^a	2011 ^b	2012 ^b	2013 ^b	2014 ^b	2015 ^c	2016 ^c	2017 ^c	2018 ^c	2019 ^c
Pharmaceutical sales (US\$ m)	14,270	15,608	15,764	16,726	18,473	20,065	21,790	23,966	27,357	32,018
Note: ^a Actual. ^b Economist Intelligence Unit estimates. ^c Economist Intelligence Unit forecasts.										
<i>Source: The Economist Intelligence Unit.</i>										

According to the Management Discussion and Analysis, Dr Reddy's Laboratories Ltd. Annual Report FY 2015, the global API market is currently valued at approximately US\$120 bn and is anticipated to grow at a CAGR of 7% to reach US\$180 bn by 2020. Over the years, some large pharmaceutical corporations have tended to be vertically integrated for critical products. Simultaneously, others have favored using trusted external sources for their APIs and intermediates sourcing. Countries like India and China have continued to benefit from this external sourcing strategy.

There is an increasing contribution of the Indian generics players in the largest pharmaceutical market, namely the US generic prescriptions (Gx) market. Over time, the Indian generic players have increased their share in the US Gx market through their Abbreviated New Drug Approvals (ANDA) approvals from United States Food & Drugs Administration (USFDA). Today, Indian companies are the second-largest suppliers of pharmaceutical products to the US.

Exhibit 1 shows the number of Indian ANDAs as well as its % of the Total ANDAs applied in US.

The main opportunities for the Indian pharmaceutical industry are in the areas of: Generics (including biotechnology generics called as biosimilars), Formulations and CRAMS. Biotechnology is treated as a separate industry and includes segments like biopharma, bioservices, bioagri, bioindustrial and bioinformatics.

Generics: India's pharmaceutical market is dominated by generic drugs accounting by volume for around seventy percent of the market. It is the largest segment of the Indian Pharmaceuticals sector. Although domestic

pharmaceutical companies were established primarily to supply the local market, they have taken advantage of their low labor and research costs to export generic drugs to developed countries, notably the US, its largest export market. The cost of setting up a production plant in India is 65% lower than in US and 50% lower than in Europe. Labor costs are 50-55% cheaper than in western countries. Indian Pharmaceutical sector has 2633 FDA approved drug products and over 546 USFDA approved manufacturing facilities. India accounts for the second largest number of ANDAs and is the world leader in Drug Master Files (DMFs) applications with the US. India is also a major supplier to emerging markets like Russia, Belarus, Kazakhstan, Armenia, Argentina etc., and has become the biggest supplier to UN health care programs. India accounts for 20% of global exports in generics by volume (cf. Pharmaceuticals March 2015, website, <http://www.ibef.org>).

Niche areas of generic-drug development, including biosimilars (generic versions of biotech drugs) continue to account for growth in the sector. Leading Indian drug firms have already developed key biosimilars for use in the local market. They are now expanding into Europe and the US.

Biosimilar's sector is expected to touch US\$1.4 bn by 2016 from \$482 mn in 2011.

According to Pharmaceuticals March 2015, India Brand Equity Foundation website, the estimates for formulations and outsourcing are of the order of US\$11.2 bn and \$8 bn.

Formulations: The domestic market size is currently around US\$11.2 bn and double digit growth is expected in the next five years. India is the largest exporter of formulations in terms of

volume with 14% market share and 12th in terms of export value.

Outsourcing: Contract Research and Manufacturing Services (CRAMS) industry is estimated to have reached US\$8.0 bn in 2015, up from around US\$4.25 bn in 2012. The market is fragmented with more than 1000 players.

Exports and Imports: Out of the total turnover of the country's pharmaceutical industry at about US\$20 bn, 65% is from exports. In financial year 2014-15 (April-March), as per EXIM bank, India's pharmaceutical exports reached US\$11.6 bn.

India is the world's largest provider of generic medicines accounting for 20% of global generic drug exports in terms of volume. The Americas accounted for around 34% of Indian Pharmaceutical exports in FY 2013 followed by Europe (26%) and Asia (20%). Exports to Africa was mainly through anti-malarial and anti-retroviral drugs (cf. Pharmaceuticals March 2015, website, <http://www.ibef.org>).

India's pharmaceutical imports were estimated at US\$4.8bn in 2014, by the government statistics. The country imports cheaper finished formulations of common products, such as painkillers and antibiotics, from China, as well as more sophisticated drugs from Europe and the US.

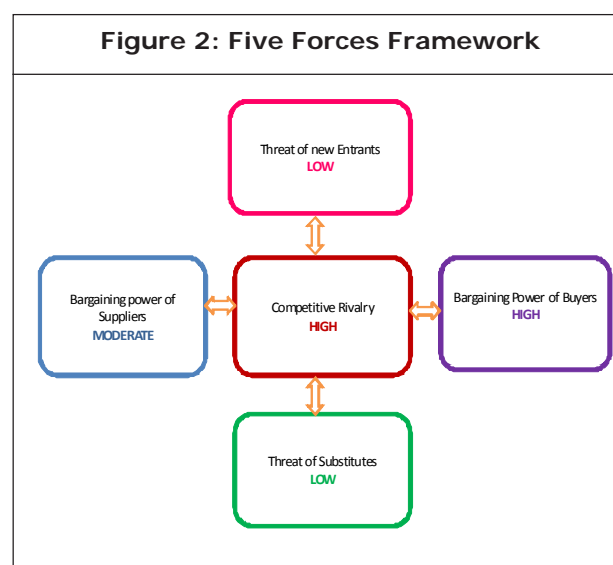
Biotechnology: The Indian biotech sector parallels that of the US in many ways. Both are filled with small start-ups while the majority of the market is controlled by a few powerful companies. Both are dependent upon government grants and venture capitalists for funding because neither will be commercially viable for years. Pharmaceutical companies in both countries have recognized the potential effect that biotechnology could have on

their pipelines and have responded by either investing in existing start-ups or venturing into the field themselves. In both India and the US, as well as in much of the globe, biotech is seen as a hot field with a lot of growth potential (cf. Understanding WTO, website, <http://www.wto.org>).

Exhibit 2 has a brief write up on the biotech sector in India.

INDUSTRY ANALYSIS

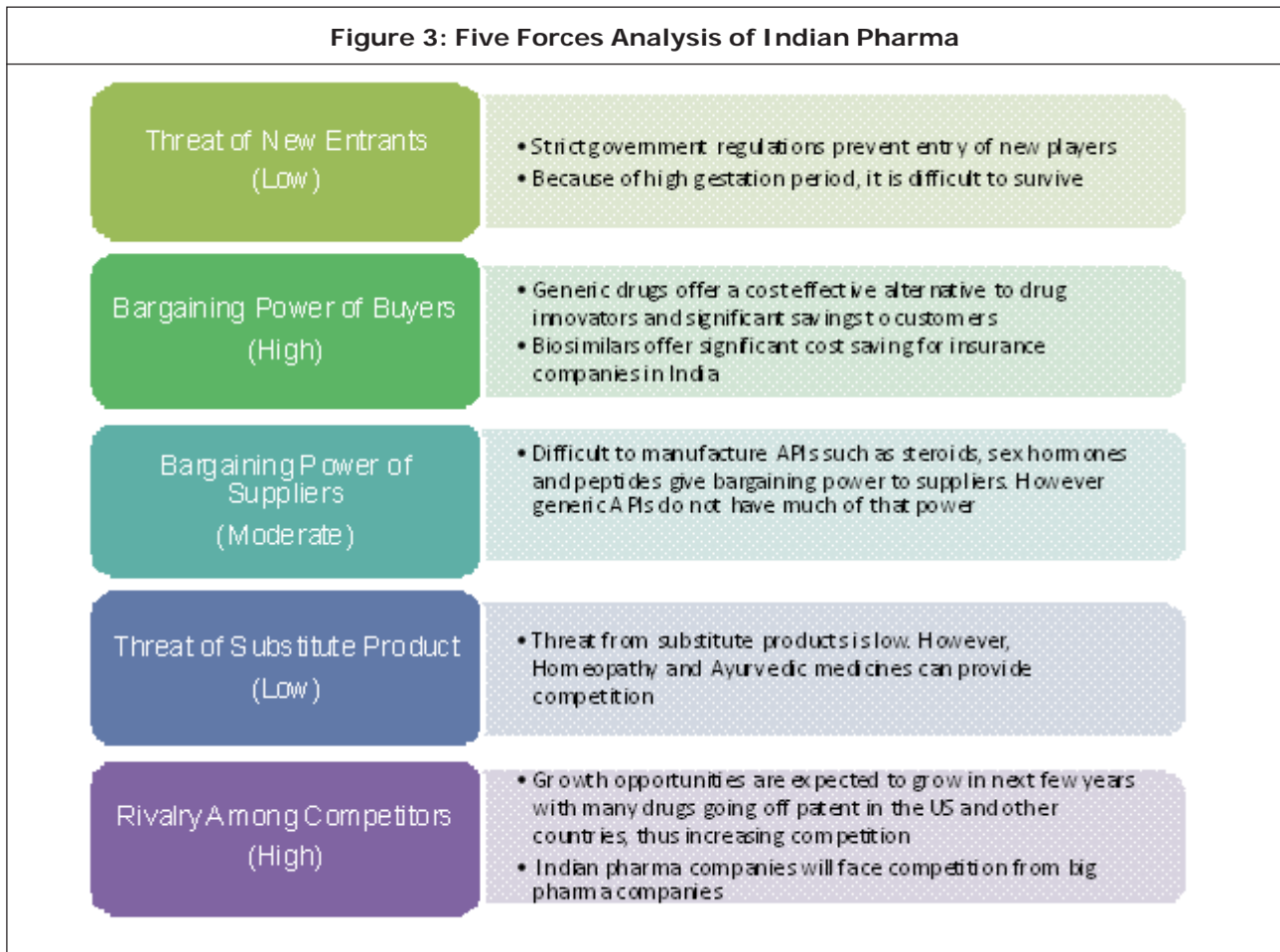
In a study by the Pharmaceuticals March 2015 (website, <http://www.ibef.org>), a broad industry analysis is presented based on Porter's five forces framework as shown in Figure 2. According to Porter (1980), any industry can be well understood by an analysis of the five forces that



impact it. The strength of the five forces and the underlying drivers are described in Figure 3.

STRATEGIES ADOPTED

Successful companies in the industry normally pursue any of the three generic strategies – cost leadership, differentiation and focus. For an elementary understanding, an illustration is



provided based on information gathered from a few company’s websites

Cost Leadership: Sun Pharma is trying to achieve cost leadership by vertical integration. Complex APIs are developed and scaled up for both API and dosage forms.

Differentiation: Dr. Reddy’s is investing in technology platforms. Similarly Sun Pharma by investing heavily on R&D is trying to develop technically complex APIs.

Focus: There is a focus on new markets as exemplified by various pharma companies. For instance, Lupin is making inroads into new markets such as Latin America, Russia and other East European countries.

Stemming from the above generic strategies, the Indian pharmaceutical companies are pursuing the following levers for growth

- Building customer centricity
- Reviewing product portfolio
- Strengthening operational capability
- Global expansion
- Creating value through Joint Ventures or Mergers & Acquisitions
- Investing in R&D to develop new drugs

Through Joint Ventures, MNCs are collaborating with Indian pharmaceutical companies to develop new drugs. For instance, Pfizer partnered with Aurobindo Pharma to develop generic medicines.

Six leading pharmaceutical companies have formed an alliance 'LAZOR' to share their best practices, so as to improve efficiency and reduce operating costs.

Indian pharmaceutical companies are pursuing global expansion either by setting up manufacturing plants abroad or by acquiring foreign companies. In 2006, Dr. Reddy's Laboratories acquired a manufacturing plant of Roche in Mexico. In 2007, Cipla which is the largest supplier of anti-malarial drugs to Africa had set up US\$32 mn plant in Africa for the production of anti-retroviral and anti-malarial drugs. In 2010, Ranbaxy (now acquired by Sun Pharma), installed a US\$30 mn manufacturing facility in Johannesburg becoming the fifth largest pharmaceutical company in South Africa.

MAJOR PHARMACUTICAL COMPANIES IN INDIA

In March 2015, Sun Pharma became India's largest pharmaceutical firm when it acquired Ranbaxy from Japan's Daiichi for US\$4 bn for which it received regulatory approval from India's Competition Commission. Other leading domestic pharmaceutical companies include Dr Reddy's, Cipla, Lupin and Aurobindo. Major foreign-owned firms include Abbott India, AstraZeneca, India, Sanofi India, Merck India and the local subsidiaries of GlaxoSmithKline (UK), Novartis (Switzerland) and Pfizer (US). The data in Table 2 of the 'Companies Rankings -Total Operating Revenue' is shown in US \$ with the conversion rate of \$ to INR at Rs 61.15.

Exhibit 3 shows the top 10 Indian companies by Total Operating Revenues.

Exhibit 4 presents the top 10 Indian companies by market capitalization as of 15th July 2015.

The Top 10 Publicly Listed pharmaceutical

Table 2: Company Rankings - Total Operating Revenue

Unit: Thousands (US \$)

Companies/Year	Revenue
Sun Pharmaceutical Industries Ltd. (India)	4,500,051 (2015)
Dr. Reddy's Laboratories Ltd. (India)	2,457,157 (2015)
Ranbaxy Laboratories Ltd. (India)	2,195,196 (2014)
Lupin Ltd. (India)	2,088,409 (2015)
Aurobindo Pharma Ltd. (India)	1,992,852 (2015)
Cipla Ltd. (India)	1,862,162 (2015)
Cadila Healthcare Ltd. (India)	1,413,510 (2015)
Dabur India Ltd. (India)	1,283,849 (2015)
Glenmark Pharmaceuticals Ltd. (India)	1,087,811 (2015)
Jubilant Life Sciences Ltd. (India)	952,825 (2015)

companies in India by Market Capitalization as of July 2015 (Exhibit 4) are Sun Pharma, Lupin, Dr Reddy's Laboratories, Cipla, Aurobindo, Cadila, Glenmark, GSK, Divi and Torrent. Brief profiles of these companies are presented below (cf. Top 10 Pharma companies in India, Retrieved November 2015, website, <http://listz.in>).

(i) Sun Pharmaceutical Industries Ltd: It was established in 1983 by Mr Dilip Sanghvi with five psychiatry products and a two person marketing team. In the year 2014, Sun Pharmaceuticals acquired Ranbaxy Laboratories Limited and became the largest pharmaceutical company in India and the fifth largest pharmaceutical company in the world. It has made more than 20 acquisitions over the years and has over 30,000 employees from over 50 different nationalities.

Today it has 48 (API & finished dose) state-of-the-art manufacturing sites in India, US, Brazil, Canada, Hungary, Israel, Bangladesh, Mexico,

Romania, Ireland, Morocco, Nigeria, South Africa and Malaysia. It provides medicinal products to patients across 150 countries worldwide.

Its manufacturing operations are focused on producing generics, branded generics, speciality, over-the-counter (OTC) products, anti-retrovirals (ARVs), Active Pharmaceutical Ingredients (APIs) and intermediates in the full range of dosage forms, including tablets, capsules, injectables, ointments, creams and liquids. It also manufactures specialty APIs, including controlled substances, steroids, peptides and anti-cancer.

The therapeutic segments covered by its portfolio of over 2000 high quality molecules include psychiatry, anti-infectives, neurology, cardiology, orthopaedic, diabetology, gastroenterology, ophthalmology, nephrology, urology, dermatology, gynaecology, respiratory, oncology, dental and nutritional. Sun Pharma makes two of the top 10 OTC brands – Revital and Volini in India.

It has around 2000 research scientists working in multiple R&D centers equipped with cutting-edge enabling technologies for research. Its scientists have expertise in developing generics, difficult to make technology intensive products, Active Pharmaceutical Ingredients (APIs), Novel Drug Delivery Systems (NDDS) and New Chemical Entities (NCEs) (<http://www.sunpharma.com>, accessed on 7th November 2015)

(ii) Lupin: In 1968, Lupin was started in Mumbai by Dr. D B Gupta with a vision of fighting life threatening infectious diseases through the manufacture of drugs. It first gained recognition when it became one of the world's largest manufacturers of Tuberculosis drugs. Today it has significant presence in various

therapeutic segments like cardiovascular, diabetology, asthma, pediatrics, CNS, GI, anti-infectives and NSAID. Its products reach over 100 countries in the world. It has made more than 14 acquisitions over the years and has employee strength of over 15000.

Lupin's world class manufacturing facilities in India and Japan have played a critical role in enabling it to realize its global aspirations. It is the fastest growing top 10 generic pharmaceutical companies in Japan and South Africa (IMS).

The company's R&D efforts have resulted in significant progress in its NCE program. Its foray into Advanced Drug Delivery Systems has resulted in the development of platform technologies that are being used to develop value added generic pharmaceuticals.

Its turnover was US\$2.06 bn for the FY 2014-15.

(<http://www.lupin.com>, accessed on 7th November 2015)

(iii) Dr. Reddy's Laboratories: In 1984, Dr. Anji Reddy established Dr. Reddy's Laboratories and acquired Cheminor Drugs an existing bulk drug manufacturing company. Today, its Generic Formulations business offers more than 200 high-quality generic versions of expensive innovator medicines—at a fraction of the cost—in over 20 countries around the world. Generic Formulations, including tablets, capsules, injectables, and topical creams, is the largest part of its business portfolio, making products across the major therapeutic areas of gastrointestinal ailments, cardiovascular disease, pain management, oncology, anti-infective, pediatrics and dermatology.

In many emerging markets, its products are available under a brand name, such as Omez (Omeprazole), Nise (Nimesulide), Ketorol (Ketorolac Tromethamine), Stamlo (Amlodipine Besylate), Razo (Rabeprazole), among many others. Over the years, these brands have established themselves as leaders in their respective categories.

In Russia and India, it markets its OTC brands like Cetrine, Nise gel, Ibuclin and Novigan, to name a few. These OTC medicines are in the areas of pain management, dermatology and allergy management areas, and gynecology.

It is one of the top producers of APIs in the world and caters to leading innovator and generic companies across the US, Europe, Latin America, Japan, Korea and other emerging markets. Over the years, it has developed deep technical strengths in the development of complex APIs such as steroids, peptides, complex long chain synthesis and oncology.

For the last fifteen years, it has been working on high quality biosimilars through its Biologics division and help create affordable medicine. Diseases like cancer or autoimmune disorders often require the long term use of Biologics – large molecule protein therapies – for an effective treatment that may have fewer side effects. It leads the industry with four biosimilar products marketed in several countries, and with an extensive development pipeline.

It is the fastest Indian company to cross US\$ 2 billion and has more than 20,000 employees.

(<http://www.drreddys.com>, accessed on 7th November 2015)

(iv) Cipla: Incorporated in 1935 and headquartered in Mumbai, it was established

by Dr. KA Hamied. It has a turnover of US\$1.78 bn and more than 20,000 employees. It has over 35 state-of-the-art manufacturing facilities for API and formulations. It has over 1500 products across various therapeutic categories with more than 60 dosage forms. It operates in more than 150 countries. Some of the areas in which Cipla offers products include Cardiology, Diabetes, Dermatology, HIV/AIDS, Neurology, Nephrology, Oncology, Respiratory, etc. It is the world's largest Anti-Retroviral manufacturer.

(<http://www.cipla.com>, accessed on 7th November 2015)

(v) Aurobindo Pharma Ltd: Founded in 1986 by Mr. P V Ramaprasad Reddy, Mr. K Nityananda Reddy, the company commenced its operations in 1988 with a single unit manufacturing Semi-Synthetic Pencillin at Pondicherry. Today it has nine units for APIs/intermediaries and seven units for formulations. It has a presence in key therapeutic segments such as neurosciences, cardiovascular, anti-retrovirals, anti-diabetes, gastroenterology, cephalosporins, etc.

It exports to over 125 countries with more than 70% of its revenues coming from international operations. Its customers include top multinational companies.

The company has over 700 scientists and are developing intellectual property in non-infringing processes and resolving complex chemistry challenges. It is developing new drug delivery systems, new dosage formulations, applying new technology for better processes.

(<http://www.aurobindo.com>, accessed on 7th November 2015)

(vi) Cadila Pharmaceuticals Ltd: Headquartered at Ahmedabad, Cadila was founded

in 1952 by Ramanbhai Patel, formerly a lecturer in the L.M. College of Pharmacy, and his business partner Indravadan Modi. It evolved over the next four decades into an established pharmaceutical company.

It is present in more than 45 therapeutic areas spread across 12 specialities including cardiovascular, gastrointestinal, analgesics, haematinics, anti-infectives, antibiotics, respiratory agents, antidiabetics and immunologicals. It sells its products in over 85 countries.

In India, it has two formulations manufacturing plants and two API manufacturing plants while in Ethiopia, it has one formulation manufacturing unit at Addis Ababa.

More than 300 scientists work in its R&D center.

(<http://cadilapharma.com>, accessed on 7th November 2015)

(vii) Glenmark Pharmaceuticals Ltd:

Established in 1977, Glenmark is a leading player in the discovery of new molecules, both NCEs (new chemical entity) and NBEs (new biological entity), with seven molecules in various stages of clinical development & pre-clinical development.

The company has a significant presence in branded generics markets across emerging economies including India. Its subsidiary, Glenmark Generics Limited has a fast growing and robust US generics business. The subsidiary also markets APIs to regulated and semi-regulated countries. Glenmark has offices in over 20 countries, 16 manufacturing facilities in 5 countries and 6 R&D centres dedicated to the goal of enriching lives across the globe. It has

over 11,500 employees from around 50 nationalities.

Four manufacturing facilities are in India. The company also has a manufacturing facility in the Czech Republic which services requirements of the Central Eastern Europe region and another in Brazil which services the Latin American region.

In 2011, Glenmark has been chosen as the 'Best Company across Emerging Markets' and recognized for the 'Best Overall Pipeline' by SCRIP, the largest selling and most respected pharmaceutical magazine in the world. In 2008, SCRIP had also recognized Glenmark as 'Best Pharma Company in the World – SME' and 'Best Company in an Emerging Market'.

(<http://www.glenmarkpharma.com>, accessed on 7th November 2015)

(viii) GlaxoSmithKline (GSK) Pharmaceuticals Limited:

Established in the year 1924, GSK is one of the oldest pharmaceuticals company in India. Headquartered in Mumbai, GSK India product portfolio includes prescription medicines and vaccines. Its prescription medicines range across therapeutic areas such as anti-infectives, dermatology, gynaecology, diabetes, oncology, cardiovascular disease and respiratory diseases. The company is the market leader in most of the therapeutic categories in which it operates. GSK also offers a range of vaccines, for the prevention of hepatitis A, hepatitis B, invasive disease caused by H, influenzae, chickenpox, diphtheria, pertussis, tetanus, rotavirus, cervical cancer, streptococcus pneumonia and others.

(<http://www.gsk-india.com>, accessed on 7th November 2015)

(ix) Divi's Laboratories:

Established in 1990,

Divis Laboratories focused on developing new processes for the production of APIs & intermediates. It set up its first manufacturing facility at Hyderabad in 1995 and its second one in Visakhapatnam in 2002. Both the facilities are engaged in the manufacture of APIs & intermediates for generics, custom synthesis of APIs and advanced intermediates for discovery compounds for pharma giants, building blocks for peptides & nucleotides, carotenoids and chiral ligands.

(<http://www.divislabs.com>, accessed on 7th November 2015)

(x) Torrent Pharma: In 1959, Mr UN Mehta started the company. It is a dominant player in the therapeutic areas of cardiovascular (CV) and central nervous system (CNS) and has achieved significant presence in gastro-intestinal, diabetology, anti-infective and pain management segments. It has also forayed into the therapeutic segments of nephrology and oncology while also strengthening its focus on gynecology and pediatric segments.

It has three world-class manufacturing facilities and a new facility is taking shape at Dahej SEZ in Western India, which will cater to the international markets. Torrent Pharma is the sole manufacturer of Insulin Formulations for Novo Nordisk in India since the early '90s and has also set up a dedicated formulation and packaging facility for Insulin.

It is also amongst the few Indian pharma majors to recognize the importance of research and development in the post 2005 GATT era. Its modern and well-equipped R&D Centre is ranked amongst the best in the country and has a team of highly qualified scientists working on various Drug Discovery and Development projects. The

R&D Centre has been approved by USFDA and various other regulatory authorities.

Recently, Torrent Pharma acquired the branded domestic formulations business of Elder Pharmaceuticals in India and Nepal. The acquisition comprises a portfolio of 30 brands including market-leading brands in the Women's Healthcare, Pain Management, Wound Care and Nutraceuticals therapeutic segments.

Torrent Pharma has a strong international presence spanning over 40 countries with over 1200 product registrations. It has wholly owned subsidiaries in USA, UK, Germany, Brazil, Russia, Mexico, Philippines and other major markets. These wholly owned subsidiaries spearheads the company's entry into several new regulated and semi regulated international markets.

(<http://www.torrentpharma.com>, accessed on 7th November 2015)

In the study by E. Kumar Sharma (November 2015), the main opportunities for the Indian pharmaceutical industry are in the areas of: generics (including biotechnology generics), biotechnology and outsourcing (including contract manufacturing, information technology (IT) and R&D outsourcing).

Most leading Indian companies have been growing in the all important US market and for many their largest source of revenue. Only about 20% of the revenues of leading Indian pharmaceutical companies come from the domestic market. They have long had a global reputation for making low cost generic drugs but many have since migrated to higher, value added or complex generics. The value added generics are those which are difficult or expensive or both to manufacture, with some even requiring clinical trials. These complex generics have limited

competition and thereby provide scope for higher margins.

Some companies are going beyond manufacture of complex generics and looking at mergers & acquisitions. Sun Pharma acquired a majority stake in US based Taro Pharmaceutical in 2010 and took over another company DUSA Pharmaceuticals in 2012 paving way to become a strong player in the US's dermatology and complex injectables market. Then in April 2014, Sun Pharma acquired Ranbaxy to get scale and become a force to reckon with globally, emerging as the fifth largest specialty generic drug maker after Teva, Sandoz, Actavis and Mylan. Over the years, Sun Pharma has made nearly 20 acquisitions.

In July 2015, Lupin announced the acquisition of US based GAVIS Pharmaceuticals, a niche generic drug specialist, for \$ 800 million, its sixth acquisition in 18 months. Further in September 2015, Cipla Ltd acquired two US Generics companies, InvaGen Pharmaceuticals and Exelan Pharmaceuticals for \$ 550 million.

While in the immediate three to four years, the pharma companies expect their differentiated products in the US market to contribute to a higher share of their profits in the longer run they expect the biosimilars to be a growth driver.

Pharma companies have been growing within the country through select product acquisitions, marketing alliances and greater penetration. The industry is benefiting from a rapidly expanding market in certain chronic disease segments like diabetes brought on by lifestyle changes. There were many apprehensions when NPPA passed a new DPCO in May 2013 increasing the number

of drugs from 74 to 348 but these have been belied. The DPCO itself took into account market realities, changing the formula for calculating drug prices from the earlier 'cost plus' approach to the more realistic 'market-based pricing' approach, and linking the prices of the drugs to inflation, so companies would not have to seek government permission each time they needed to raise prices. Prices of some formulations did indeed have to be reduced, but this affected the MNCs more than the wholly indigenous ones, since the former's prices are usually higher.

R&D IN INDIA

The industry spends around 18% of its revenue on research and development (R&D), according to Invest India as mentioned in the Industry Report, Healthcare: India October 2015 by the Economist Intelligence Unit, although other sources suggest that the proportion is far lower. According to the Indian Patent Office, Foreign companies are the heaviest investors in R&D and have accounted for more than two-thirds of India's pharmaceuticals patents in the past three years.

Just around 15 local companies are actively engaged in the development of patented pharmaceuticals. The successes have been few. One such success came in 2013, when Cadila Healthcare, a domestic company launched Lipaglyn, cholesterol drug for diabetics that was the first new chemical entity to be discovered and developed in India. Cadila is also among the companies developing biosimilars. The other companies that are developing biosimilars are Biocon, Dr Reddy's, Lupin and Intas.

Even after the increased R&D investment anywhere between US \$ 80-200 million, market

leaders such as Dr. Reddy's Laboratories and Lupin spent 8–11% of their revenues on R&D, lagging behind Western pharmaceuticals like Pfizer, whose research budget last year was greater than the combined revenues of the entire Indian pharmaceutical industry. This disparity is too great to be explained by cost differentials, and it comes when advances in genomics have made research equipment more expensive than ever. The drug discovery process is further hindered by a dearth of qualified molecular biologists. Due to disconnect between curriculum and industry, pharmaceutical industry in India also lack the academic collaboration that is crucial to drug development in the West and so far (2015 Life Sciences Outlook India, website, <http://www2.deloitte.com>).

In recent years, Joint ventures, alliances and licensing agreements between foreign and domestic companies have increased R&D investment. Combined with India's low research cost, it has helped to ensure affordability for some sophisticated drugs. For example, US-based Gilead Sciences agreed to a technology-transfer deal allowing seven Indian generics companies to produce generic versions of Solvadi, its hepatitis-C treatment.

The issuing of India's first-ever compulsory license in 2012 and several long-running court cases centering on how the stringent Patents Act defines "innovation", however, have acted as a disincentive for R&D investment. In its Special 301 report published in April 2015, the Office of the US Trade Representative retained India on its priority watch list.

India has been a preferred location in Asia for clinical trials, owing to low costs, a large patient pool and trained medical staff. However, a high

number of deaths during clinical trials triggered the government to tighten regulations in 2012. The number of trials approved came down from 262 in 2012 to just 107 in 2013. The regulations have since been amended, raising trial approvals to 150 in 2014, but continue to cause controversy.

Indian government has invested US \$ 1.1 billion in the Public-Private Partnership fund to support R&D in sectors such as vaccines, drugs and pharmaceuticals, solar energy, super-computing and electronic hardware. Venture Capital Fund of \$ 640 million will be earmarked by the government to boost drug discovery and strengthen pharma infrastructure. The approval process of drugs has been simplified by the government authorities and approval time for new facilities has been significantly reduced so as to enable the Indian pharmaceutical companies to compete with global players. For instance, NOC for export licence will be issued in two weeks instead of 12 weeks earlier. The government through its Export Promotion Capital Goods (EPCG) Scheme is providing support through zero duty for technology upgrades. There are plans from the government to relax FDI norms.

FUTURE GROWTH

As per the Industry Report, Healthcare: India, October 2015, The Economist Intelligence Unit, India's pharmaceutical sales were an estimated US \$ 20 billion in 2015. They are forecast to rise at an average of 12.43 % annually in 2015-19 to reach US \$ 32.01 billion. This growth will be driven by increasing personal incomes and the escalation of chronic diseases.

India gained its foothold on the global scene with its innovatively engineered generic drugs and

APIs, and it is now seeking to become a major player in outsourced clinical research as well as contract manufacturing and research. India accounts for 20% of global exports in generics (cf. Pharmaceuticals March 2015, website, <http://www.ibef.org>).

Exports through generics are expected to maintain strong growth in 2015-19, particularly if India manages to secure a free-trade agreement (FTA) with the EU or completes negotiations for a Regional Comprehensive Economic Partnership in Asia. India is already close to signing an FTA with the Eurasian Economic Union, comprising Russia, Belarus, Kazakhstan and Armenia. India is also a major supplier to emerging markets. The Argentinian government opened up its US\$6bn pharmaceutical sector to Indian drug makers in August 2014. The move is expected to provide a major boost to Indian drug companies, as only 8% of their exports go to Latin American markets.

However there is the attendant risk of the currency depreciation of Russia & CIS, Venezuela etc that would curtail the value growth of the exports to these countries.

To make the future happen, Indian Pharmaceutical companies have an advantage because of their cost efficiency, diversified portfolio, economic drivers and policy support. The cost efficiency is boosted through low cost of production and R&D (60% lower than US and 50% lower than Europe). The diversified portfolio is accounted by more than 500 APIs manufactured, 49% of all DMFs registered in US and over 60000 generic brands across 60 therapeutic categories. The economic drivers of India in terms of increasing economic prosperity,

increasing penetration of health insurance and chemists in rural India will provide a fillip to the pharmaceutical industry. Lastly the policy support from the Indian government through its 'Pharma Vision 2020' will aim at making India a global leader in end-to-end drug manufacture.

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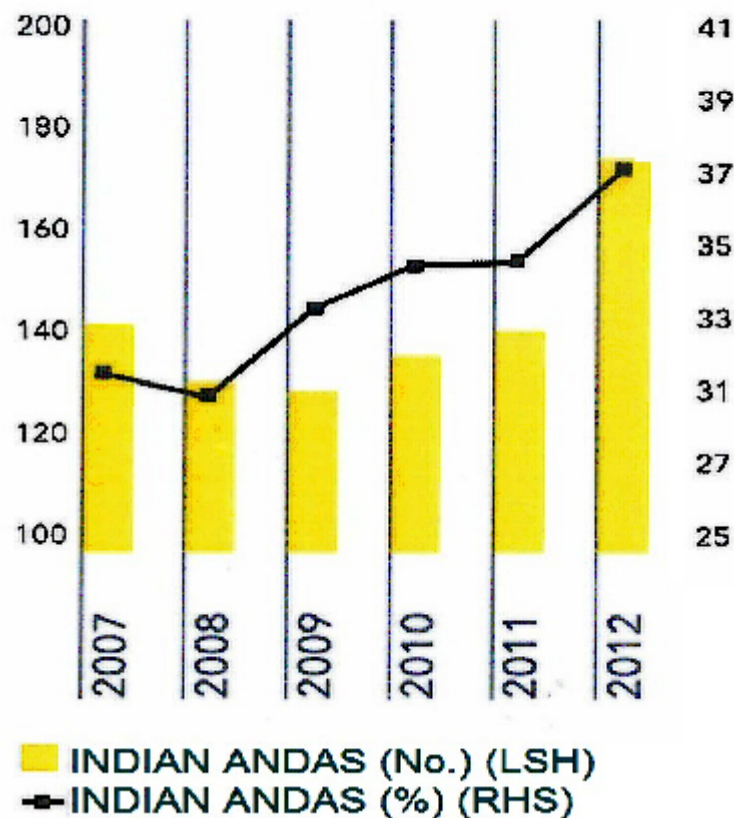
NOTES

ANDA – Abbreviated New drug Application
 API – Active Pharmaceutical Ingredient
 CAGR – Compounded Annual Growth rate
 DMF – Drug Master File
 DPCO – Drug Price Control Order
 IT – Information Technology

MNC – Multinational Company
 NPPA – National Pharmaceutical Pricing Authority
 OTC – Over the counter drugs
 UNICEF – United Nations Children education Fund
 WHO – World Health Organization
 WTO – World Trade Organization

Exhibit 1: Exhibit of ANDA Approvals

INDIAN ANDAS APPROVED AS A % OF TOTAL



Source: Management Discussion and Analysis based on the Company's consolidated IFRS financial statements from Dr Reddy's Laboratories Ltd Annual Report for FY 2015

Exhibit 2: Biotech in India**Relation between Biotech and Pharmaceuticals**

The difference between biotechnology and pharmaceuticals remains fairly defined in India, unlike in other countries. Bio-tech there still plays the role of pharmaceutical's little sister, but many outsiders have high expectations for the future. India accounted for 2% of the \$41 billion global biotech market and in 2003 was ranked 3rd in the Asia-Pacific region and 11th in the world in number of biotech companies. In 2004-5, the Indian biotech industry saw its revenues grow 37% to \$1.1 billion. The Indian biotech market is dominated by bio pharmaceuticals; 75% of 2004-5 revenues came from bio-pharmaceuticals, which saw 30% growth. Of the revenues from bio-pharmaceuticals, vaccines led the way, comprising 47% of sales. Biologics and large-molecule drugs tend to be more expensive than small-molecule drugs, and India hopes to sweep the market in bio-generics and contract manufacturing as drugs go off patent and Indian companies upgrade their manufacturing capabilities (cf. Viral Shah, October 2012).

The Indian bioeconomy grew to \$4.3 billion at the end of fiscal 2013, up from \$530 million in fiscal 2003, according to BioSpec-trum/ABLE survey, a widely read trade publication on Indian biotechnology. Though it's grown over the past decade at a compounded annual average rate of about 20 percent, growth has slowed in recent years. In the fiscal year ending March 31, 2013, the industry as a whole grew at a rate of 15 percent. The bio-pharmaceutical sector (including vaccines, biosimilars, medical devices, and stem cells) is the Indian biotechnology industry's biggest source of revenues, generating more than 63 percent of the industry's total revenues in fiscal 2013. The biopharmaceutical sector with the related bioservices sector (including contract research, contract manufacturing, and outsourced clinical trials), together represent a combined 82 percent of the industry's total revenues in fiscal 2013.

India, long associated with its strengths in generic drug and active pharmaceutical ingredient manufacturing, is also demonstrating that it is capable of creating innovative biologics. India's biotechnology industry began in 1978 with the founding of Biocon, its first biotechnology company. Biocon has now more than 7,100 employees and \$344.5 million in revenue,

The emerging area of biosimilars promises to increase access and affordability to life-improving and life-savings medicines in India, as well as provide a global growth opportunity for Indian bio-pharmaceutical companies. Biosimilars are copies of innovative biologics no longer protected by patents. Unlike generic versions of small molecule drugs that are chemically synthesized, biologics are derived from living organisms. As a result, biosimilars can be functionally equivalent to, but not identical copies, of the innovator drug. The emerging market for biosimilars is attracting not only leading Indian biopharmaceutical companies, but generic drugmakers as well. Biocon, Serum Institute of India, Reliance Life Sciences, Dr. Reddy's Lab, Intas, Shantha Biotech, Wockhardt, and Cipla are among the Indian companies active in the area. More than 20 biosimilars in India are

Exhibit 2 (Cont.)

marketed by the Indian bio-pharmaceutical companies (cf. Accelerating Growth: Forging India's Bioeconomy June 2014, website, <http://www.ableindia.in>).

As per the survey of Biospectrum (June 2013), the top 20 Biotechnology companies in India are as shown below

Rank	Company
1	Serum Institute of India
2	Biocon
3	Nuziveedu Seeds Private Limited
4	Novo Nordisk
5	Syngene International
6	Reliance Life Sciences
7	Eli Lilly and Company
8	Bharat Serums
9	Biological E. Limited
10	Fortis Clinical Research
11	Novozymes South Asia
12	Ankur Seeds
14	Indian Immunologicals Limited
15	GlaxoSmithKline Pharmaceuticals Ltd
13	Bharat Biotech International
16	Tulip Group
17	Hafkine Biopharmaceutical
18	Mahyco
19	Advanced Enzymes
20	Raasi Seeds

Exhibit 2 (Cont.)

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Exhibit 3: Top 10 Companies by Revenues

Figures of 31st March 2015

Company	Total Operating Revenue in INR Thousands	Operating Profit (EBIT) in INR Thousands	Net Profit (Loss)	Return on Assets (ROA) (%)	Return on Equity (ROE) (%)	Price per Earning (%)	Earnings per Share	Price Reference Date
Sun Pharmaceutical Industries Ltd.	275,165,000	67,413,500	45,393,800	9.26	15.93	54.2	18.86	10/30/2015
Dr. Reddy's Laboratories Ltd.	150,248,000	27,496,000	23,364,000	12.56	23.71	25.46	136.99	10/30/2015
Ranbaxy Laboratories Ltd.(2014)	132,851,980	-2,377,730	-10,852,520	-7.76	-32.02	N/A		
Lupin Ltd.	127,700,100	33,299,300	24,032,400	18.29	27.01	37.59	53.4	10/30/2015
Aurobindo Pharma Ltd.	121,857,100	23,118,900	15,757,700	12.2	30.41	45.22	26.98	10/30/2015
Cipla Ltd.	113,865,800	16,993,000	11,807,700	7.51	10.75	48.37	14.7	10/30/2015
Cadila Healthcare Ltd.	86,432,000	14,865,000	11,506,000	12.72	26.03	30.95	56.2	10/30/2015
Dabur India Ltd.	78,503,600	12,284,000	10,658,300	17.45	31.61	43.75	6.07	10/30/2015
Glenmark Pharmaceuticals Ltd.	66,516,470	7,844,330	4,752,400	4.93	15.84	46.67	16.84	10/30/2015
Jubilant Life Sciences Ltd.	58,262,470	3,764,250	-577,640	-0.67	-2.35	-42.05	-3.63	10/30/2015
Piramal Enterprises Ltd.	51,124,300	33,084,600	28,499,500	13.61	24.22	5.26	165.15	10/30/2015

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Exhibit 4: Top 10 Companies By Marketcapitalization

Top 10 Publicly Listed pharmaceutical companies in India by Market Capitalization as of July 2015.

Rank	Company	Market Capitalization 2015 (INR Crores)
1	Sun Pharmaceutical	2,17,636
2	Lupin Ltd	84,193
3	Dr. Reddy's Laboratories	63,779
4	Cipla	52,081
5	Aurobindo Pharma	42,454
6	Cadila Healthcare	38,677
7	Glenmark Pharmaceuticals	29,047
8	GlaxoSmithKline Pharmaceuticals Ltd	28,587
9	Divis Laboratories	24,847
10	Torrent Pharmaceuticals	22,320

<http://listz.in/top-10-pharma-companies-in-india.html>, Accessed on 8th November 2015