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# EXECUTIVE SUMMARY

## Leading pharma producer
- Indian pharmaceutical sector accounts for about 2.4 per cent of the global pharmaceutical industry in value terms and 10 per cent in volume terms.

## One of the highest exports
- India accounts for 20 per cent of global exports in generics. India’s pharmaceutical exports stood at US$ 16.8 billion in 2016-17 and are expected to reach US$ 20 billion by 2020.

## Among fastest growing industries
- The country’s pharmaceutical industry is expected to expand at a CAGR of 12.89 per cent over 2015–20 to reach US$ 55 billion.

## Rapidly growing healthcare sector
- Indian healthcare sector, one of the fastest growing sectors, is expected to advance at a CAGR of 17 per cent to reach US$ 250 billion over 2008–20.

## High potential generics market
- The generics market stood at US$ 26.1 billion in 2016. India’s generics market has immense potential for growth.

## Robust growth in Biotech industry
- By 2024-25, India’s biotech industry is estimated to increase to US$ 100 billion from US$ 11 billion in FY 2015-16.

**Notes:** CAGR - Compound Annual Growth Rate  
**Source:** SlIndia Biz, PWC, Department of Industrial Policy and Promotion, Deloitte, PharmaBiz, Frost and Sullivan Report on Indian Pharmaceutical Market, McKinsey, Aranca Research
ADVANTAGE INDIA
Advantage India

- Low cost of production and R&D boosts efficiency of Indian pharma companies
- India’s cost of production is approximately 60 per cent lower than that of the US and almost half of that of Europe
- Due to lower cost of treatment, India is emerging as a leading destination for medical tourism
- India’s ability to manufacture high quality, low priced medicines, presents a huge business opportunity for the domestic industry.

- Economic prosperity to improve drug affordability
- Increasing penetration of health insurance
- With increasing penetration of chemists, especially in rural India, OTC drugs will be readily available

- Accounts for over 10 per cent of the global pharmaceutical production
- Over 60,000 generic brands across 60 therapeutic categories. Manufactures more than 500 different APIs
- More than half of all 345 drug master filings (DMFs) in the USA in Q4 2016 and Q1 2017 were from India
- Government unveiled ‘Pharma Vision 2020’ aimed at making India a global leader in end-to-end drug manufacturing
- Reduced approval time for new facilities to boost investments
- In this sector, 100 per cent FDI is allowed under automatic route

Note: 2020 revenue forecasts are estimates of McKinsey, API - Active Pharmaceutical Ingredients, F – Forecast, OTC - Over-The-Counter
Source: PwC, McKinsey, Pharmaceuticals Exports Promotion Council of India
MARKET OVERVIEW
STRUCTURE OF PHARMA SECTOR IN INDIA

- Active Pharmaceutical Ingredients/ Bulk drugs
  - Branded
  - Generics

- Formulations
  - Branded
    - Cardiovascular
    - Anti-Diabetes
    - Gastro-Intestinal
    - Neurological
  - Generics
    - Anti-infectives
    - Respiratory
    - Pain
    - Gynecology

Source: Dun and Bradstreet, Aranca Research
### EVOLUTION OF INDIAN PHARMACEUTICAL SECTOR

<table>
<thead>
<tr>
<th>Period</th>
<th>Events</th>
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<tbody>
<tr>
<td></td>
<td>Several domestic companies start operations</td>
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<tr>
<td></td>
<td>Development of production infrastructure</td>
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<tr>
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<td>Export initiatives taken</td>
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<tr>
<td>1990-2010</td>
<td>Increased patent filings by pharma players</td>
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<td></td>
<td>Likely adoption of newer sales models such as channel management, KAM and CSO</td>
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<td></td>
<td>The National Pharmaceutical Pricing Policy, 2012 (NPPP-2012)</td>
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<tr>
<td>2010-2015</td>
<td>2013: New Drug Pricing Control Order issued by Directorate of Food and Drugs this will reduce the prices of drugs by 80 per cent</td>
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<td>2014: 100 per cent FDI allowed in medical device industry. The investment will be routed through automatic route</td>
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<td></td>
<td>Leading Indian pharma companies are raising funds aggressively to fund acquisition in domestic as well as international market to increase their product portfolios</td>
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<tr>
<td></td>
<td>2015: India has 10,500 manufacturing units and over 3,000 pharma companies</td>
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<td>National Health Policy Draft 2015 to increase expenditure in health care sector</td>
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<tr>
<td>2016 onwards</td>
<td>In Union Budget, 2016, FDI increased to 74 per cent in existing pharmaceutical companies</td>
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<tr>
<td></td>
<td>The Government of India unveiled ‘Pharma Vision 2020’ aimed at making India a global leader in end-to-end drug manufacture. Approval time for new facilities has been reduced to boost investments.</td>
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**Notes:** KAM - Key Account Management, CSO - Contract Sales Organisation  
**Source:** Aranca Research
API IS THE LARGEST SEGMENT OF THE INDIAN PHARMACEUTICALS SECTOR

**Active Pharmaceutical Ingredients (APIs)**
- India has become the third largest global generic API merchant market by 2016, with a 7.2 per cent market share.
- The Indian pharmaceutical industry accounts for the 2nd largest number of Abbreviated New Drug Applications (ANDAs), is the world’s leader in Drug Master Files (DMFs) applications with the US.

**Contract Research and Manufacturing Services (CRAMS)**
- Fragmented market with more than 1,000 players.
- CRAMS industry is estimated to reach US$ 18 billion in 2018 and expected to witness a strong growth at a CAGR of 18-20 per cent between 2013-2018.

**Formulations**
- Largest exporter of formulations in terms of volume, with 14 per cent market share and 12th in terms of export value.
- Domestic market size currently valued at US$ 11.2 billion.
- Double-digit growth expected over the next five years.

**Biosimilars**
- The government plans to allocate US$ 70 million for local players to develop Biosimilars.
- The domestic market is expected to reach US$ 40 billion by 2030.

Notes: OTC - Over The Counter
The Indian pharmaceuticals market witnessed growth at a CAGR of 5.64 per cent, during 2011-16, with the market increasing from US$ 20.95 billion in 2011 to US$ 27.57 billion in 2016.

By 2020, India is likely to be among the top three pharmaceutical markets by incremental growth and 6th largest market globally in absolute size.

India’s cost of production is significantly lower than that of the US and almost half of that of Europe. It gives a competitive edge to India over others.

Increase in the size of middle class households coupled with the improvement in medical infrastructure and increase in the penetration of health insurance in the country will also influence in the growth of pharmaceuticals sector.

Note: F - Forecast, CAGR - Compound Annual Growth Rate  
Source: Department of Pharmaceuticals, PwC, McKinsey
ROBUST GROWTH IN BIOTECH INDUSTRY

- Growing at a faster pace, in comparison with the previous years, the Indian biotech industry witnessed YoY growth of 57.14 per cent in FY16; the total industry size stood at US$ 11 billion by FY16 and is estimated to have reached US$ 11.6 billion by FY17.

- Fast-paced growth is likely to continue; the industry is driven by a range of factors such as growing demand, intensive R&D activities and strong government initiatives.

- The Indian biotech industry comprises of around 800 companies. In order to achieve market size of US$ 100 billion by 2025, the industry has requested Government of India to invest US$ 5 billion to initiate research activities and develop infrastructure as well as human capital.

- Clinical capabilities are developing fast and the country is becoming a popular destination for clinical trials, contract research & manufacturing activities.

- India biotech start-ups attracted investments worth US$ 2.8 billion between 2012 and February 2017.

- Recent studies have revealed that India has about 7.6% of total mammal species, 12.6% of bird species, 11% of fish and approximately 6% of the total flowering plants of the world. The country’s large population base is a huge contributor to the continuing growth of the industry.

Note: CAGR - Compound Annual Growth Rate, FY16: As of April 2016., F-Forecast
The bio-pharmaceutical segment accounted for largest revenue share of 64 per cent in India biotech industry, during FY16.

India is becoming a leading destination for clinical trials, contract research & manufacturing activities which is leading to the growth of bio services sector.

In FY16, the bio-services & bio-agri segments accounted for 18 per cent & 14 per cent of the biotech industry, respectively.

Serum Institute of India is the largest biopharma company in the country and accounts for approximately 22 per cent of biopharma market.

In May 2017, the Department of Biotechnology held a strategy meet in Delhi to discuss the future scenario of the Biotechnology industry in the country. The meet highlighted the aim of reaching US$100 billion mark by 2025, research and development of cutting edge technologies and other important aspects.

Source: ASSOCHAM, Makeinindia, Aranca Research
GENERIC DRUGS FORM THE LARGEST SEGMENT OF INDIAN PHARMA MARKET

- With 70 per cent of market share (in terms of revenues), generic drugs form the largest segment of the Indian pharmaceutical sector.
- India supplies 20 per cent of global generic medicines market exports, in terms of volume, making the country the largest provider of generic medicines globally and expected to expand even further in coming years.
- Over the Counter (OTC) medicines and patented drugs constitute 21 per cent and 9 per cent, respectively, of total market revenues of US$ 20 billion.
- Indian pharma drug manufacturer Aurobindo Pharma has received the USFDA approval to manufacture oral suspension, which is used for controlling serum phosphorus in patients with chronic kidney disease on dialysis. This drug is a therapeutic equivalent generic version of Genzyme’s Renvela oral suspension.

Source: Business Monitor International, FCCI Indian Pharma Summit 2014-15
ANTI-INFECTIVE DRUGS LEAD THE PHARMA MARKET

- Anti-infective drugs command the largest share (16 per cent) in the Indian pharma market.
- The cardiovascular segment represents 13 per cent of the market share; its contribution is likely to rise due to the growing number of cardiac cases in India.
- Gastro-intestinal contributes around 11 per cent of the total value of pharma industry in India. With increasing number of research in gastroenterology, segment is going to grow at significant pace in coming years.
- Top five segments contribute nearly 57 per cent to the total drugs consumption.

**Source:** All Indian Origin Chemists and Distributors, Department of Pharmaceuticals
Indian pharma companies are capitalising on export opportunities in regulated and semi-regulated markets.

In FY17, India exported pharmaceutical products worth US$ 16.8 billion, with the number expected to reach US$ 40 billion by 2020.

Indian drugs are exported to more than 200 countries in the world, with the US as the key market.

India is the world’s largest provider of generic medicines; the country’s generic drugs account for 20 per cent of global generic drug exports (in terms of volumes).

### Trade data of Indian pharma sector (US$ billion)

<table>
<thead>
<tr>
<th></th>
<th>FY12</th>
<th>FY13</th>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
<th>FY17</th>
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<td>16.9</td>
<td>16.8</td>
</tr>
<tr>
<td>Import</td>
<td>3.6</td>
<td>4.4</td>
<td>4.6</td>
<td>3.7</td>
<td>3.7</td>
<td>3.7</td>
</tr>
</tbody>
</table>

**Note:** CAGR - Compound Annual Growth Rate, 1 – Import from April 2015-December 2015.

**Source:** Department of Commerce India, Department of Pharmaceuticals, India Business News, BMI
PHARMA GIANTS RAISE THEIR R&D SPENDING

- In FY17, highest expenditure on research and development has been done by Sun Pharma, followed by Lupin

- Sun Pharma’s R&D spending is 7.6 per cent of the total sales in the FY17, which grew at a CAGR of 38.3 per cent from FY11 to FY17.

- Sun Pharma’s R&D plan includes developing more products through expanded R&D team for global markets, focussing on more complex products across multiple dosage forms and investments in speciality pipeline

- Lupin’s R&D spending was 13.5 per cent of sales in FY17, with major thrust on oral solids (45 per cent of R&D spend)

Note: R&D - Research and Development 1 – Data is up to Dec 2015, 2 – Data is up to September 2015, 3 - Data is for FY15
Source: Company websites
## Porter’s Five Forces Framework Analysis

### Threat of Substitutes
- Threat to substitute products is low; however, homeopathy and Ayurvedic medicines can act as substitute

### Bargaining Power of Suppliers
- Difficult-to-manufacture APIs such as steroids, sex hormones and peptides give bargaining power to suppliers. However, generic APIs do not have much of that power

### Competitive Rivalry
- Growth opportunities for pharma companies are expected to grow in next few years, with many drugs going off-patent in the US and other countries, thus increasing competition
- Indian pharma companies will face competition from big companies, backed by huge financial muscle

### Threat of New Entrants
- Strict government regulations thwart entry of new players
- Difficult to survive because of high gestation period

### Bargaining Power of Buyers
- Generic drugs offer a cost-effective alternative to drugs innovators and significant savings to customers
- Biosimilars offer significant cost saving for insurance companies in India

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**Source:** Aranca Research
RECENT TRENDS
AND STRATEGIES
Indian pharma companies spend 8-13 per cent of their total turnover on R&D. 

Expenditure on R&D is likely to increase due to the introduction of product patents; companies need to develop new drugs to boost sales.

India’s pharmaceutical export market is thriving due to strong presence in the generics space.

Pharmaceuticals exports from India stood at US$ 16.8 billion in FY 2016-17.

Multinational companies are collaborating with Indian pharma firms to develop new drugs.

Cipla formed an exclusive partnership with Serum Institute of India to sell vaccines in South Africa.

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

Cipla, the largest supplier of anti-malarial drugs to Africa, sets up a US$ 32 billion plant in Africa for the production of anti-retroviral and anti-malarial drugs.

Notes: R&D - Research and Development

Source: Aranca Research
### PPP in R&D
- Indian Government invited multi-billion dollar investment with 50 per cent public funding through its public private partnership (PPP)
- In April 2017, Clavita Pharma Pvt. Ltd., signed an MoU with GITAM University for research activities, exchange of visits between professionals of Clavita and GITAM University faculty, organise joint meetings and training programmes

### Draft Patents (Amendment) Rules, 2015
- The time limit given for submitting the application for grant has been reduced to 4 months from 12 months, providing an extension of 2 months

### Product Patents
- The introduction of product patents in India in 2005 gave a boost to the discovery of new drugs. India reiterated its commitment to IP protection following the introduction of product patents
- In December 2016, Suven Life Sciences was granted product patent for the treatment of neurodegenerative diseases

### Less time for approval
- In order to compete with global players in pharmaceutical industries, approval process of drugs have been simplified by the authorities and approval time for new facilities has been drastically reduced

**Notes:**
- R&D - Research and Development
- Source: Aranca Research
NOTABLE TRENDS IN THE INDIAN BIOTECH SECTOR

**Remarkable global positioning**
- India is among the top 12 biotech destinations in the world
- India ranks 2nd in Asia, after China
- India is the world’s largest producer of recombinant Hepatitis B vaccine

**Pharma companies focusing on biotech**
- Ranbaxy, Cadila Healthcare, Lupin, Wockhardt & Dr Reddy’s are among the major Indian pharmaceutical companies operating in the bio-pharma segment

**Global companies setting up base**
- US based DiabetOmics Inc., medical diagnostic company has raised US$ 4 million from Ventureast & US$1 million from KI Varaprasad Reddy for driving manufacturing & commercialisation activities in India.

**Biosimilars and molecular diagnostic remain strongholds**
- Growth in the sector is anticipated to come from the country's strong position in biosimilars & molecular diagnostics as well as personalised medicine (where export & domestic trends look promising). In 2016, development of biosimilars has been speeding up via Glycosylation Control Technology.

**Growth in Genetically Modified crops**
- According to International Service for the Acquisition of Agri-Biotech Applications, India has the 4th largest area covered under genetically modified crops
- In India, 11.57 million hectares of area is covered under genetically modified crops which is majorly dominated by Bt cotton.
- After Bt cotton, Bt brinjal, covering an area of 7.6 million hectares, is potentially benefitting farmers as well as consumers.

*Source: Ministry of External Affairs, Aranca Research, Indian Law Offices*
STATES HOSTING KEY PHARMACEUTICAL VENTURES

- **Sun Pharma’s API manufacturing facility at Toansa, Malanpur, Guwahati, Ankleshwar, Panoli, Ahmednagar, Maduramthakam**
- **Wockhardt’s facility covers an area of 40,468 sq meters in Baddi, Himachal Pradesh**
  - Baddi is also home to Cipla’s formulations manufacturing facility
- **Dholka in Gujarat houses a major manufacturing facility of Cadila, which spans over 100 acres**
- **Mandideep in Madhya Pradesh is the manufacturing hub for Lupin’s cephalosporin and ACE-Inhibitors**
  - Cipla has a formulations manufacturing plant at Indore
- **Lupin has an USFDA-approved plant at Tarapur, Maharashtra. The facility forms the core of Lupin’s fermentation capabilities**
- **Piramal’s USFDA-approved manufacturing plant in Hyderabad**
  - GlaxoSmithKline has a major facility at Rajahmundry, Andhra Pradesh

*Source: Company websites*
## STRATEGIES ADOPTED

### Cost leadership
- Sun Pharma is trying to achieve cost leadership by
  - Vertical Integration: Complex API, which require special skills and technology, are developed and scaled up for both API and dosage forms

### Differentiation
- Players in the sector are trying to strengthen their position in the market and expand themselves by investing heavily in R&D activities, such as:
  - Dr Reddy’s acquired OctoPlus N.V, a Netherlands-based company, to get access to the Poly Lactic-Co-Glycolic Acid (PLGA) technology for the formulation of complex injectables
  - In May 2017, Lupin has launched erectile dysfunction drug named as Cialis. The company has quoted the market worth for US$ 58.01 million in India. This tablet is available in 20 mg and 10 mg strengths.

### Focus on new markets
- Lupin is making inroads into new markets such as Latin America, Russia and other East European countries
- Sun Pharma decided to focus on specialty and chronic therapies such as neurology, oncology, dermatology segments
- In January 2017, a subsidiary of Biocon in Malaysia received an order to supply insulin worth US$ 68.42 million

### Mergers and Acquisitions in Biotech
- In 2015, Dr. Reddy’s Laboratories acquired UCB (India) for US$ 131.02 million. The acquisition has been done for established brands of UCB in India, Nepal, Sri Lanka & Maldives
- As of October 2016, Advanced Enzyme Technologies, a biotech based firm in Mumbai signed an agreement with JC Biotech - Active Pharmaceutical Ingredient (API) maker in Hyderabad, to acquire 70 per cent stake in the company.

**Notes:** R&D – Research and Development  
**Source:** Company websites, Ministry of External Affairs, RBI
GROWTH DRIVERS
SUPPLY-SIDE DRIVERS OF INDIAN PHARMA SECTOR

- Cost advantage
- Skilled manpower
- India a major manufacturing hub for generics
- In FY16, 546 sites registered at USFDA. India accounts for 22 per cent of overall USFDA approved plants
- Increasing penetration of chemists

Demand-side Drivers

- Increasing fatal diseases
- Accessibility of drugs to greatly improve
- Increasing penetration of health insurance
- Growing number of stress-related diseases due to change in lifestyle
- Better diagnostic facilities

Policy Support

- National Health Policy 2015, which focuses on increasing public expenditure on healthcare segment
- Reduction in approval time for new facilities
- Plans to set up new pharmaceutical education and research institutes
- Exemptions to drugs manufactured through indigenous R&D from price control under NPPP-2012

Notes: BPL - Below Poverty Line, USFDA - United States Food and Drug Administration, NPPP-2012 - The National Pharmaceutical Pricing Policy, 2012
Source: Pharmaceutical Export Promotion Council
### SUPPLY-SIDE DRIVERS OF INDIAN PHARMA SECTOR

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| Launch of patented drugs  | - Following the introduction of product patents, several multinational companies are expected to launch patented drugs in India  
- Growth in the number of lifestyle diseases in India could boost the sale of drugs in this segment  
- High Court allowing to export patent drugs, to foreign players in the Indian market. |
| Medical infrastructure    | - Pharma companies have increased spending to tap rural markets and develop better medical infrastructure  
- Hospitals’ market size is expected to increase by US$ 200 billion by 2024  
- In October 2016, the government gave a nod to set up the country’s first medical devices manufacturing park in Chennai |
| Scope in generics market  | - India’s generic drugs account for 20 per cent of global exports in terms of volume, making it country the largest provider of generic medicines globally. The generics drug market accounts for around 70 per cent of the India pharmaceutical industry and it is expected to reach US$ 27.9 billion by 2020 |
| Over-The-Counter (OTC) drugs | - India’s OTC drugs market is expected to rise at a CAGR of 16.3 per cent to US$ 6.6 billion over 2008–16 and is further expected to grow on the account of increased penetration of chemists, especially in rural regions |
| Patent Expiry             | - About 120 drugs are expected to go off-patent over the next 10 years; with expected worldwide revenue between US$ 80 to 250 billion |

**Notes:** CAGR - Compound Annual Growth Rate  
**Source:** BMI, India Biz
COST EFFICIENCY AND COMPETENCY CONTINUE TO BE INDIA’S FORTE

- India’s cost of production is nearly 33 per cent lower than that of the US
  - Labour costs are 50–55 per cent cheaper than in Western countries
  - The cost of setting up a production plant in India is 40 per cent lower than in Western countries
- Cost-efficiency continues to create opportunities for Indian companies in emerging markets and Africa
- India has a skilled workforce as well as high managerial and technical competence in comparison to its peers in Asia
- India has the 2nd largest number of USFDA-approved manufacturing plants outside the US
- India has 2,633 FDA-approved drug products
- India has over 546 USFDA-approved company sites, the highest number outside the US

Note: USFDA - United States Food and Drug Administration
Source: Deloitte, BMI, Financial Express
DEMAND DRIVERS OF INDIAN PHARMA SECTOR

**Accessibility**
- Over US$ 200 billion to be spent on medical infrastructure in the next decade
- New business models expected to penetrate tier-2 and 3 cities
- Over 160,000 hospital beds expected to be added each year in the next decade
- India’s generic drugs account for 20 per cent of global exports in terms of volume, making the country the largest provider of generic medicines globally

**Acceptability**
- Rising levels of education to increase acceptability of pharmaceuticals
- Patients to show greater propensity to self-medicate, boosting the OTC market
- Acceptance of biologics and preventive medicines to rise
- A skilled workforce as well as high managerial and technical competence
- Surge in medical tourism due to increased patient inflow from other countries

**Affordability**
- Rising income could drive 73 million households to the middle class over the next 10 years
- Over 650 million people expected to be covered by health insurance by 2020
- Government-sponsored programmes set to provide health benefits to over 380 million BPL people by the end of 2017
- The government plans to provide free generic medicines to half the population at an estimated cost of US$ 5.4 billion

**Epidemiological factors**
- Patient pool expected to increase over 20 per cent in the next 10 years, mainly due to rise in population
- New diseases and lifestyle changes to boost demand
- Increasing prevalence of lifestyle diseases

**Note:** RSBY - Rashtriya Swasthya Bima Yojna
**Source:** ICRA Report on Indian Pharmaceutical Sector, Pharmaceutical Industry: Developments in India- Deloitte, Mckinsey Pharma Report 2020

For updated information, please visit www.ibef.org
ANTICIPATED STEEP GROWTH IN EXPENDITURE ON PHARMACEUTICALS

- During 2010-16, total healthcare spending is expected to increase at a CAGR of 12.70 per cent to US$ 133 billion in 2016.
- In May 2017, Hyderabad-based pharmaceutical firm Hetero Drugs Ltd. launched a velpatasvir and sofosbuvir combination drug for the treatment of Hepatitis-C in India, after getting full compliance from the regulatory authorities.

**Healthcare expenditure (US$ billion)**

- **2010**: 64.9
- **2011**: 71.4
- **2012**: 70.6
- **2013**: 74.80
- **2014**: 79.80
- **2015**: 91.20
- **2016**: 133.00

**Note:** CAGR - Compound Annual Growth Rate

**Source:** Deloitte, BMI, PWC
Growing per capita sales of pharmaceuticals in India offers ample opportunities for players in this market.

Per capita sales of pharmaceuticals expanded at a CAGR of 17.6 per cent to US$ 33 in 2016.

Economic prosperity would improve affordability for generic drugs in the market and improve per capita sales of pharmaceuticals in India.

**Note:** CAGR - Compound Annual Growth Rate

**Source:** BMI
## FAVOURABLE POLICY MEASURES SUPPORT GROWTH

| Reduction in approval time for new facilities | - Steps taken to reduce approval time for new facilities  
- NOC for export licence issued in two weeks compared to 12 weeks earlier |
| Collaborations | - MoUs with USFDA, WHO, Health Canada, etc. to boost growth in the Indian Pharma sector by benefiting from their expertise. In 2015, NIPER (Mohali) signed MoUs with pharmaceutical industry leaders Bharat Biotech, Dr Reddy, Cadila Healthcare, Sun Pharma and Panacea Biotech.  
- In 2016, Strides Arcolab and US-based Gilead Sciences Inc. entered into a licensing agreement for manufacturing and distributing Gilead Sciences’ cost-efficient TenofovirAlafenamide (TAF) product in order to treat HIV patients in developing economies |
| Support for technology upgrades and FDIs | - Government is planning to relax FDI norms in the pharmaceutical sector  
- In March 2017, the government to create a digital platform to regulate and track the sale of quality drugs, and it can be used by people living in the country as well as abroad |
| Industry infrastructure | - Under the Union Budget 2017-18, the government has announced to set up 1.5 lakh Health Care Centres and open 2 new AIIMS in Jharkhand and Gujarat. In 2016, the government has planned to set up 6 pharma parks at an investment of about US$ 27 million |
| Pharma Vision 2020 | - Pharma Vision 2020 by the government’s Department of Pharmaceuticals aims to make India a major hub for end-to-end drug discovery |
| Exceptions | - Full exemption from excise duty is being provided for HIV/AIDS drugs and diagnostic kits supplied under National AIDS Control Programme funded by the Global Fund to fight AIDS, TB and Malaria (GFATM)  
- The customs duties on the said drugs are also being exempted |

*Source: Union Budget 2015-16*
Government expenditure on health in the country increased from US$ 14 billion in 2008 to US$ 53 billion in 2016.

The expenditure is expected to expand at a CAGR of 18.1 per cent over 2008–16 to US$ 53 billion.

Under Union Budget 2017-18, new 5000 postgraduate seats were announced by the government, in medicine, to ensure availability of specialist doctors.

Medical technology park in Vishakhapatnam, Andhra Pradesh has already been set up with an investment of US$ 183.31 million. States like Himachal Pradesh, Gujarat, Telangana and Maharashtra are showing interest for making investments in these parks.

German technical services provider TUV Rheinland’s Indian subsidiary has partnered with Andhra Pradesh MedTech Zone (AMTZ) to create an infrastructure for Electro-Magnetic Interference (EMI/EMC) at an investment of US$ 12.64 million over a course of four to five years.

**Note:** CAGR - Compound Annual Growth Rate

**Source:** Business Monitor International, Union Budget 2015-16
The share of private sector spending increased from US$ 36 billion in 2008 to US$ 80 billion in 2016.

Supported by favourable government policies, the private sector’s share is expected to reach US$ 80 billion by 2016.

With increasing urbanisation and problems related to modern-day living in urban settings, currently, about 50 per cent of spending on in-patient beds is for lifestyle diseases; this has increased the demand for specialised care.

To standardise the quality of service delivery, control cost and enhance patient engagement, healthcare providers are focusing on the technological aspect of healthcare delivery.

Digital Health Knowledge Resources, Electronic Medical Record, Mobile Healthcare, Electronic Health Record, Hospital Information System and PRACTO are some of the technologies gaining wide acceptance in the sector.

A new trend is emerging as luxury offerings in healthcare sector. More than essential requirements, healthcare providers are making offerings of luxurious services. For example: pick and drop services for patient by private helicopters and luxurious arrangements for visitors to patient in hospital.

Source: Business Monitor International
STRONG POLICY SUPPORT CRUCIAL TO THE SECTOR’S DEVELOPMENT

| Programme for SC/ST and Rural Population | ▪ Training & demonstration programme in various biotechnology based activities were undertaken to empower the population resulting in socioeconomic upliftment |
| Biotechnology Based Programme for Women | ▪ Programme on application of biotechnology for women was done to provide employment, skill development, awareness generation, health improvement & socio-economic upliftment of the women population |
| Single-window clearance | ▪ As per NBDS, a proposal has been made to set up the National Biotechnology Regulatory Authority (NBRA) to provide a single-window clearance mechanism for all bio-safety products to create efficiencies & streamline the drug approval process |
| Biotechnology Industry Research Assistance Council | ▪ BIRAC has been established to promote research & innovation capabilities in India’s biotech industry. The council will provide funding to biotech companies for technology & product development.  
▪ BIRAC under Small Business Innovation Research Initiative (SBIRI) scheme supports innovations in biotechnology. |
| State Policy Support | ▪ The Andhra Pradesh government in 2015 formulated a new policy which covers the benefits for the following categories: Incubation Centres, Biotech manufacturing industries, Life Science Park, Life Science Knowledge Centre, Research & Development Centres.  
▪ The Tamil Nadu government announced a biotech policy in 2014 which aims to encourage new companies to operate in Tamil Nadu, thereby increasing the R&D & manufacturing activities in the sector  
▪ The Biotechnology Policy of Gujarat established in 2015, promises to provide financial incentives of up to US$3.81 million & capital assistance of up to US$7.63 million would be given to biotechnology parks & biotechnology companies. |

Note: BIRAC - Biotechnology Industry Research Assistance Council  
Source: “Biotechnology facilities,” Department of Biotechnology, Aranca Research
NATIONAL PHARMA POLICY TO BRING GREATER TRANSPARENCY

- Cost-based pricing is complicated and time-consuming than market-based pricing
- Market-based pricing is expected to create greater transparency in pricing information and would be available in public domain
- Prices of NLEM drugs linked to WPI

- Essentaility of drugs is determined by including the drug in National List of Essential Medicines (NLEM) (348 drugs at present)
- Promote rational use of medicines based on cost, safety and efficacy

Growth Drivers

- The regulation of prices of drugs on the basis of regulating the prices of formulations only
- Only finished medicines are to be considered essential which would prevent price control of APIs, which are not necessarily used for essential drugs

Source: National Pharmaceuticals Pricing Policy 2012; WPI – Wholesale Price Index
In Investments, JVs Infusing Superior Capabilities in Indian Firms ...

- Pharma, healthcare and biotech have witnessed significant increases in M&A activities over the years.
- Over the last three years, pharmaceuticals segment has accounted for more than 70 per cent of M&A deals.

<table>
<thead>
<tr>
<th>Date Announced</th>
<th>Indian company</th>
<th>Foreign company</th>
<th>Value (US$ million)</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>February 2017</td>
<td>Piramal</td>
<td>Mallinckrodt</td>
<td>170</td>
<td>Specialty products</td>
</tr>
<tr>
<td>July 2016</td>
<td>Continental Hospitals Ltd.</td>
<td>HH Healthcare Berhad</td>
<td>192.84</td>
<td>73.4% Stake</td>
</tr>
<tr>
<td>February 2016</td>
<td>Cipla</td>
<td>InvaGen Pharmaceuticals Inc. and Exelan Pharmaceuticals Inc.</td>
<td>550</td>
<td>100% Stake</td>
</tr>
<tr>
<td>November 2015</td>
<td>Famy Care Ltd</td>
<td>Mylan Inc – Mylan Laboratories Limited</td>
<td>750</td>
<td>100% Stake</td>
</tr>
<tr>
<td>October 2015</td>
<td>Nitin Lifesciences</td>
<td>Recipharm</td>
<td>109.8</td>
<td>75% stakes in equity</td>
</tr>
<tr>
<td>July 2015</td>
<td>Lupin</td>
<td>Temmler</td>
<td>Not disclosed</td>
<td>Acquisition</td>
</tr>
<tr>
<td>May 2015</td>
<td>Cadila Healthcare</td>
<td>Claris Lifesciences</td>
<td>556.8</td>
<td>To be acquired</td>
</tr>
<tr>
<td>July 2015</td>
<td>Lupin</td>
<td>Gavis and Novel Laboratories</td>
<td>880</td>
<td>Acquisition</td>
</tr>
<tr>
<td>April 2014</td>
<td>Sun Pharma</td>
<td>Ranbaxy</td>
<td>320</td>
<td>Acquisition</td>
</tr>
<tr>
<td>November, 2014</td>
<td>Curatio Healthcare</td>
<td>Sequoia Capital</td>
<td>15.8</td>
<td>Acquisition</td>
</tr>
<tr>
<td>July, 2013</td>
<td>Cipla</td>
<td>Cipla Medpro</td>
<td>512</td>
<td>Acquisition</td>
</tr>
<tr>
<td>January, 2013</td>
<td>GlaxoSmithkLine Consumer</td>
<td>GlaxoSmithkLine Plc.</td>
<td>1,088</td>
<td>Acquisition</td>
</tr>
<tr>
<td>September, 2011</td>
<td>Natco Pharma</td>
<td>Litha</td>
<td>NA</td>
<td>JV</td>
</tr>
<tr>
<td>May, 2010</td>
<td>Glenmark</td>
<td>Sanofi</td>
<td>615</td>
<td>JV</td>
</tr>
<tr>
<td>March, 2011</td>
<td>Dr Reddy's</td>
<td>Iso Ray</td>
<td>NA</td>
<td>Licensing rights</td>
</tr>
<tr>
<td>April, 2011</td>
<td>Sun Pharma</td>
<td>Merck</td>
<td>NA</td>
<td>Marketing</td>
</tr>
<tr>
<td>September, 2010</td>
<td>Piramal</td>
<td>Abbot</td>
<td>3,720</td>
<td>Business buyout</td>
</tr>
<tr>
<td>December, 2012</td>
<td>Shantha Biotech</td>
<td>Sanofi Aventis</td>
<td>783</td>
<td>Acquisition</td>
</tr>
</tbody>
</table>

Note: JV - Joint Venture
Source: BMI
## INVESTMENTS, JVs INFUSING SUPERIOR CAPABILITIES IN INDIAN FIRMS ... (2/2)

<table>
<thead>
<tr>
<th>Date Announced</th>
<th>Indian company</th>
<th>Foreign company</th>
<th>Value (US$ million)</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>March, 2017</td>
<td>Sun Pharma</td>
<td>Thallion Pharmaceuticals</td>
<td>19.77</td>
<td>Acquisition</td>
</tr>
<tr>
<td>January, 2017</td>
<td>Zydus Cadila</td>
<td>Zoetis</td>
<td>NA</td>
<td>Acquisition</td>
</tr>
<tr>
<td>December, 2014</td>
<td>Panacea Biotec Ltd</td>
<td>Apotex Inc</td>
<td>NA</td>
<td>JV</td>
</tr>
<tr>
<td>August, 2012</td>
<td>Strides Arcolab Ltd</td>
<td>Gilead Sciences Inc</td>
<td>NA</td>
<td>Licensing agreement</td>
</tr>
<tr>
<td>July, 2011</td>
<td>Ranbaxy</td>
<td>Gilead Sciences Inc</td>
<td>NA</td>
<td>Licensing agreement</td>
</tr>
<tr>
<td>August, 2013</td>
<td>Jubilant Biosys</td>
<td>Endo Pharmaceuticals</td>
<td>NA</td>
<td>Drug development</td>
</tr>
<tr>
<td>October, 2012</td>
<td>Piramal Healthcare Ltd</td>
<td>Fujifilm Diosynth Biotechnologies</td>
<td>NA</td>
<td>Drug development</td>
</tr>
<tr>
<td>March, 2009</td>
<td>Biocon</td>
<td>Bristol-Myers Squibb</td>
<td>NA</td>
<td>Exclusive marketing</td>
</tr>
<tr>
<td>March, 2013</td>
<td>Unichem Laboratories</td>
<td>Mylan</td>
<td>30</td>
<td>Acquisition</td>
</tr>
<tr>
<td>October, 2012</td>
<td>SMS Pharmaceuticals</td>
<td>Mylan</td>
<td>33</td>
<td>Acquisition of manufacturing unit</td>
</tr>
<tr>
<td>March, 2012</td>
<td>Biocon</td>
<td>Abbott Laboratories</td>
<td>NA</td>
<td>Contract research</td>
</tr>
<tr>
<td>September, 2012</td>
<td>Agila Specialties</td>
<td>Mylan, A Canonsburg</td>
<td>1,850</td>
<td>Acquisition</td>
</tr>
<tr>
<td>February, 2012</td>
<td>Jubilant Biosys</td>
<td>Mnemosyne Pharmaceuticals Inc</td>
<td>NA</td>
<td>Drug development</td>
</tr>
<tr>
<td>January, 2011</td>
<td>Zydus Cadila Healthcare</td>
<td>Bayer</td>
<td>NA</td>
<td>Marketing arrangement</td>
</tr>
<tr>
<td>December, 2012</td>
<td>Claris Lifesciences</td>
<td>Otsuka Pharmaceutical</td>
<td>250</td>
<td>JV</td>
</tr>
<tr>
<td>November, 2012</td>
<td>Zydus Cadila Healthcare</td>
<td>Abbot Laboratories</td>
<td>NA</td>
<td>Licensing agreement</td>
</tr>
<tr>
<td>July, 2011</td>
<td>Lupin</td>
<td>Eli Lilly</td>
<td>NA</td>
<td>Marketing arrangement</td>
</tr>
</tbody>
</table>

**Note:** JV - Joint Venture, ADC - Antibody Drug Conjugates

**Source:** ICRA Research on Indian Pharmaceutical Sector, India Ratings Research Outlook on Indian Pharmaceutical, BMI

For updated information, please visit www.ibef.org
OPPORTUNITIES
### OPPORTUNITIES ABOUND IN CLINICAL TRIALS AND HIGH-END DRUGS

<table>
<thead>
<tr>
<th>Clinical trials market</th>
<th>High-end drugs</th>
<th>Penetration in rural market</th>
<th>CRAMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>- India is among the leaders in the clinical trial market</td>
<td>- Due to increasing population and income levels, demand for high-end drugs is expected to rise</td>
<td>- With 70 per cent of India’s population residing in rural areas, pharma companies have immense opportunities to tap this market</td>
<td>- The Contract Research and Manufacturing Services industry (CRAMS) – estimated at US$ 8 billion in 2015, is expected to reach</td>
</tr>
<tr>
<td>- Due to a genetically diverse population and availability of skilled doctors, India has the potential to attract huge investments to its clinical trial market</td>
<td>- Growing demand could open up the market for production of high-end drugs in India</td>
<td>- Demand for generic medicines in rural markets has seen a sharp growth. Various companies are investing in the distribution network in rural areas</td>
<td>- The market has more than 1,000 players</td>
</tr>
<tr>
<td>- From 2009 to 2015, 3043 clinical trial has been carried out in India</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Source: BMI**
### Huge Opportunities for Innovation in Agriculture/Healthcare

#### Vaccines
- Vaccines & recombinant therapeutics are the sectors driving the biotechnology industry's growth in India.
- Newer prominent therapies such as monoclonal antibodies products, stem cell therapies are expected to pick up pace in the foreseeing future.
- In 2015, Bharat Biotech launched ‘Rotavac’ vaccine in India, three doses of the vaccine can prevent the Rotavirus diarrhea in infants.
- Indian pharmaceutical firms supply 80 per cent of the anti retroviral drugs to fight AIDS globally.
- As on October 2016, Sun Pharmaceutical Industries Ltd & International Centre for Genetic Engineering & Biotechnology (ICGEB) signed a pact to develop vaccine for all four serotypes of dengue virus.

#### Bioactive Therapeutic Proteins
- Protein & antibody production & fabrication of diagnostic protein chips are promising areas for investment.
- Stem cell research, cell engineering & cell-based therapeutics are other areas, where India can cash its expertise.

#### Agriculture Sector
- Hybrid seeds, including GM seeds, represent new business opportunities in India based on yield improvement.
- Growing at an annual growth rate of 10-15 per cent, the Indian hybrid seed industry is estimated at US$1.93 billion in FY16, wherein Bt cotton is leading the market accounting for 45 per cent share India hybrid seed industry.

#### Intellectual Property
- Using the patent system as a mechanism to control drug pricing forestalls making the difficult decisions about necessary investment in the healthcare system, but does not deal with the underlying issues.

*Source: India Law Offices, Aranca search*
The share of generic drugs is expected to continue increasing; domestic generic drug market is expected to reach US$ 27.9 billion in 2020.

Due to their competence in generic drugs, growth in this market offers a great opportunity for Indian firms.

Generic drug market is expected to grow in the next few years, with many drugs going off-patent in the US and other countries.

Domestic generic drug market has reached US$ 26.1 billion in 2016.

In April 2017, Jubilant Life Sciences received a final approval from the US health regulator for olmesartan medoxomil tablets, which is used for the treatment of hypertension. The approved product is a generic version of Benicar of Daiichi Sankyo.

### Share of patented and generic drugs in prescribed drug market (US$ billion)

<table>
<thead>
<tr>
<th>Year</th>
<th>Patented drugs</th>
<th>Generic drugs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>0.8</td>
<td>6.9</td>
</tr>
<tr>
<td>2009</td>
<td>0.9</td>
<td>8.1</td>
</tr>
<tr>
<td>2010</td>
<td>1.1</td>
<td>10</td>
</tr>
<tr>
<td>2011</td>
<td>1.3</td>
<td>11.3</td>
</tr>
<tr>
<td>2012</td>
<td>1.5</td>
<td>12.6</td>
</tr>
<tr>
<td>2013</td>
<td>2</td>
<td>15.1</td>
</tr>
<tr>
<td>2014</td>
<td>2</td>
<td>18.1</td>
</tr>
<tr>
<td>2015</td>
<td>2.70</td>
<td>21</td>
</tr>
</tbody>
</table>

**Note:** F - Forecast

**Source:** BMI
SUN PHARMA: LEVERAGING ITS GENERICS MARKET CAPABILITIES

- Sun Pharma was set up in 1983, with a compact manufacturing facility for tablets and capsules
- It set up its 1st API plant at Panoli in 1995
- It has 48 manufacturing facilities across 5 continents and employs more than 30,0000 people as on FY16
- Nearly 74 per cent of its sales came from international markets in 2016
- Revenues of Sun Pharma increased from US$ 932 million in FY09 to US$ 4.2 billion in FY16, witnessing growth at a CAGR of 24.16 per cent over FY09-16
- In March 2015, Sun Pharma completed the acquisition of Ranbaxy Laboratories Ltd to become the 5th largest global specialty pharma company, No 1 pharma company in India, and ensure a strong positioning in emerging markets
- The company reported net profit of US$ 335.8 million for the period July2016 - September 2016
- As of October 2016, the company acquired 100 per cent equity in the US-based eye care specialist ‘Ocular Technologies Sarl’ for US$ 40 million

Note: Compound Annual Growth Rate
Source: Sun Pharma website

Sun Pharma net sales (US$ million)
Dr Reddy’s began as an API manufacturer in 1984, producing high-quality APIs for the Indian domestic market.

- It has presence in almost all therapeutic segments.
- It has an integrated business model in three segments: Pharmaceutical Services and Active Ingredients (PSAI), Global generics and Proprietary products.
- Dr Reddy’s has access to numerous emerging markets through partnerships with GlaxoSmithKline (GSK).
- Its product offering spans the entire value chain, from process development of APIs to submission of the finished dosage dossier to regulatory agencies.
- The company’s revenues increased from US$ 1.5 billion in FY09 to US$ 2.4 billion in FY16, at a CAGR of 6.84 per cent over FY09-16.
- Dr Reddy’s is investing heavily on R&D to differentiate itself in the market. In FY15 - 16 Dr Reddy’s spent around 13.8 per cent of sales on R&D.

**Note:** FY16* (April to September 2015) CAGR - Compound Annual Growth Rate, R&D – Research and Development

**Source:** Dr Reddy’s website,

*For updated information, please visit www.ibef.org*
LUPIN: ON A HIGH GROWTH PATH

- Lupin is a renowned pharma player producing a wide range of quality, affordable generic and branded formulations and APIs
- Lupin is the seventh largest generic pharmaceutical company globally in terms of market capitalisation
- Its revenues increased from US$ 822.5 million in FY09 to US$ 2.1 billion in FY16, at a CAGR of 14.3 per cent during FY09-16
- Advanced market formulations comprised nearly 46 per cent of its revenues in FY16
- Lupin is 3rd largest drug manufacturer in India by sales
- In 2016, Lupin received USFDA nod for its generic version of Diclofenac capsules that are used for treating acute pain and osteoarthritis
- In February 2017, Lupin has received the final approval from USFDA to market potassium sulfate, sodium sulfate and magnesium sulfate oral solutions, which are used to treat a form of cancer.
- In March 2017, Lupin received an approval from United States Food and Drug Administration (US FDA) to market generic version of tobramycin inhalation solution ‘Tobi’, which is useful to treat cystic fibrosis patients along with P. aeruginosa.

Note: CAGR - Compound Annual Growth Rate, API - Active Pharmaceutical Ingredient, CNS - Central Nervous System, NSAIDS - Non-Steroidal Anti-inflammatory Drugs, TB - Tuberculosis
Source: : Lupin website
Biocon is a premier biopharmaceutical company which manufactures generic active pharmaceutical ingredients (APIs).

It’s business model spans the entire drug value chain, from pre-clinical discovery to clinical development and through to commercialisation.

The company is among the world’s largest producers of statins & immunosuppressant’s which are used in organ transplants.

Its total revenue stood at US$ 633.11 million in FY17 as compared to US$ 537.04 million in FY16.

Biocon has two subsidiaries Syngene and Clinigene.

- Syngene provides contract research and manufacturing services in pharmaceuticals and biotechnology sector and employs over 2,500 research scientists.
- Clinigene offers clinical trials and studies for novel/generic molecules.

Biocon and its subsidiaries together employ approximately 4,500 personnel.

In September 2017, Biocon’s insulin manufacturing facility in Malaysia received a Good Manufacturing Compliance certificate from Europe Medicine Agency (EMA).

Source: Company website, Annual Reports, News Articles
USEFUL
INFORMATION
### The Indian Pharmaceutical Association

Address: Kalina, Santacruz (E), Mumbai – 400 098  
Phone: 91-22-2667 1072  
Fax: 91 22 2667 0744  
E-mail: ipacentre@ipapharma.org  
www.ipapharma.org

### Organisation of Pharmaceutical Producers of India

Address: Peninsula Chambers, Ground Floor, Ganpatrao Kadam Marg, Lower Parel, Mumbai – 400 013  
Phone: 9122 24918123, 24912486, 66627007  
Fax: 9122 24915168  
E-mail: indiaoppi@vsnl.com  
www.indiaoppi.com

### Indian Drug Manufacturers’ Association

Address: 102-B, Poonam Chambers, Dr A.B. Road Worli, Mumbai – 400 018  
Phone: 91-22-2494 4624/2497 4308  
Fax: 9122 24950723  
E-mail: idma1@idmaindia.com  
www.idma-assn.org

### Bulk Drug Manufacturers Association

Address: C-25, Industrial Estate, Sanath Nagar Hyderabad – 500018  
Phone: 91 40 23703910/23706718  
Fax: 91 40 23704804  
E-mail: info@bdmai.org  
www.bdmai.org
GLOSSARY

- CRAMS: Contract Research and Manufacturing Services
- API: Active Pharmaceutical Ingredients
- FDI: Foreign Direct Investment
- GOI: Government of India
- INR: Indian Rupee
- US$: US Dollar
- BPL: Below Poverty Line
- RSBY: Rashtriya Swastha Bima Yojna
- ESIC: Employees State Insurance Corporation
- Wherever applicable, numbers have been rounded off to the nearest whole number
## EXCHANGE RATES

### Exchange Rates (Fiscal Year)

<table>
<thead>
<tr>
<th>Year</th>
<th>INR Equivalent of one US$</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004–05</td>
<td>44.81</td>
</tr>
<tr>
<td>2005–06</td>
<td>44.14</td>
</tr>
<tr>
<td>2006–07</td>
<td>45.14</td>
</tr>
<tr>
<td>2007–08</td>
<td>40.27</td>
</tr>
<tr>
<td>2008–09</td>
<td>46.14</td>
</tr>
<tr>
<td>2009–10</td>
<td>47.42</td>
</tr>
<tr>
<td>2010–11</td>
<td>45.62</td>
</tr>
<tr>
<td>2011–12</td>
<td>46.88</td>
</tr>
<tr>
<td>2012–13</td>
<td>54.31</td>
</tr>
<tr>
<td>2013–14</td>
<td>60.28</td>
</tr>
<tr>
<td>2014–15</td>
<td>61.06</td>
</tr>
<tr>
<td>2015–16</td>
<td>65.46</td>
</tr>
<tr>
<td>2016–17</td>
<td>66.95</td>
</tr>
</tbody>
</table>

### Exchange Rates (Calendar Year)

<table>
<thead>
<tr>
<th>Year</th>
<th>INR Equivalent of one US$</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>43.98</td>
</tr>
<tr>
<td>2006</td>
<td>45.18</td>
</tr>
<tr>
<td>2007</td>
<td>41.34</td>
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<tr>
<td>2008</td>
<td>43.62</td>
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<tr>
<td>2009</td>
<td>48.42</td>
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<tr>
<td>2010</td>
<td>45.72</td>
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<td>2011</td>
<td>46.85</td>
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<td>2012</td>
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<td>2013</td>
<td>58.44</td>
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<tr>
<td>2014</td>
<td>61.03</td>
</tr>
<tr>
<td>2015</td>
<td>64.15</td>
</tr>
<tr>
<td>2016</td>
<td>67.22</td>
</tr>
</tbody>
</table>

*Source: Reserve bank of India, Average for the year*
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