EXECUTIVE SUMMARY

<table>
<thead>
<tr>
<th>Leading pharma producer</th>
<th>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</th>
</tr>
</thead>
<tbody>
<tr>
<td>One of the highest exports</td>
<td>India accounts for 20 per cent of global exports in generics. India’s pharmaceutical exports stood at US$ 16.4 billion in 2016-17 and are expected to grow by 30 per cent over the next three years to reach US$ 20 billion by 2020</td>
</tr>
<tr>
<td>Among fastest growing industries</td>
<td>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</td>
</tr>
<tr>
<td>Rapidly growing healthcare sector</td>
<td>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</td>
</tr>
<tr>
<td>Rapidly growing healthcare sector</td>
<td>The generics market stood at US$ 26.1 billion in 2016 from US$ 21 billion in 2015. India’s generics market has immense potential for growth</td>
</tr>
<tr>
<td>Crop, health and motor insurance to drive growth</td>
<td>Crop insurance market in India is the largest in the world and covers around 32 million farmers; which accounted for nearly 19 per cent of the total farmers in the country</td>
</tr>
<tr>
<td></td>
<td>Strong growth in the automotive industry over the next decade to be a key driver of motor insurance</td>
</tr>
</tbody>
</table>

Notes: API - Active Pharmaceutical Ingredient, USFDA - United States Food and Drug Administration, CAGR - Compound Annual Growth Rate  
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
- As of February 2017, 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
- 35.7 per cent of all drug master filings from India is registered in the USA in 2015

- Government unveiled ‘Pharma Vision 2020’ aimed at making India a global leader in end-to-end drug manufacture
- 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**

- **Indian Patent Act passed in 1970**
- **Several domestic companies start operations**
- **Development of production infrastructure**
- **Export initiatives taken**

**Notes:** KAM - Key Account Management, CSO - Contract Sales Organisation

**Source:** Aranca Research

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**1970-90**

- Liberalised market
- Indian companies increasingly launch operations in foreign countries
- India a major destination for generic drug manufacture
- Approval of Patents (Amendment) Act 2005, which led to adoption of product patents in India

**1990-2010**

- Increased patent filings by pharma players
- Likely adoption of newer sales models such as channel management, KAM and CSO
- The National Pharmaceutical Pricing Policy, 2012 (NPPP-2012)

**2010-2015**

- National Health Policy Draft 2015 to increase expenditure in health care sector.
- 2014: 100 per cent FDI allowed in medical device industry. The investment will be routed through automatic route
- 2013: New Drug Pricing Control Order issued by Directorate of Food and Drugs this will reduce the prices of drugs by 80 per cent.
- Leading Indian pharma companies are raising funds aggressively to fund acquisition in domestic as well as international market to increase their product portfolios.
- 2015: India has 10,500 manufacturing units and over 3,000 pharma companies

**2016 onwards**

- In Union Budget, 2016, FDI increased to 74 per cent in existing pharmaceutical companies
- 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.
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 5 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
Generics 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
PHARMA EXPORT TO CONTINUE WITNESSING HIGH GROWTH

- Indian pharma companies are capitalising on export opportunities in regulated and semi-regulated markets
- In FY16, India exported pharmaceutical products worth US$ 16.89 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)

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
In FY16, highest expenditure on research and development has been done by Sun Pharma, followed by Dr. Reddy.

Sun Pharma’s R&D spending is 9.1 per cent of the total sales in the March quarter of FY16, which grew at a rate of 23 per cent Y-o-Y, in comparison with March quarter of FY15.

In FY17, Lupin’s R&D spending is expected to be 12-15 per cent of sales, growing from 12 per cent in FY16.

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.

Source: Aranca Research
RECENT TRENDS AND STRATEGIES
### NOTABLE TRENDS IN THE INDIAN PHARMACEUTICALS SECTOR … (1/2)

**Research and development**
- Indian pharma companies spend 8-11 per cent of their total turnover on RandD
- Expenditure on RandD is likely to increase due to the introduction of product patents; companies need to develop new drugs to boost sales

**Export revenue**
- India’s pharmaceutical export market is thriving due to strong presence in the generics space

**Joint Ventures**
- 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

**Expansion by Indian players abroad**
- 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: RandD - Research and Development
Source: Aranca Research*
### NOTABLE TRENDS IN THE INDIAN PHARMACEUTICALS SECTOR … (2/2)

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
</table>
| PPP in RandD | - 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:** RandD - Research and Development  
Source: Aranca Research
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
- Lupin has an USFDA-approved plant at Tarapur, Maharashtra. The facility forms the core of Lupin’s fermentation capabilities
- Cipla has a formulations manufacturing plant at Indore
- 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 RandD 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

Notes: RandD – Research and Development
Source: Company websites
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

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

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

<table>
<thead>
<tr>
<th>Category</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Launch of patented drugs</td>
<td>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.</td>
</tr>
<tr>
<td>Medical infrastructure</td>
<td>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 1st medical devices manufacturing park in Chennai.</td>
</tr>
<tr>
<td>Scope in generics market</td>
<td>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.</td>
</tr>
<tr>
<td>Over-The-Counter (OTC) drugs</td>
<td>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.</td>
</tr>
<tr>
<td>Patent Expiry</td>
<td>The total sales value of the drugs with expiring patent in 2015 is US$ 66 billion and drugs with expiry protection in 2014 valued around US$ 34 billion.</td>
</tr>
</tbody>
</table>

**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

**Manufacturing Cost Index by Country, 2016**

- USA: 100
- Germany: 93.9
- India: 67.2

*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
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.

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 the 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
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.

Essentiality 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.

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
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**INVESTMENTS, JVs INFUSING SUPERIOR CAPABILITIES IN INDIAN FIRMS ... (1/2)**

- Pharma, healthcare and biotech have witnessed significant increases in M&As 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)

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<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>Zoetics</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>
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<tr>
<td>August, 2012</td>
<td>Strides Arcolab Ltd</td>
<td>Gilead Sciences Inc</td>
<td>NA</td>
<td>Licensing agreement</td>
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<td>July, 2011</td>
<td>Ranbaxy</td>
<td>Gilead Sciences Inc</td>
<td>NA</td>
<td>Licensing agreement</td>
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<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>
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<td>March, 2009</td>
<td>Biocon</td>
<td>Bristol-Myers Squibb</td>
<td>NA</td>
<td>Exclusive marketing</td>
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<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>
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<tr>
<td>March, 2012</td>
<td>Biocon</td>
<td>Abbott Laboratories</td>
<td>NA</td>
<td>Contract research</td>
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<td>September, 2012</td>
<td>Agila Specialties</td>
<td>Mylan, A Canonsburg</td>
<td>1,850</td>
<td>Acquisition</td>
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<td>February, 2012</td>
<td>Jubilant Biosys</td>
<td>Mnemosyne Pharmaceuticals Inc</td>
<td>NA</td>
<td>Drug development</td>
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<td>January, 2011</td>
<td>Zydus Cadila Healthcare</td>
<td>Bayer</td>
<td>NA</td>
<td>Marketing arrangement</td>
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<td>December, 2012</td>
<td>Claris Lifesciences</td>
<td>Otsuka Pharmaceutical</td>
<td>250</td>
<td>JV</td>
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<td>Zydus Cadila Healthcare</td>
<td>Abbot Laboratories</td>
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<td>Licensing agreement</td>
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<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
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>
</table>
| ▪ India is among the leaders in the clinical trial market  
  ▪ Due to a genetically diverse population and availability of skilled doctors, India has the potential to attract huge investments to its clinical trial market  
  ▪ From 2009 to 2015, 3043 clinical trial has been carried out in India | ▪ Due to increasing population and income levels, demand for high-end drugs is expected to rise  
  ▪ Growing demand could open up the market for production of high-end drugs in India | ▪ With 70 per cent of India’s population residing in rural areas, pharma companies have immense opportunities to tap this market  
  ▪ Demand for generic medicines in rural markets has seen a sharp growth. Various companies are investing in the distribution network in rural areas | ▪ The Contract Research and Manufacturing Services industry (CRAMS) – estimated at US$ 8 billion in 2015, is expected to reach a huge potential for investments  
  ▪ The market has more than 1,000 players |

*Source: BMI*
GROWTH IN DRUG SALES

- 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](chart)

**Note:** F - Forecast
**Source:** BMI
SUCCESS STORIES
SUN PHARMA: LEVERAGING ITS GENERIC 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 30,000 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 July 2016 - 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
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 RandD to differentiate itself in the market. In FY15 - 16 Dr Reddy’s spent around 13.8 per cent of sales on RandD.

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

**Source:** Dr Reddy’s website,
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
### INDUSTRY ORGANISATIONS

<table>
<thead>
<tr>
<th>The Indian Pharmaceutical Association</th>
<th>Organisation of Pharmaceutical Producers of India</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Address:</strong> Kalina, Santacruz (E), Mumbai – 400 098</td>
<td><strong>Address:</strong> Peninsula Chambers, Ground Floor, Ganpatrao Kadam Marg, Lower Parel, Mumbai – 400 013</td>
</tr>
<tr>
<td><strong>Phone:</strong> 91-22-2667 1072</td>
<td><strong>Phone:</strong> 9122 24918123, 24912486, 66627007</td>
</tr>
<tr>
<td><strong>Fax:</strong> 91 22 2667 0744</td>
<td><strong>Fax:</strong> 9122 24915168</td>
</tr>
<tr>
<td><strong>E-mail:</strong> <a href="mailto:ipacentre@ipapharma.org">ipacentre@ipapharma.org</a></td>
<td><strong>E-mail:</strong> <a href="mailto:indiaoppi@vsnl.com">indiaoppi@vsnl.com</a></td>
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<td><a href="http://www.ipapharma.org">www.ipapharma.org</a></td>
<td><a href="http://www.indiaoppi.com">www.indiaoppi.com</a></td>
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<table>
<thead>
<tr>
<th>Indian Drug Manufacturers’ Association</th>
<th>Bulk Drug Manufacturers Association</th>
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<tbody>
<tr>
<td><strong>Address:</strong> 102-B, Poonam Chambers, Dr A.B. Road, Worli, Mumbai – 400 018</td>
<td><strong>Address:</strong> C-25, Industrial Estate, Sanath Nagar, Hyderabad – 500018</td>
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<tr>
<td><strong>Phone:</strong> 91-22-2494 4624/2497 4308</td>
<td><strong>Phone:</strong> 91 40 23703910/23706718</td>
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<tr>
<td><strong>Fax:</strong> 9122 24950723</td>
<td><strong>Fax:</strong> 91 40 23704804</td>
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<tr>
<td><strong>E-mail:</strong> <a href="mailto:idma1@idmaindia.com">idma1@idmaindia.com</a></td>
<td><strong>E-mail:</strong> <a href="mailto:info@bdmai.org">info@bdmai.org</a></td>
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<td><a href="http://www.idma-assn.org">www.idma-assn.org</a></td>
<td><a href="http://www.bdmai.org">www.bdmai.org</a></td>
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</table>
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>
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<td>2004–05</td>
<td>44.81</td>
</tr>
<tr>
<td>2005–06</td>
<td>44.14</td>
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<tr>
<td>2006–07</td>
<td>45.14</td>
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<td>2007–08</td>
<td>40.27</td>
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<tr>
<td>2008–09</td>
<td>46.14</td>
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<tr>
<td>2009–10</td>
<td>47.42</td>
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<td>2010–11</td>
<td>45.62</td>
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<tr>
<td>2011–12</td>
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<td>2012–13</td>
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<tr>
<td>2013–14</td>
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<td>2014–15</td>
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<td>2015–16</td>
<td>65.46</td>
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<td>2016–17</td>
<td>66.95</td>
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</table>

### Exchange Rates (Calendar Year)

<table>
<thead>
<tr>
<th>Year</th>
<th>INR Equivalent of one US$</th>
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<tr>
<td>2005</td>
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<td>2015</td>
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<td>2016</td>
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*Source: Reserve bank of India, Average for the year*
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