FDI - Foreign Direct Investment

Workflow

1. Data obtained from: Unified Mentor
2. Data cleaning using python(pandas, numpy).
3. Data visualization using Power BI.
4. Data insights generated from data visualization.

Introduction to FDI

1. **Foreign Direct Investment (FDI)** is an investment made by a firm or individual in one country into business interests located in another country. It typically involves acquiring a lasting interest in or gaining significant influence over a company in the foreign country. FDI can take various forms, such as establishing new operations, acquiring existing businesses, or entering into joint ventures with local firms.
2. FDI is a crucial driver of globalization, facilitating the flow of capital, technology, and expertise across borders. It plays a vital role in the economic development of both the investing and host countries, promoting integration into the global economy. However, it also involves challenges and risks that require careful management to ensure mutual benefits.
3. **Foreign Direct Investment (FDI)** lies at the heart of globalization and serves as an important conduit for the transfer of capital, goods, services, and information across economies. Measuring FDI helps us better understand how countries are interconnected and integrated into today's global economy.

Benefits of FDI

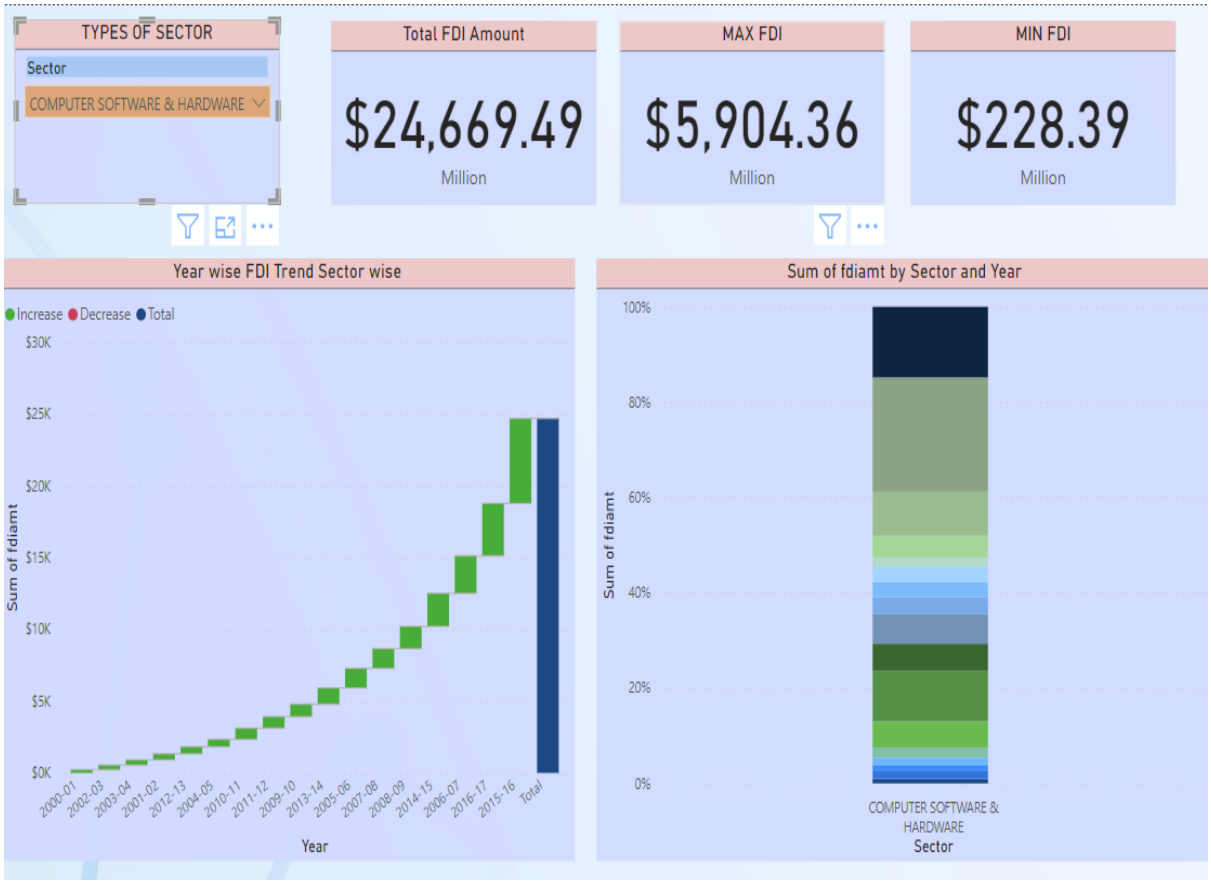
1. Economic growth and development.
2. Technology transfer and innovation.
3. Infrastructure development.
4. Access to international markets.
5. Economic diversification.
6. Competitive business environment.
7. Political and economic stability.
8. Access to global markets and expertise.
9. Tax revenue and government finances.
10. Improved balance of payments.

Data Cleaning

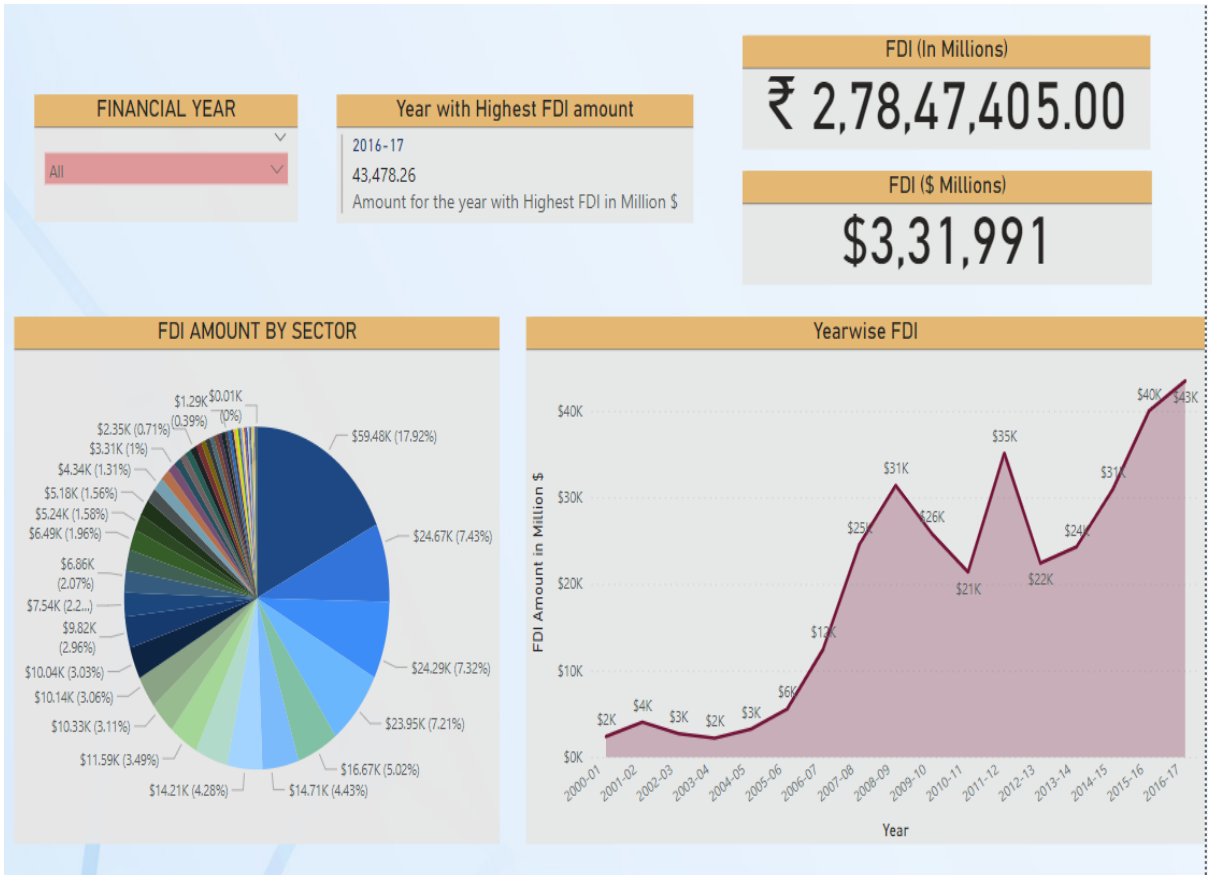
```
1. import pandas as pd
   import numpy as np

   df = pd.read_excel(r"C:\Users\sagar\OneDrive\Desktop\Chethan\Unified
   Mentor\Project 5\Data.xlsx")

   df2 = df.drop(['Sector'], axis = 1)
   data_sum = df2.copy()
   data_sum['Sum_in_million_USD'] = df2.sum(axis = 1)

   df_year = df.iloc[:,1:]
   width_y = df_year.shape[1]

   def cal_avg(n):
      avg = np.round(df_year.iloc[:,width_y-n:width_y].mean(axis=1),2)
      return(avg)

   df_year["avg_last_17yrs"] = cal_avg(17)
   df_year["avg_last_15yrs"] = cal_avg(15)
   df_year["avg_last_12yrs"] = cal_avg(12)
   df_year["avg_last_10yrs"] = cal_avg(10)
   df_year["avg_last_8yrs"] = cal_avg(8)
   df_year["avg_last_5yrs"] = cal_avg(5)
   df_year["avg_last_3yrs"] = cal_avg(3)
   df_year["avg_last_2yrs"] = cal_avg(2)

   df_year.insert(0,'Sector', df['Sector'])
   df_year['Sum_in_million_USD'] = data_sum['Sum_in_million_USD']


   df_year.to_excel('FDI_DT.xlsx')

   df = pd.read_excel(r"C:\Users\sagar\OneDrive\Desktop\Chethan\Unified
   Mentor\Project 5\FDI_DT_By_Excel.xlsx")

   newdf = df.copy()
   z = newdf.drop([df.index[17], df.index[18]])

   df_melted = pd.melt(z, id_vars=['Sector'], var_name='sector',
   value_name='FDI Amount')
   print(df_melted.to_string())

   df_melted.to_excel("Year_Sector_FDIamt.xlsx")
```

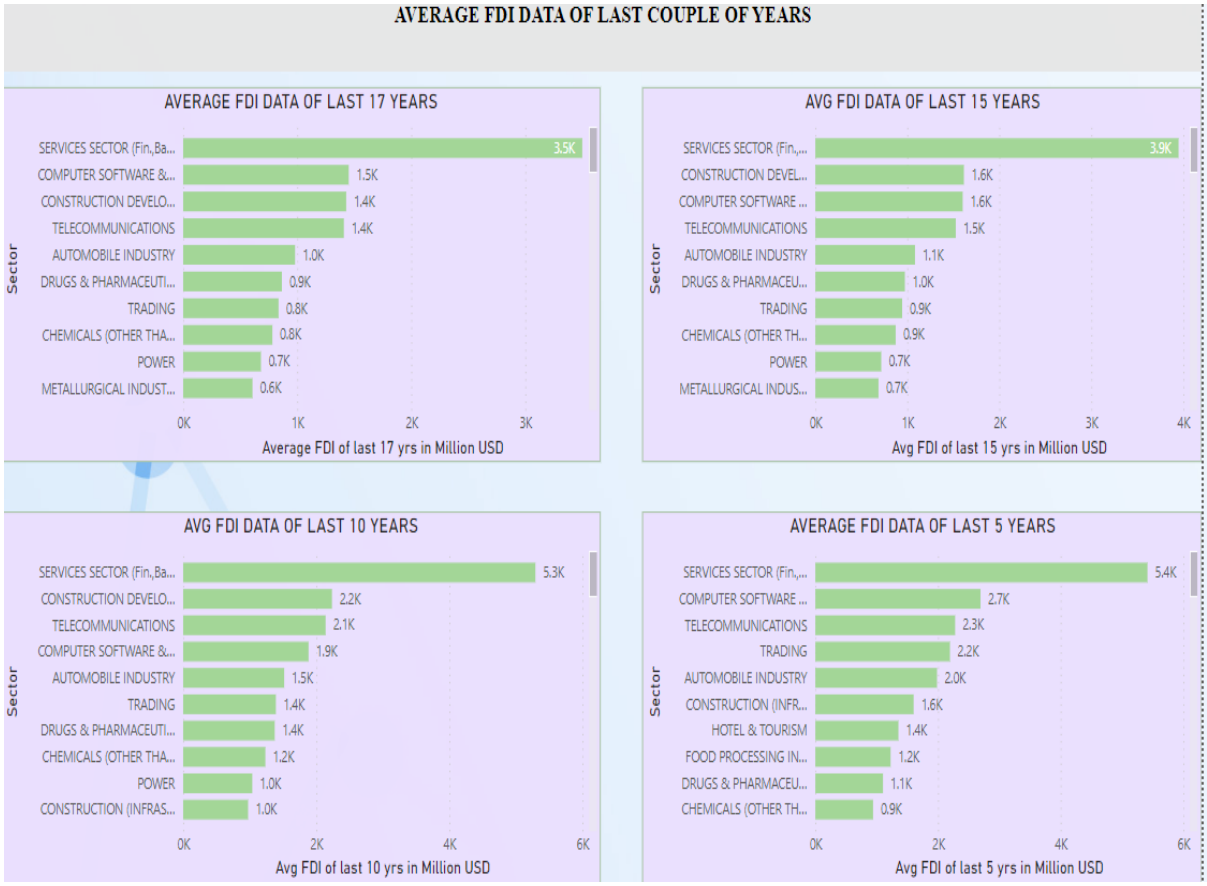
Insights

1. The service sector has attracted the largest share of FDI over the 17 years, around 18%. This may be due to factors such as outsourcing, urbanization, government regulations, and a thriving startup ecosystem.
2. The next four sectors with significant FDI are computer software and hardware, construction development, telecommunications, and the automobile industry. The rise in FDI in these sectors might be due to their interlinking with industries such as telecommunications and the service sector.
3. Total FDI over the 17 years amounts to approximately 3.3 lakh million dollars.
4. FDI in India increased gradually until 2008 but declined afterward, possibly due to the global financial crisis of 2007–2008.
5. FDI further declined in 2012–2013, potentially due to scandals such as the 2G spectrum scam, coal allocation scam, retrospective taxation, declining GDP growth, high inflation, and interest rates.
6. The **Mathematical Surveying and Drawing Instruments** sector has recorded zero FDI over the 17 years.
7. FDI in most sectors recovered after the global financial crisis, but sectors like **Ports** have seen a year-on-year decline, indicating a need for increased focus.
8. Foreign investors are particularly interested in financial services due to their profit-generating potential, allowing profits to be repatriated to the home country. As the services are consumed in the host country, this leads to an outflow of funds from the host country.
9. There is very low interest in sectors like **Coir, Defense Industries, Mathematical Surveying and Drawing Instruments, and Coal Production**. Around 28 to 30 sectors receive 1% or less of total FDI.
10. The second-largest recipient of FDI is the **Computer Software and Hardware** sector, which accounts for 7% of total FDI. Other significant sectors include **Telecommunications (7%), Construction Development (6%), Automobiles (5%), Trade (4.7%), Drugs and Pharmaceuticals (4%), Chemicals (other than Fertilizers) (4%), Power (3%), Construction (3%), and Hotel and Tourism (3%)**.


TYPES OF SECTOR
Sector
COMPUTER SOFTWARE & HARDWARE
Total FDI Amount
$24,669.49
Million
MAX FDI
$5,904.36
Million
MIN FDI
$228.39
Million
Year wise FDI Trend Sector wise
Increase
Decrease
Total
Sum of fdiamt
Year
Sum of fdiamt by Sector and Year
Sum of fdiamt
Sector
COMPUTER SOFTWARE & HARDWARE

YEAR
All
SHARE AMONG TOP 5 SECTORS
$16.67K (11.19%)
$23.95K (16.06%)
$59.48K (39.9%)
$24.29K (16.3%)
$24.67K (16.55%)
TOP 5 SECTOR BY FDI INFLOW
SERVICES SECTOR (Fin,...
COMPUTER SOFTWAR...
CONSTRUCTION DEVE...
TELECOMMUNICATIONS
AUTOMOBILE INDUSTRY
Sector
Sum of fdiamt in Million $
SHARE AMONG BOTTOM 5 SECTORS
$5.12 (4.56%)
$7.98 (7.11%)
$27.74 (24.73%)
$67.28 (59.98%)
BOTTOM 5 SECTOR BY FDI INFLOW
PHOTOGRAPHIC RAW ...
COAL PRODUCTION
MATHEMATICAL,SURV...
DEFENCE INDUSTRIES
COIR
Sector
Sum of fdiamt in Million $


FINANCIAL YEAR
All
Year with Highest FDI amount
2016-17
43,478.26
Amount for the year with Highest FDI in Million $
FDI (In Millions)
₹ 2,78,47,405.00
FDI ($ Millions)
$3,31,991
FDI AMOUNT BY SECTOR
$59.48K (17.92%)
$24.67K (7.43%)
$24.29K (7.32%)
$23.95K (7.21%)
$16.67K (5.02%)
$14.71K (4.43%)
$14.21K (4.28%)
$11.59K (3.49%)
$10.33K (3.11%)
$10.14K (3.06%)
$10.04K (3.03%)
$9.82K (2.96%)
$7.54K (2.2...)
$6.86K (2.07%)
$6.49K (1.96%)
$5.24K (1.58%)
$5.18K (1.56%)
$4.34K (1.31%)
$3.31K (1%)
$2.35K (0.71%)
$1.29K (0.39%)
$0.01K (0%)
Yearwise FDI
FDI Amount in Million $
Year
$40K
$30K
$20K
$10K
$0K
2000-01
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
2013-14
2014-15
2015-16
2016-17

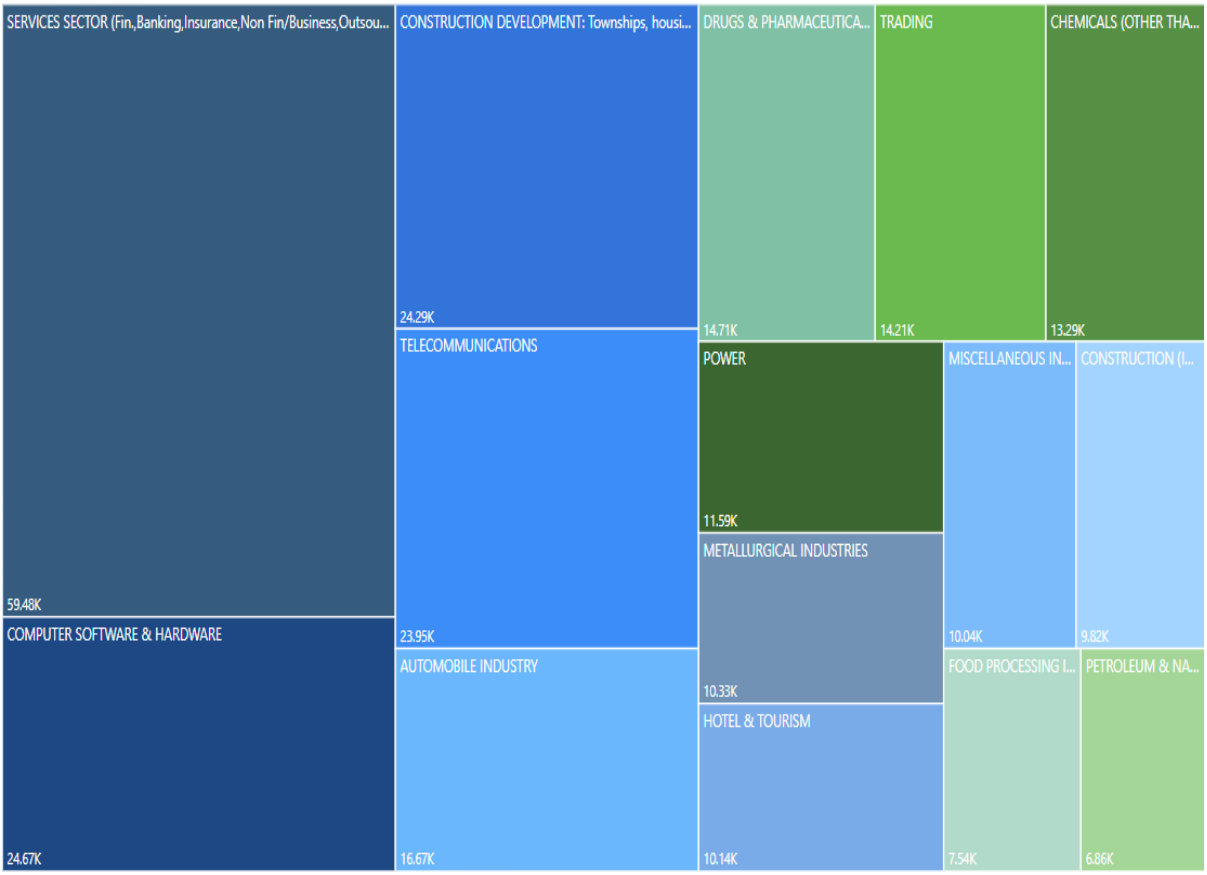

AVERAGE FDI DATA OF LAST COUPLE OF YEARS
AVERAGE FDI DATA OF LAST 17 YEARS
SERVICES SECTOR (Fin.,Ba... 3.5K
COMPUTER SOFTWARE &... 1.5K
CONSTRUCTION DEVELO... 1.4K
TELECOMMUNICATIONS 1.4K
AUTOMOBILE INDUSTRY 1.0K
DRUGS & PHARMACEUTI... 0.9K
TRADING 0.8K
CHEMICALS (OTHER THA... 0.8K
POWER 0.7K
METALLURGICAL INDUST... 0.6K
Sector
0K 1K 2K 3K
Average FDI of last 17 yrs in Million USD
AVG FDI DATA OF LAST 15 YEARS
SERVICES SECTOR (Fin,... 3.9K
CONSTRUCTION DEVEL... 1.6K
COMPUTER SOFTWARE ... 1.6K
TELECOMMUNICATIONS 1.5K
AUTOMOBILE INDUSTRY 1.1K
DRUGS & PHARMACEU... 1.0K
TRADING 0.9K
CHEMICALS (OTHER TH... 0.9K
POWER 0.7K
METALLURGICAL INDUS... 0.7K
Sector
0K 1K 2K 3K 4K
Avg FDI of last 15 yrs in Million USD
AVG FDI DATA OF LAST 10 YEARS
SERVICES SECTOR (Fin.,Ba... 5.3K
CONSTRUCTION DEVELO... 2.2K
TELECOMMUNICATIONS 2.1K
COMPUTER SOFTWARE &... 1.9K
AUTOMOBILE INDUSTRY 1.5K
TRADING 1.4K
DRUGS & PHARMACEUTI... 1.4K
CHEMICALS (OTHER THA... 1.2K
POWER 1.0K
CONSTRUCTION (INFRAS... 1.0K
Sector
0K 2K 4K 6K
Avg FDI of last 10 yrs in Million USD
AVERAGE FDI DATA OF LAST 5 YEARS
SERVICES SECTOR (Fin,... 5.4K
COMPUTER SOFTWARE ... 2.7K
TELECOMMUNICATIONS 2.3K
TRADING 2.2K
AUTOMOBILE INDUSTRY 2.0K
CONSTRUCTION (INFR... 1.6K
HOTEL & TOURISM 1.4K
FOOD PROCESSING IN... 1.2K
DRUGS & PHARMACEU... 1.1K
CHEMICALS (OTHER TH... 0.9K
Sector
0K 2K 4K 6K
Avg FDI of last 5 yrs in Million USD

SECTOR WISE AND YEAR WISE FDI DATA

Sector	FDI Amount in Million $
AGRICULTURAL MACHINERY	$449.2
AGRICULTURE SERVICES	$1,920.75
AIR TRANSPORT (INCLUDING AIR FREIGHT)	$1,014.44
AUTOMOBILE INDUSTRY	$16,673.92
BOILERS AND STEAM GENERATING PLANTS	$195.15
CEMENT AND GYPSUM PRODUCTS	$5,239.23
CERAMICS	$760.12
CHEMICALS (OTHER THAN FERTILIZERS)	$13,293.09
COAL PRODUCTION	$27.74
COIR	$4.06
COMMERCIAL, OFFICE & HOUSEHOLD EQUIPMENTS	$353.47
COMPUTER SOFTWARE & HARDWARE	$24,669.49
CONSTRUCTION (INFRASTRUCTURE) ACTIVITIES	$9,817.47
CONSTRUCTION DEVELOPMENT: Townships, housing, built-up infrastructure and construction-development projects	$24,293.09
CONSULTANCY SERVICES	$3,617.73
DEFENCE INDUSTRIES	$5.12
DIAMOND,GOLD ORNAMENTS	$895.95
DRUGS & PHARMACEUTICALS	$14,706.9
DYE-STUFFS	$88.4
EARTH-MOVING MACHINERY	$389.39
EDUCATION	$1,416.2
ELECTRICAL EQUIPMENTS	$6,567.41
ELECTRONICS	$1,719.98
FERMENTATION INDUSTRIES	$2,487.81
FERTILIZERS	$565.69
FOOD PROCESSING INDUSTRIES	$7,542.92
Total	**$3,31,990.99**

Year	FDI Amount in Million $
2000-01	$2,378.71
2001-02	$4,027.69
2002-03	$2,704.32
2003-04	$2,187.85
2004-05	$3,218.69
2005-06	$5,539.75
2006-07	$12,491.76
2007-08	$24,575.4
2008-09	$31,395.96
2009-10	$25,834.38
2010-11	$21,383.07
2011-12	$35,120.78
2012-13	$22,423.59
2013-14	$24,299.32
2014-15	$30,930.47
2015-16	$40,000.99
2016-17	$43,478.26
Total	**$3,31,990.99**

Top 15 Sectors with FDI amount



SECTOR WITH ZERO FDI AND THEIR CORRESPONDING YEARS

Sector	YearsWithZeroFDI
EARTH-MOVING MACHINERY	2000-01
HOSPITAL & DIAGNOSTIC CENTRES	2000-01
AIR TRANSPORT (INCLUDING AIR FREIGHT)	2000-01, 2001-02
FERTILIZERS	2000-01, 2001-02
NON-CONVENTIONAL ENERGY	2000-01, 2001-02
RAILWAY RELATED COMPONENTS	2000-01, 2001-02
EDUCATION	2000-01, 2001-02, 2002-03
VEGETABLE OILS AND VANASPATI	2000-01, 2001-02, 2002-03
PRIME MOVER (OTHER THAN ELECTRICAL GENERATORS)	2000-01, 2001-02, 2002-03, 2003-04
SOAPS, COSMETICS & TOILET PREPARATIONS	2000-01, 2001-02, 2002-03, 2003-04
CONSTRUCTION (INFRASTRUCTURE) ACTIVITIES	2000-01, 2001-02, 2002-03, 2003-04, 2004-05
RETAIL TRADING	2000-01, 2001-02, 2002-03, 2003-04, 2004-05, 2005-06, 2006-07
MATHEMATICAL,SURVEYING AND DRAWING INSTRUMENTS	2000-01, 2001-02, 2002-03, 2003-04, 2004-05, 2005-06, 2006-07, 2008-09, 2009-10, 2010-11, 2011-12, 2013-14, 2014-15, 2015-16, 2016-17
DEFENCE INDUSTRIES	2000-01, 2001-02, 2002-03, 2003-04, 2005-06, 2006-07, 2007-08, 2008-09, 2009-10, 2010-11, 2016-17
COIR	2000-01, 2001-02, 2002-03, 2003-04, 2008-09, 2015-16, 2016-17
COAL PRODUCTION	2000-01, 2001-02, 2002-03, 2004-05, 2009-10, 2010-11, 2011-12, 2012-13, 2014-15, 2015-16, 2016-17
BOILERS AND STEAM GENERATING PLANTS	2000-01, 2001-02, 2002-03, 2005-06, 2008-09
PRINTING OF BOOKS (INCLUDING LITHO PRINTING INDUSTRY)	2000-01, 2001-02, 2003-04
SUGAR	2000-01, 2001-02, 2003-04
PHOTOGRAPHIC RAW FILM AND PAPER	2000-01, 2001-02, 2005-06, 2009-10, 2011-12, 2012-13, 2013-14, 2015-16, 2016-17
GLUE AND GELATIN	2000-01, 2003-04, 2004-05, 2005-06, 2006-07, 2008-09, 2012-13
TIMBER PRODUCTS	2000-01, 2006-07
PORTS	2000-01, 2006-07, 2011-12, 2012-13, 2015-16, 2016-17
TEA AND COFFEE (PROCESSING & WAREHOUSING COFFEE & RUBBER)	2002-03
DYE-STUFFS	2002-03, 2005-06, 2006-07, 2012-13, 2013-14
AGRICULTURAL MACHINERY	2004-05
INDUSTRIAL INSTRUMENTS	2006-07
SCIENTIFIC INSTRUMENTS	2007-08, 2009-10