**WORKING PAPER, NO: 562**

# Royalty Payments on Intellectual Property: A Preliminary Analysis of the Principal Policy Issues facing India

**A. Damodaran**
*IPR Chair Professor, DIPP IP Chair*
*Economics and Social Sciences area*
*Indian Institute of Management Bangalore*
*Bannerghatta Road, Bangalore – 560076*
*Ph: 080 - 26993747*
*damodaran@iimb.ac.in*

Technical assistance
**Mariappan S**
*Senior Research Associate – DIPP Chair*
*Indian Institute of Management Bangalore*
*Bannerghatta Road, Bangalore – 560076*
*mariappan.sundaram@iimb.ac.in*

Year of Publication – December 2017

## Acknowledgement

The research inputs provided by Dr. Balaji, Assistant Professor, Department of Economics, Central University of Tamil Nadu, is thankfully acknowledged. The editorial support rendered by Mr. Arul Jason is also thankfully acknowledged.

**Royalty Payments on Intellectual Property: A Preliminary Analysis of the Principal Policy Issues facing India**

## Abstract

The objective of this study is to find out the trends of royalty payments made by Indian Companies over the period of 10 years. Further, the study also documents the share of royalty paid to that of specific variable, viz., net sales, cost of production, capital employed, profit and exports, in percentage terms. In addition, the study also examines statistically, the determinants of royalty accruing from patents, trademarks and copy rights. Totally, eleven sectors which have been making royalty payments are identified for the study. The results reveal that outflow of royalty payments from the mentioned sectors has increased over the 10 years period for the companies concerned. In general, the royalty payments made in terms of its relationships to net sales, cost of production, capital employed, net profit and export earnings shown an increasing trend over the period. Regression analysis reveals that net sales, cost of production, profit and exports are significant factors for determining royalty payments in certain sectors. The Report concludes by examining the potential of applying regulations on royalty rates for different patented and IP protected technologies and trademarks. It is argued that while regulations on royalty rates are desirable, it should not jeopardise the quest for modernising the Indian economy.

Keywords: Intellectual Property Rights, Royalty Rates, Economic Development, Indian Economy.

## 1 Background

Over the past twenty years, there has been a global trend toward stronger intellectual property rights (IPR) (Maskus1995). By the mid-1990s, a minimum standard set of globally enforced intellectual property rights had been enshrined in the WTO Charter through the incorporation of the Agreement on Trade-Related Aspects of Intellectual Property Rights. The shift in international economic-policy making from its traditional post war focus on the lowering of tariff and nontariff trade barriers to the embrace of strong IPR is deeply controversial (Branstetter, Fisman, Foley 2006).

Lanjouw (1997) and McCalman (2001), among others, have argued that the move toward stronger IPR in developing countries may work against national economic interests, transferring rents to multinational corporate patent holders headquartered in the world's most advanced countries, especially the United States. Yi Qian also argues that, National patent protection alone does not stimulate domestic innovation, as estimated by changes in citation-weighted U.S. patent awards, domestic R&D, and pharmaceutical industry exports. However, domestic innovation accelerates in countries with higher levels of economic development, educational attainment, and economic freedom (Yi Qian 2007).

Royalty is most often associated with the fee paid to someone who owns a patent for its use or the money owed to an author for each copy of a book sold. It is the share of a product or a profit reserved by the owner for permitting another to use his/her property. Technology-receiving countries symmetrically feel that they pay too much and that the transferred technology may be ill-suited to the factor endowments of developing countries (Contractor and Sagafinejad, 1981).

### 1.1 Theoretical assumptions for royalty payments

A technology that remains under proprietary control and ripe for licensing not fully embodied in equipment and not diffused into general knowledge is typically possessed by only a few firms (Contractor, 1981, p. 112). The number of willing sellers of a technology is further limited by the alternative of foreign direct investment, which often holds the potential for extracting more of the available rents, and tends to become the choice of the larger and more successful firms in a market. One might expect potential licensees to be numerous. However, competent licensees are clearly scarce in some markets (Contractor, 1981, ch. 2), and in any case small numbers bargaining conditions set in once the potential licensor and licensee begin to negotiate. Impacted information and opportunism.

Technical knowledge possesses the classical property of asymmetrical access by the potential parties to a transaction to knowledge about its expected pay out. The licensor has the relevant experience. If the licensee could fully evaluate the proffered technology, the license agreement would dwindle to a right to infringe the licensor's patents - not a rare outcome, as we shall see.

That licensors and licensees may both behave opportunistically is apparent to all and discourages the use of guarantees to get around impacted information

### 1.2 International IP Policy

In a knowledge-based economy, SMEs play an important role in supporting innovation and as knowledge sources, thereby enhancing productivity growth (OECD 2011d). Thus, SMEs' management of intellectual property rights (IPRs) that facilitate the process of value creation from intellectual assets is critical. However SMEs face greater problems in benefiting from IPRs than larger firms due to the often complicated and lengthy procedures required by IPR frameworks. OECD country experiences with "SME-friendly" initiatives within the intellectual property (IP) regulatory framework provide some potential lessons as to how these problems can be reduced.

- In Australia, an alternative and simplified patent filing system was introduced (Innovation Patent System) in 2001, in order to protect inventions that do not meet the threshold required for standard patents.
- In the United Kingdom, similarly to Australia, recent reforms have aimed at creating a more simplified, streamlined and user friendly IP system. In 2003, the option for a streamlined procedure was introduced in order to speed up dispute resolution. Since 2005, the United Kingdom Patent Office has been providing key information to potential patent applicants in order to improve the quality of applications. In 2010, new procedures aimed at further simplifying and reducing the cost of the patent litigation process were introduced by the Patent County Court (PCC).
- In the United States, the United States Patent and Trademark Office (USPTO) has implemented several measures to enhance its capacity and speed up the process of patent applications. For instance, an Ombudsman programme has been created to resolve breakdowns in the normal prosecution process, with senior examiners supporting applicants with unresolved issues. Furthermore, the 2011 reform bill gives the patent office the right to set its own fees and keep the proceeds to hire more examiners in order to increase the capacity to respond rapidly to applicants.

### 1.3 World Trends in Royalty and License Fee Payments

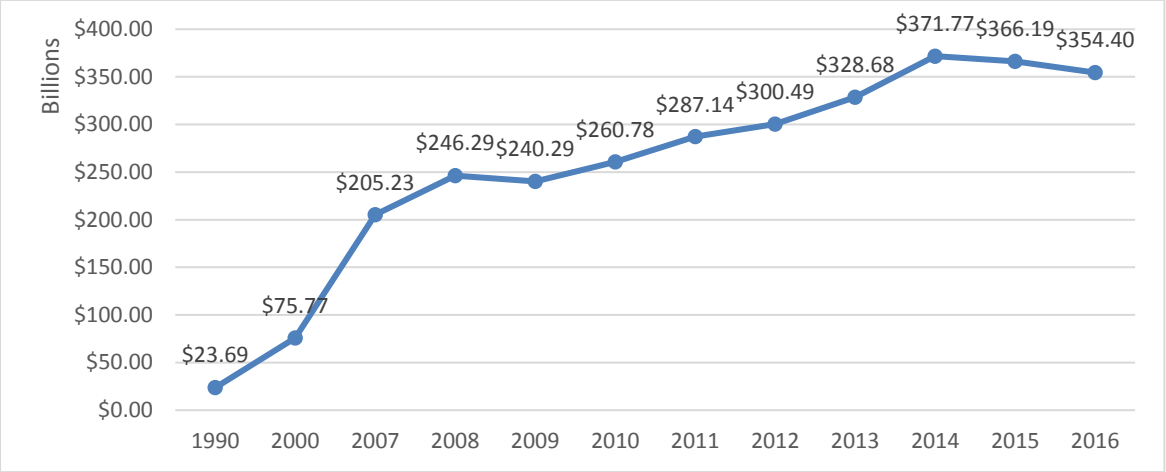


**Fig: 1 Charges for the use of intellectual property, payments (BoP, current US$), World**

A glimpse of Fig.1 describes that the royalty payments[1] by different countries has been increasing from US$ 23.69 billion in 1990 to US$ 354.40 billion in 2016. During 2014, the payments in absolute terms reached its peak of US$ 371 billion.

### 1.4 BRICS Countries – Royalty Payment

Looking at the major emerging economies block, the BRICS2, have also visualized an increasing trend in royalty payments. Among the five countries in this group, China tops in payments with US$ 22 billion, followed by Russian Federation with payments upto US$ 8.0 billion. India stands third with payments upto US$ 5.0 billion.

[1]Definition for payments: Charges for the use of intellectual property are payments and receipts between residents and non-residents for the authorized use of proprietary rights (such as patents, trademarks, copyrights, industrial processes and designs including trade secrets, and franchises) and for the use, through licensing agreements, of produced originals or prototypes (such as copyrights on books and manuscripts, computer software, cinematographic works, and sound recordings) and related rights (such as for live performances and television, cable, or satellite broadcast). Data are in current U.S. dollars.

[2]***BRICS*** is the acronym for an association of five major emerging national economies: Brazil, Russia, India, China and South Africa.

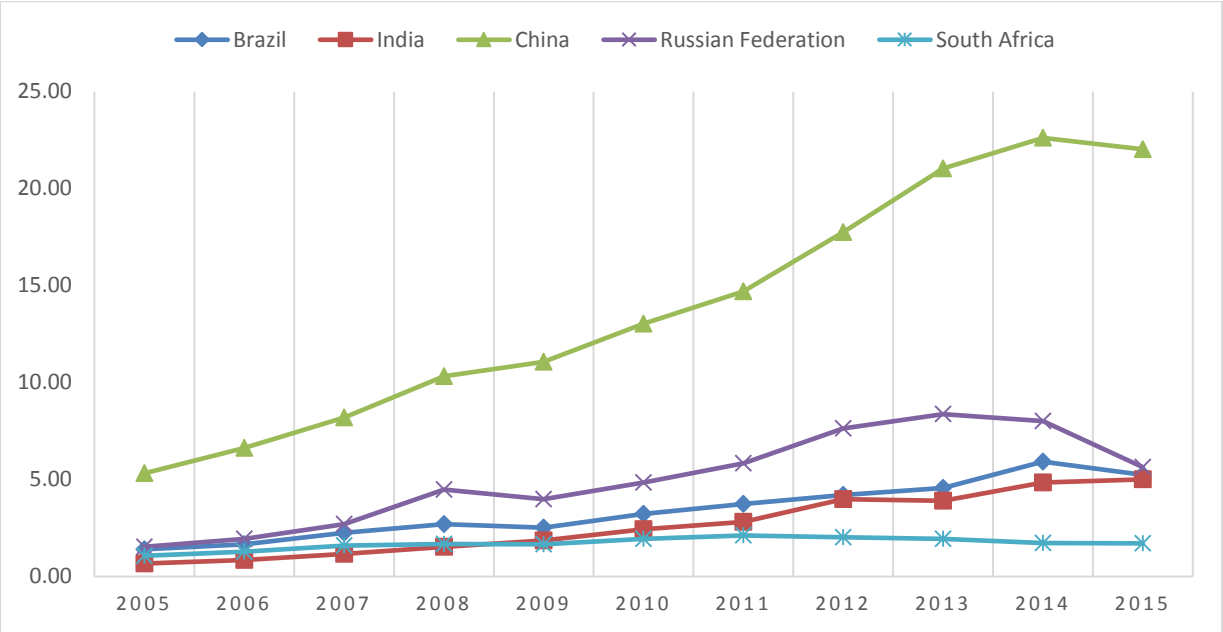


**Fig: 2 BRICS countries charges for the use of intellectual property, payments (BoP, current US$) (in Billion)**

### 1.5 India - Royalty and license fees

Fig. 3 shows that the latest value for Charges for the use of intellectual property, payments (BoP, current US$) in India was $5.01 billion as of 2015. Over the past 38 years, the value for this indicator has fluctuated between $4.8 billion in 2014 and $12.5 million in 1980.


**Fig: 3 India charges for the use of intellectual property, payments (BoP, current US$)**

## 1.6 Global IP Index 2017

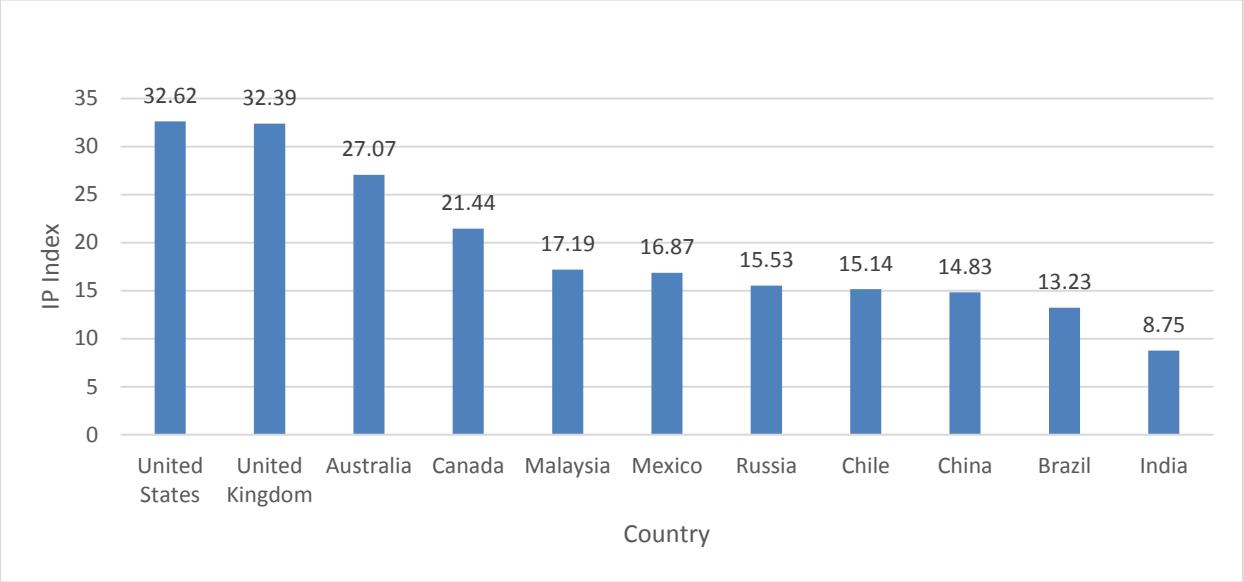


**Fig: 4 Global IP Index 2017**

India's position in International IP index is as low as 8.75 compared with 32.62 for the US. It has been measured and published by Global IP Centre, Chamber of Commerce, USA by considering various factors in each industrial sector. This low value suggests the need for improvement in IP environment in the sub-continent. The key strength of Indian IP sector as noted by Global IP centre is "New National Intellectual Property Rights Policy which recognizes several key gaps in India, including the need for stronger enforcement of existing IP rights, establishment of stronger administrative capacities at India's IP offices, and enactment of a trade secrets law".

At the same time, it also points out the weaknesses of Indian IP sector as follows: "Overall, National Intellectual Property Rights Policy does not address fundamental weaknesses in India's IP framework, Limited framework for protection of life sciences IP, Patentability requirements outside international standards, Lengthy pre-grant opposition proceedings in place, 2016 High Court ruling on copyright infringement in the University of Delhi copy-shop case continues to weaken the enforcement environment for rights holders, Previously used compulsory licensing for commercial and non-emergency situations and Limited participation in international IP treaties".

## 1.7 Trend in IP Applications in India

In view of IP applications, India shows an increasing trend. These applications include Multinational Companies, Joint venture companies and Indian companies. Applications in Trademarks lead among the other IP products followed by patents, designs and geographical

indications. Apart from that, the royalty payments for the technology transfer also shows an increasing trend over this period.

**Table 1: Trend of IP Applications in India[3]**

| Application | 2011-12 | 2012-13 | 2013-14 | 2014-15 | 2015-16 |
|---|---|---|---|---|---|
| **Patent** | 43,197 | 49,674 | 42,951 | 42,763 | 46,904 |
| **Design** | 8,373 | 8,337 | 8,533 | 9,327 | 11,108 |
| **Trade mark** | 1,83,588 | 1,94,216 | 2,00,005 | 2,10,501 | 2,83,060 |
| **Geographical Indication** | 148 | 24 | 75 | 47 | 14 |
| **Total** | 2,35,306 | 2,46,251 | 2,51,564 | 2,62,638 | 3,41,086 |

Following Figures (Fig. 5 – Fig. 8) depicts the increasing trend in IP registrations in India[4] over the last five year period.

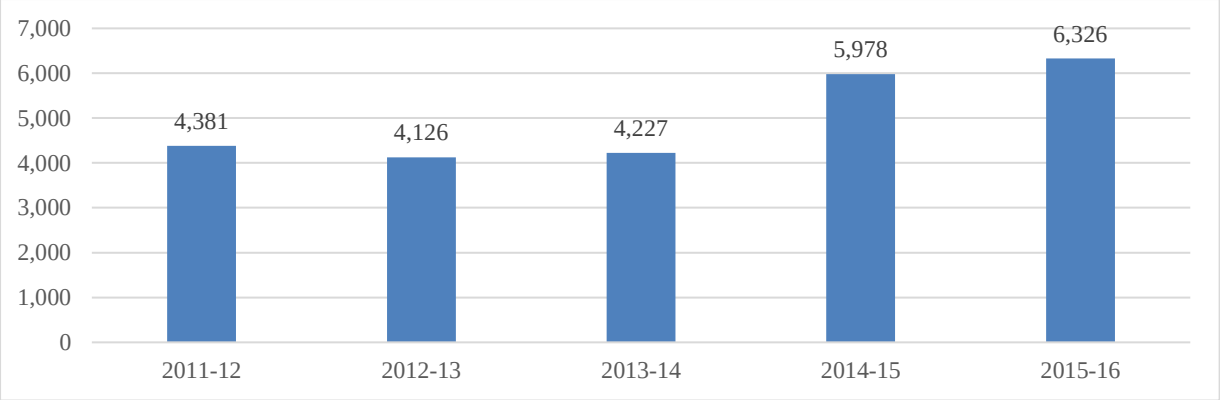


**Fig: 5 Patents Granted in India**

[3] Source: Annual Report, office of the Controller General of Patents Designs and Trade Marks, http://www.ipindia.nic.in/writereaddata/Portal/IPOAnnualReport/1_71_1_Annual_Report_2015-16_English__2_.pdf

[4] Source: Annual Report, office of the Controller General of Patents Designs and Trade Marks

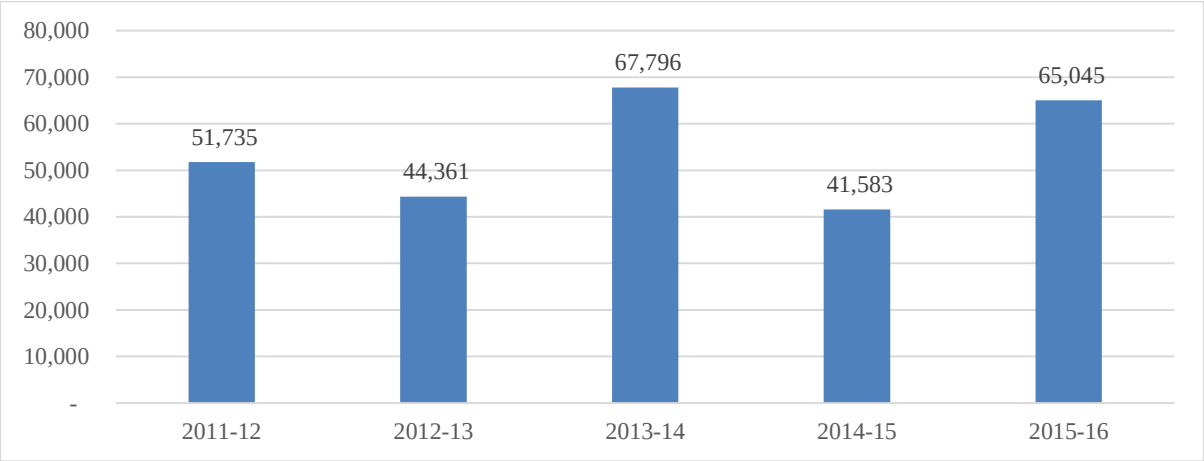


**Fig: 6 Trademarks Registered in India**

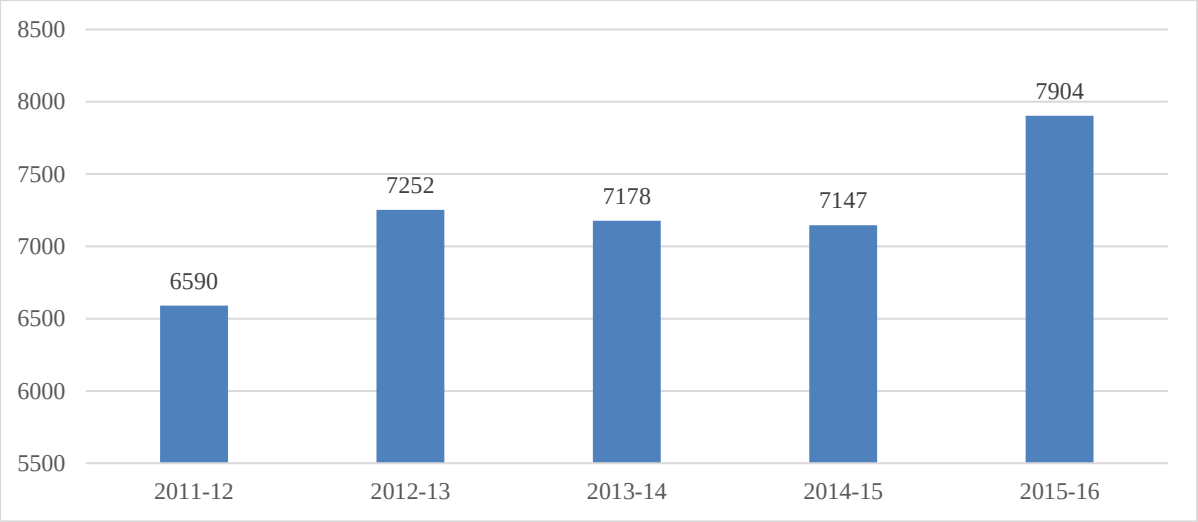


**Fig: 7 Designs Registered in India**

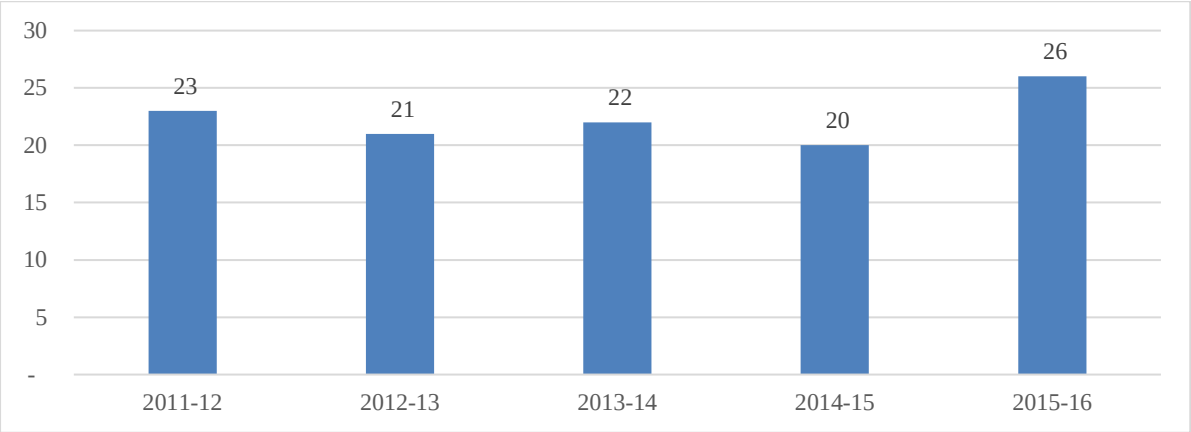


**Fig: 8 Geographical Indications Registered in India**

## 2 SECTOR WISE TRENDS IN ROYALTY PAYMENTS

This report has been prepared by IIMB study team based on firm level annual data, using a sample of 231 companies in India, for a 10-year period from 2006 to 2016. Totally, eleven sectors are identified, viz., automobile, auto ancillary, FMCG, IT-software and hardware, media, health care, pharmaceuticals, electronics, engineering, agro chemicals and trading companies which have been making royalty payments.

For each sector, data has been compiled for the following variables; Net Sales, Cost of production, Capital employed, Royalty and Technical fees, Export sales and Profit after Tax to estimate the determinants of Royalty payments and to understand the pattern of royalty payment for the year 2006 to 2016. Multiple regression analysis has been used to find out the determinants of royalty payments for the data collected from Capitaline database. Description of the variables used for analysis has been given in Annex 1. Due to data availability constraint, the averages of each variable for each year are taken for the study.

The breakup of the data taken from eleven crucial industrial sectors of India are provided in Table 2.

**Table 2: Sector Classification**

| Sl. NO | Sector | No. of Companies |
|---|---|---|
| 1 | Auto Ancillary | 31 |
| 2 | Auto Mobile | 12 |
| 3 | Agro Chemicals | 5 |
| 4 | Electronics | 31 |
| 5 | Engineering | 14 |
| 6 | FMCG | 50 |
| 7 | Health Care | 8 |
| 8 | IT Soft Hard ware | 28 |
| 9 | Media | 19 |

| | | |
|---|---|---|
| 10 | Pharmaceuticals | 22 |
| 11 | Trading | 11 |
| | Total | 231 |

Table. 14 (Annex 2) discusses year wise average royalty payment for the selected sectors. All the eleven sectors show an increasing trend in royalty payments for the last 10 years. IT and Automobile sector's average royalty payment shows an enormous increase for the 10 year period. Increase in royalty payment in all the sectors has clearly explicit the excessive dependence on multinational companies for their products and services. Moreover, In May 2010 the Government and the Reserve Bank of India (RBI) amended the Foreign Exchange Management Rules, 2000, doing away with the need for the Commerce Ministry to approve royalty payments exceeding 5 per cent of domestic sales and 8 per cent of export sales. Thus all regulatory requirements capping royalty payments to foreign collaborators were done away with in the quest for foreign investments, and the stage was set for massive hike in royalties to the MNCs by their respective subsidiaries (Rahul Varman 2014).

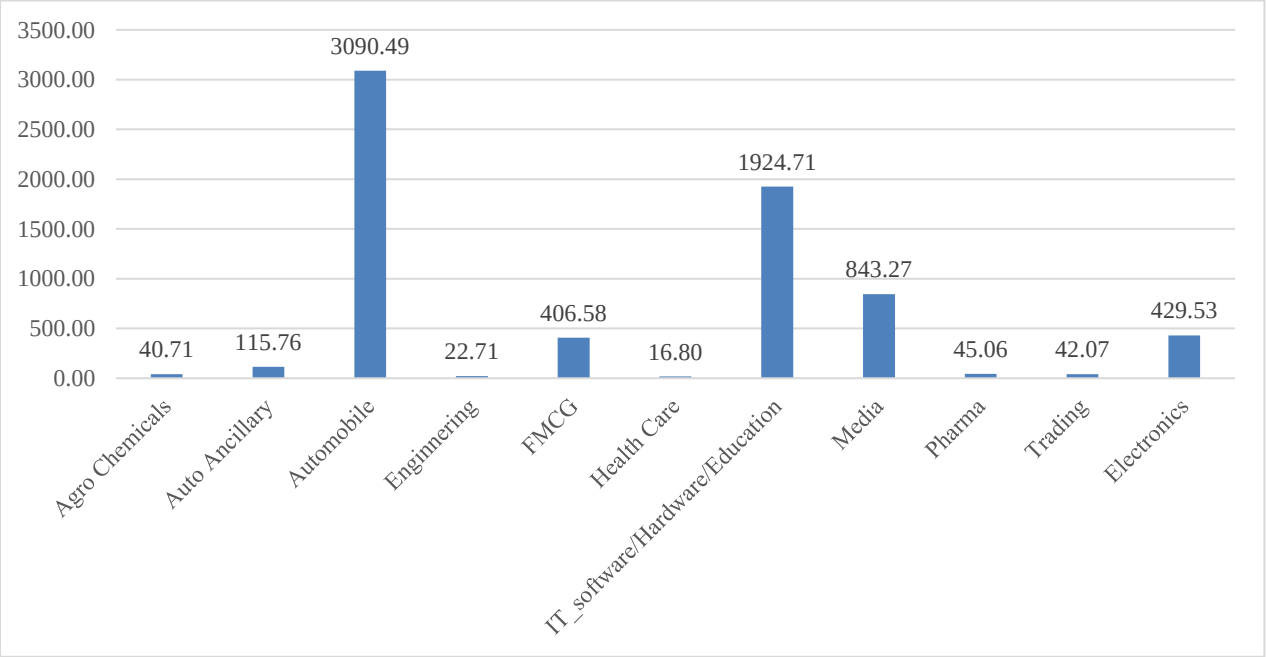


**Fig: 9 Average Royalty Payment 2006-2016**

Overall, there is a general tendency of increasing trend seen in all the sectors over the 10 years period with the average royalty payment for Automobile sector stands way ahead with payments of Rs.3090.49 crores followed by IT Sector with Rs.1924.71 crores and Media sector with Rs.843.27 crores. The payments made by Electronics and FMCG sectors, on an average

stood at Rs.429.53 crores and Rs.406.58 crores respectively, while Engineering sector and Health care has paid the least royalty compared to other sectors.

### 2.1 Sector wise royalty payments:

A depiction of sector wise royalty payments will give a clearer picture of royalty payments made by Indian Companies which is shown from Fig. 10 to Fig. 20.

Automobile sector's royalty payments has grown from Rs.85.5 crore to Rs.538.7 crores over the period of 10 years. Though the liberalisation process opened the way for International trade in general, which has seen enormous breakthrough in the four wheeler and two wheeler production and their exports, in particular, yet the royalty payments to parent companies have started galloping only in the recent years.

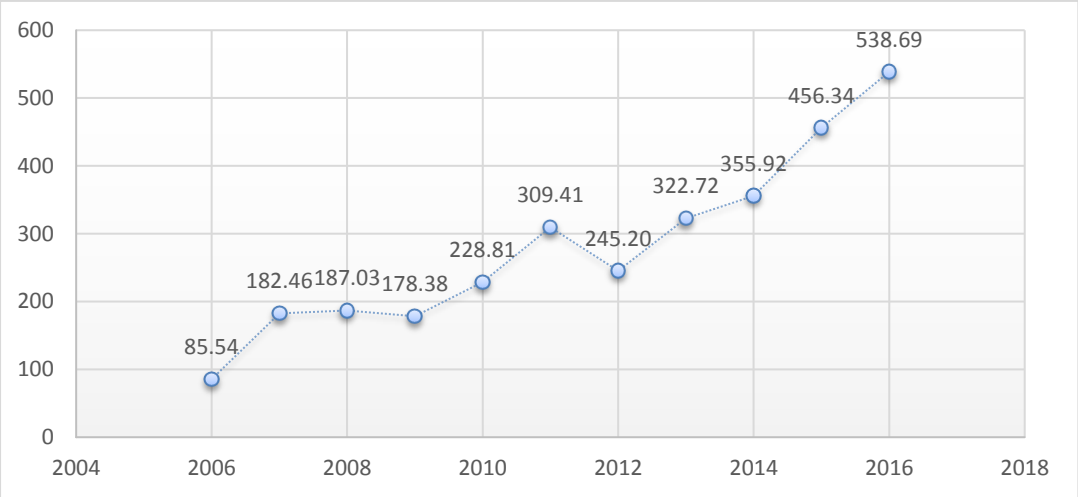


**Fig: 10 Automobile Sector Average Royalty Payments for Sample Companies**

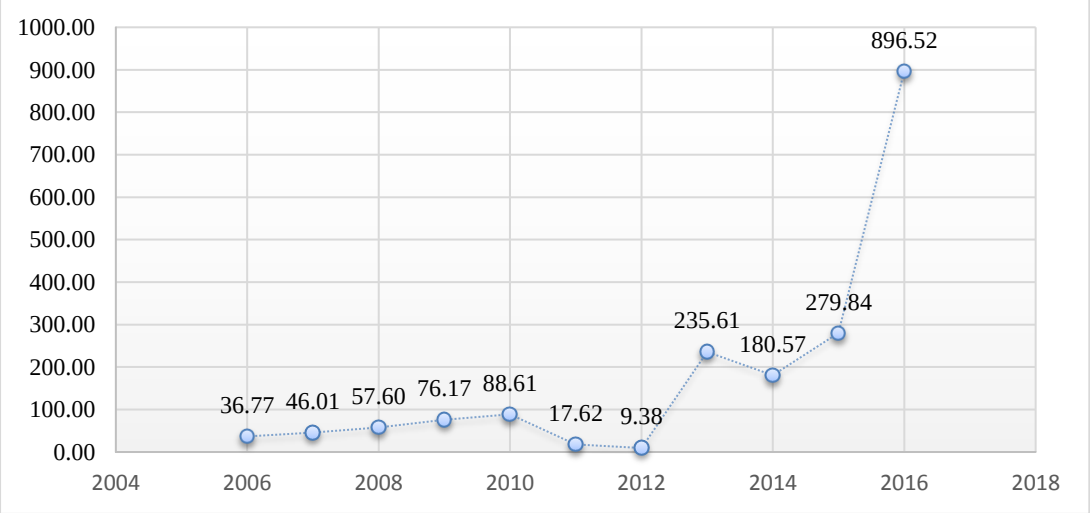


**Fig: 11 IT-Software/Hard ware Average Royalty Payment for Sample Companies**

Information Technology stands second in royalty payments. It has grown from Rs.36.7 crore to Rs.896.5 crores over the period. The high usage of new software and hardware technologies by the highly populated country helps the multinational IT companies to sell their product in India. Increased access to new technologies and growing income of the people opened up an enormous and potential market for IT products. But the design of products or the coding of software programs by the MNCs has made them benefit through the increasing royalty payments.

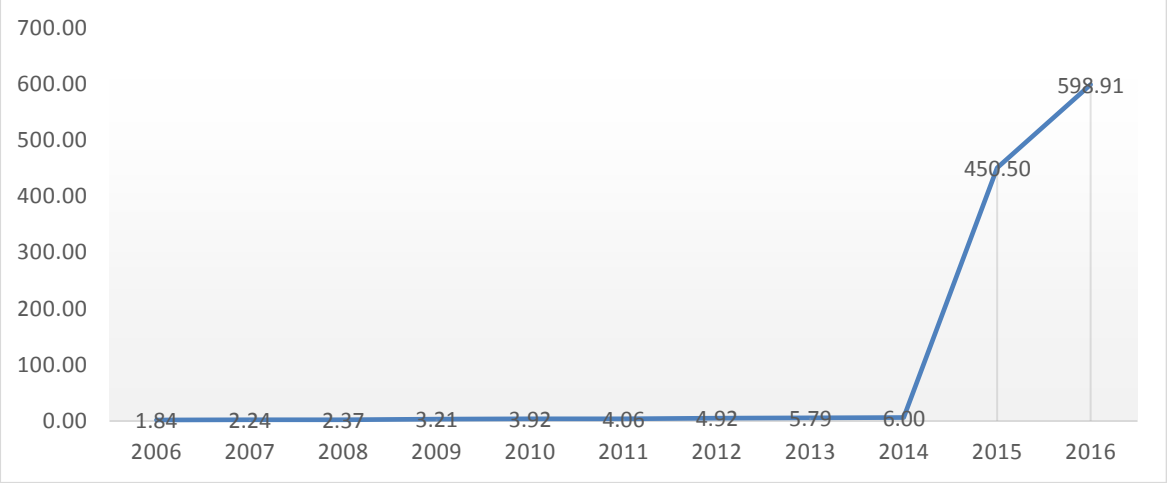


**Fig: 12 Media Sector Average Royalty Payments for Sample Companies**

Media Sector companies mentioned here include Satellite Channels, Radio, and print media. Royalty payment in the media sector shows a gradual increase in trend over the years but has seen a sudden and tremendous increase from 2014, due to the high royalty paid by STAR TV India; they have made a payment of a staggering amount of Rs. 6207 crore in 2015 and Rs. 5316 crores in 2016 as royalty which can be considered as a standalone case. Increased viewership and low price high quality televisions made that possible.

Electronics sector companies includes televisions, gadgets, mobile phones and other electronic appliances. Royalty payment for the sector has grown almost ten times over the years. On an average, it has grown from Rs.14.6 crores to Rs.109 crores.

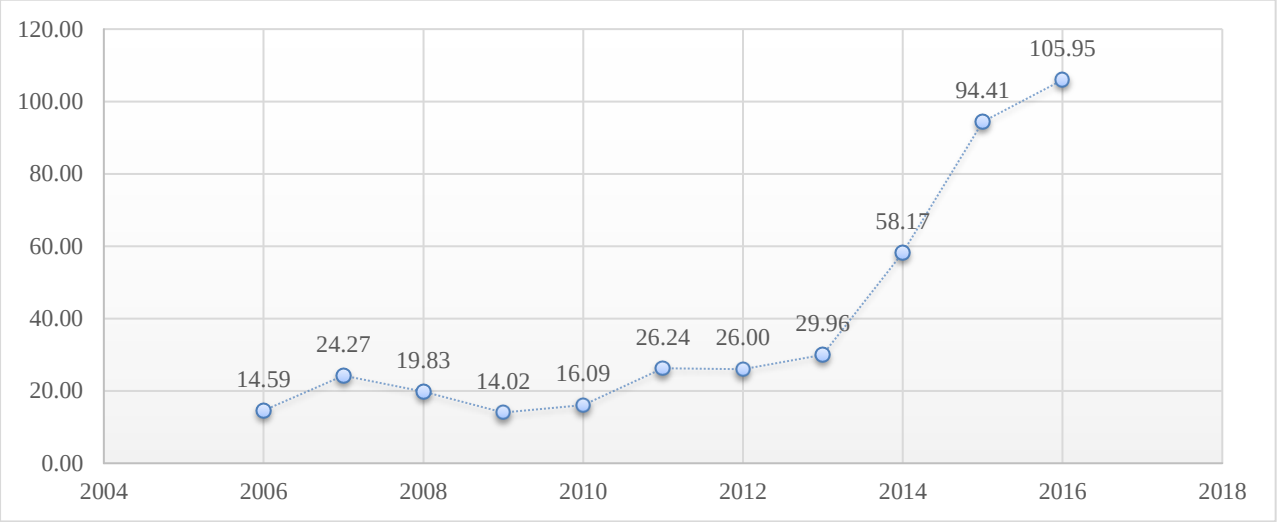


**Fig: 13 Electronics sector Average Royalty Payments for Sample companies**

In FMCG sector, the average royalty payments shows an increasing trend from Rs.12.81 crores in 2006 to Rs.56.40 crores in 2016. It has grown six times over the years. Increasing income, desire to have a western life and advertisements through various media helps this sector to grow tremendously during the last decade. In fact, it is well known that MNCs have started their operation in Indian market even before its independence.

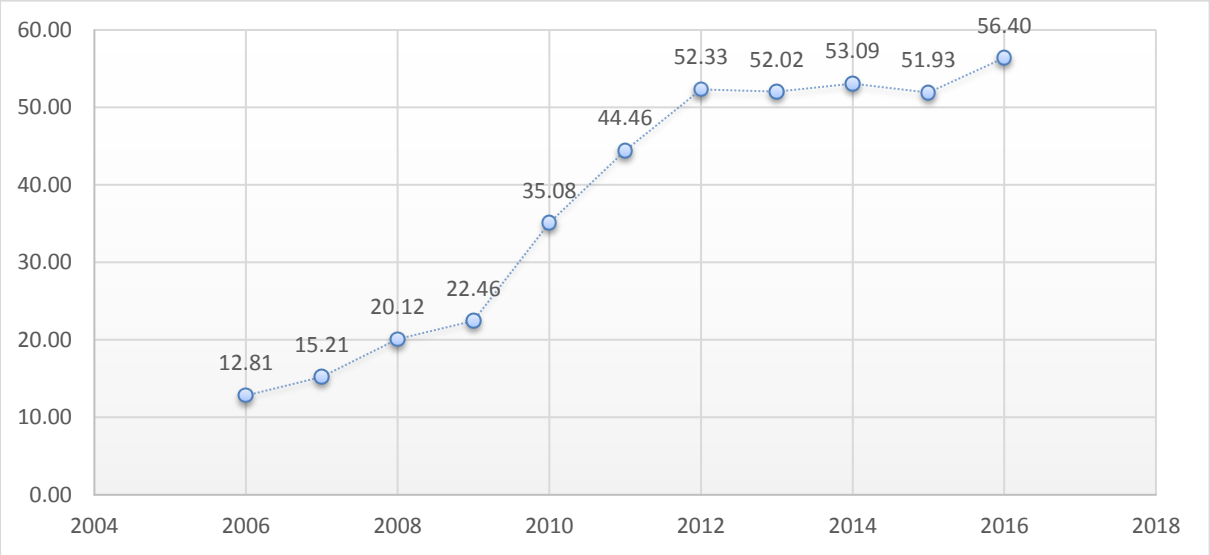


**Fig: 14 FMCG sector Average Royalty Payments for Sample companies**

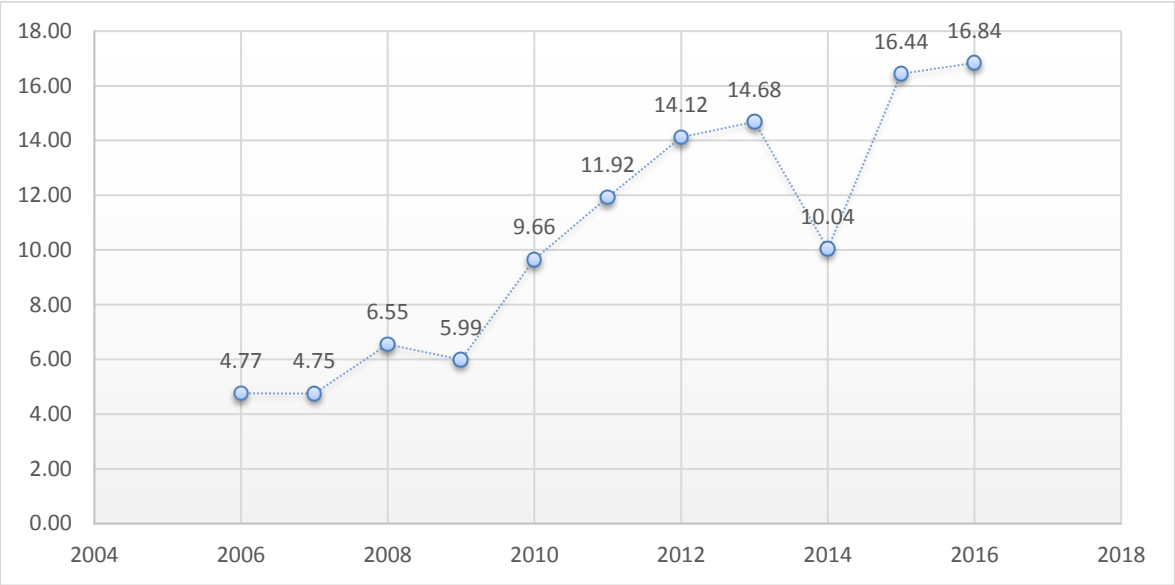


**Fig: 15 Auto Ancillary Sector Royalty Payments for Sample Companies**

The auto ancillary sector which majorly depend on the automobile sector also shows an increasing trend in the royalty payments. It has shown an increase from Rs.4.77 crores to Rs.16.84 crores. Spare parts for the automobiles are the major products of these companies for which they have to get designs from the parent organisation. Thus, this sector has to depend on the design providers.

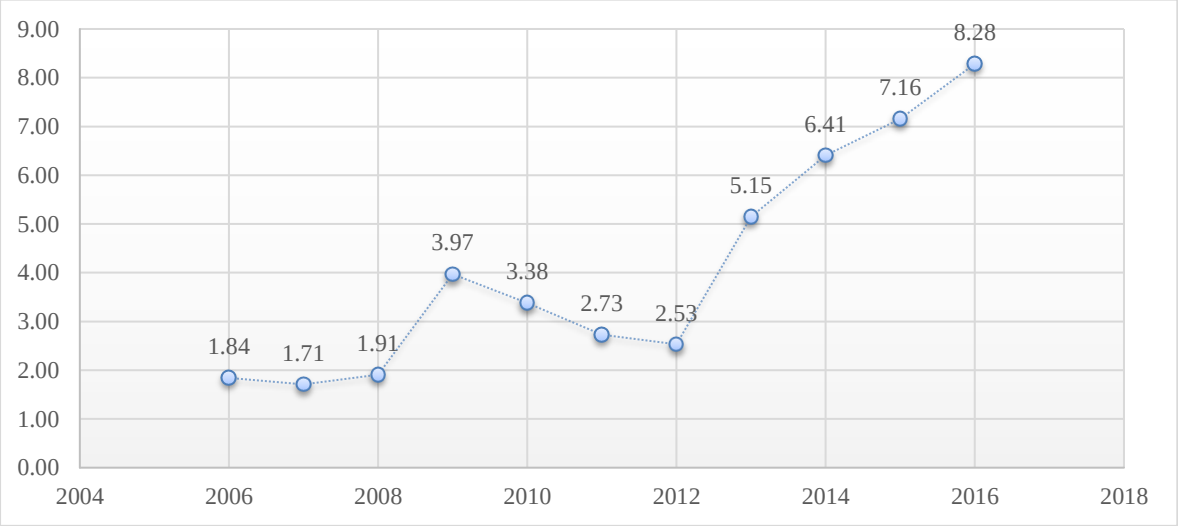


**Fig: 16 Pharma Sector Average Royalty Payments for Sample Companies**

Pharma companies are one of the major contributors of royalty payments in India. Its growth is tremendous and has a potential market in India. Indigenous research in health sector, government support for R&D labs could help to reduce the royalty payments in this sector.

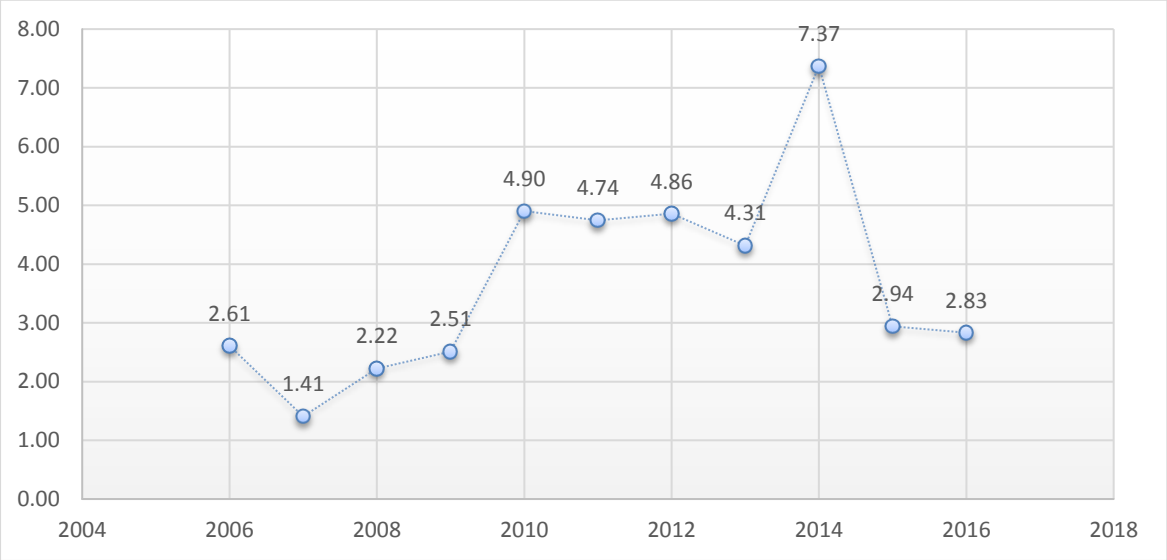


**Fig: 17 Agro Chemicals Sector Average Royalty Payments for Sample Companies**

Average royalty payments for Agro chemicals shows an increasing trend over the years and sudden fall in recent years. The reason being the shift to indigenous methods and natural farming used for agricultural production, which paves way for less dependence on chemicals and reduction in royalty payments. Data from the Union Ministry of Agriculture show a more positive all-India trend, with the usage of bio-pesticides across the country rising faster than that of chemical pesticides. Between 2010-11 and 2016-17, usage of bio-pesticides increased by 23 per cent, while that of chemical pesticides grew only 2 per cent (Business line 2017).

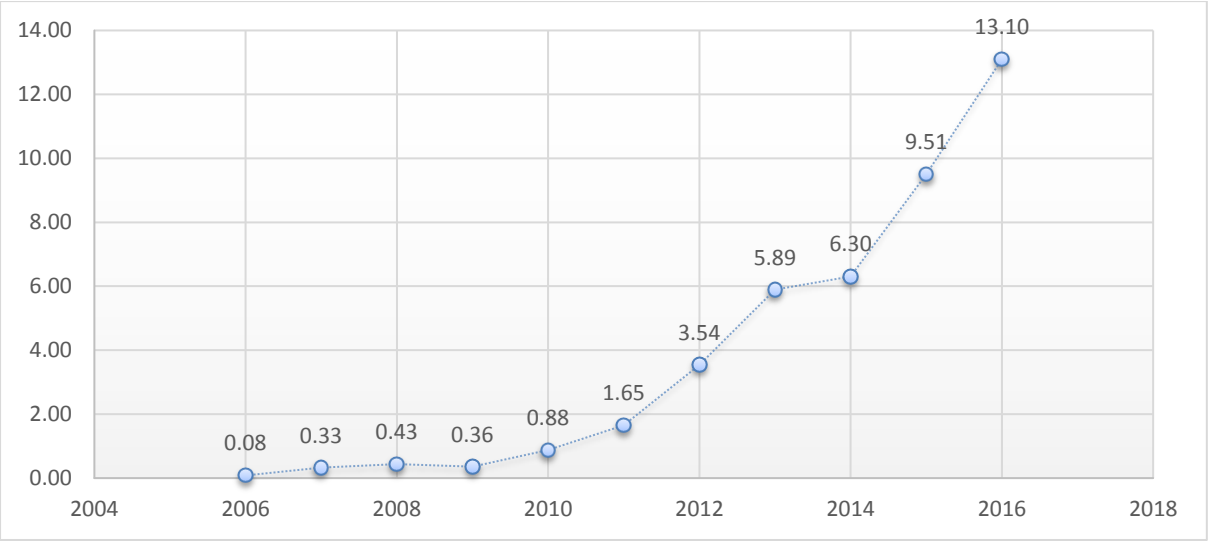


**Fig: 18 Trading Sector Average Royalty Payments for Sample Companies**

Companies in the trading sectors are Bombay cycle, 3M India, Remi Sales and engineering, PCI ltd, etc. Average royalty payments shows an increasing trend over the years from Rs. 0.08 crores to Rs.13.10 crores. This sector has also shown a tremendous growth over the last 10 years.

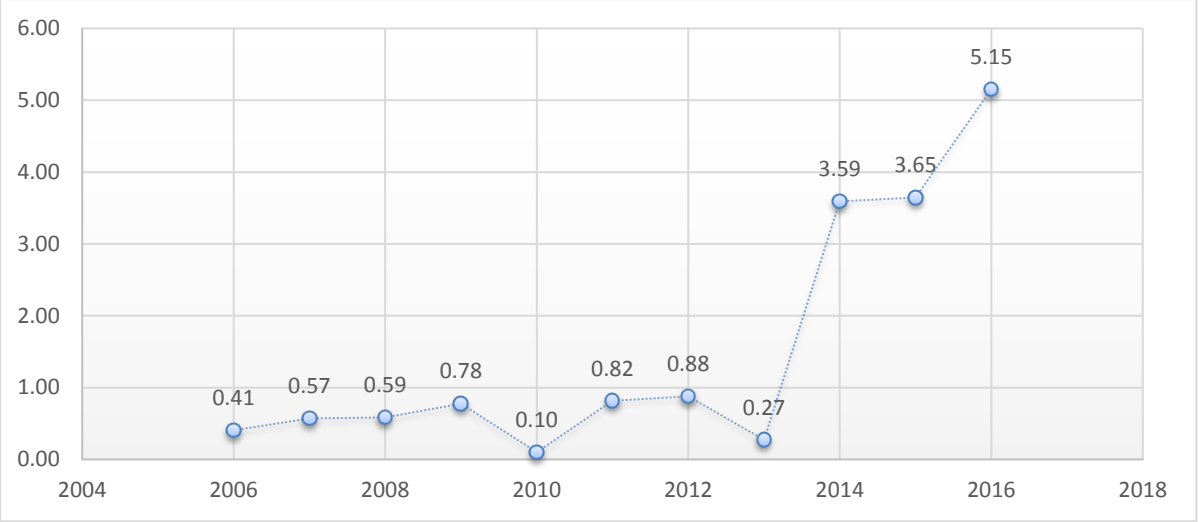


**Fig: 19 Health Care Sector Average Royalty Payments for Sample Companies**

Health care sector companies includes hospitals, medical devices manufacturing companies. Though the contribution of royalty to parent companies in this sector is small in number, it has also grown over the years from Rs.0.41 crores to Rs. 5.15 crores over the years.

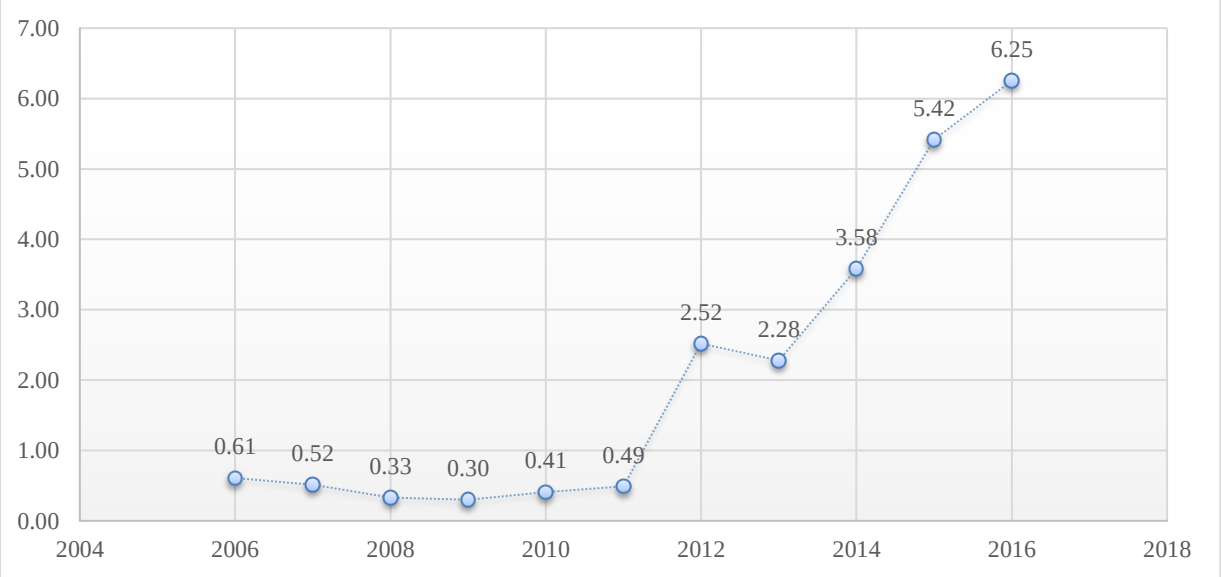


**Fig: 20 Engineering Sector Average Royalty Payments for Sample Companies**

Engineering sector's average royalty payment has grown over the years from less than Rs. One crore to Rs. 6.25 crores. Companies who depend on the designs of engineering products pay the royalty to the design provider or parent company.

In conclusion, average royalty payment for the selected sectors show an increasing trend over the last 10 year period, which shows the dependence of MNCs for their products and/or services. In certain sectors it seems to be reducing but overall the payments are increasing. Next section discuss royalty payment in terms of Net Sales, Cost of Production,

Capital Employed, Profit after Tax and Export earnings. This analysis would give us more information about the increasing royalty in Indian context.

## SECTION 3

Royalty paid in percentage of capital employed, net sales, cost of production, export and profit have been examined in this section. Each sector has been expounded individually with all the above mentioned indicators to understand the trend of royalty payments over the years. To calculate the percentage value in terms of each indicator the following formulae has been used.

$$Royalty\ in\ percentage\ of\ indicators = \frac{R_n}{I_n} * 100$$

$$R_n = Royalty\ in\ Rs.crores\ for\ n^{th}\ year$$

$$I_n = Indicators\ in\ Rs.crores\ for\ n^{th} year$$

### 3.1 Automobile

About 12 companies have been taken from the Automobile sector for analysis. This sector's royalty payment in terms of profit has gone up in the initial years but was trending down to reach a negative low in the year 2012. Since then, royalty paid in terms of profit has gone up drastically. On average, a growth of more than 50 percent in terms of profit has been paid as royalty in this sector. Whereas, royalty in terms of net sales, cost of production, capital employed are in the range of two to eight percent. It is interesting to note that royalty in terms of export earnings has grown over the years, and this has gone up to 50 per cent during 2010 and come down to 10 percent in recent years. The major sector to be noted is automobile with highest royalty payment in Indian context, as the average royalty payment in this sector stands above all the other sectors selected.

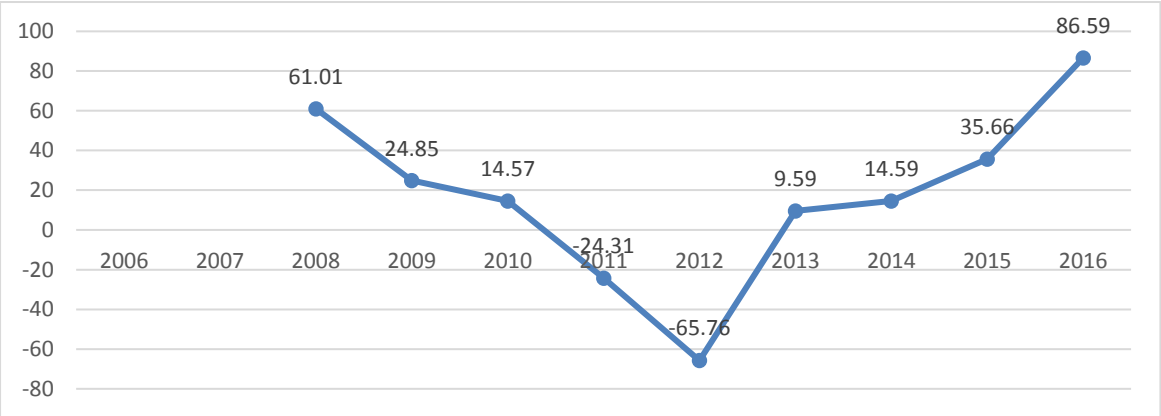


**Fig: 21 Automobile Sector Average Royalty Payment in Percentage of Profit**

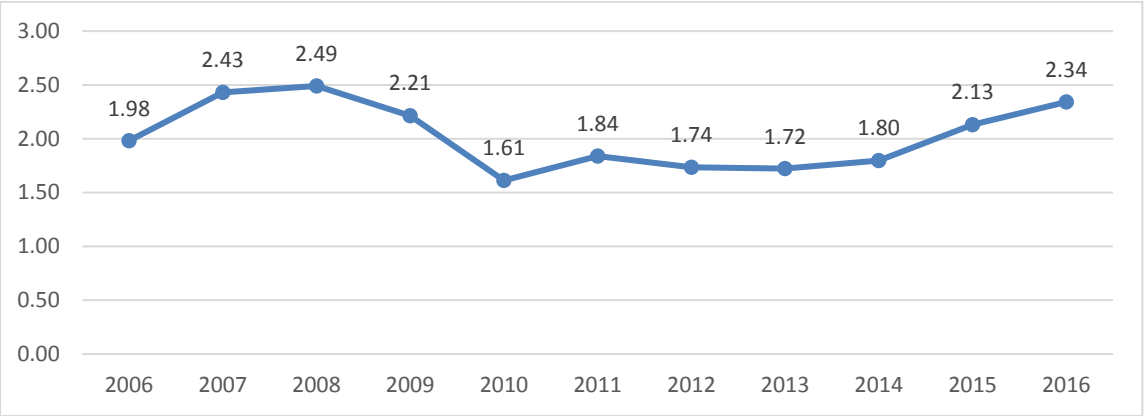


**Fig: 22 Automobile Sector Average Royalty Payment in Percentage of Net Sales**

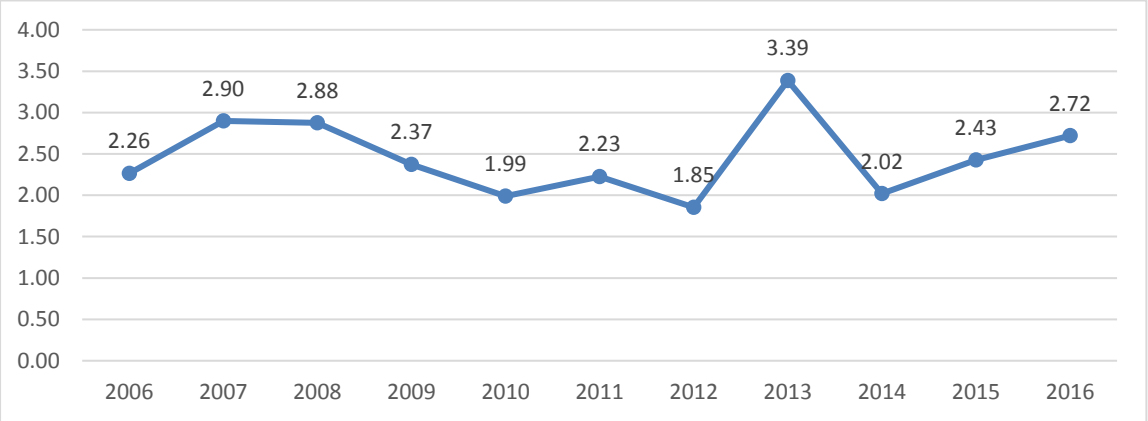


**Fig: 23 Automobile Sector Average Royalty Payment in Percentage of Cost of production**

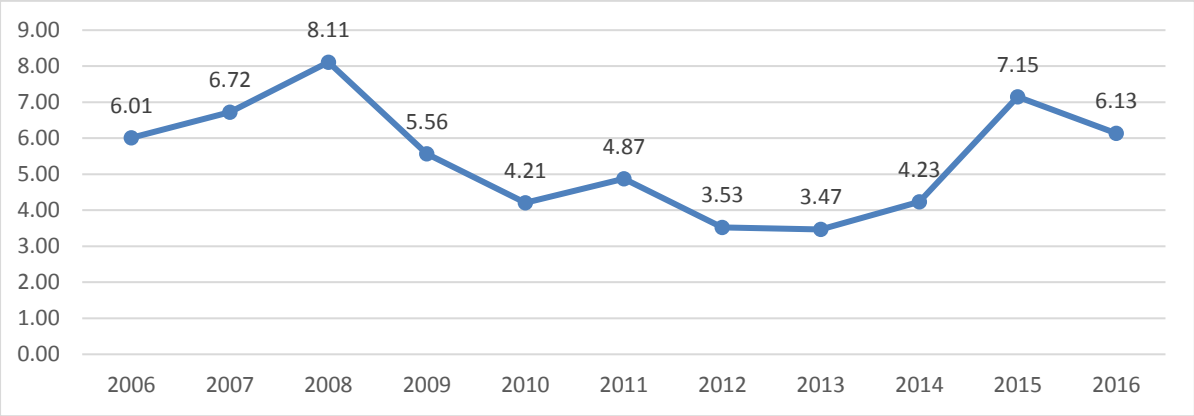


**Fig: 24 Automobile Sector Average Royalty Payment in Percentage of Capital employed**

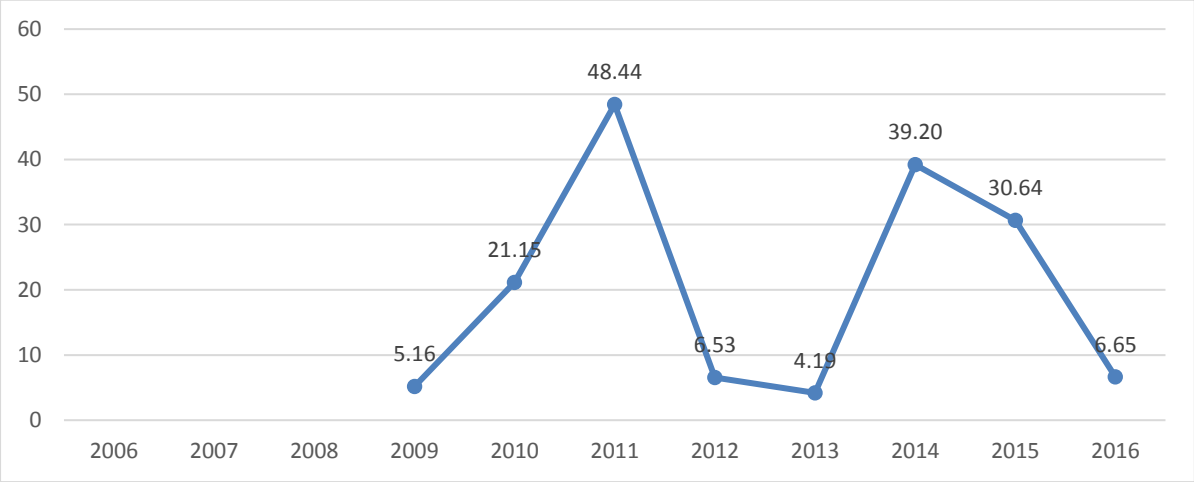


**Fig: 25 Automobile Sector Average Royalty Payment in Percentage of Exports**

### 3.2 Information Technology software and hardware:

In IT, the royalty paid in percentage of net profit shows a tremendous growth over the 10 year period. In 2012, it has come down to zero but ticked a growth rate of 674 percentage in recent years. High dependency on MNC software, especially in operating system by Microsoft and other software products, made possible to pave way for huge royalty to the parent companies. Royalty paid as a percentage of capital employed, cost of production, net sales trends upward in this sector. Royalty paid in percentage of exports also show an increasing trend but has slowed down in recent years owing to the reduction in software sales produced in India.

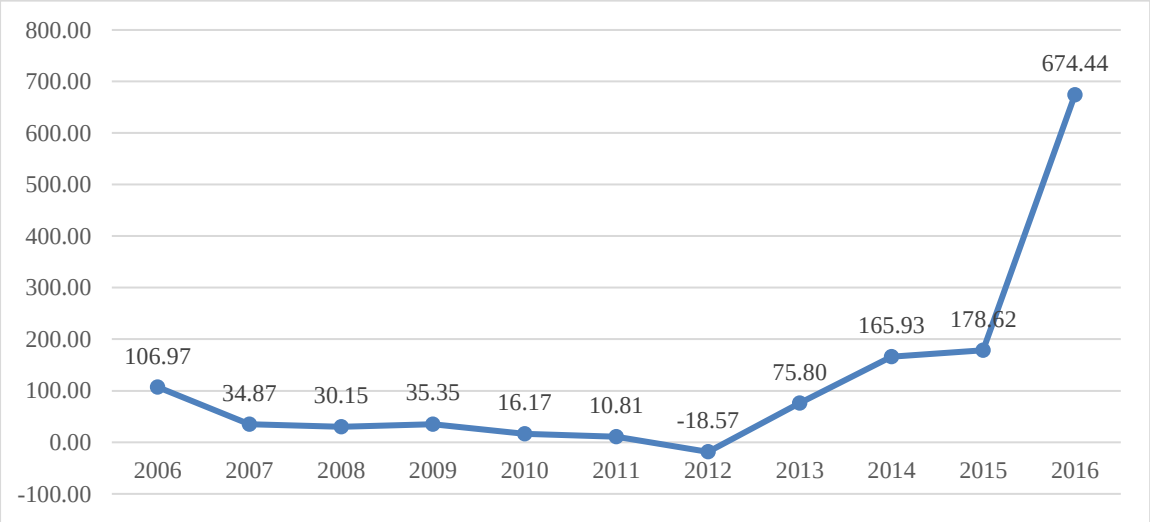


**Fig: 26 IT Sector Average Royalty in percentage of Net Profit**

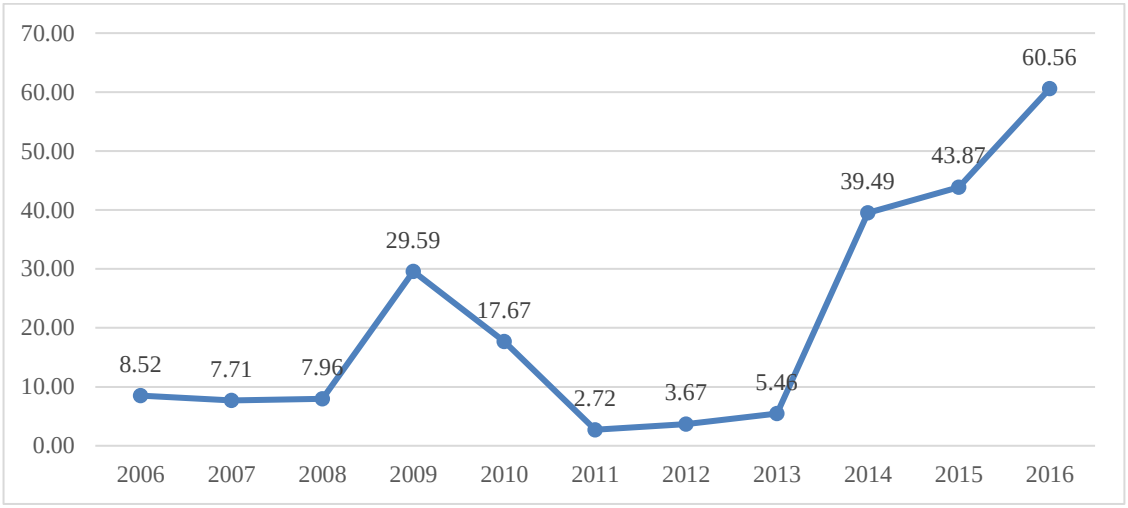


**Fig: 27 IT Sector Average Royalty in percentage of Capital Employed**

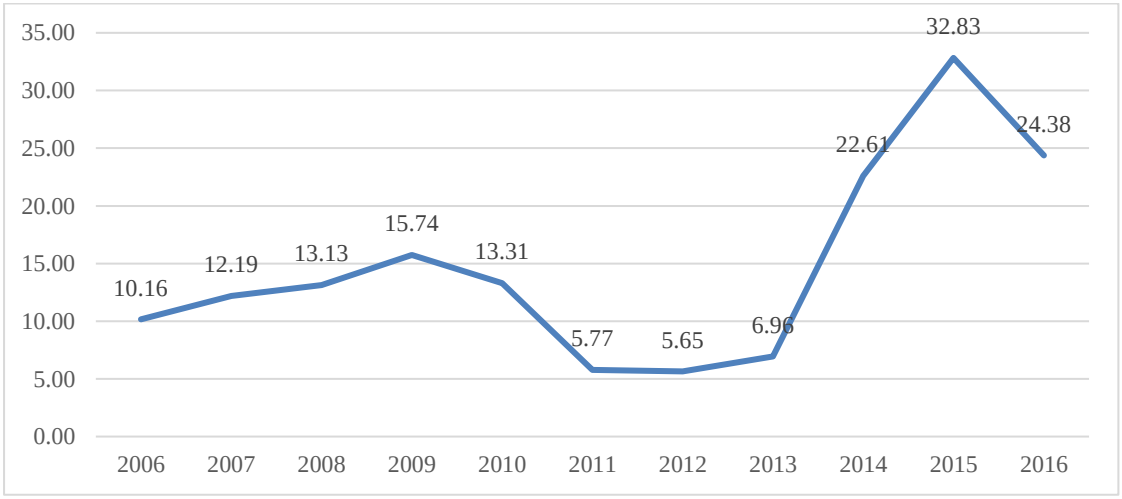


**Fig: 28 IT Sector Average Royalty in percentage of Cost of Production**

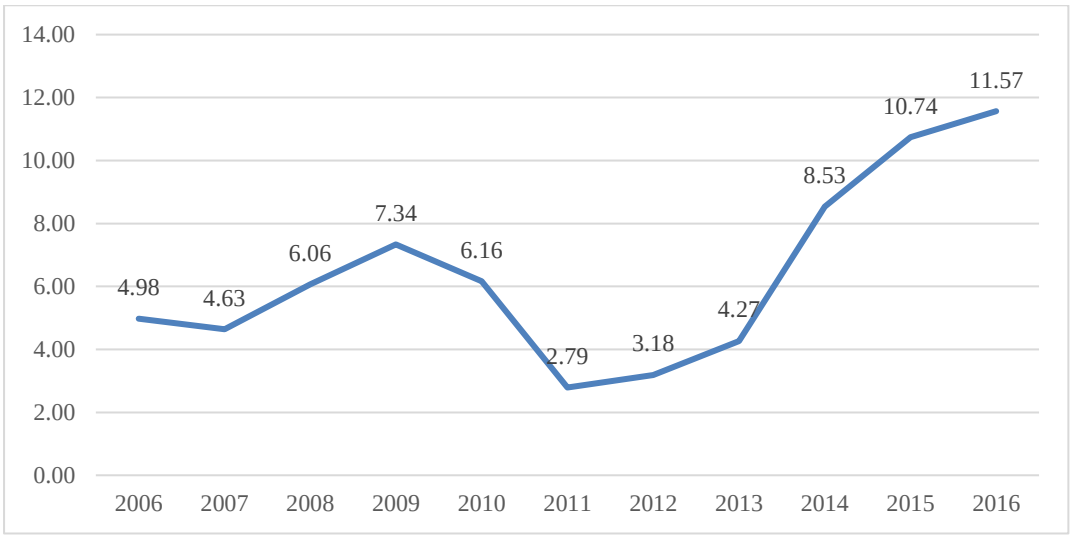


**Fig: 29 IT Sector Average Royalty in percentage of Net Sales**

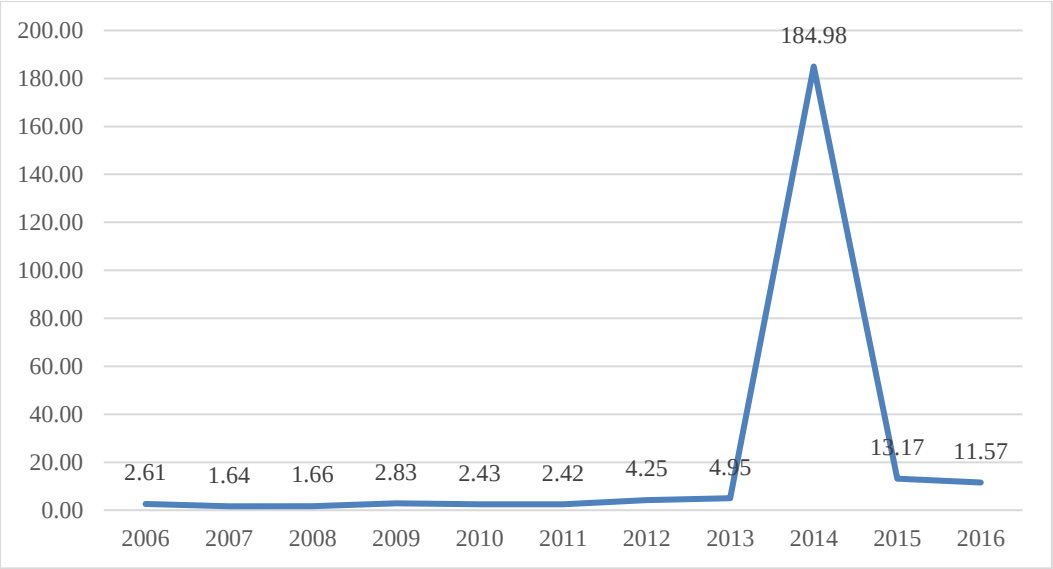


**Fig: 30 IT Sector Average Royalty in percentage of Export**

### 3.3 Media Sector

Media sector shows a reduction in royalty payment in percentage with respect to profit over the years. Whereas, other indicators like capital employed, cost of production and net sales show an increasing royalty payment for the same period. Export data shows a decreasing royalty payment.

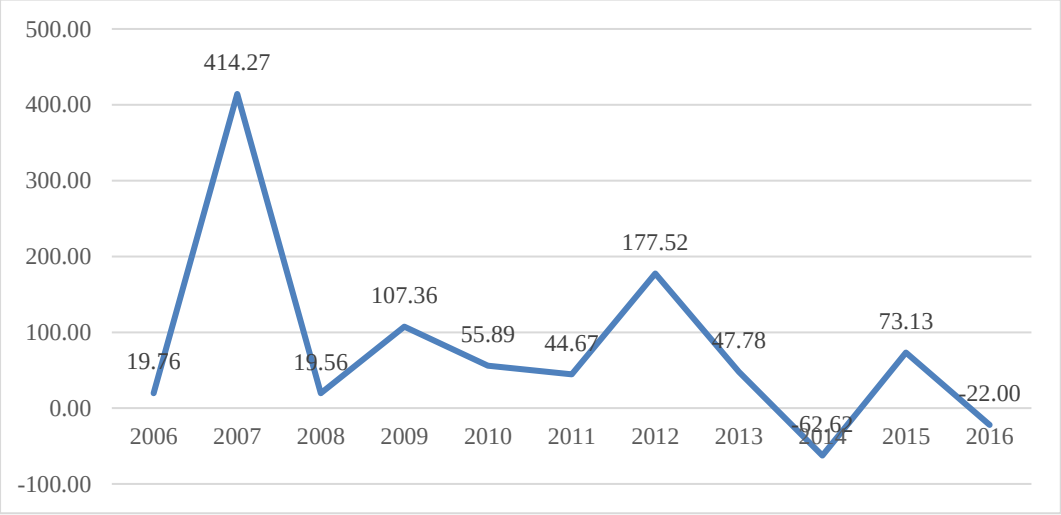


**Fig: 31 Media Sector Average Royalty Payment in percentage of Profit**

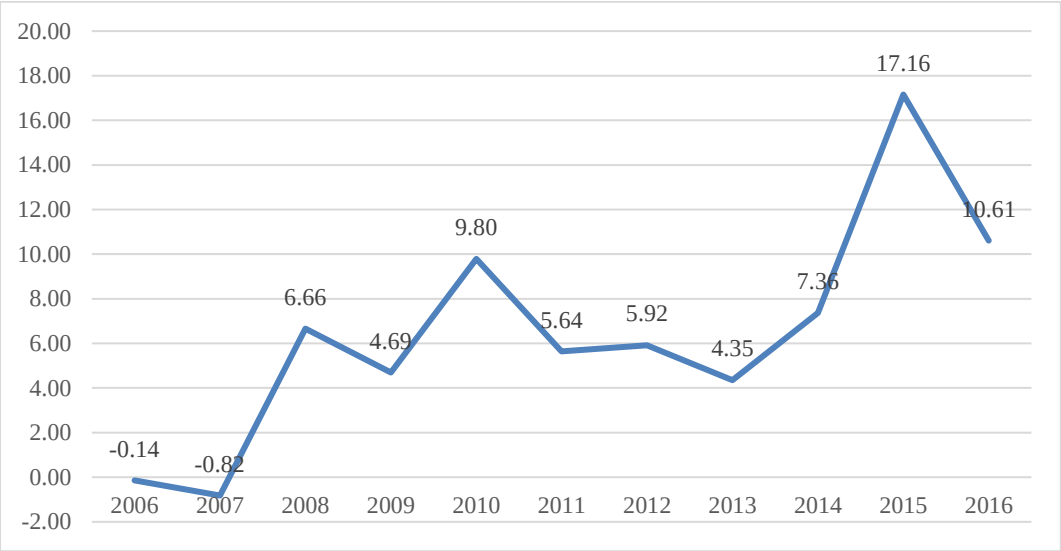


**Fig: 32 Media Sector Average Royalty Payment in percentage of Capital Employed**

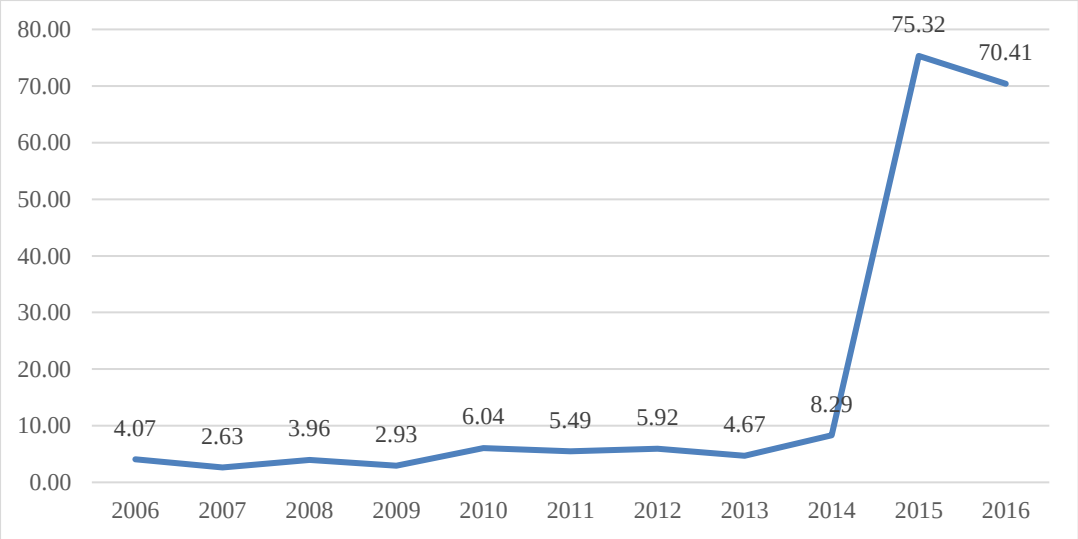


**Fig: 33 Media Sector Average Royalty Payment in percentage of Cost of Production**

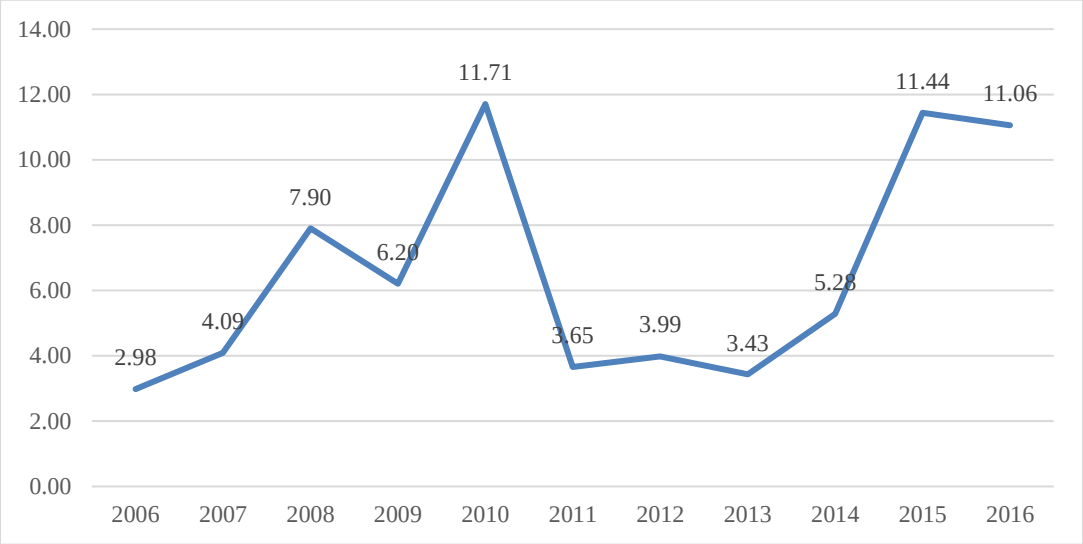


**Fig: 34 Media Sector Average Royalty Payment in percentage of Net Sales**

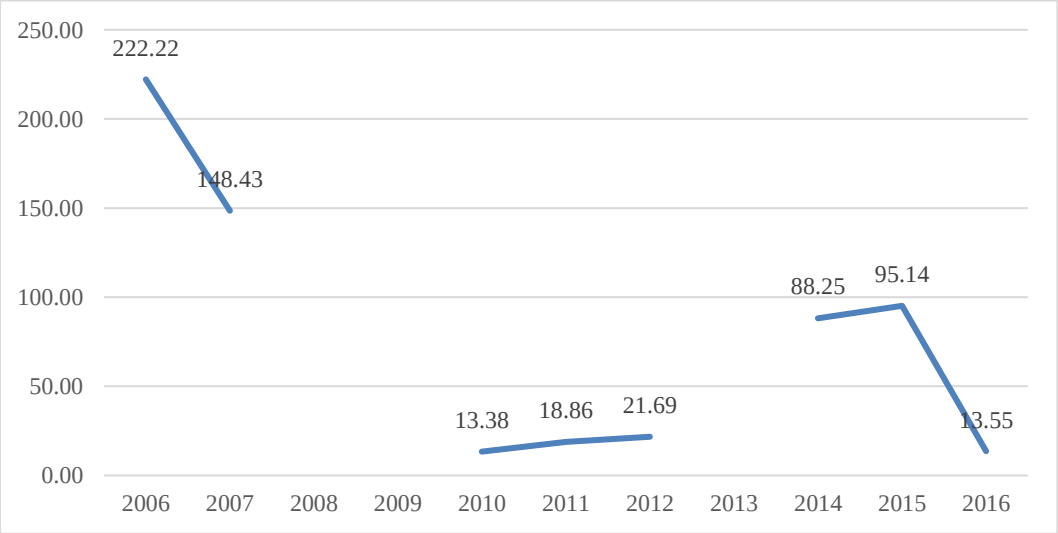


**Fig: 35 Media Sector Average Royalty Payment in percentage of Export**

### 3.4 Electronics Sector

In electronics sector, the average royalty payment in percentage of profit has decreased in the initial years, but the introduction of smartphones, gadgets, LED televisions, etc. have contributed to a 50 per cent increase during the period 2009-14. But in recent years, there is a slowdown which may be due to indigenous production of electronic goods and less dependent on the MNCs. Other indicators, with respect to net sales, cost of production, capital employed, on average are showing growth in royalty payment over the years and trends below five percent.


**Fig: 36 Electronics Sector Average Royalty in Percentage of Net Profit**

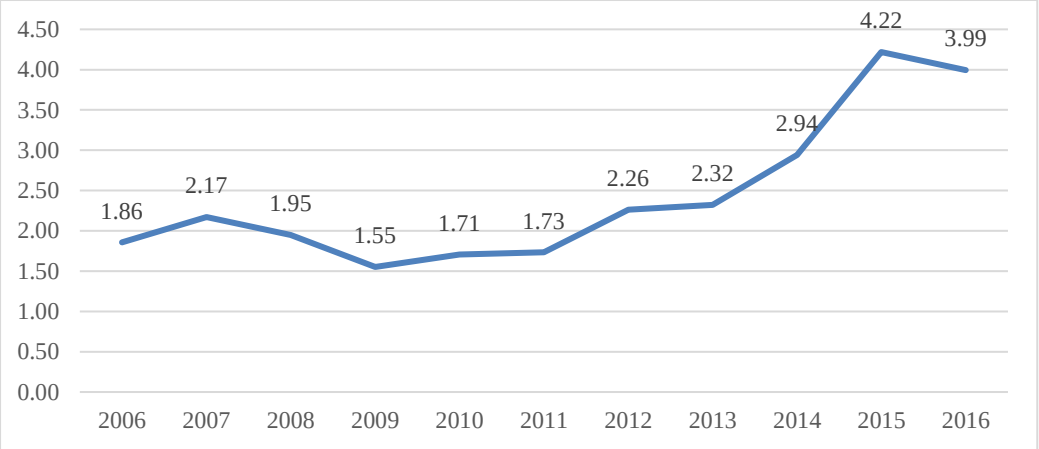


**Fig: 37 Electronics Sector Average Royalty in Percentage of Capital Employed**

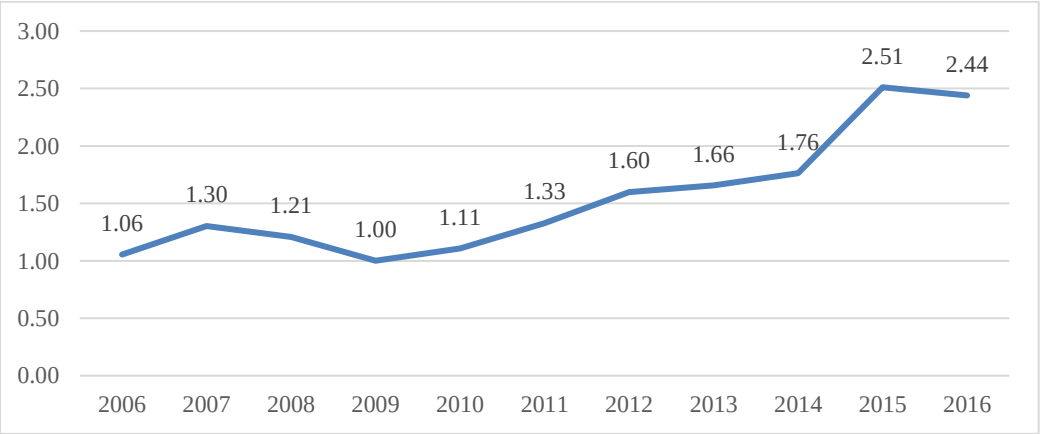


**Fig: 38 Electronics Sector Average Royalty in percentage of Cost of Production**

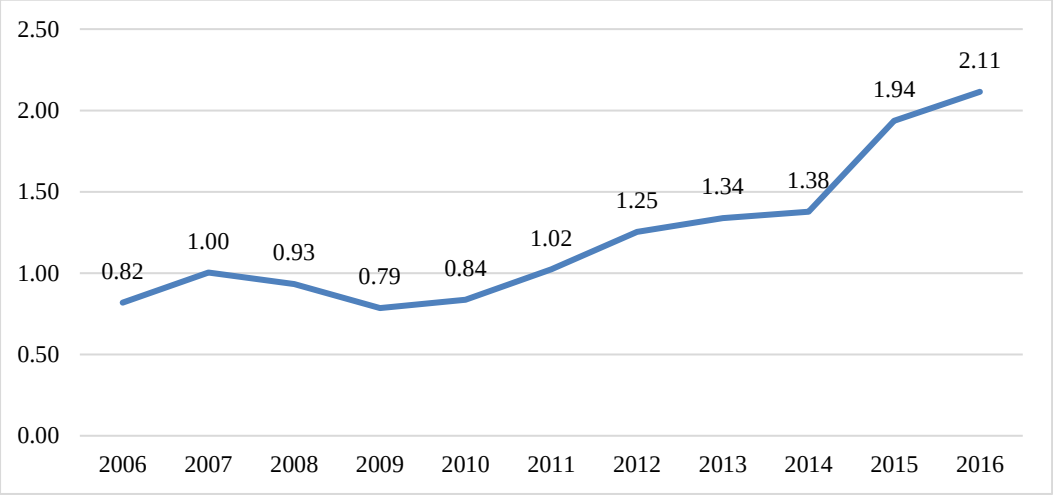


**Fig: 39 Electronics Sector Average Royalty in percentage of Net Sales**

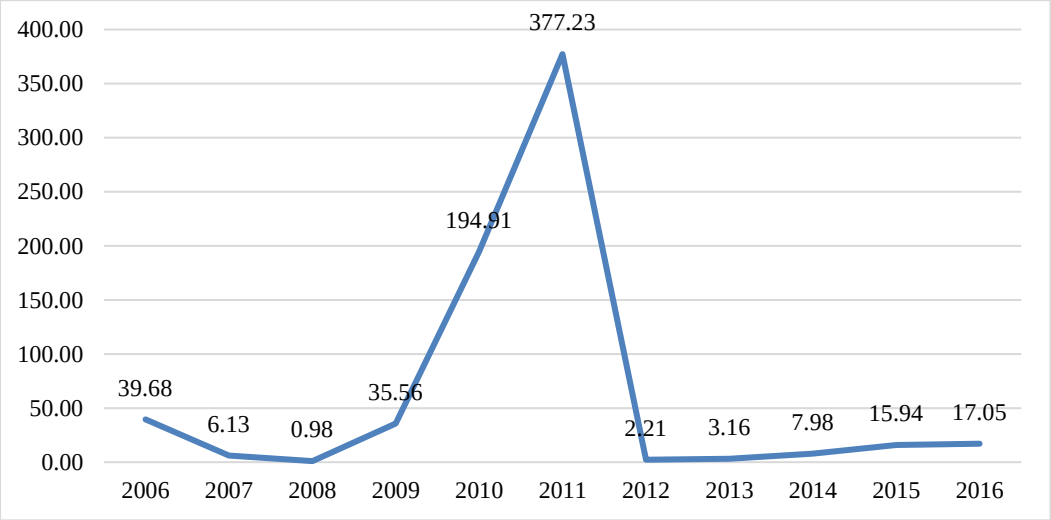


**Fig: 40 Electronics Sector Average Royalty in Percentage of Exports**

### 3.5 Auto Ancillary Sector

Auto ancillary sector's royalty payment in percentage of net profit shows an increasing trend over the years, and ranges between 10 percent and 30 percent. Royalty paid in percentage of export shows a sudden upsurge during 2010 to 2014 and reduced in recent years. Royalty paid in percentage of Net sales, capital employed and cost of production are showing a gradual increase and trending below three percent.

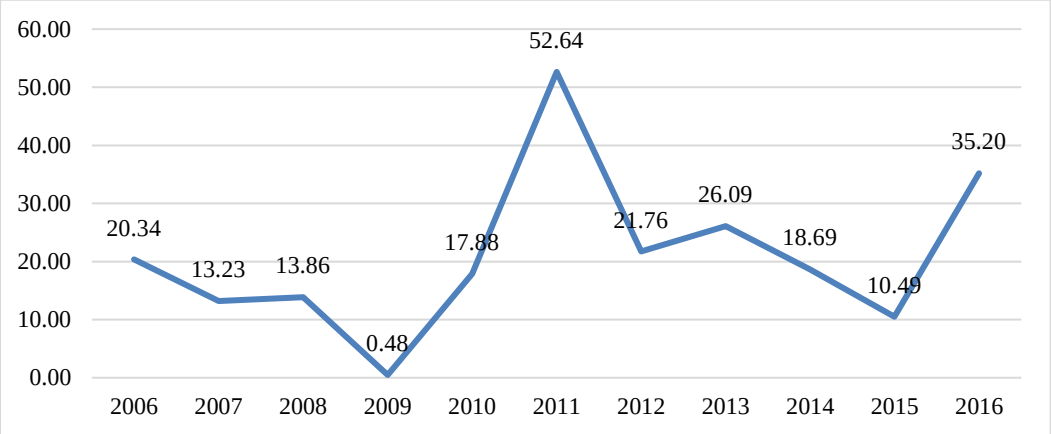


**Fig: 41 Auto Ancillary Sector Average Royalty in percentage of Net Profit**

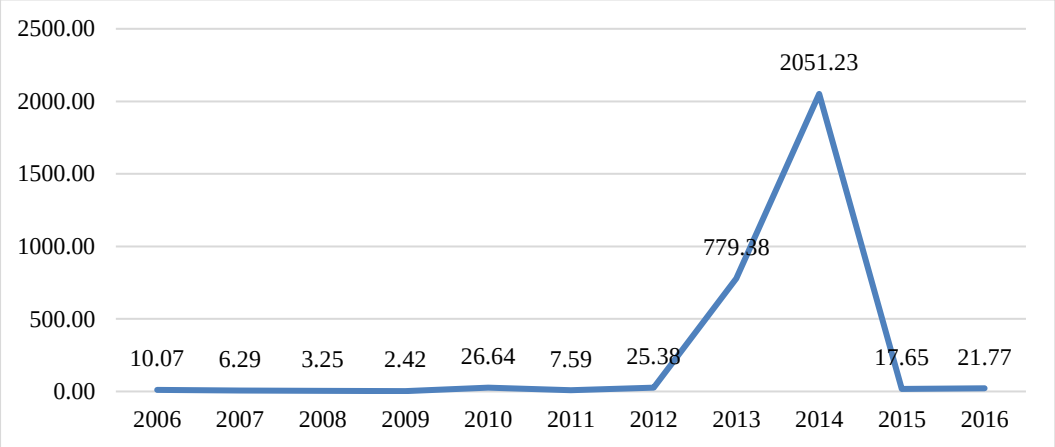


**Fig: 42 Auto Ancillary Sector Average Royalty in percentage of Export**

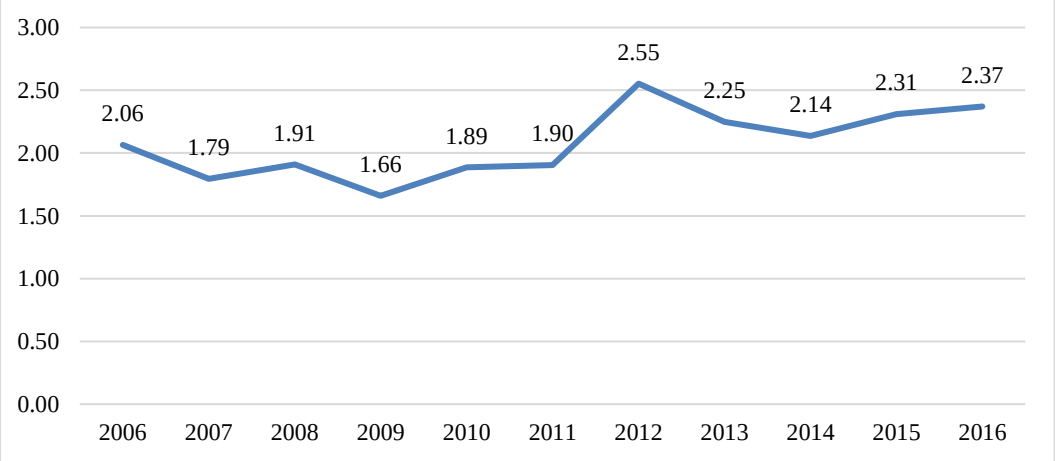


**Fig: 43 Auto Ancillary Sector Average Royalty in percentage of Capital Employed**

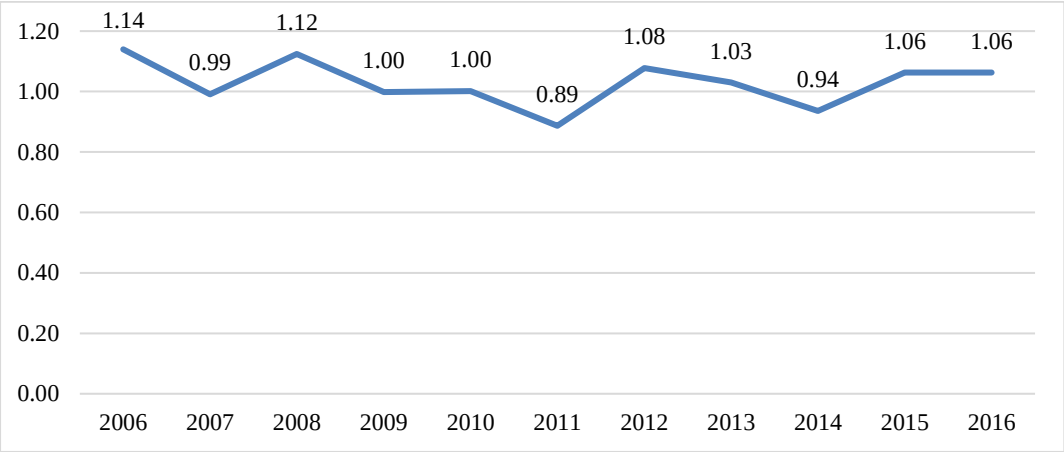


**Fig: 44 Auto Ancillary Sector Average Royalty in percentage of Cost of Production**

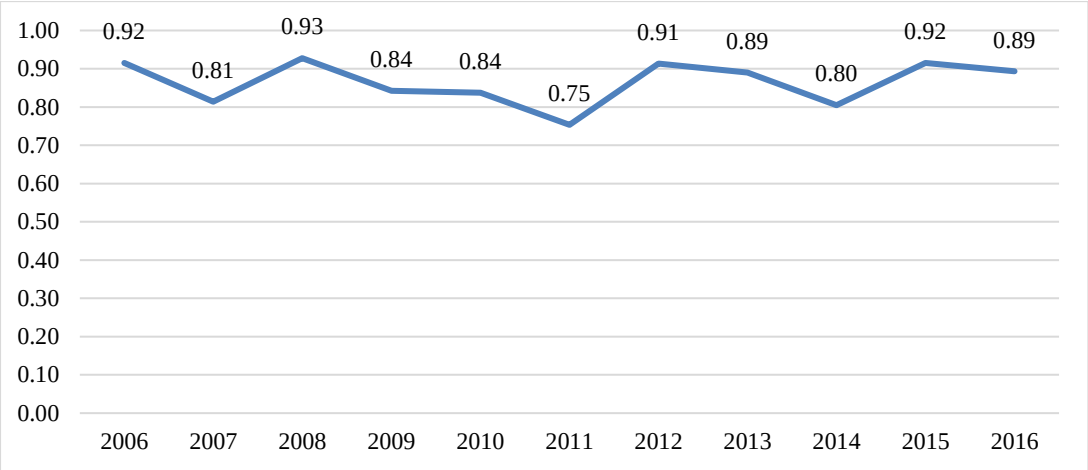


**Fig: 45 Auto Ancillary Sector Average Royalty in percentage of Net Sales**

### 3.6 Pharma Sector

Average royalty payment in percentage of profit shows a negative trend during 2009 and 2014, but has picked up since 2015, and in addition, about 20 percent of profit is paid as royalty to the parent companies by Indian subsidiaries. Other indicators also shows a decreasing trend from 2013-2014.

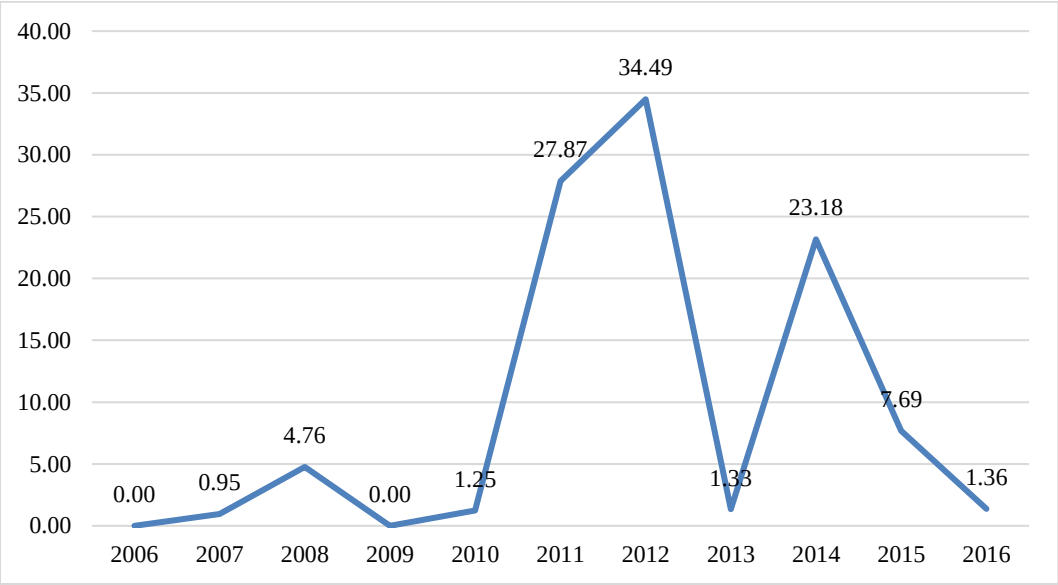


**Fig: 46 Pharma Sector Average Royalty in percentage of Exports**

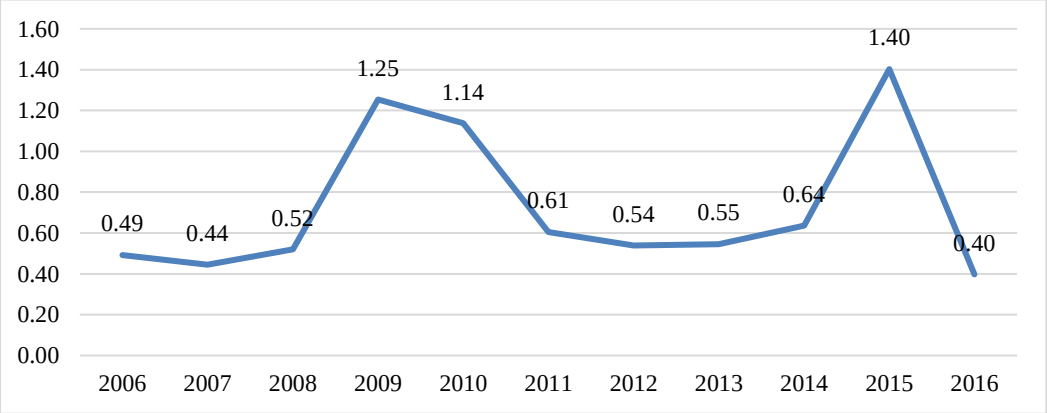


**Fig: 47 Pharma Sector Average Royalty in percentage of Net Sales**

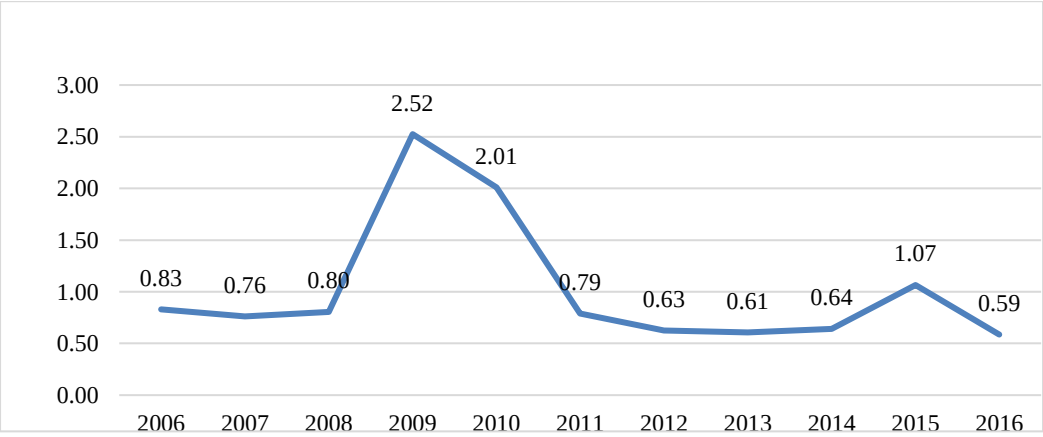


**Fig: 48 Pharma Sector Average Royalty in percentage of Cost of production**

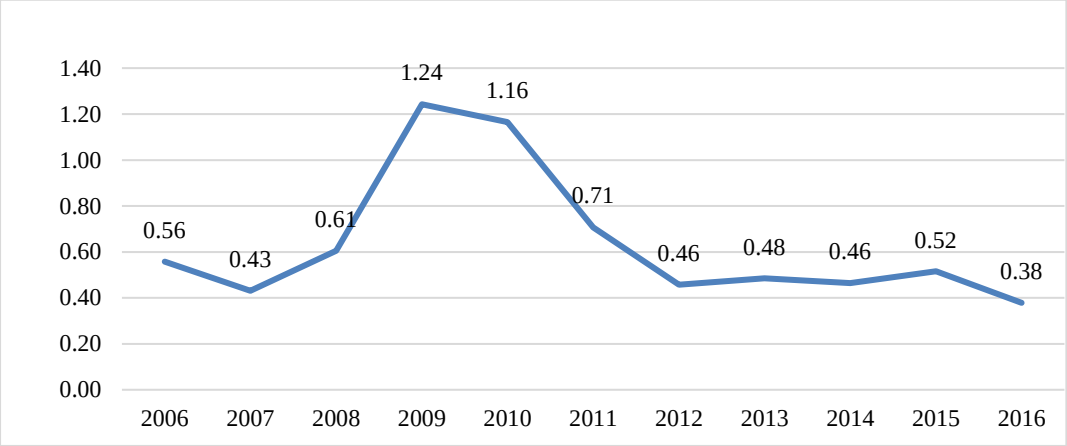


**Fig: 49 Pharma Sector Average Royalty in percentage of Capital Employed**

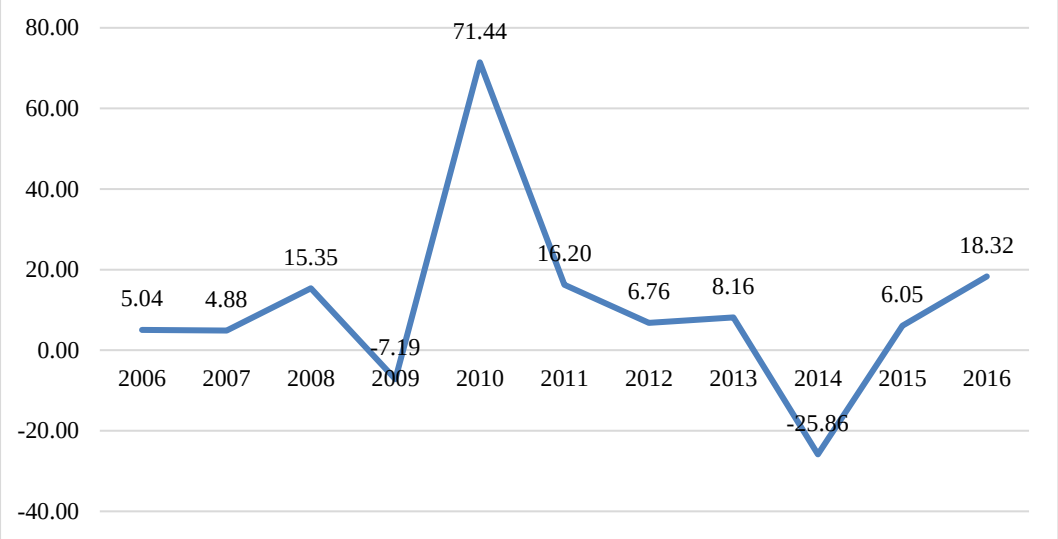


**Fig: 50 Pharma Sector Average Royalty in percentage of Net Profit**

### 3.7 FMCG Sector

Royalty paid in percentage of net profit has a tremendous increase from Rs.60.90 crores to Rs.548.35 crores over the years. Royalty paid in terms of capital employed shows a decreasing trend, whereas the percentage of royalty paid in terms of net sales and cost of production trending below three percent.

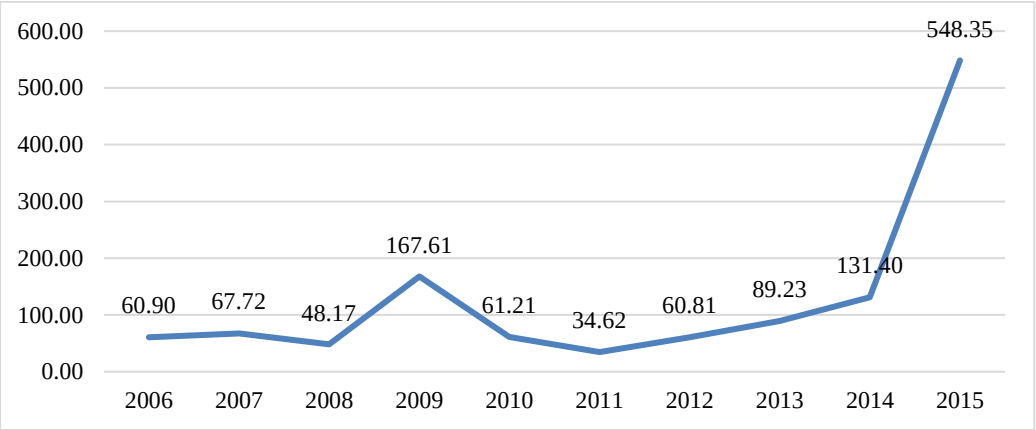


**Fig: 51 FMCG Sector Average Royalty Payment in percentage of Profit**

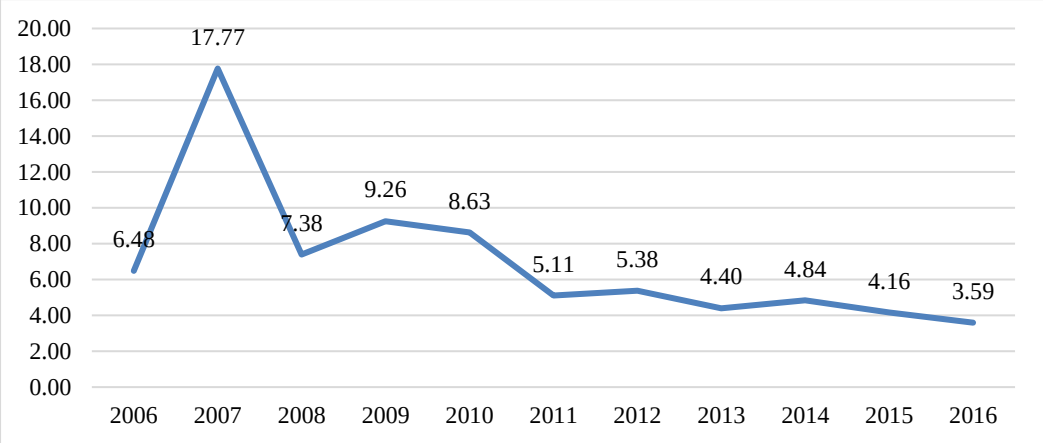


**Fig: 52 FMCG Sector Average Royalty Payment in percentage of Capital Employed**

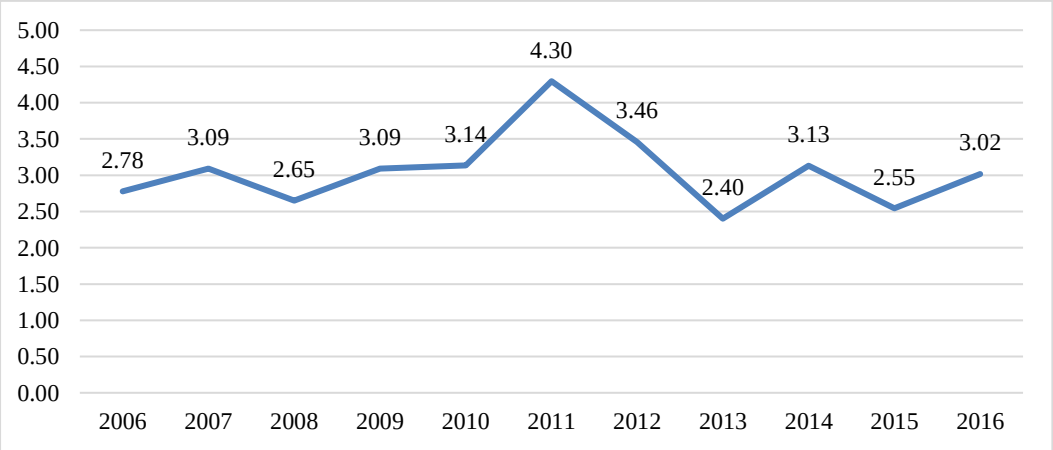


**Fig: 53 FMCG Sector Average Royalty Payment in percentage of Cost of Production**

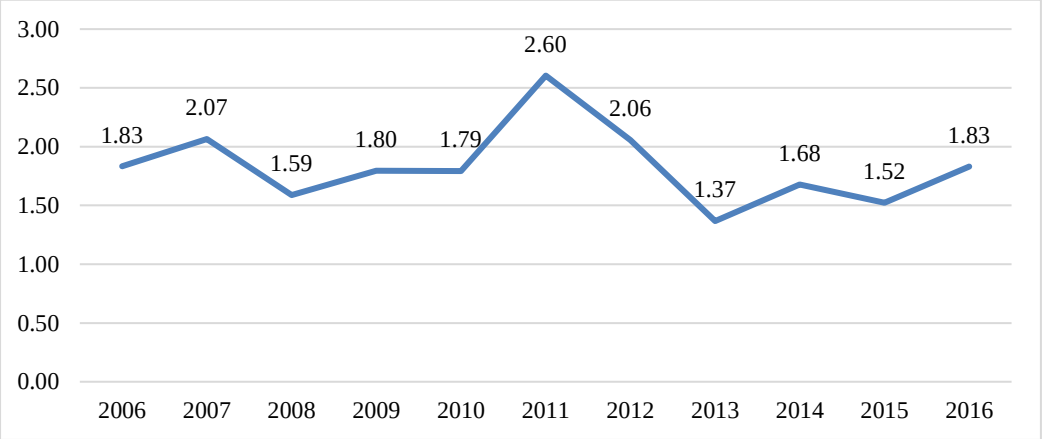


**Fig: 54 FMCG Sector Average Royalty Payment in percentage of Net Sales**

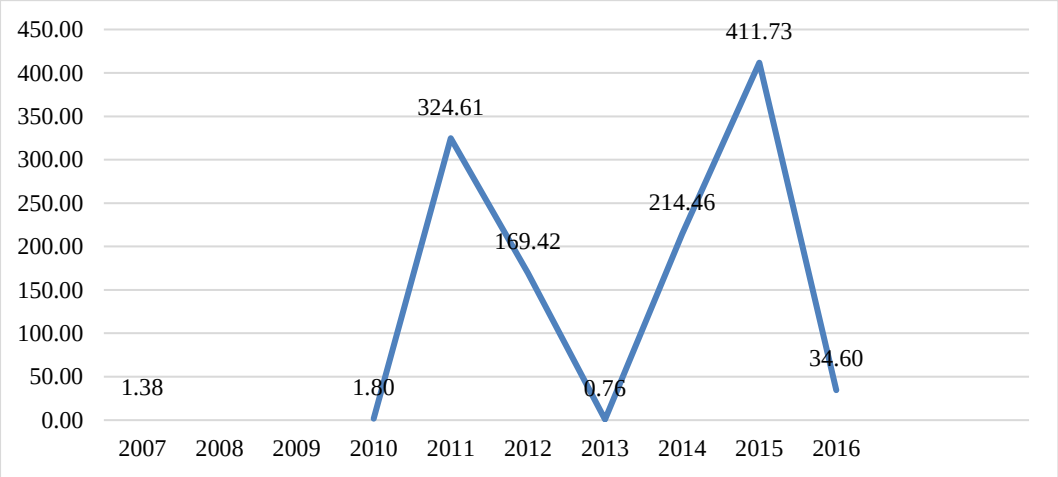


**Fig: 55 FMCG Sector Average Royalty Payment in percentage of Export**

### 3.8 Agro Chemicals

Among the five companies selected for the analysis, the royalty paid in percentage of net profit, net sales, cost of production and capital employed are showing an increasing trend over the years. Though there is a sharp increase in between it has come to a down in recent years, and ranges from one to four percent.

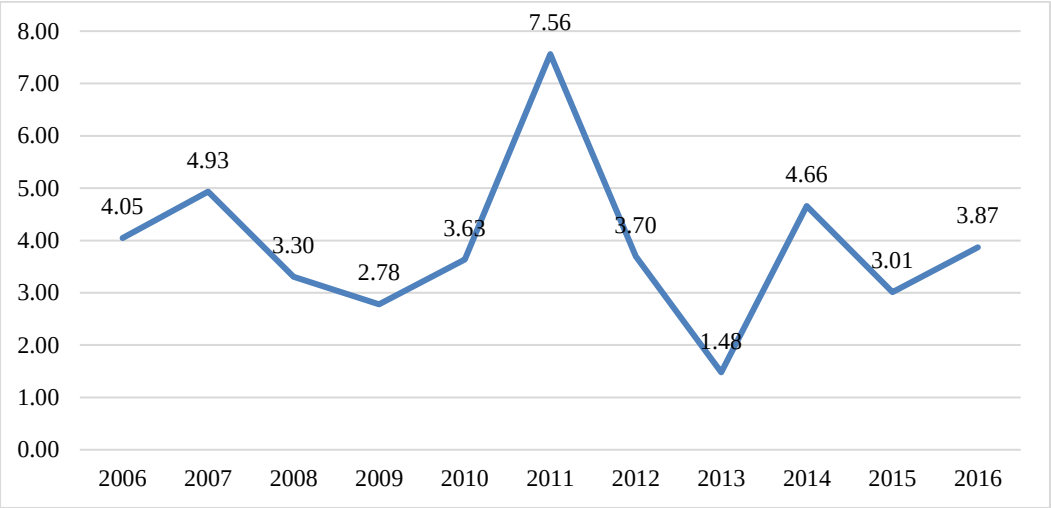


**Fig: 56 Agro Chemicals Sector Average Royalty Payment in percentage of Profit**

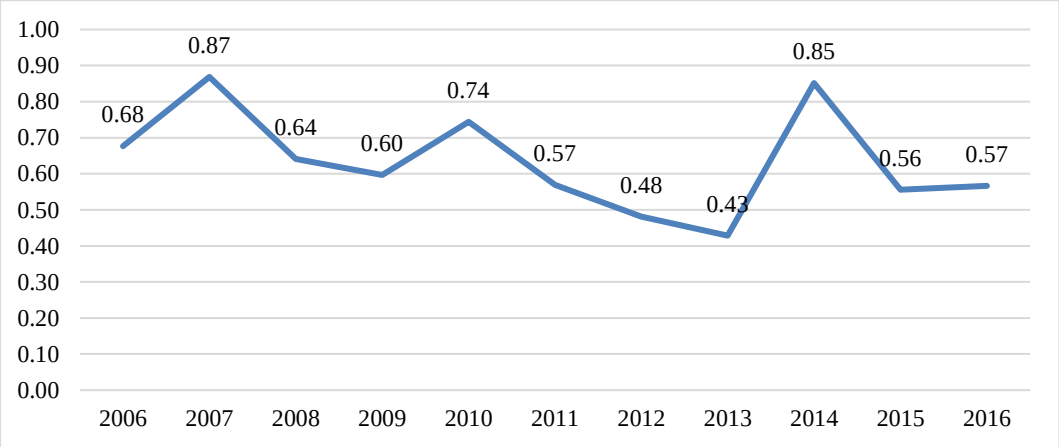


**Fig: 57 Agro Chemicals Sector Average Royalty Payment in percentage of Capital Employed**

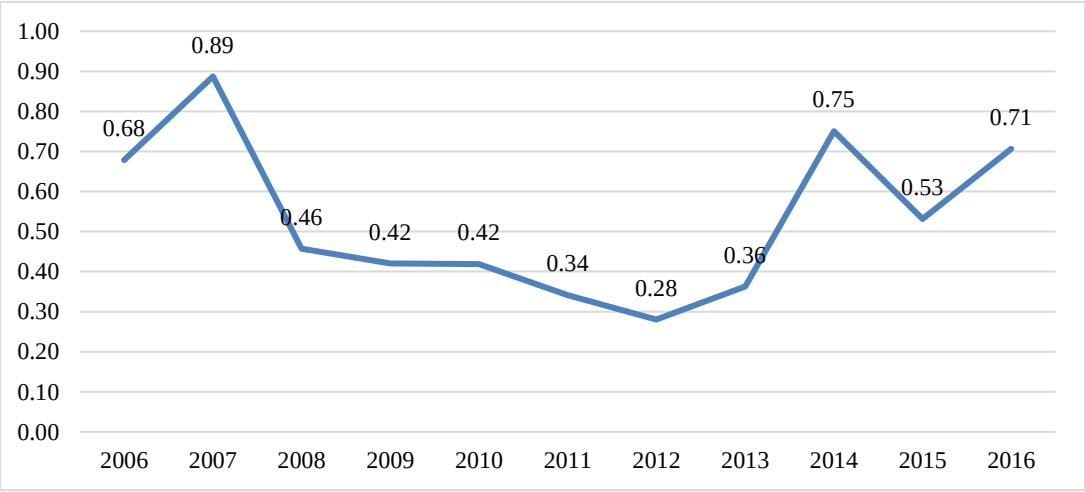


**Fig: 58 Agro Chemicals Sector Average Royalty Payment in percentage of Cost of Production**

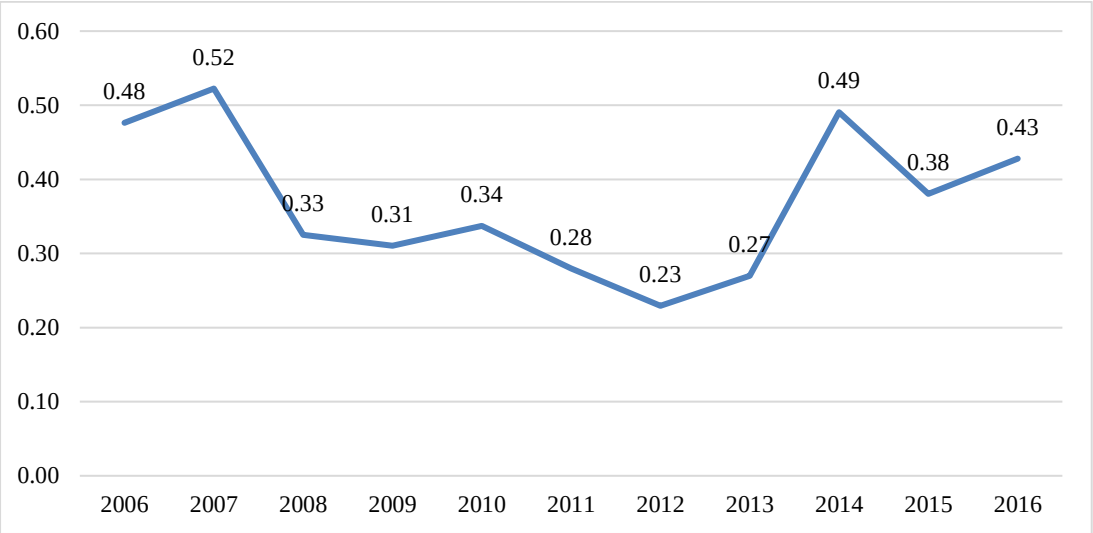


**Fig: 59 Agro Chemicals Sector Average Royalty Payment in percentage of Net Sales**

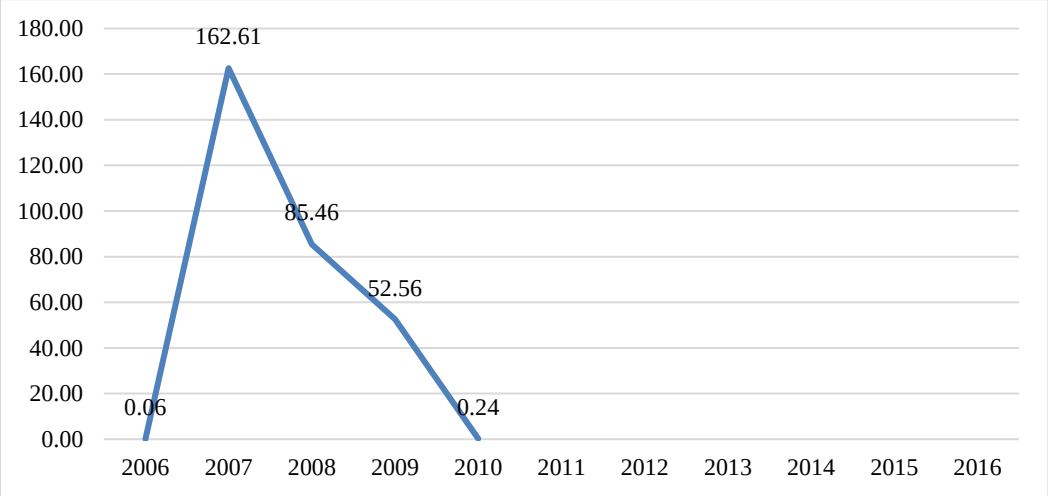


**Fig: 60 Agro Chemicals Sector Average Royalty Payment in percentage of Exports**

### 3.9 Trading Sector

Average royalty payment for trading sector in percentage of profit, net sales, cost of production, capital employed, and exports shows an increasing trend over the years. It shows the dependence of MNCs for patents or designs or other intellectual property rights. But, in recent years, the royalty payment has come down due to the development of indigenous technologies.

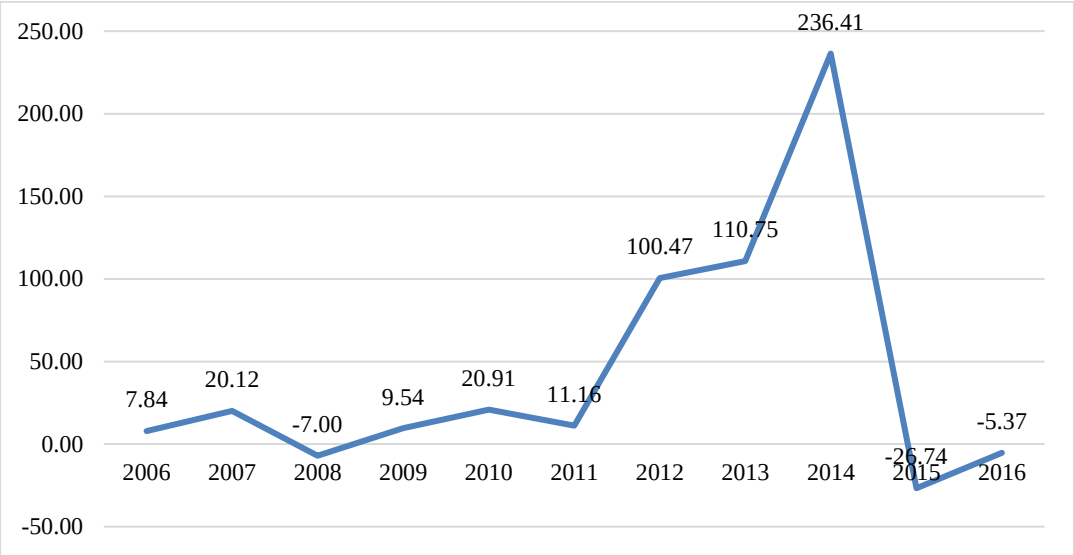


**Fig: 61 Trading Sector Average Royalty Payment in percentage of Profit**

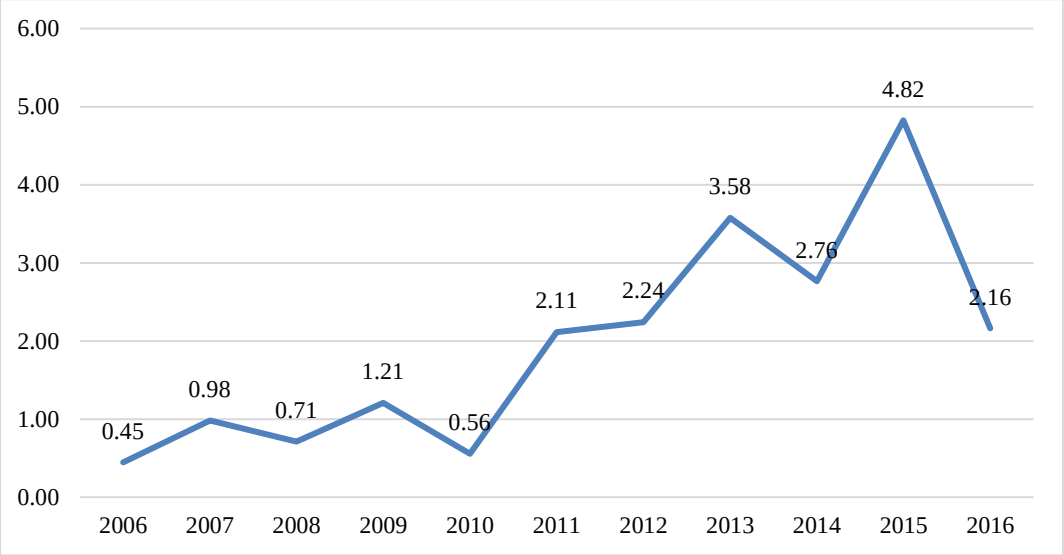


**Fig: 62 Trading Sector Average Royalty Payment in percentage of Capital Employed**

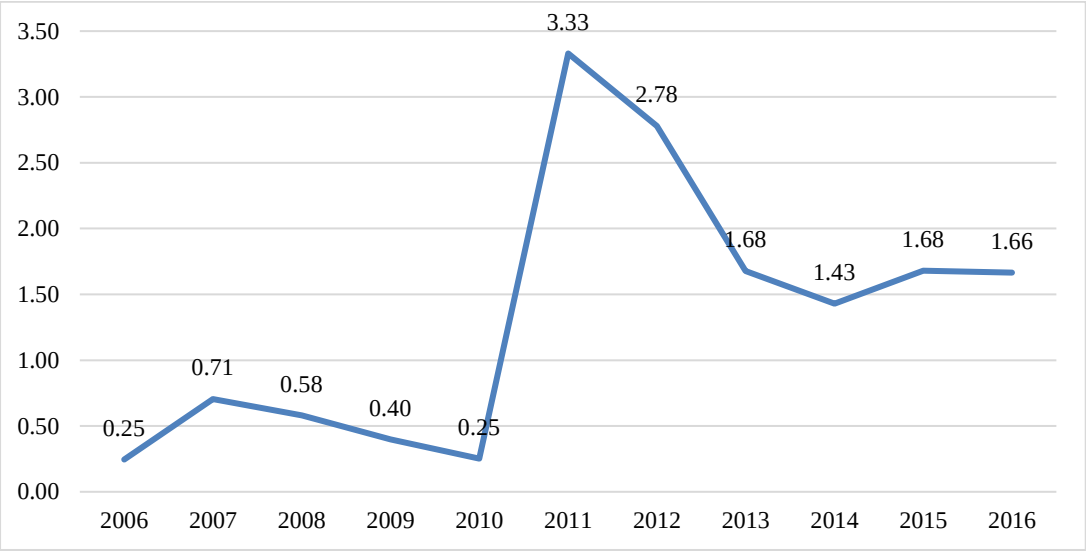


**Fig: 63 Trading Sector Average Royalty Payment in percentage of Cost of Production**

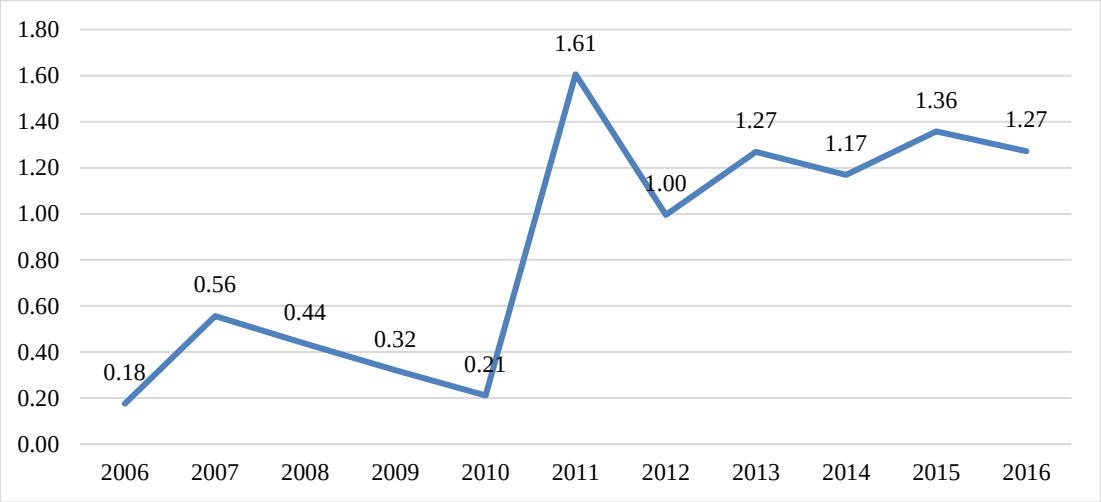


**Fig: 64 Trading Sector Average Royalty Payment in percentage of Net Sales**

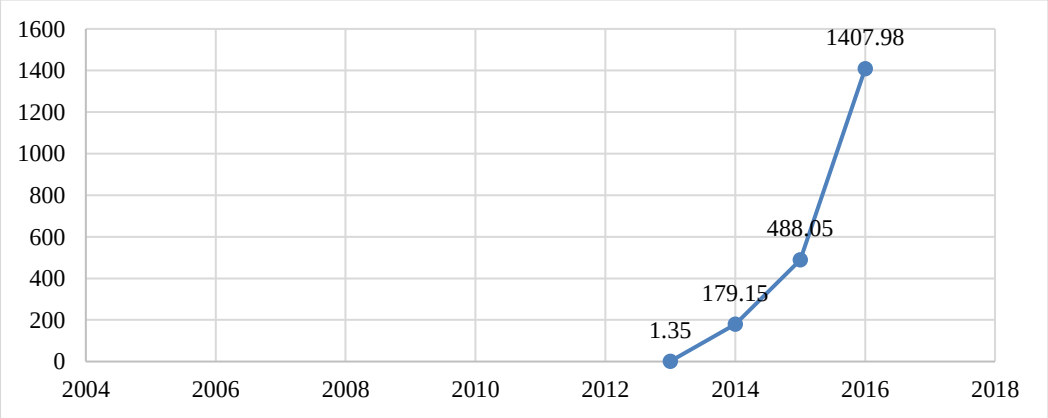


**Fig: 65 Trading Sector Average Royalty Payment in percentage of Export**

### 3.10 Health Care Sector

In health care sector, the royalty payments in percentage of profit, capital employed, cost of production and net sales shows a decreasing trend over the period of 10 years.

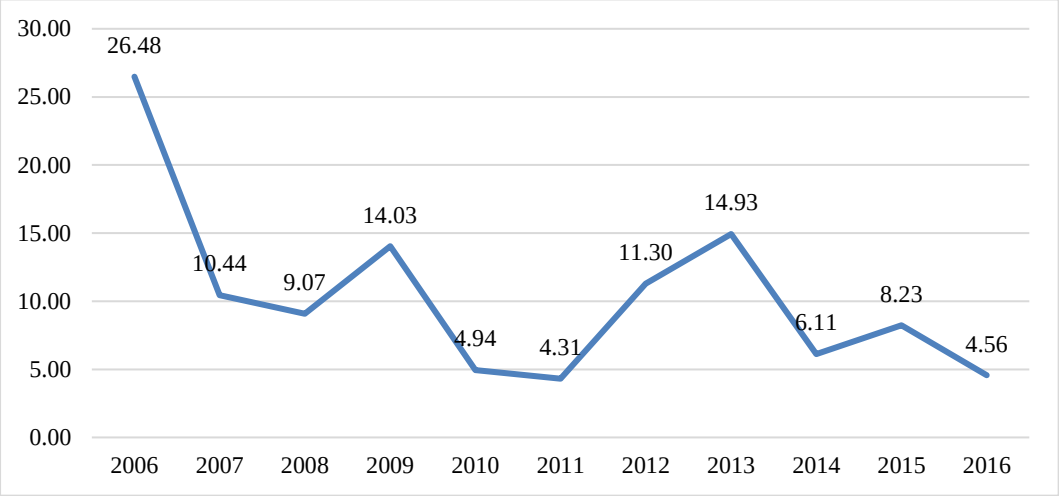


**Fig: 66 Health Care Sector Average Royalty Payment in percentage of Profit**

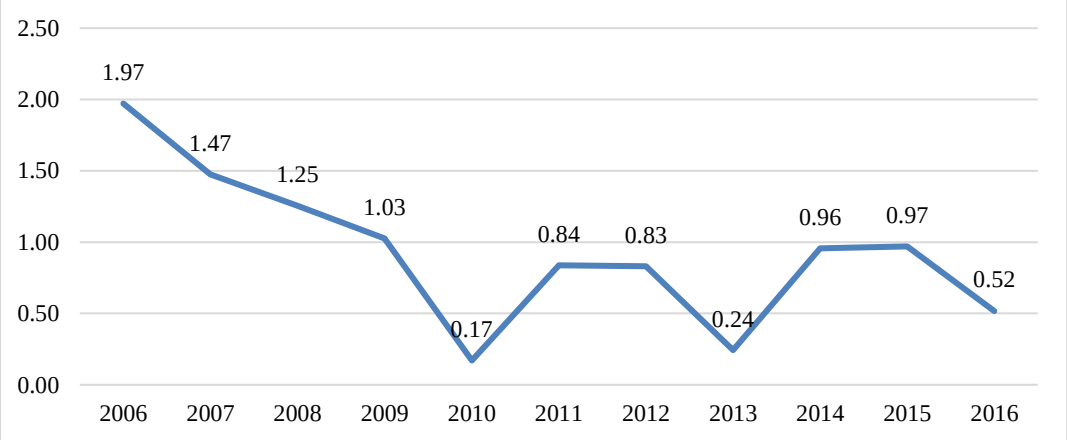


**Fig: 67 Health Care Sector Average Royalty Payment in percentage of Capital Employed**

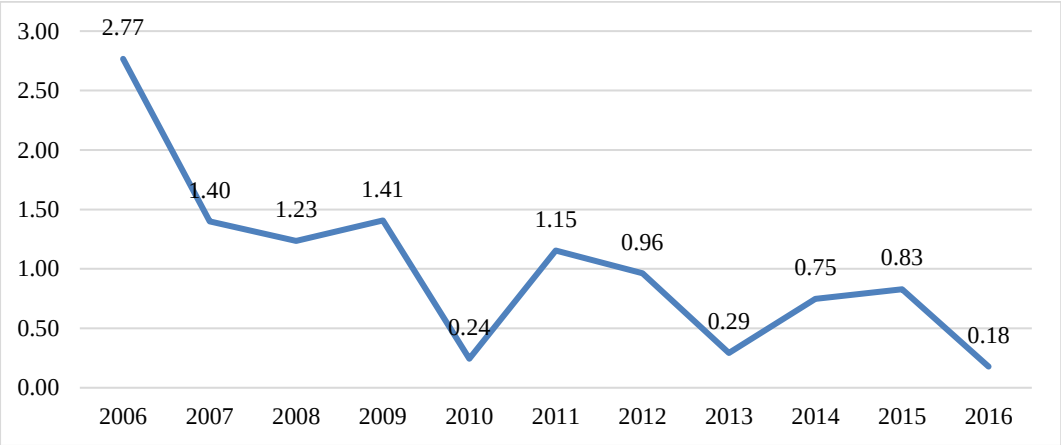


**Fig: 68 Health Care Sector Average Royalty Payment in percentage of Cost of Production**

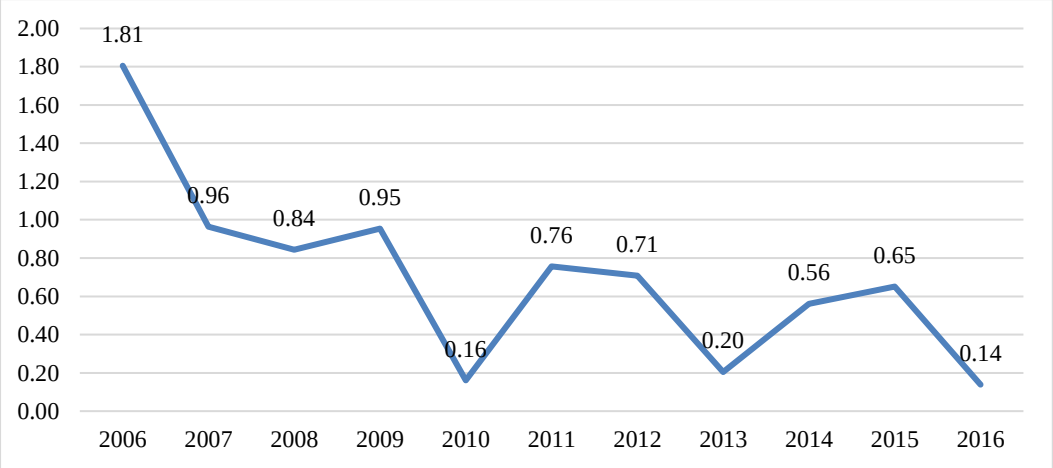


**Fig: 69 Health Care Sector Average Royalty Payment in percentage of Net Sales**

### 3.11 Engineering Sector

Engineering sector's royalty payment in percentage of the selected indicators shows an increasing trend over the 10 year period except for export earnings.

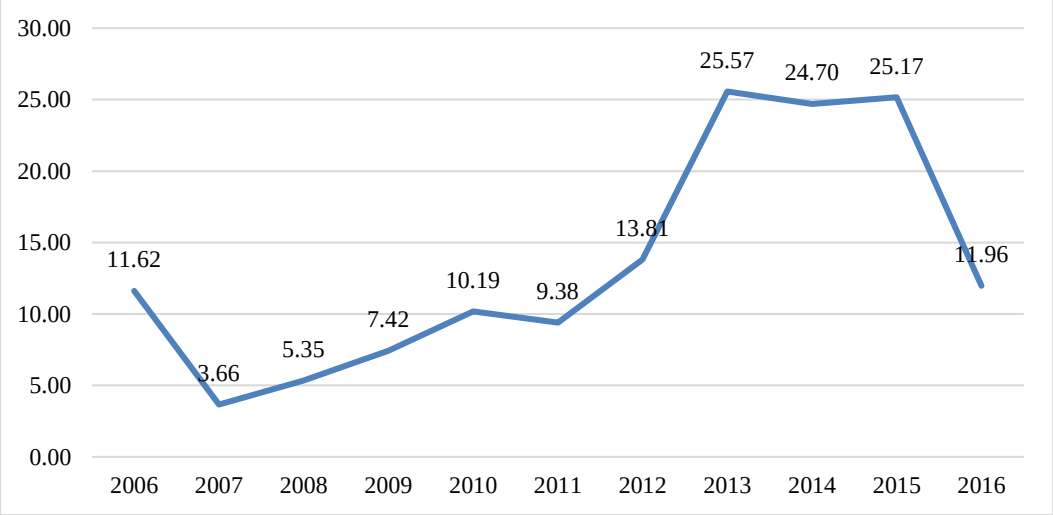


**Fig: 70 Engineering Sector Average Royalty Payment in Percentage of Profit**

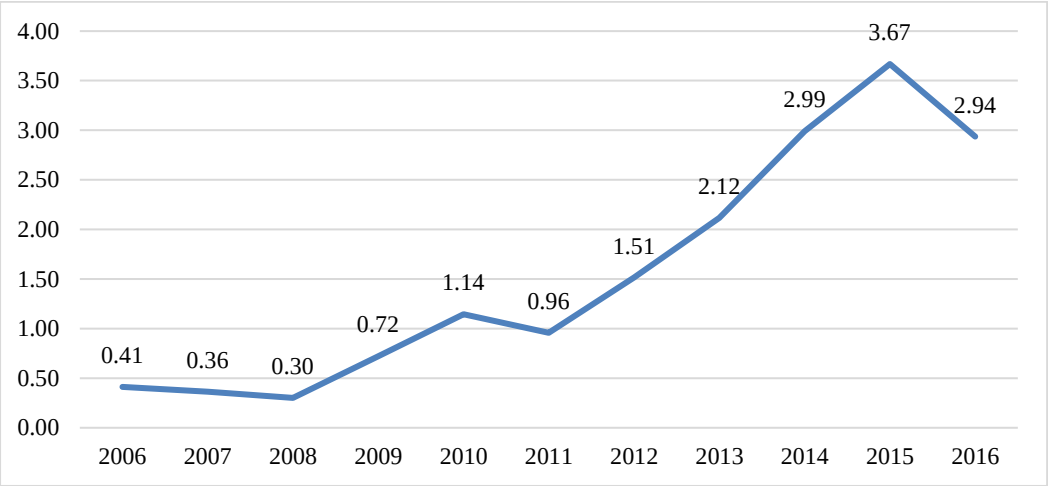


**Fig: 72 Engineering Sector Average Royalty Payment in Percentage of Capital Employed**

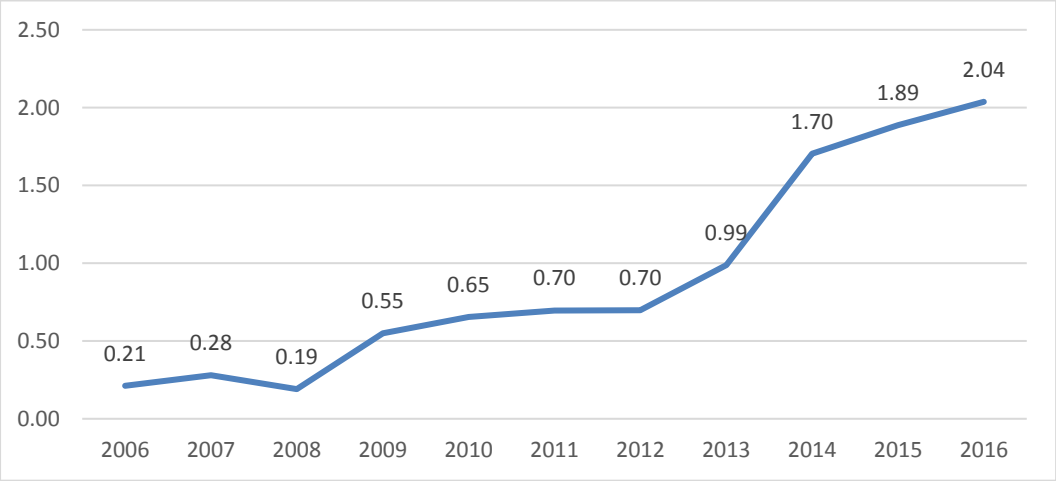


**Fig: 73 Engineering Sector Average Royalty Payment in Percentage of Cost of Production**

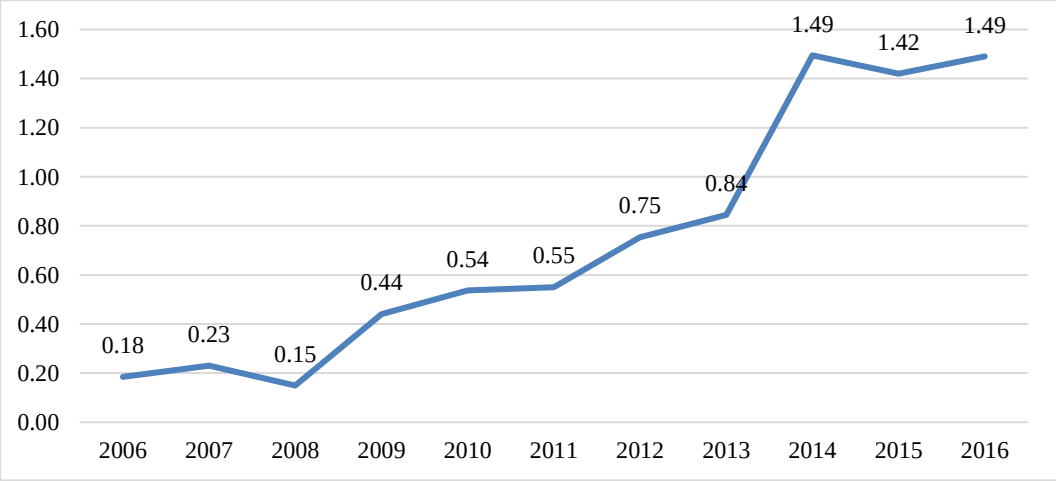


**Fig: 74 Engineering Sector Average Royalty Payment in Percentage of Net Sales**

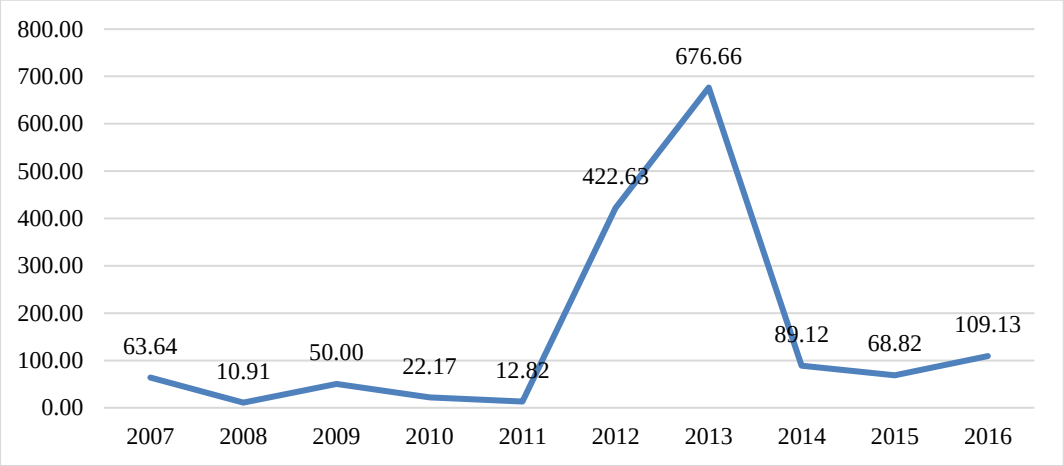


**Fig: 75 Engineering Sector Average Royalty Payment in Percentage of Exports**

## 4 DETERMINANTS OF ROYALTY PAYMENTS

The main objective of this chapter is to describe the factors that guide the determination of royalty rates for licensed intellectual property rights (IP). Royalty payments is determined by various factors of production. In this section, an analysis, using multiple regression, has been carried out to understand the relationship between royalty payments and the variables, viz., net sales, capital employed, cost of production, profit after tax and export earnings. Each sector has been analyzed separately to know the determinants of royalty in their respective sectors. The average royalty payments for each year has been taken for each sector as dependent variable. Independent variables have also been averaged for each year and used for the analysis. The results show that automobile, media and trading sectors have impacted royalty for the dependent variables like net sales, cost of production, profit and exports. The model used to find out the determinants is as follows:

$$Y_1 = B_1 + B_2 NS_2 + B_3 CE_3 + B_4 CP_4 + B_5 PAT_5 + B_6 EE_6 + u$$

Where;

$Y_1$ = Average Royalty payments in particular year

$B_1$= Intercept

$NS_2$=Average Net Sales in particular year

$CE_3$= Average Capital Employed in particular year

$CP_4$=Average Cost of production in particular year

$PAT_5$=Average Profit in particular year

$EE_6$ = Average Export earnings in particular year

### 4.1 FMCG

There is no significant impact between independent variables and the dependent variable in FMCG sector.

**Table 3: Regression Results of FMCG Sector Determinants**

| Variables | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| **Constant** | 6.82 | 2.56 | 2.66 | 0.04 |
| **Net Sales** | 0.06 | 0.06 | 0.96 | 0.37 |
| **Cost of production** | -0.05 | 0.06 | -0.75 | 0.48 |
| **Capital Employed** | 0.01 | 0.03 | 0.47 | 0.65 |
| **Profit** | -0.16 | 0.15 | -1.08 | 0.33 |
| **Export** | 0.01 | 0.07 | 0.16 | 0.87 |
| **R-squared** | 0.98 | **Adjusted R-squared** | | 0.97 |

### 4.2 Automobile

Net sales has significantly impacted the royalty payment in Automobile sector.

**Table 4: Regression Results of Automobile Sector Determinants**

| Variables | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| **Constant** | -32.70 | 25.16 | -1.30 | 0.24 |
| **Net Sales** | 0.09 | 0.03 | 2.57 | 0.04 |
| **Cost of production** | -0.05 | 0.04 | -1.41 | 0.21 |
| **Capital Employed** | -0.01 | 0.03 | -0.49 | 0.64 |
| **Profit** | 0.04 | 0.05 | 0.68 | 0.52 |
| **Export** | -0.01 | 0.03 | -0.15 | 0.88 |
| **R-squared** | 0.98 | **Adjusted R-squared** | | 0.96 |

### 4.3 Pharma

There is no significant impact between independent variables and the dependent variable in pharma sector.

**Table 5: Regression Results of Pharmaceuticals Sector Determinants**

| Variables | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| **Constant** | -1.75 | 1.39 | -1.25 | 0.26 |
| **Net Sales** | 0.03 | 0.01 | -2.35 | 0.03 |
| **Cost of production** | -0.02 | 0.01 | -2.35 | 0.06 |
| **Capital Employed** | -0.002 | 0.001 | -1.44 | 0.21 |
| **Profit** | -0.006 | 0.007 | -0.82 | 0.45 |
| **Export** | 0.009 | 0.005 | 0.36 | 0.73 |
| **R-squared** | 0.99 | **Adjusted R-squared** | | 0.98 |

### 4.4 Electronics Sector

There is no significant impact between independent variables and the dependent variable in electronics sector.

**Table 6: Regression Results of Electronics Sector Determinants**

| Variables | Coefficients | Standard Error | t-Statistic | Prob. |
|---|---|---|---|---|
| **Intercept** | -33.54 | 33.45 | -1.00 | 0.36 |
| **Export** | -0.01 | 0.14 | -0.06 | 0.95 |
| **Net Sales** | 0.31 | 0.36 | 0.86 | 0.43 |
| **Cost of Production** | -0.31 | 0.38 | -0.80 | 0.46 |
| **PAT** | -0.19 | 0.59 | -0.33 | 0.76 |
| **Capital Employed** | 0.03 | 0.09 | 0.38 | 0.72 |
| **R squared** | 0.99 | **Adjusted R-Squared** | | 0.99 |

### 4.5 Media Sector

Net sales, cost of production, capital employed and profit have significantly impacted the royalty payment in media sector.

**Table 7: Regression Results of Media Sector Determinants**

| Variables | Coefficients | Standard Error | t Stat | Prob. |
|---|---|---|---|---|
| **Intercept** | 17.85 | 9.42 | 1.89 | 0.12 |
| **Export** | 1.79 | 0.77 | 2.32 | 0.07 |
| **Net Sales** | 0.80 | 0.15 | 5.51 | 0.00 |
| **Cost of Production** | -0.53 | 0.16 | -3.23 | 0.02 |
| **Capital Employed** | -0.36 | 0.11 | -3.19 | 0.02 |
| **PAT** | -1.67 | 0.29 | -5.67 | 0.00 |
| **R squared** | 0.99 | **Adjusted R Square** | | 0.99 |

### 4.6 Engineering Sector

There is no significant impact between independent variables and the dependent variable in electronics sector.

**Table 8: Regression Results of Engineering Sector Determinants**

| Variables | Coefficients | Standard Error | t Stat | Prob. |
|---|---|---|---|---|
| **Intercept** | -0.35 | 0.82 | -0.42 | 0.69 |
| **Export** | 0.01 | 0.02 | 0.28 | 0.79 |
| **Net Sales** | 0.00 | 0.04 | -0.10 | 0.92 |
| **Cost of Production** | -0.01 | 0.04 | -0.20 | 0.85 |
| **Capital Employed** | 0.03 | 0.02 | 1.91 | 0.11 |

| | | | | |
|---|---|---|---|---|
| **PAT** | 0.07 | 0.09 | 0.85 | 0.43 |
| **R squared** | 0.99 | **Adjusted R Square** | | 0.85 |

### 4.7 Trading Sector

In trading sector, exports, net sales, cost of production, capital employed and profit have significantly impacted the royalty payment.

**Table 9: Regression Results of Trading Sector Determinants**

| Variables | Coefficients | Standard Error | t Stat | Prob. |
|---|---|---|---|---|
| **Intercept** | -1.03 | 0.32 | -3.22 | 0.02 |
| **Export** | 0.77 | 0.17 | 4.63 | 0.01 |
| **Net Sales** | 0.16 | 0.02 | 7.30 | 0.00 |
| **Cost of Production** | -0.18 | 0.03 | -6.85 | 0.00 |
| **Capital Employed** | 0.01 | 0.00 | 3.34 | 0.02 |
| **PAT** | -0.06 | 0.04 | -1.47 | 0.20 |
| **R squared** | 0.99 | **Adjusted R Square** | | 0.98 |

### 4.8 Agro Chemicals

There is no significant impact between independent variables and the dependent variable in Agro chemicals sector.

**Table 10: Regression Results of Agro Chemicals Sector Determinants**

| Variables | Coefficients | Standard Error | t Stat | Prob. |
|---|---|---|---|---|
| **Intercept** | 0.50 | 1.94 | 0.26 | 0.81 |
| **Export** | 0.01 | 0.03 | 0.20 | 0.85 |
| **Net Sales** | 0.00 | 0.02 | -0.14 | 0.89 |
| **Cost of Production** | 0.01 | 0.02 | 0.42 | 0.69 |
| **Capital Employed** | 0.00 | 0.01 | -0.38 | 0.72 |
| **PAT** | 0.00 | 0.01 | 0.15 | 0.89 |
| **R squared** | 0.71 | **Adjusted R Square** | | 0.41 |

### 4.9 Health care

There is no significant impact between independent variables and the dependent variable in health care sector.

**Table 11: Regression Results of Health Care Sector Determinants**

| Variables | Coefficients | Standard Error | t Stat | Prob. |
|---|---|---|---|---|
| **Intercept** | 0.78 | 0.41 | 1.89 | 0.11 |
| **Net Sales** | 0.00 | 0.02 | -0.09 | 0.93 |
| **Cost of Production** | 0.01 | 0.02 | 0.37 | 0.73 |
| **Capital Employed** | 0.00 | 0.00 | -1.60 | 0.16 |

| | | | | |
|---|---|---|---|---|
| **PAT** | -0.01 | 0.03 | -0.32 | 0.76 |
| **R squared** | 0.97 | **Adjusted R Square** | | 0.95 |

### 4.10 Auto Ancillary

There is no significant impact between independent variables and the dependent variable in auto ancillary sector.

**Table 12: Regression Results of Auto Ancillary Sector Determinants**

| Variables | Coefficients | Standard Error | t Stat | Prob. |
|---|---|---|---|---|
| **Intercept** | -2.24 | 0.90 | -2.49 | 0.05 |
| **Net Sales** | 0.05 | 0.03 | 1.35 | 0.23 |
| **Cost of Production** | -0.03 | 0.03 | -1.08 | 0.32 |
| **Capital Employed** | -0.01 | 0.01 | -0.43 | 0.68 |
| **PAT** | -0.03 | 0.04 | -0.79 | 0.46 |
| **R squared** | 0.98 | **Adjusted R Square** | | 0.96 |

### 4.10 IT – Software and Hardware Sector

There is no significant impact between independent variables and the dependent variable in IT –software and hardware sector.

**Table 13: Regression Results of IT-Software and Hardware Sector Determinants**

| Variables | Coefficients | Standard Error | t Stat | Prob. |
|---|---|---|---|---|
| **Intercept** | -33.54 | 33.45 | -1.00 | 0.36 |
| **Export** | -0.01 | 0.14 | -0.06 | 0.95 |
| **Net Sales** | 0.31 | 0.36 | 0.86 | 0.43 |
| **Cost of Production** | -0.31 | 0.38 | -0.80 | 0.46 |
| **Capital Employed** | 0.03 | 0.09 | 0.38 | 0.72 |
| **PAT** | -0.19 | 0.59 | -0.33 | 0.76 |
| **R squared** | 0.98 | **Adjusted R Square** | | 0.99 |

## 5 BROAD ANALYSIS OF EMPIRICAL FINDINGS

In view of IP applications filed for IPRs in India shows an increasing trend over the years. At the same time, royalty payments made by Indian subsidiaries also shows an increasing trend over this period. India's position in International IP index, measured and published by Global IP Centre is as low as 8.75 compared with 32.62 for the US. This low value suggests the need for improvement in IP environment in the sub-continent.

The objective of this study has been to find out the pattern of royalty payments over the period of 10 years and suggest policy recommendations drawn out of the study for Government of

India. Further, the study also documents the share of royalty paid to that of specific variables, viz., net sales, cost of production, capital employed, profit and exports, in percentage terms. In addition, the study also examines statistically, the determinants of royalty accruing from patents, trademarks and copy rights.

This report has been prepared by IIMB study team based on firm level annual data, using a sample of 231 companies in India, for a 10 year period of 2006 to 2016 from Capitaline database. Totally, eleven sectors are identified, viz., automobile, auto ancillary, FMCG, IT-software and hardware, media, health care, pharmaceuticals, electronics, engineering, agro chemicals and trading companies which have been making royalty payments. Due to data availability constraint, the averages of each variable for each year are taken for the study.

The results reveal that outflow of royalty payments from the mentioned sectors has increased over the 10 years period for the companies concerned. Automobile sector has experienced maximum royalty payment outflows at Rs.3090.49 crores, followed by the IT Sector with Rs.1924.71 crores, the Media sector with Rs.843.27 crores. The Electronics and FMCG sectors on an average paid Rs.429.53 crores and Rs.406.58 crores respectively by way of royalties. By comparison, firms in the Auto ancillary, Engineering sector, agro chemicals and Health care sectors have not paid significant amounts as royalty.

In terms of its relationships to net sales, royalties have shown an increasing trend in the automobiles, electronics, auto-ancillary, IT – software and hardware and engineering sectors. For other sectors like FMCG, Pharma, Health care, Media and trading royalty payment to sales ratio has shown a decreasing trend. Royalty paid in proportion of cost of production has shown an increasing trend in automobile IT-software and hardware, trading, engineering, media, electronics auto ancillary FMCG, and decreasing trend in health care, pharma, agro chemicals sectors.

Royalty paid in terms of capital employed has shown an increasing trend in engineering, trading, auto ancillary, electronics, media, IT-software and hardware, automobile sectors and a decreasing trend in agro chemicals, FMCG, pharma, health care sectors. The share of royalty paid to that of profit has shown an increasing trend in engineering, trading, auto ancillary, IT-Software and hardware, Automobile, FMCG, pharma sectors and a decreasing trend in agro chemicals, electronics, health care, media sectors.

Royalty paid in percentage terms of export earnings has shown an increasing trend in engineering, trading, auto ancillary, IT-software and hardware, automobile, FMCG, pharma sectors and decreasing trend in agrochemicals, electronics, media sectors. It should also be noted that there are no data available for royalty in health care exports.

Regression analysis of the data gathered in respect of all variables gives interesting results. For Automobile, Media and trading sector net sales, cost of production, profit and exports are significant factors in royalty payments.

The study shows that royalty is a method by which MNCs protect their revenues from its subsidiaries irrespective of market uncertainties and falling sales. Irrespective of whether they are able to sustain sales or profits, these corporations want to have a secured source of surplus and returns.

### 5.1 The Way Forward: Regulating Royalty Rates?

The study results reveal that outflow of royalty payments from the mentioned sectors has increased with greater sensitivity for the automobile sector and the IT Sector. By comparison, firms in the Auto ancillary, Engineering sector, agro chemicals and Health care sectors have not paid significant amounts as royalty. In terms of relationship to net sales, costs of production, profits, exports and capital employed, the automobile IT-software and hardware, trading, engineering, media, electronics auto ancillary FMCG, have shown an increasing trend. This may or may not have adverse effects on competitiveness. The important point is to assess the situation on a case to case basis before contemplating policy level interventions to regulate royalty rates.

It is noteworthy that there is a decreasing trend in royalties as part of net sales for agro chemicals, FMCG, pharmaceutical and health care sectors.

The four sectors are important from the vantage of SMEs and Make in India priorities. The key issue is whether they need to be regulated insofar as royalty rates are concerned. In deciding this, we have to examine the following parameters: the degree of employment elasticity, technological competitiveness, the probability of technologies involved being standard essential patents and probability of the technology attracting royalty payments causing a decline in ICOR and the possibility of technology involved not being replaced in near future. In case the four parameters are positively significant. Where a technology involved is characterised by high employment elasticity or assures sustained technological competence or lowered Incremental Capital Output Ratios (ICOR), it is apparent that the companies cannot afford to lose it. This creates conditions for unequal bargaining positions between the Indian company and the overseas entity that controls the technology. The result could be adverse for the Indian company in terms of bottom line performance. Under such circumstances regulation in royalty rates may be desirable with Government stepping in may be desirable particularly if the industry comes under the category of a priority sector under Make in India or Start - Up India programmes. In the event of a technology involving standards essential patent, the spirit of competition policy can be invoked for possible anti- competitive behaviour on the part of the owner of the standard essential patent for bringing in a FRAND (Fair, Reasonable, and Non-Discriminatory) regime to peg royalty rates. Where it is felt that policy intervention for regulating royalty rates are likely to deter secondary investments, it is essential to go with the royalty rates that have been sought by the licensor for strategic reasons, while going in for providing suitable concessions on corporate taxes for established companies or greater loan repayment periods for start-ups.

Nevertheless policy regimes on royalty payments need careful treatment in the hands of decision makers. They should not lead to diversion of technology transfer offers from India to other emerging economies that offer more liberal royalty regimes. Compulsory licensing and FRAND principles may be carefully laid down through and objective and measurable system of reasonableness when it comes to fixing royalty rates in terms the two measures.

**References:**


1. Annual Report, office of the Controller General of Patents Designs and Trade Marks, http://www.ipindia.nic.in/writereaddata/Portal/IPOAnnualReport /1_71_1_Annual_Report_2015-16_English__2_.pdf
2. Contractor, F. J. and Sagafi-nejad, T. (1981). 'International Technology Transfer: Major Issues and Policy Responses', *Journal of International Business Studies*, 12, 2, 113-35.
3. http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators#
4. http://www.capitaline.com
5. http://www.thehindubusinessline.com/economy/agri-business/usage-of-biopesticides-growing-at-a-faster-pace-than-chemical-variety/article9918456.ece
6. http://www.theglobalipcenter.com/ipindex2017-chart/
7. International Monetary Fund, Balance of Payments Statistics Yearbook and data files.
8. Lanjouw, Jean O., (1997). The Introduction of Pharmaceutical Product Patents in India: 'Heartless Exploitation of the Poor and Suffering?, *NBER Working Paper* No.6366.
9. Lee G. Branstetter, Raymond Fisman and C. Fritz Foley. (2006). Do Stronger Intellectual Property Rights Increase International Technology Transfer? Empirical Evidence from U. S. Firm-Level Panel Data, *The Quarterly Journal of Economics*, 121, 1, 21-349
10. Maskus, Keith E., and Mohan Penubarti. (1995). How trade-related are intellectual property rights?. *Journal of International economics*, 39, 3, 227-248.
11. McCalman, Phillip, (2001). Reaping What You Sow: An Empirical Analysis of International Patent Harmonization, *Journal of International Economics*, LV, 161-186.
12. OECD (2011d), Intellectual Assets and Innovation - The SME Dimension, OECD Studies on SMEs and Entrepreneurship, OECD, Paris.
13. Qian, Yi. (2007). Do national patent laws stimulate domestic innovation in a global patenting environment? A cross-country analysis of pharmaceutical patent protection, 1978–2002. *The Review of Economics and Statistics*, 89, 3, 436-453.
14. Rahul Varman, https://rupeindia.wordpress.com/2014/03/09/royalty-payments-the-royal-treatment-of-foreign-companies-in-india/#_ftn3.

## Annex 1 Metadata of the selected Variables

**Capital Employed:**
The total amount of capital used for the acquisition of profits, or the value of all the assets employed in a business. Or Fixed assets plus working capital in Capitaline: (Equity Paid Up + Total Reserves Excluding Revaluation Reserves) + Total Debt.

**Sales – Export**
That part of income earned by way of exports out of the total sales made (irrespective of manufactured or traded goods)

**Net Sales (in Rs. Crore)**
Net of Excise duty

**Cost of Production**
(Raw material cost + Power & fuel + Employee Cost + Director Remuneration + other operating expenses+ Depreciation – closing stock of WIP + opening stock of WIP + Insurance)

**Royalty and Technical fees**
Royalty/License fees/Technical Knowhow

**PAT**
Profit after Tax

**Annex 2**

**Table 14: Average Royalty payment for selected sectors 2006-2016**

| Sectors | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Agro Chemicals** | 2.61 | 1.41 | 2.22 | 2.51 | 4.90 | 4.74 | 4.86 | 4.31 | 7.37 | 2.94 | 2.83 |
| **Auto Ancillary** | 4.77 | 4.75 | 6.55 | 5.99 | 9.66 | 11.92 | 14.12 | 14.68 | 10.04 | 16.44 | 16.84 |
| **Automobile** | 85.54 | 182.46 | 187.03 | 178.38 | 228.81 | 309.41 | 245.20 | 322.72 | 355.92 | 456.34 | 538.69 |
| **Engineering** | 0.61 | 0.52 | 0.33 | 0.30 | 0.41 | 0.49 | 2.52 | 2.28 | 3.58 | 5.42 | 6.25 |
| **Electronics** | 14.59 | 24.27 | 19.83 | 14.02 | 16.09 | 26.24 | 26.00 | 29.96 | 58.17 | 94.41 | 105.95 |
| **FMCG** | 12.81 | 15.21 | 20.12 | 22.46 | 35.08 | 44.46 | 52.33 | 52.02 | 53.09 | 51.93 | 56.40 |
| **Health care** | 0.41 | 0.57 | 0.59 | 0.78 | 0.10 | 0.82 | 0.88 | 0.27 | 3.59 | 3.65 | 5.15 |
| **IT-Software/Hardware/Education** | 36.77 | 46.01 | 57.60 | 76.17 | 88.61 | 17.62 | 9.38 | 235.61 | 180.57 | 279.84 | 896.52 |
| **Media** | 1.84 | 2.48 | 2.37 | 3.16 | 3.92 | 3.25 | 4.93 | 5.81 | 419.50 | 386.83 | 9.17 |
| **Pharma** | 1.84 | 1.71 | 1.91 | 3.97 | 3.38 | 2.73 | 2.53 | 5.15 | 6.41 | 7.16 | 8.28 |
| **Trading** | 0.08 | 0.33 | 0.43 | 0.36 | 0.88 | 1.65 | 3.54 | 5.89 | 6.30 | 9.51 | 13.10 |