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

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Acknowledgement

This study has been undertaken as part of the activities of the DIPP IPR Chair at IIM Bangalore and as requested for by the Department of Industrial Policy and Promotion, Government of India. The objective of this study has been to find out the pattern of royalty payments made by a cross section of India based enterprises during 2006-16 and suggest policy recommendations for regulating royalty outflows from the country. More specifically the study seeks to assess royalties paid by a significant cross section of Indian Industry for IPRs licensed in from overseas holders of proprietary IPRs. Royalty payment outflows from Indian and India based firms concerned are sought to be examined against specific variables relating to them viz., net sales, cost of production, capital employed, profit and exports. In addition, the study also examines statistically/econometrically, the determinants of royalty accruing from patents, trademarks and copy rights. The statistical /econometric analysis is preliminary given the paucity of time series data on royalty payments for an extended period beyond 10 years. Based on simple trend lines and crude results from time series based multiple regression analysis, we have presented some findings in this mid-term report. The final report, which will be submitted by us in some time will carry findings arising from panel data analysis.

The support rendered by the Department of Industrial Policy and Promotion, Ministry of Industry and Commerce, Government of India for the study is thankfully acknowledged.

31st August 2018

Prof A Damodaran
DIPP IPR Chair at IIM Bangalore

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. A panel level data analysis is underway to overcome the limitations of the multiple time series regression undertaken in this paper.

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

Executive Summary

The objective of this study is to find out the trends in royalty payments over the period of 10 years from 2006 for a cross section of Indian and India based firms. The study also documents the trends in royalty payments paid to technology licensors in relation to specific variables, viz., net sales, cost of production, capital employed, profit and exports through simple trend analysis. In addition, the study also examines statistically, the impacts of royalty payments on the economic parameters of firms concerned.

This report has been prepared by IIMB study team based on firm level data, for a sample of 231 companies in India, for the period from 2006 to 2016. Eleven sectors were identified for the study viz., automobile, auto ancillary, FMCG, IT-software and hardware, media, health care, pharmaceuticals, electronics, engineering, agro chemicals and trading companies. All the firms drawn from these sectors have been making royalty payments on IPRs (patents, trademarks and copyrights) licensed by them. Out of the sample of 231 companies, 111 companies made royalty payments to overseas firms. These firms included subsidiaries of MNCs.

For each of the chosen firms, apart from tracking royalty payments data, effort was made to compile data on the following variables; Net Sales, Cost of production, Capital employed, Royalty and Technical fees, Export sales and Profit after Tax in order to understand the relationship between royalty payment trends and trends in these parameters. We have used simple trend graphs for each industry as well as a crude multiple regression (MR) analysis to find out the determinants of royalty payments. Data for this exercise has been collected from Capitaline database. The first set of preliminary findings were provided in an earlier preliminary draft. The present mid-term report draft fine tunes the findings further.

The MR model employed in the study this far is imperfect given the limited 10 years data point available. A “balanced panel data analysis” is underway to have firm wise specifics of factors determining royalty payments. The results of this model will be submitted with the final report.

Based on the existing trend and time series based MR analysis we list our findings as under:

Findings:

1. Outflow of royalty payments has increased in absolute terms for firms falling under the 11 mentioned sectors over the 10 years period. The automobile sector is seen to have experienced maximum royalty payment outflows at Rs.3090.49 crores, followed by firms in the IT Sector with Rs.1924.71 crores and 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 absolute terms.

2. 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.
3. 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.
4. 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.
5. 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.
6. 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 no data was available regarding royalty payments in the health care.
7. Crude multiple 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 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. Promotional fiscal measures and EXIM policies may be thought of technology importing companies. It is also proposed that a Technology Absorption Facilitation Fund may be established for hybrid capital building by technology importing companies and start up enterprises to minimise royalty payments to embodied technologies than on both embodied technology and associated know how .

The study advocates the need for a more dynamic regime of caps on royalty outflow limits whereby a range can be prescribed for domestic markets and export markets respectively, depending on the distinct economic prospects or problems faced by a sector. It is argued that a flat royalty outflow cap may not be a desirable instrument given that the incidence of burden faced by companies in different sectors varies from firm to firm and sector to sector. A cap ranging from 4% to 6% for the domestic markets for the first 4 years followed by upper limits of 2% to 3% beyond the first three years, will be helpful for start-up firms in India in the fields of IT/ICT and auto-components that have a large

transformational ability on India's economic landscape to establish their technological competitiveness. For royalty paying Indian and India based enterprises that cater to the export markets a cap of 7% to 9 % is proposed for enterprises that hold promise in terms of sustained value realization and market access. The study concludes by arguing that the parameters of foreign exchange earnings, employment generation potential and mass consumer base of goods/services concerned, may be adopted as key determinants of policy regulations on royalty payments in the Indian context.

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

1. Background

Over the past twenty years, there has been a global trend toward stronger intellectual property rights (IPR) (Maskus 1995). By the mid-1990s, a minimum standard set of globally enforced intellectual property rights had been enshrined in the WTO TRIPS. 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 is 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. FDI 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 their small numbers cause their bargaining power to be high.

Technical knowledge possesses the classical property of asymmetrical access by the potential parties to a transaction as well as asymmetries about knowledge regarding their expected pay out. The licensor has the relevant experience to understand his strengths and negotiate its licensing. If the licensee could fully evaluate the proffered technology, the license agreement would dwindle to a right to infringe for

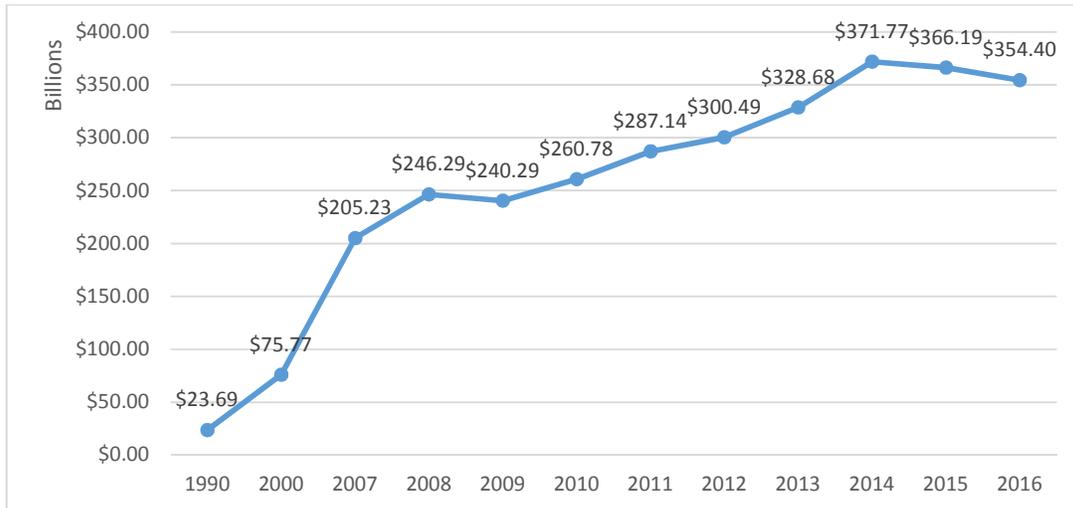
possible infringement of the licensor's patents - not a rare outcome, as we shall see. That both the licensors and licensees may behave opportunistically is apparent to all.

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, management of intellectual property rights (IPRs) by SMEs facilitate value creation. However SMEs face greater problems in benefiting from IPRs on account of procedural challenges entailed by IPR laws. 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 (OECD 2011d).
- 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) (OECD 2011d).
- 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 (OECD 2011d).

1.3 World Trends in Royalty and License Fee Payments



Source: World Development Indicators

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

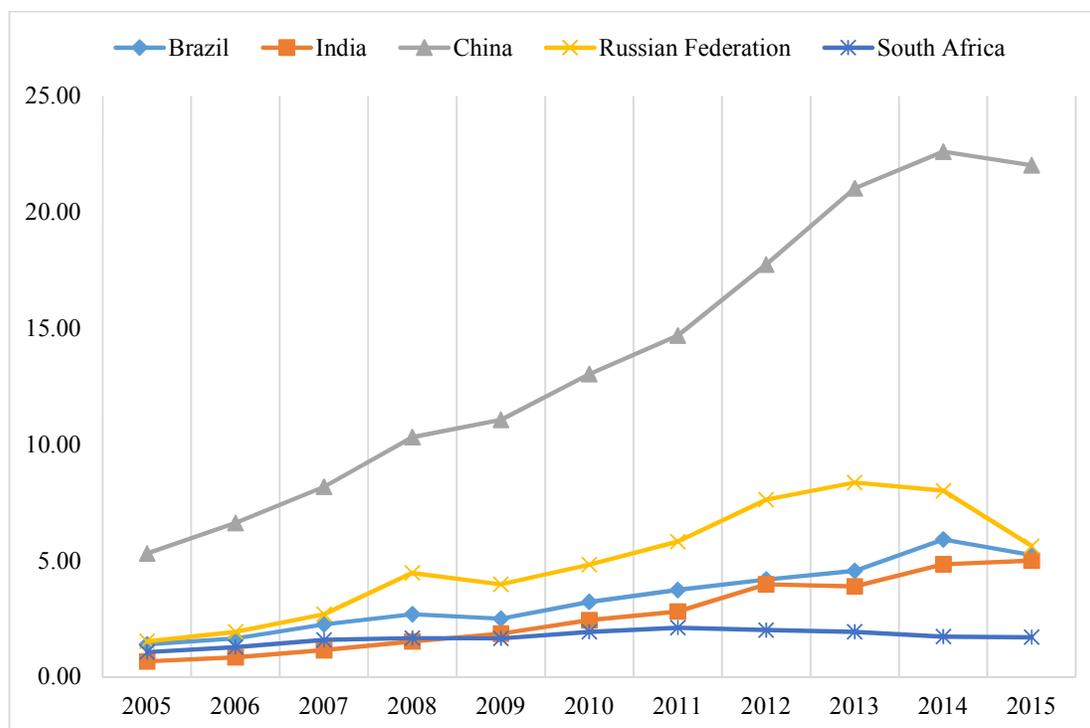
A glimpse of Fig.1 describes that the royalty payments¹ by different countries has been increasing from US\$ 23.69 billion in 1990 to US\$ 354.40 billion in 2016. During 2014, the payments in absolute terms reached its peak of US\$ 371 billion.

1.4 BRICS Countries – Royalty Payment

Looking at the major emerging economies block, the BRICS², have also witnessed an increasing trend in royalty payments. Among the five countries in this group, China tops in royalty payments with US\$ 22 billion by 2015, followed by Russian Federation with payments upto US\$ 8.0 billion. India stands third with royalty payments upto US\$ 5.0 billion by 2015, way below China.

¹Definition 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.

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

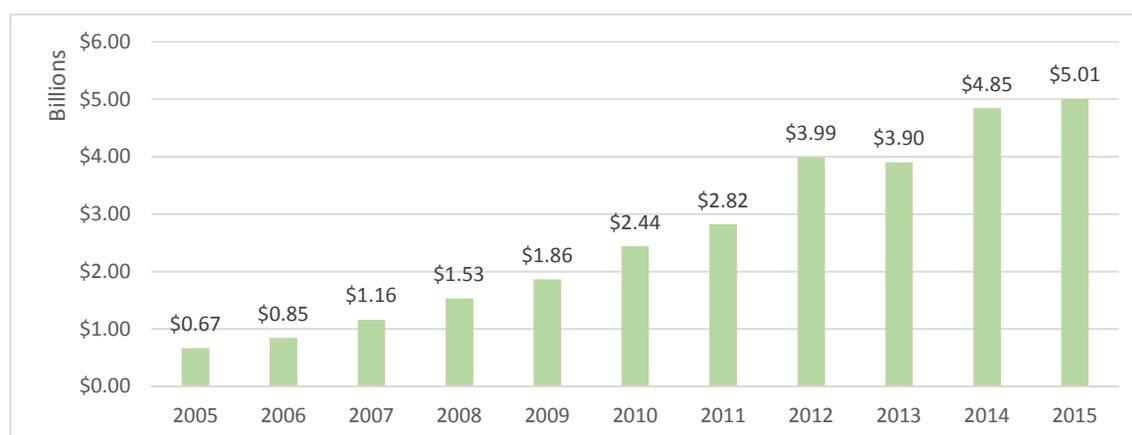


Source: World Development Indicators

Fig 2: BRICS Countries Charges for the use of intellectual property, payments (BoP, current US\$) (in Billion)

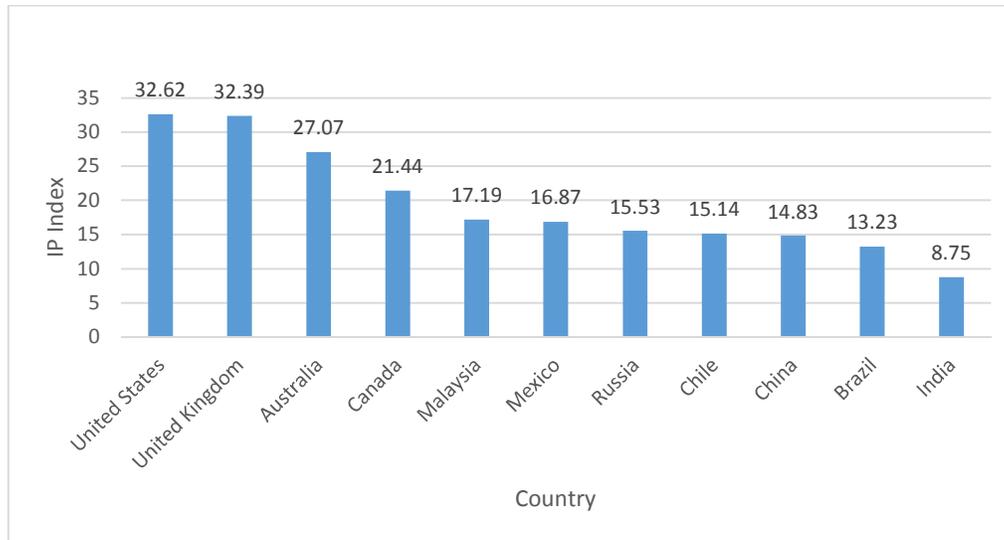
1.5 India - Royalty and license fees

The Fig. 3 shows that the latest value for royalty charges for use of intellectual property (BoP, current US\$) by India was \$5.01 billion as of 2015. Over the past 38 years, the value for these indicators have fluctuated between \$4.8 billion in 2014 and \$12.5 million in 1980.



Source: World Development Indicators

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



Source: <https://www.theglobalipcenter.com/ipindex2017>

Fig 4: Global IP Index 2017

India's position in International IP index is as low as 8.75 compared to the USA's score of 32.62. The index has been measured and published by Global IP Centre, Chamber of Commerce, USA by considering various factors relevant to each 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" (IP index 2017).

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 ie limited framework for protection for life sciences IP, patentability requirements outside international standards, lengthy pre-grant opposition proceedings. The 2016 High Court ruling on copyright infringement in the University of Delhi copy-shop case continues to weaken the enforcement environment for rights holders" (IP index 2017). Other problems relating to India's IP framework are previous use of compulsory licensing for commercial and non-emergency situations and limited participation in international IP treaties.

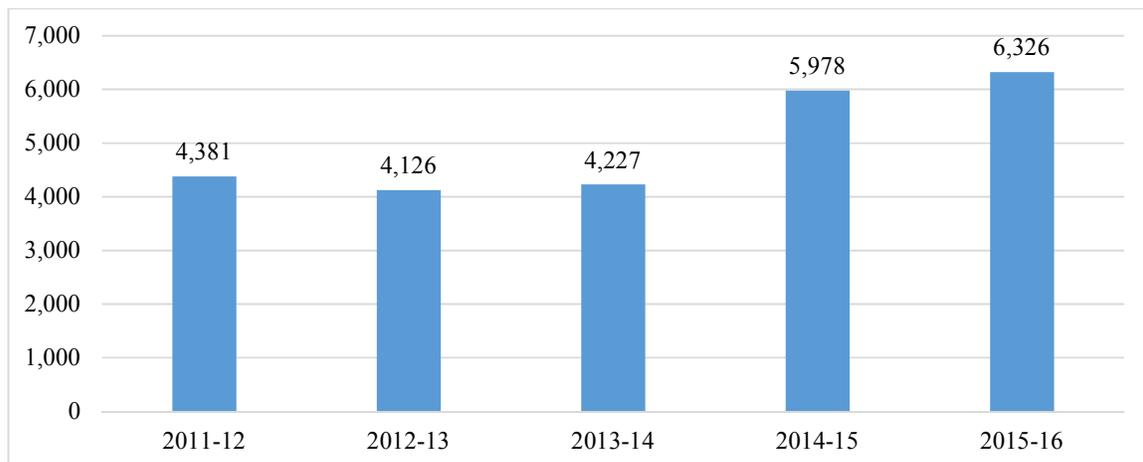
Table 2: Trend of IP Applications in India

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

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

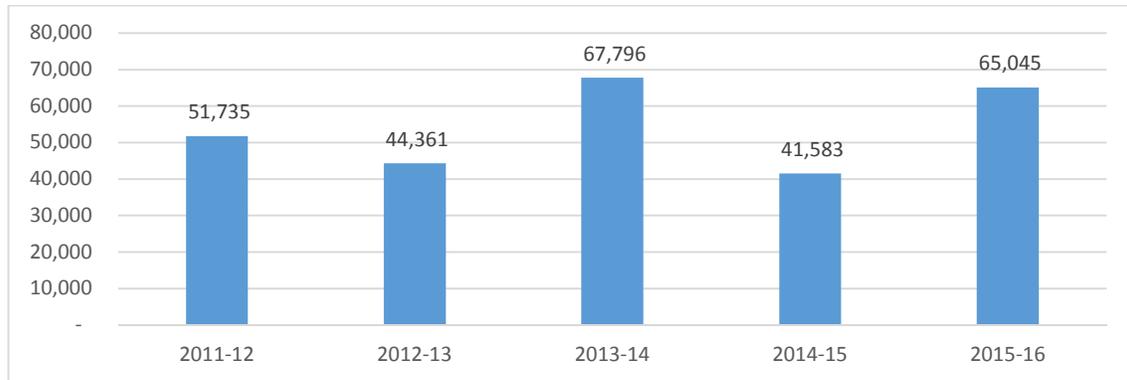
In view of IP applications, India shows an increasing trend. These applications include Multinational Companies, Joint venture companies and Indian companies. Applications in Trademarks lead among the other IP products followed by patents, designs and geographical indications. Apart from that, the royalty payments for the technology transfer also shows an increasing trend over this period.

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



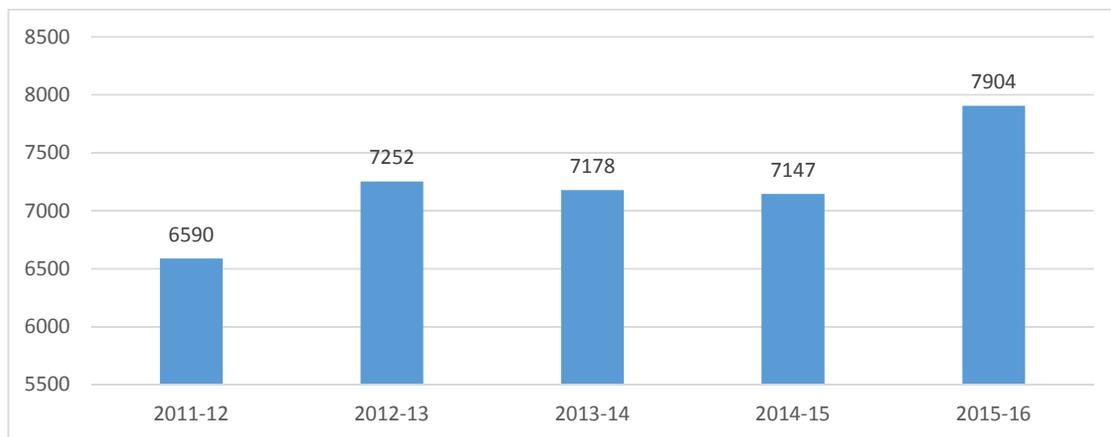
Source: Annual Report, office of the Controller General of Patents Designs and Trade Marks

Fig 5: Patents Granted in India



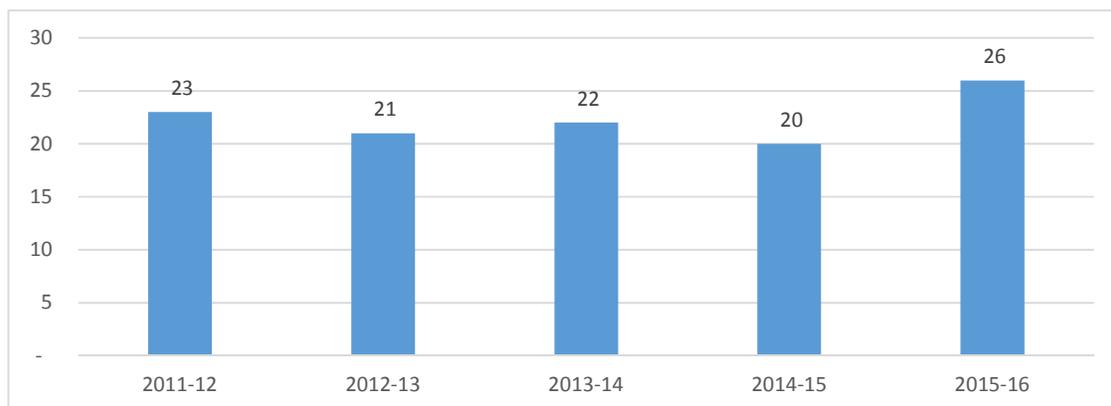
Source: Annual Report, office of the Controller General of Patents Designs and Trade Marks

Fig 6: Trademarks Registered in India



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

Fig 7: Designs Registered in India



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

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 annual, firm level data, in respect of a cross section sample of 231 companies in India for the 10 year period from 2006 to 2016. We have identified eleven sectors 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. Of the total sample of 231 companies, 111 companies made royalty payments to overseas companies. This included subsidiaries of MNCs that paid royalties to their principals located abroad. Nearly 96 of the 111 companies that paid royalties overseas were drawn from the sectors of automobiles, IT Hardware/Software, Media Houses, auto ancillaries, electronics and FMCG. The rates of royalty payment varied from firm to firm and from sector to sector.

For each sector, apart from royalty payments data, figures have been compiled for the following five variables; Net Sales, Cost of production, Capital employed, Export sales and Profit after Tax. This has been done to estimate determinants and impacts of Royalty payments on these variables and to understand the pattern of royalty payments made by firms concerned for the period from 2006-16.

Apart from this multiple regression analysis has been used to find out the relationship/association of royalty payments to the five variables. Capitaline database is the source of data employed here. A description of the variables used for analysis has been given in Annex 1. Due to data availability constraint, we have used annual figures for each variable.

The breakup of the firms drawn from the eleven chosen sectors of India are provided in Table 2.

Table 2: Sector Classification

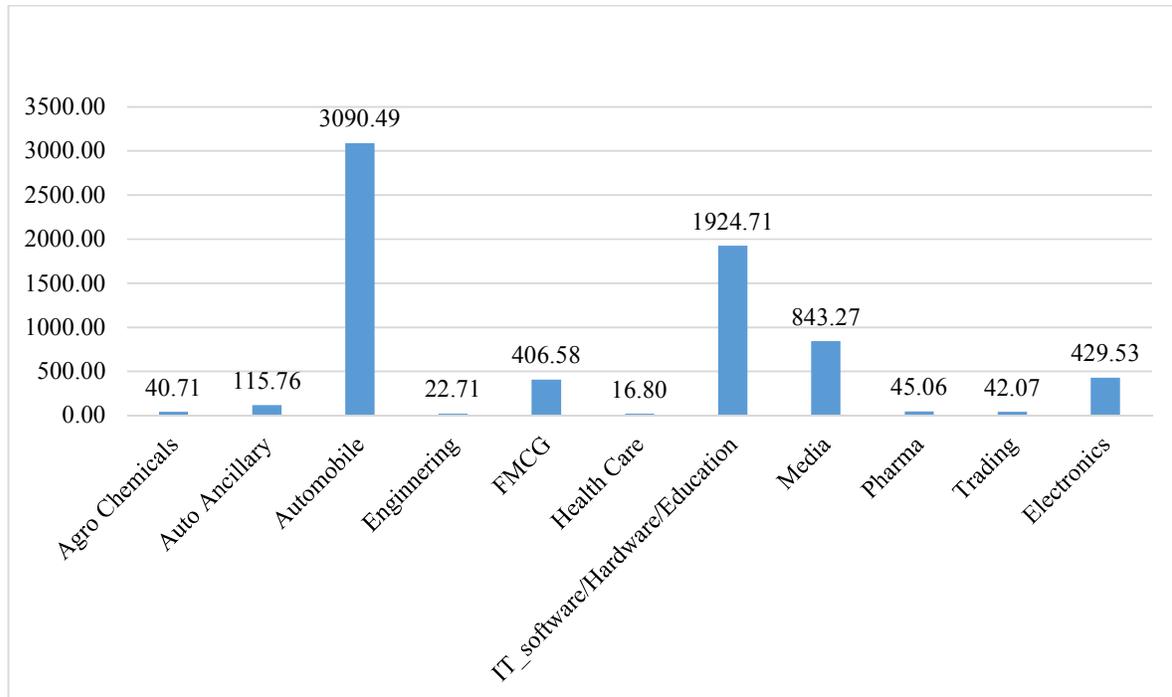
Sl. NO	Sector	No. of Companies
1	Auto Ancillary	31
2	Auto Mobile	12
3	Agro Chemicals	5
4	Electronics	31
5	Engineering	14
6	FMCG	50
7	Health Care	8
8	IT Soft Hard ware	28
9	Media	19
10	Pharmaceuticals	22
11	Trading	11
	Total	231

Table 3: Average Royalty payments made by firms sampled for the 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

Source: www.capitaline.com

Table. 3 discusses year wise average royalty payments for the selected sectors. All the eleven sectors show an increasing trend in royalty payments for the 10 year period commencing from 2006. Royalties paid by the IT and Automobile sector's shows an enormous increase over the 10 year period.



Source: www.capitaline.com

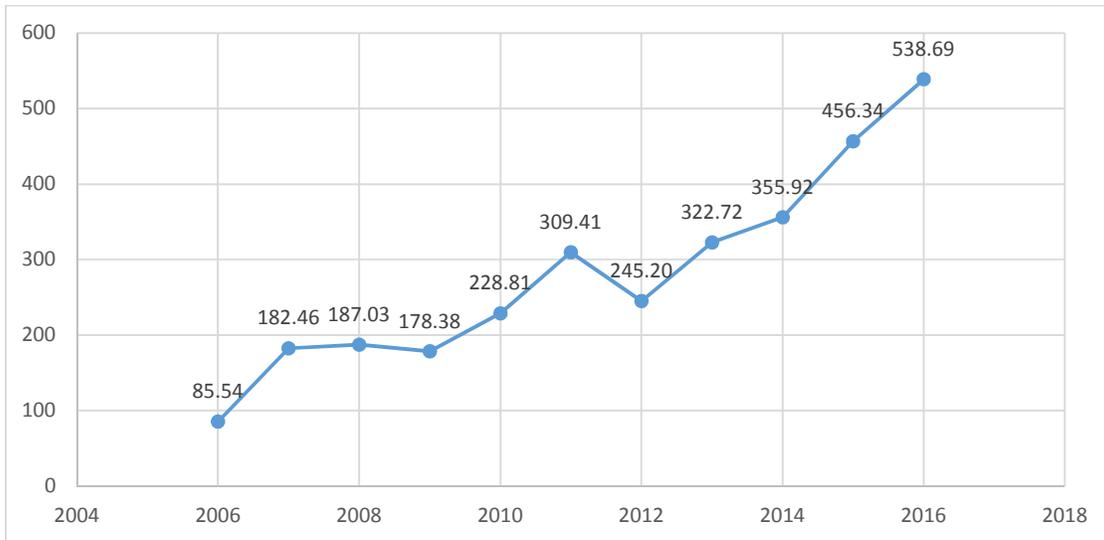
Fig 9: Average Royalty Payment 2006-2016

Overall, there is a general tendency of increasing royalty payments or all sectors over the 10 years period with the average royalty payments for the Automobile sector stands way ahead at 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 least royalty compared to other sectors.

2.1 Sector wise royalty payments:

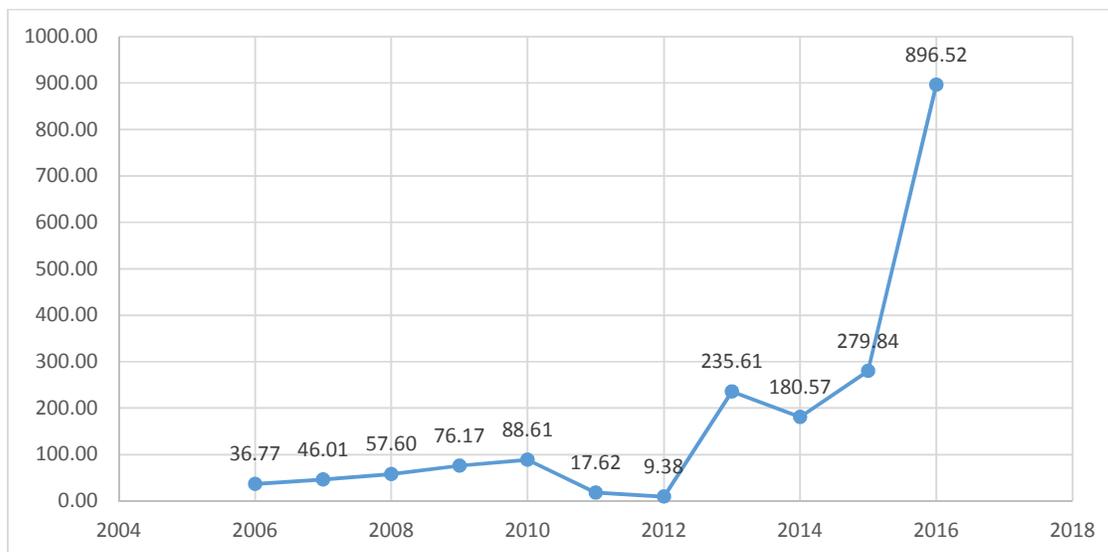
A depiction of sector wise royalty payments will give a clearer picture of royalty payments made by Indian Companies which is shown from Fig. 10 to Fig. 20.

Royalty payments by the automobile sector has grown from Rs.85.5 crore to Rs.538.7 crores during the period 2006-16. The liberalisation process has seen enormous breakthrough in exports of four wheeler and two wheeler segments. However royalty payments to parent companies have started galloping only in the recent years.



Source: www.capitaline.com

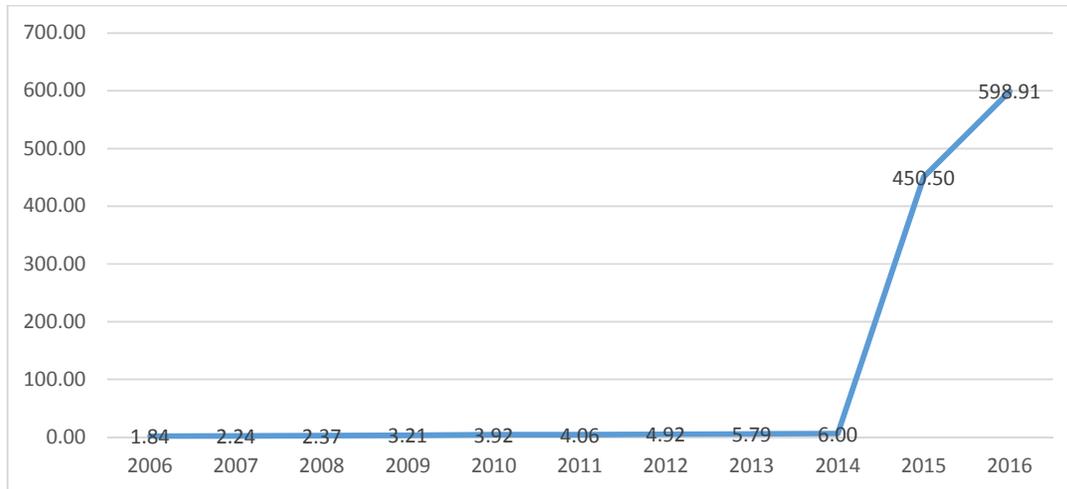
Fig 10: Automobile Sector Avg Royalty Payments for Sample Companies



Source: www.capitaline.com

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

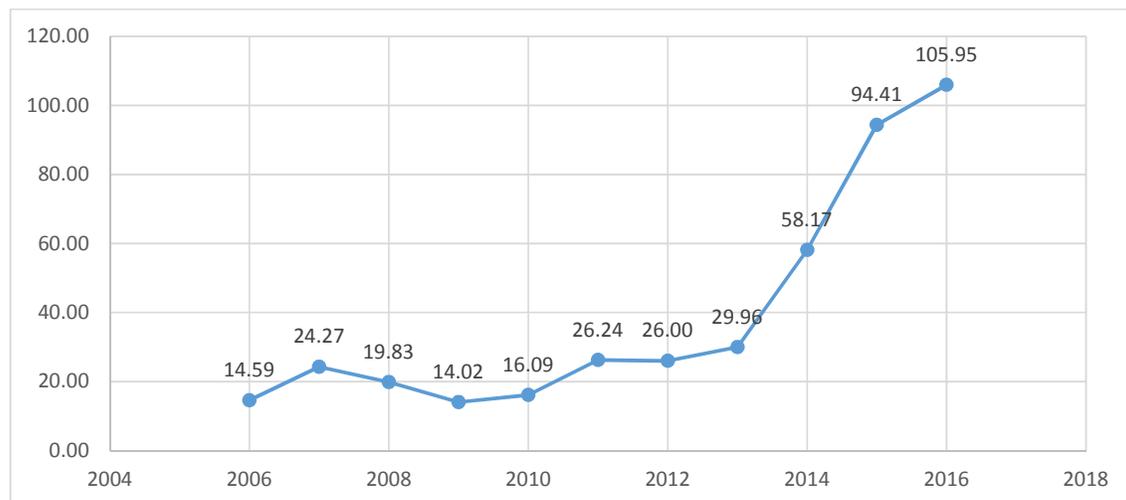
Information Technology stands second royalty payment outflows. Outflows have increased from Rs.36.7 crore to Rs.896.5 crores over the reference period. The high demand for new software and hardware technologies helps multinational IT companies to sell their products in India. Increased access to new technologies and growing income of the people open up an enormous market for IT products. The domination by MNCs in this sector has made it possible for licensors to realize large royalty payments.



Source: www.capitaline.com

Fig 12: Media Sector Avg Royalty Payments for Sample Companies

The media sector companies mentioned here include Satellite Channels, Radio, and print media. Royalty payment outflows for the media sector has shown only a gradual increase until 2014, though in the post 2014 period it has seen a sudden and tremendous increase due to high royalties paid by STAR TV India. This company has made payments 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 has been the cause of this large outflow.

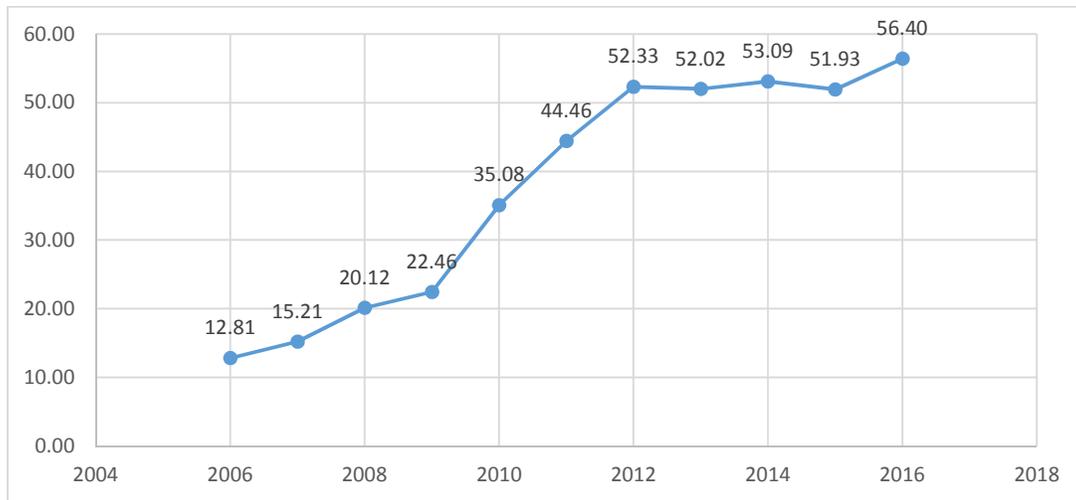


Source: www.capitaline.com

Fig 13: Electronics sector Avg Royalty Payments for Sample companies

The electronics sector companies include those producing televisions, gadgets, mobile phones and other electronic appliances. Royalty payments for the sector have grown almost ten times

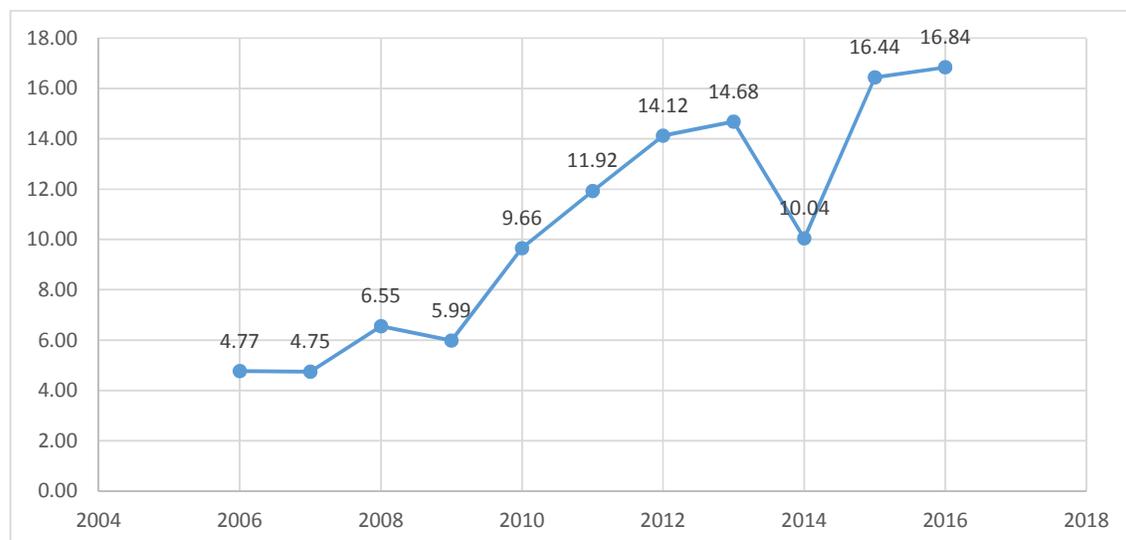
over the years. On an average, it has grown from Rs.14.6 crores to Rs.109 crores. During the reference period.



Source: www.capitaline.com

Fig 14: FMCG sector Avg Royalty Payments for Sample companies

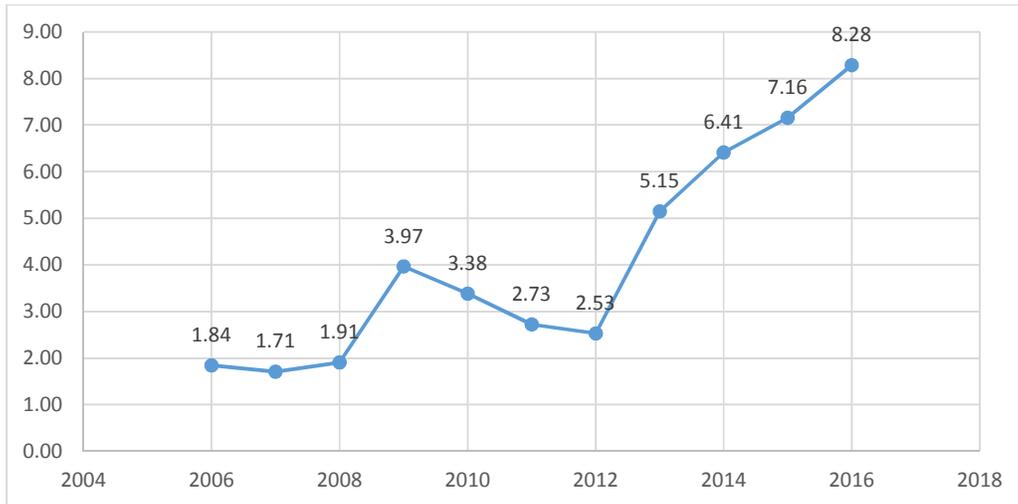
In FMCG sector, the average royalty payments has risen from Rs.12.81 crores in 2006 to Rs.56.40 crores in 2016, ie by nearly six times. Increasing income, changing lifestyles has helped this sector to grow tremendously during the last decade.



Source: www.capitaline.com

Fig 15: Auto Ancillary Sector Royalty Payments for Sample Companies

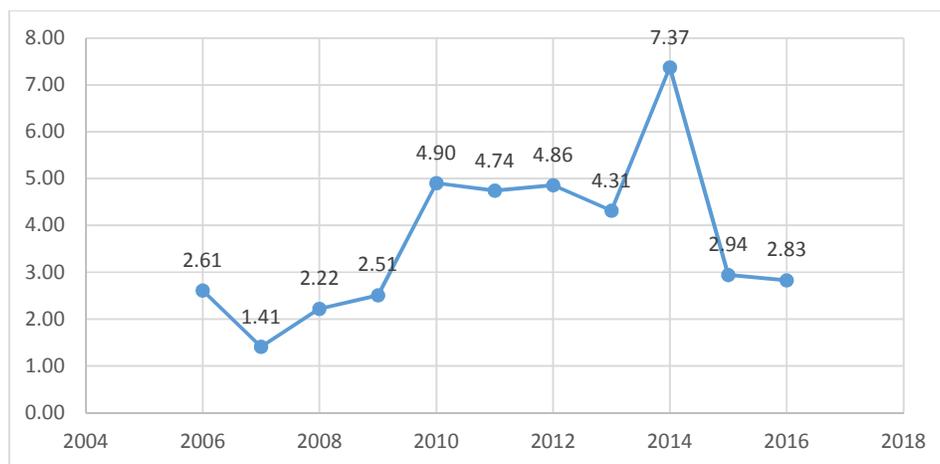
The auto ancillary sector also shows an increasing trend in the royalty payments. Payments have increased from Rs.4.77 crores to Rs.16.84 crores during the 10 year period. Availability of spare parts for the automobiles have been a major constraint in India. The sector has to depend on the design providers to provide them with technology for which royalty made had to be made.



Source: www.capitaline.com

Fig 16: Pharma Sector Avg Royalty Payments for Sample Companies

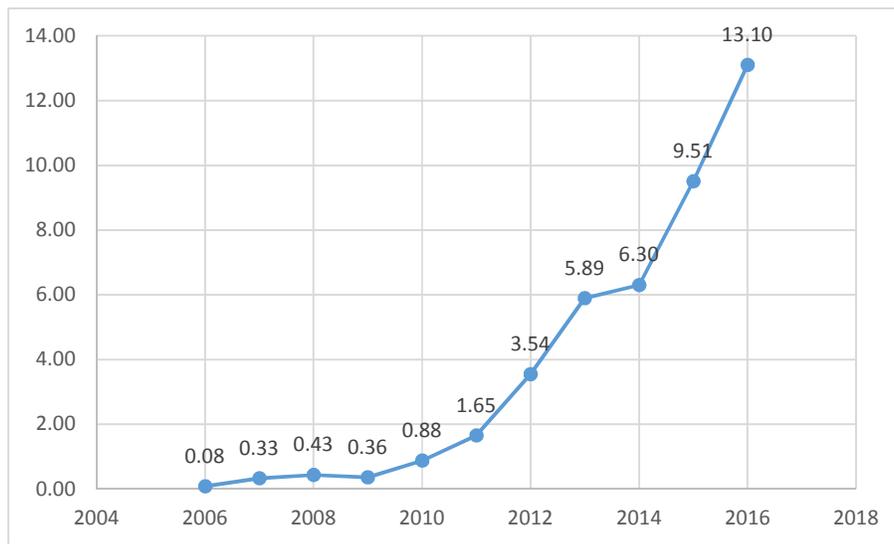
Pharma companies are one of the major contributors of royalty payments in India. Their growth has been tremendous. Though the payments figures have grown tremendously in recent years, the amounts are not significant. Indigenous research in health sector, government support for R&D labs could help to reduce the royalty payments in this sector further.



Source: www.capitaline.com

Fig 17: Agro Chemicals Sector Avg Royalty Payments for Sample Companies

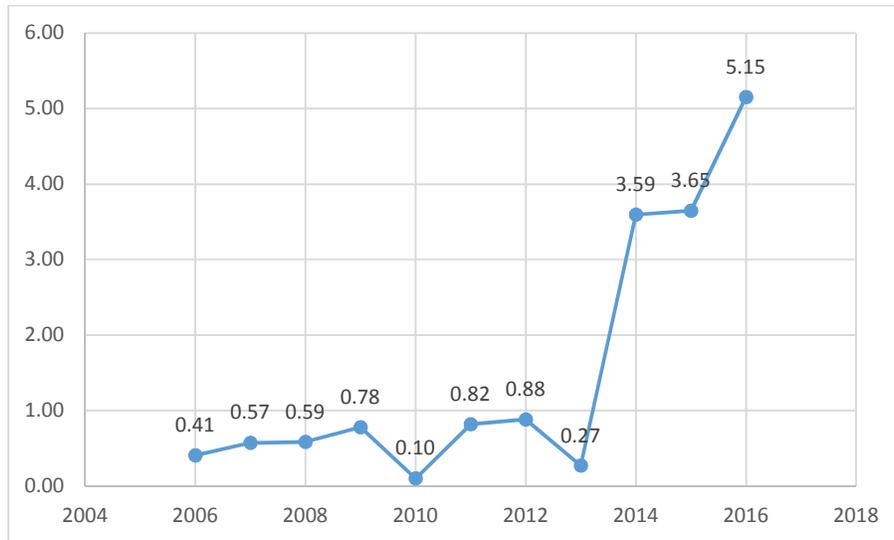
Average annual royalty payments for Agro chemicals showed an increasing trend until 2014 with a sudden fall in recent years. The reason being the shift to indigenous methods and natural farming in our agriculture sector leading to lessened dependence on chemicals thus bringing down the volume of royalty 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 consumption of chemical pesticides grew by only 2 per cent (Business line 2017).



Source: www.capitaline.com

Fig 18: Trading Sector Average Royalty Payments for Sample Companies

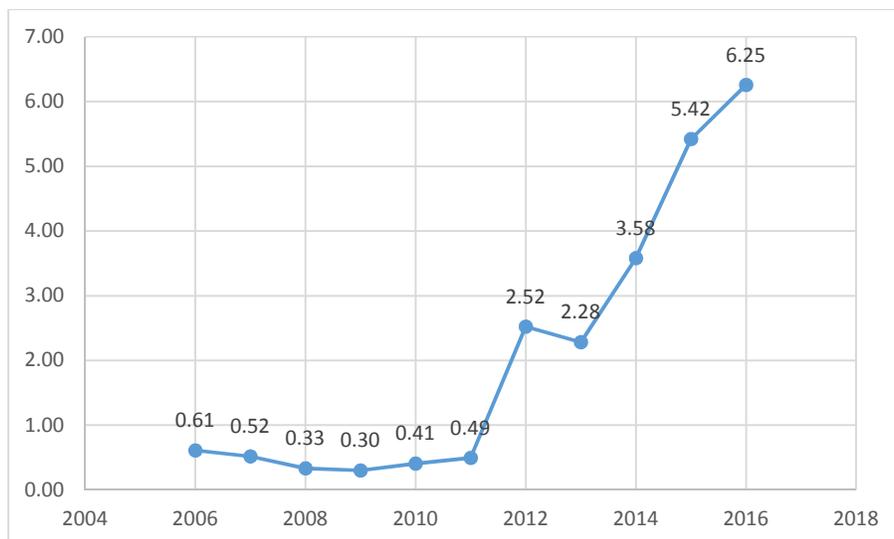
Companies in the trading sectors include Bombay cycle, 3M India, Remi Sales and engineering, PCI ltd, etc. Average royalty payments for these units have shown an increasing trend over the years from Rs. 0.08 crores to Rs.13.10 crores. This sector has also shown a tremendous growth over the last 10 years.



Source: www.capitaline.com

Fig 19: Health Care Sector Avg Royalty Payments for Sample Companies

Health care sector companies includes hospitals, medical devices and other 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.



Source: www.capitaline.com

Fig 20: Engineering Sector Avg Royalty Payments for Sample Companies

The average royalty payments by engineering goods sector has grown over the years from less than Rs. 1 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 11 selected sectors have shown an increasing trend over the 10 year period, which indicates dependence of Indian firms on national and overseas firms for technologies. In certain sectors it seems to be either insignificant or even decreasing but overall, absolute outflows of royalty payments have increased for the companies concerned. In the succeeding section we relate royalty payments by the companies to their Net Sales, Cost of Production, Capital Employed, Profit after Tax and Export earnings.

This analysis would give us an idea of the impact of royalty payments on these parameters /variables

3. Analysis

In this section, we explore royalty paid as percentage of capital employed, net sales, costs of production, exports and profits of firms concerned. Each sector has been examined in terms of these indicators to understand the trend of royalty payments over years. To calculate the percentage value in terms of each indicator the following formulae has been used.

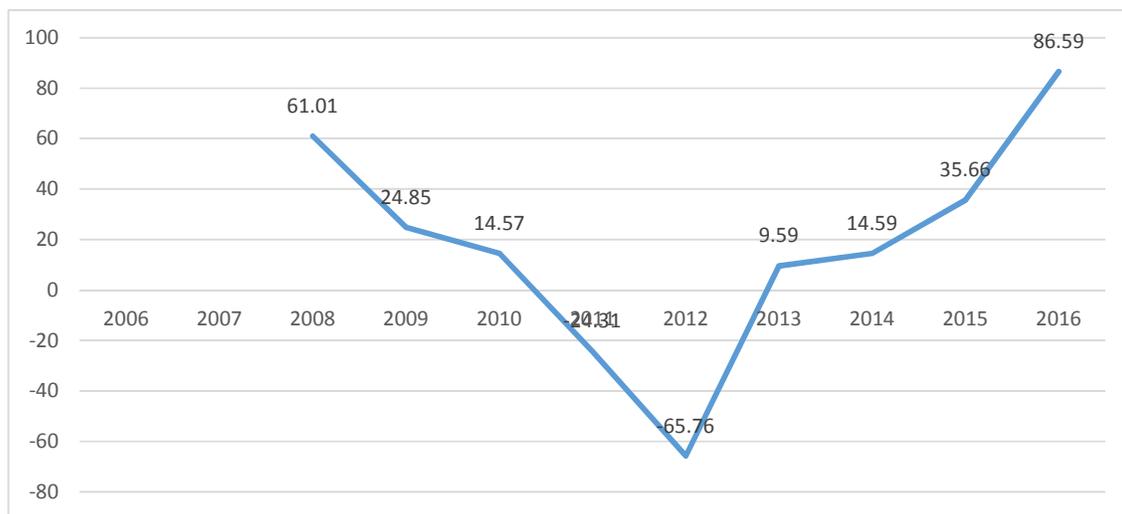
$$\text{Royalty in percentage of indicators} = \frac{R_n}{I_n} * 100$$

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

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

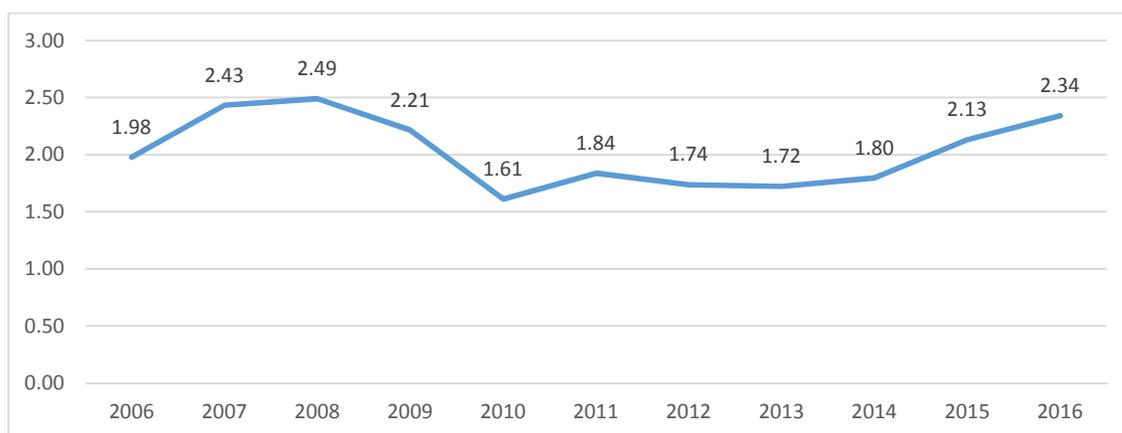
3.1 Automobile

About 12 companies have been taken from the Automobile sector for analysis. Royalty payment by these firms 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. Whereas, royalty in terms of net sales, cost of production, capital employed are in the range of two to eight percent it is much higher when reckoned in terms of profits. It is interesting to note that royalty payments in terms of export earnings has grown over the years - up 50 per cent during 2010 and subsequently come down to 10 percent in recent years. The average royalty payments made by this sector towards above all the other sectors covered here.



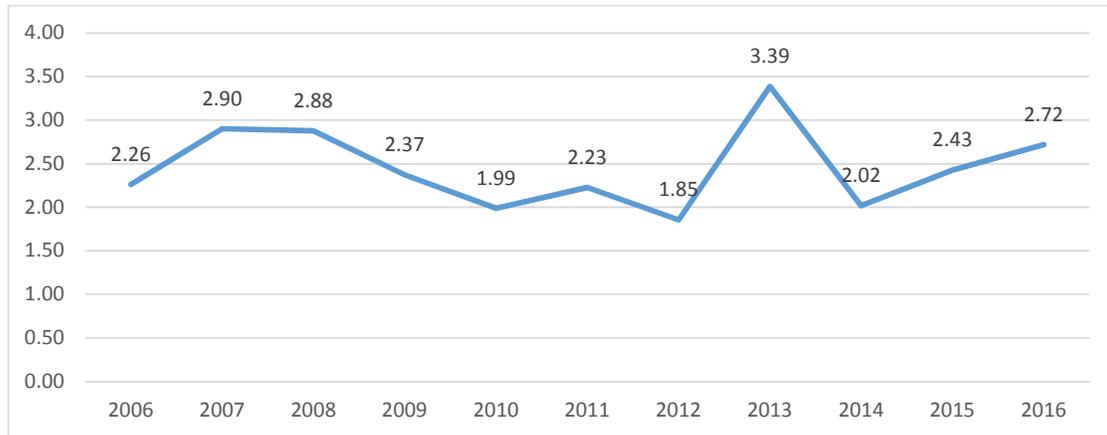
Source: www.capitaline.com

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



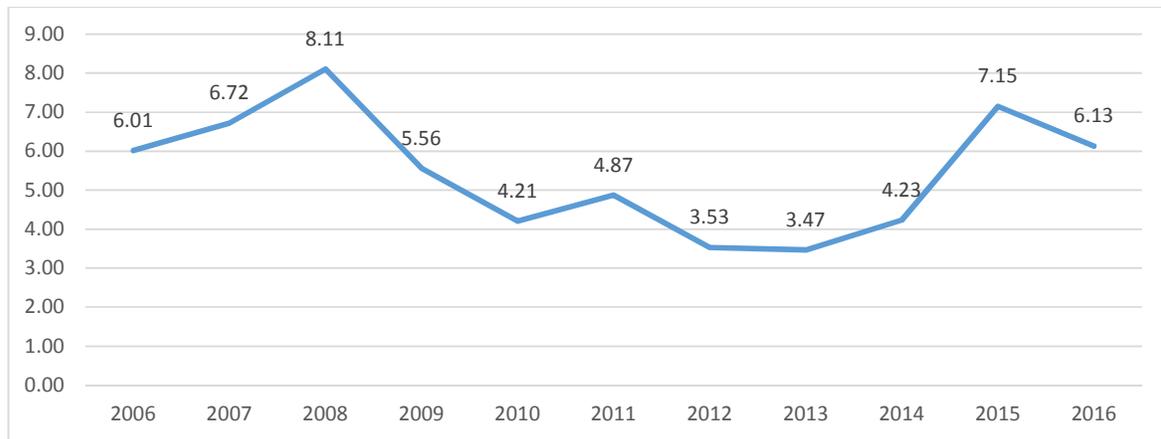
Source: www.capitaline.com

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



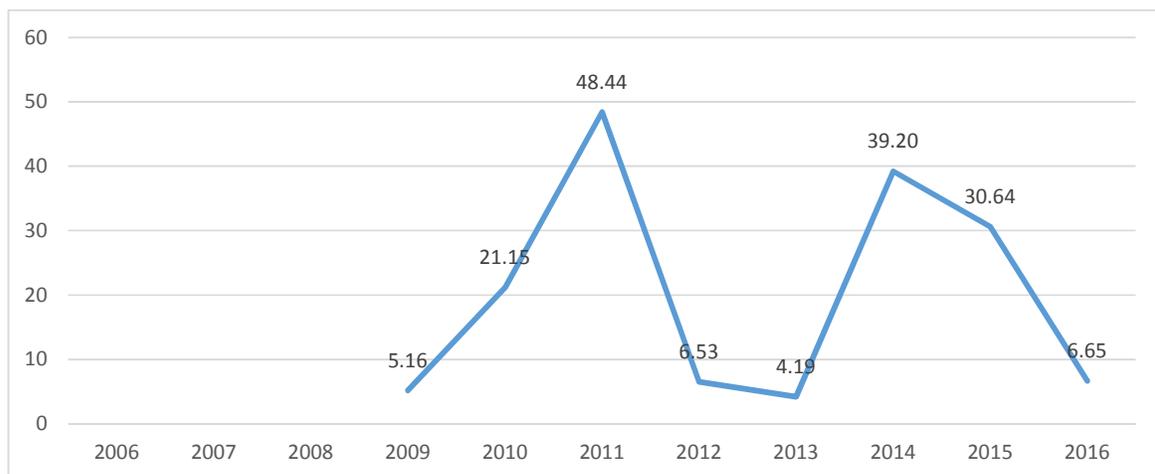
Source: www.capitaline.com

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



Source: www.capitaline.com

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

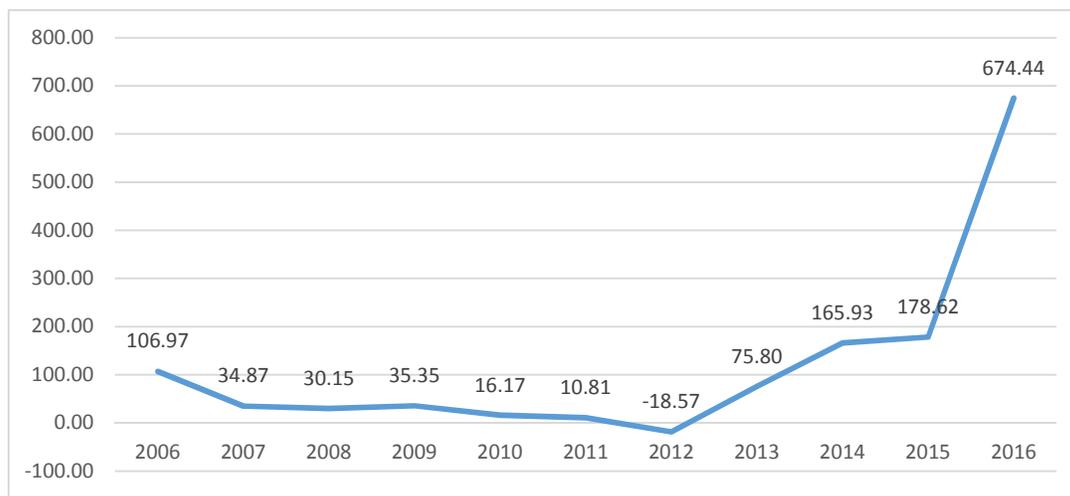


Source: www.capitaline.com

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

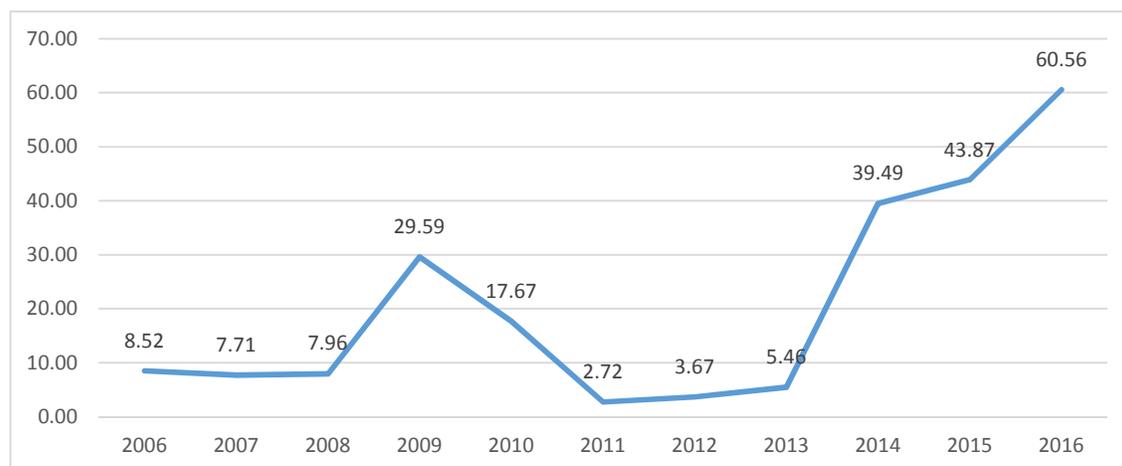
3.2. Information Technology software and hardware:

As far as firms in the IT sector go, royalties paid as percentage of net profits have shown a tremendous growth upto 2011. However In 2012, payments have come down to zero to again pick up drastically in recent years. High dependency on MNC software, especially on Microsoft operating systems and other software products, have made it possible to pave way for huge royalty payments to parent companies. Royalty paid as a percentage of capital employed, costs of production, net sales have trended upward in this sector. Royalty paid in percentage of exports have also shown an increasing trend but has slowed down in recent years owing to the reduction in software sales, produced in India.



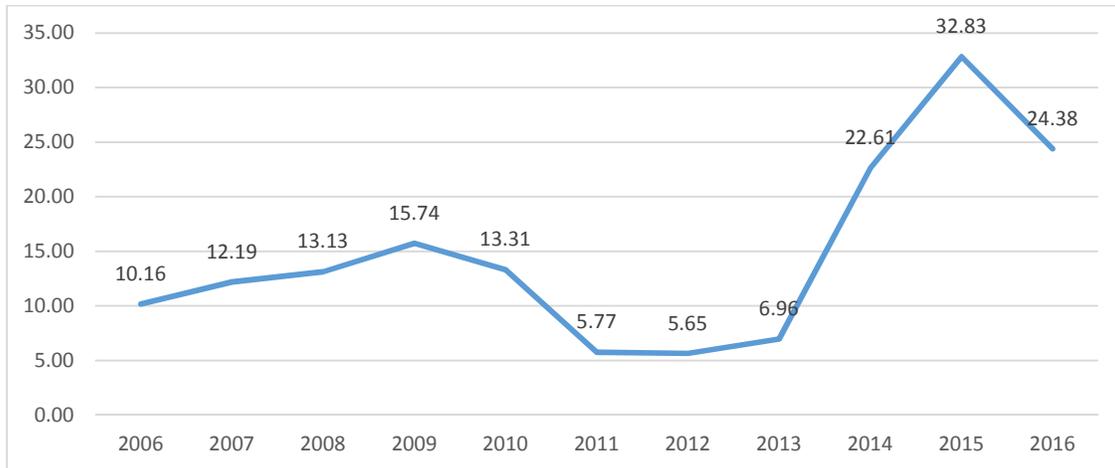
Source: www.capitaline.com

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



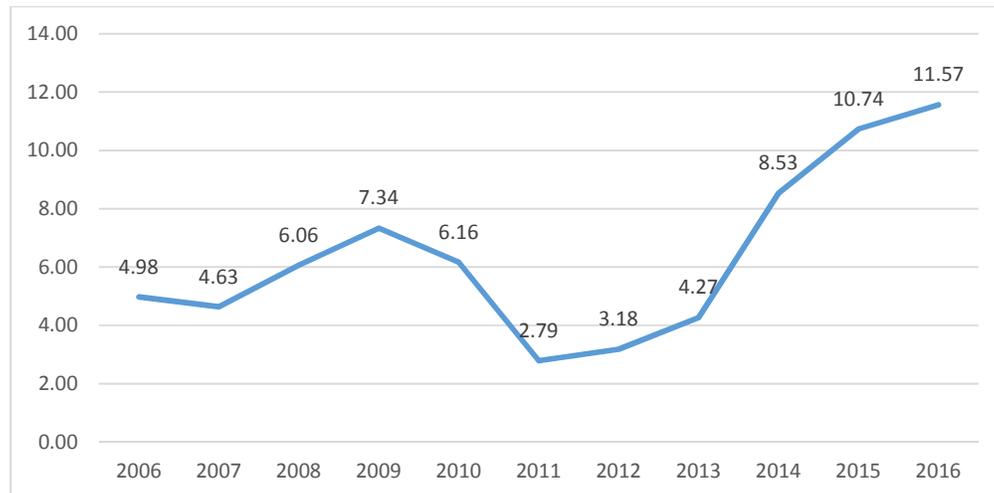
Source: www.capitaline.com

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



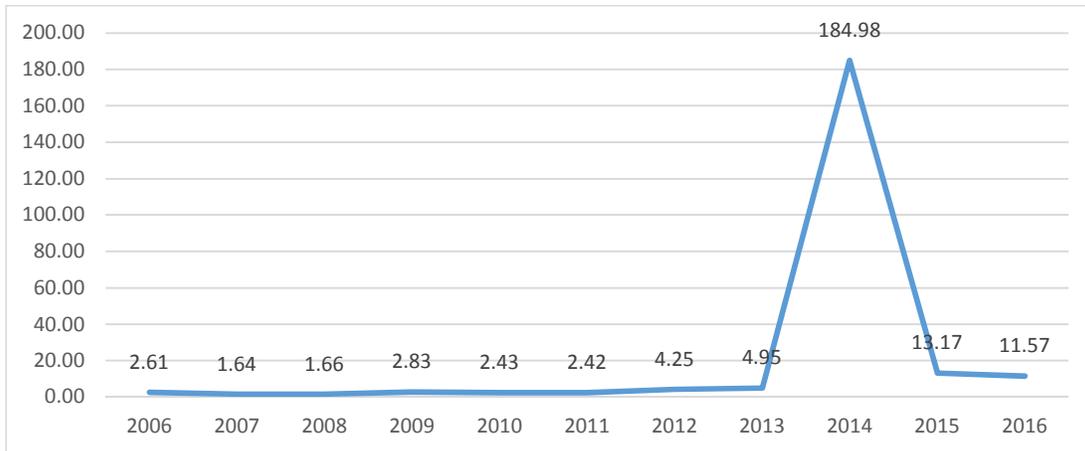
Source: www.capitaline.com

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



Source: www.capitaline.com

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

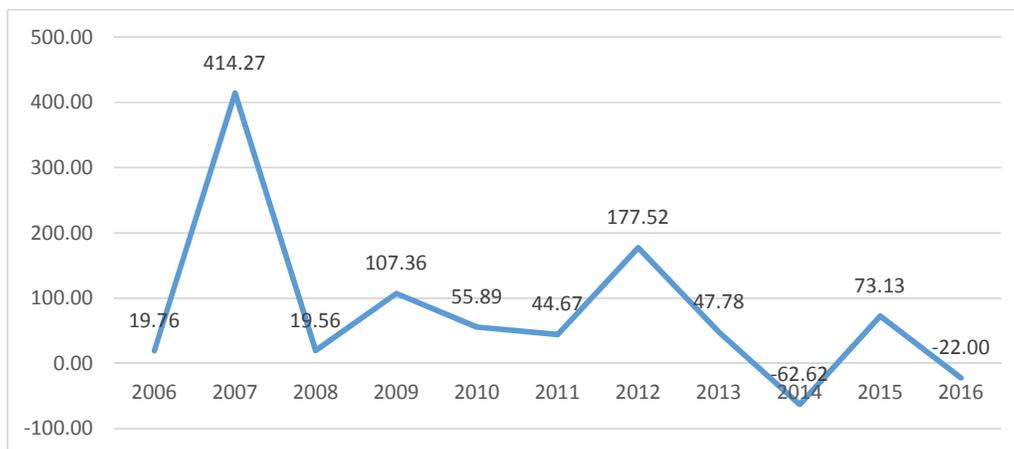


Source: www.capitaline.com

Fig 30: IT Sector Average Royalty in percentage of Export

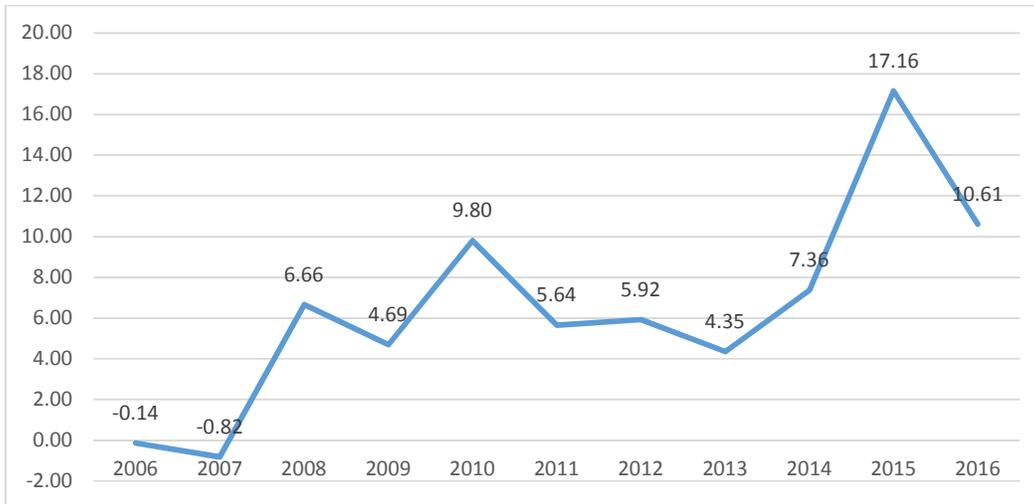
3.3 Media Sector:

Companies in the media sector has shown reduction in royalty payments as percentage of profits over the years. Whereas, other indicators like capital employed, costs of production and net sales show an increasing trend in royalty payments for the same period. Exports data for these companies have shown a decreasing trend in royalty payments.



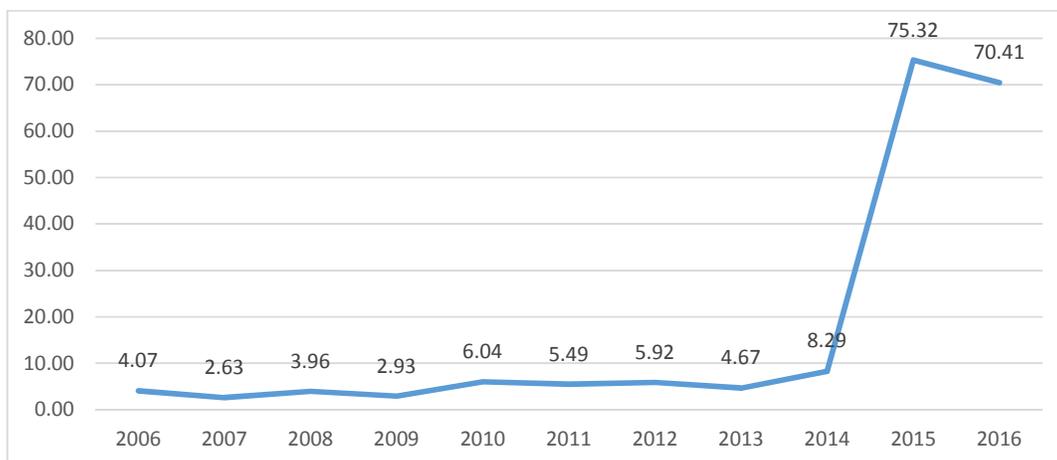
Source: www.capitaline.com

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



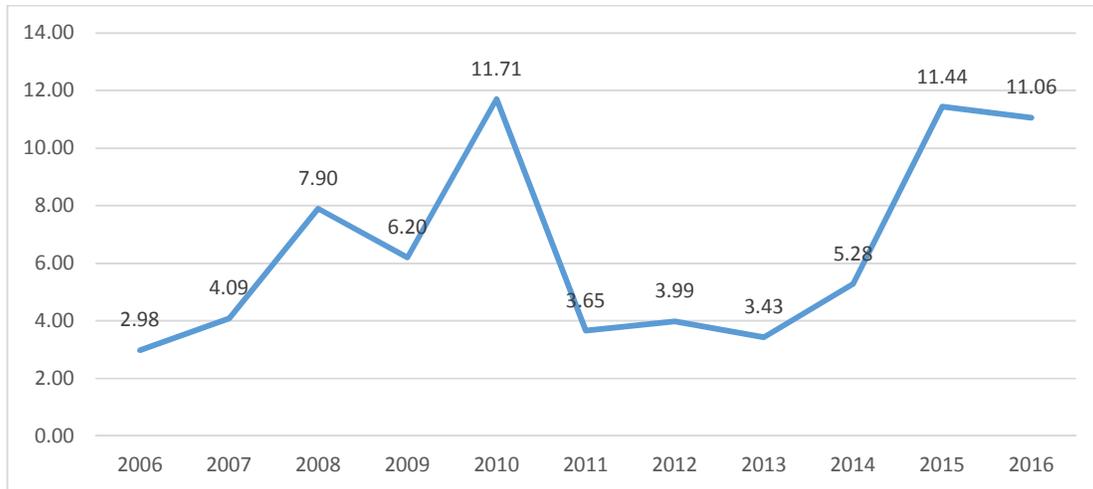
Source: www.capitaline.com

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



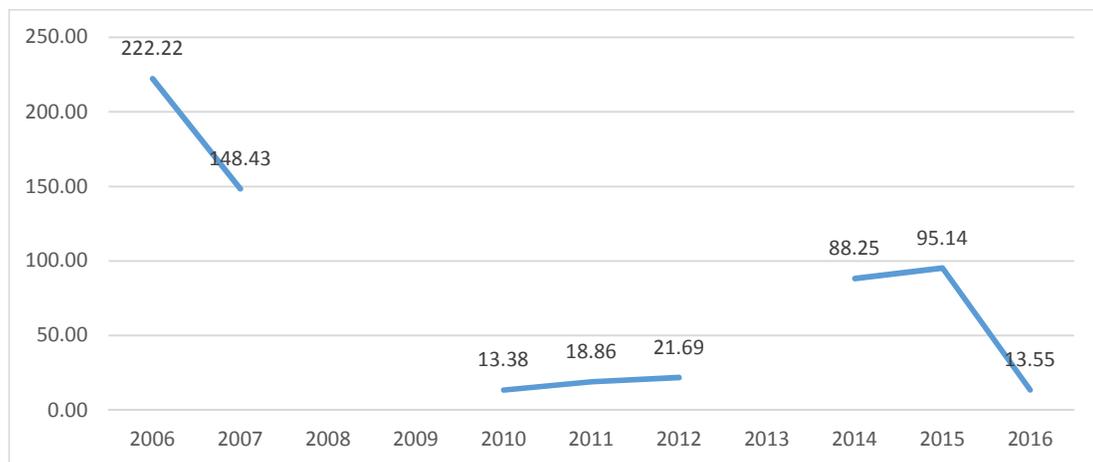
Source: www.capitaline.com

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



Source: www.capitaline.com

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



Source: www.capitaline.com

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

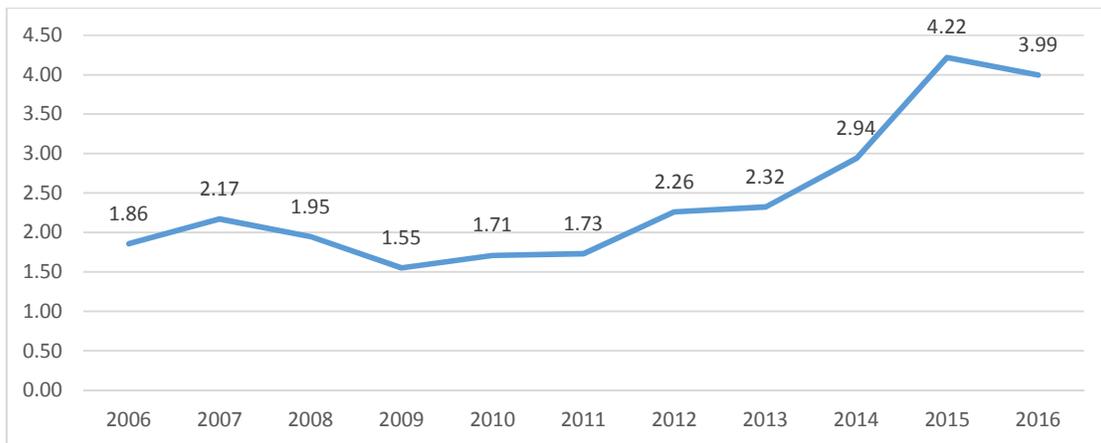
3.4 Electronics Sector:

In the electronics sector, for the firms concerned, the average royalty payments as percentage of profits 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 has been a slowdown which may be due to indigenous production of electronic goods and consequently lessening dependence on MNCs. Other indicators, in relation to net sales, cost of production, capital employed, on average are showing growth in royalty payment over the years and trends below five percent.



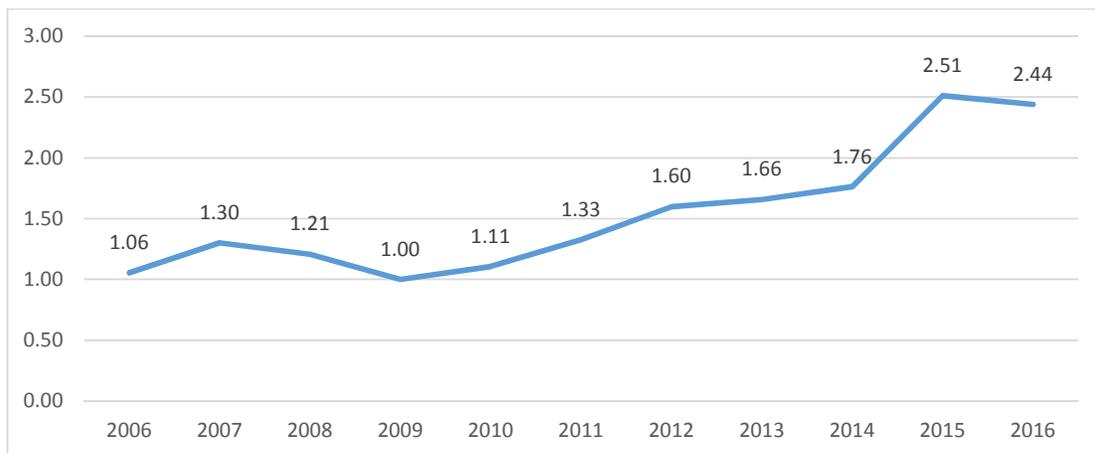
Source: www.capitaline.com

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



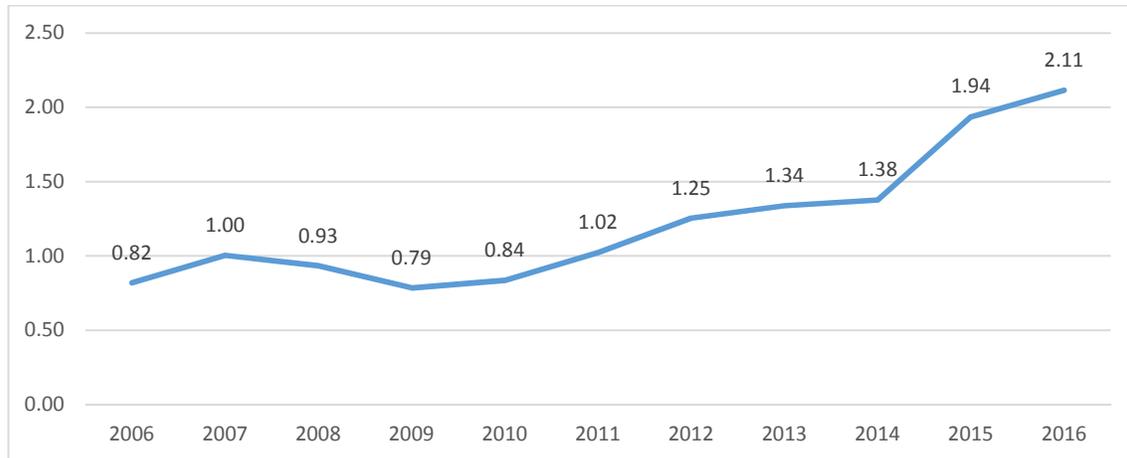
Source: www.capitaline.com

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



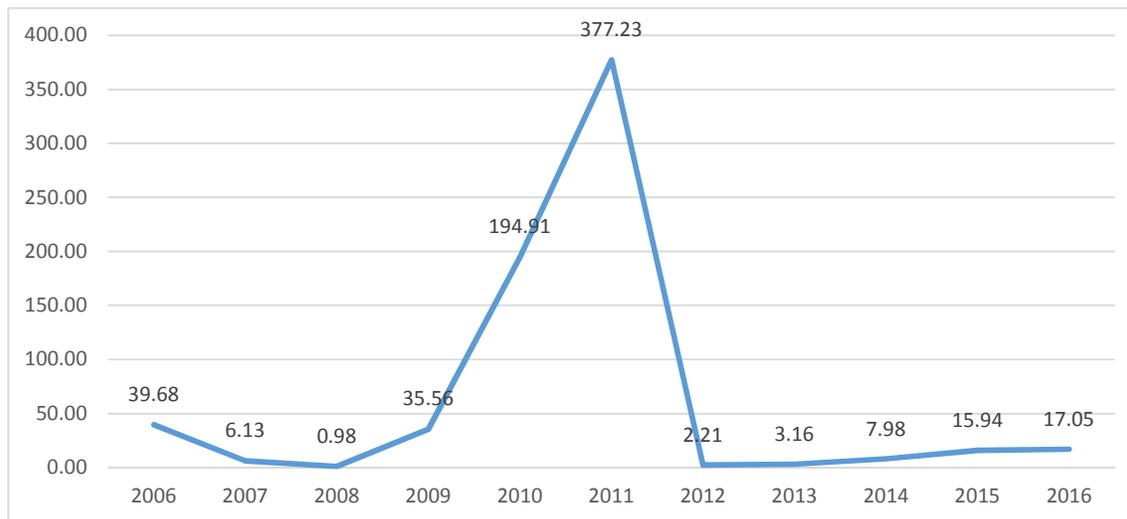
Source: www.capitaline.com

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



Source: www.capitaline.com

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

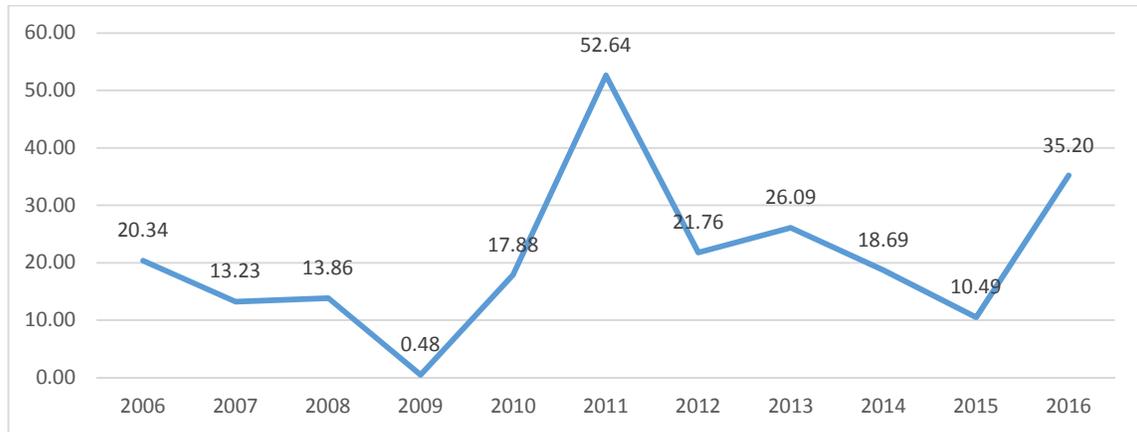


Source: www.capitaline.com

Fig 40: Electronics Sector Average Royalty in Percentage of Exports

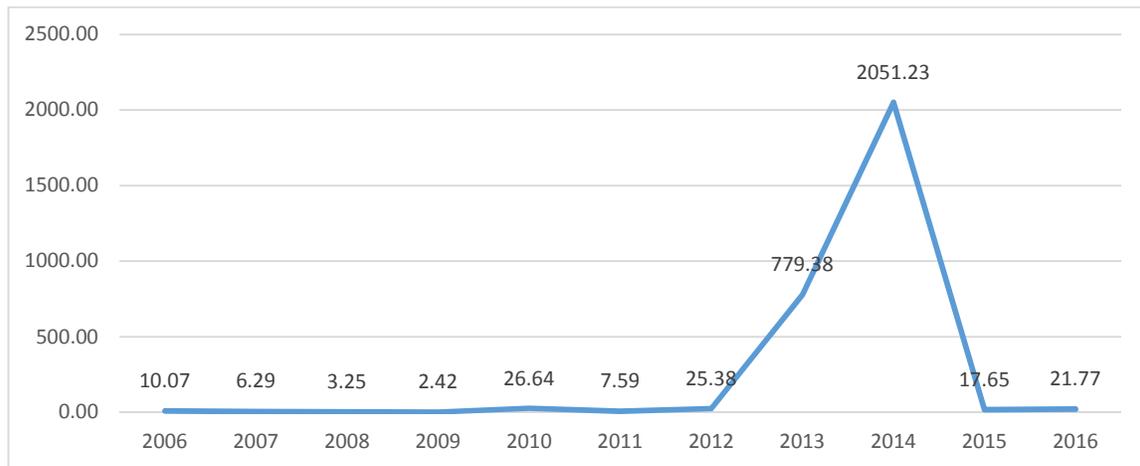
3.5 Auto Ancillary Sector

The auto ancillary sector's royalty payment as percentage of net profits show an increasing trend over the years, and ranges between 10 percent and 30 percent. Royalty paid as percentage of exports shows a sudden upsurge during 2010 to 2014, thereafter falling in recent years. Royalties paid as percentage of Net sales, capital employed and cost of production are showing a gradual increase and trending below three percent.



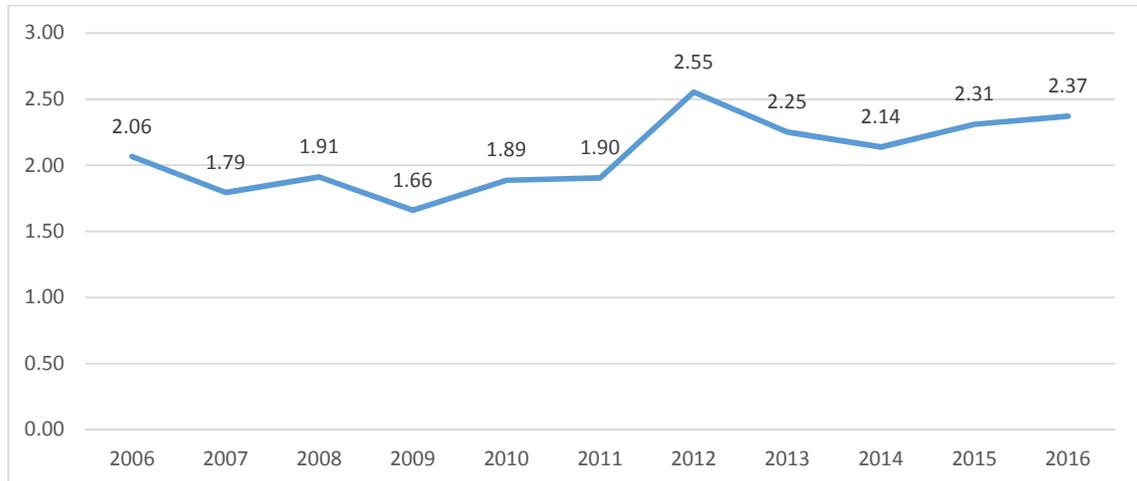
Source: www.capitaline.com

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



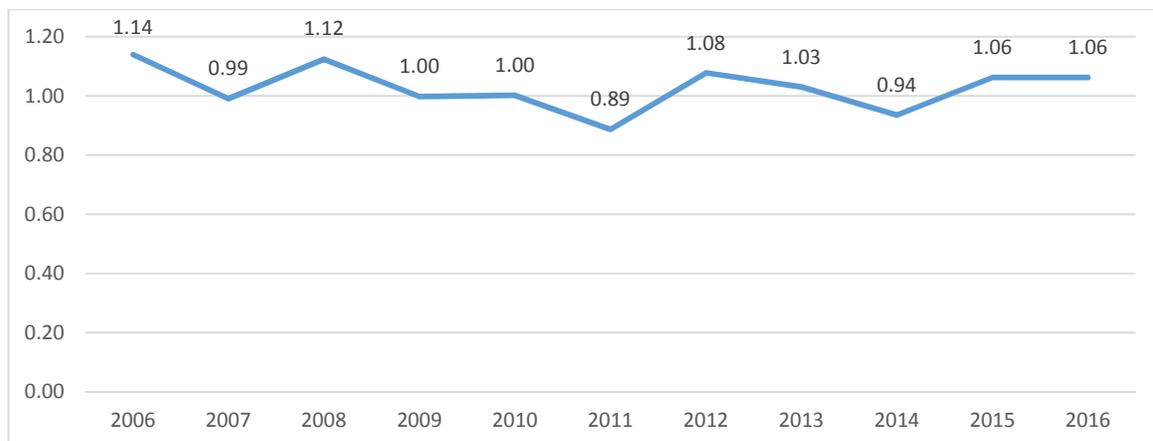
Source: www.capitaline.com

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



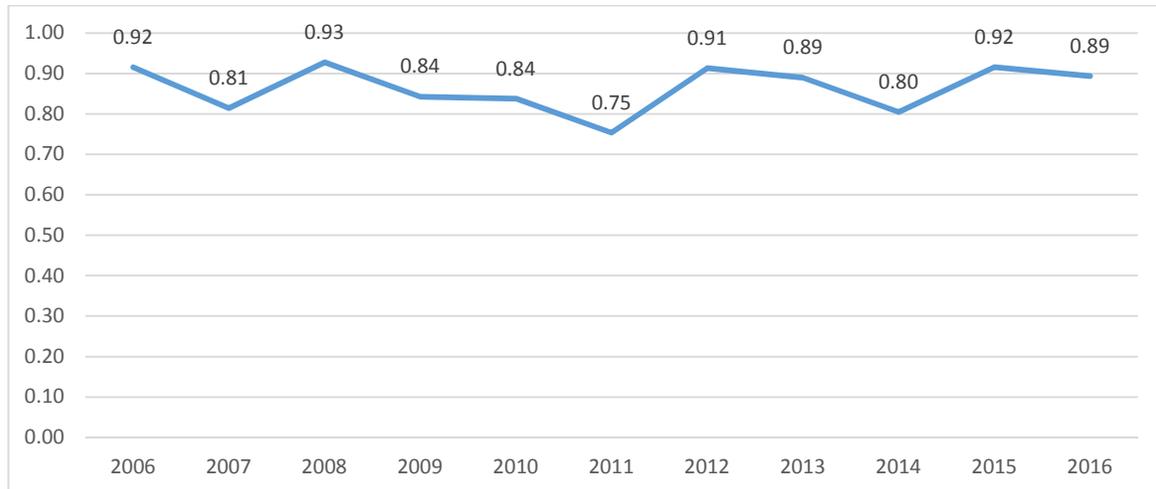
Source: www.capitaline.com

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



Source: www.capitaline.com

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

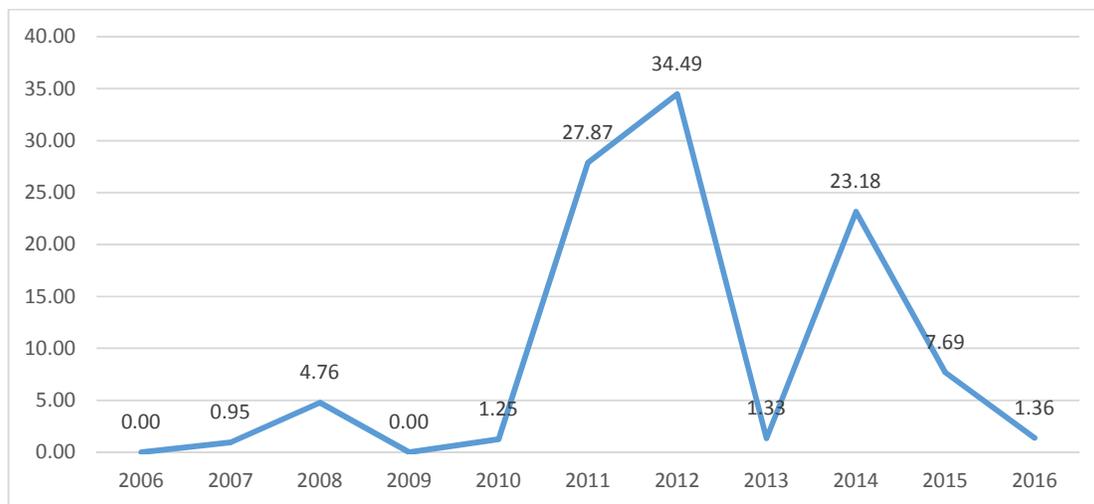


Source: www.capitaline.com

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

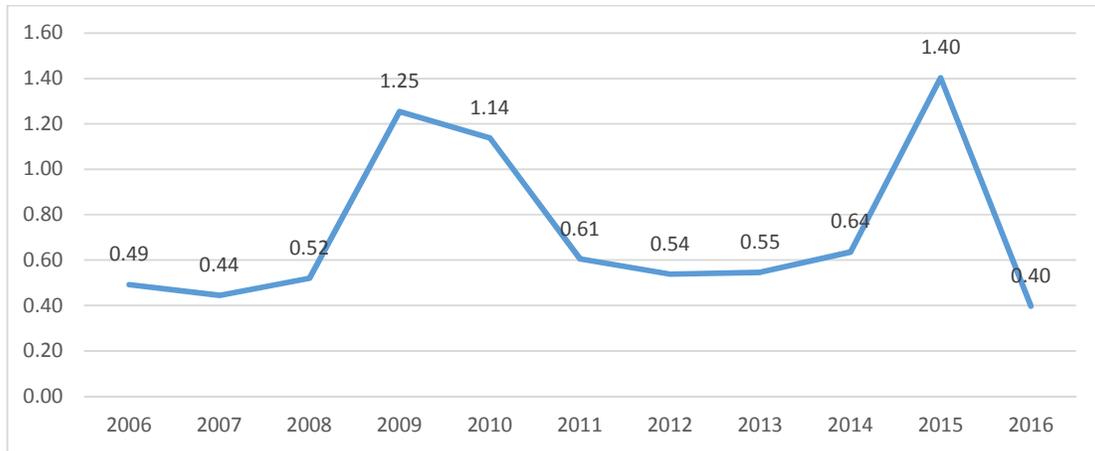
3.6 Pharma Sector

Average royalty payment as percentage of profits 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 show a decreasing trend from 2013-2014.



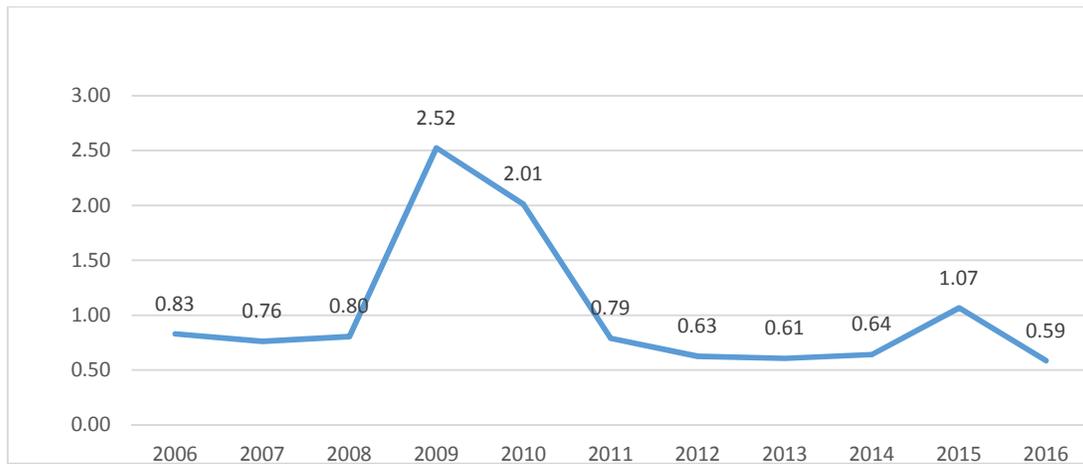
Source: www.capitaline.com

Fig 46: Pharma Sector Average Royalty in percentage of Exports



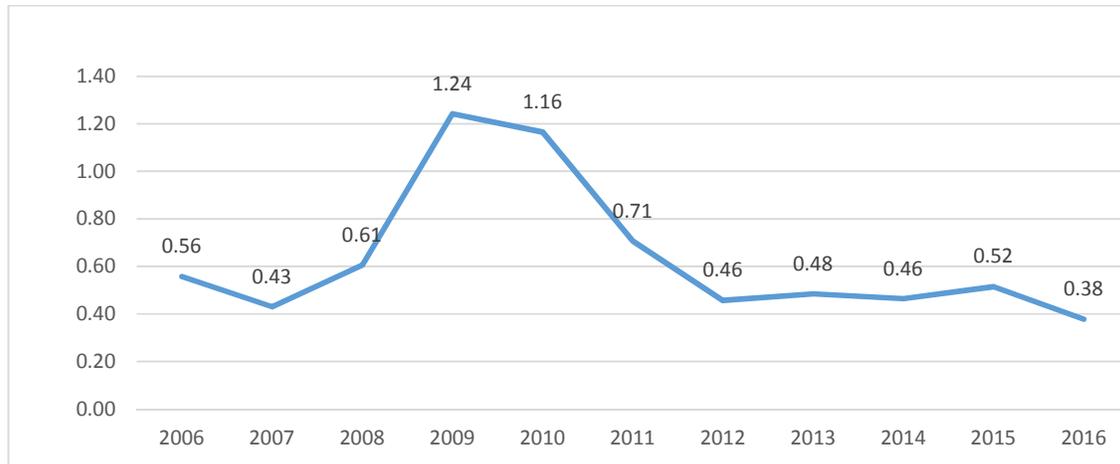
Source: www.capitaline.com

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



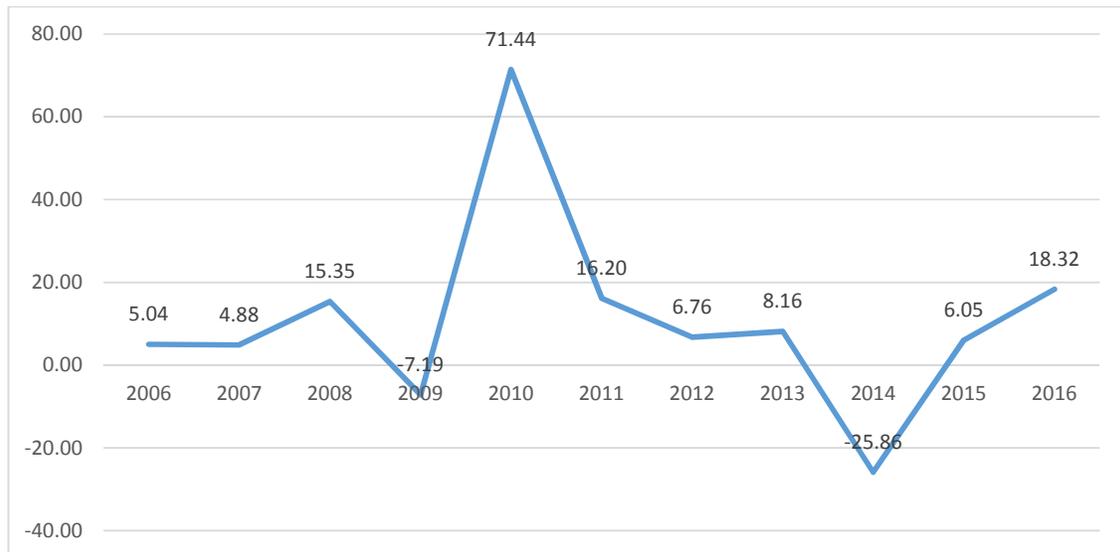
Source: www.capitaline.com

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



Source: www.capitaline.com

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

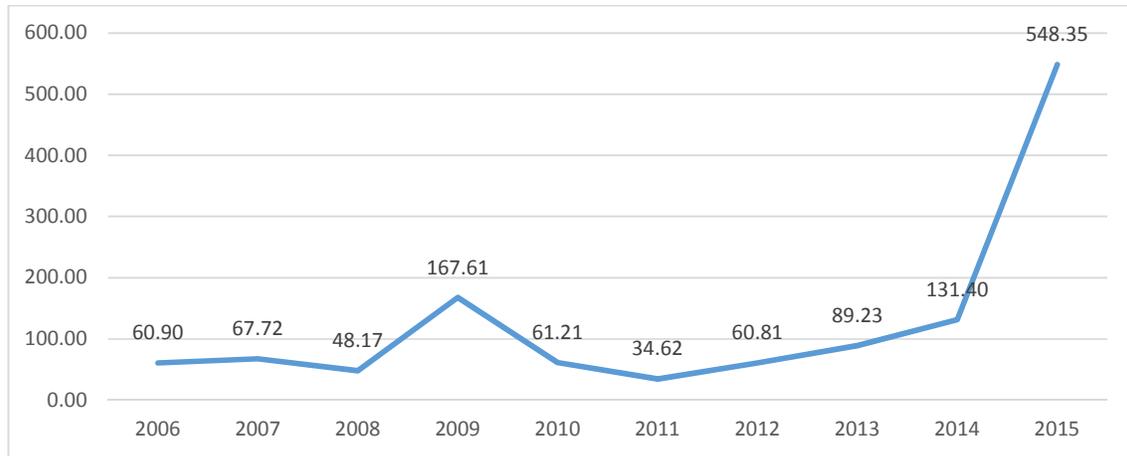


Source: www.capitaline.com

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

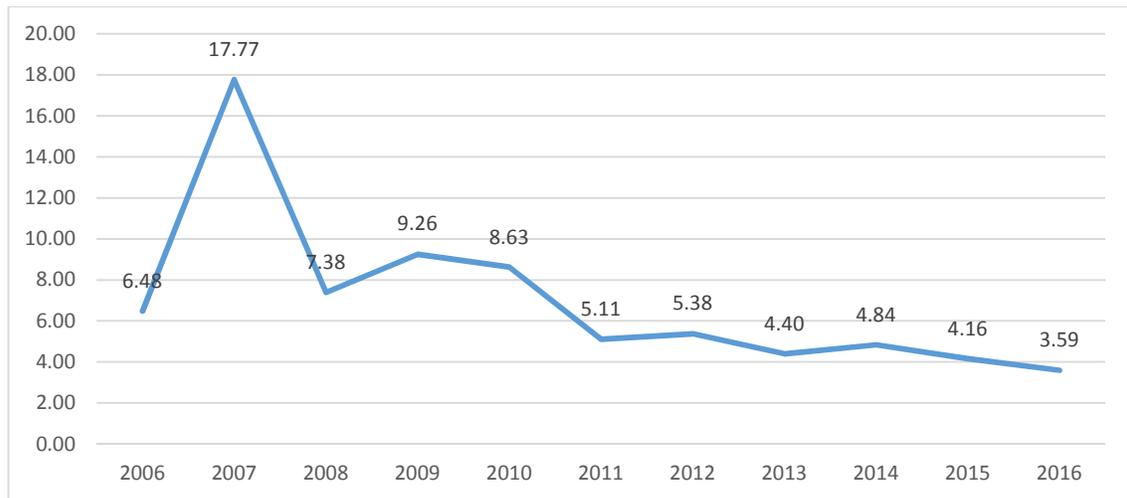
3.7 FMCG Sector:

Royalty paid as percentage of net profits has shown 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 costs of production are trending below three percent.



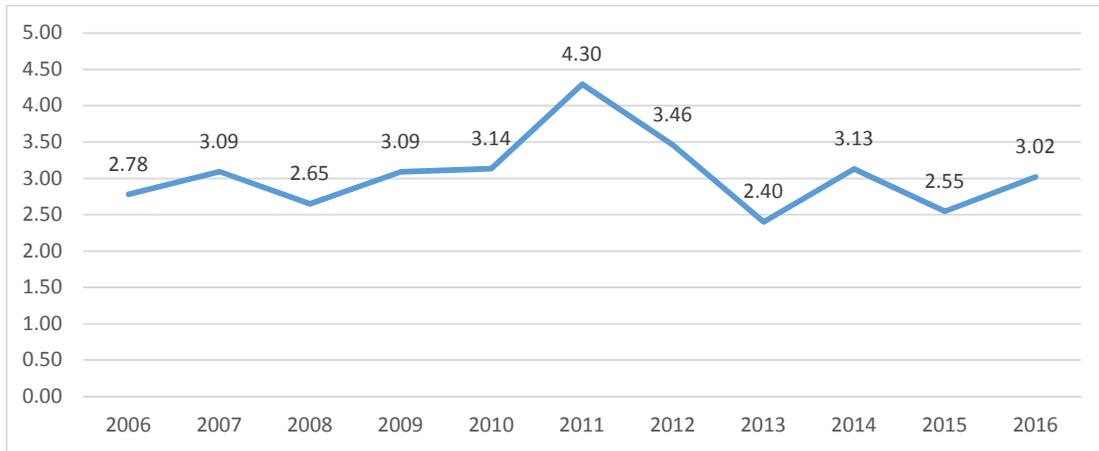
Source: www.capitaline.com

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



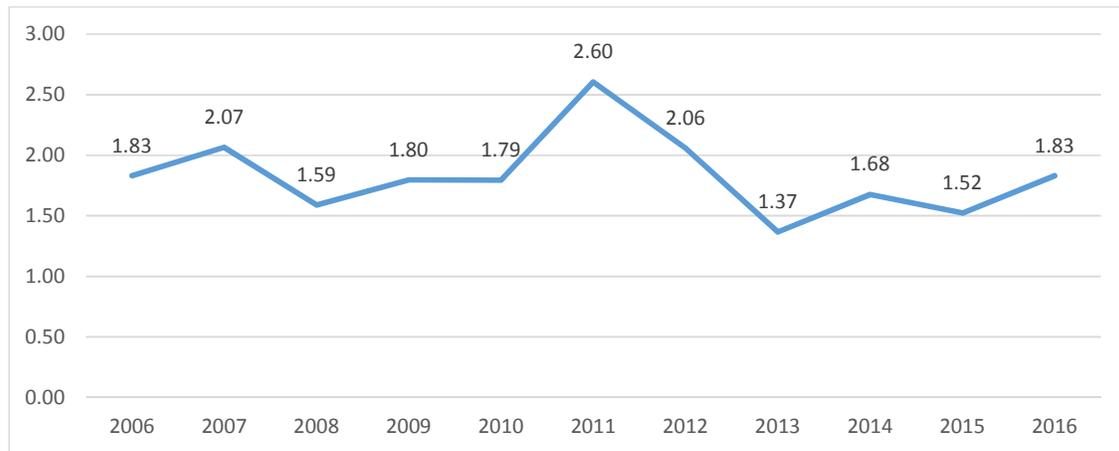
Source: www.capitaline.com

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



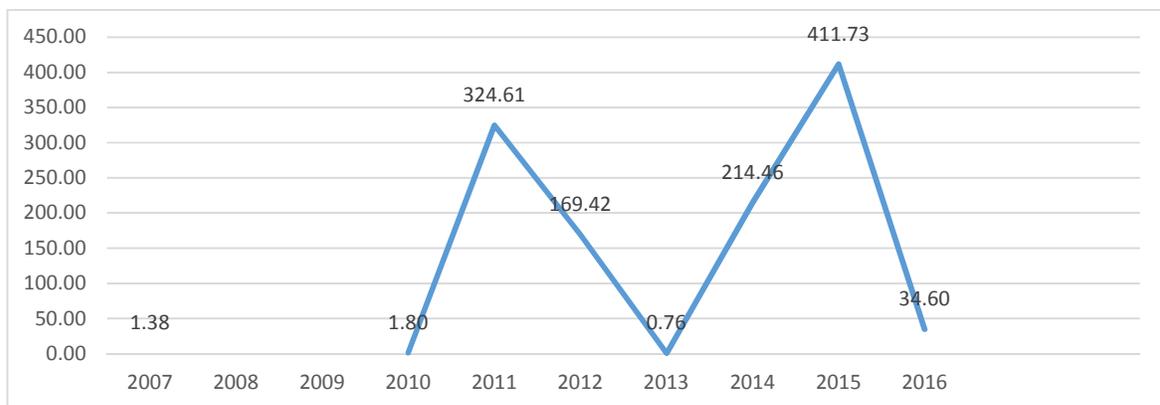
Source: www.capitaline.com

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



Source: www.capitaline.com

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

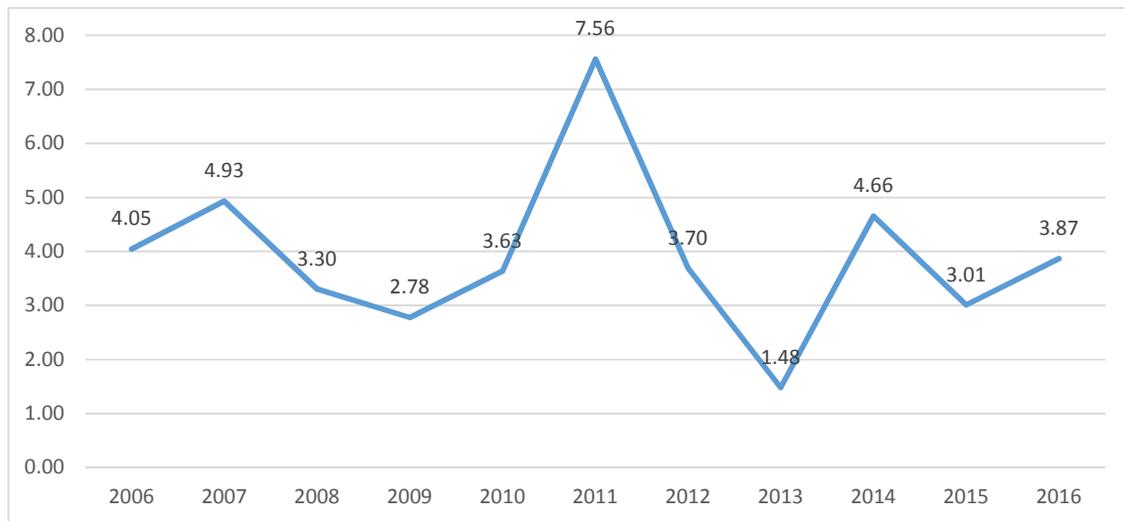


Source: www.capitaline.com

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

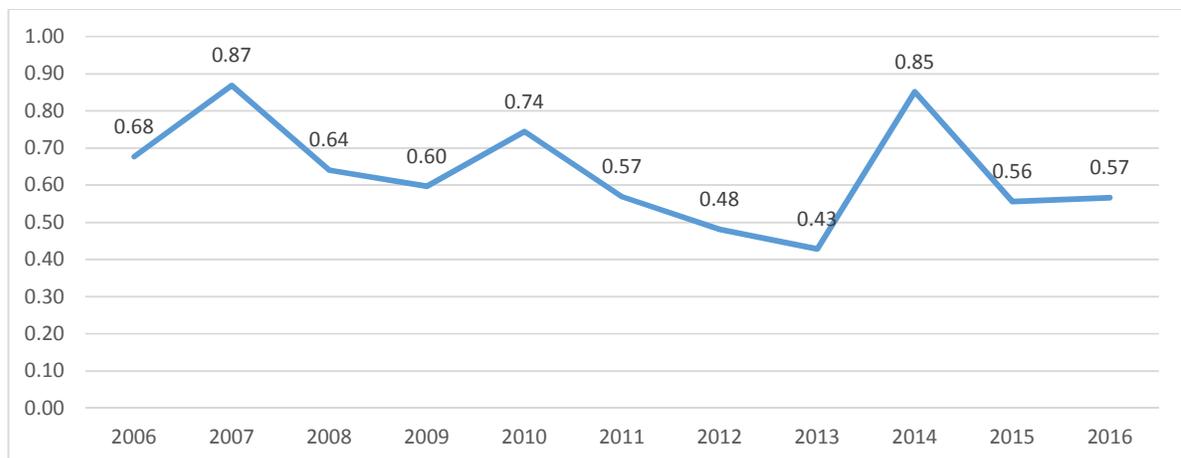
3.8 Agro Chemicals:

Among the five companies selected for the analysis, royalty paid as percentage of net profits, 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.



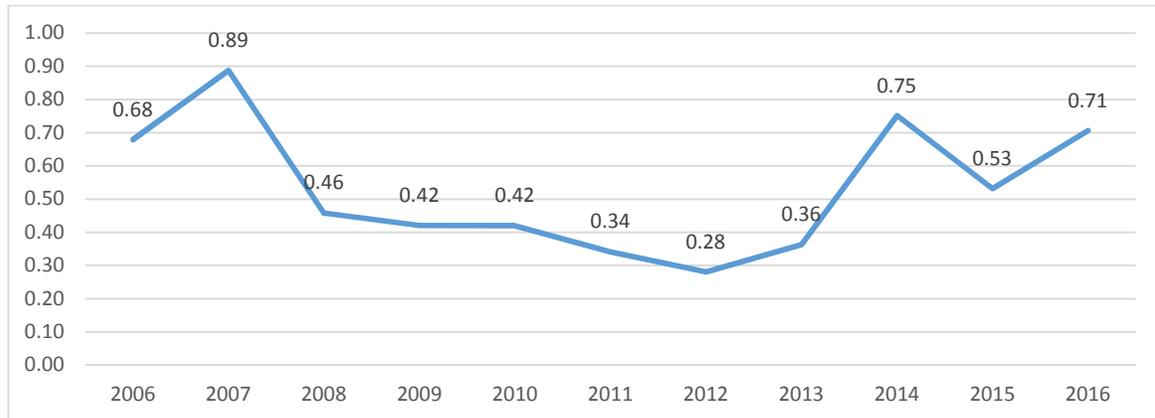
Source: www.capitaline.com

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



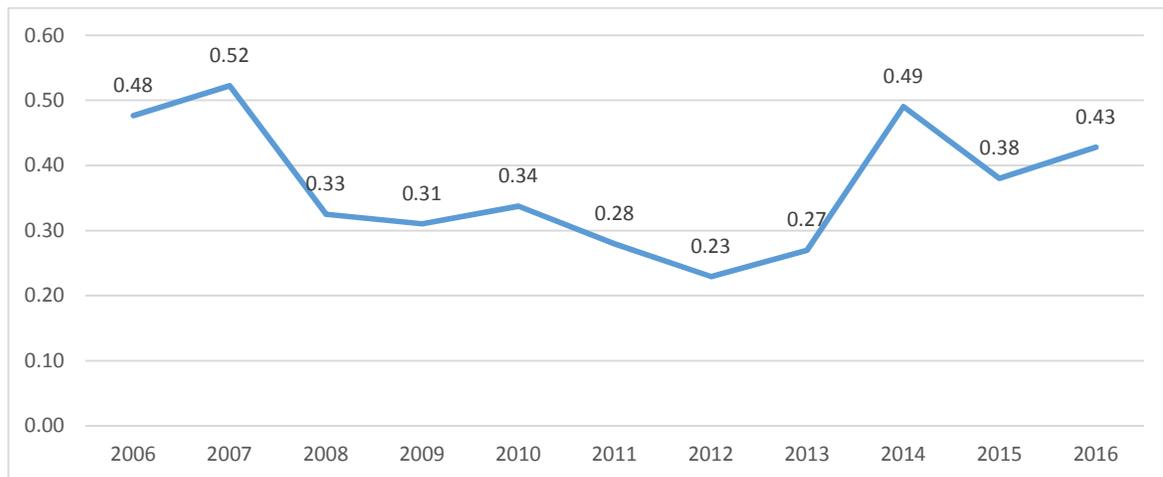
Source: www.capitaline.com

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



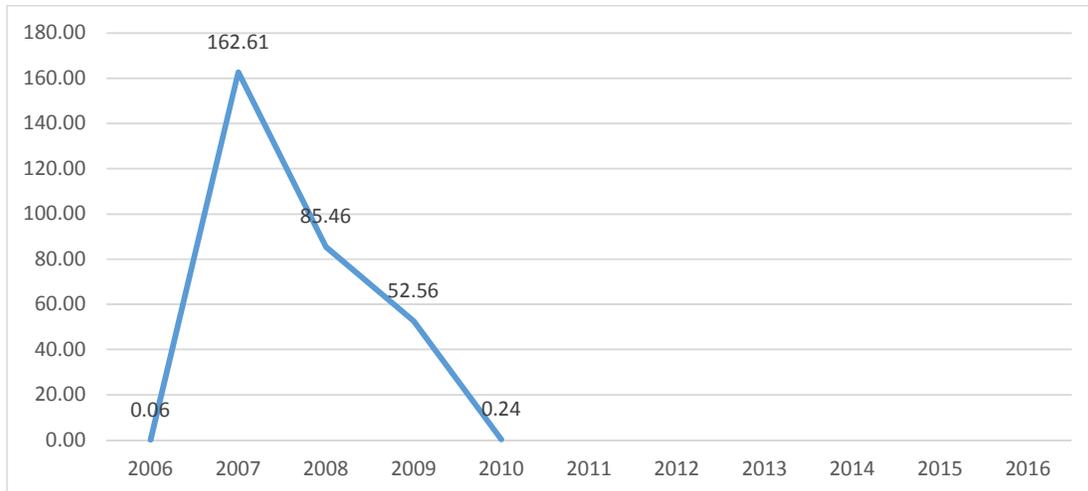
Source: www.capitaline.com

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



Source: www.capitaline.com

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

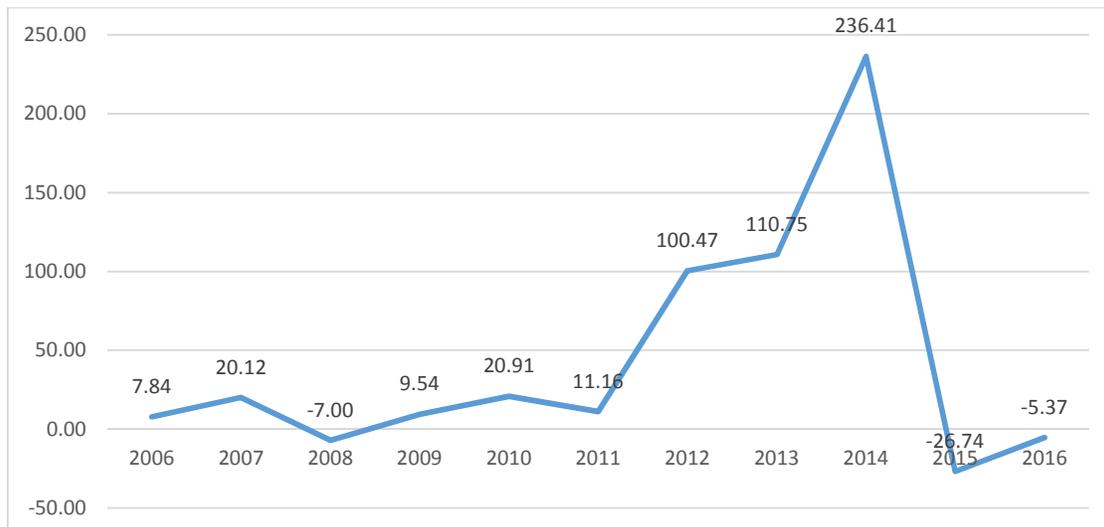


Source: www.capitaline.com

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

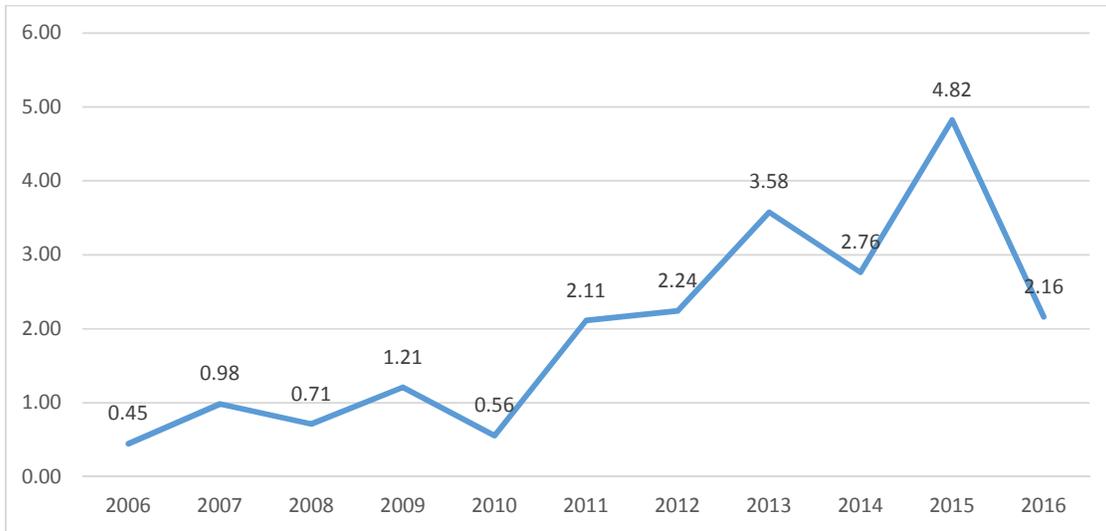
3.9 Trading Sector

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



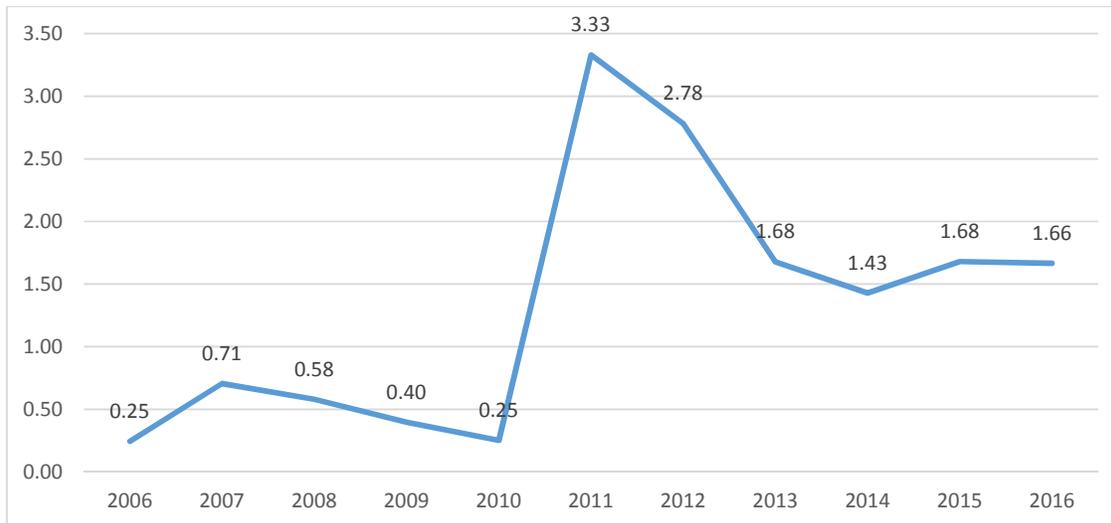
Source: www.capitaline.com

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



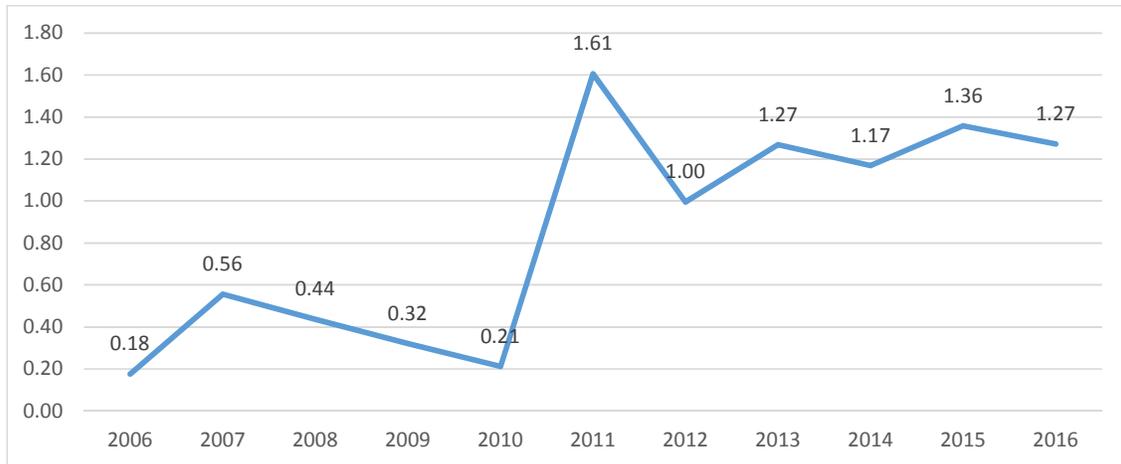
Source: www.capitaline.com

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



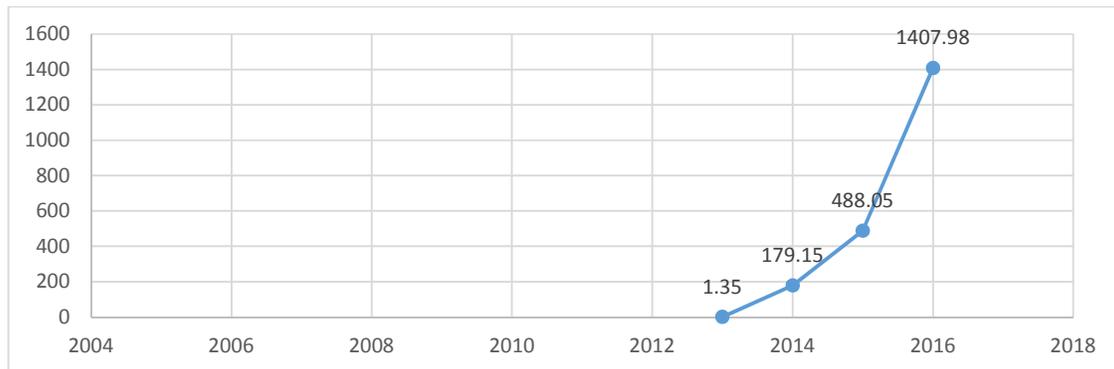
Source: www.capitaline.com

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



Source: www.capitaline.com

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

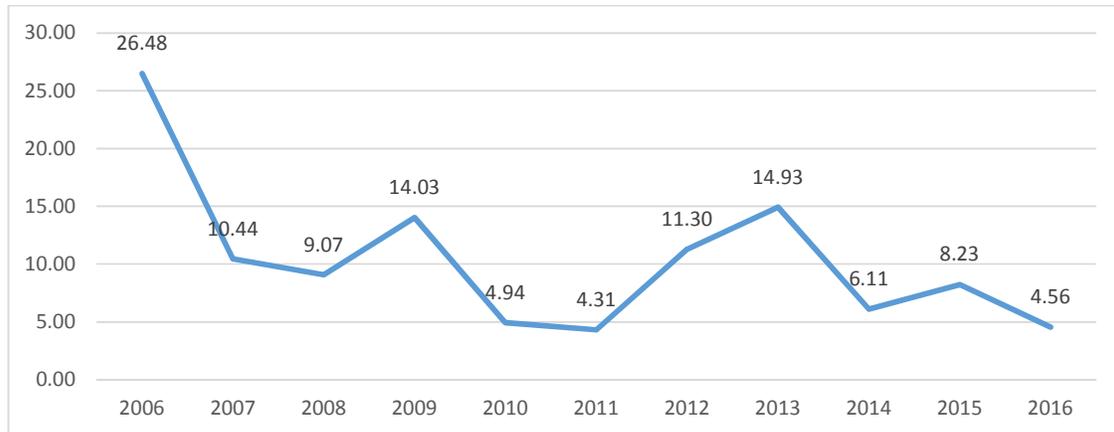


Source: www.capitaline.com

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

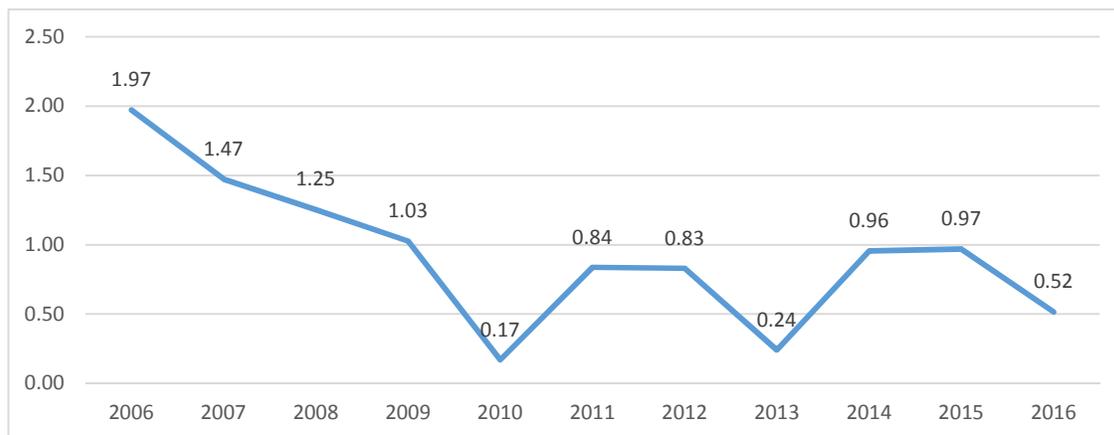
3.10 Health Care Sector:

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



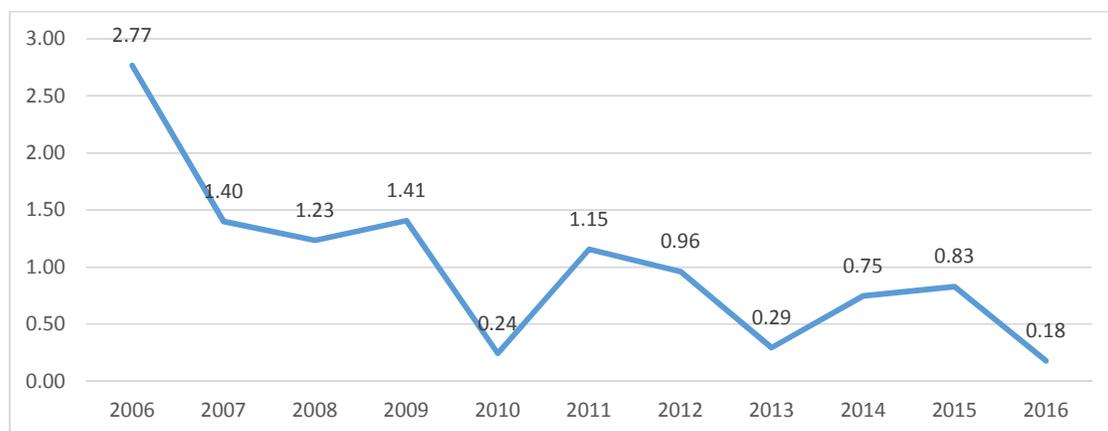
Source: www.capitaline.com

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



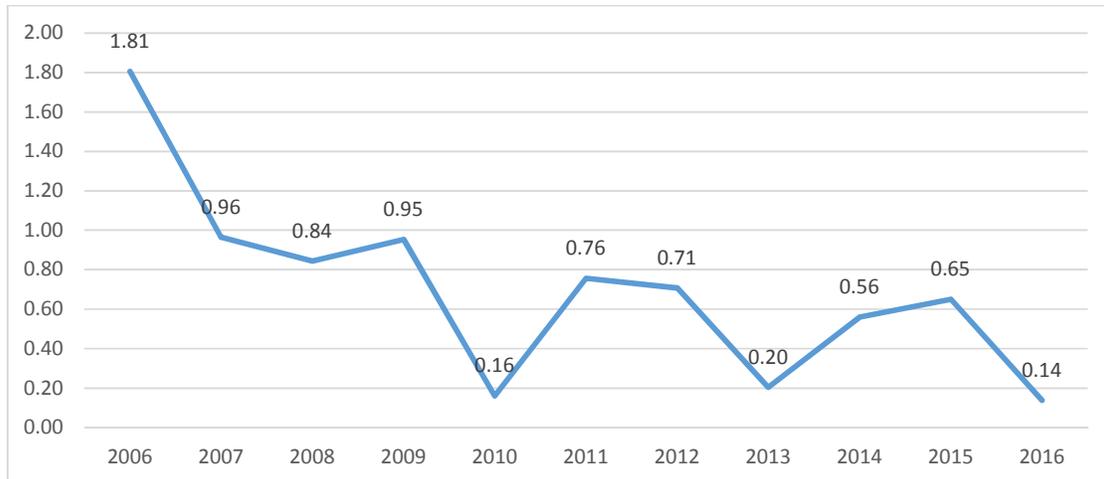
Source: www.capitaline.com

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



Source: www.capitaline.com

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

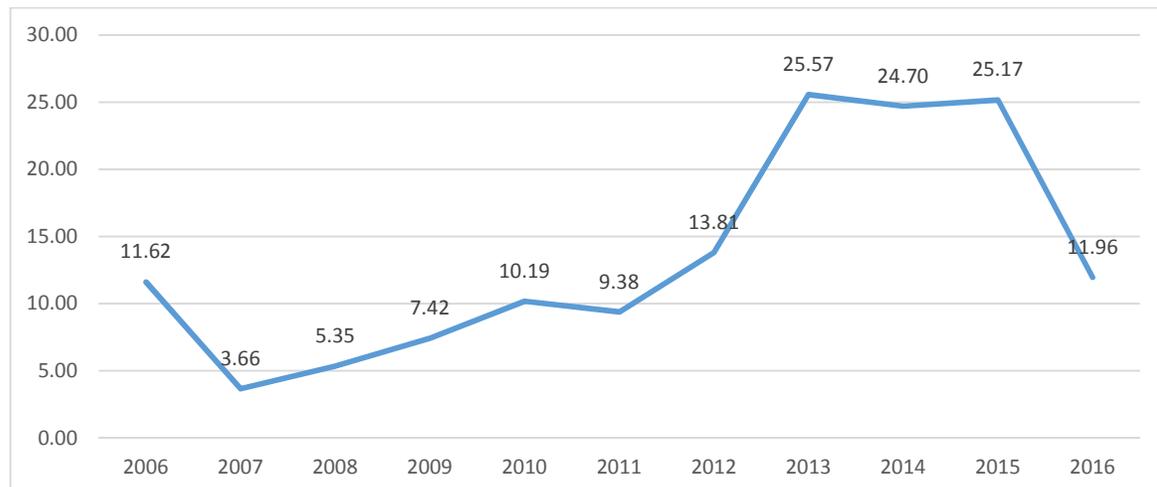


Source: www.capitaline.com

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

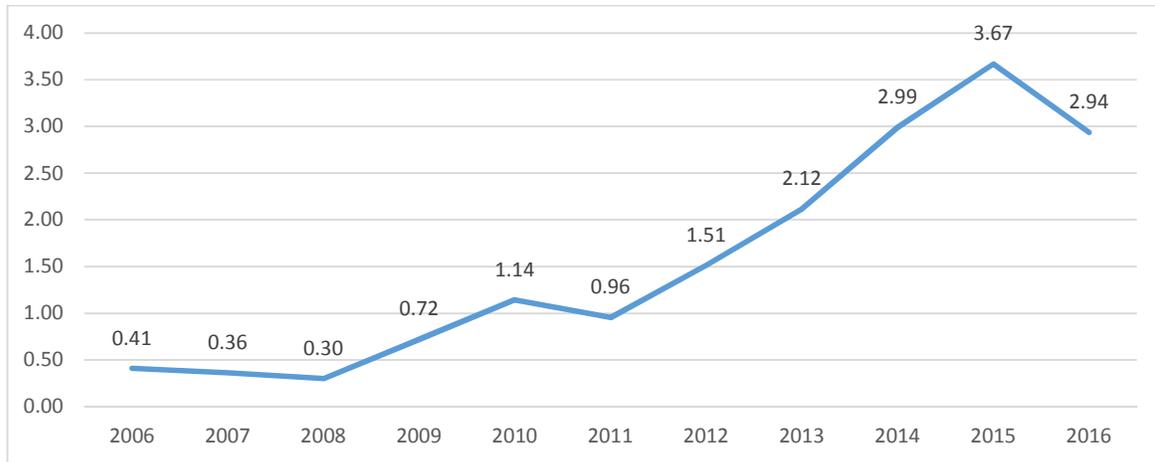
3.11 Engineering Goods Sector:

Royalty payments as percentage of the selected indicators shows an increasing trend over the 10 year period except for export earnings.



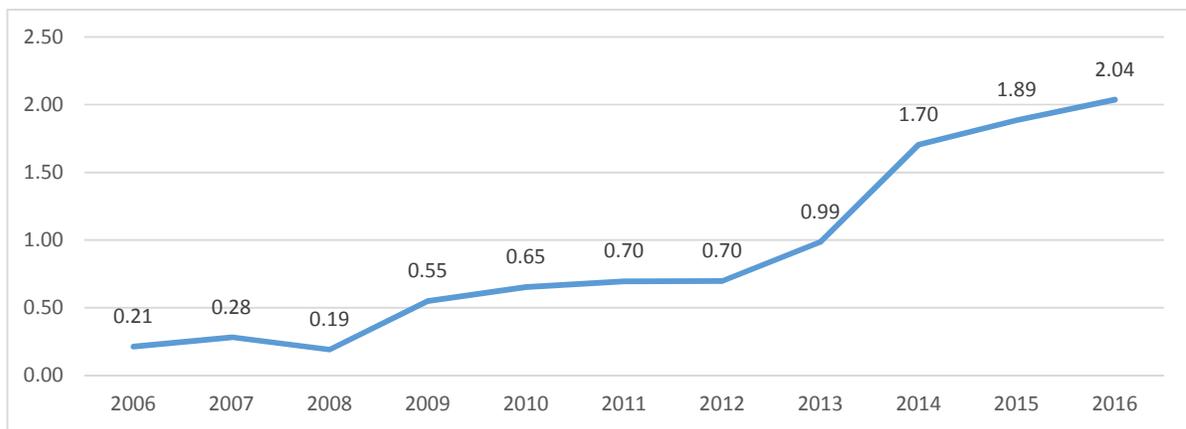
Source: www.capitaline.com

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



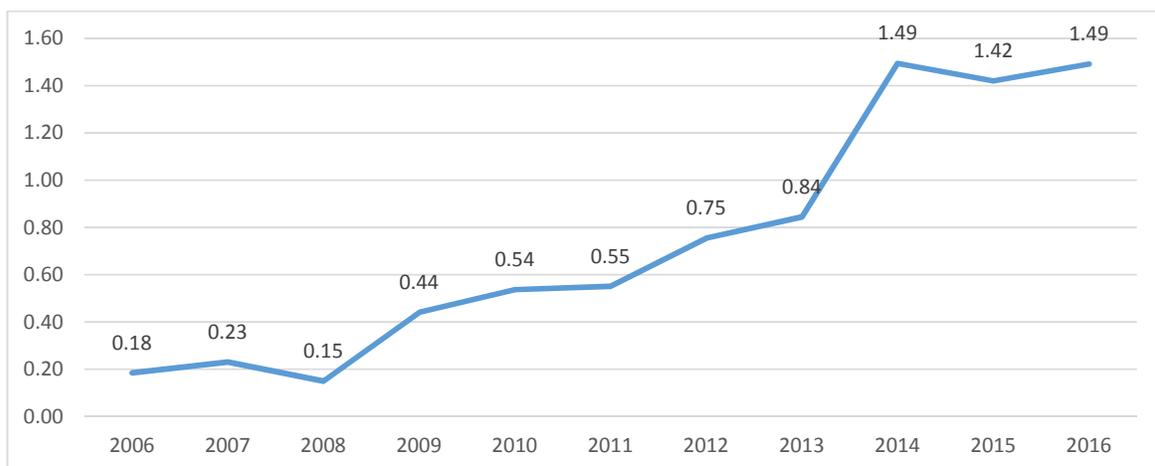
Source: www.capitaline.com

Fig 71: Engineering Sector Average Royalty Payment in Percentage of Capital Employed



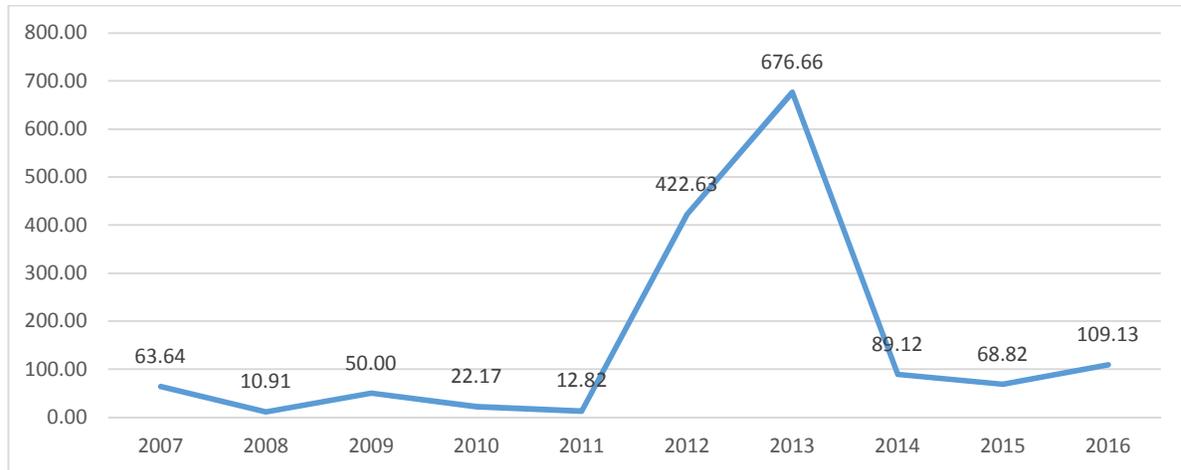
Source: www.capitaline.com

Fig 72: Engineering Sector Average Royalty Payment in Percentage of Cost of Production



Source: www.capitaline.com

Fig 73: Engineering Sector Average Royalty Payment in Percentage of Net Sales



Source: www.capitaline.com

Fig 74: 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 simple time series based 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. The model is not perfect due to data paucity. Each sector has been analysed separately to know the determinants of royalty in their respective sectors. Average royalty payments for each year has been taken as the dependent variable. Independent variables have also been averaged for each year and used for analysis.

The model used to find out the determinants is as follows:

$$Y_1 = B_1 + B_2NS_2 + B_3CE_3 + B_4CP_4 + B_5PAT_5 + B_6EE_6 + u$$

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 association between independent variables and the dependent variable in the FMCG sector.

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:

Royalty payments to net sales has been significant as far as Automobile sector is concerned.

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 association between the independent variables and the dependent variable as far as pharma sector is concerned

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 association between independent variables and the dependent variable in the electronics sector.

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
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 Square		0.99

4.5 Media Sector

Net sales, costs of production, capital employed and profits have been associated with royalty payment in the media sector.

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
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 association between independent variables and the dependent variables as far as the electronics sector is concerned.

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
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 the trading sector, royalty payments have been associated with exports, net sales, cost of production, capital employed and profits.

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
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 relation between the independent variables and the dependent variable as far as this sector is concerned.

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
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 association between the independent variables and the dependent variable as far as this sector is concerned.

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
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 association between independent variables and the dependent variable as far as this sector is concerned.

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
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

4.11 IT – Software and Hardware Sector

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

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	-33.54	33.45	-1.00	0.36
Exports	-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

Multiple Regression Based Panel Data Analysis under Progress

The Panel data analysis which is being worked upon by us is based on the following equation

$$y_{it} = \alpha_1 + \beta_1 x_{1it} + \beta_2 x_{2it} + \beta_3 x_{3it} + \dots + u_{it}$$

Where ‘i’ refer to cross sectional data of particular enterprise or firm and ‘t’ refers to the time period.

5. Broad Analysis of Empirical Findings

India's royalty payments regime was liberalized in 2010 ostensibly to increase the pace of FDI flows. During 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 on domestic sales and 8 per cent on export sales. Thus all regulatory requirements that were there to cap royalty payments to foreign collaborators were done away with in the quest for attracting foreign investments. This set the stage for a rise in royalty outflows from India particularly by subsidiaries of MNCs (Rahul Varman 2014). It is noteworthy that while FDIs in India primarily cater to Indian markets, in China they are primarily linked to exports. However by July 2018, Ministry of Commerce and Industry, Government of India, recognizing the increased outflow of royalty payments to overseas companies considered proposals for capping payments at 4% of domestic sales and 7% of exports for first four years with caps on these tightening beyond this period for subsequent three years to the upper limits of 3% and 6% respectively ([https://timesofindia.indiatimes.com/business/india-business/govt-considering-restrictions-on-royalty-payments/article show/65212638.cms](https://timesofindia.indiatimes.com/business/india-business/govt-considering-restrictions-on-royalty-payments/article-show/65212638.cms)). The idea behind the curbs was to increase profit lines of Indian automobile companies and increase revenues for GOI. Foreign exchange savings have also been a factor.

IP applications filed in India have shown an increasing trend over the years. Royalty payments made by Indian subsidiaries to their MNC principals overseas have also shown an increasing trend over this period. India's position in the International IP (IIP) index, measured and published by Global IP Centre is as low as 8.75 as compared to the score of 32.62 clocked by the US. This leaves the field open for import of technologies for sectors that are not of priority to the Indian economy. It is important to ensure that the incidence of Royalty payments from India are kept under check. This will not only ensure the economic viability of technology licensee firms in India but also prevent undesirable outflow of foreign exchange from the country. The low IIP Index value suggests that we need to further improve the 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 for a cross section of Indian firms drawn from 11 sectors and suggest policy recommendations for Government of India. The study explores royalty payments of Indian and India based companies to their net sales, costs of production, capital employed, profit and

exports. In addition, the study also examines statistically, the determinants of royalty accruing from patents, trademarks and copy rights.

The 231 companies have been drawn from the sectors of automobile, auto ancillary, FMCG, IT-software and hardware, media, health care, pharmaceuticals, electronics, engineering goods sector, agro chemicals and trading companies.

The results of our preliminary data analysis reveal that outflow of royalty payments from the mentioned sectors has increased over the 10 years period for companies concerned. The 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 companies, royalty payments to sales ratio has shown a decreasing trend. Royalty paid as a function of costs 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. This is not a desirable trend since the royalty outflows has the effect of weakening the economic viability of the enterprises.

Royalty payments in relation to capital employed has shown an increasing trend for engineering, trading, auto ancillary, electronics, media, IT-software and hardware, automobile sectors and a decreasing trend for agro chemicals, FMCG, pharma, health care sectors. The share of royalties paid to that of profits has shown an increasing trend in the case of engineering, trading, auto ancillary, IT-Software and hardware, Automobile, FMCG, pharma sectors and a decreasing trend for agro chemicals, electronics, health care and 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 we experienced data paucity regarding royalty payments on health care exports.

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

The study argues that royalty extraction has been the preferred method by which MNCs making FDIs have appropriated revenues from their subsidiaries to compensate for low controlling interest in India based subsidiaries. For MNCs that have gone for FDI in India through subsidiaries, royalty extractions have proved to be a more attractive instrument than seeking controlling interests on the entities on which they have invested. Royalty outflows promise inelastic returns as compared to returns on capital invested. This is particularly true with IT hardware and IT software and FMCG products that have achieved significant growth of domestic markets in recent times. This enhances their interest in using the royalty outflow vehicle as an instrument to realize economic advantages from their investment. Therefore the recent efforts of GOI to explore caps on royalty payment outflows is a welcome decision.

6. The Way Forward: Policy Recommendations

The sectoral disaggregation attempted in this study points to the need for a more dynamic regime of caps on royalty outflow limits whereby a range of caps can be prescribed for domestic markets and export markets respectively, depending on the distinct economic prospects or problems faced by a sector. A flat cap may not be a desirable instrument for the long run given that companies in different sectors face the burden of royalties differently. A cap ranging from 4% to 6% for the domestic markets for the first 4 years followed by upper limits of 2% to 3% beyond the first three years, will be helpful to start up firms in India in the fields of IT/ICT and auto-component industries that have a large transformational ability on India's economic landscape. For royalty paying Indian and India based enterprises that cater to the export markets a cap of 7% to 9 % will be viable for enterprises that hold promise in terms of sustained value realization and market access.

The rationale for proposing the sliding range of royalty caps rests on the following analysis.

The study results reveal that in terms of their absolute volumes, the outflow of royalty payments from the mentioned sectors has increased during the period studied, with incidence of outflows being higher for automobile, IT Sectors., FMCG and electronics sectors. By comparison, firms in the Auto ancillary, Engineering sector, agro chemicals and Health care sectors have not paid significant amounts of royalty.

However these numbers do not bring out the relative incidence of royalty payments on the economic health of enterprises concerned. The relative incidence of royalty payments on the economic health of enterprises can be gauged by comparing these payments to sales, costs of production and capital employed by enterprises concerned.

Our estimates establish that on all five counts -viz in relation to net sales, costs of production, profits, exports and capital employed, royalty payment levels show an upward trend for automobile and the IT-software and hardware sectors. Both sectors are characterised by an exploding consumer base with inelasticity conditions for demand.

The other sectors also encounter varying difficulties on account of facing high incidence of royalty outflows when reckoned against the parameters of capital employed, profits, exports earnings and costs of production.

Firms that exhibit increased royalty payments going with increased costs of production have to be worried as this will lead to their margins being wiped out when prices for their products dip. The same is true for firms that have increasing royalty payments going with sales. 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. The key regulatory question is how far these sectors have passed the burden to the consumers capitalising on inelastic demand conditions and to what extent high royalty payments have constrained their ability to pay domestic taxes like GST.

Similarly our analysis of the sampled companies show that 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 a decreasing trend in health care, pharma, agro chemicals sectors. The key regulatory issue is whether this has been passed onto consumers or has been achieved at the costs of profit margins. Regulation of royalty rates is called for particularly in the case of start-ups and SMEs that face the problem of high royalty payments adding to the burden of their costs of production and decrease the possibility of generating employment.

Increase in royalty payments to capital employed is not a good sign as it may be at the cost of potential returns on capital. It is worthy of note that royalty payments in relation to capital employed have shown an increasing trend in particular for IT-Software and hardware, Automobile , engineering goods , trading establishments, auto ancillary, electronics and media. The key question for designing a FRAND like regulation for these sectors, is to look at whether the royalty paid are commensurate to the age of the IPRs licensed or are IPRs that are outdated

or getting outdated, by virtue of being more than 10 years old .It is equally important to analyse whether the burden of royalty flows in relation to capital employed constrains the employment capability of these enterprises.

Similarly, the share of royalties paid to that of net profits has shown an increasing trend in the case of engineering, trading, auto ancillary, IT-Software and hardware, Automobile, FMCG, pharma sectors. The key regulatory issue is to examine whether royalty outflows have replaced dividend pay outs to MNC principals by their subsidiaries in India or have compounded high dividend pay-outs. In case the latter is true, there is a strong case for capping royalty outflows from such sectors on the basis of a FRAND like regime.

Royalty paid in percentage terms of export earnings has shown an increasing trend for IT-Software and hardware, Automobile, FMCG engineering, trading, auto ancillary, the FMCG and pharma sectors. The key regulatory issue is whether royalty payments have been for technologies that cover new IPRs and have been matched by high unit value realisation in the export markets.

The sectors explored here are important from the vantage point of Start Up India, Digital India and Make in India programmes.

There are sectors characterized by enterprises that use patented technologies that have a high probability of turning into standards (referred to as ‘standards essential patents’ or SEPs) as in IT, Digital, health and Telecom industry, IoT enterprises. Some of these sectors have high employment elasticity (automobiles and IT). In addition to being employment elastic , some of the SEPs produce essential inputs and life-saving goods (like the pharma and health care) while others have a high potential technological competitiveness (FMCG, auto, engineering, digital and electronics sectors) despite being under SEPs .For such sectors it is important to have stronger caps on royalty payments.

6.1 Regulating Royalty Rates through FRAND licensing

Royalty rates on technologies that become standards tend to be higher and unreasonable. This leads to higher royalty outflows from India on such technologies. Indigenization of standards essential technologies is difficult, as licensing agreements for such technologies prevent transfer of technologies and knowhow to the licensees of these technologies. Such sectors can be subjected to FRAND (Fair, Reasonable, and Non-Discriminatory) licensing regimes through Government intervention. Telecom (including cellular services), ICT (Wi-Fi), auto ancillary, FMCG and the IT sector can be subjected to FRAND given their status as merit items that have

a large consumer base (domestic) or if proven to be paying for technologies that are rapidly getting obsolete. In the case of MNC subsidiaries that stack high royalty rates over high dividend pay-outs, there is a strong case for imposing a FRAND like regime. Similarly for export goods that have stagnating unit value realizations a FRAND regime may be considered if royalty payments are excessive.

6.2 FRAND with Protective Import Duties

Where indigenously developed technologies are robust and are promising, a combination of FRAND and protective import duties may be tried in order to assist provide nurture time for technologies indigenously developed by SMEs, drug and pharma companies and start-ups under the start-up India and digital India programmes. The employment generation potential of these sectors makes such a protective regime essential.

6.3 Tax Deductions & Concessional Loan Repayments Regime or extended tax holidays

Where standards essential patents have high employment elasticity (or are capable high potential for generating employment) or enhance technological competence of Indian companies concerned or still enjoy low Incremental Capital Output Ratios (ICOR) such technologies need to be imported even if they entail high royalty rates. Tax deductions are a way out to improve the top and bottom line of Indian companies particularly when they result in greater employment possibilities. Where FRAND regimes are likely to block transfer of technologies in employment sensitive sectors like telecom, IT and the digital space, we may not invoke FRAND but go for suitable tax deductions for established companies and provide for concessional capital loan repayment periods or extended tax holidays for start-ups under the Start-up India programme.

6.4 Review of sops under Exim Policy

Our studies show that 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 and media sectors. For the former special dispensation under the EXIM policy (duty drawback etc.) and tax regimes may be thought of particularly if it is realized that the export markets have been growing in value or volume or both.

6.5 Concessional Term Financing and Hybrid Capital Building by setting up a Technology Absorption Facilitation Fund

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 the agro chemicals, FMCG, pharma and health care sectors. For these sectors concessional term financing and hybrid capital structures may be thought of: one for covering sunk costs (based on grants) and the other for operations (at market rates of interest). A new Technology Absorption Facilitation Fund that develops indigenous knowhow that is germane for technology absorption may be established under the aegis of the MIC (DIPP) to facilitate Hybrid Capital Building by Digital India and Start up India Companies that bring in know how that absorbs embodied technology besides generating jobs.

To sum up, India has a valid case to frame a sliding regulatory regime on royalty payments / outflows. We need an integrated sector-wise strategy to deal with the issue of royalty payments than a one size fits all approach to regulation of royalty payments. We may need to employ a sector specific approach to determine in which range a sector will situate itself in the capping scheme of things. Exports, foreign exchange earning potential and mass consumer base could be key determinants of our policy on royalty outflow regimes.

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Annexure 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