

## Patent Activity by Patent Agents in India

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Post TRIPS and WTO India's journey to intellectual property compliance has not been an easy one. In particular patent reform has been triggered by panel rulings against India in the dispute settlement body that articulate the ambivalent approach followed by the government.<sup>1</sup> As there is some evidence of the tumultuous activity at the government level<sup>2</sup>, it is worthwhile to examine patent activity effectively taking place. A patent is granted by the national patent office as patent law is territorial in its application while the World Intellectual Property Organization (WIPO) administers Patent Cooperation Treaty (PCT) provides for the filing of a single international patent application which has the same effect as national applications filed in several designated countries. Patent activity may be examined in a number of ways: Study of industry that is involved in patenting, information from the patent office, etc. In this paper, an analysis of the activity of patent agents' has been undertaken to determine the extent and type of patent activity taking place in the country.

**Keywords:** Patent, TRIPS, WTO, PCT, patent agent, patent activity

Patent agents involved in patent activity i.e. for processing patent filing, patent grant and patent renewal procedures work with the Office of the Controller General of Patents, Designs and Trade Marks that grants patents under the Indian Patents Act, 1970. Many law graduates function as patent agents. But at present subject specialists in various sciences e.g. Chemistry, Physics, Biotechnology etc. work as patent agents after qualifying an examination conducted by the Office of Controller General of Patents and Trademarks.

The list of patent agents entered in the Register of Patent Agents under Rule 108 of the Patents Rules 2003 and maintained under Section 125 of the Patents Act 1970 as on August 2008 is 1192. This study has been taken up for the patent agents numbering 700 registered up to 31 March 2006. Information has been taken from patent agents that includes patents filed and obtained over time by small, medium and large firms and MNCs.<sup>3</sup> Data on patents filed and obtained by patent agents on select industry categories has also been analysed.<sup>4</sup> Patent agents' perceptions of purpose of patent filing by firms and reasons for firms not filing patents have also been recorded. The ratio of patents filed as an outcome of shop-floor innovations and innovations based on R&D have been examined.

The difficulties reported by patent agents in patent filing along with percentage of filing of patents for individual and academic institution inventors and number of years of experience of responding patent agents have been explored.

### **Role of Patent Agents in Patent Activity**

A patent agent has legal and technical skills to define correctly 'scope of patent and extent of the claims'.<sup>5</sup> In the late nineteenth century it would have been difficult for any aspiring patentee, however scientifically and technically qualified and experienced, to prepare a sound specification without support of competent and experienced counsels; they too had to depend on the assistance of people who could conjugate complexity of technical subject-matters with thorough knowledge of the legal procedures. It was in this period that patent agents established themselves as a new institutionally recognized profession, and a network of lawyers and consulting engineers emerged who specialized in dealing with patent litigation and industrial controversies in relation to the control of inventions. A novel body of expertise, bridging across the fields of law and technology, began to develop.<sup>6</sup> An official register of patent agents was eventually compiled by the Board of Trade in UK in 1889; however by 1882 a group of practitioners, most of the

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London-based, had already constituted the Institute of Patent Agents.<sup>7</sup> At the end of the nineteenth century, a degree in science or engineering was becoming more common as one of the hall-marks of the curriculum of a patent agent.<sup>6</sup>

In the US, for the average SME, the government fees, combined with patent attorney fees or patent agent fees, can be expected to be about \$3500.00 to \$4000.00 in order to receive a US patent.<sup>8</sup> Most companies, including consultancies studied during this project, 'farm out' patent searches to a patent agent. These searches play a role in suggesting what is available by identifying new exploitable technologies – and what is not available, because someone else got there first.<sup>9</sup> The USPTO reported in 1990 that it can be costly for an American firm to adopt a Japanese-style, aggressive approach to patent filing, unless the firm retains a patent department or law firm to file a large number of applications in Japan.<sup>10</sup> This does not bode well for small American firms, since according to GAO, most of the US firms patenting through *benrishi* (Japanese patent agents) or maintaining their own patent offices in Japan are large (1991 sales over \$1 billion) while most US firms patenting in Japan through US law firms are small (1991 sales under \$1 billion).<sup>11</sup>

### Research Methodology and Data

Primary data for this study was collected from all registered patent agents through a structured questionnaire. The information on subject matter of filing of patents by patent agents was taken on industry product categories of the industry product codes used in the National Industry Classification for 3<sup>rd</sup> Census of Small Scale Industries that were clubbed to reflect the following industry groups for collection of information from firms. Thus, the requisite information was obtained from the patent agents regarding patent filing in the product categories viz. motor vehicle, transportation, automotive components; electrical/electronics/telecom equipments/medical instruments; machinery, fabricated metal products, tools & gauges; drugs, pharmaceutical & chemicals; biotechnology; rubber and plastic; food and food processing; textiles, garments, accessories, leather and leather goods; non-metallic/ ceramics/ wood/ paper products; and others.

Patents filed and obtained for three sets of time periods: upto 1994 (pre-WTO); from 1995 to 2000 and from 2001 to 2005 were analysed to obtain information on pattern of patent activity in India particularly after TRIPS Agreement.

Patent agents were asked to rank the purpose of filing of patents by firms. The factors were examined in relation to protecting new technology; preventing competitors from claiming priority on invention; licensing patented technology to others; maintaining monopoly and earning profits; developing competitive advantage; attracting joint ventures/ collaborations; and easier financing/ venture capital financing. This was done to examine the reasons why Indian firms engage in patent activity, particularly, whether patents are seen as means of maximizing profits for Indian firms.

The difficulties faced by patent agents in patent activity were analysed on the factors, lack of knowledge of inventor/ assignee on what to patent; prior art search; patent drafting; patent filing procedure which is cumbersome; and others i.e. any other reason that may be specified. Further, the reasons for not filing patents by firms as reported by patent agents is seen in relation to lack of knowledge of patents; patent system perceived to be too complex; cost of patent filing is prohibitive; high cost of enforcement of patent; inability to enforce patents; competitors can invent around patents; maintaining patents is too expensive; and rapid changes in technology limit patent protection. These aspects were identified to identify the weaknesses of patent activity in Indian firms.

In the questions where extent of importance, impact etc of various factors is examined, the Scale Value Index (SVI) of a factor was calculated as follows:

$$\text{Scale Value Index} = \sum L_i F_i / N$$

where,  $L_i$  is the response on the scale,  $F_i$  is the frequency of respondents responding to  $L_i$  level and  $N$  is the total number of respondents responding to that question. All innovation related factors including those which were measured through SVI were analysed for the sample firms. For visual comprehension, these results are shown in exhibits through Radar diagrams. Thus, data collected through the questionnaires and the SVIs obtained have been analysed through multivariate analysis.

There are 700 patent agents registered in India as on 31 March 2006.<sup>12</sup> During the course of gathering information from these patent agents, it was observed that a large number of registered patent agents were inactive. A number of patent agents had changed residence and place of address as specified in the web-site of the Government of India.<sup>12</sup> Out of these 700 patent agents, 110 were inactive, 86 were not

involved in the patent activity and only 56 responded to the questionnaire regarding the patenting activity.

### Analysis of Data

Information from patent agents on the number of patents filed for firms on different scales viz. small, medium, large firms and MNCs was obtained on three sets of time periods:

(i) Up to the year 1994: This period is taken as the cut off point because India became party to the TRIPS Agreement on 1 January 1995 as a result of its accession to the WTO. (ii) For the years 1995 to 2000: This period was selected to understand the nature of patent activity that is undertaken by Indian firms soon after the advent of the TRIPS Agreement, before amendment to the Indian Patent Act, 1970. (iii) From 2001 to 2005: To study development of patent activity in Indian firms after the amendments in the Indian Patent Act 1970 were made operational through The Patents (Amendment) Act, 1999, The Patents (Amendment) Act, 2002, and The Patents (Amendment) Act, 2005 towards India's compliance to TRIPS Agreement.

The periodic amendments were necessitated due to India exercising its option for taking advantage of the transitory period prescribed under the TRIPS Agreement. The information for the period 2001 to 2005 is particularly important since it was in the amendment in 1999 (made operative retrospectively from 1 January 1995) that the provision of exclusive marketing rights for patented products was made. In the amendment of the Act in 2002, the life of a patent was extended to 20 years from the date of filing while the 2005 amendment of the Patents Act gave extension of product patent protection to all fields of technology (i.e., drugs, foods and chemicals) and also deleted provisions relating to exclusive marketing rights which became redundant after the transition period for TRIPS Agreement expired on 1 January 2005.

Table 1 depicts information received from the patent agents on the patents filed over different time periods. It can be seen that for the period up to 1994, levels of performance for patents filed and obtained for small, medium and large firms and MNCs are almost same indicating that percentage of patents obtained for all scale of firms are more or less similar: 93.2% patents obtained for small firms, 93.8% patents obtained for medium firms, 90.5% patents obtained for large firms and 99.2% patents obtained for MNCs. Post-1995 there are more number of patents obtained

Table 1 — Patents obtained as percentage of patents filed

Time period	Patents obtained as percentage of 'patents filed' Scale (size) of firms			
	Small	Medium	Large	MNCs
Upto 1994	93.2	93.8	90.5	99.2
1995-2000	81.1	84.0	89.1	97.5
2001-2005	30.9	21.4	43.6	12.2

by large firms and MNCs than firms of other categories. During the period 1995-2005, patents obtained by MNCs are more than that for any other category of firms.

During 2001-05, large firms obtained 43.6% of patents filed; the number of patents obtained by MNC firms is only 12.2%, perhaps because of 'mail box'<sup>13</sup> provisions. Small firms obtained more patents (30.9%) than medium firms 21.4% and MNCs 12.2% out of patents filed. This shows that in proportion to the patent applications filed, small firms obtained a good percentage of their patents. Large firms with 43.6% of patents obtained as a percentage of patents filed, got maximum patents. During 2001-05, patents obtained in small firms are next to large firms while medium firms and MNCs appear to be laggards in this activity.

For MNCs, this may be due to 'mail-box' phenomenon. However, the numbers demonstrate propensity to innovative activity in small firms. Medium firms are behind the other firms in obtaining patents. Another aspect that needs to be kept in mind is that most of the time it is the small firms that are approaching patent agents for patenting their inventions in contrast to some medium and most large firms who often have their dedicated internal patent management wings for patent activity. One may, however, conclude that post TRIPS, while patenting appears to be a large firms activity, small firms are also actively exploiting the patent system. It may also be noted that after the formation of the WTO and introduction of the TRIPS Agreement, patent filing has significantly increased in India. As the capacity of the patent offices in handling the increase in patents filed is limited, the negative temporal change in patents obtained as a percentage of patents filed after 1994 is obtained. Since filing increased during this period and there is a lead time for patent grants (5-6 years from the date of filing at that time) this negative temporal change continues at a rapid pace as observed in the Table 1.

### Patents Filed and Obtained across Different Industry Categories

Information on patents filed and obtained by industry product sectors was also taken from patent agents in the product groups: Motor vehicle/transportation/automotive components; electrical/electronics/telecom equipments/medical instruments; machinery; fabricated metal products, tools & gauges; drugs, pharmaceutical & chemicals; biotechnology; rubber and plastic; food and food processing; textiles, garments, accessories, leather and leather goods; non-metallic/ceramics/wood/paper products; and others.

Apart from the information on the patents filed and obtained by these industry group segments, information on patent activity was also obtained from the patent agents on product patents filed and obtained, process patents filed and obtained and product plus process patents filed and obtained to distinguish patent activity in product and process inventions, particularly in view of the introduction of product patents in India for all product categories with amendments in Indian patent law. Information on product plus process patents indicates utilization of both forms of patents by industry (Table 2).

It can be seen from the table that in biotechnology industry category, the number of patents obtained over filed for product patents is the highest 17.9%, followed by others. This finding is in line with anecdotal evidence that biotechnology is a relatively recent sunrise industry in the country. For process patents, electrical/electronics/telecom equipments/medical instruments are at the first place with 43.6% patents obtained over filed followed by motor vehicle/transportation/automotive at second place with 25% of patents obtained over filed. However, electrical/electronics/telecom equipments/medical

instruments appear to be low on product patent obtained over filing. For product plus process patents, biotechnology industry category is at first place followed closely by food and food processing. The latter is an industry sector having a large number of firms in Indian industry<sup>14</sup> and it appears from information given by patent agents that this industry is beginning to take advantage of the patent system.

At the other end of the spectrum are textiles & textile goods, garments & accessories, leather and leather goods; and non-metallic/ceramics/wood/paper products, where the patents filed by patent agents are zero. This indicates low level of innovative R&D activity resulting in patents in these industries.

Further, process patents are significantly higher for certain industry groups than product patents or both product plus process patents. This indicates that industries are filing more patents on process improvement and process innovation rather than product or product plus process innovation. In certain sectors, electrical/electronics/telecom equipments/medical instruments, the number of process patents is considerably greater 43.6%, than the product patents and product plus process patents. In biotechnology and food and food processing, both product and product plus process patents obtained as a percentage of patents filed are similar 17.9% and 17.2%, while in rubber and plastic, 6.7% product patents have been obtained over the patents filed. It appears that the Indian industry is even now encouraging process innovation as provided in the earlier Indian Patent Act 1970 that encouraged process innovation while one may also conclude that patents obtained as percentage of patents filed vary considerably across industry categories.

Table 2 — Patents obtained as percentage of patents filed by industry categories and type of patent

S. No.	Industry categories	Patents obtained as percentage of patents filed		
		Type of patent		
		Product patents	Process patents	Product plus process patents
1	Motor vehicle/transportation/automotive	1.3	25.0	0.0
2	Electrical/electronics/telecom /medical	0.9	43.6	11.1
3	Machinery, metal products, tools & gauges	0.1	0.0	8.3
4	Drugs, pharmaceutical & chemicals	6.3	3.4	11.6
5	Biotechnology	20.7	2.3	17.9
6	Rubber and plastic	6.7	0.3	0.0
7	Food and food processing	13.8	5.8	17.2
8	Textiles and textile goods; garments & accessories; leather and leather goods	0.0	0.0	0.0
9	Non-metallic/ceramics/wood/paper products	0.0	0.0	0.0
10	Others	16.7	14.3	0.0

### Purpose of Patent Filing by firms and Reasons for not Filing

The purpose for patent filing is recorded on the reasons for which a firm may patent on the following criteria: Protecting new technology, preventing competitors from claiming priority on invention, licensing patented technology to others, maintaining monopoly and earning profits, developing competitive advantage, attracting joint ventures/ collaborations, and easier financing/venture capital financing (Table 3).

Firms may patent innovations with the basic purpose of protecting their technology or may patent for mining patents through licensing and earning revenues from this activity. Based on the information received scale value index of importance of the different purpose of patent filing has been calculated.

It can be seen from the table that the main purpose of filing for patents is to protect new technology, while developing competitive advantage is only at third position. Indian industry does not seem to be taking advantage of monetary gains through the patent system as all the elements on profit and financing are at low positions. This gives one to understand that Indian firms are still at an embryonic stage of using the patent system for true monetary gains. Licensing of patents is not a top agenda for firms. Hence, protection of technology and technical know-how with the related issue of preventing competitors from claiming priority on invention is the main reasons for firms filing patents. In this aspect, Indian firms are at level one-defensive of ownership of patents rather than viewing patents at a higher level of activity.<sup>15</sup>

The reasons for Indian firms not filing patents are captured on the most frequent factors cited by firms for not filing patents i.e. the following criteria: lack of knowledge of patenting, patent system perceived to be too complex, cost of patent filing is prohibitive, high cost of enforcement of patent, inability to enforce patents, competitors can invent around patents, maintaining patents is too expensive, rapid changes in technology limit patent protection. These factors give an idea as to what factors are impeding patent activity and what may be done to improve the situation.

The reasons for not filing of patents by Indian firms are revealing: lack of knowledge of patenting scores very high 3.84 on scale value index, close to high cost of enforcement of patent 3.85 (Table 4).

Cost is another major factor hindering Indian firms from taking patents: high cost of enforcement of patent is the highest at 3.85 on the scale value index, and maintaining patents is too expensive 3.84, are at

Table 3 — Patent agents perception of purpose of patent filing by firms

S. No.	Purpose of patent filing	Scale Value Index
1	Protecting new technology	4.46
2	Preventing competitors from claiming priority on invention	4.16
3	Developing competitive advantage	3.94
4	Maintaining monopoly and earning profits	3.62
5	Attracting joint ventures/collaborations	3.43
6	Licensing patented technology to others	3.29
7	Easier financing/venture capital financing	3.06

Table 4 — Patent agents' perception of firms' reasons for not filing patents

S. No.	Reasons for not filing patents	Scale Value Index
1	High cost of enforcement of patent	3.85
2	Lack of knowledge of patenting	3.84
3	Maintaining patents is too expensive	3.84
4	Cost of patent filing is prohibitive	3.60
5	Inability to enforce patents	3.49
6	Patent system perceived to be too complex	3.46
7	Competitors can invent around patents	2.94
8	Rapid changes in technology limit patent protection	2.80

almost the same level, while lack of knowledge of patents 3.84 is also a strong reason why Indian firms are not taking patents. The issues relating to technology and ability to invent around patents are of least importance 2.80 and 2.94.

It is thus seen that the factors inhibiting filing of patents are not technical issues relating to technology and patenting as much as enforcement and cost issues. Enforcement of patents is particularly important in view of the costs involved and a judicial and police system in India that is yet to respond actively to the nuances of a patent regime. If a competitor can get away by cheap imitation of the patented product, there is little incentive for the inventor to take the expense and trouble to pursue filing of patents. Hence, this calls for a robust policy initiative by the Government on enforcement for creating necessary conditions for inventive and patent activity in Indian firms.

It also follows that Indian firms look at their balance sheet in taking a decision whether to file a patent or not. The main reason for obtaining patents is to protect technology. Indian firms appear to be at the initial stages of patent exploitation and not at the stages of licensing and making profits on patents.

Table 5 — Patents filed as an outcome of R&amp;D and shop-floor innovations and their impact

Activity / ratio	Patents filed during past 3 years			Outcome of innovations (impact)			
				Improvement in existing		Development of new	
	Product	Process	Product plus process	Products (No.)	Processes (No.)	Products (No.)	Processes (No.)
R&D innovation	37	40	70	43	88	67	73
Shop-floor innovation	40	33	62	42	90	65	62
Ratio of R&D based patents to shop-floor innovations based patents	0.93	1.21	1.13	1.13	1.02	0.98	1.03

### Shop-floor based Innovations and R&D based Innovations

An important aspect is whether innovations resulting in patent filing for Indian firms are based on shop-floor activities, i.e. on the firm's manufacturing plant or as a result of dedicated R&D cells. The information is obtained from patent agents on the basis of patent applications filed on innovation based on shop-floor activities and innovation based on outcome of R&D in two parts (Table 5). The first part gives patents filed during past 3 years which is the number of innovative product, process or product plus process patents as a result of innovations in R&D and shop-floor. The second part is the outcome of innovations (impact) of these patents filed and resulting innovative activity i.e. whether this innovation has resulted in improvement of existing product and process or in the development of new product and process.

The numbers in the first two rows of Table 5 are the total numbers of responses realized, while the last row gives the ratio of R&D to shop-floor innovation for firms as reported by patent agents.

It may thus be seen that while product innovation and process innovation and product plus process innovation is being carried out by the Indian industry, it is process innovation that is dominating innovative activities in firms. In both shop-floor innovation and innovation as an outcome of R&D, process innovation is predominant. Moreover, process innovation is greater in outcome of R&D than in shop-floor innovation illustrating that even in R&D it is process innovation that is dominating (1.21). While formal R&D is resulting in greater number of innovation, pointing to the advantages of these wings for firms, here again process innovation is taking precedence over product innovations for Indian firms.

The fact that process innovation dominates, ratio of 1.21 in last 3 years, 1.02 for development of existing process and 1.03 for development of new process, against 0.93 for product in past three years and 1.13

and 0.98 for existing product and new product development, reiterates the finding that it is process innovation that is dominant innovative activity in Indian firms.

### Conclusion

The responses of patent agents and the information contained therein are valuable as this number is obtained from the whole population of patent agents registered in the country. The information from patent agents reveals that biotechnology firms file and obtain maximum number of patents while in textiles, garments, accessories, leather; and non-metallic/ceramics/ wood/ paper products, the patents filed are zero. Therefore, patent activity seems to be linked to the type of industry category to which a firm belongs.

On examination of patents filed and obtained for product patents, process patents and product plus process patents it is seen that process patents filed and obtained are significantly higher than product patents or product plus process patents indicating that incremental improvements are the forte of Indian firms. This finding also shows that firms are still carrying the load of allowances under the Indian Patents Act 1970 where only process patents and product patents for certain subject matters were recognized. Firms are yet to break away from this erstwhile system taking the leap for product patents. Information from patent agents illustrates small firms are more active in patents obtained over patents filed than medium firms; on this criterion these firms are next to large firms.

The main purpose of filing for patents as recorded by patent agents is to protect new technology, while developing competitive advantage is only at the third position. Firms appear to look at their balance sheet in taking a decision whether to file a patent or not. Indian industry does not seem to be exploiting the patent system for monetary gains. It appears that firms would be willing to patent their inventions and technical know-how if they knew what to patent. This

inference calls for a robust policy initiative for enhancing awareness of patenting activity in firms.

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- 2 In response to a question from the Panel, the EC explained that, in 1996 and at the beginning of 1997, the European Communities and their member States were engaged in intensive discussions with India with a view to convince the Indian authorities to take the necessary steps for a correct implementation of its obligations under Article 70.8 and 70.9 of the TRIPS Agreement. Until that time, the EC was confident that India was preparing the necessary steps concerning the implementation of its obligations under these provisions without awaiting the end of the ongoing dispute settlement procedure (WT/DS50). When it became clear that India was not in fact taking the necessary steps to implement the above provisions expeditiously, the EC requested consultations under the DSU. The request for these consultations was submitted to India on 28 April 1997 and was circulated to WTO Members on 6 May 1997 (document WT/DS79/1). Consultations were held on 14 May 1997. While these consultations failed to lead to a mutually acceptable solution, it was felt that the EC's position had been sufficiently clarified so that India could have no doubt that the EC were willing to pursue the dispute settlement procedure further if necessary. Again, it was the impression of the EC that by means of additional informal contacts it would be possible to avoid further steps in the formal dispute settlement procedure. This was based also on the EC's experience, particularly in the TRIPS context, that satisfactory solutions are very often found on the basis of informal contacts before resorting to a formal panel process. In addition, at the time of the EC's formal consultations with India in May 1997, the panel process in the dispute between the United States and India (WT/DS50) was well advanced and it would have been difficult for the EC to join this ongoing dispute as a complainant, since the EC had chosen earlier on to act as a third party in that dispute. The EC does not believe that a party can be a complainant and a third party in the same panel procedure. This reading of the relevant DSU provisions is reinforced by the wording of Article 10.4 which in the view of the EC envisages successive procedures. As becomes clear from the above, the EC did not make the same policy choice as the United States, namely to resort to early dispute settlement procedures once the problem had been identified. Rather, the EC used all available channels in order to come to a mutually satisfactory solution without submitting the matter to WTO dispute settlement. Unfortunately, these efforts failed and the EC was left with no other option than to request the establishment of a panel as a complainant in order to be able to protect its interests in the context of the enforcement provisions of the DSU (Articles 21 and 22), since these provisions require the party seeking implementation of a panel report to have resorted to dispute settlement procedures as a complainant rather than a third party (Article 22.2 DSU). WT/DS79/R page 15.
- 3 An SSI unit was defined as one where investment in plant and machinery whether held on ownership terms or on lease or by hire purchase does not exceed Rs 1 crore (Rs 10 million). Micro-firms are popularly known as 'Tiny units'. A tiny unit is one where investment in Plant & Machinery does not exceed Rs 25 lakh (Rs 2.5 million). The medium sector was not defined. Hence in this study for definition of Medium firms sector the criteria adopted by Small Firms Development Bank of India, wherein the Medium sector covered an investment in Plant and Machinery up to Rs 10 crore. However, on 16th June 2006, The Micro, Small and Medium Enterprises Development Act (MSME Act, 2006) was enacted by Parliament of India (and came into force in October 2006) where the Small and Medium firms are redefined as follows: a Small enterprise, where the investment in plant and machinery is more than twenty five lakh rupees but does not exceed five crore rupees (Rs 50 million) ; a medium enterprise, where the investment in plant and machinery is more than five crore rupees but does not exceed ten crore rupees (Rs 100 million).
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