



Conference on Patent Use

On 9 September the Economics Research and Evidence Team (ERE) at the Intellectual Property Office (IPO) in partnership in partnership with Brunel University London hosted a conference to present and discuss research into patent use. The following presentations were made;

- “**Use and non-use of patents in the US and Japan**” presented by **John Walsh** (Georgia Tech University).
- “**The economic use of EPO patents: Evidence from the Patval surveys**” presented by **Salvatore Torrisi** (University of Bologna).
- “**Innovation and Patent Use: Findings from the SIPU survey**” presented by **Ashish Arora** (Fuqua School of Business, Duke) and **Suma Athreye** (Brunel University).
- “**Do Patents Shield Disclosure or Assure Exclusivity When Transacting Technology?**” presented by **Beth Webster** (Intellectual Property Research Institute of Australia).
- “**Buyer Behaviour in Markets for Technologies**” presented by **Ayfer Ali** (Universidad Carlos III, Madrid).
- “**Deals Not Done: Sources of Failure in the Market for Ideas**” presented by **Iain Cockburn** (Boston University).
- “**Imperfect Information, Patent Publication and the Market for Ideas**” presented by **Deepak Hegde** (New York University).

Sean Dennehey (Deputy Chief Executive, IPO) opened proceedings and welcomed a range of UK and international representatives from Patent Offices around the world, academia, the legal profession and industry.

Tony Clayton, (Chief Economist IPO) introduced the first session which focused on Surveys of Innovation and Patent Use (SIPU).

John Walsh presented a paper covering the strategic use of patents and the drivers behind such activities. The research focused on triadic patents and conclusions were drawn from inventors' responses to the PatVal survey. A major finding was that 60% of triadic patents (a series of patent applications filed for protection in Japan, USA and at the European Patent Office, which all cover the same invention) were commercialised. As with all presentations throughout the day, a lively question & answers session followed where members of the audience raised the following points.

Q. The research was focused on industry inventors, had academics been considered?

A. These were not considered in the research and given the relatively small number of university patents analysis would be difficult.

Q. Questions were raised regarding the 20% response rate and whether this was a distorted sample. The point was made that inventors who are proud of their invention are more likely to respond. This led to thoughts that the 60% commercialisation rate was very high even taking into account the triadic patent subset used.

An Audience member also highlighted that commercialisation of an invention could encompass a large number of upstream activities which would lead a large number of respondents to respond positively when asked if an invention was being commercialised.

A. Although the response rate was low and may have been distorted there was still a lot of information on the patents of non-responders. This enabled comparisons to be drawn on the more general data between responders and non-responders.

Q. How did you know that the inventors were allowed to answer the questions without pressure from employers?

A. The questions were sent to the inventors address so there should have been more freedom to reply.

Salvatore Torrisi presented research also drawn from the results of the PatVal survey through a comparison between PatVal I & PatVal II. The presentation aimed to show the economic use of EPO patents in different countries, technological fields and types of organisations. The research showed a drop in the licensing of patents; an increase in “sleeping” university patents; and a non-linear relationship between patent value and licensing. The data appeared to show that licensing increased with patent value until the top 1% had been considered where a drop in licensing was seen. This suggested that firms were holding on to their most valuable patents for internal use only. The research also identified that a high concentration of firms in a technological field appeared to make it easier to sell or license. There was also a reported increase in unused patents, up to 42% from 36%. The following points were discussed after the presentation;

- Whether the unused patents reported were still in force or had lapsed. This appeared to be unavailable from the data which had been considered.
- A proposal that that patents could be revoked or forced into license if unused, as is the case with trade marks.
- The point was also made that there is a genuine non-use of patents when further technological investigation is taking place or while determining a patent's true value and uses.

Ashish Arora and **Suma Athreya** presented the paper they had produced with **Can Huang**. The IPO and the Economic & Social Research Council (ESRC) commissioned the Survey of Innovation and Patent Use (SIPU) on which their analysis was based. This survey drew on a sampling frame from the Community Innovation Survey (CIS6) which enabled an analysis of the previous technological behaviour of the surveyed firms. Their research indicated that within the group of innovative firms licensing technology helps firms catch-up, rather than produce new to market innovations. It also found that patents underpin around half of the technology a firm brings in from external sources. It also made clear that whilst the probability of a random firm patenting is low (around 3%), the propensity to patent is much higher when only those firms that have innovated are considered. Although this is not a common measure of patent propensity it was argued as being more reasonable. This is because firms that have no new ideas or a reason to innovate cannot be expected to patent. Using this new measure led to an estimate of between 28 – 40 % of new to market innovations being patented in the UK.

Paul Jensen (Melbourne University) commented on the papers that had been presented and covered the difficulties in sampling, and in particular the problem of asking inventors to identify their “most valuable invention”. It was also highlighted that patent and inventor surveys do not cover innovation protected by trade secrets and that further investigation into these areas could give a clearer picture of who patents and why.

Paul Jensen then chaired a question and answers session with all the presenters so far, along with **Can Huang**. The topics discussed included;

- Patent blocking and trolls and how to measure the social cost;
- The de facto compulsory licensing of patents where they cover technological standards;
- The tracking of expired patents;
- The structure of the UK market for technology licensing;
- Whether citation analysis to gauge patent usefulness is a robust technique;
- Whether many of the differences between CIS6 & CIS7 can be attributed to the global financial crisis; and
- Whether the in-licensing of IP is a good measure of technology transfers or if it strongly reflects profit shifting within a company for tax reasons.

Dr Benjamin Reid chaired a session with a panel of industry IP users consisting of **Lorrie Humphrey** (BAE Systems), **Denis Anscomb** (Kwickscreen) and **Jonathan Silverman** (Silverman Sherliker LLP). Points raised during the discussion included;

- The changes in patent use since the recession;
- The use of the patent box; how it has raised the importance of patents in a firm's business plan and the increased incentive to renew patents which would have previously been allowed to lapse;
- The contrast between patents which are expensive and “slow”, and start-up companies which aim to be small, lean and agile;
- The increased occurrence of Patent Assertion Entities (PAE), especially in areas (defence) where they were previously not found;
- The movement towards trade secrets rather than patenting in areas with a short life cycle and high technological demands;
- The usefulness of a patent as a means of proving your background in a technological field when approaching

- companies for collaboration;
- The use of blocking patents and how small firms generally don't have the time or money to undertake such practices;
- The ability to put protected technology on a company's balance sheet;
- The renewal practice in the US being very different to that elsewhere causing comparison between countries to be difficult;
- The difficulty for small businesses when dealing with large companies in licensing agreements because of time, costs and bureaucracy;
- The role that IP brokers can play in licensing deals; and
- The difficulty and costs in searching for patents available for license.

The afternoon session was chaired by **Ashish Arora**. He introduced **Beth Webster** who presented a paper on the role patents play in the trade of technology. Analysis had taken place on a dataset of technology transfer negotiations with the aim of discovering the extent to which patents assist technology trades in two ways; the appropriation effect, where buyers are protected against the expropriation of the idea by third parties and the disclosure effect, where sellers are more able to disclose a protected idea during negotiation. The work found evidence for the appropriation but not the disclosure effect. The following points were raised by the audience after the presentation;

- The use of non-disclosure agreements during negotiations;
- The inventiveness threshold required at the Australian patent office;
- The following of individual patents in the research to see if they are granted; and
- The level of development of the technology under negotiation in the research.

Ayfer Ali presented a paper exploring buyer behaviour within technology markets. The research made use of data surrounding patents available for license from an innovative academic medical centre. Aspects investigated included the number of patents already owned by the buyers, the technology field that the buyers operated in, and the interest shown in the available patents. A coefficient was produced which measured how closely the technology in the available patent matched a buying firms own patent portfolio, making use of the International Patent Classification system (IPC). This coefficient showed a correlation when the technologies were considered at the IPC subclass level (high level) but there was no correlation when considered in finer detail (IPC group level). The following points were raised by audience members:

- Possible better measures for exploring the demand for a patent license;
- How correlated a firms existing technology is to the technology it wishes to license; and
- To what level in the IPC did the coefficient indicate a correlation.

Iain Cockburn then reported on work exploring failures in technology licensing deals. The various stages in such deals were considered separately and the major source of failure at each stage identified. Market safety, which may be provided by formal IPRs was only found to be a factor in the final stages of the licensing process. A lack of buyers and sellers in a market was not found to be correlated with deal failure in the latter stages of negotiations. A large number of respondents to the survey also thought that the percentage of the IP they wished to license but probably never would was very high. The presentation sparked much discussion afterwards which centered around the transparency of IP transactions and the information which could and should be available to help the market.

The final presentation was by **Deepak Hegde**. His paper explored the importance of information disclosure in technology transactions. This was done by analysing the effect of the American Inventor's Protection Act (AIPA) of 1999. This Act required Patent specifications to published 18 months after filing whereas previously publication only took place after a patent had been granted. In the sample of applications considered there was an increase in the probability of licensing after the 18 month publication of the specification. It was also found that for applications not licensed until they had been granted the 18 month publication still shortened their time to license. Overall, for inventions which were licensed, publication at 18 months accelerated licensing by 8.5 months. Various points were raised by the audience including:

- The possibility that the increase in early licensing reflected people off-loading patents early before they are tested by the USPTO. It was explained that the sample was controlled for quality;
- The change in the law had in effect created a new right with the early disclosure which could have been the cause of the increase in licensing at 18 months; and
- The difference between the invention disclosed by publication at 18 months and the actual claims which are granted.

Dr Michael Jewess (Research in IP) discussed the afternoon's presentations and chaired a question and answer session. The topics included:

- The uncertainty around the precise definition of intellectual property rights until tested in court;
- The potential uncertainty surrounding IP rights leads to difficulty in understanding exactly what property is protected and its value;
- The cost of searching for technology to license in certain areas limits the ability to in-license;
- Web based platforms to trade IP and their apparent failures;
- The payoff and risk balance between licensing earlier and later in the patenting process and
- The ability to have control of the direction a patent takes when licensing before allowance.

The event closed with **Suma Athreya** chairing a panel with **Tony Clayton & Roger Burt (CIPA)**. The panel discussed the work presented and the implications it has on patent policy. Tony Clayton indicated a need for a more accessible intellectual property register with better information on ownership and licensing to enable a better functioning market for technology transfer. Roger Burt discussed the reduction in the relevance of triadic patents due to the rise of China. The past change in the patent term was also discussed. Licensing agreements became available to those who had expected to exploit a technology after its protection had ended, but were then delayed in doing so because of the increased term of protection. It was indicated that the terms of these deals could be available and would offer scope for further research.

