

## **The macro-economic effects of intensive patenting industries – Or: Why we could be all better off with less patenting**

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Dear congress participants,

We all agree that patents are important (or at least, most of us). For this position statement, however, I would like to take the opportunity to look at patenting more from the public view, the macro perspective. And as you might, and place some critical notes.

The concept of patenting has a long history. Whereas ownership concepts relating to material goods (such as land) were rather obvious, ideas to apply ownership to ideas and innovations were first pioneered in Venice, who adopted a patent law in the 15<sup>th</sup> century. Patent law, as we now know it, was developed in the 19<sup>th</sup> century and adopted by most developed countries by the early 20<sup>th</sup> century.

In general, two main motives can be distinguished for the intellectual property systems: a moral one and an economic one. Where the moral is felt to be particularly important for protections such as the copyright, the economic motive is usually key for patent systems.

We will now focus a bit more on the economic motive. The central thought is that knowledge, key to any innovation, has so-called public good characteristics. It is non-rivaling and, often, non-excludable. If we were not to offer any ways to protect that knowledge, there would be little incentive to invest in developing knowledge in order to innovate, since any other could simply imitate that invention without having invented in it. Economists consider this free rider problem to be a market failure. Patent systems address this market failure, by granting an exclusive right to exploit findings, under specific conditions. At the same time, they promote diffusion of knowledge by requiring the patent texts to become public. As such patent systems attempt to strike a balance: between creation on the one hand, and utilization on the other.

Up to about a decade ago, most economists took it for granted that the net effect of patent systems are positive. Recently, some doubt was shed on this: there are several indications that in particular sectors the total public costs of patents systems exceed the total public profits. Some even believe that from an overall perspective, they in fact hamper innovation instead of stimulating it. I will now elaborate a bit on the problems that fuel these doubts.

To do this, we must address the potential costs that patent systems invoke. Of course there are direct costs, such as those of drafting, applying, defending and litigation. As an illustration, the Dutch Philips company has a patent office which employs more than 500

people, and in addition out sources much more work. But these direct costs are not our largest concern here.

One important cost is related to access to technologies. There are several potentially harmful strategies that are increasingly popular among patent holders, such as minefield patenting, creating a so-called patent thicket, and patenting to falsely suggest technical trajectories. These may seriously hamper access to technologies. These problems are amplified by two developments. Firstly, more and more technologies have a cumulative nature. Problems of access to one of the underlying technologies may block a whole trajectory (think of (bio)medical research instruments). Secondly, more and more industries are network-based. Network technologies may cover hundreds of essential patents, and problems to access to a single one of these may block an entire technology or technical standard. Among economist, this situation is called the ‘tragedy of the anti-commons’. A study on the GSM standard for mobile telephony illustrates how essential patents were used to control *who* was actually able to benefit from a European standardisation project, under what conditions.<sup>1</sup> The development of UMTS has been delayed by at least one and half year because of IPR issues. In many markets nowadays, a firm has little chance to get access industry-standard technologies and standards if it does not have patents on offer itself, and cross licensing is much more common than paid licenses.

Another development I want to mention, next to access problems we just discussed, is that of the increasing uncertainty. The real value of a patent differs of the various stages the patent goes through and is difficult to determine. Only after a patent is infringed and found valid (or invalid if you want), the real value may be assessed. Markets may react quickly to such events. Some examples: when a Japanese court ruled in August 1994 against Texas Instrument’s claim that Fujitsu has infringed the well-known Kilby patent, TI’s stock price fell by 5.6%, a loss in market capitalization of almost half a billion dollar. The market value of memory chip designer Rambus fell by more than 54% over a 2-day period in March in a response to news that a judge was expected to interpret some of Rambus claims in a narrow fashion. This represents a loss in market capitalization of over US\$ 1.9 billion.<sup>2</sup> Such examples illustrate some of the effects of uncertainty and risk of instabilities.

Also, the sheer number of patents in some sectors is rising at an alarming rate. An average mobile phone may cover several hundreds of essential patents, plus many more that are not essential. A personal computer is nowadays estimated to cover 70.000 patents. Negotiating about so many patents with so many different patent holders invokes serious transaction costs and delays.

The type of problems I sketch here are increasing over time, because (1) the scope of patenting is widened and more and more countries are introducing software patents and

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<sup>1</sup> Bekkers, R., Duysters, G. & Verspagen, B. (2002). ‘Intellectual property rights, strategic technology agreements and market structure: The case of GSM.’ In: Research Policy Vol. 31 Issue 7, pp. 1141-1161.

<sup>2</sup> Sherry, E.F. & D.J. Teece, Royalties, *Evolving patent rights, and the value of innovation*, Research Policy 33(2), 179-192.

business method patents, (2) increasingly, the threshold for granting patents is lowered and the real test shifts to the litigation phase (partly because patent offices are not able to deal with the flood of patents in areas such as software) and (3) more and more industries are network-based.

How do regulators deal with such issues? And all of these issues have indeed been recognised by the EU, for instance. Still, several lobbies have been instrumental in convincing governments to strengthen and widen patent regimes. And the relation between property law and competition law is a very complex one and in general, property law overrules competition law, despite several attempts to change that.

Part of the problem is of course the difference between private interests and public interests. While for any firm it is advantageous to patent, for the society as a whole it could be harmful. So called patent pools, in which industries bring together all essential patents for a technology or standard and license them as a package, may relieve some of the pain. Regulators are interested in these. Apart from pro-competitive effects, patent pools may also have serious anticompetitive effects, depending on their exact design. That's why regulators are looking carefully which pools allow and which not. We have to realise, however, that patent pools may relieve the pain but do not take away the cause of problems. They may reduce transaction costs, for instance, but do not necessarily solve blocking problems.

Now I will finalise this position statement. I have sketched a rather black picture on patents. I do believe, however, that patents do have a useful function in our society. And it might still be true that the balance tips to the side of net positive effects, in favour of patents. Still, there are worrying signs and we better not ignore them and get trapped in the rat race.