

Competition and Consumer Protection in the 21st Century Hearings, Project Number P181201

Comments of Knowledge Ecology International

8. The role of intellectual property and competition policy in promoting innovation;

Patents and other intellectual property rights have very differential impacts in different fields of technology, and policies about patents should recognize these differences.

The WTO TRIPS Agreement appears to require uniformity in the patent rights across technologies, although in practice, this is probably a weaker requirement. Article 27 of the TRIPS provides that “patents shall be available . . . in all fields of technology” with “patent rights enjoyable without discrimination as to . . . the field of technology. . . .” That said, there remains considerable national flexibility. Since the TRIPS Agreement came into effect in 1995, the WTO adopted the Doha Declaration on TRIPS and Public Health, which set out different requirements for the implementation of patent rights when public health is involved: “the Agreement can and should be interpreted and implemented in a manner supportive of WTO members’ right to protect public health and, in particular, to promote access to medicines for all.”¹ There is also state practice which provides for differential treatment. Governments have special rules for a variety of subject areas, including business method patents, biologic drugs, nuclear energy and seed varieties, to mention a few.

Some of the differences involve expanded rights, such as the provisions in national laws that grant patent extensions for pharmaceutical drugs or certain agricultural inventions based upon the timing of marketing approval. 35 USC § 156 requires differential treatment on patent extensions for “a patent which claims a method of manufacturing the product which primarily uses recombinant DNA technology in the manufacture of the product.”

Patent exceptions are also tailored to specific policy objectives and technologies.

The European Biotechnology Directive mandates compulsory licensing for patents on “new plant characteristics resulting from genetic engineering.”²

(52) Whereas, in the field of exploitation of new plant characteristics resulting from genetic engineering, guaranteed access must, on payment of a fee, be granted in the form of a compulsory licence where, in relation to the genus or species concerned, the

¹ Paragraph 4. Doha WTO Ministerial 2001: TRIPS, WT/MIN(01)/DEC/2, 20 November 2001. https://www.wto.org/english/thewto_e/minist_e/min01_e/mindecl_trips_e.htm

² Directive 98/44/EC of the European Parliament and of the Council of 6 July 1998 on the Legal Protection of biotechnological inventions.

plant variety represents significant technical progress of considerable economic interest compared to the invention claimed in the patent;

(53) Whereas, in the field of the use of new plant characteristics resulting from new plant varieties in genetic engineering, guaranteed access must, on payment of a fee, be granted in the form of a compulsory licence where the invention represents significant technical progress of considerable economic interest;

The United States has a variety of compulsory licensing statutes, including for example statutes that deal with nuclear energy, clean air, efficient lighting technologies, energy storage and biologic drugs. See: <https://www.keionline.org/cl/statutory-authority-us>

The notion of a single patented technology protecting a product or service is hardly relevant in some fields. The development of complex ecommerce platforms, software or mobile data and computing devices is likely to infringe large numbers of patents, which can result in significant barriers to entry, and in some cases high degrees of industry concentration.

Medical technologies

It is sometimes said that pharmaceuticals provide both the best and the worst justification for the patent system. It is certainly true that among all industries, the elimination of the patent system would have the largest impact on the pharmaceutical industry. Often the costs of manufacturing a drug or vaccine are trivial, and fixed cost of development are very large. Without a system of incentives to reward successful R&D efforts, private investments would be vastly reduced. That is one set of facts. On the other hand, drugs, vaccines and other medical technologies can be essential for health or even life. Without insulin a type 1 diabetic will die quickly, and the same is true for many other treatments for other diseases. Extending life, or reducing suffering, is important, and is an important difference for policy makers. Also, for expensive new medicines and treatments like CAR T, the patient isn't really expected to pay for the cost of the treatment -- through a patchwork and imperfect system of insurance and government programs, society is. With third parties often in charge of paying for medical technologies, and premature death and suffering a consequence of access barriers (which are significant even in the United States), the grant of a monopoly has significant costs.

The following 15 points are from a recent attempt to summarize the case for considering alternatives to the grant of monopolies on new medical technologies as the incentive to induce investments in R&D.

1. People rarely stop to think of the disadvantages of linking R&D rewards for drug development to the prices of products, or consider the complexities that such

approaches involve. It's what we know, but it is a ridiculously complex and flawed system.

2. Among the random elements that determine R&D rewards are relatively arbitrary patent landscapes and the various national systems of insurance coverage, which use restrictive coverage rules and co-payments to control costs.
3. Under the current system, there are excessive rewards for replicating health outcomes and promoting use, even when inappropriate, and often inadequate rewards for moving science and health outcomes forward.
4. Drug developers have relative high discount rates, which make it expensive to provide incentives that are earned 14 to 20 years after market entry.
5. It is not uncommon for a drug to have more than one indication, including in some cases very different doses, and thus, costs to patients/payers, which have little to do with differences in outcomes. For example, midostaurin.
6. Prices for treatments for rare disease are perhaps the most arbitrary, and have nothing to do with company R&D costs or the sales earned on products.
7. In the area of medicine, some drugs and treatment procedures are protected by a single patent, but often there are many more asserted. For new technologies, like CAR T, or CRISPR, there are often large numbers of patents filed with overlapping and overly broad claims. Not only does the complex patent landscape for drugs create barriers for innovation, and drives up the costs of market entry and R&D, but it can result in highly arbitrary terms on monopoly, raising important questions about the relationship between the incentives provided and the objectives of creating the monopoly as an incentive in the first place.
8. The sales from a new drug can range from tens of billions to tens of millions.³ There is no effort by policy makers to consider if the distribution of returns makes any sense, given the purpose of the incentive.
9. Technology assessment for determining the value of a new drug is far from an exact science, which in itself is not a fatal flaw, until it is linked to decisions that determine access to a life saving treatment.
10. The costs of the current system in terms of under serving populations that would benefit from treatments is rarely measured. How many women are dying because they do not have access to TDM1/Kadcyla for example?
11. If and when governments delink R&D incentives from prices, they can provide far more rational reward systems, using existing data on outcomes and budget constraints, and vastly expand access and reduce inequalities.
12. Under delinkage systems, like the one proposed in [S.495](#), rewards can be targeted to induce investments in treatments that improve outcomes (Sec 9) , create priorities (Sec 10), and advance science (Sec 11, Sec 12).
13. The often heard argument that the current system "works" are shallow attempts to excuse flaws and avoid even thinking about alternatives that would work better.

³ See: <http://drugdatabase.info/revenues/>

14. It's not because a plumber can fix a leaking pipe the cost is reasonable. It's not because a mechanic can fix a car the bill is reasonable. It's not because a day in a hospital saved a life the cost is reasonable. Why should new drugs be different?
15. Aside from the harsh impacts of fiscal toxicity for patients who receive treatments, there is considerable inequality of access, based upon incomes and geography. This inequality is the opposite of evidence the current system "works." When there is no real plan to address inequalities of access, there is evidence policy makers are not serving the underserved, and instead are protecting those that are most privileged, and benefit the most from the current system.

Policy makers need to explore both short term and longer term reforms, as regards the incentives for development of new drugs and other medical technologies, like CAR T.

In the near to medium term, policy makers should reform the system of exclusive rights so that incentive is more rationally related to policy objectives.

Non-patent exclusivities have fixed terms that are consistent, but often the costs are spectacularly random when compared to the benefits, such as the very wasteful pediatric testing exception, which can cost more than \$5 million per child tested, or the orphan drug exclusivity, which is sometimes used to drive up the cost of existing drugs for new indications where the costs of testing was minimal, and for new drugs that generate billions of revenue per year.

Patents may have uses in rewarding medical inventions, but they are a rough instrument for shaping incentives for drug development. The science for drug development is often moved forward by government-funded research, and the more important role for the private sector is to provide investments in costly clinical trials and regulatory approval, areas where patents usually play a minor role. In the current system, you have cases where a drug that is costly to develop has no patents, and cases where a drug that is relatively cheap, with few patients in trials, has a large number of patents. Some products obtain patents of each new use, formulation and use in a combination, and can put off competition for many years, based simply on the skills and ingenuity of patent lawyers and the often arbitrary decisions by juries asked to revolve highly technical patentability issues.

For biologic drugs the patent landscape is actually treated as a protected secret by the misnamed "Biologics Price Competition and Innovation Act of 2009 (BPCIA)," a ridiculous policy that nullifies one of the putative benefits of the patent system -- technology transfer. And, technology transfer is badly needed for biologic drugs.

KEI recently studied competition for drugs registered with the FDA from 1995 to 2005. It found that 17 percent of new BLA drugs and 61 percent of new NDA drugs faced competition from at least one product with the same API by the end of 2017. A small molecule drug was 3.5 times

more likely to face any competition than a biologic drug, but that's not all. The first entrant for a small molecule occurred an average of 6 years later than was the case for a biologic. The number of companies selling a drug with the same API was also quite different. There were an average of 9 companies approved to sell drugs with the same API when the drug was a small molecule. For biologic drugs, the number of companies selling a drug with the same API was 1.5, for the drugs that faced any competition at all. On top of everything else, physicians are less willing to prescribe biosimilar drugs, over concerns they may not work the same.

Clearly, the whole system works very differently for small molecules than for biologic drugs, leading to fewer competitors for biologic drugs, longer terms of monopolies, and less price competition, even though the R&D costs are similar.

To fix this lack of competition for biologic drugs, policy makers need to force technology transfer, which would not only enhance competition, it would assure patients the biosimilar drugs would work, and present less risk to patients.

We propose the following obligations:

As a condition of registration of biological products and services a person must agree to promptly, upon request, make available to providers of generic or biosimilar products or services certain materials, data, information and know-how, relating to the manufacture or supply of the regulated product, including but not limited to, when appropriate and relevant, the following:

“a. Materials:

“i. Cellular clones and hybridoma stocks;

“ii. Plasmids, plasmid maps, and sequences of antibody complementarity determining regions (CDR); and

“iii. Physicochemical/biophysical characterization;

“b. Methods:

“i. Growth conditions and protocols;

“ii. Attenuation or inactivation protocols;

“iii. Extraction and purification protocols; and

“iv. Synthetic work-up and schemes;

“c. Sufficient quantities of the approved medication for testing, and the protocols/methods used for testing the products, and the expected outcomes from those protocols.

Reforms of the incentive system should seek a closer match between the incentive and the costs of investments the incentive is designed to stimulate or reward. One approach proposed

to the NIH, for government-owned inventions, is to reduce the period of exclusivity when a product meets certain global revenue benchmarks.

The notion that the period of exclusivity should be almost random depending upon the patent landscape, and that the amount of revenue earned under the monopoly also differs radically without regard to the expected risk-adjusted investments in R&D, should not be unquestioned or unexamined. Modeling approaches such as those proposed by KEI for several NIH proposed exclusive licenses noticed in 2018 (see: <https://www.keionline.org/nih-licenses>) would be useful, to see if reducing exclusivity or drug prices after products exceed certain revenue benchmarks would make the incentives more efficient and cost effective.

More important, however, is to model approaches that delink the R&D incentives from the prices of products or services. The National Academies is keen to undertake a feasibility study of delinkage, including the transition from the current system, so that a progressive delinkage of R&D incentives from prices has a feasible and cost effective path.

The federal government can do much to improve the transparency of R&D costs by publishing the costs of clinical trials on products subsidized by or licensed from the federal government. It is astonishing that the NIH and other federal agencies such as BARDA refuse requests to provide information on the costs of clinical trials subsidized by the federal government.

The NIH and the Army have both refused to require that companies licensing patents that have federal Bayh-Dole rights refrain from charging prices in the United States that are higher than the companies charge in other high income countries, thus endorsing a policy of discriminating against the United States, when products are subsidized by U.S. taxpayers. This harms U.S. taxpayers, employers and patients.