INTELLECTUAL PROPERTY

Why Big Tech Likes Weak IP

Big tech benefits from weak intellectual property rights while small innovator firms struggle.

BY JONATHAN M. BARNETT

Intellectual property (IP) rights in general and patents in particular are commonly characterized as, at best, a necessary "monopoly" granted to correct weak private incentives to invest in generating innovations that can be easily imitated by others. In recent history, this second-best characterization has dominated academic and policy commentary. It commonly supports widely asserted views that patent issuance and litigation have increased excessively, purportedly burdening technology markets with litigation and licensing costs that impede innovation and inflate prices for end-users. These views have translated into action: since approximately the mid-2000s, both the Supreme Court and Congress have erected significant obstacles to enforcing and applying for patents, and those barriers have increasingly threatened the economic viability of patent-based monetization strategies.

In my new book, *Innovators, Firms, and Markets: The Organizational Logic of Intellectual Property*, I draw on an intellectual toolbox consisting of economic theory, economic and legal history, and political economy to show that significant reductions in the strength of patent protection are likely to have unwelcome consequences as a matter of innovation and competition policy. Counterintuitively, weakening patents can raise entry barriers and shelter incumbents by disadvantaging firms that are rich in ideas but poor in the capital and expertise required to convert ideas into commercially viable products and services. The result is an innovation ecosystem in which research and development, and the commercialization of R&D, tend to take place within integrated financing, production, and distribution environments that can only be feasibly maintained by a small handful of large firms. By contrast, robust IP protections enable innovation ecosystems that support a variety of more- and less-integrated structures for funding and extracting value from R&D investments. That, in turn, multiplies the viable points of entry and promotes the formation of licensing and other secondary markets in intangible assets.

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WHEN PATENTS ARE AND ARE NOT CRITICAL

To appreciate the relative importance of patents for firms that specialize mostly in R&D, it is necessary to appreciate the relative *un*importance of patents for firms that specialize in mostly everything else that is required to convert R&D into products and services that deliver value to end-users. For large, integrated firms with established market positions, various types of evidence indicate that, outside the biopharmaceutical and related life sciences industries, patents are generally not the leading tool used to capture value on innovation. This is not to say that these types of firms do not value patents; rather, they place less value on patents relative to other strategies by which to earn returns on intangible assets.

Does this mean that the conventional free-rider justification for IP rights is unjustified? No, it means that larger firms outside the life sciences industries tend to have internal financing, production, distribution, and other non-IP-dependent capacities that are difficult for most other firms to replicate, which in turn may confer a competitive advantage even if the underlying technology is not securely protected as a legal matter. Even if a free-rider can produce one perfect copy of a BMW, it does not pose a competitive threat to BMW unless the free-rider can produce millions of copies at the same cost and with comparable financing, warranty protection, and post-purchase service capacities.

Everything that I just said is *not* true, however, of a small biotech firm that has abundant expertise in developing a new medical therapy but lacks the capital and knowledge necessary to test, reproduce, and distribute that therapy on a mass scale and at a

price point that will be acceptable to the target market. For firms that are smaller in size or have not integrated into the production and distribution stages of the technology supply chain, a robust patent portfolio is likely to be a critical predicate for entering into joint ventures and other relationships with potential sources of capital and commercialization expertise. This predicament reflects what is sometimes known as Arrow's Paradox (originated by Nobel economics laureate Kenneth Arrow): it is impossible to transact over an innovation without disclosing it but, in doing so, the counterparty's willingness to pay falls to zero because it can now replicate the innovation freely. While reputation effects can mitigate this outcome, there nonetheless remains a significant risk of knowledge leakage inherent to disclosing a firm's "crown jewel" intellectual assets. Given this risk, weakening patent protection can significantly increase entry costs to the extent the innovator cannot use contractual relationships to secure the necessary capital and expertise and must therefore enter the market independently at every step of the supply chain.

Weakening patents can raise entry barriers and shelter incumbents by disadvantaging firms that are rich in ideas but weak in capital and business expertise.

LESSONS FROM ECONOMIC HISTORY

If patents are especially critical to support innovation and enable entry by smaller, R&D-intensive firms, and not especially critical for larger firms with internal financing, production, and distribution capacities, then it should be expected that different levels of patent protection would affect the mix of business models used to support and monetize innovation in technology markets. Specifically, weak-IP environments would tend to be populated by larger firms that maintain mostly self-contained R&D, production, and distribution infrastructures, while strong-IP environments would tend to be populated by a greater diversity of organizational forms, including entities that specialize in R&D and rely on contractual relationships with third parties to execute the commercialization process.

A history of U.S. patent strength / Testing this hypothesis first requires assessing historical changes in the strength of patent protection (including changes attributable to patent-related changes in antitrust law). I studied the period from 1890 (the year the Sherman Act was enacted) through the mid-2000s, which then breaks down into three main periods based on various indicators of patent strength. During the late 19th and early 20th centuries, courts were generally sympathetic toward patentees and antitrust law imposed few restraints on patent licensing. Starting in the late New Deal era and extending through the late 1970s, courts were generally hostile toward patentees, antitrust agencies made extensive use of compulsory licensing remedies, and antitrust case law imposed per se prohibitions on a variety of licensing practices. Starting in the early 1980s through the mid-2000s, the establishment of the Court of Appeals for the Federal Circuit and the enactment of the Bayh–Dole Act reinvigorated patent protections while the Chicago School revolution in antitrust law lifted most per se restrictions on licensing freedom.

An organizational history of U.S. technology markets / General trends in the mix of organizational structures observed in U.S. technology markets during these three periods conform approximately to my theoretical expectations. During the two periods of relatively strong patent protection, U.S. technology markets exhibited a wide range of organizational structures, which included smaller firms that funded R&D by securing investments from venture capital funds (or the late-19th century equivalent) and often commercialized innovations through licensing, assignment, or other transactions with larger firms that delivered critical production and distribution capacities. In contrast, the long period of weak patent protection exhibited a high degree of organizational uniformity. Innovation took place primarily in the laboratories of large, integrated firms, which were often supported by procurement relationships with, or R&D funding from, the U.S. military, NASA, and other government entities.

Patent strength and organizational distortions / Contrary to the standard incentive justification for IP rights, this inquiry into the relationship between IP rights and organizational structure does not support the view that private investment in innovation declines significantly as patent protection diminishes (except for the life sciences industries). Rather, this analysis indicates that insecure patent protection can give rise to distortions in the organizational structures used to support innovation and commercialization activities.

Specifically, weak-IP environments are hospitable for large, integrated firms that maintain internal markets for financing and conducting R&D and then embed the resulting intellectual output in goods and services for the end-user market. By contrast, strong-IP environments enable entry by smaller firms that specialize in R&D and monetize the resulting intellectual outputs through external relationships with third parties. This organizational distortion matters because larger firms tend to excel in incremental and process-related innovation that refines

existing technologies while smaller firms tend to excel in product innovation that challenges existing technologies.

The most striking examples are found in the biotechnology and semiconductor industries, in which patent-dependent business models have facilitated significant entry by R&D-specialist firms and a vertical disintegration of the market supply chain. Counterintuitively, a strong-IP environment can lower entry costs by relieving firms from having to assemble a production and distribution infrastructure in order to earn returns on R&D investments. This may explain why in 1966 (during the postwar weak-IP regime) small firms accounted for only about 5% of business R&D spending, but they accounted for almost 24% in 2006 (during the strong-IP regime starting in the early 1980s).

LESSONS FROM POLITICAL ECONOMY

As an empirical matter, it is notoriously difficult to establish definitively the extent to which patents are necessary to support innovation by particular firms or industries. I adopt an alternative approach that assesses the value that firms themselves place on patents as indicated by firms' advocacy and lobbying actions. If it is true that patent protection facilitates entry by smaller and less integrated firms that specialize in R&D, we should expect to observe those firms expressing policy preferences favoring stronger IP rights. If it is true that larger and more integrated firms do not rely heavily on patents or can even derive competitive advantages through non-IP-dependent production and distribution capacities, we should expect to observe that those firms express policy preferences favoring weaker IP rights.

Lobbying behavior / To test this hypothesis, I reviewed and gathered evidence on the lobbying behavior of various technology-intensive industries. Historical examples show that large, integrated firms resisted strong patent protection in the late 19th-century railroad industry, as did large, integrated firms like IBM in the computing industry of the 1960s and 1970s. Both industries have in common the fact that incumbents offered a bundled package of intangible and tangible assets and therefore resisted patent protection that facilitated entry by suppliers of discrete components of that package. More recent evidence shows that some of the largest technology firms were among the most vigorous supporters of the America Invents Act. Enacted in 2011, that statute substantially expanded opportunities for third parties to contest the validity of patents, principally through the Patent Trial and Appeal Board (PTAB). It is likely not accidental that these same firms have been among the most active petitioners at the PTAB seeking to invalidate issued patents.

Advocacy behavior / I also collected evidence on firms' advocacy activities by reviewing all patent-related amicus briefs filed in Supreme Court litigation over the period 2006–2016. This evidence shows that the business community generally does not favor robust patent protections: out of 740 firms that signed amicus briefs during the period, only 30% supported the patentee. Consistent with the proposed inverse relationship between firm size and reliance on patents, this figure falls to 21% if only Fortune 500 firms are included. Industry-specific evidence shows that business models—specifically, the level of integration—can approximately predict IP policy preferences. Financial services firms that monetize innovations through a bundled package of trading, advisory, and other services supported alleged infringers 81% of the time, whereas venture capital firms that fund idea-rich startups that seek to challenge incumbents supported patentees 100% of the time. Similarly, information technology companies, which often monetize innovations through integrated production and distribution infrastructures or platform-based business models, favored alleged infringers 75% of the time. By contrast, university technology transfer offices, which rely on contractual relationships with larger firms to capture returns on research outputs, favored patentees 96% of the time.

CONCLUSION

Today the U.S. patent system stands at a critical juncture. Since approximately 2006 (the year the Supreme Court issued *eBay Inc. v. MercExchange LLC*, which limited injunctive relief for patent infringement), virtually every branch of the federal government that can affect patent policy has taken steps to weaken patent protections (the exceptions being the U.S. Patent and Trademark Office under the leadership of director Andrei Iancu and the Department of Justice's Antitrust Division under the leadership of assistant attorney general Makan Delrahim, in both cases from 2017 to January 2021). There are strong reasons to believe this mostly weak-IP trajectory is inconsistent with the public interest in a robust innovation ecosystem.

The historical experience of the U.S. patent system over more than a century suggests that weak-IP regimes favor incumbents that pursue bundled models for monetizing intangible assets while impeding entry by smaller R&D-specialist entities that are often best situated to displace, rather than merely improve upon, technological paradigms. That is unlikely to be a preferred outcome as a matter of both innovation and competition policy. *R*

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