IP Literature Watch

CRA Charles River Associates

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This newsletter contains an overview of recent publications concerning intellectual property issues. The abstracts included below are as written by the author(s) and are unedited.

IP & Antitrust

Bargaining Power in the Market for Ideas

Li Guo (University of Pennsylvania)
Yang Yu (Shanghai Jiao Tong University (SJTU) – Antai College of Economics and Management)
Working Paper
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7268578

We study the division of total surplus between buyers and sellers in patent transactions and its impact on the development of ideas. Using comprehensive data on U.S. patent transactions from 1975 to 2012, we estimate gains from trade for both parties based on how their stock prices react to patent transaction news. Additionally, we quantify bargaining shares as the proportion of their gains from trade within the total surplus. We find that firms' bargaining shares are heterogeneous and proportional to their size relative to their counterparties, starkly contrasting to the conventional assumption of homogeneous and fixed bargaining shares in the literature. We further show that the relationship between relative size and bargaining share is stronger among firms with weaker corporate governance. To study the implications of these findings, we develop a model with size-dependent bargaining power in the patent market. Our analysis shows that the substantial bargaining power of large firms diminishes the incentive for innovation among smaller firms.

IP & Licensing

FRAND Licensing Needs a Taxonomy: Valuation Absent Context is Misvaluation

Keith Mallinson (WiseHarbor)
Working Paper
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7094319

The World Intellectual Property Organization's recent report on SEP valuation methodologies provides a useful overview of comparable licenses, bottom-up valuation and top-down approaches. However, in my view, the most important issue in FRAND valuation remains underexplored: the need to distinguish between fundamentally different categories of licensing and commercial arrangements.

This article argues that much FRAND analysis suffers from false commensurability. Bilateral licenses, cross-licenses, collective licensing platforms, patent pools, paid-up lump-sum settlements and royalty-free regimes are frequently converted into common metrics such as ad valorem rates or dollar-per-unit royalties and then treated as directly comparable. In the process, critical commercial context can be lost in translation.

Using examples including Nokia's agreements with Apple and Microsoft, Avanci's $32-per-vehicle automotive licensing model, public licensing programs from Qualcomm and InterDigital, and recent FRAND decisions including Samsung v ZTE, Optis v Apple and InterDigital v Lenovo, I examine how royalty metrics, payment structures, bargaining conditions and strategic objectives can materially affect negotiated outcomes.

I also discuss the risks associated with cross-license unpacking, portfolio-strength-ratio methodologies, patent counting, manufactured comparables, and the tendency to treat complex licensing agreements as if they can be translated mechanically into equivalent royalty rates.

My central thesis is simple:

The first question in FRAND valuation should not be "Which methodology should we use?" but "What exactly are we trying to value?"

The resulting rates may appear objective and comparable, but instead still reflect the bargaining asymmetries, strategic objectives, risk allocations and other distortions that shaped the original deal.

IP & Litigation

Patent Infringement in the Context of 3D Printing

Johnson Jemimah C. Johnson (Independent)
Working Paper
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7161798

The rapid growth of additive manufacturing, commonly known as 3D printing, has transformed manufacturing by enabling decentralized production through the use of digital Computer-Aided Design (CAD) files. While this technological development offers significant opportunities for innovation within the European Union, it also presents complex challenges for the enforcement of patent rights under existing legal frameworks. This paper examines whether the current European patent framework, particularly the European Patent Convention (EPC) and the Unified Patent Court Agreement (UPCA), adequately addresses patent infringement arising from the creation, distribution, and use of 3D printing design files.

Using a doctrinal legal research methodology, the study analyses the concepts of direct and indirect patent infringement, the private and non-commercial use exception, and the principle of territoriality within the context of decentralized digital manufacturing. Particular attention is given to the legal status of CAD files, the interpretation of "means relating to an essential element" under Article 26 UPCA, and the challenges of enforcing patent rights where design, distribution, and production occur across multiple jurisdictions. The paper argues that although the existing European patent framework provides a foundation for addressing many forms of 3D printing-related infringement, significant legal uncertainty remains regarding the treatment of digital design files, private home printing, and cross-border digital activities. It concludes that the current framework is only partially equipped to respond to the realities of additive manufacturing and that continued judicial interpretation under the Unified Patent Court will be essential to ensure effective patent protection in an increasingly digital and decentralized manufacturing environment.

Patent-infringement Actions in the Eighteenth Century and the Right to a Jury Trial

Tomas Gomez-Arostegui (Lewis & Clark College – Lewis & Clark Law School)
Working Paper
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7268838

This Article offers a wide-ranging reappraisal of patent-infringement litigation in the law courts of England in the 18th century. Infringement actions from this period are vitally important. They are foundational to those who work in patents, intellectual property generally, and constitutional law. Most saliently, 18th-century English law and practice continues to influence critical rights and governance in the United States. Litigants today have a Seventh Amendment right to have juries decide the same types of issues that English juries decided in 1791. They also have a constitutional right to have their disputes heard in Article III courts, rather than Article I administrative tribunals, if those types of disputes were heard in the regular English courts during the same foundational period.

To assess these constitutional issues, this Article presents the procedural context and excavates the vital materials needed to do so. Using a broad array of untapped primary sources, including thousands of manuscript records, it discusses the mechanics of infringement litigation in the King's Bench and Common Pleas, and focuses on how contested issues were allocated between judges and juries. It demonstrates how and why juries dominated the system of adjudicating infringement cases; corrects many misconceptions; and aims to add to the scholarly corpus on 18th-century litigation and trials more generally. Most broadly, it illustrates the kind of historical work that originalism often requires, but which judges, lawyers, and non-specialist scholars usually find too difficult to perform.

Although the history recovered here supports some prior court decisions on these important constitutional issues, it calls many others into question, including those that permit the International Trade Commission to adjudicate patent infringement, as well as those that assign claim construction entirely to judges, validity issues to judges, and enhanced damages to judges. In short, many litigants appear to have constitutional rights where the courts presently deny them.

Litigation Risk in Energy Technologies: Evidence from U.S. Patents

Itziar Lazkano (University of Wisconsin – Milwaukee – Department of Economics)
Siyu Feng (University of Oxford)
Yi Han (University of Wisconsin-Milwaukee)
Working Paper
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7092379

We study patent disputes in the energy sector using litigation data in the U.S. from 2001 to 2016. The estimations of a dynamic fixed-effect Poisson pseudo-maximum likelihood innovation model show the characteristics of applicants and patents with an elevated risk of litigation. Specifically, patents frequently cited, those invented by small firms, and patents with a faster review process face a higher risk of litigation. These results provide an overview of patent disputes in the energy sector.

IP & Innovation

Patent Delay and Innovation Dynamics in Brazil: Institutional Constraints, Strategic Behavior, and Policy Reform

Mauro Maia Laruccia (Pontifical Catholic University of Sao Paolo (PUCSP); FUNDACENTRO)
Working Paper, Volume 1, No. 7.
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7264763

The relationship between patent delay and innovation has been widely studied in advanced economies, yet its implications in emerging innovation systems remain underexplored. This article examines the Brazilian case, where prolonged patent examination delays have historically functioned as a structural constraint rather than a purely strategic instrument. Drawing on the literature on patent systems, innovation economics, and institutional theory, the study argues that excessive delays in patent publication and grant undermine knowledge diffusion, increase market uncertainty, and weaken incentives for technological investment. Using a comprehensive dataset of 874,680 patent applications from the Brazilian National Institute of Industrial Property (INPI), this study employs Analysis of Variance (ANOVA) and multiple linear regression to investigate the structural determinants of patent prosecution delays. The findings reveal that the number of applicants (R^2 = 22.18%) and the technological sector (R^2 = 20.32%) are the primary explanatory factors, while temporal filing cohort (0.64%) and technological complexity (0.01%) have negligible effects. Patents with six or more applicants exhibit an average delay of approximately 5,455 additional days compared to single-applicant filings, whereas the 2020+ cohort shows a significant reduction of 530 days—evidence of institutional improvements. Recent reforms—particularly the Backlog Combat Plan introduced in 2019 and international cooperation mechanisms such as the Patent Prosecution Highway (PPH)—suggest a transition toward a more efficient and strategically navigable system. The analysis highlights a shift from systemic delay toward hybrid dynamics in which firms increasingly incorporate timing into their innovation strategies. The article contributes to the literature by positioning institutional efficiency as a central determinant of innovation outcomes in developing economies.

Multidimensional Patent Policy, Heterogeneous Innovation, and Economic Growth

Ting Pan (Fudan University – School of International Relations and Public Affairs (SIRPA))
Di Wang (Fudan University)
Working Paper
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7260062

This paper shows that the three main instruments of patent policy are not variants of a single “protection strength”: they act on different margins and have qualitatively different growth effects. We embed a patentability requirement z, lagging breadth μ, and leading (blocking) breadth β in a Schumpeterian growth model in which quality improvements are drawn from a Pareto distribution. Three analytical results follow. First, growth is inverted-U shaped in lagging breadth, with a growth-maximizing level available in closed form, $\mu_\circ = 1/(1-\theta)$, which is independent of R&D productivity, of the other two instruments, and of the shape of the quality distribution. Second, growth is strictly decreasing in the patentability requirement for every $z > 1$: raising the bar lifts the average quality of patented innovations only logarithmically while it thins their arrival rate as a power function, so the quantity effect always dominates. Third, growth is strictly decreasing in blocking patents, because a follow-on innovator pays the licensing fee with certainty today but collects it later only if displaced by a further patented innovation, an event whose discounted probability is strictly below one. Welfare-maximizing lagging breadth lies strictly below the growth-maximizing level, $\mu_* < \mu_\circ$, for all $\mu > 1$. Motivated by newly reconstructed micro-data on the universe of Chinese patents (1985–2023), and calibrating the model to Chinese targets, we find a welfare-maximizing breadth of $\mu_* = 1.48$ against a growth-maximizing $\mu_\circ = 1.78$, and quantify the consumption-equivalent cost of the calibrated status

quo. An extension in which low-quality patents crowd the technology space shows what it takes to overturn the negative results: an interior patentability requirement is optimal only when the clutter elasticity lies in the narrow window (0.789,1), and even then the implied standard screens out at least 97% of innovations—far more than any observed patent system. The case for a positive patentability requirement or for blocking patents must therefore rest on forces outside the canonical quality-ladder framework.

Patent or Trade Secret? Generative AI, Innovation Protection, and Strategic Disclosure

Terrence Tianshuo Shi (UCLA Anderson)
Charles C. Y. Wang (Harvard University – Business School (HBS); Harvard University – Accounting & Control Unit; European Corporate Governance Institute (ECGI))
Danye Wang (University of Iowa)
Yuxiang Zheng (Rutgers, The State University of New Jersey – Rutgers University, Camden)
Working Paper
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7245098

We examine how the emergence of generative artificial intelligence (GenAI) reshapes firms' choice between the two primary forms of protecting innovation: patents and trade secrets. The effect is ex ante ambiguous. GenAI may make secrecy harder to maintain by increasing the risk of inadvertent innovation leakage and lowering competitors' cost of reverse engineering. Yet it may also make patenting more costly, since it can help rivals more quickly imitate or invent around technologies after patent filings disclose the underlying technical details. Using the public launch of ChatGPT in November 2022 as a shock to the availability and salience of GenAI, we find that trade-secret-reliant firms shift toward patenting, consistent with rising secrecy costs increasing the relative appeal of legal exclusivity despite the disclosure required by patents. The shift is stronger when firms face greater information leakage risk, as captured by GenAI exposure and dispersed inventor networks, and when their industries and technologies are more susceptible to reverse engineering. Despite the overall increase in patenting, firms appear to limit the information they reveal. They delay publication, provide shorter and less specific disclosures, concentrate filings in areas with faster technological obsolescence, and seek broader claims. Taken together, our findings suggest that GenAI shifts the boundary between private knowledge and public disclosure, increasing legal exclusion without necessarily producing a proportional increase in useful technical disclosure.

Determinants of Patent Applications across European Regions: Evidence from Panel Estimators, K-Means Clustering and Predictive Validation

Angelo Galiano (Dyrecta Lab – Istituto di Ricerca – IT research Laboratory)
Giuseppe Dell'Erba (eCampus University)
Costantiello Alberto (Lum University Giuseppe Degennaro)
Angelo Leogrande (Lum University Giuseppe Degennaro – Lum Enterprise s.r.l.)
Working Paper
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7290198

Europe measures the innovative performance of its regions largely by counting patents, and allocates public resources accordingly. This paper asks what regional patenting actually reflects, drawing on Regional Innovation Scoreboard data for 245 European regions observed annually between 2016 and 2023. Three candidate drivers are considered: the research effort of firms, the intensity of formal collaboration between the research base and industry, and the propensity to protect intangible assets through trademarks. Business research effort emerges as the dominant correlate throughout, science industry collaboration as a weaker but consistent one, and trademark activity as a positive one, suggesting that firms which protect brands are not forgoing patents but exercising a single appropriation capability across several instruments.

Two findings carry implications beyond measurement. Regional innovative capacity proves remarkably immobile: differences between regions account for roughly 95 per cent of the variation in the data, and differences within a region over the eight years for the remainder, so the short-run movements on which policy evaluation typically relies carry very little information, and the returns to innovation investment should be sought over horizons far longer than a programming cycle. And when the 245 regions are grouped into four innovation profiles rather than treated as a single population, the relationship that holds on average holds almost nowhere in particular: it is strong among leading and lagging regions, statistically absent in the largest group, and displaced by brand-led appropriation in a fourth group of 27 regions whose innovation is real but largely non-technological. Uniform innovation policy prescriptions and uniform managerial benchmarks are correspondingly difficult to justify.

IP Law & Policy

The Quantum-AI Invention Stack: Patent Strategy, Inventorship, and Disclosure Timing as AI Accelerates Quantum R&D

Michael Schallop (University of California, Berkeley Law School; Van Pelt, Yi & James LLP)
Working Paper
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7256420

Artificial intelligence and quantum computing are converging into a layered research environment, referred to herein as a quantum-AI invention stack, in which technical advances emerge from interactions among human researchers, AI systems, quantum hardware, calibration and error correction workflows, compilers, and simulation tools. This essay argues that the convergence tests patent law without displacing it. Its central claim is that acceleration converts documentation and disclosure timing from administrative questions into substantive legal ones: quantum-AI research teams should record conception, selection, validation, and ownership decisions while the research is still moving, and should treat the choice of what to disclose, when, and through which channel as an innovation-governance problem with a single owner and a single clock. Two further claims frame that argument. AI-assisted quantum inventions should remain patentable where natural persons make the legally required inventive contribution, and the patent system's disclosure bargain should be preserved, including in security-sensitive fields such as quantum cryptanalysis. The essay closes with five policy principles for patent practice and innovation governance in the quantum-AI era, and with concrete steps for implementing them.

Artificial Intelligence, Standards and Patents

Enrico Bonadio (City University London, The City Law School)
Akshita Rohatgi (Guru Gobind Singh Indraprastha University)
in Guido Westkamp – Noam Shemtov (eds.), Artificial Intelligence and Creativity – Between Participation and Objection (Elgar 2026)
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7276458

This chapter examines the relationship between artificial intelligence (AI), technical standards and patents. It first considers how standards may operationalize requirements for trustworthy AI, especially under the EU AI Act. It considers the limits of industry-led standardization, the need for democratic scrutiny, and the role of harmonized standards in translating statutory duties into practice for AI providers. It also compares horizontal standards applicable across AI systems with sector-specific standards designed to address particular technologies, uses, and risks. The chapter then shifts from AI as an object of standardization to AI as a tool operating within the broader standardization ecosystem, especially in AI-assisted patent essentiality determinations. AI can certainly facilitate patent searching, document analysis and portfolio

management, but it cannot currently replace expert assessment, as existing literature has stressed. This chapter supports that conclusion, while considering the more limited roles that AI-assisted tools may nevertheless play in patent searching, portfolio analysis and preliminary essentiality screening.

Copyright Law

After the Deal: Authors' Second Bites in a Global Copyright Economy

Guy Rub (Temple University – James E. Beasley School of Law)
64 Houston Law Review (forthcoming 2027)
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7126639

Copyright law is commonly understood as regulating consumers' access to and use of creative works, but it also governs an important internal aspect by policing the relationship between authors and the intermediaries that commercialize their works. While those intermediaries create enormous value for our creative ecosystem, authors frequently bargain with them before a work's value is known and under conditions of asymmetric information, unequal resources, and, most troubling, concentrated market power.

Across copyright history and throughout the world, legal systems have responded by, among others, creating second-bite mechanisms: inalienable rights that allow authors, after the initial transaction, to recapture rights, obtain additional compensation, or participate in a work's later economic life. These mechanisms are remarkably numerous, geographically widespread, and continuing to expand as additional jurisdictions adopt or strengthen them. This Essay develops a comparative taxonomy of these mechanisms, examining and classifying many such regimes across multiple jurisdictions.

The Essay argues that the prevalence of second-bite rights should not obscure the political economy shaping their adoption and design, their weak targeting and—most crucially—their potentially regressive effects. Many of those mechanisms, especially those linked to later commercial success, often benefit established, wealthy, and older creators (and their heirs) while doing little for the young, unknown, and poorly capitalized authors whose bargaining weakness supplies the strongest justification for intervention. At the same time, many mechanisms remain difficult to invoke and modest in practical effect. Their durability may therefore reflect an important expressive function. They communicate respect for authors and reject the finality of improvident early bargains, even while delivering material relief to very few.

Finally, the Essay shows how territorial copyright rights and global contracts generate forum shopping, strategic litigation, and regulatory arbitrage.

The Concept of Lawful Access and its Implications for User Freedoms in the EU Copyright Acquis: Opinion of the European Copyright Society

Thomas Margoni (Centre for IT & IP Law (CiTiP), Faculty of Law – KU Leuven)
Martin Kretschmer (University of Glasgow – School of Law)
Axel Metzger (Humboldt-Universität zu Berlin, Juristische Fakultät)
João Pedro Quintais (University of Amsterdam – Institute for Information Law (IViR))
Tatiana Synodinou (University of Cyprus)
Working Paper
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7210638

The advent of digital technologies and connected patterns of production and consumption has progressively displaced ownership in favor of access as the predominant mode of enjoyment of works of authorship and

other information goods. This transition from acquiring physical copies to subscribing to digital services has become prevalent across various sectors and has even enabled new commercial, cultural and scientific practices. However, it also marks a major shift in the theory and function of copyright: it transforms a right primarily concerned with regulating certain exploitations and circulations of works into one capable of controlling individual acts of access and use. EU copyright law increasingly reflects this shift through conditions of lawfulness. These appear across the acquis in different forms: the “lawful acquirer” in the Software Directive, the “lawful user” in the Database Directive, “lawful use” and “lawful source” in the Information Society Directive and CJEU case law, and “lawful access” in the Text and Data Mining (TDM) provisions of the Copyright in the Digital Single Market Directive (CDSMD). These expressions are not merely terminological variants. They perform a boundary-setting function by determining when exceptions and limitations may be relied upon, and therefore when certain acts may take place without right holders’ authorization. The principal risk, surfaced in decisions such as ACI Adam or VOB, is that lawful access, lawful use or lawful source might be equated with right holders’ authorization. An interpretation of this kind would undermine the nature and function of exceptions and limitations. Since an exception presupposes that authorization is not required, making authorization the sole condition of lawfulness would create circularity and deprive exceptions of practical effect. At the same time, lawfulness cannot be understood as an unlimited permission to access or use protected works. It must operate within identifiable legal boundaries, including effective technological protection measures, valid and enforceable contractual restrictions where not overridden by mandatory law, and other legally binding limits. Its application must also be guided by contextual principles, including the meaning of content “freely available online”, the knowledge and role of the user, the purpose and commercial or non-commercial character of the activity, the applicable fundamental rights framework, and the three-step test.

Toward a Better Use of Real Property Rules in Copyright Coownership

Benjamin David Landry (New York University School of Law)
Working Paper
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7194499

The rules of copyright coownership in American law are broken. Because the Copyright Act is silent, courts treat copyright coowners as tenants in common-a set of rules borrowed from the law of real property. These rules work well in many respects, but much less so in others because real property and copyrights are fundamentally different kinds of things: land is tangible and rivalrous, while copyrighted works are intangible and nonrivalrous. It may make sense to prohibit cotenants of land from excluding one another or destroying shared property, but it is far less clear what it means for one coowner to, say, exclude another from a song or to destroy a poem. Importing these real property rules into copyright has produced predictable consequences: doctrinal confusion, inconsistent application, and market unpredictability. This Article argues that the problem runs deeper: real property law advances a pluralistic set of policy goals that sometimes conflict with American copyright’s singular utilitarian purpose of promoting the progress of art and science. As a result, the use of certain real property rules has shifted the law of copyright coownership out of alignment with its underlying policy goals. But while the current framework is flawed, it is not fatal: when we import ownership rules developed in the context of one resource into another, we can and should adapt them to fit the nature of the resource being governed and the policy goals the state wants to achieve. This Article makes progress towards that end by developing an account of copyright coownership decoupled from the most problematic real property rules and reframed through the core principles of tenancy in common which are well-suited to the copyright context, offering a framework for the better use of real property rules in copyright coownership.

IP & Trade

Volume, Value and Direction: Interpreting the Rise of Chinese Trade Mark Filings at the EUIPO and Patent Filings at the EPO and WIPO

Victor Oswago (Independent)
Working Paper
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7339899

Chinese applicants are now the single largest source of European Union trade mark applications, the largest source of European Union design applications, the third largest source of European patent applications, and the largest source of international applications under the Patent Cooperation Treaty. This paper assembles the most recent published filing data from the European Union Intellectual Property Office (EUIPO), the European Patent Office (EPO) and the World Intellectual Property Organization (WIPO), and asks a narrower question than the headline figures usually invite: what does this pattern actually demonstrate about innovation capacity? The paper argues that trade mark and design filings and patent filings are two different signals that are frequently conflated. Trade mark and design volumes from China principally measure commercial intent to enter the European single market. Patent filings at the EPO and through the Patent Cooperation Treaty measure something closer to technological capability, and by that narrower measure China has moved decisively but unevenly, with strength concentrated in digital communication, batteries, transport and semiconductors. Four quality tests, namely the share of filings made abroad, the share of foreign-oriented patent families, patent family size, and examination outcomes, show a system whose average international value per filing remains below that of the United States, Japan and the leading European economies, even as the absolute number of high-value Chinese filings grows rapidly. The paper concludes that the accurate reading is not displacement but convergence at the frontier combined with European stagnation, and that the appropriate policy response in Europe concerns its own filing dynamism rather than the volume of filings arriving from elsewhere.

Other Topics

Observable AI Capability and Firm Uncertainty: Market Reassurance versus Operating Volatility

Mustafa Kocoglu (Prague University of Economics and Business)
Tiago Matos (University of the Azores; Centre of Applied Economics Studies of the Atlantic (CEEAplA))
Sai Palepu (Hofstra University)
Working Paper
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7350620

We examine whether observable artificial intelligence (AI) capability reduces firm-level uncertainty. We construct a novel firm-level measure of AI capability by linking patent-level classifications from the USPTO Artificial Intelligence Patent Dataset to patent–firm assignments for U.S. public firms. Using a staggered-adoption difference-in-differences design, we find that with the first observed AI patent grant, the annualized stock-return volatility declines by 3.5 percentage points. By contrast, the first AI patent has no statistically significant average effect on operating cash-flow volatility. however, the operational consequences become clear when we examine individual AI technologies and the depth of firms' AI capability. Patents in machine learning, natural-language processing and speech, computer vision, and AI hardware reduce stock-return volatility by 2.3 to 5.8 percentage points, whereas machine-learning and NLP patents increase operating cash-flow volatility by 0.9 and 0.8 percentage points, respectively. These findings are robust when analyzing accumulated AI patent stock, and across alternative specifications.

Value Estimates for U.S. Patent Grants

Jonathan Federle (Kiel Institute for the World Economy)
Dietmar Harhoff (Max Planck Institute for Innovation and Competition; Ludwig-Maximilians-Universität München; Centre for Economic Policy Research (CEPR))
Ann-Christin Kreyer (Max Planck Institute for Innovation and Competition)
Max Planck Institute for Innovation & Competition Research Paper No. 26-08
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7204462

We propose major amendments to the standard approach for retrieving valuations for U.S. patents from stock market data put forth by Kogan et al. (2017). For most firms, especially since the 1980s, grant events involve multiple, simultaneously issued patents. We argue that the number of simultaneously issued patents affects the signal-to-noise ratio used for filtering patent value estimates out of stock returns. We also propose a method for allocating the firm's capital gain from a week's multiple patent grants to individual patents. We show that our revised values exhibit much higher correlations with external value measurements.

Counting Patents, Miscounting Innovation

Gaétan De Rassenfosse (École Polytechnique Fédérale de Lausanne (EPFL))
Working Paper
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7084898

Patent counts are widely used to measure innovation, but their apparent precision often hides deep conceptual and empirical problems. This paper explains why patents are useful but imperfect indicators: not all inventions are patented, not all patents reflect valuable innovation, and legal, strategic, sectoral, and geographic factors distort comparisons. It argues that patent statistics remain indispensable, but only when matched carefully to the research question and interpreted as measures of patenting behavior, not innovation itself.

Brand Capital Formation and Depreciation Dynamics Associated with Patent/Exclusivity Expiration of OTC Drugs

Yeowoon Park (The University of Texas at Dallas)
Joonhwi Joo (University of Texas at Dallas – Naveen Jindal School of Management)
Yufeng Huang (University of Rochester – Simon Business School)
Working Paper
https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7350461

We study brand-capital formation and depreciation dynamics in the U.S. over-the-counter (OTC) drug market, in which generic competitors' entry was triggered by the expiration of patent/exclusivity protection. Using retail scanner data, we document the stylized fact that the branded drugs retain 40%-80% quantity shares after the entry of chemically identical generics, despite being 22%-102% more expensive. Analyzing household panel data, we further find that households first exposed exogenously to the branded drug during the monopoly period remain 3.2%p-10.5%p more likely to choose the branded drug even years after generics become available. These findings point to a persistent brand preference built by initial and subsequent repeated exposure to the branded drug. We then develop a parsimonious household-level choice model with brand-capital dynamics to translate these findings into market outcomes. The estimated brand-capital stock is reinforced by repeat purchases but depreciates over time, with an implied half-life of about 2.2-3.6 months. Ignoring the brand-capital persistence understates the branded drugs' incremental revenue from a counterfactual 1-year-delayed generics' entry by 32.2%-106.6%. Our analysis highlights that the patent/exclusivity protection affects market outcomes beyond the formal protection period through the brand capital stock carried into post-entry competition.

Contact

For more information about this issue of IP Literature Watch, please contact the editor:

Tolga Bilgicer
Principal
Chicago
+1-312-377-9285
TBilgicer@crai.com

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