THE LAW AND ECONOMICS OF PATENT DAMAGES, ANTITRUST, AND LEGAL PROCESS

Edited by James Langenfeld, Frank Fagan and Samuel Clark

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VOLUME 29

THE LAW AND ECONOMICS OF PATENT DAMAGES, ANTITRUST, AND LEGAL PROCESS

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THE LAW AND ECONOMICS OF PATENT DAMAGES, ANTITRUST, AND LEGAL PROCESS

EDITED BY

JAMES LANGENFELD
Ankura Consulting Group LLC, USA

FRANK FAGAN
EDHEC Business School, France

AND

SAMUEL CLARK
Ankura Consulting Group LLC, USA

United Kingdom – North America – Japan
India – Malaysia – China

Emerald Publishing Limited
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LIST OF CONTRIBUTORS

Michael P. Akemann	Berkeley Research Group, LLC
Frank Fagan	EDHEC Business School
Hassan Faghani	Ankura Consulting Group, LLC
Wenqing Li	Epsilon Economics, LLC
Soheil R. Nadimi	Kansas State University
Nathan Petek	Federal Trade Commission
Rebbecca Reed-Arthurs	Berkeley Research Group, LLC
Nicolae Stef	Burgundy School of Business
David J. Teece	Berkeley Research Group, LLC; University of California, Berkeley
Jean-Christian Tisserand	Burgundy School of Business
Alen Veljan	Universidad Rey Juan Carlos
Igor Vuletic	Josip Juraj Strossmayer University of Osijek
Dennis L. Weisman	Kansas State University

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THE LAW AND ECONOMICS OF PATENT DAMAGES, ANTITRUST, AND THE LEGAL PROCESS

James Langenfeld[a] and Frank Fagan[b]

ABSTRACT

This issue of Research in Law and Economics *covers several areas of important research by a variety of international scholars. It contains technical papers on the appropriate way to estimate damages in patent disputes, as well as methods for evaluating relevant markets and vertically integrated firms when determining the competitive effects of mergers and other actions. There are also papers on the implication of different legal processes, regulations, and liability rules on consumer welfare, which range from the impact of delays in legal decisions in labor cases in France to issues of criminal liability related to the use of artificial intelligence.*

Keywords: Patent damages; critical loss analysis; non-exclusionary price floors; labor litigation; firm performance; litigation duration

JEL Classification: J01; K00; K21; K41; L4

There are seven refereed papers in this issue of *Research in Law and Economics*. Three address key technical economic issues in disputes and regulatory actions that relate to patent damages or competition concerns. Two present empirical analyses of the impact of legal processes or regulatory changes in the European

[a]Senior Managing Director, Ankura Consulting and Adjunct Professor of Economics, Johns Hopkins University.
[b]Associate Professor of Law, EDHEC Business School.

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Union on the involved parties. Two discuss appropriate liability rules that take into account the expansion of artificial intelligence ("AI") and of disinformation in political speech. In this introduction, we briefly highlight the motivation and some of the findings in each paper.

The first technical paper is *Resolving Bargaining Range Indeterminacy in Patent Damages after VirnetX*, by Rebbecca Reed-Arthurs, Michael Akemann, and David Teece. This paper is an extension of the law and economics literature of evidence (Posner, 1999). Damages in patent cases can be very substantial and are a key element of ensuring that innovators are appropriately rewarded for their investments. In most patent disputes, damages are based on estimates of reasonable royalties, so implementing sound methodologies is critically important for effective patent protection. However, reasonable royalty estimates have typically focused on a checklist of loosely connected factors, such as the one contained within *Georgia-Pacific Corp. v. U.S. Plywood Corp*.[1] The recent US federal court decision in *VirnetX* provides new guidance on the use of economic models of bargaining in estimating reasonable royalty damages in patent cases. The authors build on the findings of *VirnetX* to bring intellectual rigor to calculating reasonable royalties ranges based on measurable market conditions such as the relative discount rates of firms involved in the litigation. In particular, the authors use the Rubinstein Bargaining Model to develop a quantitative starting point with which to divide a bargaining range and explain how it can be tied to the circumstances of the parties at the time of a hypothetical negotiation. They show how this approach can be used in conjunction with other factors to estimate reasonable royalty damages.

The second technical paper is *Critical Loss Analysis with Differentiated Products* by Wenqing Li, Nathan Petek, and Hassan Faghani. Market definition and the evaluation of market power are key elements for evaluating the potential anticompetitive effects of a proposed merger. One of the economic analyses often deployed is "critical loss" analysis.[2] However, when products are differentiated, applying the standard critical loss formula to assess whether it is profitable for a hypothetical monopolist to impose a common price increase can lead to delineating an antitrust market that is too broad. The authors address this potential shortcoming by expanding critical loss analysis to include the possibility of asymmetric price increases post-merger. They conclude that critical loss analysis with asymmetric price increases and another often used analysis (gross upward price pressure index) are both practical alternative approaches for conducting market definition analysis when products in a candidate market are differentiated.

The third technical paper addresses different aspects of potentially anticompetitive behavior by vertically integrated firms. Vertically integrated firms provide products or services (upstream) that are used in the production of other products or services that they sell to other customers (downstream). Under some circumstances, a vertically integrated firm may have the incentive and ability to exclude or raise the costs of rivals at one of these levels, damaging competition and

consumer welfare in the process. As recognized by the European Commission in its *Non-Horizontal Merger Guidelines* (2008) and the US *Vertical Merger Guidelines* (2020), mergers of vertically related firms can potentially reduce competition.

In *Vertical Integration, Market Consolidation and Economic Welfare*, Dennis L. Weisman and Soheil R. Nadimi examine markets in which a vertically integrated provider ("VIP") initially has a duty to deal with an independent rival at unregulated upstream and downstream prices. The VIP subsequently acquires the independent rival downstream and no longer supplies the input to other firms downstream. This refusal to deal decreases rivalry, and can also increase economic efficiency and potentially generate procompetitive effects. This paper raises the important policy question of how the law should evaluate a refusal to deal that not only eliminates a rival and monopolizes the downstream market but also increases static efficiency.

Nicolae Stef and Jean-Christian Tisserand's *Labor Litigation and Firm Performance* is the first of the two empirical analyses of the impact of legal processes or regulatory changes. There is a growing literature on the impact of legal risk management on firm performance. Law and economics, at least since Gilson (1984), has demonstrated an interest in explaining the work of business lawyers in terms of value creation and transaction cost reduction (Gilson, 1998). The decision between pursuing full litigation as opposed to settlement has been examined theoretically, but fewer papers have empirically examined the impact this decision has on firm performance. In this paper, the authors empirically measure the impact of labor litigation on the ex post performance of firms. Using a sample of 44 French labor litigation cases, they show that the compensation amount requested by an employee has a significant and negative influence on the financial performance of firms. Although that effect fades over time, it still remains significant four years after the employee has initiated the legal procedure. Firms that have opted for a trial rather than a conciliation procedure improved their financial performance in only the first two years following the initiation of the lawsuit, which is primarily explained by the long delays of French labor courts in reaching judgment.

Alen Veljan provides the second empirical paper, *Regulating the Uncontrollable: The Development Of Card Scheme Fees In Payments Markets in Light of Recent Policy Intervention*. There is a controversy over the merits of credit card fee interventions by regulators. Payment cards represent an inexpensive, secure, welfare-increasing payment mechanism that enhances consumer welfare. However, lawmakers continue to remain troubled by consumers' ability to protect themselves and remain concerned for merchants. The European Union capped credit card interchange fees for four-party consumer card transactions on December 9, 2015, provides a natural experiment to test the impact of government interventions (see Coleman & Langenfeld, 2008). This paper assesses the subsequent development of card scheme fees within four-party card payment networks by relying on survey of 104 merchants across the European Union. The paper finds half of the

merchant population card fees have increased since the regulation. Also troubling are further concerns related to (1) transparency of fees, (2) pass-through of savings to retailers and subsequently consumers, and (3) the development of commercial cards. The paper then evaluates alternative arrangements for the setting of card scheme fees with a focus on the legal basis for potential regulation. The paper provides some evidence that legislation such as the U.S. Credit CARD Act (2009) and Australia's Standard No. 2 of 2016, The Setting of Interchange Fees in the Designated Debit and Prepaid Card Schemes and Net Payments to Issuers, Variation 2019, may have negative effects, including higher fees and reduced access to credit.

The first of the two papers that evaluate alterative legal liability rules is *Criminal Law and the Challenges of Autonomous Intelligence*: *Substituting a Theory of Guilt with the Division of Labor* by Igor Vuletic. This paper builds on an important emerging area in the autonomous intelligences ("AI") and law literature – the division of labor between humans and AI. The authors analyze the emerging challenges to traditional criminal law posed by the development of modern technology. For example, the automotive industry has implemented a new generation of autonomous self-driving vehicles, and there have been incidents where those vehicles have been involved in traffic accidents with deadly consequences. The use of autonomous intelligence is emerging in other important sectors as well, such as in medicine and the military. For example, the authors argue that it makes little sense to consider whether autonomous war systems should be held liable for war crimes, since weapons systems are always paired with humans. In essence, weapon systems are always semi-autonomous, if only because humans give the system goals and provide the system with data. The authors analyze the scope and limits of criminal liability of humans for criminal offences 'committed' by autonomous systems and suggest expanding existing liability systems for the creators of these systems – i.e., engineers, programmers, and designers. The paper contributes to an understanding of how criminal liability should be apportioned under different combinations of human and AI labor in the familiar contexts of intent and negligence and proposes a new form of "shared" criminal liability.

The second paper evaluating an alternative liability rule is Frank Fagan's *Two-Sided Social Media and Bad Faith Political Speech*. The First Amendment to the US Constitution affords protection to political speech based on its "high value." However, there is growing concern over "fake news" and its implications on the quality of discourse in society. Law and economics scholars have recognized that private interactions between producers and consumers of information media can generate positive and negative externalities such as the creation of fake news, which can, in turn, affect the quality of discourse in society (Coase, 1974). In particular, purveyors of false information drive up the costs of truth-seeking for others. In this context, the paper explores instances when an actor may be identified as a "bad faith" political speaker who does not focus on promoting what he or she considers a worthwhile goal, and in the process, makes it more difficult for others to seek the truth. It points out that producers of content that support one

side of a political argument are presumably motivated by belief in the overall correctness of their position, even if they utter falsehoods and inflame discourse. However, speakers who make inflammatory statements on both sides of an issue do not advance legitimate political projects or viewpoints. Accordingly, classifying two-sided inflammatory speech as "low value" and prohibiting it is consistent with economic efficiency and can open greater space for political bargaining. To the extent social media platforms enable two-sided inflammatory speech and other similar externalities, they can potentially be controlled through platform regulation and there is growing interest on the part of regulators, including those of the telecommunications industry.[3]

Each of these papers provides important insights into various aspects of the intersection of law and economics.

NOTES

1. See Gould and Langenfeld (1997).
2. See US Department of Justice and Federal Trade Commission, *Horizontal Merger Guidelines* (August 19, 2010).
3. An earlier version of Fagan's paper, for example, was presented at the Italian Authority for Communications Guarantees, whose stated competences include equitable and efficient delivery of content and assurance of competitive market structure in telecommunications. Law 31 July 1997, n. 249, Istituzione dell'Autorita' per le garanzie nelle comunicazioni e norme sui sistemi delle telecomunicazioni e radiotelevisivo. (Institution of the Authority for Communications Guarantees and rules for the systems of telecommunications, including radio and television.) (GU n.177 del 31-7-1997 - Suppl. Ordinario n. 154).

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RESOLVING BARGAINING RANGE INDETERMINACY IN PATENT DAMAGES AFTER *VIRNETX*

Rebbecca Reed-Arthurs,[a] Michael P. Akemann[b] and David J. Teece[c]

ABSTRACT

Recent US federal court rulings have provided new guidance on the use of economic models of bargaining in estimating reasonable royalty damages in patent cases. After reviewing relevant case law and providing an overview of the bargaining range approach, we describe one analytic method (the Rubinstein Bargaining Model) for developing a quantitative starting point with which to divide a bargaining range and explain how it can be tied, at least in part, to the facts and circumstances of the parties around the time of the Hypothetical Negotiation. We also describe how this approach can be used in conjunction with an analysis of other quantitative and qualitative factors related to the bargaining power of the parties, to help estimate reasonable royalty damages.

Keywords: Patent damages; royalties; Rubinstein bargaining model; bargaining range; VirtnetX; Georgia-Pacific

JEL Classification: K29; K41; O34

[a]Director, Berkeley Research Group, LLC.
[b]Managing Director, Berkeley Research Group, LLC.
[c]University of California at Berkeley, Berkeley Research Group, LLC; Tusher Professor in Global Business in the Haas School of Business, Chairman and Principal Executive Officer of Berkeley Research Group, LLC.

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1. INTRODUCTION

Over the past decade, US federal appellate court decisions have further circumscribed approaches available to assess reasonable royalty damages in patent infringement matters. For example, the US Court of Appeals for the Federal Circuit ("CAFC") in *Uniloc v. Microsoft* appropriately rejected the use of the so-called 25% rule of thumb – under which a reasonable royalty rate was assumed to be equal to 25% of the expected profits generated from sales of the product containing a patented invention – because this approach "fails to tie a reasonable royalty base to the facts of the case at issue." The Court warned of the need to "carefully tie proof of damages to the claimed invention's footprint in the market place."[1]

As old rule-of-thumb methods have been supplanted, data-driven analytic methods that focus on the economic benefits enabled by the patented innovation are becoming increasingly prominent in patent litigation. A commonly employed economic method for estimating a reasonable royalty is to analyze the outcome of a "Hypothetical Negotiation" (*Georgia-Pacific* factor 15) [2] using a bargaining range approach (see, e.g.,Epstein & Malherbe, 2011; Hausman & Leonard, 2006; Hausman, Leonard, & Sidak, 2007). Under this approach, a reasonable royalty negotiated between a willing licensor and a willing licensee can be expected to fall somewhere in the range between the minimum amount that the licensor would be willing to accept for granting a license to the patent and the maximum amount that the licensee would be willing to pay for use of the patented technology. The maximum willingness to pay is generally determined by the value of the patented technology to the licensee over the best commercially and technologically viable noninfringing alternative available to that licensee. Both upper and lower bounds of the bargaining range are inherently tied to the footprint of the invention and to the costs and benefits to each party of taking a license to the patent(s) at or around the time of the Hypothetical Negotiation.

However, a number of challenges often remain with utilizing a bargaining range approach. In particular, it will often be most helpful to the fact finder for the damages expert to attempt to determine where within the bargaining range the parties would be expected to agree during the Hypothetical Negotiation. In some cases, the bargaining range is small and resolving indeterminacy within that range may not have a large quantitative impact on the final damages opinion. At other times, the range is so large as to render it of limited value to a judge or jury attempting to reach a conclusion on damages. In these instances, we are confronted with at least the following choices: Should the range simply be presented and no other guidance offered? Should the expert perform a qualitative assessment of the facts and circumstances of the case and render an opinion based on his or her expertise? Or can an economic model which generates specific quantitative predictions, and can be tied at least in part to the specific facts and circumstances of the parties, help inform the resolution of this indeterminacy?

Until recently, a common approach to resolving bargaining range indeterminacy was to assume a 50/50 split resulting from an application of the Nash Bargaining Solution ("NBS"). However, this approach was rejected in the CAFC's decision in *VirnetX, Inc.*, and *Sci. Applications Int'l, Corp., v. Cisco Sys., Inc.*, and *Apple Inc* ("*VirnetX*") because it was insufficiently tied to the facts and circumstances of the case. However, the Court in *VirnetX* did not reject the bargaining range approach