

FRAND Royalties and Good-Faith Negotiations to License SEPs

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The Way Towards the Internet of Things:

Open Standards vs Silos

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The Way Towards the Internet of Things. Open Standards vs Silos

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Overview

1. Economics of the FRAND contract and FRAND royalties
2. Calculating FRAND royalties for 5G applications using hedonic price analysis
3. Economic ambiguity in the legal analysis of the duty to negotiate FRAND licenses in good faith

Economics of the FRAND contract and FRAND royalties

The FRAND contract

- FRAND is a matter of private contract
 - Overlays the national patent statute
 - Adds (relative to U.S. patent law):
 - nonexclusion
 - nondiscrimination
 - fairness
 - Competition law, if applicable, varies by jurisdiction

Important appeals pending

- *Unwired Planet*
 - Currently the most thorough and intellectually rigorous analysis of the FRAND contract
- *TCL v. Ericsson*
 - Lacks *Unwired Planet*'s clarity and cogency
- *FTC v. Qualcomm*
 - Aggressive interpretation of an antitrust duty to license at the component level

FRAND jurisprudence

- Contract interpretation, not policy making
- Economic analysis must be relevant to the question of fact that informs the question of law to be decided
- The controlling authority is
 - Contract language
 - Controlling law (France, New York)
- When is the contractual duty discharged?

Role of economic evidence

- Are lawyers posing, and expert economic witnesses answering, the correct question?
 - Example: Confusion over fundamental difference between a contract offer and contract formation
 - Normative theories of patent valuation, which courts do not in fact use (more later on this point)

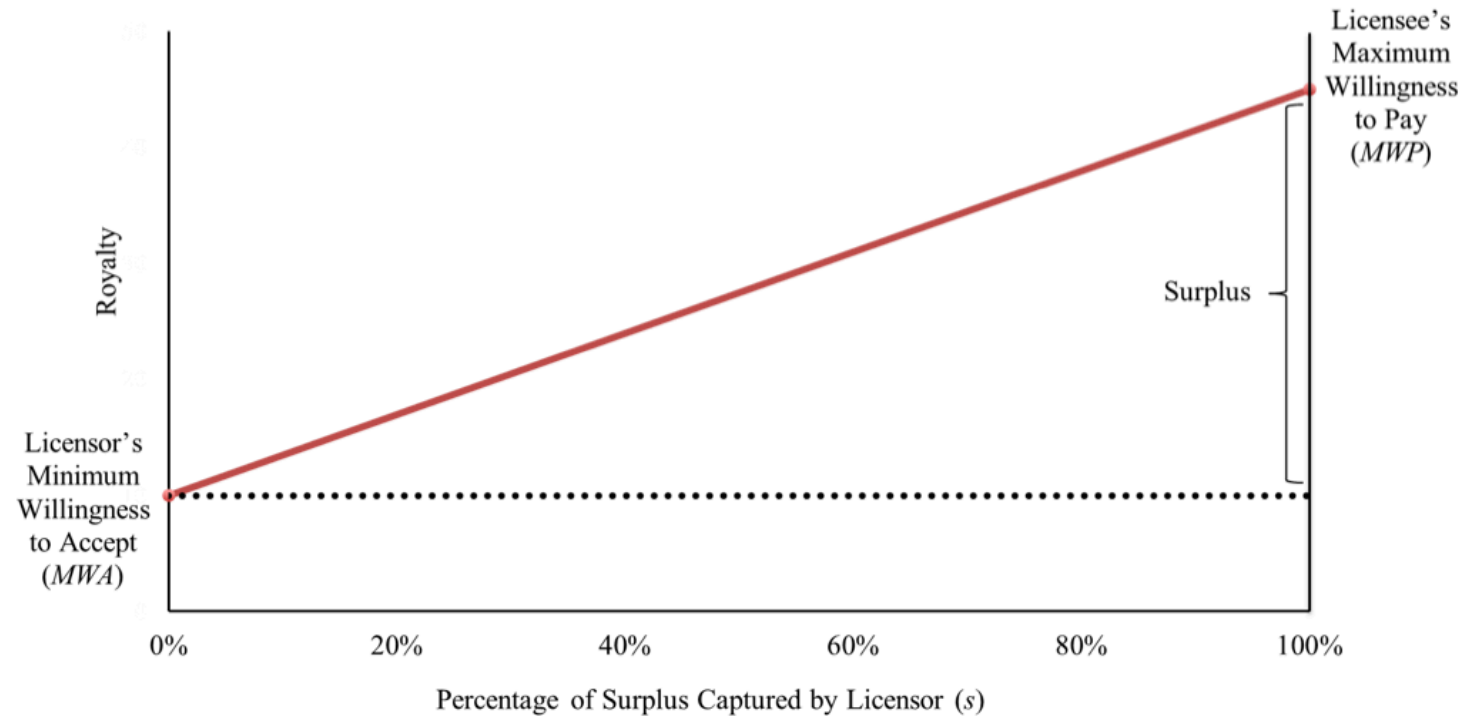
Economic meaning of FRAND

- Contract interpretation seeks to give independent meaning to “fair,” “reasonable,” and “nondiscriminatory”
 - Depends on the specific language of the SSO’s FRAND obligation, choice of law, and law on contract ambiguity of the controlling jurisdiction
- How can economic analysis assist judicial interpretation rather than be oblivious to it?

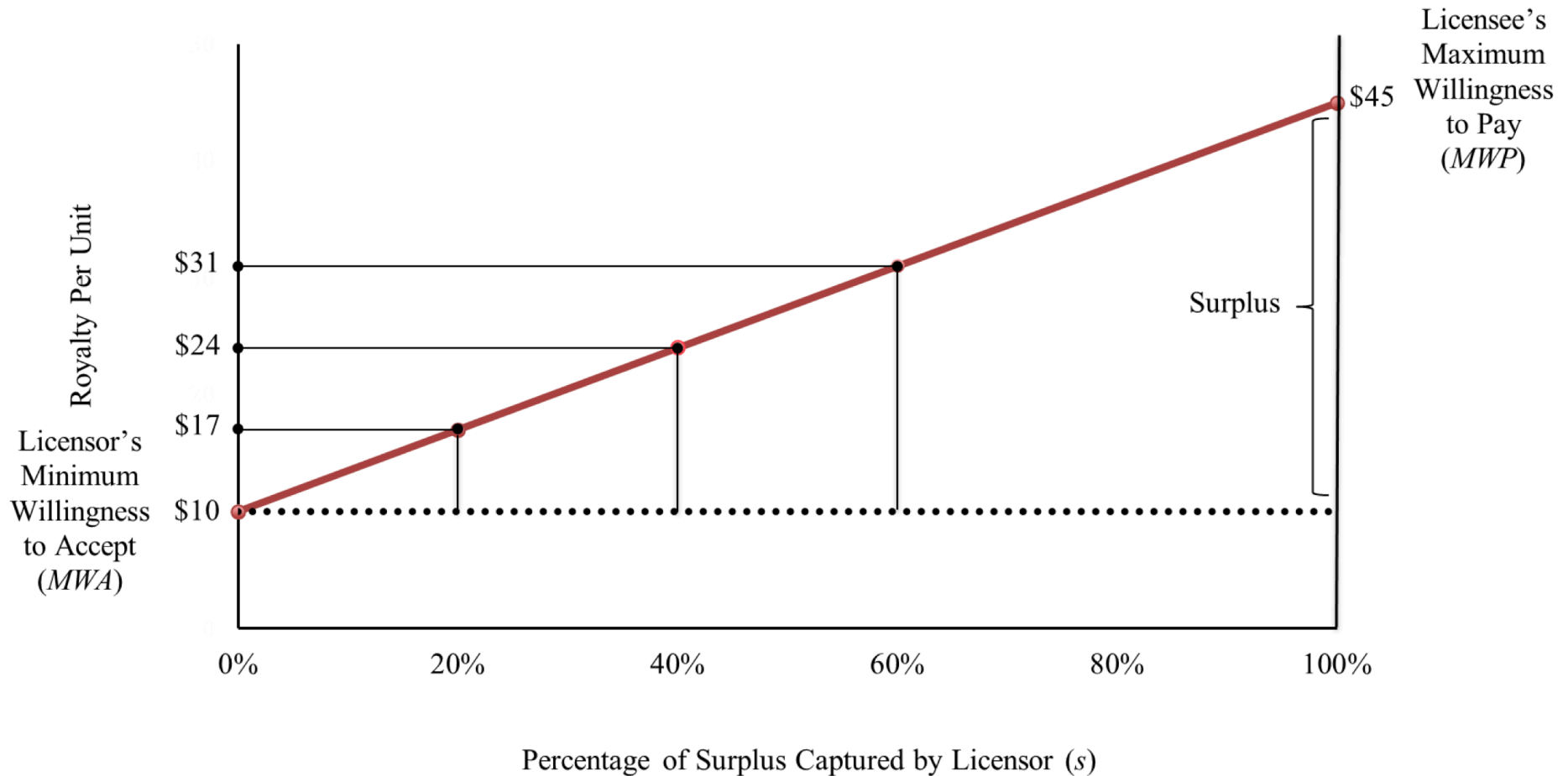
Reasonable

- A reasonable royalty is one that would result from voluntary exchange
- A bargaining range, not a unique point, bounded by
 - Licensors' minimum willingness to accept
 - Licensee's maximum willingness to pay

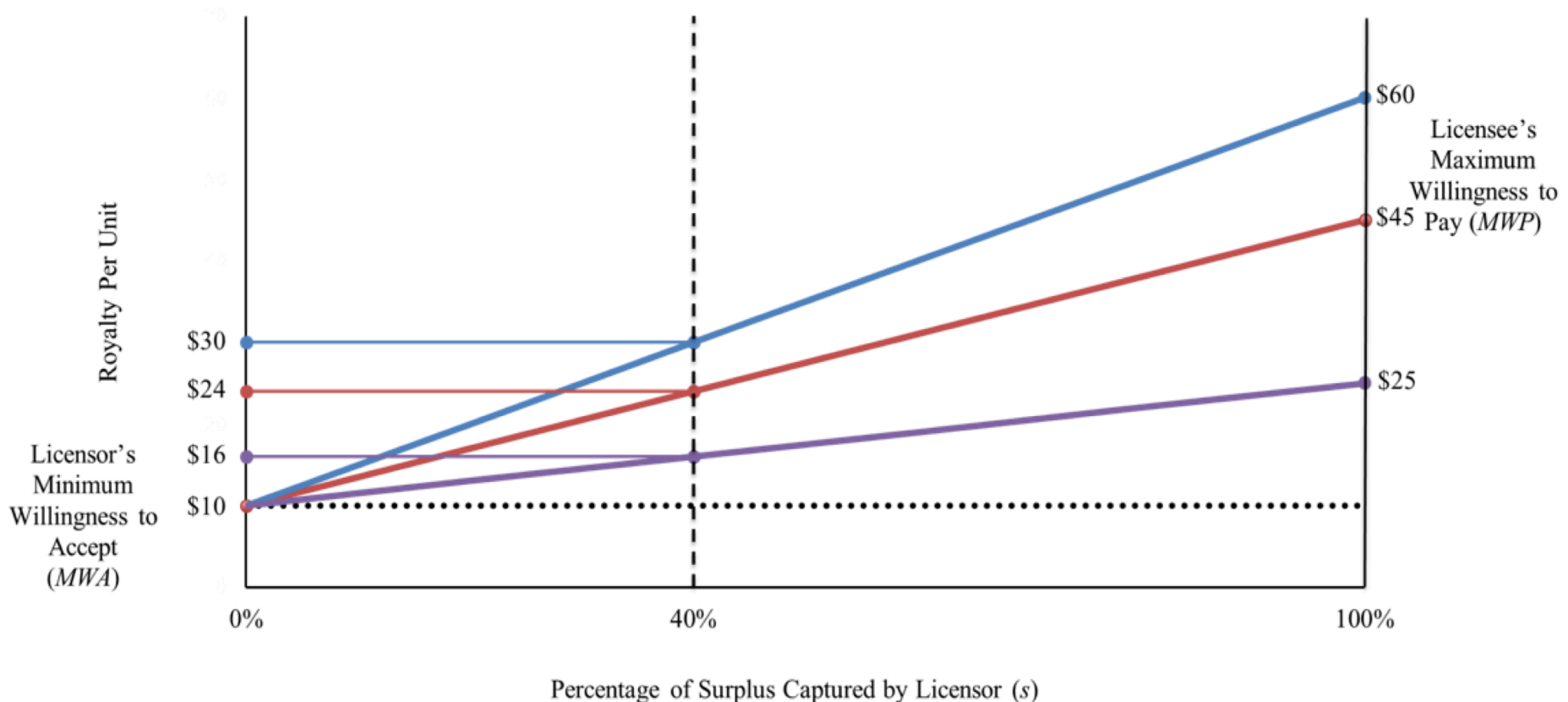
Principles of bargaining theory



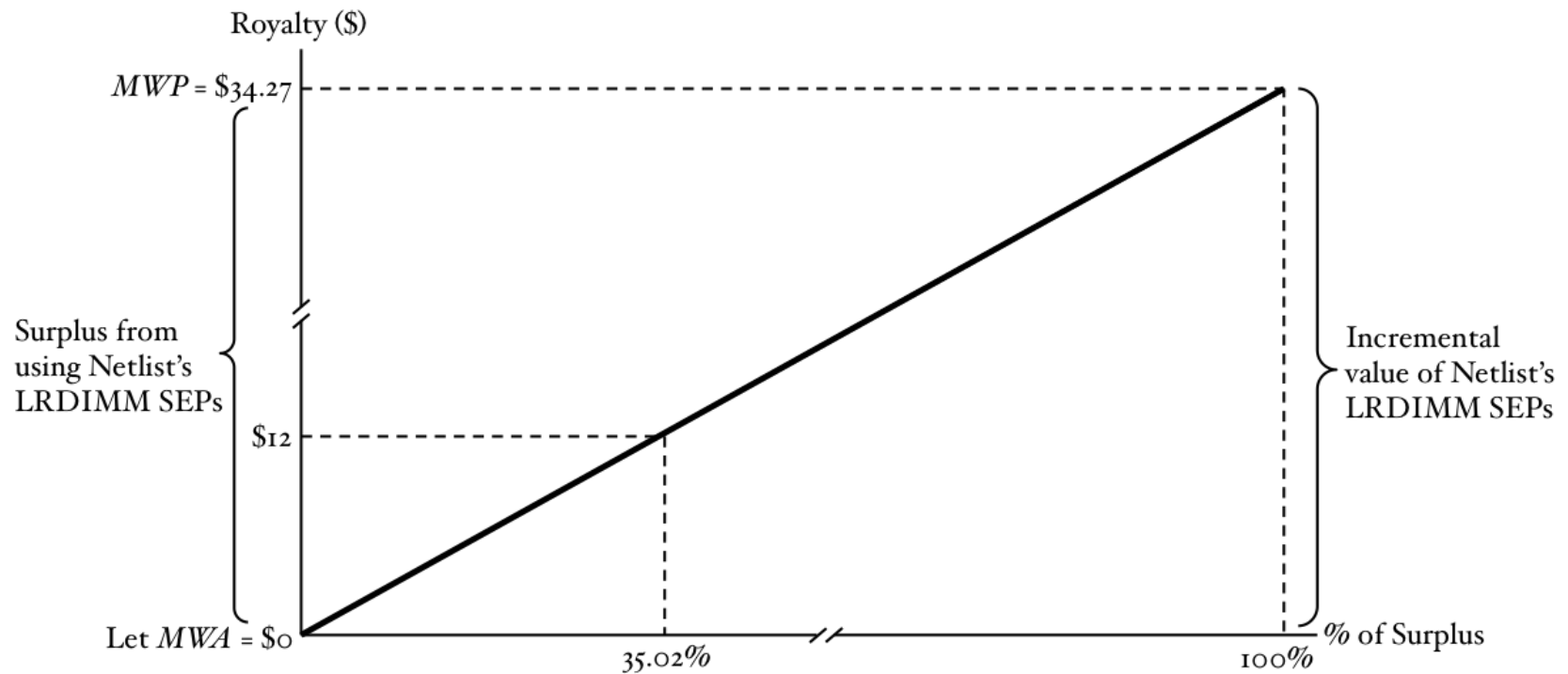
A range of FRAND royalties



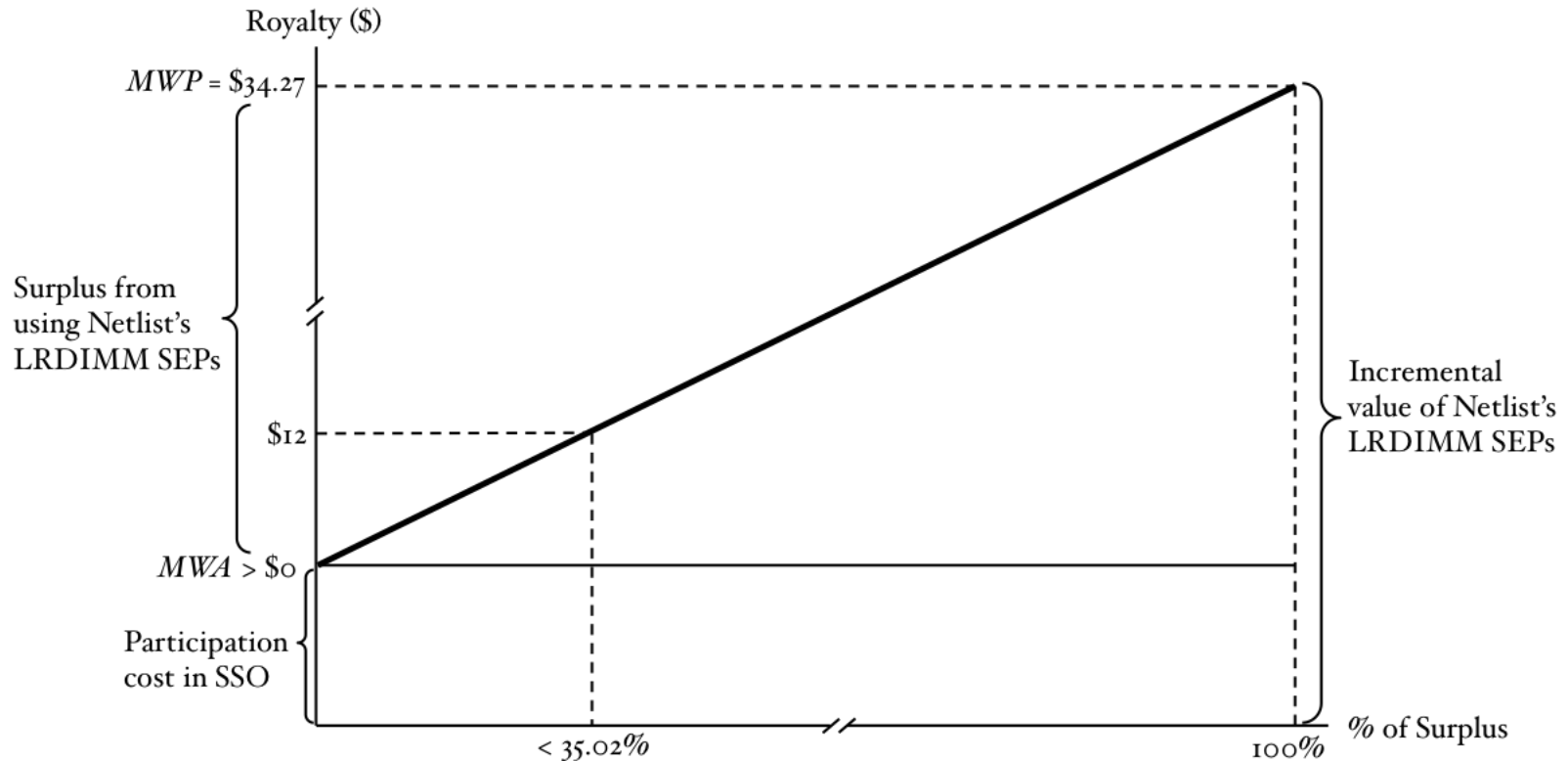
A FRAND royalty for a given SEP will vary across licenses



Bargaining range for a RAND royalty ($MWA = 0$)



Bargaining range for a RAND royalty ($MWA > 0$)



When does the hypothetical negotiation occur?

- Moment of first infringement?
 - standard rule under U.S. patent jurisprudence
- Moment of standard adoption?
 - “ex ante incremental value” theory
- Moment when patent holder decided to monetize its technology by offering it to the SSO?

Fair

- What makes FRAND “fair” and distinguishable from RAND?
- Courts have ignored the question, contrary to conventional contract interpretation principles, without any explanation
- Can economics offer an answer?

What makes FRAND fair?

- “a division of surplus that is perceived by both parties to be fair maximizes the probability of contract formation”

J. Gregory Sidak, *What Makes FRAND Fair? The Just Price, Contract Formation, and the Division of Surplus from Voluntary Exchange*, 4 CRITERION J. ON INNOVATION 701 (2019), <https://www.criterioninnovation.com/articles/what-makes-frand-fair/>

Nondiscriminatory

- *Unwired Planet* requirements for showing discrimination
 - Similarly situated licensees
 - Disparately treated
 - Without objective justification
- Specific language of SSO's FRAND or RAND commitment will vary

Different SSO wording

“A license will be offered, with compensation, to applicants desiring to utilize the license for the purpose of implementing the JEDEC Standard under reasonable terms and conditions that are **demonstrably free of any unfair discrimination.**”

—JEDEC Patent Policy

Patent owner “undertaking in writing that it is prepared to grant irrevocable licences on fair, reasonable and **non-discriminatory** (‘FRAND’) terms and conditions”

—ETSI IPR Policy

Positive legal principles

- A finding of discrimination under U.S. law typically requires evidence of differential treatment of similar comparators
- The defendant may provide justifications for its differential treatment (even in the case of an unqualified prohibition against discrimination)
- Both cost-related and non-cost-related factors might justify differential treatment of similar comparators

Normative economic principles

- Economic principles might help to determine whether two licensees are similarly situated
- The analysis of differential treatment should focus on the SEP holder's offer (rather than on the actual terms of the license)
- Economic justifications for differential treatment include the SEP holder's financial distress, the implementer's negotiating conduct, or changing market conditions

Calculating FRAND royalties for 5G applications using hedonic price analysis

Challenges for the IoT

- If the 5G application is new, there are no comparable licenses to use
- Patent pools are helpful but are already being challenged in antitrust litigation
 - Addresses nondiscrimination as it concerns completely different uses of the SEPs
 - Establishes royalty ceiling

Challenges for the IoT, cont'd

- Ex ante (bottom up) calculations are infeasible
 - No data exist
 - Contrived depiction of competition
- Top-down calculations start with an assumption of an aggregate SEP royalty
- Hedonic price analysis uses real data from real transactions

Challenges for the IoT, cont'd

- Hedonic price analysis
 - What is the incremental value of connectivity in an automobile that results from standard-essential patents?
 - Scientific methodology that analyzes the actual facts of the case (Federal Rule of Evidence 702)
 - Uses real data from real transactions
 - Econometric analysis is replicable

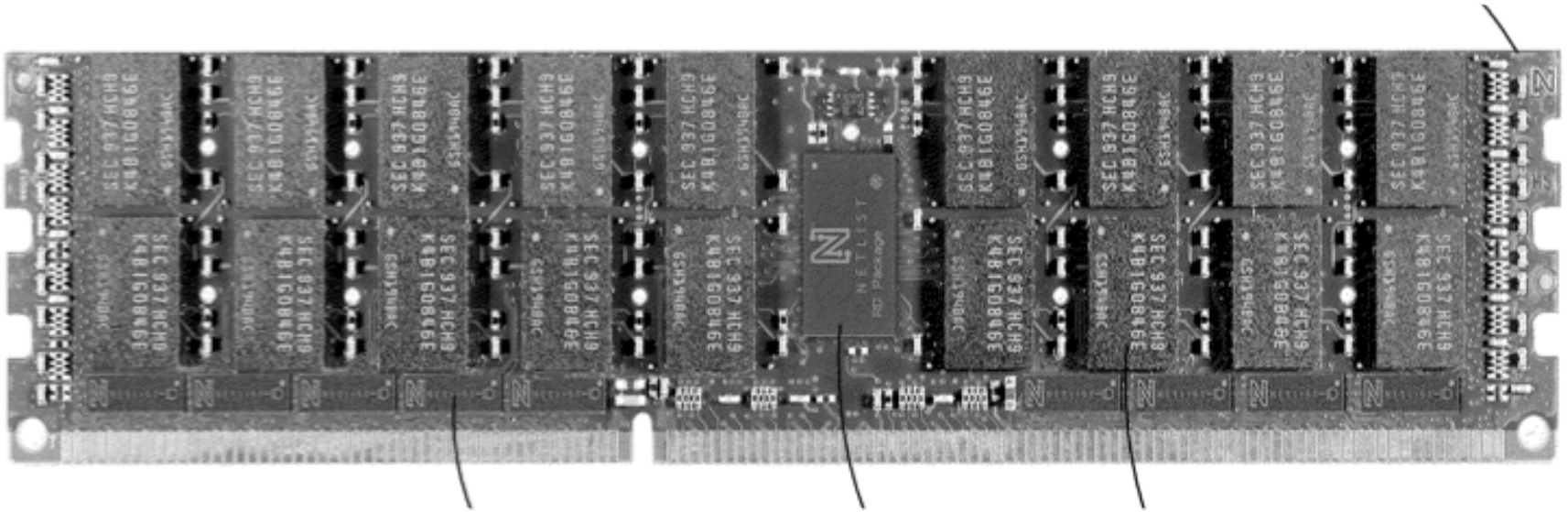
The theory of hedonic prices

“When goods can be treated as tied packages of characteristics, observed market prices are also comparable on those terms. The economic content of the relationship between observed prices and observed characteristics becomes evident once price differences among goods are recognized as equalizing differences for the alternative packages they embody.”

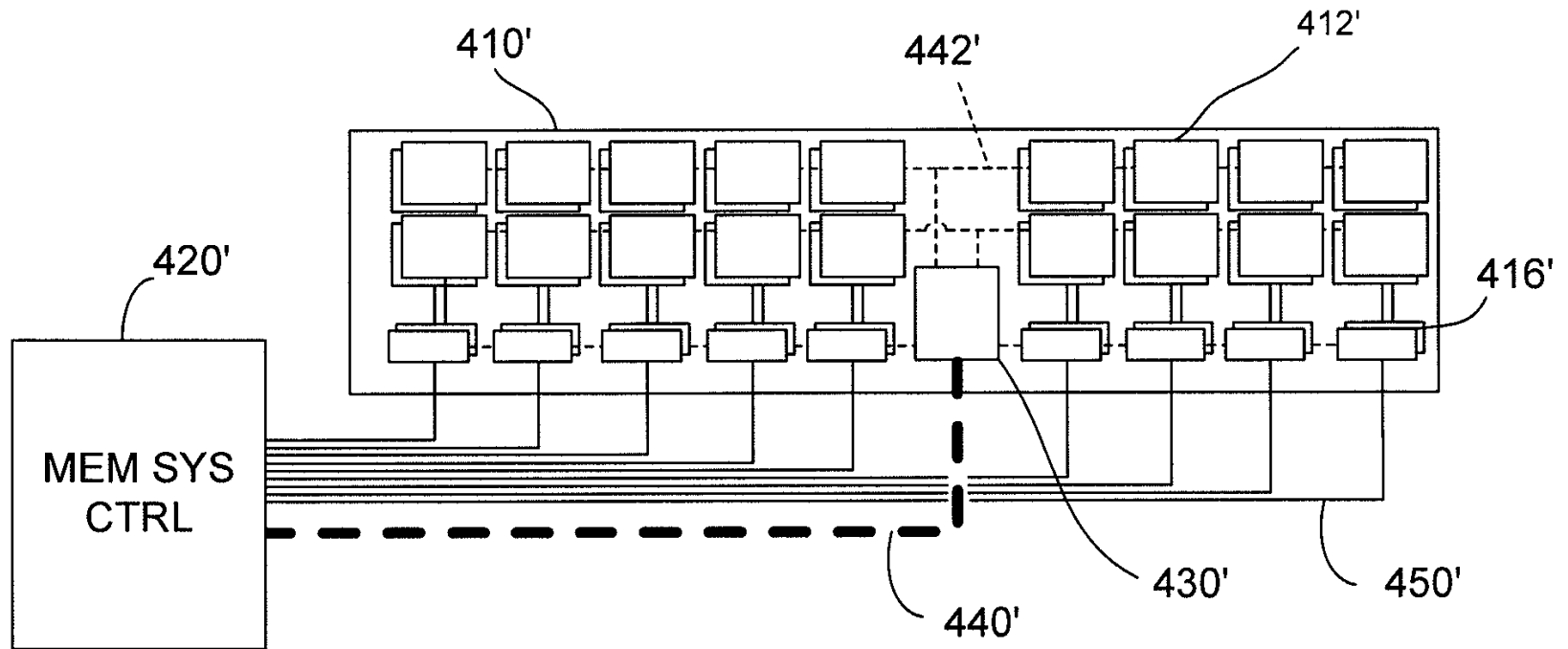
—**Sherwin Rosen**

*Hedonic Prices and Implicit Markets:
Product Differentiation in Pure Competition,*
82 *Journal of Political Economy* 34, 54 (1974)

DDR4 LRDIMM



DDR4 LRDIMM



The model

$$Price = \alpha + \beta_1 \times LRDIMM + \beta_2 \times DDR4 + \beta_3 \times GB + \beta_4 \times Year + \varepsilon$$

where *LRDIMM* is a dummy variable that takes a value of 1 if the memory module is LRDIMM-compliant, *DDR4* is a dummy variable that takes a value of 1 if the memory module is DDR4-compliant, *GB* is a continuous variable for the memory module's gigabyte capacity, and *Year* is a variable for each year for which we have price data.

The value of the LRDIMM standard

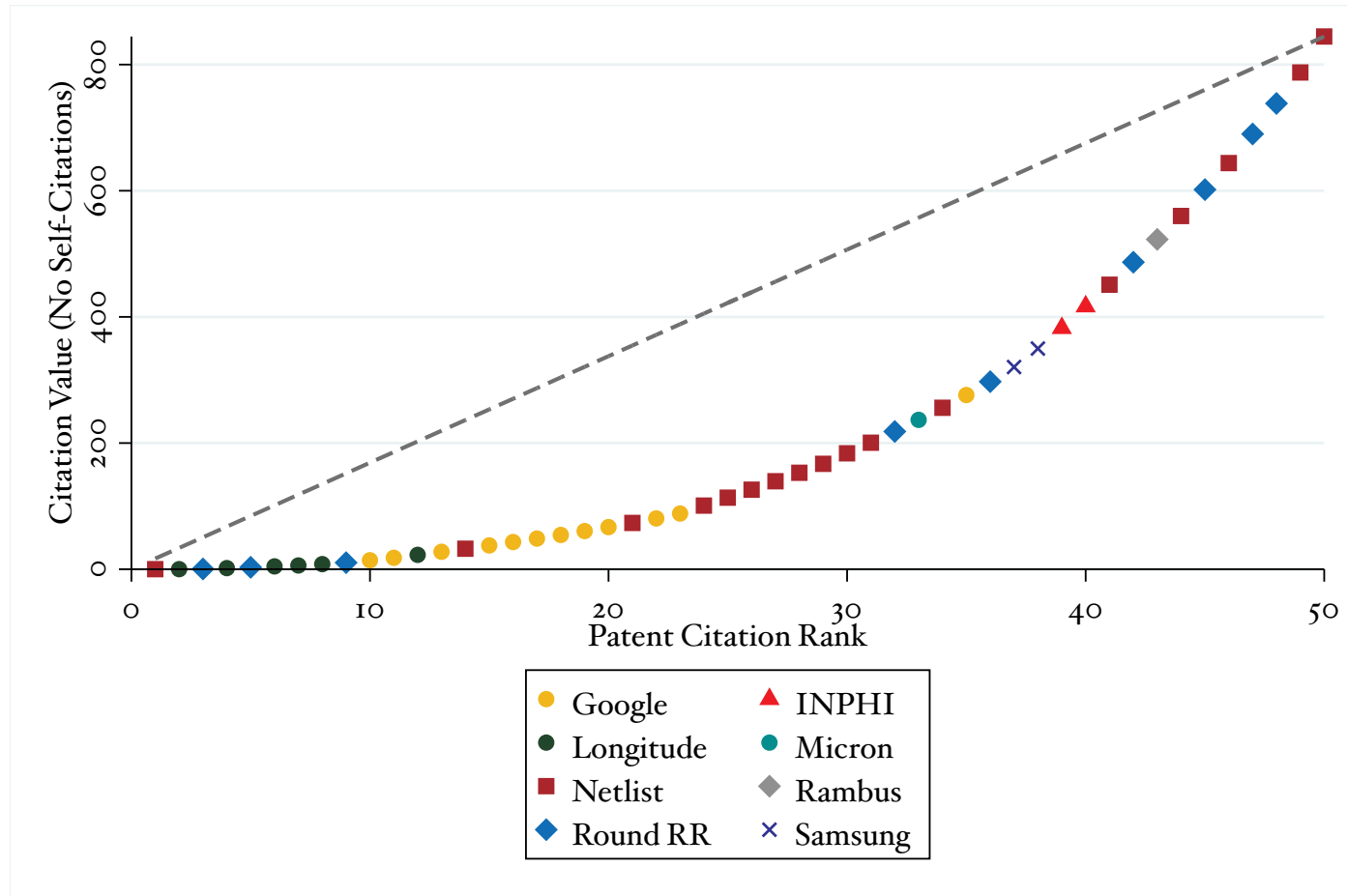
Table 1. Hedonic Regression Results for Memory-Module Prices

Variable	Coefficient	Standard Error	<i>t</i> -Statistic
<i>LRDIMM</i>	100.4716***	35.0722	2.86
<i>DDR4</i>	48.7459***	15.8708	3.07
<i>GB</i>			
8	61.4273*	31.9943	1.92
16	108.5513***	34.4684	3.15
32	223.0828***	45.3401	4.92
64	577.4247***	63.9095	9.04
128	1457.388***	69.2066	21.06
<i>Year</i>			
2014	-9.3930	23.6438	-0.40
2015	-61.0179***	23.3763	-2.61
2016	-128.272***	23.0100	-5.57
Constant	46.6667*	25.5737	1.82
<i>R</i> ²	0.8981		
<i>F</i> -Statistic	141.01		
<i>Prob</i> > <i>F</i>	0.0000		
<i>N</i>	171		

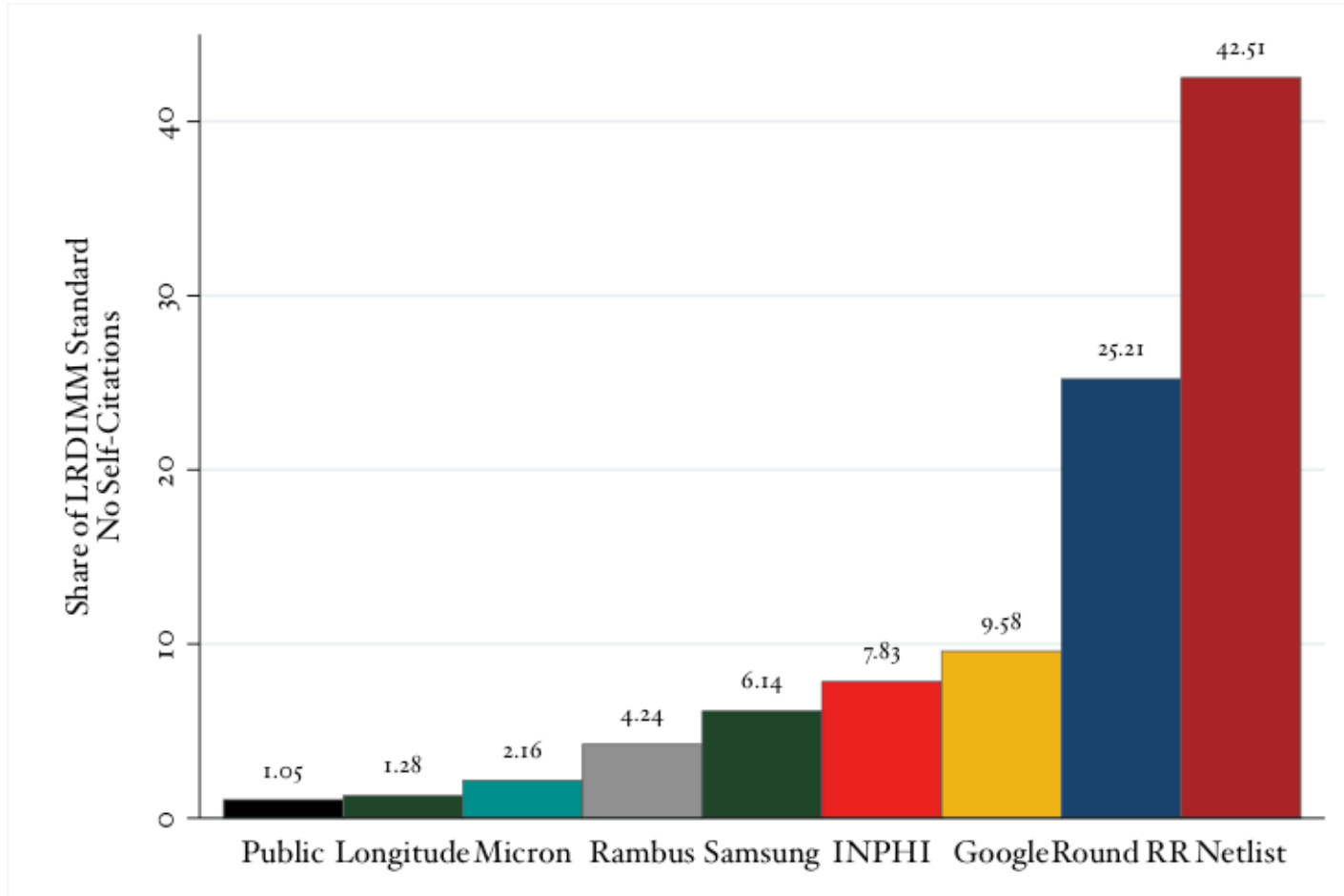
Source: De Dios & Associates (2016).

Notes: * indicates statistical significance at the 90-percent confidence level, ** indicates statistical significance at the 95-percent confidence level, and *** indicates statistical significance at the 99-percent confidence level.

The Lorenz curve depicting value distribution



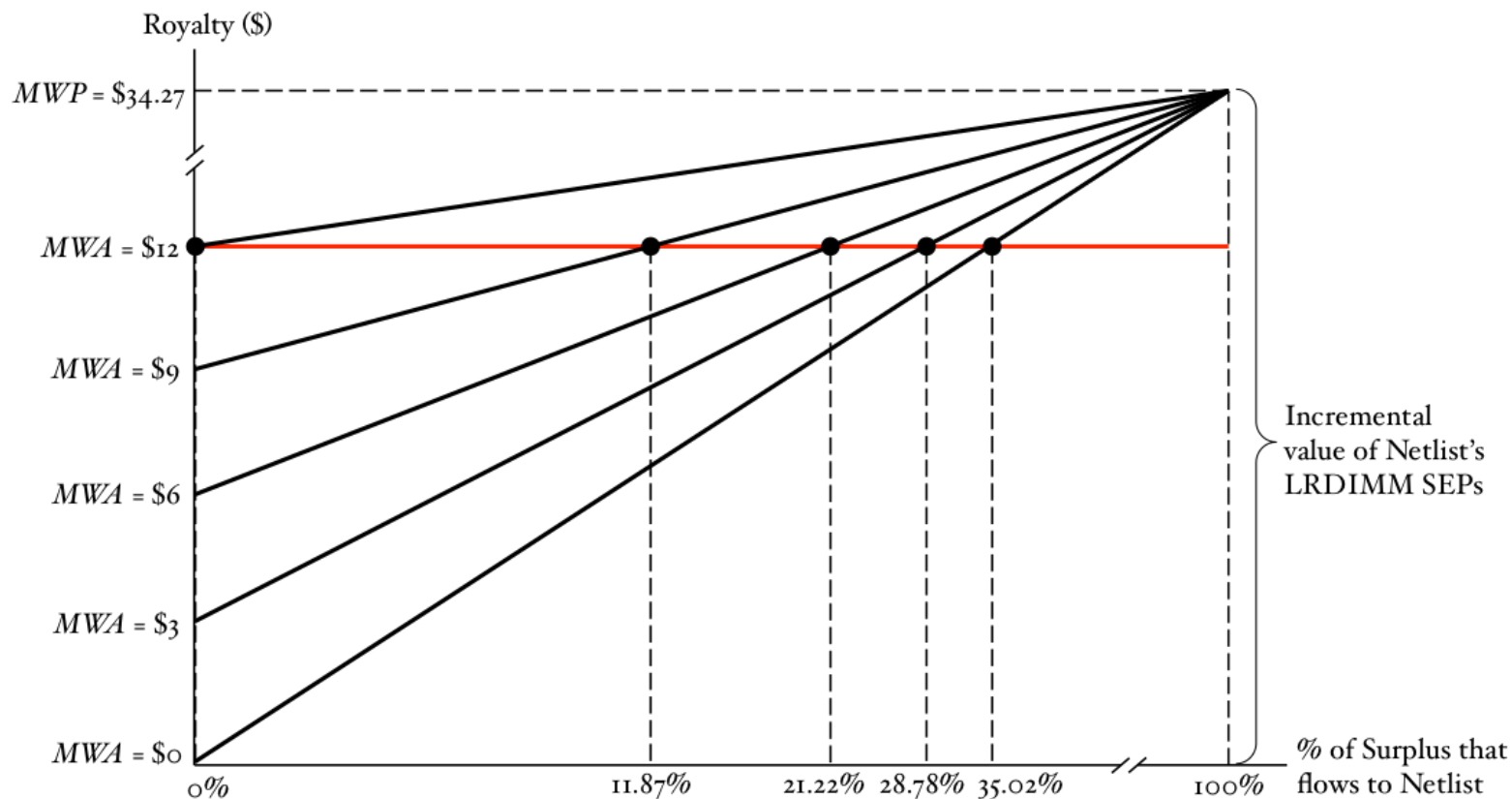
Distribution of value by company



Division of surplus from a licensing agreement

	RAND Royalty	Netlist's Hypothetical MWA	Licensee's MWP	Netlist's Portion of the Surplus $([A] - [B])$ $\div ([C] - [B])$ $= [D]$	Licensee's Portion of the Surplus $1 - [D]$ $= [E]$
	[A]	[B]	[C]		
[1]	\$12.00	\$0.00	\$34.27	35.02%	64.98%
[2]	\$12.00	\$3.00	\$34.27	28.78%	71.22%
[3]	\$12.00	\$6.00	\$34.27	21.22%	78.78%
[4]	\$12.00	\$9.00	\$34.27	11.87%	88.13%
[5]	\$12.00	\$12.00	\$34.27	0.00%	100.00%

The division of surplus will differ with different MWA



The same hedonic price analysis
has been done for the features
of a smartphone

J. Gregory Sidak & Jeremy O. Skog, [Hedonic Prices for Multicomponent Products](#), 4 CRITERION JOURNAL ON INNOVATION 301 (2019).

Negotiating FRAND licenses in good faith

Activity rule and closing rule

- What must a party do to stay active in the negotiation?
- When is the negotiation at an end, given that it has not resulted in contract formation?

Ambiguity across jurisdictions

- American principles of contract formation provide a clear closing rule
- French law, which governs ETSI, is less clear about a closing rule and silent on an activity rule

Proposed activity rule

To the extent that the SEP holder has not already discharged its contractual obligation to ETSI (such as by already having made a legitimately FRAND offer at the very outset of the negotiation)—a party must revise its bid or ask price by the minimum agreed-upon increment for that party to be deemed still to be negotiating in good faith.

- But how is the minimum bid increment determined?

Proposed closing rule

A party will be deemed to have made its final offer or counteroffer if it does not sweeten its price relative to its price in the previous round of offer and counteroffer.

Recent articles on SEPs

<https://www.criterioneconomics.com/>

[What Makes FRAND Fair? The Just Price, Contract Formation, and the Division of Surplus from Voluntary Exchange](#), 4 CRITERION JOURNAL ON INNOVATION 701 (2019)

[Misconceptions Concerning the Use of Hedonic Prices to Determine FRAND or RAND Royalties for Standard-Essential Patents](#), 4 CRITERION JOURNAL ON INNOVATION 501 (2019)

[Hedonic Prices and Patent Royalties: Epilogue](#), 4 CRITERION JOURNAL ON INNOVATION 401 (2019)

[Hedonic Prices for Multicomponent Products](#), 4 CRITERION JOURNAL ON INNOVATION 301 (2019)

[Judge Selna's Errors in *TCL v. Ericsson* Concerning Apportionment, Nondiscrimination, and Royalties Under the FRAND Contract](#), 4 CRITERION JOURNAL ON INNOVATION 101 (2019)

[Why *Unwired Planet* Might Revolutionize the Resolution of FRAND Licensing Disputes](#), 3 CRITERION JOURNAL ON INNOVATION 601 (2018)

[Is Patent Holdup a Hoax?](#), 3 CRITERION JOURNAL ON INNOVATION 401 (2018)

Recent articles on SEPs, cont'd

<https://www.criterioneconomics.com/>

[Will the CJEU's Decision in MEO Change FRAND Disputes Globally?](#), 3 CRITERION JOURNAL ON INNOVATION 301 (2018)

[Citation Weighting, Patent Ranking, and Apportionment of Value for Standard-Essential Patents](#), 3 CRITERION JOURNAL ON INNOVATION 201 (2018)

[The FRAND Contract](#), 3 CRITERION JOURNAL ON INNOVATION 1 (2018)

[Hedonic Prices and Patent Royalties](#), 2 CRITERION JOURNAL ON INNOVATION 601 (2017)

[Using Regression Analysis of Observed Licenses to Calculate a Reasonable Royalty for Patent Infringement](#), 2 CRITERION JOURNAL ON INNOVATION 501 (2017)

[Is a FRAND Royalty a Point or a Range?](#), 2 CRITERION JOURNAL ON INNOVATION 401 (2017)

[Fair and Unfair Discrimination in Royalties for Standard-Essential Patents Encumbered by a FRAND or RAND Commitment](#), 2 CRITERION JOURNAL ON INNOVATION 301 (2017)

[Enhanced Damages for Infringement of Standard-Essential Patents](#), 1 CRITERION JOURNAL ON INNOVATION 1101 (2016)

Recent articles on SEPs, cont'd

<https://www.criterioneconomics.com/>

[A FRAND Contract's Intended Third-Party Beneficiary](#), I CRITERION JOURNAL ON INNOVATION 1001 (2016)

[How Commissioner Vestager's Mistaken Views on Standard-Essential Patents Illustrate Why President Trump Needs a Unified Policy on Antitrust and Innovation](#), I CRITERION JOURNAL ON INNOVATION 721 (2016)

[What Aggregate Royalty Do Manufacturers of Mobile Phones Pay to License Standard-Essential Patents?](#), I CRITERION JOURNAL ON INNOVATION 701 (2016)

[Does the International Trade Commission Facilitate Patent Holdup?](#), I CRITERION JOURNAL ON INNOVATION 601 (2016)

[Testing for Bias to Suppress Royalties for Standard-Essential Patents](#), I CRITERION JOURNAL ON INNOVATION 301 (2016)

[Tournaments and FRAND Royalties](#), I CRITERION JOURNAL ON INNOVATION 101 (2016)