

Economics of FRAND

Theory and practice

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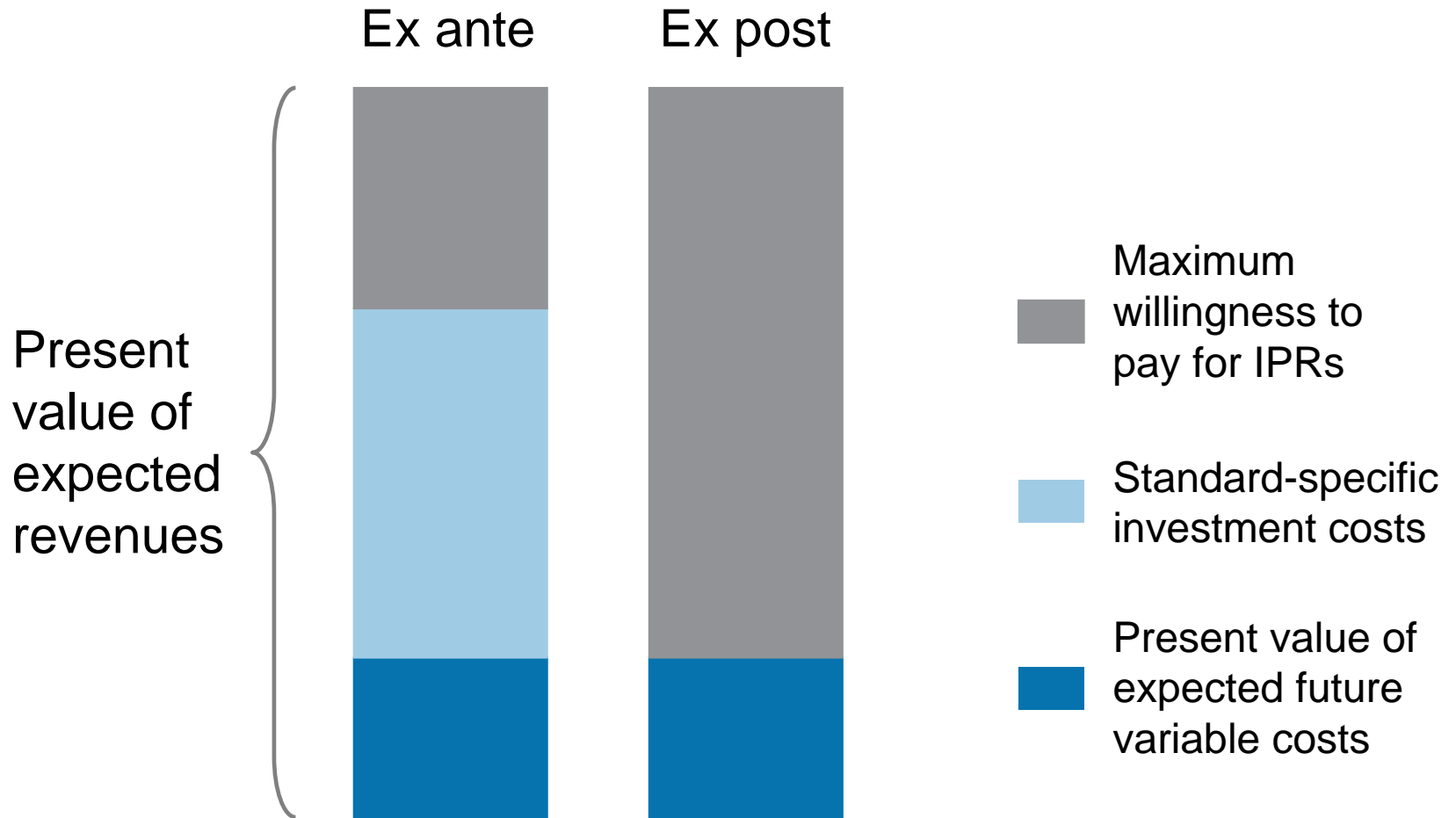
The story starts with the benefits of standards

- Standards promote interoperability
- One objective – encourage implementations
- Implementations run into essential patents
- Another objective – ensure that R&D investors are compensated
- Royalties:
 - In some settings not necessary (when IPR holders are expected to profit from implementations or from ancillary services)
 - But this is not the case in all settings

The patent hold-up problem

- Developing implementations requires standard-specific investments
- This creates the risk of “opportunistic behaviour”

Illustration of the patent holdup problem



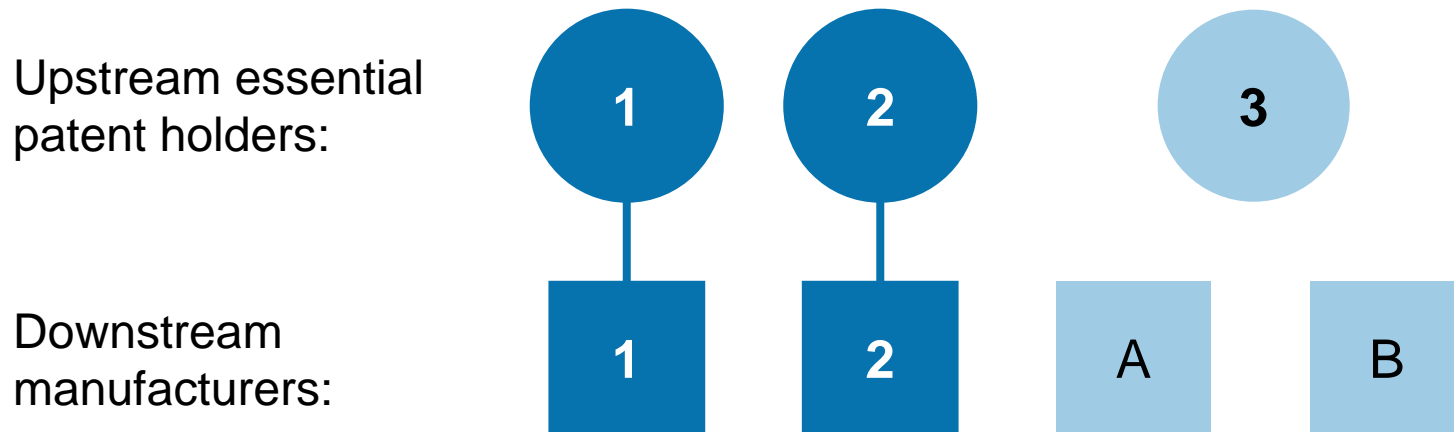
Risk of opportunistic behaviour is not unique to standards

- Sometimes the risks can be managed through contracts and the prospect of damages
- Sometimes firms can arrange for mutual dependencies – “swapping hostages”
- Sometimes the solution is vertical integration
- Many times parties simply rely on the reputational costs that the perpetrator would suffer if it behaved opportunistically
- Some of these mechanisms come into play in the standards world. But parties also rely on FRAND commitments

Is it crazy to have a system that relies on FRAND?

- Why would any firm be willing to make investments in standard-specific investments without knowing in advance how much it will have to be paying in royalties?
- Because there are too many uncertainties ex ante:
 - Nature of implementations and market size
 - Future payments to owners of technically non-essential, but “commercially essential” patents
 - Standard likely to evolve, implying payments to owners of essential patents who are not currently “at the table”
- An understanding that FRAND will be interpreted to prevent patent holders from benefitting from “patent hold-up” should help reassure “implementers” – even if exact royalties cannot be fixed

What is the logic of the “ND” part of FRAND?



- The FR commitment is about limiting the risk of patent hold-up
- The ND commitment seems directed at the fact that some holders of essential patents are vertically integrated and how this might affect licensing incentives

The effect of vertical integration on incentives

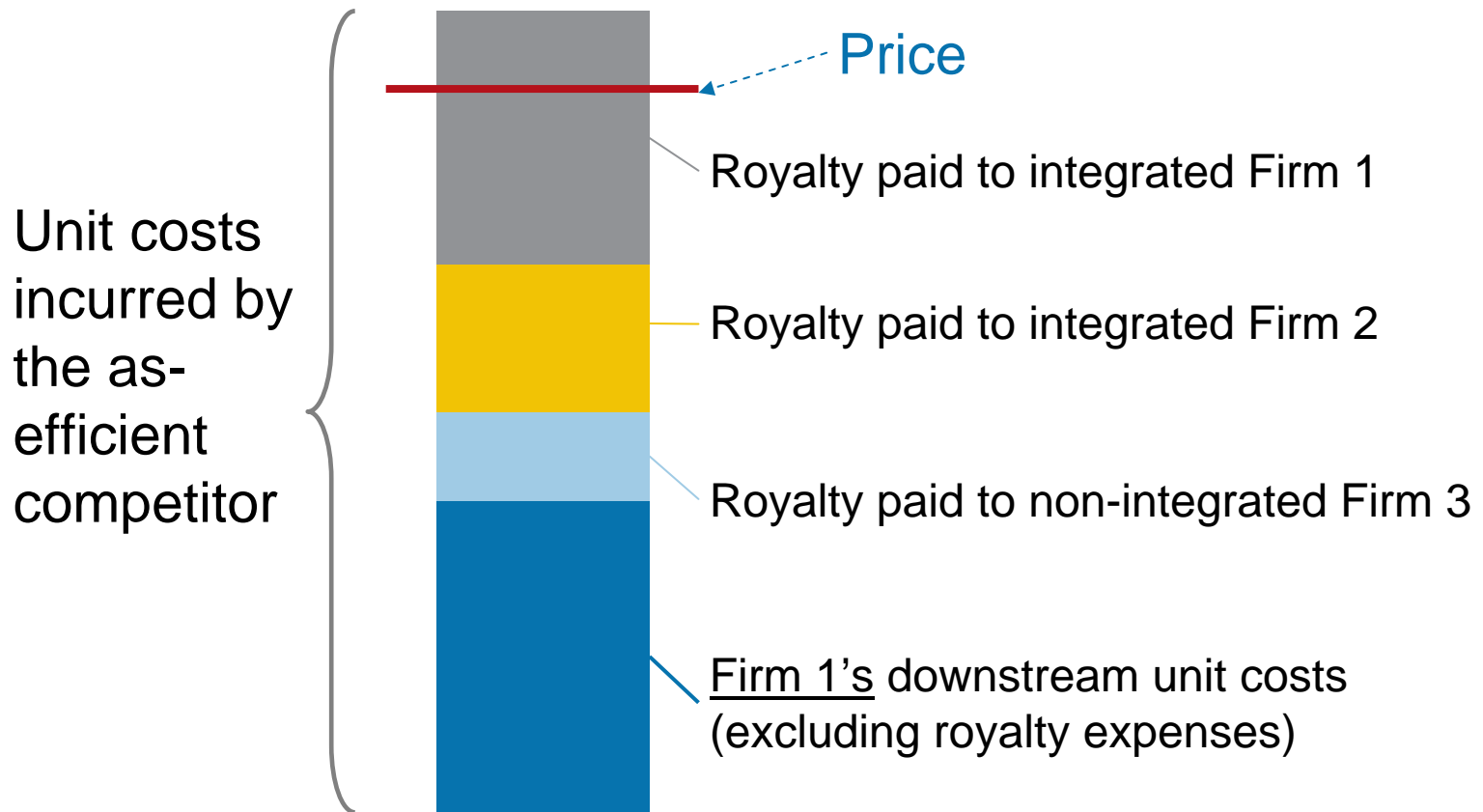
- Non-integrated IPR holders want competition downstream
 - Lower downstream prices mean more sales; for a given royalty rate, more sales mean more royalty revenue
- Vertically integrated IPR holders do not necessarily have the same incentive
 - Excluding competition from non-integrated downstream rivals would reduce royalty revenues
 - But this loss might be more than offset by higher profits at the downstream level
- The “ND” part of the FRAND commitment seems designed to provide non-integrated downstream manufacturers with extra assurance that vertically integrated IPR holders will not engage in exclusionary licensing practices

Testing for exclusionary effect

- It is not enough to look at the royalties charged by vertically integrated IPR holders to non-integrated manufacturers
 - One needs to consider the interaction of these royalties and prices in the downstream market
 - Is there a margin squeeze that would exclude an “as efficient competitor”?

Illustration of the as-efficient competitor test

Given the royalties it must pay, a non-integrated downstream rival could not survive, even if it was as efficient as Firm 1 at the downstream level

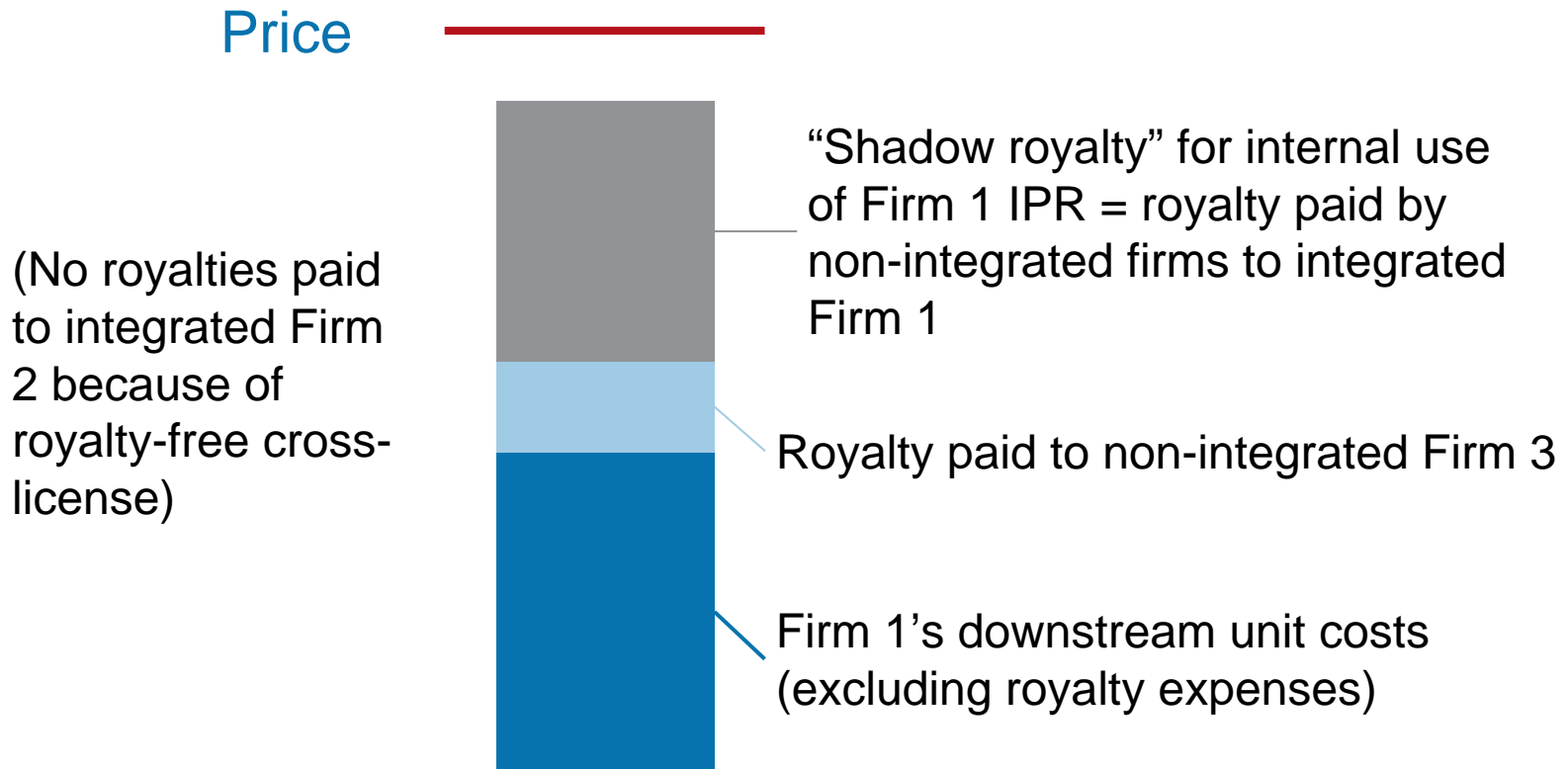


What about simply requiring vertically integrated firms to charge themselves the same royalty rate they charge non-integrated manufacturers?

- Even if this requirement could be monitored (which might be difficult), what if Firm 1 had a cross-license with Firm 2 (assume for simplicity that it was a royalty-free cross-license)?

Cross-licenses can complicate price-cost comparisons

Impact of cross-license on Firm 1's costs means that price covers Firm 1's costs, even though an as-efficient competitor would be excluded (see previous diagram)



FRAND - moving from theory to practice ...

- Generalities unfortunately have been the rule when it comes to defining FRAND. For example, from a GCR FRAND roundtable (April 2008):

“FRAND is designed to give a reasonable return to preserve the incentives for technology holders to innovate and provide that technology, but to prevent those rights holders from unreasonably benefiting from the additional value that accrues to them from being included in a standard and from the removal the competition that they might otherwise have faced.”

More from the GCR FRAND Roundtable (April 2008)

“Reasonable means not too high, but also not too low. There is a complicated balancing act between upstream interests – giving companies the incentive to innovate – and downstream interests to work with that technology and develop products.”

The main candidates for estimating FRAND rates

- Ex ante auction – rates that would have been negotiated if rates had been agreed before the standard was finalized
- Rate that ensures incentive to invest in implementations while providing return to investments in R&D
- Comparable royalty rates

Ex ante auction

- Seminal article is Swanson & Baumol, Antitrust Law J (2005)
- Suppose there are two technologies, A and B, that enable implementations with production costs of 10 and 15 respectively.
- Imagine a sealed-bid auction in which these relative costs are known and in which A and B propose royalties
- B knows it is likely to lose and so bids just over zero
- Owner of A knows it is likely to win – but knows that if B bids near zero it can bid no more than about 5
- Owner of A wins at a royalty near 5
- Royalty limited to ex ante incremental value over next best technology
- Owner of A derives no “patent hold-up” value

Ex ante auction

- Just as ex ante negotiation difficult in practice, difficult to see how this approach could ever be implemented retrospectively
 - Especially since standards never involve just one technology / patent

Rate that balances economics of implementation and economics of investment in R&D

- Disputes over royalty rates arise in settings where the technology and the standard have been a success
- Implies that operating profits from downstream product (excluding royalty expenses) is likely to more than cover downstream investment plus upstream R&D costs (including a risk-adjusted normal return on capital)
- There is likely to be a wide range of “acceptable” royalty rates – how to choose within this range?
 - Goldscheider’s rule – 25% of operating profit to patent holder?

Rate that balances economics of implementation and economics of investment in R&D – other issues

- Would be a measure of the cumulative royalty rate – would still need to address how royalties should be allocated across essential patents
- Determining the minimum necessary cumulative royalty would require data on industry R&D investment
 - Should it be investment specific to the standard?
 - This would raise problems where there are economies of scope in R&D (e.g. R&D produces technology essential to more than one standard)
- In calculating cumulative royalty acceptable to users, should not necessarily assume that downstream product prices are fixed
 - To some extent higher royalties will be passed through; this means there is not some fixed maximum cumulative royalty rate

Comparable royalty rates

- There are multiple issues that have to be faced (to be discussed)
- But this is a method that can be implemented and which courts are familiar with
 - It is basically the approach that the US FTC took in its Rambus decision (reversed on other grounds)

Hypothetical

- Firm X has essential patents but also manufactures
- Firm Y is only active at the IP level
- X and Y have each committed to license on FRAND terms
- Y demands royalty rate that X considers non-FRAND
- Y responds that others have agreed to similar rates
- X responds that just because others have decided to accept non-FRAND rates does not mean that it has to
- X manufactures without a license
- Y sues X for infringement

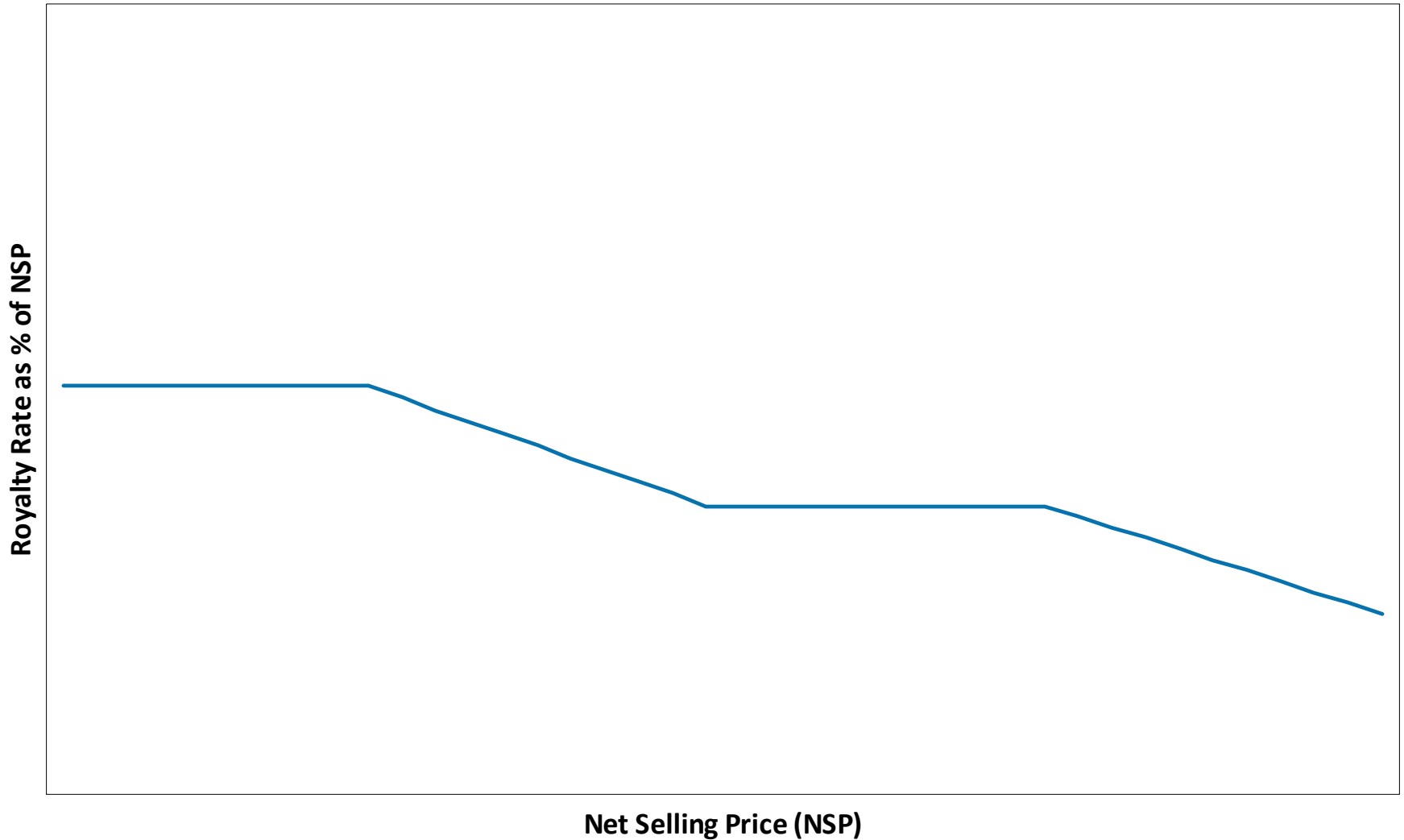
The comparable royalty approach in practice

- Firm X is party to a number of license agreements involving the relevant standard
 - In many cases these agreements are cross-licenses
 - In other cases X has in-licensed technology from a third-party (typically lump-sum payments for a paid-up license)
 - In other cases X has out-licensed to other users (typically structured as running royalties with minimal lump-sum payments)
- Basic logic of the approach:
 - X is subject to a FRAND commitment
 - X cannot complain about Y's proposed royalty if Y's proposal is in line with what X has charged when it was the out-licensor

The main steps in the analysis of X's out-licenses

- Learn the background of X's licenses involving the relevant standard to determine which are effectively out-licenses
 - Some agreements will be structured as cross-licenses but are effectively out-licenses
 - Are there special circumstances that need to be considered?
- Collect data on the royalty rates in these agreements for the relevant standard
 - Royalty rates are frequently a function of net selling price (see next slide)
- Pool these schedules to create a representative royalty rate schedule
- Scale the representative schedule up or down depending on differences in the scope and strength of the patent portfolios of X and Y

Structure of royalty rates in typical out-license



Adjusting for differences in scope and strength

- This is clearly the hardest part
- For mobile phone standards, one could consider using the Goodman & Myers estimates of “judged essential” patents
 - But obviously controversial
 - And what if X and Y are not both covered by Goodman & Myers?
- But, while the problem is hard, it is a problem that licensing executives face all the time in license negotiations (proud lists, etc)
 - In a litigation setting, it seems inevitable that this will require testimony from experts in license negotiations

FRAND in the context of cross-licenses

- What if X and Y are both vertically integrated and Y demands royalty and other terms in a cross-license that X considers non-FRAND?
- X refuses and Y sues for infringement; X counter-sues
- Parties could be required to put one-way licenses on the table that each considers FRAND. Whether these one-way proposals are consistent with FRAND could be tested using the method just described
 - Rates that Y demands could be tested against X's out-license rates (and vice versa)
 - These one-way FRAND rates could be used to calculate any past damages
- Against the backdrop of these one-way FRAND proposals, allow X and Y to negotiate a cross-license covering future uses

Summary of main points

- Unlikely that the need for FRAND commitments can be avoided
- The ND aspect of the FRAND commitment should not be forgotten
- When it comes to deciding whether particular royalty rates are consistent with FRAND, the familiar “comparable royalty rate” method seems like the only practical alternative

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