



Revisiting Injunctive Relief in High-tech Industries with Non-practicing Patent Holders

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The Goal

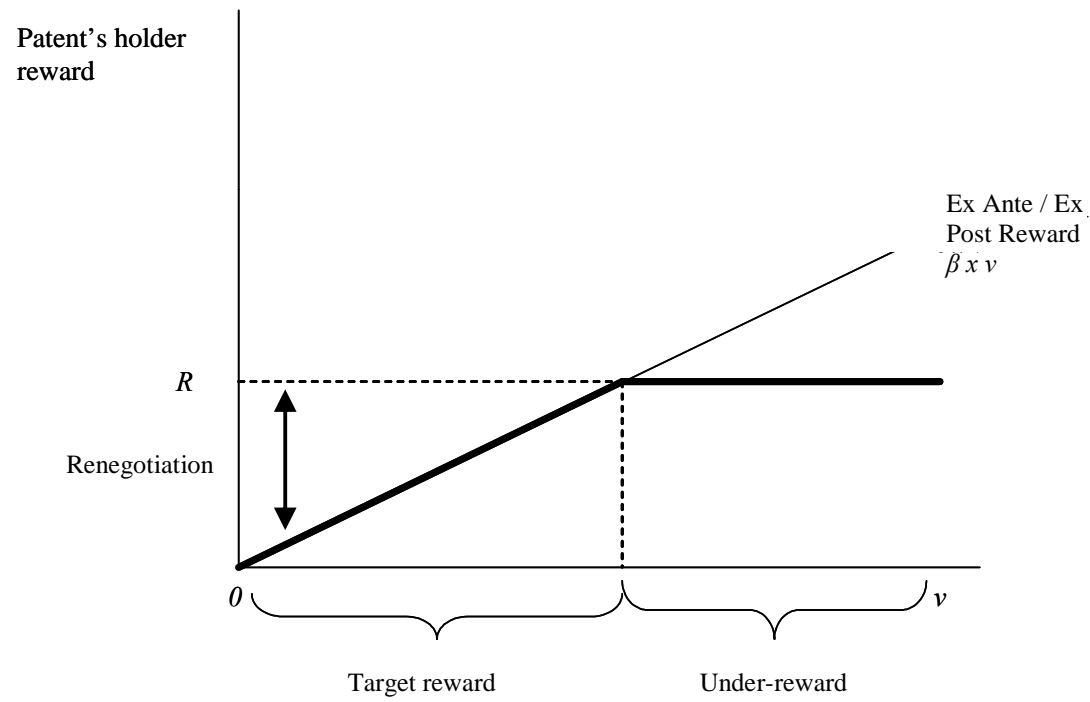
- **Policy oriented paper addressing injunctive relief**
 - We begin with policy proposal put forth in Lemley & Shapiro (2007) and supported by Shapiro (2006)
 - Others in law and economics literature come to similar policy proposals, including Miller (2007) and Burk & Lemley (2003)
 - District courts following this literature after *eBay* decision
- **Reply to calls for categorical denial of injunctions for non-practicing patent holders**
 - “...the model presented here implies that economic efficiency and innovation will be promoted if permanent injunctions are no longer routinely issued to non-competing patent holders upon a finding of infringement.” (Shapiro 2006, p. 24)

The Motivation for Injunctive Relief

- **Assume the same general setup as in Shapiro (2006), but with no holdup:**
 - Manufacturer A and patent holder B
 - Valid patent (for now) on innovation of value v
 - A faces no redesign or switching costs
 - β captures B's bargaining power
 - If ex ante license, $f = \beta v$ (benchmark)

- **If no ex ante agreement and infringement found:**
 - Court awards damages and prospective reasonable royalty, R
 - If courts knew v and β with certainty, $R = \beta v$
 - Would never need injunctive relief
 - Uncertainty over v and β leads to injunctions

Compensation with no Holdup



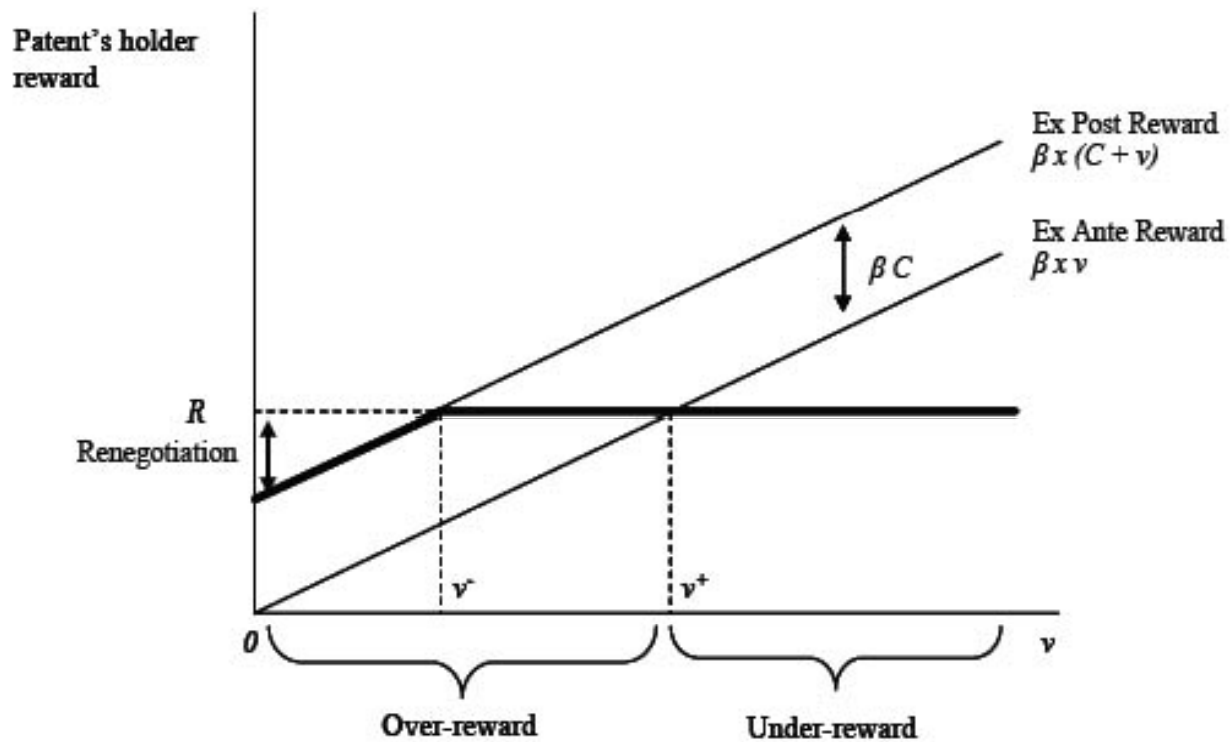
Patent Holdup Changes Things

- **Assume manufacturer A develops innovative product with value V**
 - B has patented incremental improvement, value v
 - Technologies are one way complements
 - A is unaware of B's patent, extends V to $V+v$

- **B discloses IP only after manufacturer has invested in irreversible capital outlays**
 - Manufacturer A must redesign product to avoid infringing
 - Ex ante, redesign cost is zero
 - Ex post, redesign cost is positive (time and money)
 - C reflects difference between ex ante and ex post redesign costs



Compensation with Holdup



Unpacking the Holdup Finding

- **Assumes value of patent small compared to manufacturer's non-infringing alternative**
 - $v < V$ and represents minor component
 - If $v > V$, patented technology defines bulk of product and under-compensation more likely
 - If C is very small, so is holdup
- **Assumes technology involves at least two components, but only one-way complementarity**
 - If strictly complementary innovative components, infinitely costly to redesign product in non-infringing way ex ante and ex post
 - ...thus $C = 0$, no holdup

Assumptions About Litigation Options

- **Assumes limited strategies for manufacturer**
 - Allow probabilistic patents: patent valid with probability $\theta < 1$
 - Ex ante target is now $\theta\beta v$
 - Holdup model assumes manufacturer takes patent as valid ex ante
 - This assumption drives finding of ex ante holdup

- **Expand A's options to include seeking a declaratory judgment on patent validity**
 - A wins with probability $(1-\theta)$, gets v and pays nothing to B
 - A loses with probability θ , gets v but has to pay βv
 - B's expected payout is $\theta\beta v$, same as ex ante target

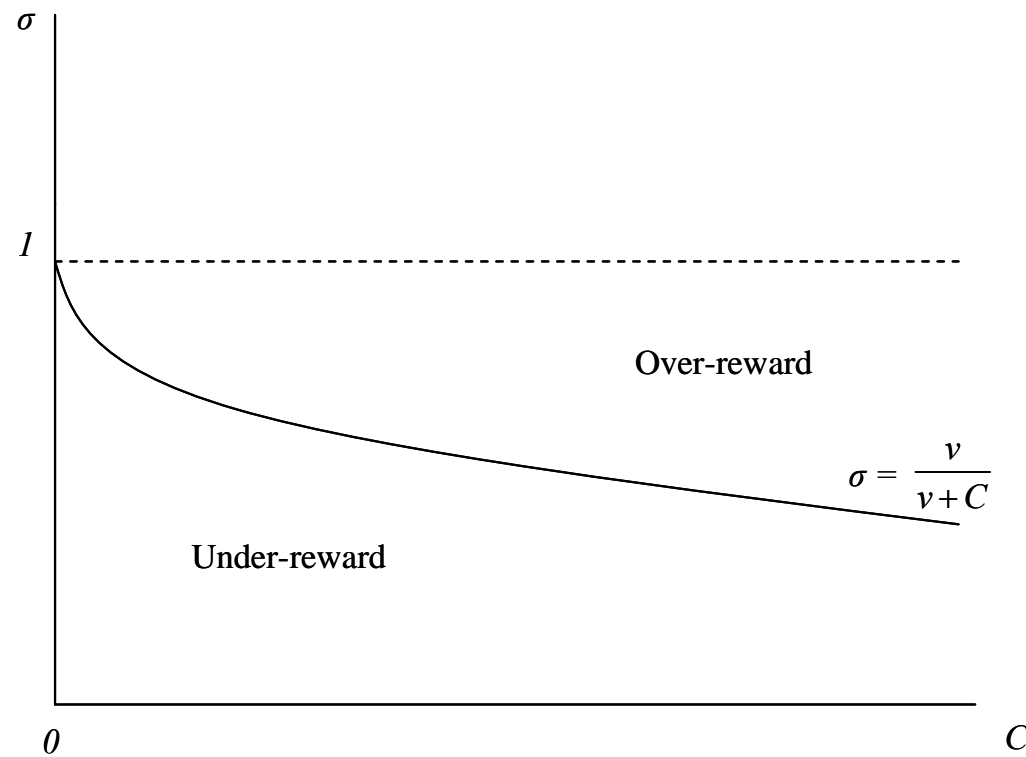
Assumptions About Detection

- **Assumes all infringements found with certainty**
 - If infringement not always found, cannot assume A was innocent victim of patent ambush
 - Must allow for strategic behavior by manufacturer
 - Intentional infringement and purposeful ignorance (no due diligence in IPR search)
 - Here reasonable royalty would be free option for manufacturer

- **Allow for uncertainty over detection**
 - Set odds of B discovering infringement at $\sigma < 1$
 - Alternatively, σ could capture odds of discovery plus odds of B having credible lawsuit threat
 - Ex post, B's expected payoff is now $\sigma\theta\beta(C + v)$
 - If σ is sufficiently small, expected payoff can be *smaller* than ex ante target $\theta\beta v$



Under-compensation Can Result





Non-Practicing Patent Holders and Holdup

- **Consider two manufacturers, A_1 and A_2 , with differentiated goods**
 - A_2 's product is non-infringing, A_1 's inadvertently infringes
- **Contrast two scenarios that differ on who holds the patent**
 - Scenario 1: Patent is held by non-practicing B
 - B must reach agreement with A_1 in order to earn any revenues
 - Scenario 2: Patent is held by competing manufacturer A_2
 - A_2 earns revenues downstream on its own product, can credibly threaten not to license A_1
 - Holdup could occur in either case, but risk is actually higher under scenario 2 because A_2 can have an interest in shutting down A_1
- **Categorically denying injunctive relief for non-practicing patent holders is not justified**



Relaxing Assumptions

- **With no switching costs, optimal to grant injunctions by default**
- **With switching costs and restrictive assumptions, optimal to set finite R, never grant injunctions whenever holdup is a risk**
- **Reality lies somewhere in-between: Injunction decisions should be case specific**
 - Broadening the analysis to include realistic scenarios, like intentional infringement, availability of patent challenge, and uncertain detection of infringements shows there is risk on both sides
 - Can over-compensate patent holder (holdup) *or* under-compensate patent holder



Policy Implications

- **The majority opinion in *eBay* rejected categorical limits on injunctions and confirmed the 4-factor test**
 - Justice Thomas noted “...traditional equitable principles do not permit such broad classifications [for categorical denials]. For example, some patent holders, such as university researchers or self-made inventors, might reasonably prefer to license their patents, rather than undertake efforts to secure the financing necessary to bring their works to market themselves.”

- **Optimal policy hinges on empirical evidence, not theory**
 - An error-cost approach is sensible
 - How likely is patent holdup under particular circumstances?
 - How costly would holdup be if it did occur?
 - How costly would it be if some patent holdup not caught?
 - Relationship between V and v may inform court, as will B’s litigation history
 - But practicing versus non-practicing is not a useful guide