

The Fallacies of Patent Holdup Theory

Alexander Galetovic &
Stephen Haber

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This presentation summarizes our paper, "The Fallacies of Patent Holdup Theory," *Journal of Competition Law and Economics* 13:1 (2017), pp. 1-44.

Fundamental fallacies often lead researchers to miss the evidence right in front of them

The theory of the peaceful Maya

Fallacy 1: Mayan hieroglyphs were unlike other glyph-based writing systems →

Fallacy 2: Non-calendrical Mayan hieroglyphs were indecipherable (even though scholars had the Landa alphabet) →

Fallacy 3: No written evidence to challenge the hypothesis that the Maya were ancient hippies →

Stelae depicting Mayan warriors subjugating rivals were ignored. Scholars who argued against the theory were ridiculed →

It took 40 years to overturn the fallacies, and reject the theory.

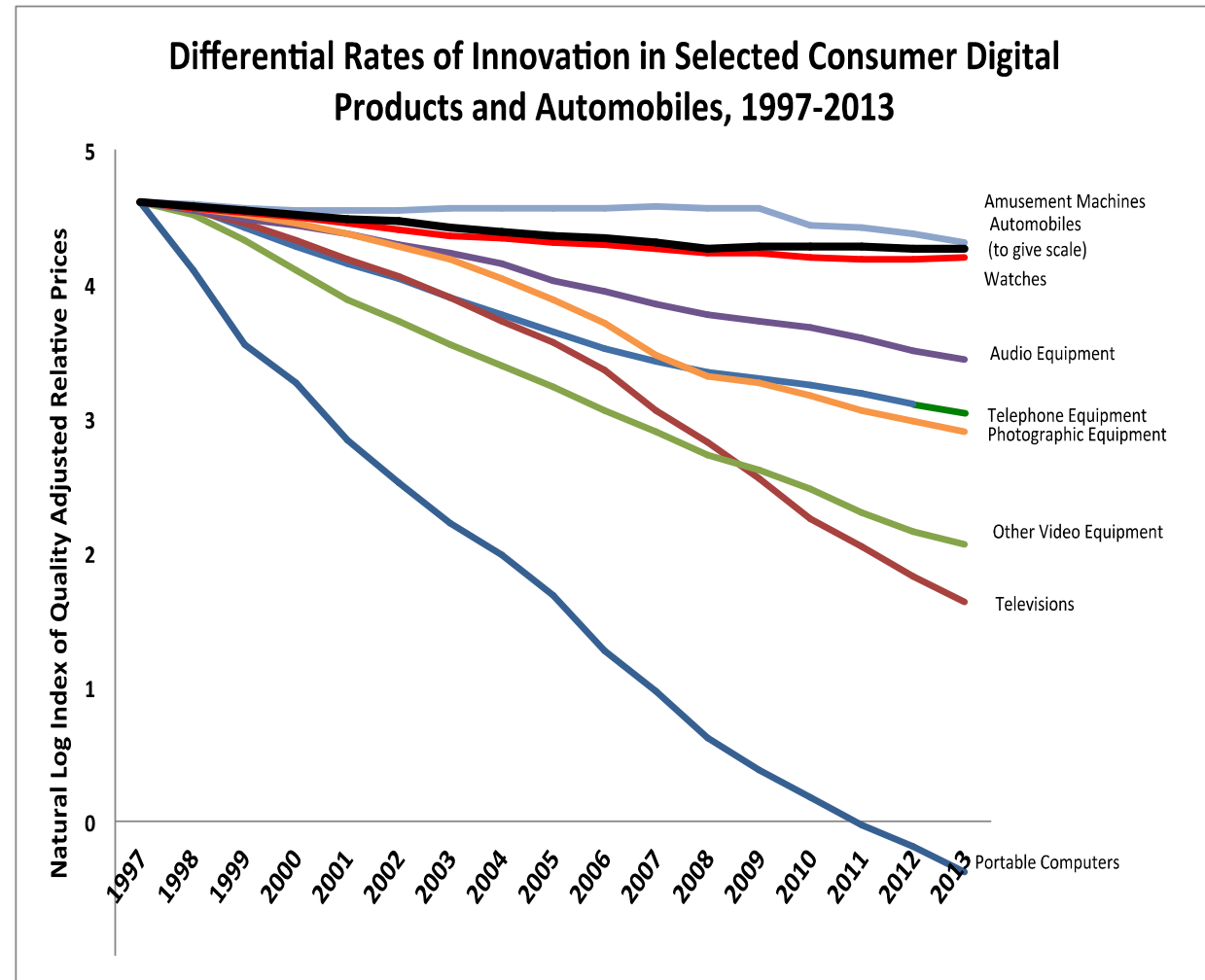


Patent Holdup Theory is an example of the phenomena: Consider its claims

1. Patent holdup is a straightforward variant of holdup as understood in transaction cost economics→
2. Patent holdup repeated multiple times = Royalty Stacking→
3. Royalty stacking is amplified by the fact that a SEP confers market power beyond the value of the patent itself→.
4. 1+2+3→ royalties are “too high,” rents are being earned, markets will fail, innovation will stagnate, consumers will be harmed→
5. The problem is severe in SEP-intensive, IT industries, particularly, mobile phones, personal computers, and IoT→
6. Antitrust intervention and patent reform is required.

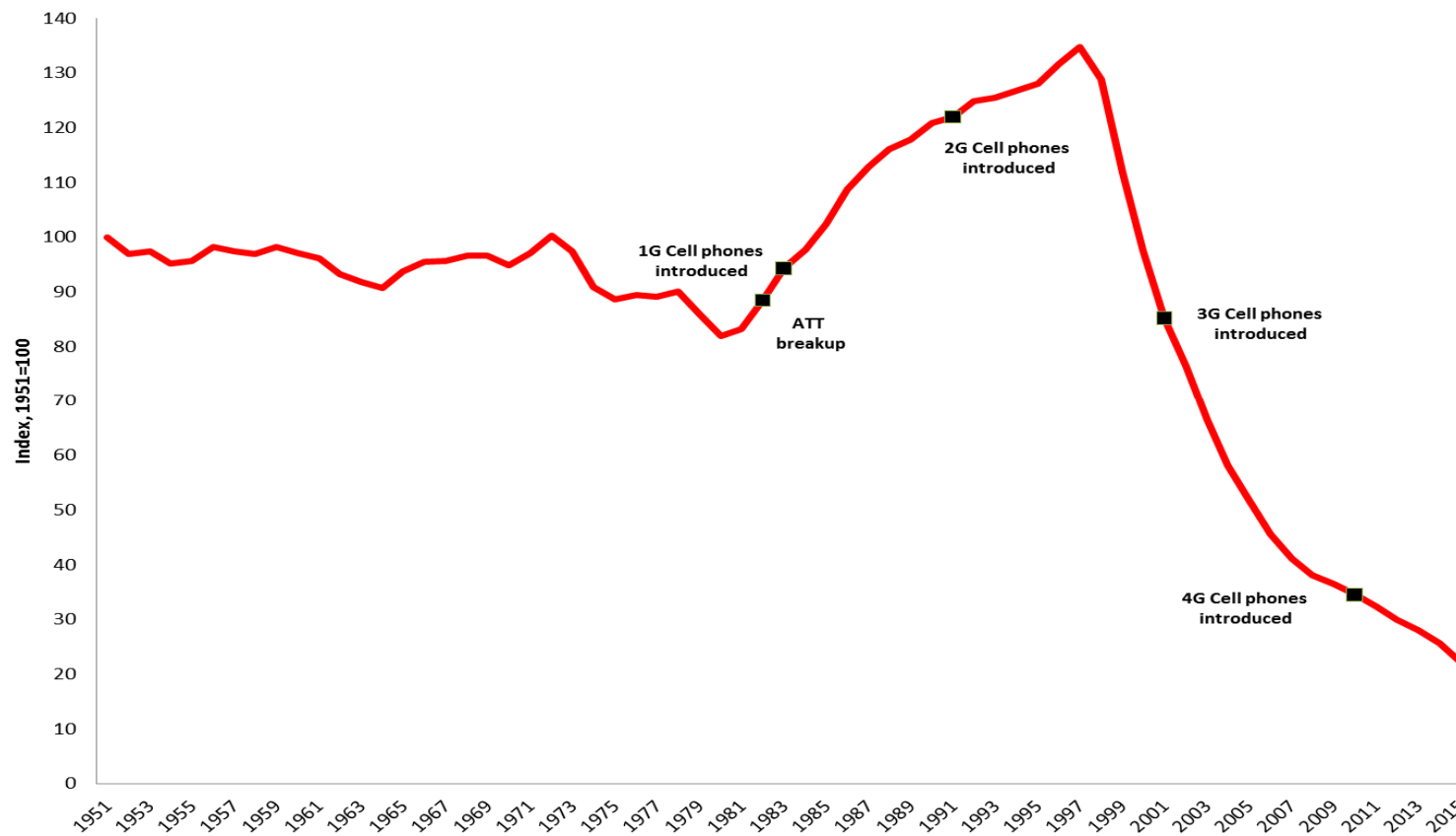
The “Stelae” of Patent Holdup Theory 1: Fast Rates of Innovation in SEP-intensive IT products— especially mobile phones and computers

There is no evidence
of stagnation.
(Galetovic, Haber, &
Levine, JCLE, 2015).



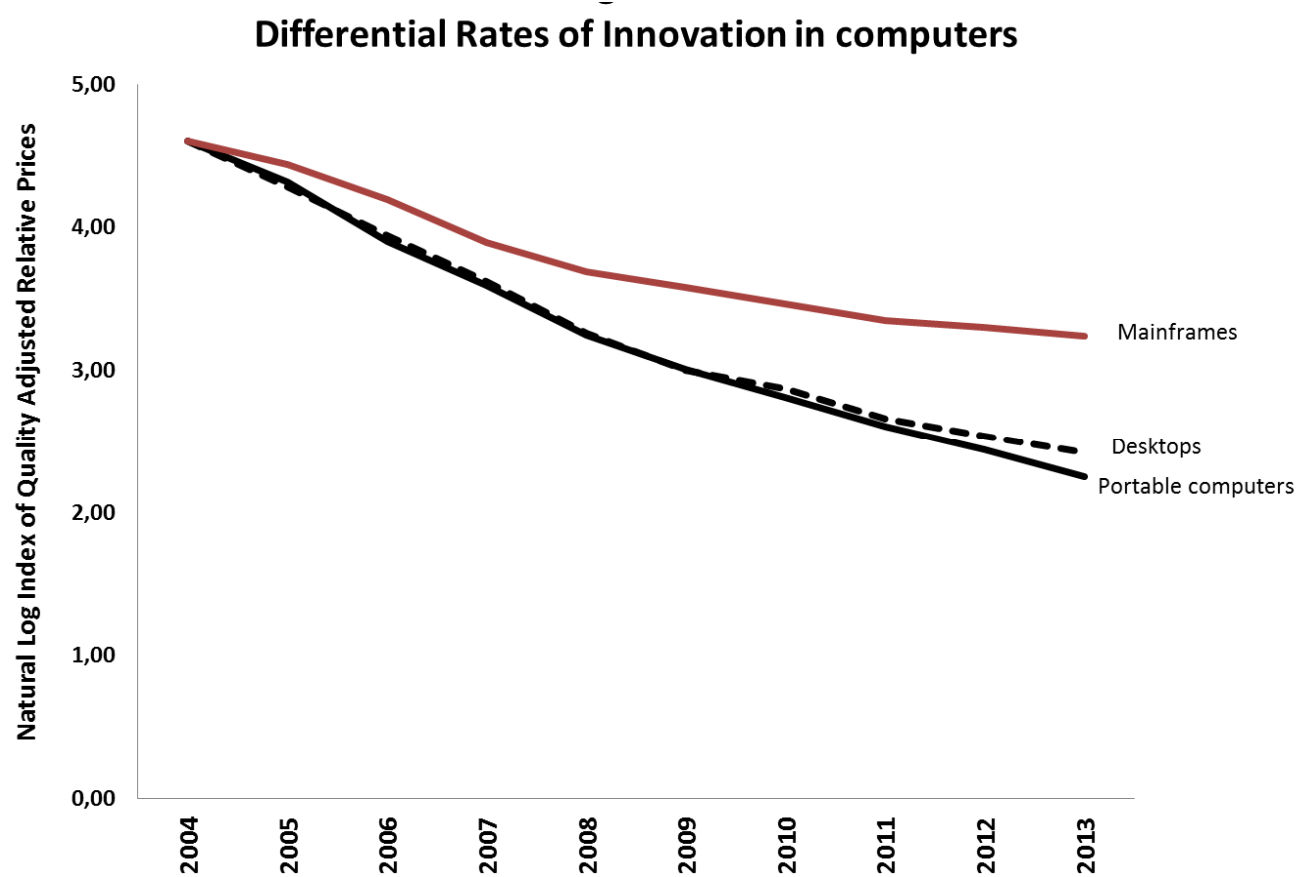
In mobile phones, rapid innovation occurred precisely during the period when technology development and product integration moved into separate, specialized companies

Quality-Adjusted Relative Prices of Telephone Equipment according to the US BEA, 1951-2015)



Even controlling for Moore's Law, product fixed effects, year fixed effects, and de-trending the data, being SEP-intensive does not come at a cost to innovation (Galetovic, Haber, & Levine JCLE 2015)

The intuition of the GHJL difference in differences



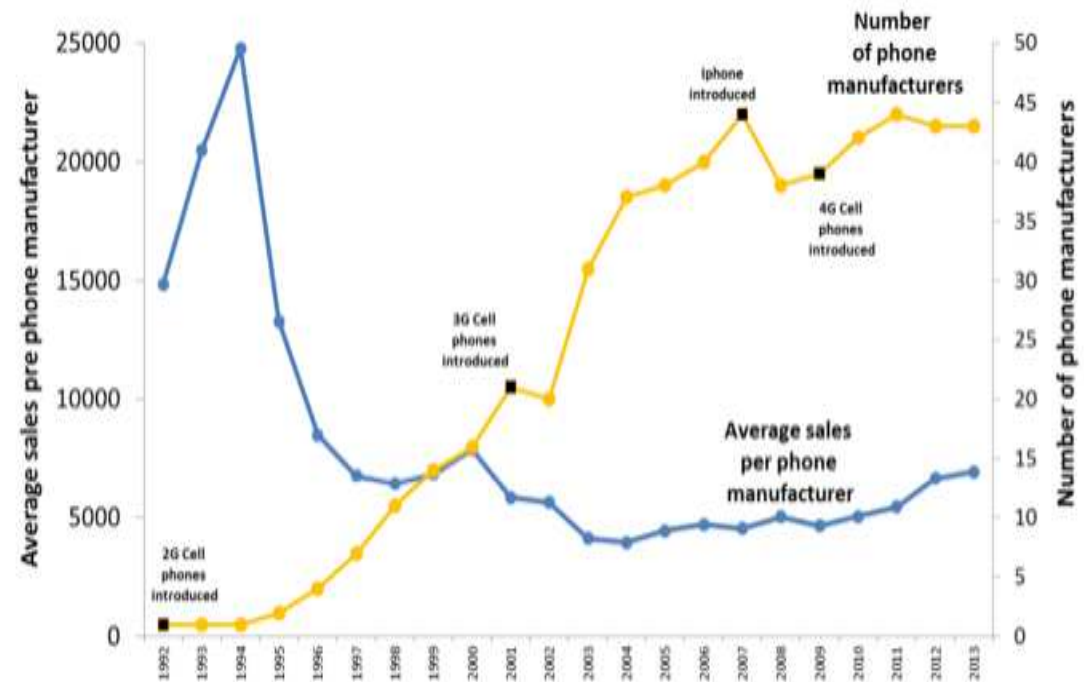
The Stelae of Patent Holdup Theory 2:

If innovation is threatened by high patent royalties, how do we explain rapid growth in output and entry by new OEMs?

1. SEPs increased rapidly.
2. SEP holders grew from two to 128.
3. But, prices fell.
4. Output grew 62 fold
5. ...and manufacturers entered the market

(Data from Galetovic and Gupta 2016)

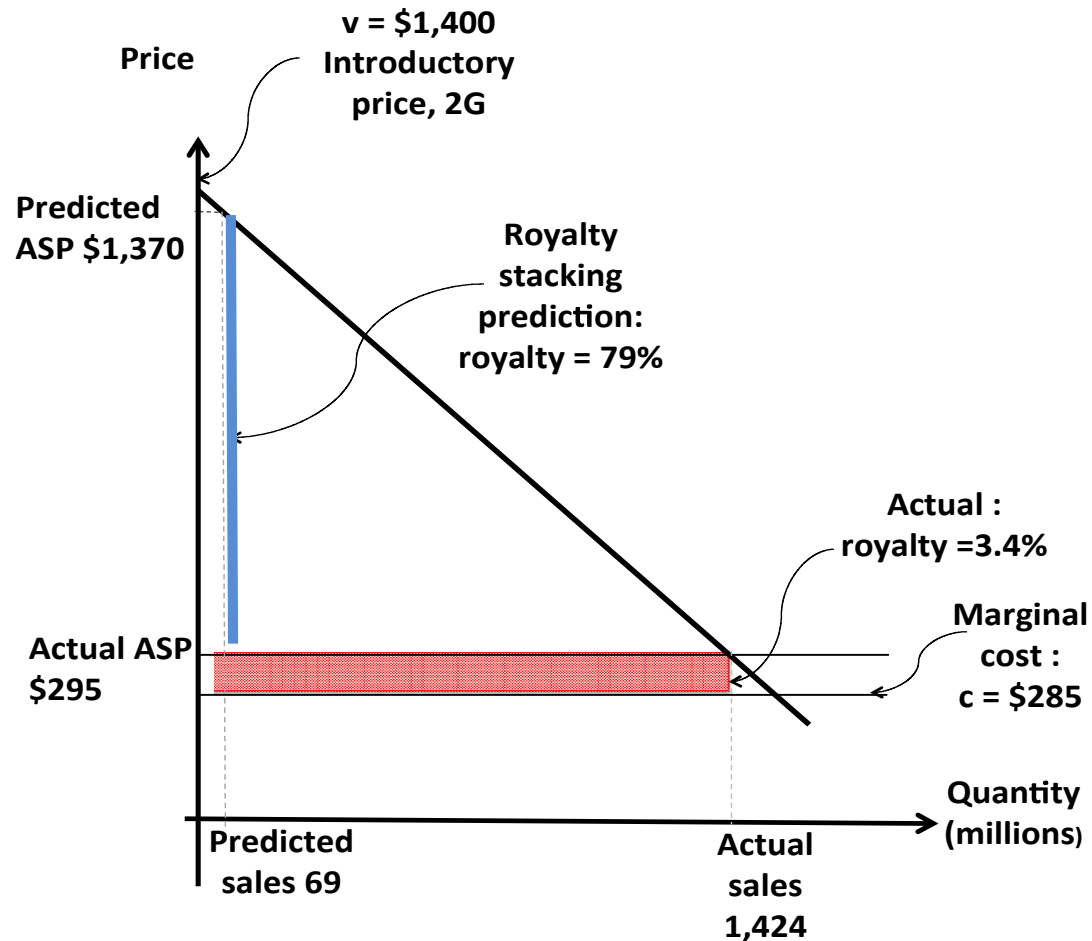
Number of of phone manufacturers and average sales per firm
(1992-2013, millions of 2013 \$)



The Stelae of Patent Holdup Theory 3:

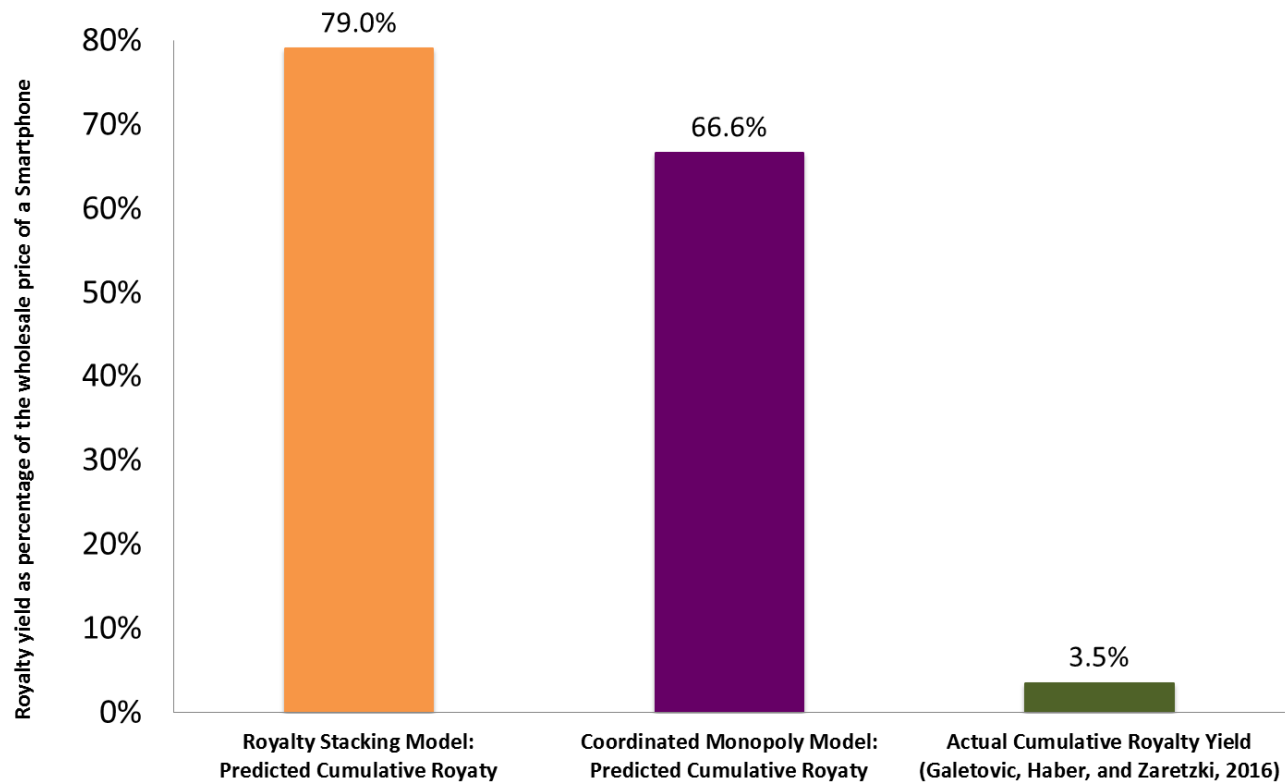
The cumulative royalty yield on a smart phone is less than 1/20th that predicted by a royalty stacking model

Royalty stacking model from Lemley & Shapiro (2007), parameterized with actual data on output, prices, costs, and royalties from Galetovic, Haber, & Zaretzki (2016)

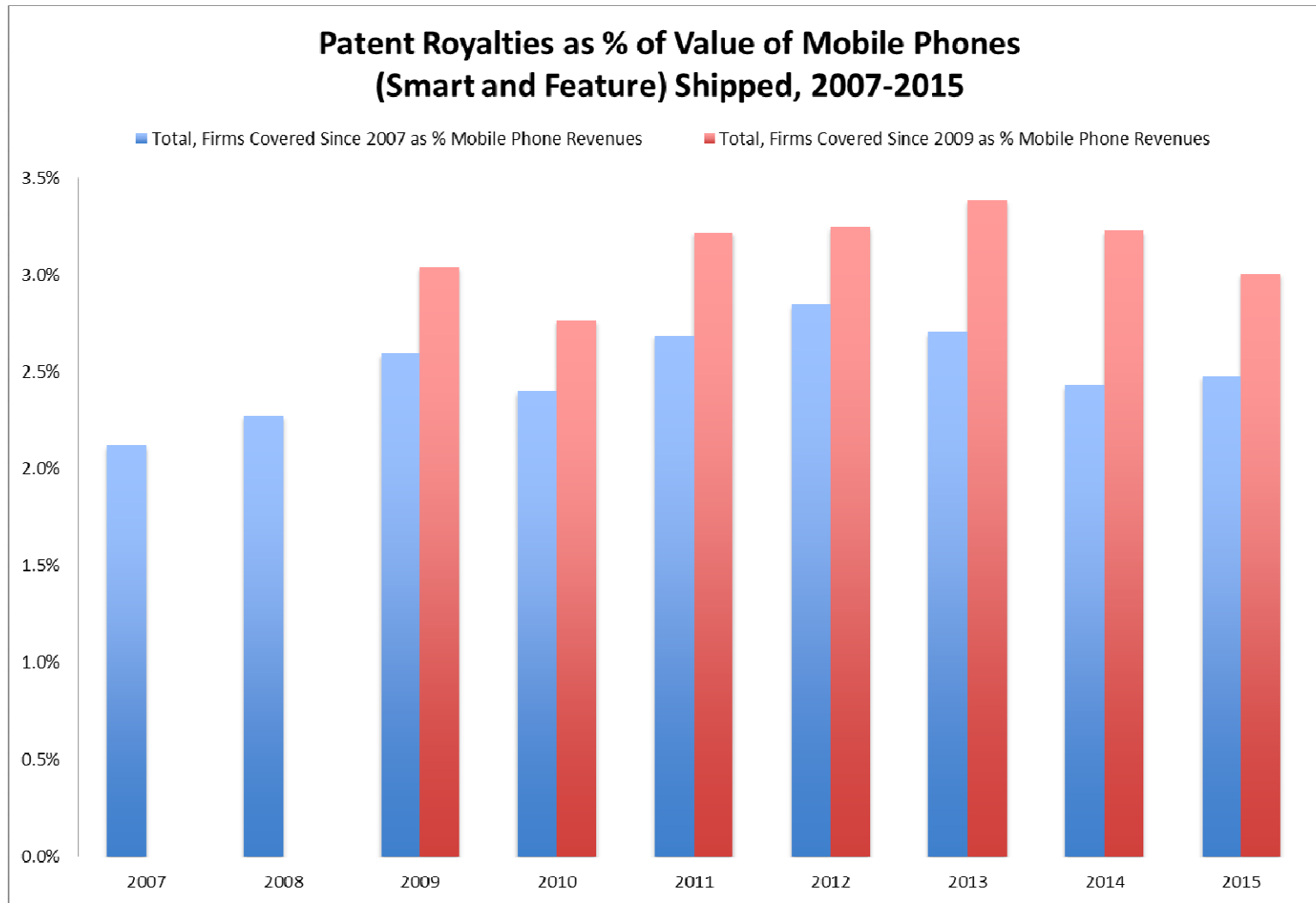


The gap between the predictions of the theory and observed reality in the smartphone industry

Royalty yield predicted by monopoly and the actual worldwide royalty yield in smartphones in 2015



The (low) cumulative royalty yield on a mobile phone has been stable since at least 2007



The predictions of PHT do not fit the facts because, like the theory of the peaceful Maya, it is based on a sequence of three fallacies

Fallacy 1: *PHT is a straightforward variant of holdup as it is understood in transaction cost economics.*

Fallacy 2: *Royalty stacking is holdup repeated over and over on the same product.*

Fallacy 3: *Standard Essential Patents Contribute Little or No Value to the Markets they Help Create*

Fallacy 1: PHT is not a variant of the established theory of holdup. Both its variants contradict the established theory –and are inconsistent and incomplete theories

Table 1: Transactions Cost Holdup and Patent Holdup Compared

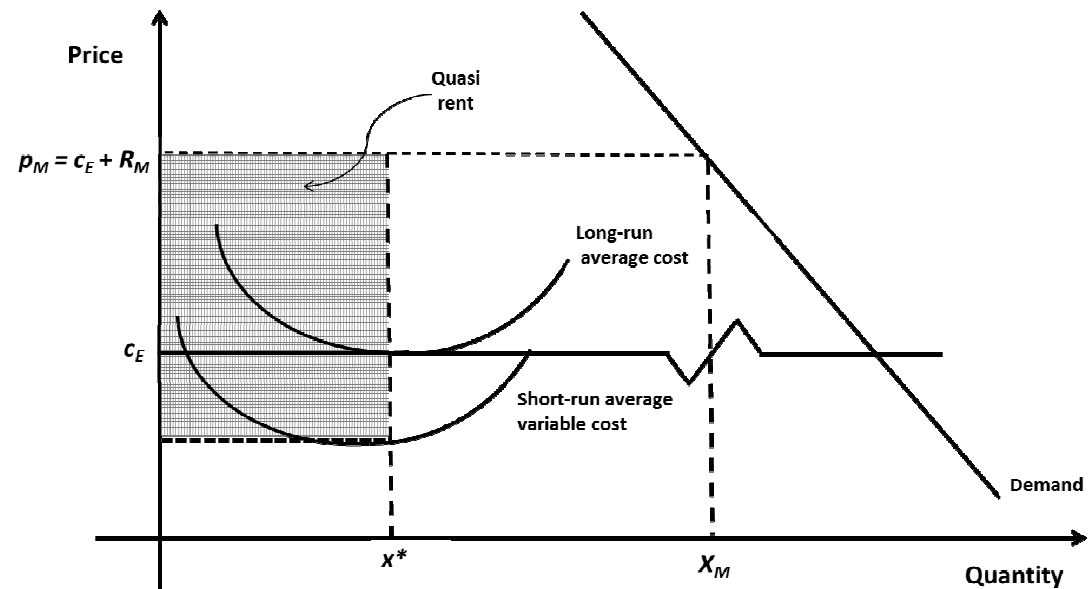
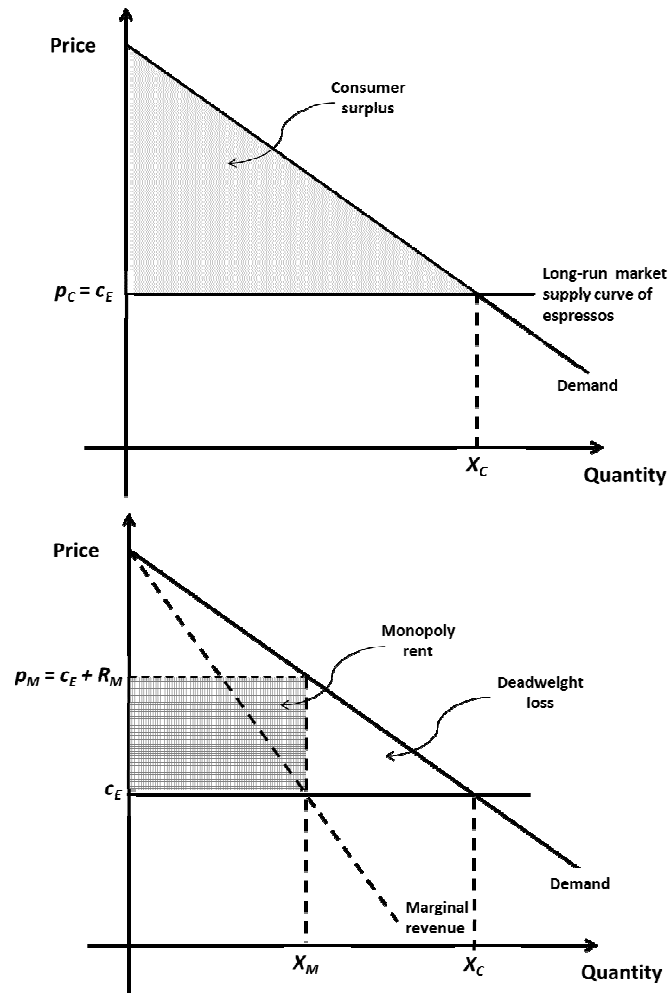
	Transactions-Cost Holdup	Standard-Setting Holdup	Inadvertent trespass
Sunk and specific investment	Yes, a relation-specific investment	Yes, a standard specific investment	Yes, investment is specific to the infringed patent
Incomplete contract?	Yes	Yes	No contract
Opportunistic surprise?	Yes (otherwise it is anticipated and parties adapt)	No (manufacturers participated in setting the standard)	Yes (patent holder demands royalties)
Prediction?	Structural or contractual adaptation anticipates holdup, prevents it and sustains trade	Game begins with holdup. No reinvestment or no trade	Game begins with holdup. No reinvestment or no trade

Fallacy 2 of Patent Holdup Theory

Patent holdup repeated over and over = royalty stacking.

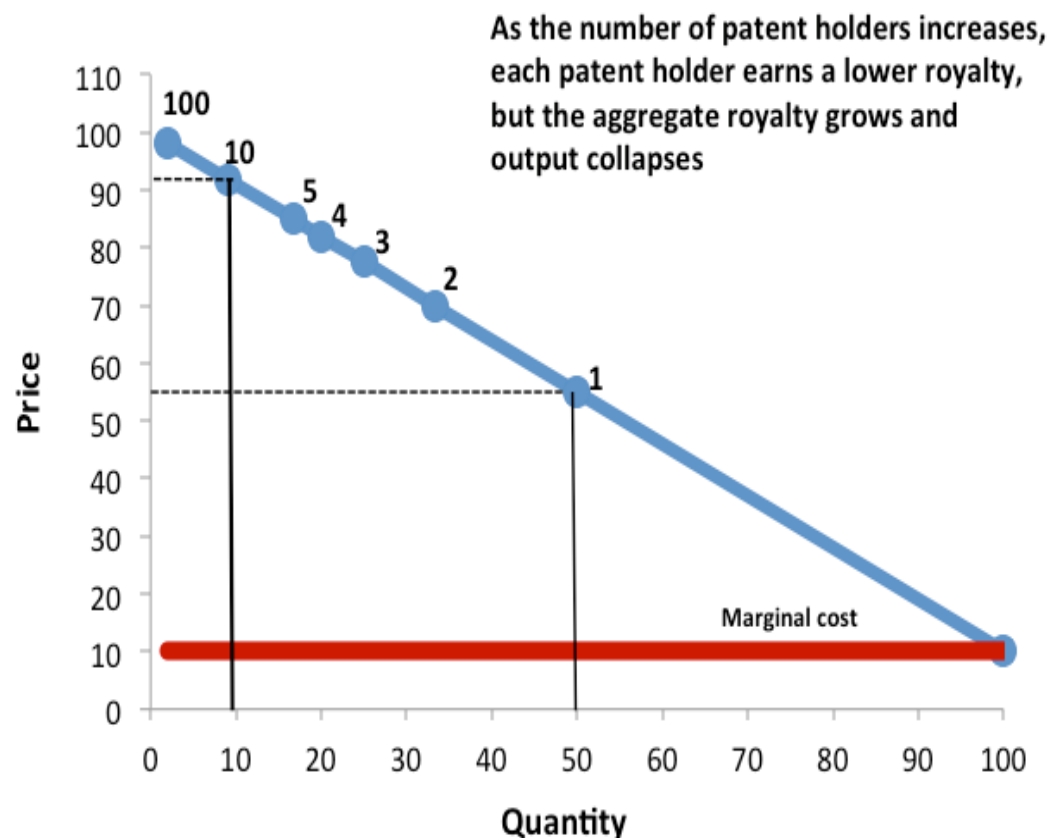
False: Holdup cannot be repeated numerous times on the same product. Quasi rents are bounded by the firm's short run costs. Patent holdup theorists conflated holdup with the exercise of market power by an upstream supplier.

Holdup and the exercise of market power have different mechanics



Royalty stacking is not holdup repeated over and over, it is the exercise of market power repeated over and over

Note the different implications. With holdup, a single patent owner earns large royalties (He takes the quasi rents). With royalty stacking, the cumulative royalty rate would be high, but individual royalty rates would be low.



The problem for Patent Holdup Theory

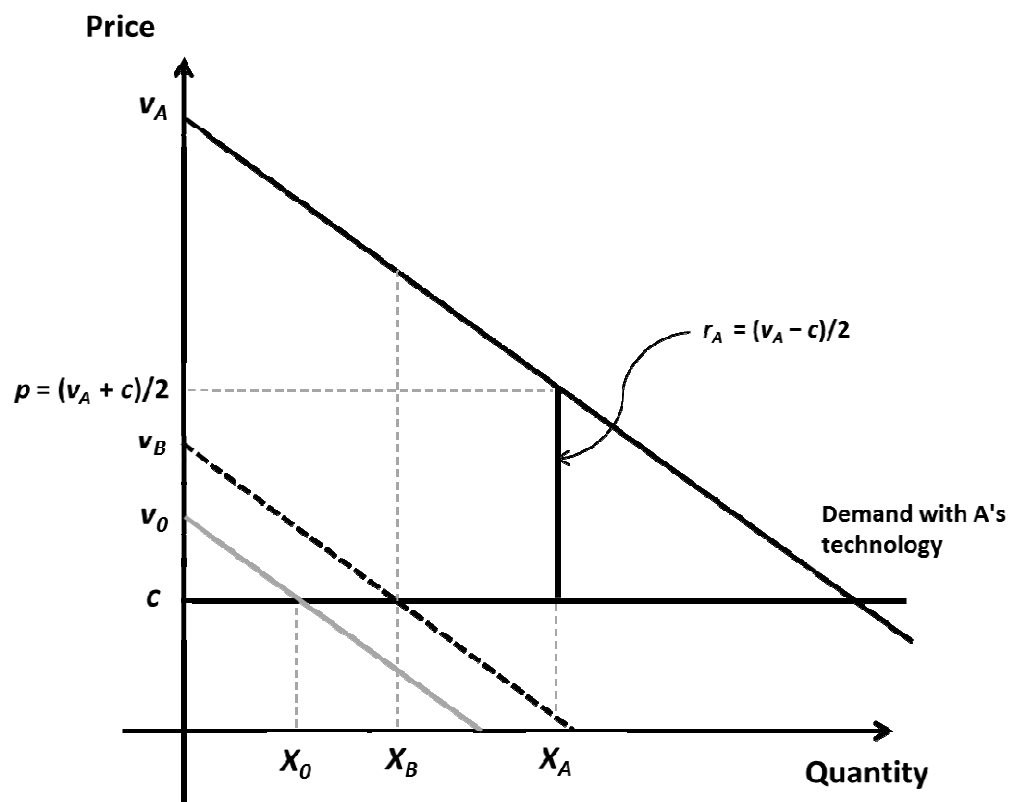
- If patent holdup is not holdup, and if royalty stacking is not holdup...
- Why not just say that the patent system creates a potential Cournot Complements problem?
- One could, but then there would be no antitrust issue. A patent, by design, confers a limited amount of market power on its owner →
Something more must be claimed about patents and market power....

Fallacy 3 of Patent Holdup Theory: Patented Technologies Contribute Little or Nothing to the Markets they Help Create

- Variant 1: When a patented technology is included in an industry standard, the SEP holder can appropriate more than the incremental value of his technology. He gets market power beyond that which inheres to the patent.
- Variant 2: When a patented technology is included in an industry standard, the SEP holder can appropriate the value of standardization. He gets market power beyond that which inheres to the patent.

The problem with the “extra market power” argument: one has to ignore Arrow 1962...

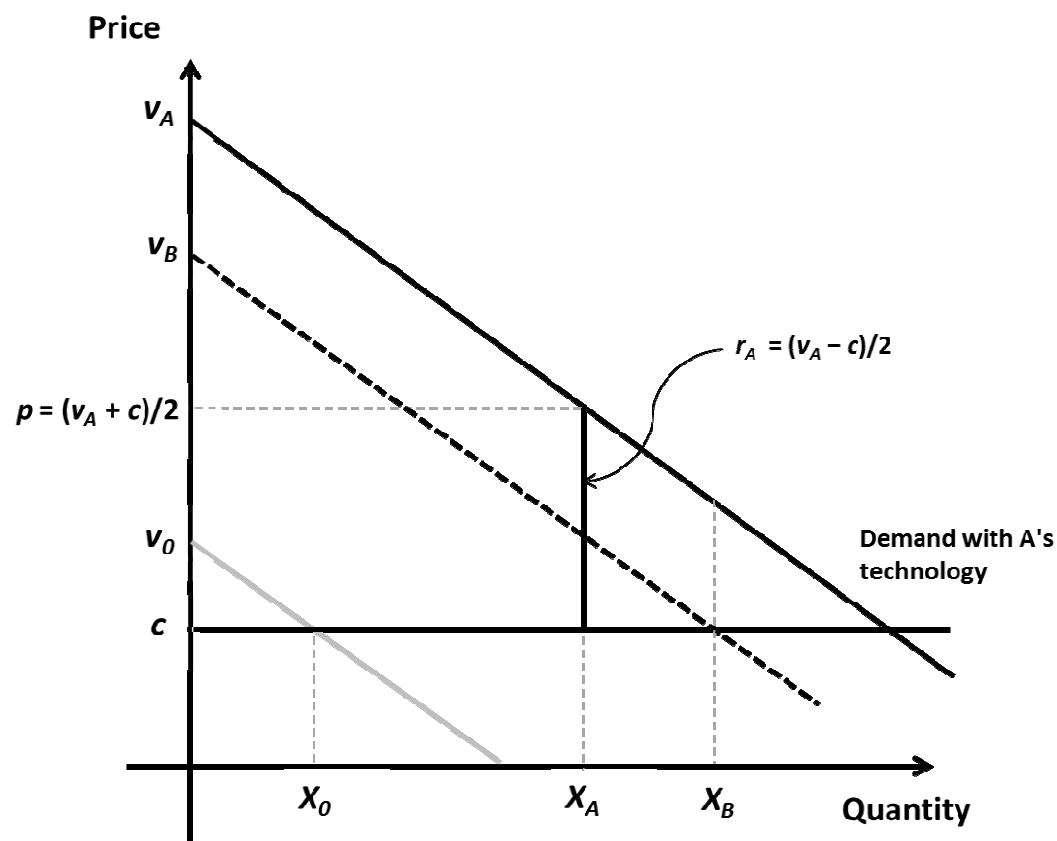
The purpose of an IT SDO is not to make incremental technical improvements to a standard. It is to push out the demand curve; to make large jumps valued by consumers so that everyone is better off. If innovations are drastic, then the monopolist charges less than $v_A - v_B$!



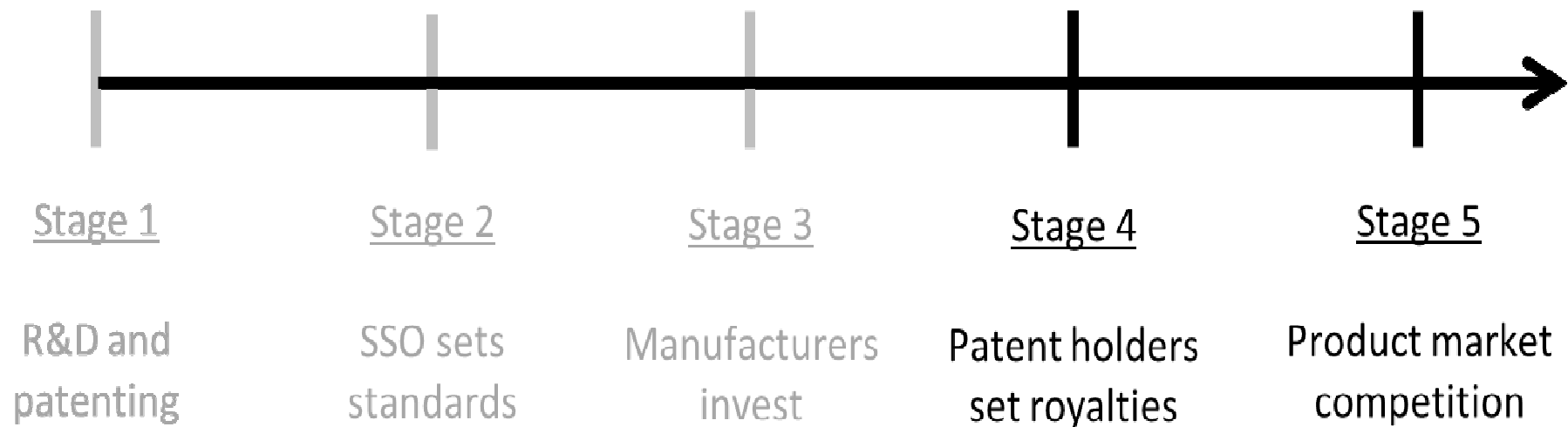
What if the innovation is non-drastic?

Under what conditions is it true that the monopoly price is more than $v_A - v_B$?

1. When one can demonstrate that there really were two alternative technologies on offer that were close in value to consumers.
2. Even then one has to accept an arbitrary assumption of PHT: Firms A and B not allowed to backward induct to R&D stage



PHT makes an arbitrary assumption about the process of innovation in SEP-intensive, IT industries: Technology producing firms and manufacturers operate behind a veil of ignorance until patent holders set royalties



The power of fallacies: researchers focus on demonstrating the assumptions of the theory, rather than testing the theory

- The literature provides anecdotes about royalty demands or opportunistic behavior—but these contradict royalty stacking, are non-systematic, and according to some critics are inaccurate.
- The literature cites studies on patent thickets—but this is evidence about an assumption of the theory, not a test of the theory's implications

We are not the first to point this out

Denicolo et.al, (2008)

Gerardin, Layne-Farrar and Padilla (2008)

Epstein, Kieff and Spulber (2012)

Layne-Farrar (2014)

Egan and Teece (2015)

Mallinson (2016)

We need a new theory

The theory needs to explain the facts about SEP-intensive IT products: output increases, quality improves, prices fall, profit margins are healthy enough to attract new entrants and incentivize R&D, and consumer welfare increases.

The necessary elements of that new theory:

1. R&D by technology developers and the setting of industry standards occur concurrently and in a protracted fashion;
2. The development and licensing of technology is characterized by large sunk costs;
3. Technology developers, manufacturers, and other stakeholders play a repeated game in which the technology developers earn reputational rents for being reliable long-run partners of manufacturers and other stakeholders;
4. Technology developers, manufacturers, and other stakeholders compete with alternative technologies and products.