

The Fallacies of Patent Holdup Theory

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What are the claims of Patent Holdup Theory?

1. Patent holdup is a straightforward variant of holdup as understood in transaction cost economics.
2. Patent holdup repeated multiple times = Royalty Stacking.
3. A patent that is essential to a standard confers market power beyond the value of the patent itself.
4. 1+2+3 → rents are being earned, markets will fail, innovation will stagnate, consumers will be harmed, → a policy response is required.
5. The problem is particularly acute in SEP-intensive, IT industries, because there are thousands of patents that may be used to “hold up” innovation.

What are the questions to be answered?

1. Is Patent Holdup Theory a straightforward variant of holdup as it is understood in Transaction Cost Economics? Answer: No.
2. As a matter of logic, can the three mechanisms—Patent Holdup, Royalty Stacking, & Market Power Conferred by Standards— be bundled together? Definitely Not.
3. Does the literature present evidence that any one of these three mechanisms has harmed innovation? Answer: No.
4. Is systematic evidence about equilibrium economic outcomes in SEP-intensive, IT industries consistent with the predictions of Patent Holdup Theory? Answer: No.

The Transaction Cost Economics (TCE) Theory of Holdup

- TCE holdup has 3 essential elements in order for holdup to potentially occur: (i) a relationship specific asset; (ii) an incomplete contract, (ii) opportunistic surprise.
- TCE made a prediction: firms (working together) would make structural and contractual adaptations to solve holdup and sustain trade.
- TCE advanced a policy prescription: contractual & structural adaptations sustain and create trades; competition authorities should not misconstrue these adaptations as anti-competitive behavior.

Why Patent Holdup Theory (PHT) is an Incomplete and Inconsistent Theory that contradicts TCE holdup

Variant 1 Patent holdup occurs through standard setting.

There is an incomplete contract, specific investments, but no opportunistic surprise, because OEM's have worked with patent holders to devise the standard! Why did they invest knowing they would be held up? A theory cannot simultaneously claim that OEMs are opportunistically surprised but that opportunistic surprise is unnecessary for holdup to take place.

Variant 2 Patent Holdup occurs through Inadvertent trespass.

There is a specific investment and opportunistic surprise, but no contract to be renegotiated. The theory does not explain how a firm that knows it risks trespassing on an IPR (because there is no contract ex ante) does not set aside a reserve to cover such trespasses—when it has insured itself against any number of other risks. A theory cannot simultaneously claim that patent holdup is a serious risk to innovative firms, but that the firms engaged in innovative activities are unaware of that risk.

Implications of an Incomplete and Inconsistent Theory

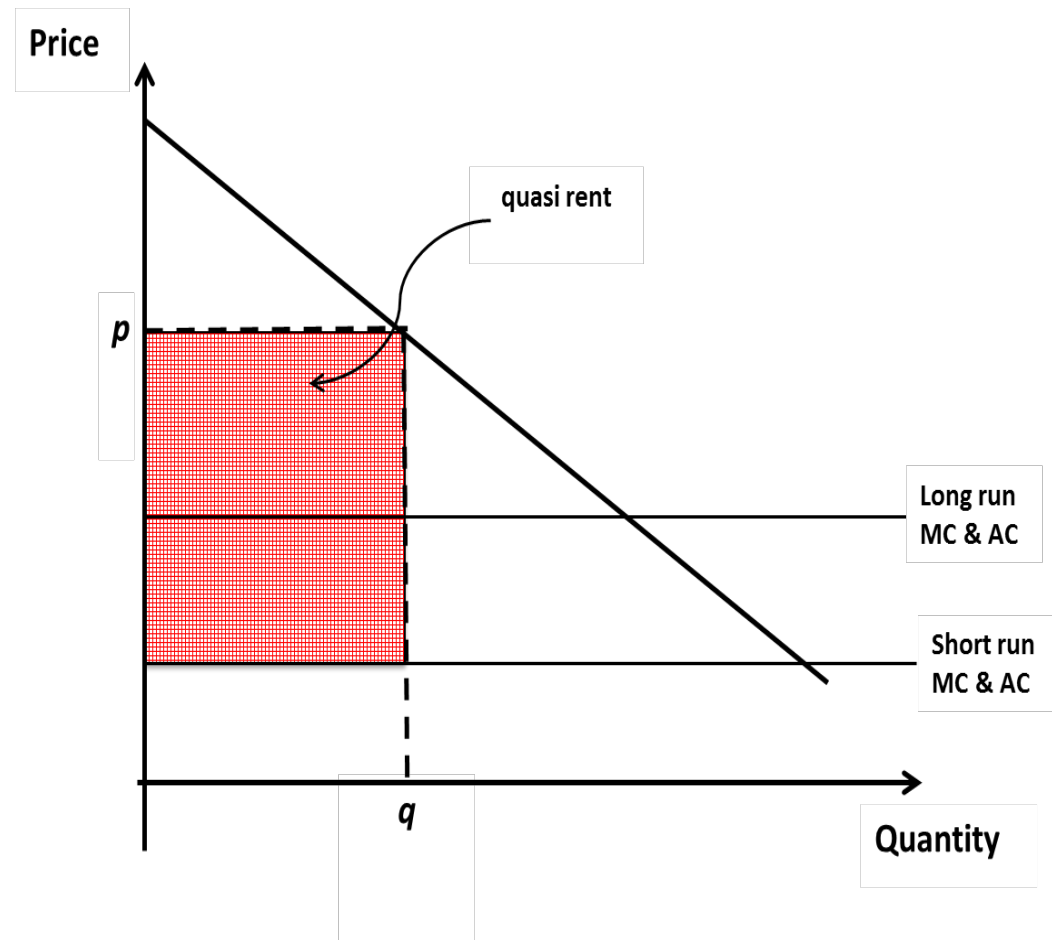
1. In both versions of PHT two conditions (not the three in TCE holdup) are sufficient for holdup to occur.
2. What then is proof of holdup? Any complaint by an unhappy or unwilling licensee.
3. Because the game in PHT begins in the holdup stage, no contractual or structural adaptation can sustain trade.
4. Only government/antitrust intervention can prevent holdup—exactly the opposite conclusion of TCE literature on which PHT claims to be based.

The chain of logical reasoning in Patent Holdup Theory is not internally consistent

1. Royalty Stacking and Market Power Conferred by Standards are two terms for the same thing: the generalized exploitation of market power.
2. Holdup and the generalized exploitation of market power are distinct mechanisms that rule each other out.
3. Each implies distinct strategic interactions among firms (different games).
4. Each has a different implications for the size of individual royalties.
5. → Evidence for one is not evidence for the other. Evidence of an OEM paying royalties to multiple patent holders is evidence that holdup is not taking place.

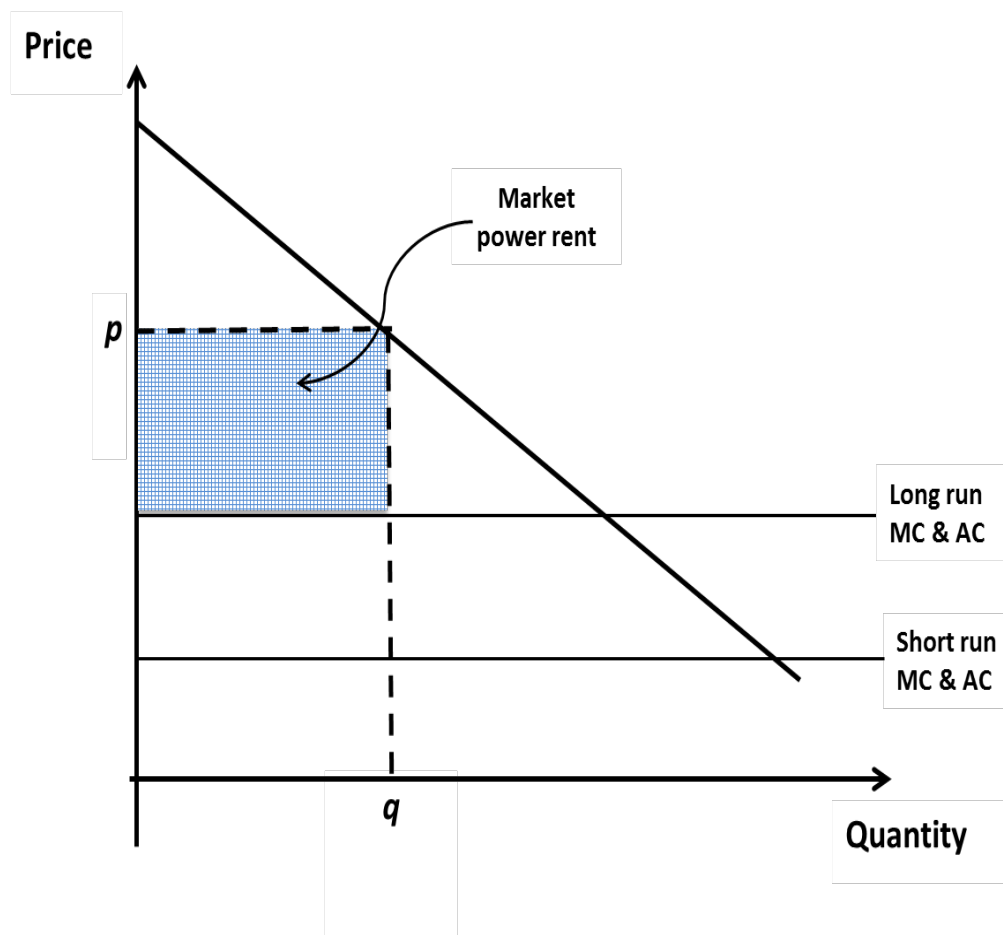
Holdup and the systematic long run exercise of market power cannot go together: in any market there is only one demand curve!

Holdup is a one-time, appropriation of quasi-rents through opportunistic behavior in the presence of relationship-specific investments. By definition it is not anticipated.



Royalty stacking and the exercise of market power conferred by an industry standard are the same thing—but neither has anything to do with holdup

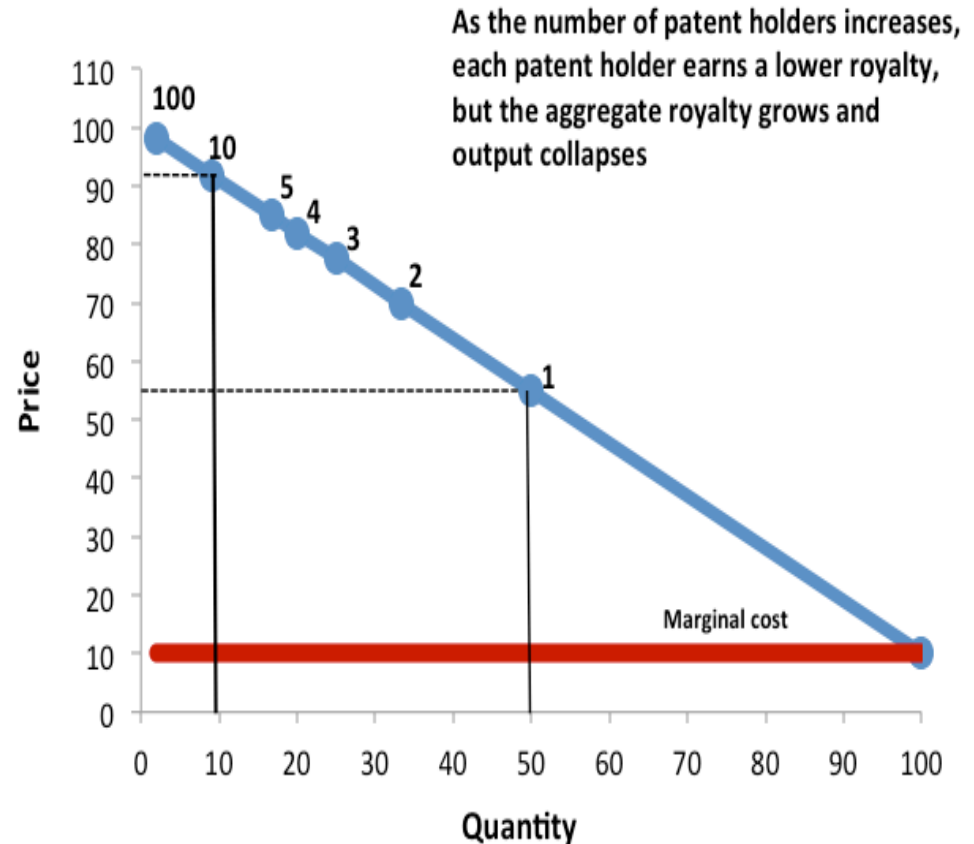
- A patented technology included in an industry standard might confer market power.
- An important technology covered by a patent may confer market power.
- Royalty stacking (Cournot Complements) is simply several patent holders exploiting whatever market power they have, from whatever source, over a single demand curve.
- Downstream producers anticipate all of this, and invest and price accordingly.



Could the exercise of market power threaten innovation?

Royalty Stacking/generalized market power →

- In principle, the industry could survive, because the downstream firms anticipate the exercise of market power, and take that into account when they invested. Quasi-rents are not appropriated.
- But, the industry dies because demand is choked off by rising prices. In order to bear the royalties, downstream firms must increase prices. Output falls. The industry collapses.
- Note: that the mechanics are different from holdup.



Is there evidence in the literature that holdup or the generalized exploitation of market power have hindered innovation in SEP-intensive, IT products?

- The Patent Holdup literature does not test hypotheses against data about equilibrium economic outcomes (prices, output, firm entry, margins).
- The Patent Holdup 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 that are consistent with the hypothesis that there are patent thickets in some industries—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)

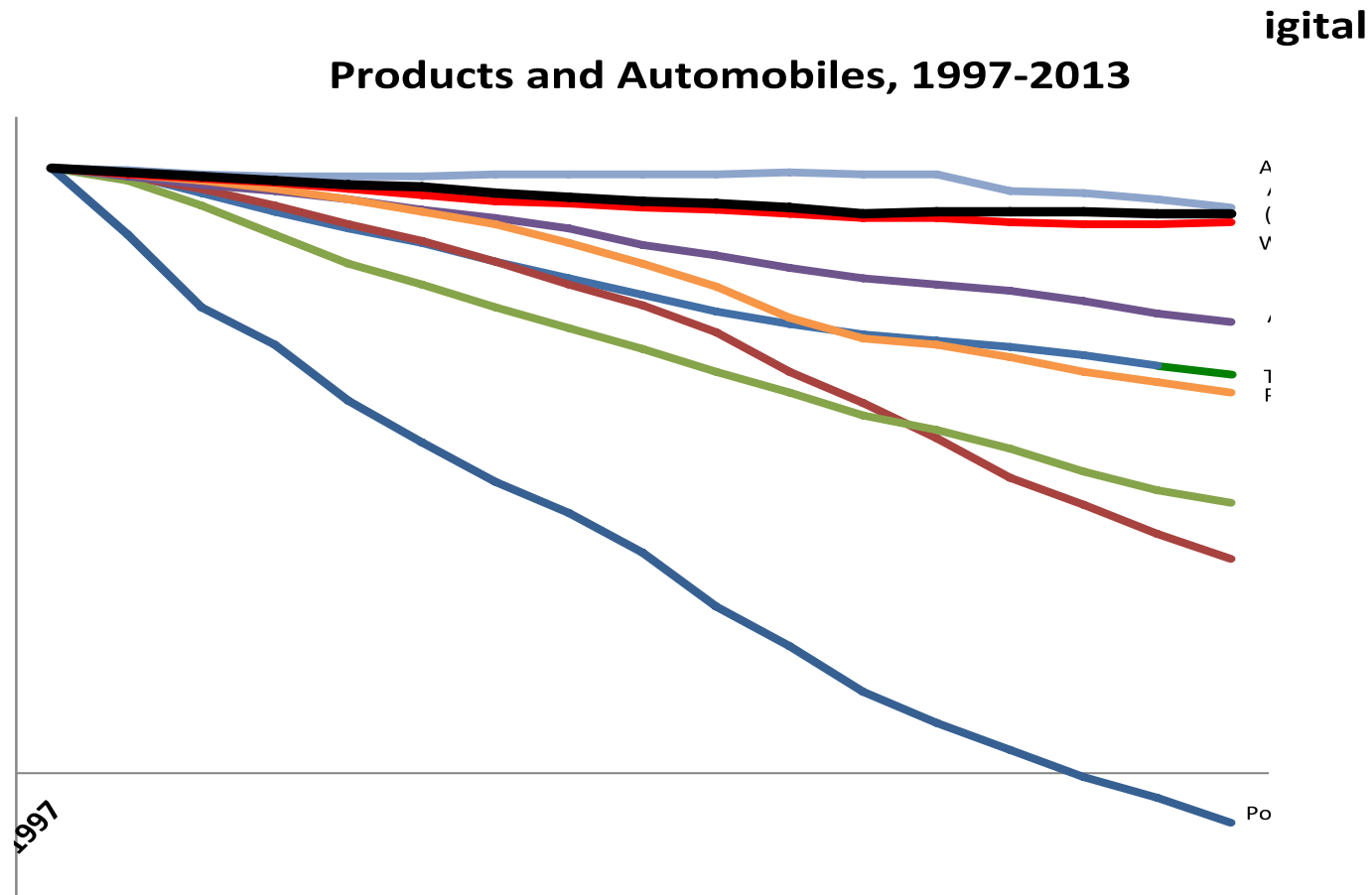
Epstein, Kieff and Spulber (2012)

Layne-Farrar (2014)

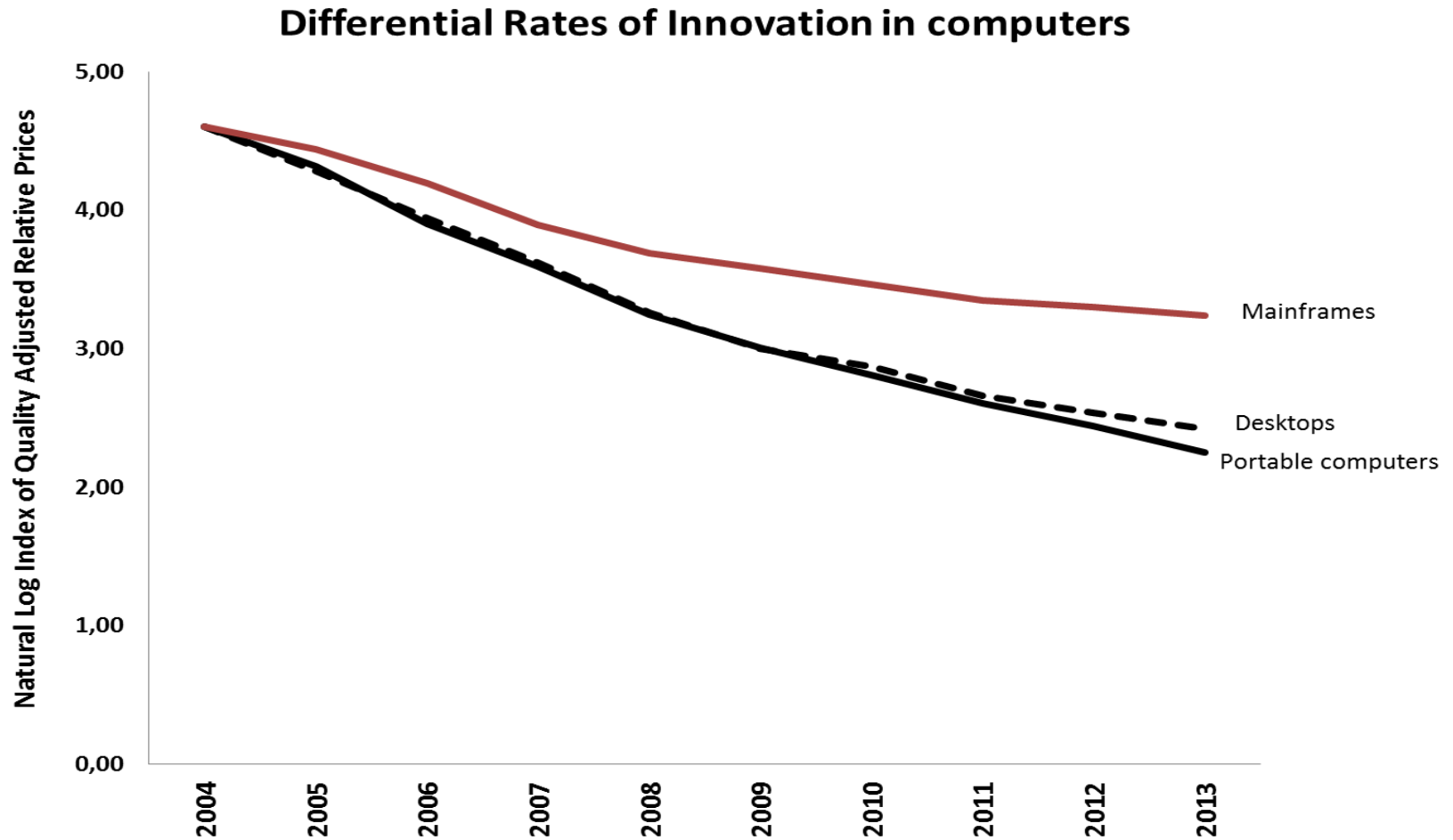
Egan and Teece (2015)

Mallinson (2016)

Can we find evidence that holdup or the generalized exploitation of market power have hurt innovation in SEP-intensive, IT industries?

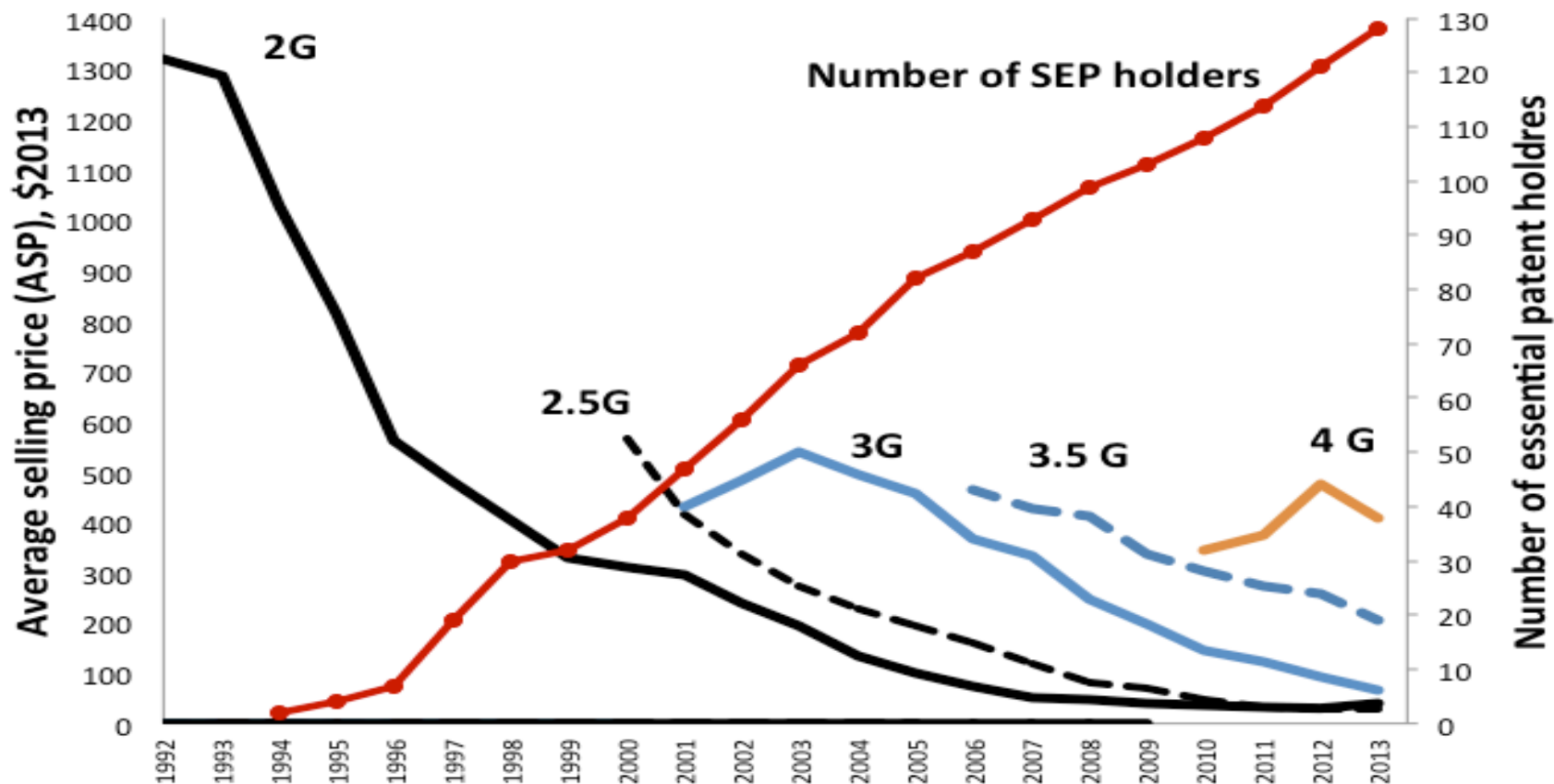


The evidence does not suggest that being SEP-intensive comes at a cost to innovation
(see diff in diff in Galetovic, Haber, Levine JCLE 2015)



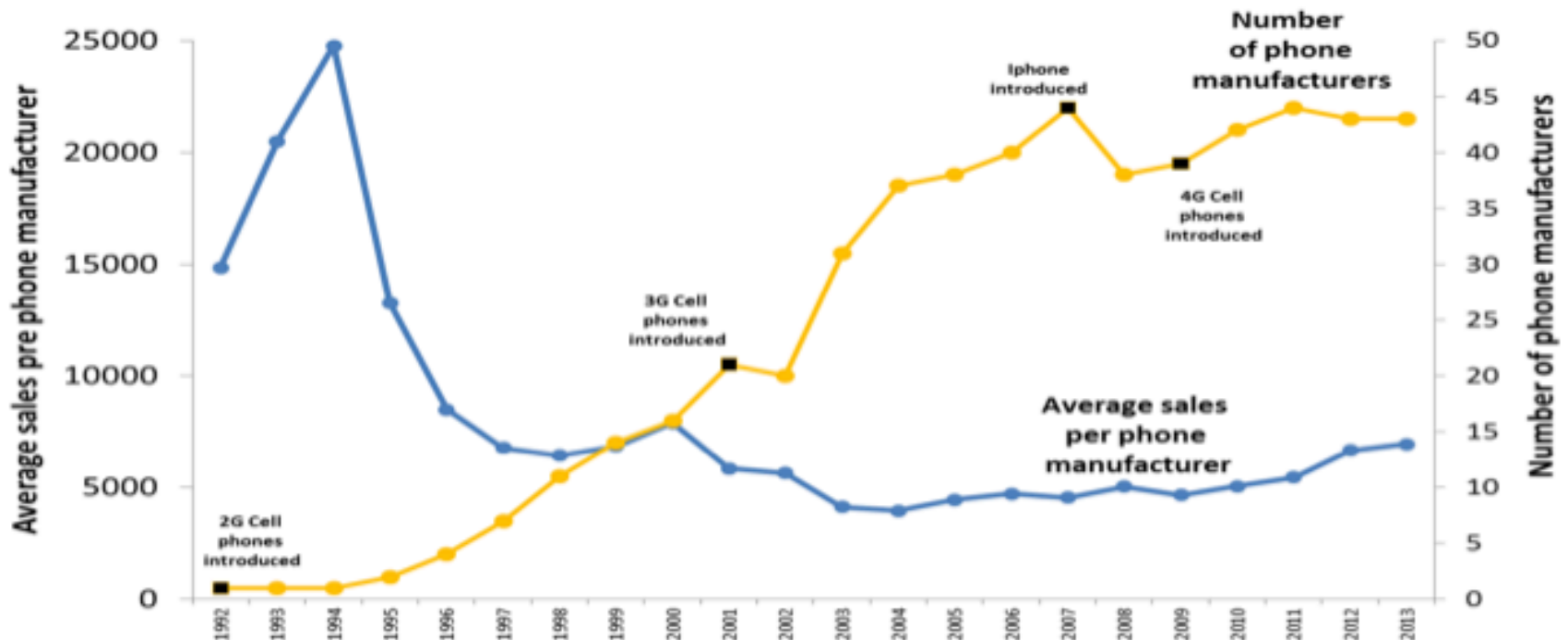
Is the data on SEP-holders and prices for wireless phones from Galetovic & Gupta (2016) consistent with the hypothesis of royalty stacking?

Real Prices of Phones, by Generation, and Number of SEP Holders, 1992-2013

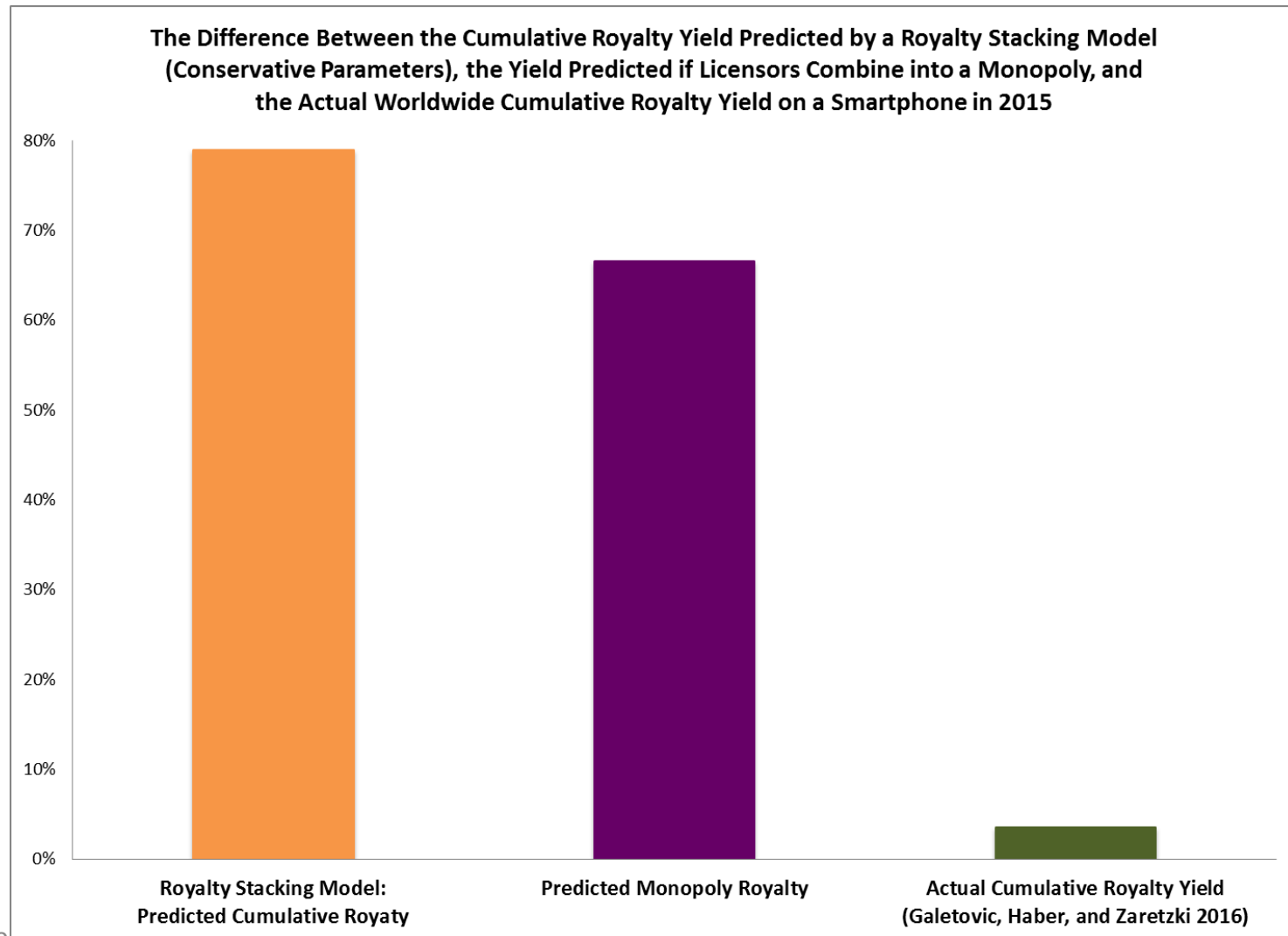


A second test of the hold-up/systematic exploitation of market power hypothesis: from Galetovic & Gupta (2016)
 If there is hold-up and royalty stacking in the wireless phone industry, why are new firms entering?

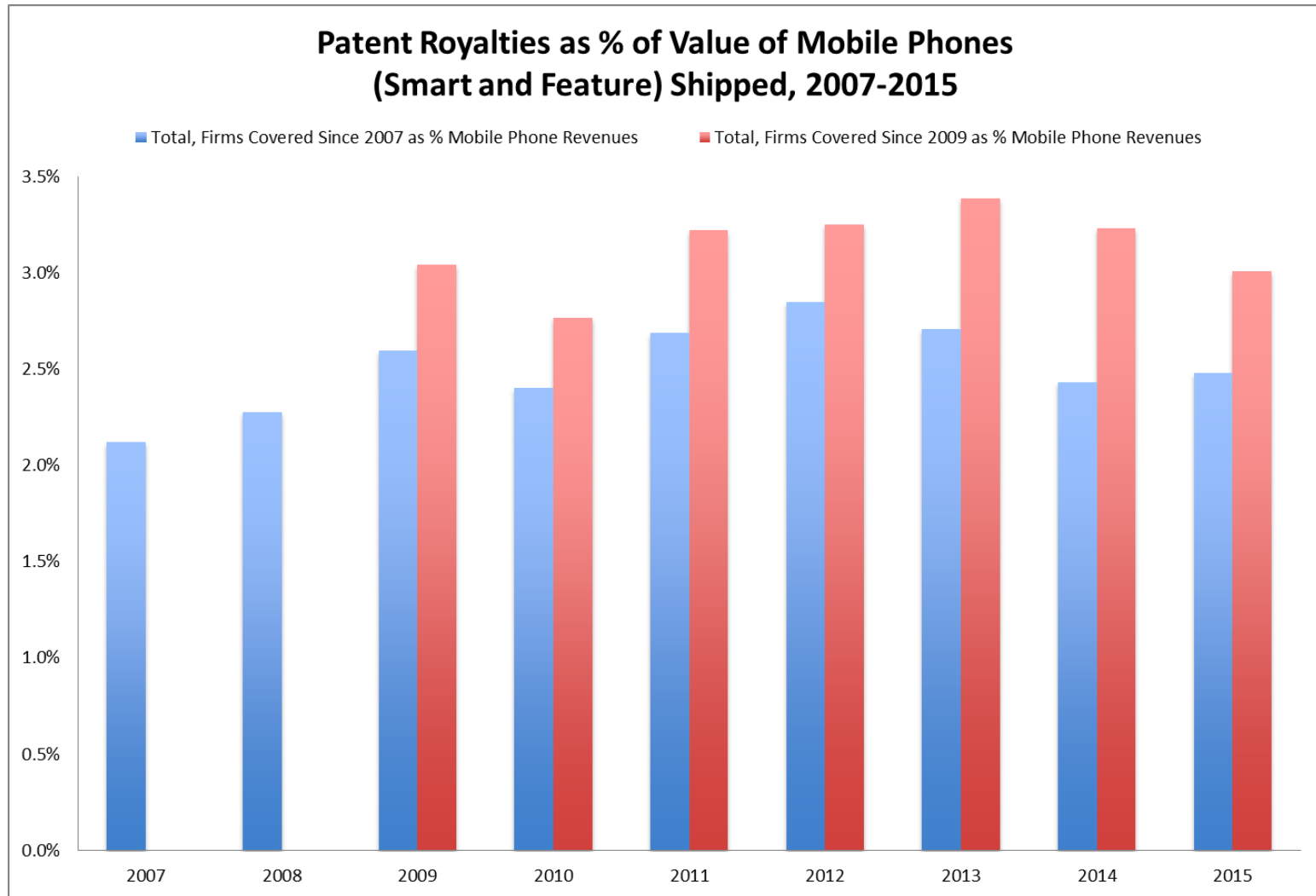
**Number of of phone manufacturers and average sales per firm
 (1992-2013, millions of 2013 \$)**



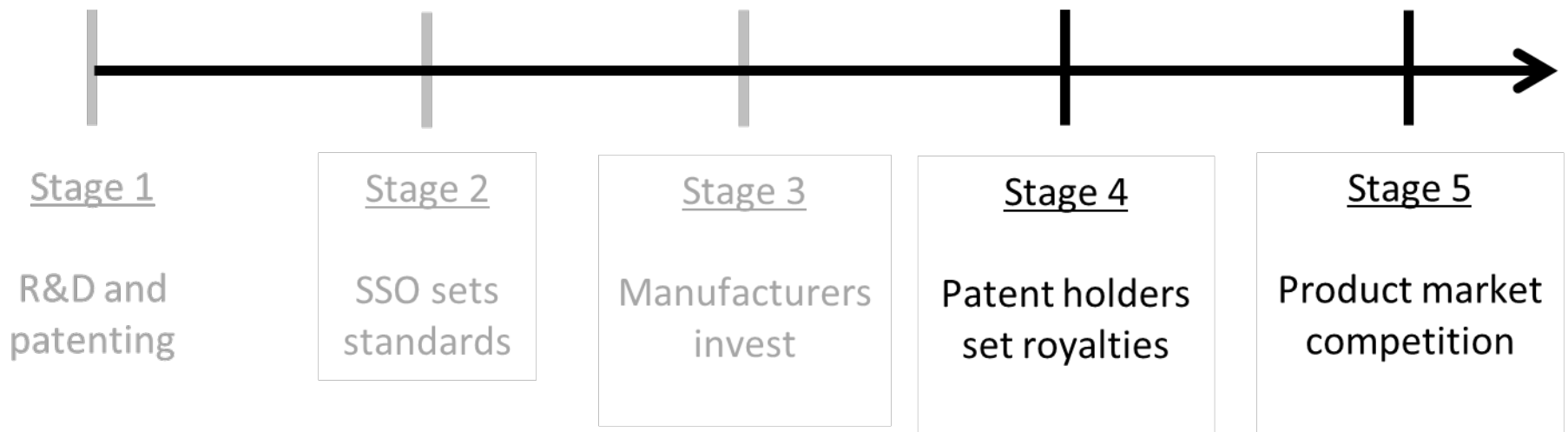
How big is the difference between the predicted “Royalty Stack” from a royalty stacking model (conservative parameters) and the actual cumulative royalty yield on a smartphone with 20 SEP holders?



Average cumulative royalty yield shows no trend since 2007



The Fundamental Flaws I: Patent Holdup theory has the wrong model about the process of innovation in SEP-intensive, IT industries



The Fundamental Flaws II: Misunderstanding of what SSOs (SDOs) do

- PH Literature believes that:
 - The added value of standardization comes from standardization itself; patents do not add value.
 - SEPs grant market power or the ability to hold up in an otherwise competitive market.
- The goal of SSOs (SDOs) in IT: set goals (“the standard”), do the R&D, push demand outwards as much as possible.
- Standardization cannot add value to a product that consumers do not value.

Should Patent Holdup Theory be employed as a Framework by Competition Authorities?

1. Patent Holdup Theory is not a variant of TCE Holdup Theory; it is a new formulation.
2. Patent Holdup Theory is an incomplete theory.
3. Patent Holdup Theory predicts market failure.
4. Patent Holdup Theory is falsified by systematic evidence about its predicted outcomes.
5. As a general rule, theories that are incomplete and not supported by evidence are not useful guides to public policy.