Qualcomm-NXP

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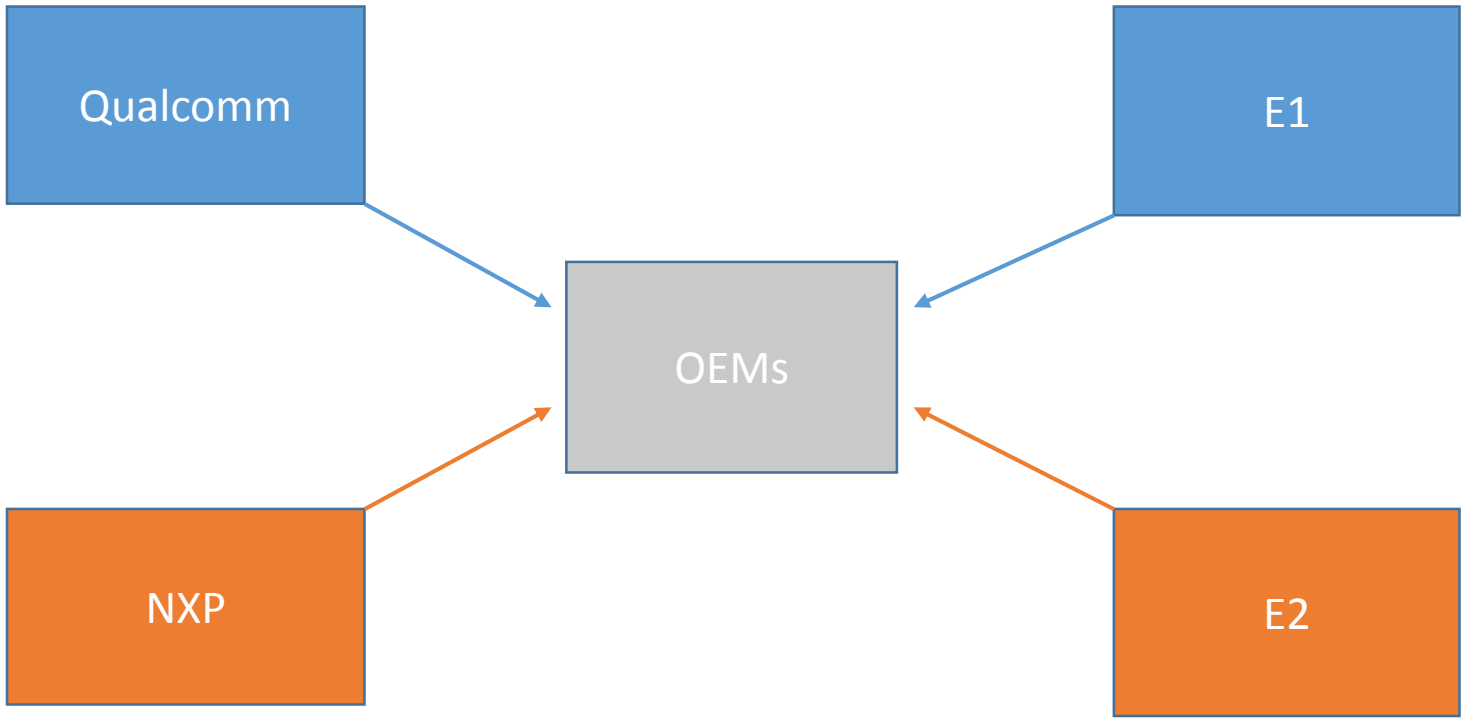
ACE, Bologna 2018

Set Up



Nature of the TOHs

- A merger of complements → Favourable Priors. The point should not be to BLOCK the acquisition.
- Complements → foreclosure a “natural” basis for a theory of harm.
- Focus on Licensing.
- Both static effects (royalty rates) and dynamic effects (innovation)
- Two basic references: Choi (2001), Choi-Stefanadis (2003)

Static TOH: Choi 2008

- The merged entity prefers mixed bundling.
- Ambiguous effect on consumer surplus:
  - Internalisation of complementary links in the bundle.
  - Increase in the price of pure components → increased price of “mixed” systems ↔ “raising rivals’costs”.
  - The second effect dominates when substitutability between smilar components is high.

Static Theory of Harm

- Assume MIFARE is essential… but then NXP can already extract (most) of the surplus from all three other firms before the merger … so the additional effect of the merger, if any, is likely to be small.
- While pre-merger royalty rates are quite high (as percentage of E2's profit margins), they leave a significant share of surplus to the other players… so what limits NXP's pre-merger's extraction ability?
- The higher the royalty rate, the more likely that licensees will invest in trying to "invent around" the IPRs (Gallini 1984).
- E2 invents around if $\pi_{E2}(r) < \pi_{E2}(0) - R\&D$

Inventing Around?

- One of the parties had considered such an investment earlier
- Many other patent holders in the same areas, including some with “MIFARE” patents.
- Legality of “reverse engineering” to achieve interoperability.

Static Analysis: Results

- Internalisation of complementarity after the merger → $\pi_{E2}(r)$ decreases…but so does $\pi_{E2}(0)$…so what happens to the difference?
- Without bundling this difference increases after the merger → r increases.
- With bundling, this difference increases further → further upward pressure on the royalty rate.
- It is not always optimal for the merged entity to bundle.
- This extra pressure on the royalty rate *extends* the range of parameters for which the merger would harm consumers

Static Analysis: (Broad)Intuition

- No bundling: internalise complementarity →lower prices for Qualcomm and NXP's products but less of a price decrease if NXP gets licensing income from E2. Hence the merger lowers $\pi_{E2}(r)$ less than $\pi_{E2}(0)$.
- Bundling: merger + mixed bundling → Qualcomm's stand alone chip price increases, hurting E2's profits…but less Qualcomm's price increases less if the merged firm gets licensing revenues from E2 (higher opportunity cost of raising E2's "costs"), hence mixed bundling decreases E2's profits when it uses its own technology more than when it uses MIFARE.

Choi-Stefanadis

- Same set up.
- Entrants can only get into the market if they successfully innovate.
- By *committing* to (pure) bundling, the integrated incumbent ensures that E1 can only enter successfully if BOTH E1 and E2 successfully innovate.
- Trade-off: if rival innovate successfully, it would be ex post optimal to move back to mixed bundling, so committing to pure bundling entails a loss of profits if rivals succeed anyway. On the other hand, the likelihood of entry is reduced.
- No explicit link to MIFARE licensing.

Choi-Stefanadis Revisited 1

- Add a merger stage → compare CS before and after merger *when merging is profitable*. This includes cases where pure bundling is profitable past-merger and cases where it is not.
- Merging is profitable iff bundling is profitable post-merger.
- Also extended to allow innovation by incumbents as well:
  - Additional positive complementarity effect on incumbent R&D → merging is always profitable, irrespective of whether pure bundling is.
  - The merger can reduce CS even if commitment to pure bundling is not possible or is not profitable.

Choi-Stefanadis Revisited 2

- A more complex model trying to capture a number of features of the industry.
  - Explicit role for MIFARE licensing: OEMs require MIFARE so refusal to license can foreclose E2.
  - High-End Phone OEMs want the latest (best) technology.
  - Supply agreements with OEMs reached through tenders/bargaining.
- Innovation by Qualcomm and E1 only.

Bidding to Bargain

- There is complete information.
- Each seller makes a bid (price).
- The lower price seller bargains with the OEM. The price of the higher bidder is an outside option for the OEM.
- Separate tenders for the two components.
- Yields a lower price than either tender alone or bargaining alone.

Timing: NXP and E2

- License or not?
- If yes at what rate?
- At that stage the costs of NXP and E2 are unknown
- Costs are realised: bidding to bargain.

Timing: Qualcomm and E1

- Invest in Innovation
- If neither is successful or both are, bid for bargaining.
- If only one is successful, it makes the sale

Results

- If the merger is profitable, the merged entity refuses to license MIFARE.
- E2 is partially foreclosed.
- Consumer surplus *can* decrease quite sharply after the merger

Effects

- Differences in efficiency between NXP and E2 provide incentives for licensing.
- However, post merger, refusing to license MIFARE partially forecloses E1 and reduces its incentives to innovate. This effect dominates.
- The main consumer harm arises when E1 and Qualcomm successfully innovate: E1 is foreclosed, Qualcomm bargains directly with the OEM without a preliminary bidding stage, prices go up.

How much weight should we give to these TOHs?

- Without evidence on parameter ranges, no ground to reject the merger.
- However, a simple, unobstrusive remedy addresses one of the causes for concerns: continued licensing of MIFARE at current (FRAND?) terms deals with the possibility that licensing rates might be hiked or that licensing might be discontinued.
- It is difficult to see how such a remedy would harm the merging parties, unless they do intend to engage in RRC strategies.
- Such a remedy should not be evergreen as one wants to preserve NXP's rivals' incentives to innovate in order to reduce NXP's dominance.

A Remark on the “Patent Portfolio” TOH

- A separate TOH linked the size of patent portfolios to the willingness to litigate and hence to the level of royalty extracted.
- Three steps
  - A credible threat of litigation by the patent-holder leads to higher royalties
  - Fixed fees of→ litigation → there is a minimum portfolio size below which patent holders do not litigate
  - On its own NXP would not litigate. But Qualcomm has the critical portfolio size.
- However, most IPR litigation involves very few patents → the “fixed fee saving” advantage of portfolio size does not extend much beyond this limited number of patents…and NXP’s portfolio is larger than that.
- A proxy for the fear that Qualcomm’s alleged “aggressive” licensing attitude would spread to NXP?