



# Royalty Stacking In Mobile Telecommunications: A Closer Look At The Evidence

**Dr. Anne Layne-Farrar**

LECG  
[www.lecgcgcp.com](http://www.lecgcgcp.com)

Washington, DC Wireless Technologies Conference April 17 2009



## The key question

- The royalty stacking theory is based on long standing economics
  - Augustine Cournot’s “complements problem” (1838)
- Key prerequisites
  - Many complementary patents
  - Fragmented IP ownership
- 3G mobile telecom meets the theoretical conditions, but is royalty stacking a problem in practice?
  - Some have claimed it is
  - But, evidence is weak
  - And firms have strong incentives to find solutions

# The evidence

- Anecdotal evidence and extrapolations from single royalty rates
  - Unreliable since patents not created equal
- The ideal test
  - Individual licensing contracts for 3G products
  - This data not publicly available
- The need to rely on proxies
  - Backward cites offer an observable indicator of the patents that the patent holder may have to license in order to implement its invention
  - Can use this data to calculate a measure of IPR concentration:
    - IPR “HHI”: the sum of the squares of the shares of firm  $i$ 's backward citations
    - Ranges from 0 (complete fragmentation of IP rights) to 10,000 (all cited patents are in the hands of a single IP holder)

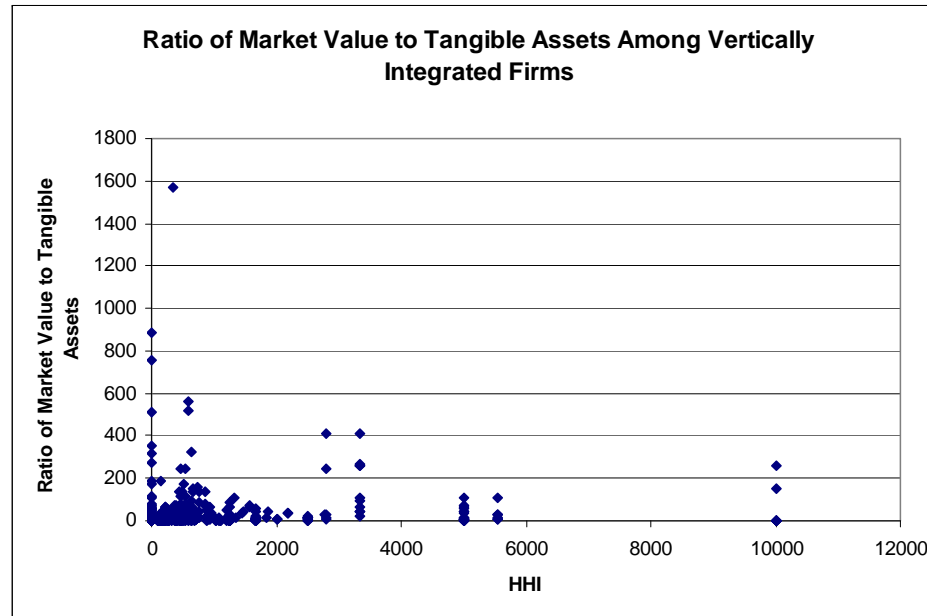


## The research approach

- Comparing IPR concentration measure against firm market value
  - If royalty stacking is a problem in practice, downstream firms' market value should fall as IPR fragmentation rises
    - Royalty stacking increases aggregate royalty burden and transaction costs, which translates into lower cash flows for downstream firms and hence into lower market values
  - Analyze other firm types for comparison
- The dataset
  - Data from 91 public firms participating in the development of the 3G standard under ETSI
    - All have at least one patent relevant for the 3G standard
    - Data on upstream firms, vertically integrated firms, and network operators
    - Cannot include pure downstream firms as approach requires at least one patent



## The findings



- Upstream firms and network operators likewise show no relationship
- **Tentative conclusion:** no evidence of a significant royalty stacking effect among firms operating in 3G



## The caveats

- Proxy measure for IPR fragmentation may not accurately reflect licensing requirements; ideal data would be comprised of license contracts
- Hypothesis for market value is most clear for pure downstream firms, but we cannot include these firms given our IPR fragmentation proxy
- Simple comparisons do not control for other factors that may affect the relationship; however, our regression analysis yielded no statistically significant results
- More research is needed before any policy intervention to solve royalty stacking problems