

The Value of Corporate Patent Utilization

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Summary

- The paper studies **patent utilization**: how much a firm's patents are commercialized and used for introducing new products.
- To measure patent utilization, it uses textual analysis of patent texts + texts of new product announcements.
- Main findings:
 - New products that are more related to patents are more successful.
 - Firms with higher patent utilization rates have more successful products and higher growth in sales, profits, and market valuation.

Very Interesting Paper

- Impressive data work combining text data from two sources
- Addresses a central question in innovation: How does innovation benefit firms? What kind of innovation yields the largest benefits?
 - Firms mainly grow by introducing new products (Klette and Kortum, 2004; Braguinsky, Ohyama, Okazaki, and Syverson, 2021)
- My discussion:
 - What does patent utilization mean?
 - Measure of patent utilization

Why Do Firms Patent?

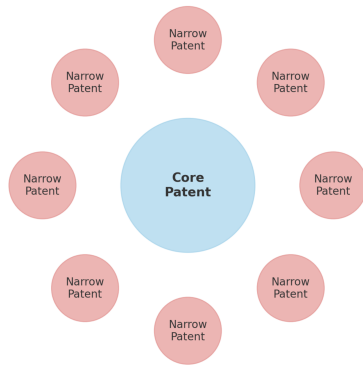
- Commercialization: developing new products or improving processes and protecting the technology from competitors
 - This paper focuses on product patents and exclude process patents
- Defensive/strategic purposes: deter lawsuits from competitors
- Generate licensing income
- Support or control follow-on innovation (by the same firm or others)
- Signal to investors to get financing

Defensive Patenting: The Case of iPhone

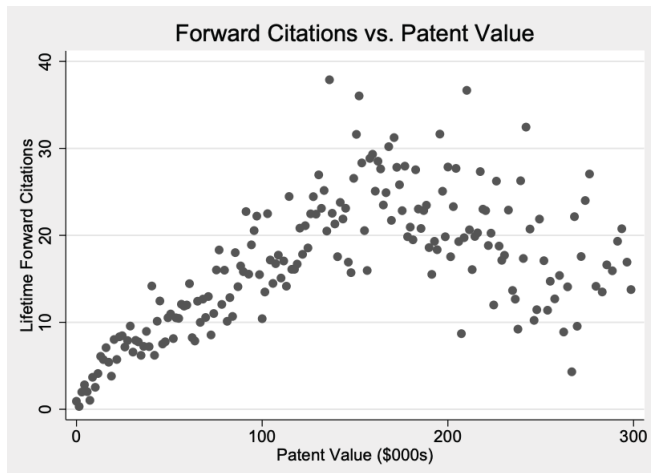
When Apple introduced the original iPhone (2007), it introduced broad core patents (e.g., touch-screen gesture recognition) and also a series of narrow patents on specific product features, for example:

- Exact icon grid layouts and icon shapes.
- Bezel widths and corner curvature proportions.

Some of these patents covered configurations Apple never actually planned to mass-produce, but that sat just adjacent to competitors' likely designs.



Defensive Patents Can Be Very Valuable



Abrams, Akcigit, and Popadak (2013)

Comment #1: What Does Patent Utilization Rate Mean?

- A firm has low patent utilization when:
 - It has more defensive patents (preferred interpretation).
 - It has more patents that do not have immediate stand-alone commercial value but generate licensing income or support follow-on innovation.
 - The patents have low quality. If lower patent utilization is correlated with lower patent quality, then it is also correlated with worse firm performance.
 - The firm is bad at commercializing innovation. If the firm introduces fewer new products, the patent utilization rate is lower.

Comment #1: What Does Patent Utilization Rate Mean?

- I'm not convinced that defensive patenting is the main driver of the findings. Usually firms file defensive patents to protect their most valuable and commercially successful patents. More direct evidence on defensive patenting is needed.
- Do underutilized patents share similar characteristics as defensive patents (e.g., low citation and high value)? Is utilization lower when the defensive patents would be most expected (e.g., in fields of rapid development)?
- Exploit variation in patent utilization due to shock to defensive patenting like patent laws and regulations, patent trolls or NPEs, and competitive threats.
 - The current IV—R&D tax credits—does not satisfy the exclusion restriction because they also affect innovation in other ways.

Comment #2: Measuring Patent Utilization

- The patent utilization rate is defined as:

$$\frac{\text{\# of patents in last 5 years utilized by any product introduced this year}}{\text{\# of all patents in last 5 years}}.$$

- This measure is set to zero when the number of products introduced is zero (>50% of observations).
- Including the observations with zero products leads to a mechanical positive correlation between patent utilization and number of new products.
- Excluding the observations with zero products leads to a selected sample. The observations with zero products do provide useful variation.

Comment #2: Measuring Patent Utilization

- Conditional on having new products, the average patent utilization rate is quite high (>70%). In addition, most new products utilize multiple patents (25th percentile is 3).
- Suggestion: for example, take the maximum similarity score between a patent and new products introduced in the next five years, and average across all patents filed in a given year.
 - Continuous measure would provide more variation.
 - Aggregating products over next five years should reduce the number of zeros.
 - It may make sense to weight the similarity score by the importance of the patents. For example, the unweighted average of similarity scores can be very low in the previous case of iPhone.

Comment #3: Measuring Value of Products and Patents

- The paper uses cumulative abnormal returns around product announcement or patent issuance to measure the value of products or patents.
- There is a lag between patent application and patent issuance, and most patents are granted after the product release.
- Back to the iPhone example...
 - The first iPhone was released in June 2007.
 - Patent 7,469,381 (rubber-band scrolling): filed in 2007 and issued in Dec 2008.
 - Patent 7,864,163 (pinch-to-zoom): filed in 2007 and issued in Jan 2011.
 - Patent 7,479,949 ("Steve Jobs" multitouch): filed in 2007 and issued in Jan 2009.
 - Design Patent D618,677 for iPhone itself: filed in 2007 and issued in Jun 2008.

Comment #3: Measuring Value of Products and Patents

- Kogan et al. (2017): “the market often had advance knowledge of which patent applications were filed, since firms often choose to publicize new products and the associated patent applications themselves.”
- Even though patents are filed before product introduction, markets usually learn about patents after they are commercialized. The market reaction to product release also partly reflects the commercial value of the underlying patents.
- Market reaction to subsequent patent issuance could reflect the value of patent protection and future commercializations.
- Bottom line: need to think more carefully about the relationship between patent value, product value, and CARs.

Conclusion

- Really interesting and thought-provoking paper.
- The paper takes an important first step in addressing the link between patents and products, which is an under-explored but promising area with rich data.
- Suggestions:
 - Dig deeper into the underlying economic drivers of patent utilization.
 - Improve the measure of patent utilization to reduce bias.