Keeping a Secret: Evidence from Process and Product Innovation

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Executive Summary

Discussions of intellectual property (IP) rights often focus on these rights’ role in stimulating new creative activity. The prospect of exclusive rights to one’s own inventions incentivizes innovation, but this exclusivity also creates barriers for follow-on innovation. The trade-off between granting monopoly rights to incentivize innovation and limiting such rights to facilitate follow-on innovation depends largely on the visibility of the innovation. If others can easily see and copy the invention, innovators must file for IP protection to gain a competitive advantage. However, such protection impedes follow-on innovation which would have otherwise been easy. On the other hand, if the invention cannot easily be copied or re-engineered, the innovator may be able to reap monopoly benefits from the invention regardless of its IP status. In this case, follow-on innovation may happen only if the invention is disclosed, for example by filing a patent.

An ideal patent policy incentivizes invention while also facilitating follow-on innovation by inducing patenting of less visible inventions (to ensure disclosure) and making less stringent forms of IP protection more attractive for more visible inventions (where disclosure is of

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less importance). This paper analyzes the relationship between an invention’s visibility and its optimal form of IP protection. We ask whether the “right” inventions are patented. More specifically, we theoretically and empirically examine incentives to disclose (through the patent system) less visible ideas that would otherwise remain in hiding.

Empirically examining the incentives to disclose inventions requires variation on two levels. First, visibility needs to vary across inventions, and we need to identify high-visibility from low-visibility inventions. Second, the appeal of filing a patent (relative to keeping it a secret) needs to (exogenously) vary across inventions and over time. We observe both types of variation.

First, we posit that process patents are inherently different from product patents. Product innovations are inherently disclosed by a physical object (e.g., the invented machine or apparatus), whereas this is not necessarily true for product innovations (e.g., the process of producing said machine or apparatus). Utilizing a novel dataset created by Ganglmair and Robinson (2017), we confirm this notion by examining disclosure decisions of patent applications after the American Inventors Protection Act or AIPA (1999), which introduced pre-grant publication of patent applications along with earlier patent protection unless the innovator opted out of such disclosure. While Graham and Hegde (2015) find that very few innovators opted out of early disclosure, we find that creators of process innovations do so disproportionately.

Second, we take advantage of the Uniform Trade Secrets Act or UTSA (1979/1985), which strengthened the protection of trade secrets in two ways: (1) through an extension of the definition of trade secrets, and (2) through an extension of the circumstances under which trade secret law has been violated (Png, 2017). The UTSA has been enacted in 39 states between 1979 and 1998. The strengthening of trade secrets in turn weakens the relative appeal of more formal forms of IP protection, such as patents, and we would therefore expect fewer patent applications in a state which enacted the UTSA.

Importantly, we examine whether the change in trade secret protection affected patenting
behavior of process innovations differently than that of product innovations. How the policy change affects innovations of varying visibility depends on the invention’s visibility as well as the patentee’s additional value from potential licensing.

We find that the share of process patents falls after the trade secret protection is strengthened, and that this effect is stronger for states in which trade secret protection was particularly weak before the UTSA enactment. Our results suggest that relatively weaker patent protection and relatively stronger trade secret protection does not necessarily incentivize disclosure of those inventions which could benefit the most from it. In other words, while stronger trade secrets protection has the potential to increase R&D activity (Png 2017), it also results in disproportionate disclosure of the “wrong” inventions—those that are more visible. Less visible inventions, for which disclosure is crucial to enable follow-on innovation, are kept as trade secrets and thus not shared with the public.

References

