IP Protection Strategies: Analysis of the CIS 4 Survey

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Extended Abstract Protection of intellectual property (IP) is an essential tool to give incentives to innovate because it increases the appropriation of the benefits of innovation. In practice, an inventor has several options to protect its innovation, each of them having its own characteristics in terms of risk and ability to ensure appropriation. The most commonly used methods are patent and secrecy. Secrecy is usually considered as an "all or nothing" choice, as the firm is either successful in maintaining secrecy and it can then enjoy a monopoly, sometimes over a longer period than with a patent, or the secret leaks and the firm is left without recourse.

The Community Innovation Survey 4 of 2004 contains a large section dedicated to the use of intellectual property (IP) protection methods by the surveyed firms. Using this dataset the paper compares the firms' preferences between secrecy and patent as expressed in previous CIS survey studied in Arundel (2001), with their actual behavior using the CIS 4 survey. In the previous CIS survey, respondants were asked to give their *preferences* with respect to the different IP protection methods. More precisely, respondents had to rank, on a 1 to 5 scale, each IP protection method according to how useful they considered the method to be. Arundel shows that the proportion of respondents who rank secrecy as the first method is always higher than the proportion of respondents who rank patent as the main method. This result is robust to size classes, though the larger the firm, the weaker the preference for secrecy over patent. The CIS 4 survey takes a

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different approach and asks for protection behaviors, not preferences. In this paper, our aim is to determine whether previous conclusions are still valid when firms' actual decisions are taken into account, instead of preferences. We show that the use of patents, relative to secrecy, is increasing with the firm's size. However, CIS 4 data do not support the hypothesis of a higher relative use of secrecy for all class sizes; in practice, only small (fewer than 30 employees) firms use secrecy relatively more than patent.

Furthermore, we investigate whether secrecy is used to protect small innovations or large ones. Theoretical predictions on this topic have been provided by Anton and Yao's *Little Patents, Big Secrets* article and are summarized in our paper. We offer to use a simple statistic available in the CIS 4 survey, the ratio of the frequency of firms using patents to the frequency of firms using secrecy, to show that, in line with Anton and Yao's counterintuitive predictions, the relative use of patent is *decreasing* with the magnitude of the innovation in a third of the innovative industries (7 industries out of 21). This result holds for two usual measures of the size of innovation. This is also true at the aggregate level for small firms for each measure of innovation size. In theses cases, a sample of firms from the same class size and with a large innovation, use patent less relatively to secrecy than firms in another sample of the same class size in the same industry.

Such behavior is not consistent with the traditional view of patents. According to the usual view, a patent guarantees protection in exchange of information disclosure, as opposed to secrecy, which is a risky protection method since protection is only offered so long as secrecy is maintained. The impact of the size of the innovation on the use of patents is then unambiguously positive. In this context, a reluctance to patent a larger innovation as compared to a smaller innovation cannot be explained. Only models taking into account the uncertainty surrounding the enforcement and/or the validity of a patent can explain this reluctance. Indeed, the fact that the ratio of patent to secrecy decreases with the size of the innovation is the core prediction of Anton and Yao's model with patent strength. Empirical support for this prediction is limited to one third of innovative industries, but the mere fact that such a behavior exists appears noteworthy to us because of its departure from the usual view of patent as a secure IP protection tool.

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Big Secrets article and are summarized in our paper. We offer to use a statistic available from the CIS 4 survey, the ratio of the frequency of firms using patents to the frequency of firms using secrecy, to show that, in line with Anton and Yao's counterintuitive predictions, the relative use of patent is *decreasing* with the magnitude of the innovation in a third of the innovative industries (7 industries out of 21). This result holds for two usual measures of the size of innovation. This is also true at the aggregate level for small firms for each measure of innovation size. In theses cases, a sample of firms from the same class size and with a large innovation, use patent less relatively to secrecy than firms in another sample of the same class size in the same industry.