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Title: Appropriating of the returns from industrial research and development

To have the incentive to undertake research and development, a firm must be able to appropriate returns sufficient to make the investment worthwhile. Patents do not necessarily guarantee best appropriability as they can be circumvented. Because of this and other factors which have similar influences, innovators usually choose other methods of competitive advantage like gaining lead time and exploiting learning curve advantages for appropriate appropriation of their R&D investments. Therefore, there is a need to know for which processes and products the patent system is effective. This will lead to a notion to use methods other than patent for other specific production methods and product innovations.

The paper emphasizes that R&D appropriation is different for different sectors. And the type of protection method they use for their products and production methods differs from industry to industry. The method utilized to assess the returns from R&D investments in the paper is using questioners. Questioners were distributed to the R&D managers which have the knowledge of both the relevant technology and the market conditions.

Through the survey it is claimed that for new processes (not products) patents are the generally rated the least effective of the mechanisms of R&D appropriation. Most respondents agree that lead time and learning curve advantages as the most effective methods for innovative processes. Secrecy, though not considered as effective as lead time and learning advantages, was still considered by many as more effective than patents in protecting processes.

The paper also states that, patents for products were typically considered more effective than those for processes, and secrecy was considered less effective in protecting products than processes. Generally, lead time, learning curves, and sales or service efforts were regarded as substantially more effective than patents in protecting products. But for chemical industries and for relatively uncomplicated mechanical equipment producers, results show that patents are the most effective methods in protecting their new product innovations.

The implication is that product patents are more effective than process patents except for the petroleum refinery processes and some chemical industries (like drugs, plastic materials, inorganic chemicals, and organic chemicals). However, most respondents to the questioners claimed patents not as effective as other methods of appropriation (secrecy, lead time, learning curve advantage). Patents are strictly effective in one industry, drugs. In addition, for small, start-up ventures, patents may be a relatively effective means of appropriating R&D returns, in part because some other means, such as investment in complementary sales and service efforts, may not be feasible. The patents held by a small, technologically oriented firm may be its most marketable asset.

Patenting products and processes tend to increase the cost imitation, and thus the cost of R&D, for the competitors to invent around. But for other appropriation methods, there is no correlation between the cost inventing around and the particular method.