

Patents and Other Factors Affecting Executive Decisions*

JEROME C. STRONG, Research Associate
JESSE W. MARKHAM, Principal Investigator

S U M M A R Y

THE PROJECT ON THE ROLE OF PATENTS in executive decisions is directed toward discovering some of the ways in which firms' behavior is affected by the patent system. Particular emphasis is given to the relations between decisions concerning research and the patent system. A small sample of firms has been selected for intensive study.

Executive decisions and the acquisition of patents are regarded in the context of the many factors that enter into firms' competitive strategies, and it is expected that some interesting variations will be found concerning the impact of the patent system on different kinds of industries and companies.

Because the system is of such long standing and is embedded deeply in many business policies and attitudes, it is not easy to identify its specific effect on decisions made by the business community. The broad problems with which the present project deal are, first, determining the kinds of decisions in which the patent system may play a part, and then attempting to isolate whatever effects the system might have on those decisions. This interim report describes the nature of the project, identifies some of the problems which are involved, and offers some tentative findings.

THE FOUNDATION BECAME INTERESTED in the relations between the patent system and executive decisions as a result of the work of an earlier project on "The Value of the Patent System in the United States" carried out under the direction of Dr. Jesse W. Markham.¹ That project examined a variety of methods by which an evaluation of the patent system might be made. The following statement appears in that study:

It should be made clear at the outset that the value of the patent system cannot be quantitatively measured in the relatively precise manner in which such economic variables as the national income and its various components are measured. The system embraces a host of components such as expectations of financial reward and scientific fame, the urge to create, and changes in the stock of scientific knowledge. Some of these are by definition of a qualitative nature. . .²

* This research interim report on *Project 8a*, The Role of Patents in Executive Decisions, was prepared by Mr. Strong.

¹ *PTC J. Res. & Ed.*, 1, No. 1, (June 1957), pp. 20-56.

² *Ibid.*, p. 20.

The present project accepts the validity of this statement and makes no attempt to measure quantitatively the impact of the patent system on executive decisions.

Rather, this study takes as a guide one of the conclusions of the earlier project which was stated as follows:

Since the basic decision-making unit in a free enterprise economy is the firm, it follows that the most promising approaches to the value of the patent system should seek to estimate its impact on firms' behavior. It has been argued elsewhere in this study that the system probably affects firms in different ways and in different degrees. If this is so, better understanding of the *modus operandi* of the system in a wide variety of cases is required before its fruits can be reliably identified. Hence an intensive study of a well-selected sample of firms . . . would be invaluable.³

Thus, the present study seeks to estimate, for a small sample of firms, the impact of the patent system on firms' behavior, as exhibited by the decisions of responsible executives. Of course, a great many types of executive decisions are of such a nature that patent considerations are never involved. But decisions concerning research, new product development, and diversification may frequently take into account the patent system,⁴ and it is the purpose of this study to examine the various ways in which these kinds of decisions are affected under differing conditions.

The method of research that has been adopted is to select for intensive study four to six large corporations from each of the broad industrial categories of mechanical equipment, electrical equipment, and chemical manufacturing. The object is not to try to obtain a statistically valid random sample or even a representative cross-section of manufacturing industry, but rather to select a diverse group of firms with the expectation that it will exhibit a wide variety of policies, attitudes, and experiences in relation to the patent system. The success of this procedure was demonstrated to some degree by the fact that two interviewees from different companies expressed the opinion that their firms were poor choices for the purposes of this study since they had patent policies that were not representative of American industry in general. One of the executives felt that in spite of the fact that many patents were taken out regularly by his company, research was carried on as an essential part of the business and would be just as essential even in the absence of a patent system; and the other executive felt that his firm was unusual because the company depended on the royalties from patent licensing for an important part of its income, and, except for its present military contracts, could not exist without patents.

For each of the firms chosen for investigation, all available published sources are searched for information about the firm's activities and the changes in those activities over the past several years. A considerable amount of information can be found in annual reports, financial directories and manuals, applications to stock

³ *Ibid.*, p. 53.

⁴ One type of executive decision which normally would not be associated with the patent system deals with the geographical location of a firm's subsidiaries. However, in the case of one firm, an important factor in the location of its subsidiaries was the variations in the degree of leniency with which different Circuit Courts customarily treated cases concerning the validity of patents.

exchanges for the listing of new stock or bond issues, prospectuses, stockbrokers' reports, trade journals, newspapers, and the popular business periodicals. These sources at least provide a good indication of a firm's involvement with the patent system; for example, if a company has diversified its products over a period of years but has not engaged in any mergers and has not spent much money on research, one logical point for further study would be to investigate the extent to which the firm has bought or licensed patents from others. In addition to examining the published sources of information, interviews are held with officers of the firms being studied; and in some cases, permission can be obtained to see records concerning intra-company recommendations on actions involving patents. Specific information that comes from the companies themselves is especially valuable because, while much has been written concerning the factors that *should* enter into business decisions, there is very little published information concerning the factors that actually *have* entered into decisions.

Decisions Concerning Research

Although this study is concerned with the relation of the patent system to many kinds of business decisions, the kind of business activity that is of principal interest is research (two other major areas, decisions concerning taxes and anti-trust involvements, are dealt with in other Foundation projects). The patent system is designed to stimulate economic progress through invention, innovation, and disclosure; and industrial research often serves the same end of economic progress through development of new and better products and processes, and the promotion of greater efficiency and customer satisfaction. Consequently, a good starting point in the present discussion of the effect of the patent system on executive decisions is an examination of decisions that relate to research and development. Then will follow a discussion of the kinds of decisions involving the acquisition of patents.

All large manufacturing firms carry on some research if research is defined to include engineering and design improvements as well as "basic" research which does not strive for such immediate results. If, in addition, research is conceived to include both the kind of activity that leads to invention and the kind that leads to innovation, the more common reasons for carrying on research may be listed as follows: ⁵ ^{5a}

1. To invent or develop new materials, products, or processes.
2. To improve the quality of existing materials or products.
3. To standardize products or processes.

⁵ This list is adapted from Lincoln T. Work, "The Philosophy and Economics of an Industrial Research Program," in Conference on Industrial Research, *Costs, Budgeting, and Economics of Industrial Research* (New York: King's Crown Press, 1951), pp. 5-6.

^{5a} It should be noted that some of the reasons for carrying on research may become operative only when firms can foresee that their research accomplishments are likely to be protected by patents.

4. To develop new uses for existing materials, products, or processes.
5. To reduce the costs of production through better engineering.
6. To devise ways of helping customers make better use of a product, including the distribution of technical information.

It will be noted that these reasons are not all mutually exclusive; for example, in order to improve the quality of a product it also may be necessary to redesign the corresponding manufacturing process.

Too few companies have been investigated up to this point to indicate any consistent pattern, either for the companies in a single industry or the sample as a whole. However, all of the reasons except Number 3 had some importance attributed to them by two or more companies. It is probable that, as the study progresses, reasons in addition to those listed may turn out to have significance.

A fact that does appear clearly is that, while most companies consider one or more of the same reasons for carrying on research to be important, there are sharp differences in the emphasis which they give to the various reasons. A firm in the machinery industry stressed the importance of continuous quality improvement and the adaptation of its machines to appeal to a wider market. A firm in the electrical equipment industry devotes much of its research effort to developing new products and to providing assistance to the licensees of its patents. A firm in the chemical industry emphasized new product development. (The question of *why* a firm has one or more of these reasons for carrying on research is beyond the scope of this project, but, in general, the answer may be found for any one company in some combination of the characteristics of firms and industries which are discussed in a later section of this report.) What is important for present purposes is the extent to which research decisions are related to decisions concerning the acquisition of patents.

Decisions Concerning the Acquisition of Patents

The factors that lead companies to acquire patents are as numerous as those inducing them to carry on research. The more common reasons for acquiring exclusive property rights in an invention may be listed as follows:⁶

1. To obtain greater freedom in pricing and production policies than would be possible without a patent monopoly.
2. To protect new products during the period while manufacturing methods are being perfected and markets are being developed.^{6a}
3. To prevent other firms from engrossing a field of technology, i.e., technological excellence could well be futile without patent protection.
4. To avoid the risk of being unable to obtain patent licenses from outsiders.
5. To obtain bargaining power in cross-licensing negotiations.

⁶ This list is adapted from Frederic M. Scherer, and others, *Patents and the Corporation, a Report on Industrial Technology Under Changing Public Policy* (2nd ed., Boston: 1959), pp. 47-49.

6. To obtain royalty income from the licensing of patents.
7. To gain prestige for the company by proving technological leadership with patents.
8. To raise the morale of research personnel by allowing patents to be issued in their names.

As in the case of the reasons for research, some of the reasons for acquiring patents overlap one another; for example, patents may serve the purpose of preventing competitors from engrossing a field of technology and at the same time provide bargaining power in negotiating cross-licensing agreements with those same competitors.

It is still too early to predict what, if any, pattern will finally emerge as far as different types of companies are concerned—each of the reasons has been granted at least some importance by one or more companies, but there have been no outstanding favorites. The range of emphasis is illustrated by the variation between a petroleum company that considers patents valuable in cross-licensing bargains to an electrical equipment company that has experienced so little difficulty in obtaining licenses from others that it considers the obtaining of bargaining power to be of negligible importance as a reason for acquiring patents.⁷

When the reasons for carrying on research are compared with the reasons for acquiring patents, it is seen that in some cases these reasons are unrelated, i.e., a company may take out patents for the sake of its employees' morale, but certainly would not undertake research merely to be able to take out patents for that purpose. Frequently, a patent may have been an accessory after the fact in contributing to the commercial success of the results of research, but it was not the moving force causing the research to be undertaken in the first place.

Methods of Competition

The methods of competition in everyday use in this country include those emphasizing price, quality, design, service, advertising, location, and technology or research. Obviously, some types of firms and industries because of their very natures cannot compete on the basis of research and technology. For example:

⁷ A major difficulty in determining the degree of importance that companies ascribe to the various reasons arises because of the different ways in which executives describe their companies' policies. For example, one interviewee may say that his company's research decisions are made with little or no thought given to the possible patentability of the results of research, although in fact, patents are applied for wherever possible. Another executive may say that patents are very important and that much less research would be undertaken in the absence of a patent system. In fact, the two companies may have very similar research and patent policies—both may consider research very important and undertake it for the same reasons, and both take out patents on whatever develops from the research; the only difference is that one man chooses to emphasize the importance of research and the other the importance of patents. This points up the desirability of getting the opinions of more than one person in each firm and of checking verbal opinions against both written records and the actual behavior of the firm whenever possible.

Some companies must rely on a favorable relation between costs of raw materials and the selling value of products. Good judgment with respect to inventories may control profits and there is little that can be done toward making more valuable products. . . . Other industries may make their return through economical manufacture. Standard bulk commodities, such as acids, cement, phosphates, are in this category. The sales margin is too close for much research.⁸

The methods of competition used by any one firm depend on a great many characteristics of the firm, such as the kind of industry in which the firm operates (expanding or stable), the type of product manufactured (importance of price, quality, design), the type of customer (consumer or producer), the number and strength of competitors, the nature of the production process, whether the firm is primarily a product or process company, the extent of public regulation of the industry, etc. The list could be extended almost indefinitely.

These are the factors that determine to a large extent the basic character of a firm and that strongly influence its business behavior. Depending on the character of a firm, patents may or may not be a major consideration in its behavior. However, even in those cases where patents may not be a strong causative factor in a firm's behavior, their influence may be felt in a less direct way. For example, new product additions to a company's line might be evaluated in terms of their potential markets, costs, contribution to balanced operation, expected profitability, etc., and if the products appear desirable on all these counts, patent considerations could determine whether any one product was actually adopted by a firm.

A more direct effect of the patent system may be to help *create* business firms in certain instances. This would be true in the cases of both the small, highly specialized firm, perhaps founded by a scientist with a few significant patents, and the few firms that derive the major part of their incomes from patent royalties. In addition, the patent holdings of one firm may induce a competitor to expend research effort to seek an alternative process or product. This effort to "invent around" the patents of others was mentioned by almost every executive interviewed.

The problem of the extent of causation in the impact of the patent system on executive decisions will be of major concern as the study progresses. It is desirable to establish as clearly as possible those cases where the patent system does have an influence on decisions and then attempt to determine when and how the system made its influence felt.

⁸ Work, *op. cit.*, pp. 7-8.