THE “PROFITABILITY” OF TECHNOLOGY LICENSING BY U.S. MULTINATIONALS: A FRAMEWORK FOR ANALYSIS AND AN EMPIRICAL STUDY

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Abstract. The fees or compensation charged by technology licensing companies to recipient firms overseas have long been subject to debate. Opinion has ranged from a cost-related pricing to a monopolistic pricing model where the price or compensation is considerably higher than the variable costs of effecting a transfer. The empirical study covering 102 technology licenses shows that whereas compensation levels greatly exceed transfer costs, statistically they are strongly related. Compensation levels are influenced by the extent of services rendered to the licensee and by his scale of production. Important differences were manifest between industrialized nations and LDCs, between product types, and between patented and unpatented technologies.

INTRODUCTION  ■ For at least a decade, the question of what factors constitute and determine the net compensation accruing to supplier firms from technology transfers to overseas recipients has lain at the core of a broader debate in the United Nations and other forums which seek to define the nature of technology and, in recent years, seek to bolster the negotiating position of recipients through formulation of codes and the exchange of technical and commercial intelligence. The U.S. clearly has the largest stake in the technology transfer business, with U.S. firms’ receipts of royalties and other fees amounting to some $4,401 billion in 1977.† There is a virtual absence of empirical work, except as case studies [for example, Baranson 1977], which (1) identifies all the elements and sources of returns accruing to supplier firms and the costs of effecting a transfer, (2) formulates a standard accounting method which can then be applied uniformly to a large sample of transfers, to measure the profitability of contribution margin for each supplier firm, and (3) seeks to identify the determinants of this margin statistically in a regression model based on supplier, recipient, technology, and nation-specific variables.

This paper does not address directly the issue of the nature of technology except to present evidence showing that it is by no means a near free good nor its transfer costless [Caves 1971; Rodríguez 1975]. Similarly, it skirts the value-laden question of what constitutes adequate or fair compensation, although it does present figures for the ratio or multiple of Returns to the Supplier Firm over Transfer Costs for an agreement.

ALTERNATIVE VIEWS OF TECHNOLOGY TRANSFER COMPENSATION TO BE TESTED

One of the aims of a group of technology receiving nations in the UNCTAD conferences is to lower the price or total compensation flowing to supplier firms on the grounds that their pricing is “monopolistic.” The total revenues accruing to supplier firms from technology recipients, in this view, are a large multiple of the incremental costs that the supplier incurs in effecting the transfer; moreover, it has sometimes been posited that technology is akin to a free good—it is virtually costless. Caves [1971] put forth the hypothesis that

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the successful firm producing a differentiated product controls knowledge about serving the market that can be transferred to other national markets for this product at little or no cost. This is clearly so for the patented good or product embodying a particularly apt bundle of traits.

In this view, furthermore, the supplier firm has a substantial bargaining power over the technology receiving firm, based on a limited number of alternative suppliers, patent and trademark coverage, restrictions on sales territory or production levels, and the limited technical capacities of the recipient firm [Newfarmer 1978; Lall 1976]. If, by imposing limitations in the agreement or by virtue of high transport or tariff barriers, national markets are effectively segregated, the supplier firm may be viewed as a “discriminating monopolist,” charging different fees in different nations even when transfer costs may be the same, i.e., a situation where compensation is not related to the costs of effecting the transfer. The alternative view, proposed by some supplier firm representatives is that the technology transfer business is much more competitive, and that price or the total compensation to the supplier is related to the costs of technology transfer. Here we have to define clearly what the costs of an agreement are to a supplier firm. In theory, a firm can price its technology at or near marginal cost; that is, accept compensation over an agreement life which covers just the costs of contractual obligations to the licensee, with perhaps a small mark-up thereon. If this is true, it would explain the position of some supplier firms, that governmental intervention which constrains compensation (by ceilings on royalties, agreement life, and so on) will only result in a cessation or reduction in the flow of technology to those nations [Dull 1974]. This idea, that compensation is at or near transfer costs may appear extreme and theoretical. A priori, in the absence of comprehensive empirical work apart from case studies, we have no way of knowing.

A variation of this model is that besides the direct transfer costs, supplier firms also bear other strategic opportunity costs of licensing and seek to recover from an agreement a margin toward research and development costs associated with the technology. These are defined in a later section.

The initial objective of this study was basic: It was first necessary to define a comprehensive format for returns and costs so that comparable data could be gathered on an appropriate sample of agreements.

It turns out that despite an infinite diversity of products and processes transferred, and despite technology transfer packages in many instances being specifically tailored for the recipient, a standard accounting format can be applied for all cases of manufacturing technology transfer. The institutional and legal arrangements, the types of compensation, and the kinds of costs involved did not turn out to be unmanageably diverse in the sample and fall into the categories as depicted in Table 1.3

Starting with Hymer [1960], there has been an extensive literature on the monopolistic advantage of multinational firms; and the considerable disparities that exist between price and marginal or variable costs are explained as a monopoly rent or as a contribution margin toward the substantial R&D and marketing overheads borne by such firms. Here, the difference between total revenues obtained by a licensor from an agreement and the costs of effecting the transfer under the terms of the agreement would be recognized in economics terms as a monopoly rent. If the businessman is mindful of past R&D expenditures on the product, he may prefer to describe it as a contribution margin toward this and the opportunity costs of licensing.