

Licensing in International Strategy

How decisions to license are made; the business factors affecting licensor/licensee environments

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An international company may deliver a product to a foreign customer in three ways—export the product to that country, make a capital investment and produce the item there, or license their technology to another company which will produce in that nation. In practice, of course, the choice is often not so clear-cut, and several combinations of methods are used, such as licensing-cum-equity investments or licensing accompanied by component exports to the licensee.

This paper looks at the conditions under which a firm may choose licensing as the dominant mode of operation in a foreign country.

As a matter of corporate policy, several multinational companies either rule out or are very hesitant about licensing to independent foreign firms, considering this an inferior strategy to establishing their own subsidiaries.

Others, however, particularly smaller firms or companies in mature industries, place much emphasis on arms-length licensing on their foreign operations. One even finds the so-called high-technology companies willing to license some of their technologies which they consider peripheral, or where the rate of technical change is rapid enough to remove the fear of licensee competition. Some of the largest companies in the U.S. have many more independent licensees around the world than they have equity affiliates (although, of course, total licensing income is far less than their affiliates' total earnings).

How is the choice of licensing versus other methods of doing business abroad made? How is this choice influenced by environmental conditions in foreign markets? To what extent does the propensity to use licensing depend on licensor industry factors? These are the questions addressed here.

First, some management theory considerations are presented. This is followed by the results of a survey asking licensing and international executives which of the factors actually influenced their past decisions.

STRATEGY CHOICE

When assessing entry methods, a company should choose that strategy which gives the highest risk-adjusted net present value. For exporting, incremental

revenues minus incremental costs provide estimates of net margins on expected sales in the country. For licensing, from expected receipts of royalties and fees over the life of an agreement, we subtract the estimated costs of transferring the technology and meeting other contractual obligations.

One should not forget to also subtract the costs of possible licensee competition in third countries, if any. This amounts to estimating lost profits that would otherwise have accrued were it not for licensee competition. This may appear hypothetical and vague, until we remember that cash flow projections in a proposed foreign capital investment are even more hypothetical and require far more assumptions. Yet, they are routinely made.

By contrast, as a company gets close to concluding a licensing agreement, it has a reasonably accurate estimate of its costs and a fair idea of licensee performance from which a range of royalty and other income can be deduced.

Table A shows average figures of net cash flows from a sample of more than 100 manufacturing technology agreements made by 39 U.S. firms, with licensees in 41 nations in the 1970s. The sample is a reasonable approximation of the total universe of agreements between U.S. firms and arms-length foreign licensees, in terms of country and industry distribution.

The figures shown are undiscounted dollar totals over each agreement life (except for the bracketed figures in the first row, which illustrate the effect of discounting at 15%). The study shows that licensing income can be substantial and can, in several cases, compare favorably with the repatriated dividends earned from an equivalent equity investment. Moreover, the risk in licensing is lower, and not just because the licensee bears the entrepreneurial risk; royalties (which occurred in 80% of sample agreements) are keyed to output, whereas dividends only come out of after-tax profit.¹

Additionally, 54% of the sample of agreements had front-end or lump-sum payments, lowering risk further. All in all, on a risk-adjusted basis, licensing may compare favorably to an equity investment in several situations, particularly in more volatile countries, or where the environment for foreign investment is not favorable because of government regulation, or strong competition when the industry is mature.

Licensing income, however attractive, must be examined in the light of the problem of losing a competitive edge to the licensee in the long-run. In practice, apart from specific industries like semiconductors, biosciences and some chemical processes, this would not appear to be a serious problem for U.S. licensors in general.²

Most technologies include an important component

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**NET CASH FLOW TOTALS OVER AGREEMENT LIFE —
AVERAGES FROM A SAMPLE OF AGREEMENTS MADE BY U.S. COMPANIES (\$THOUSANDS)**

	Industrial Market Economics	East Europe	Developing Countries
All Manufacturing Sectors	3,720 (326)	1,717 (226)	3,004 (284) (Discounted at 15%)
Chemicals	2,243	481	1,013
Pharmaceuticals	6,194	—	410
Industrial Equipment	4,830	4,770	11,646
Intermediate Industrial Components and Processes	4,281	1,425	1,156
Consumer Goods	702	—	1,143
Other	71	—	—

Source: F.J. Contractor, *International Technology Licensing: Compensation Costs and Negotiation* (Lexington, Mass., D.C. Heath & Co., 1981)

Table A

of unpatented, or even undocumented knowledge in production, management, and marketing techniques which are not easily assimilated by a licensee. In many cases, the licensor is continuously updating the technology by R&D. It would be safe to say that, in general, with the notable exception of a few industries and in a few nations like Japan, there is no overwhelming fear of licensee competition.

In any case, because of transport costs, trademarks or patents, licensees are often constrained to sell only in their territory. Lately, several nations, particularly LDCs, have been prohibiting territorial restraints in agreements. But here again, the licensee's relative inferiority, smaller scale of output, tariffs, and transport costs make their propensity to export and compete in third countries extremely low, as the study indicates.³

WHEN IS LICENSING THE BEST STRATEGY?

The circumstances under which licensing can be the strategy preferred over direct investment or exporting are explored in this section. The 1970s saw the beginning of a reversal in the favorable climate for equity investment and trade in the 25 years after World War II.

Increasing transport rates, more discriminating rules for investment and income repatriation; erosion of commanding technical leads of U.S. firms, the ability of local firms to make competitive products, or at least reasonable facsimiles, market saturation in Western Europe, and emergence of European and Japanese-based international competitors, these are factors forcing U.S. firms to take a more discriminating look at alternative methods of doing business.

Few firms today have the kind of technological and market lead which enables an IBM to have an across-the-board policy of expanding only with controlled affiliates. Given the changing conditions, licensing often comes out to be a preferred option, and is certainly superior to doing no business in a country, as in East Europe.⁴

With now sophisticated bureaucracies, literally scores of developing nations as well as some OECD countries, in the 1970s, passed legislation or rules broadly emulating the Japanese example, which seeks

to inhibit equity investment and replace it where possible with contractual means for technology transfer. In a nutshell, the new governmental discrimination as to the entry conditions for a foreign business has to be matched by corporate discrimination as to entry methods. Foreign direct investment (FDI) can no longer be the automatic choice. This is the attempt of the following discussion, summarized in Table B.

Strategic factors which impinge on the decision and which form the basis for corporate policy discrimination are:

1. *Product Cycle Standardization and Maturity*

The idea of an international product cycle is familiar where more mature, standardized products facing increasing competition and declining margins are produced, in the extreme case, in the least-cost global locations. Several studies confirm that production in LDCs involves relatively older and more standardized technologies. But, product cycle maturity also affects the *mode* of overseas business, and more mature products within a firm should be singled out as being amenable for licensing.

In some cases, a product list of mature products is drawn up and given to the licensing department, with a mandate to go all out and maximize licensing receipts. For other products, central coordination is needed to ensure that a proposed licensing agreement does not interfere with the product division's export or equity investment intentions in a particular nation. One firm in the sample goes even further, and analyzes quarterly on a product/nation matrix the preferred entry mode. Often, licensing wins out, especially for mature products.

Secure

Similarly, a firm that knows it is due for a model change or technology jump will be willing to license the older versions, secure in the knowledge of a continuing gap between them and licensees. Alternatively, executives in a U.S. aerospace firm were faced with the inexorable erosion of their lead and emergence of European competition in the international technology market may as well license and lock up some income

LICENSING AS A PREFERRED STRATEGY UNDER FOLLOWING CIRCUMSTANCES

Strategic Concept	Conditions
1. Product Cycle Standardization	-Obsolescing products considered for licensing -Imminent technology or model change -Increasing competition in product market
2. Environmental Constraints on FDI or FDI income	-Government regulations restricting FDI to selected sectors only -High political risk in nation -Market uncertain or volatile, licensor lacking in requisite marketing abilities, or market too small for FDI.
3. Constraints on imports into licensee nation	-A high ratio for transport cost to value for item -Tariff or non-tariff barriers
4. Licensor firm size	-Licensor firm too small to have financial, managerial or marketing expertise for overseas investment -Licensor firm too big (see 12 below)
5. Research intensity	-Licensor firm will remain technologically superior, so as to discount licensee competition in other markets
6. High rate of technological turnover	-Change so rapid, and technologies so perishable (e.g., semi-conductors) that even with equally proficient licensees, a design or a patent may be transferred with little fear of significant competition.
7. Perpetuation of licensee dependency	-Even without or beyond the licensing agreement, effective licensee dependency maintained by trademarks, required components or licensee hunger for technical improvements.
8. Product vs Process Technologies	-Licensing opportunities in auxiliary processes (e.g., galvanizing in the steel industry, or anodizing aluminum) even if the basic product technologies not licensed.
9. Reciprocal exchanges of technology	-Licensing as a valuable tool for obtaining technology or market rights, in industries characterized by high R&D and market development costs and product diversity (e.g., Pharmaceuticals, Electricals, Chemicals).
10. "Choosing" competition	-With a patent about to expire, licensing gives a head start to a licensee firm favored by present patent holder. (May be illegal in some countries.)
11. Creation of auxiliary business	-Even if direct royalty income is inadequate, margins on components to or from licensee can be handsome (in the extreme, e.g., licensing automobile assemblers, licensing is tantamount to disguised imports). Other auxiliary business can be turnkey plants, joint bidding with licensee, etc.
12. Diversification and product-line organization in licensor firm	-Especially in large diversified firms, with divisional attention focused on the "product imperative", a centralized examination of the product/country matrix reveals neglected market penetration possibilities via licensing, (especially where considerable diversification puts a constraint on the financial and managerial resources available for equity ventures overseas).

131

Table B

before competition does. (In this case, the strategic nature of the industry precludes foreign investment and inhibits trade.)

2. Constraints on Direct Investment and Direct Investment Income

The prohibition of certain sectors to foreign investment, local participation requirements, stronger local competition, "fade-out" clauses, and restrictions on repatriation of dividends are the environmental constraints above normal entrepreneurial risk facing investments in both LDC and OECD nations, in varying degrees.

By the 1970s, in several industries in Europe, market saturation and strong domestic firms were factors providing further disincentives. In regions such as the COMECON countries and Japan, foreign investment and trade, for that matter, are options closed by government fiat or lack of foreign exchange.

In several LDCs, high political risk tilts the entry decision away from volatile dividends, to more stable and agreement-bound income sources, such as royalties or fixed fees. Certainly, these could be smaller, although not necessarily so, as suggested by average licensing income figures shown in Table A.

All that is suggested here is that, with higher risks and growing constraints on investment income, a realization is dawning in many firms that a uniform policy of equity investment, to the neglect of licensing options, will fail to maximize global profits.

3. Constraints on Imports into Licensing Nation

Just as governmental regulations or political risk may rule out the direct investment option, transport costs (if a critical fraction of value) and tariff or non-tariff barriers often preclude the exporting option, also. Government policy has been explicit in Japan, Brazil, India, Mexico and Argentina on favoring the licensing method for technology acquisition by closing off the import alternative to indigenous companies in the belief that in a balance-of-payments and dependency sense, this is cheaper for the nation.

4. Licensor Firm Size

That the propensity to use licensing in an industry is inversely related to licensor company size, all other things being equal, is confirmed statistically in some studies. The most plausible explanation would be that the relatively smaller firm has a lower financial, managerial and foreign marketing capability.

Indeed, relatively higher licensing propensity in companies is associated with less experience in foreign operations, as measured by the proportion of total sales manufactured abroad by controlled subsidiaries.⁵ However, the direction of causality between these two variables remains unknown.

At the same time, one also encounters very large firms, especially diversified ones, which undertake licensing because, given large capital requirements and the magnitude of their product and nation spread, there is simply no way to have all production in-house. Thus, one hears of a GE with hundreds of global licensees, or an RCA licensing (with a buy-back provision) large-screen television designs to Hitachi.⁶

5. *Research Intensity of Licensor Company*

Companies that spend relatively more on R&D as a percentage of sales in an industry were reported to have a higher propensity to use the licensing mode over direct investment in two studies.⁷ The findings disprove the contention that more R&D-intensive firms will uniformly opt for direct investment as a way to extract profits from foreign markets.

Moreover, there is no reason to believe that licensing receipts should not *also* increase with greater R&D in licensor firms, and this is precisely confirmed in the Contractor study. An often applicable explanation may be that a firm is so comfortable in its technology lead and, consequently, fearless of imminent or eventual licensee competition, that it agrees to license (at an adequately high price) in areas where investment is difficult or risky.

132

Good examples are the several heavy equipment and basic industry firms that have extremely lucrative licensing arrangements in East Europe. Payment may well be received in kind, but the margin on the "buy-back" arrangement is usually an extra bonus.

6. *The Rate of Technological Turnover*

Rapid technological change is another variable which, other things being equal, can induce significant use of licensing. Good examples are in the electronics and computer industries.

Hypothetically, a U.S. firm may well license a chip design to a Japanese competitor, despite the fear that the prospective licensee is technologically equal and already constitutes an international threat. This is because the rate of change is so rapid, i.e. the design is so perishable that some licensing income may as well be generated on this design.

The licensee is already proficient, so that the mere transfer of the design will not, in itself, improve the recipient's competitiveness. In the extreme case, the prospective licensee already has the specifications from patent filings or from "reverse engineering" and merely awaits the conferral of the right to the licensor's patent.

7. *Perpetuation of Licensee Dependency*

The disadvantages of licensing arising from licensee independence are often removed if the licensee is kept dependent for trademarks, required components, foreign market access, technical improvements, etc. This would be true even where the licensee government prohibits such explicit restraints as tied inputs. This is

because, particularly in more protected environments, licensees' interests are likely to be closer to the licensor's than to their own government.

Trademarks are a case in point. Several studies show that often the licensee views the permission to use the foreign trade name as critical to marketing success and profit, and accordingly craves it, where, to the government, it involves a balance-of-payments drain with little direct economic benefit over a local brand name.⁸ (Not surprisingly, many nations, like Mexico, have come down hard on the inclusion of trademarks in technology transfer agreements.) The point is that it is licensees themselves who often desire such dependencies.

Most importantly, once introduced, they lock the market and the producer into them, thus reducing the latter's freedom of action and bargaining strength when the agreement comes up for renewal.

Similar situations exist with components supplied to the licensee who often does not have domestic alternatives, with the licensee's exports through the licensor's international market network, and with technical improvements. The inclusion of these features in the licensing "package" can often tip the balance in favor of licensing versus other options.

8. *Product Versus Process Technologies*

Several companies have realized that, even if the complete product technology is to be kept "in-house," there can be substantial incremental income possibilities in licensing associated or peripheral processes.

For example, for a giant Pennsylvania-based steel producer, the licensing of oven door designs or galvanizing methods to scores of licensees all over the world involves little incremental costs (once the engineering and R&D costs have been incurred for their own operations), compared with the royalties which, in the aggregate, are extremely handsome.

There is little likelihood of the technology recipients increasing their international competitiveness vis-a-vis the licensor solely from a license involving a minor process. This is even more true for a globally oligopolistic industry like aluminum.

Thus, you have a major aluminum producer aggressively seeking out licensees for anodizing processes or pull-top-can technology, where a proposal to license the entire smelting or refining technologies would certainly be refused or analyzed with much greater circumspection as to the future international competitive posture of the prospective licensee.

Many large U.S. firms neglect such licensing opportunities. A Detroit executive estimated that if his company were to organize internally to "collect" all the peripheral process technologies spread throughout the company, perhaps millions in incremental licensing could be generated, even after subtracting the extra costs of personnel to administer such a program. As it is, the company does license processes like thermo-adhesion of coatings and special paint formulas. But, this is sporadic and completely incidental to its main strategic focus on building cars.

9. *Reciprocal Exchanges of Technology*

For this case, licensing assumes an important

strategic role, apart from generation of cash income. In the pharmaceutical industry, not even the giants can do research on all biological fronts, or hope to go through testing and certification in all countries.

Thus, exchange of knowledge and territorial rights is important for fuller representation in both a product range, as well as territorial coverage sense. Licensing-out is the means for obtaining technologies and patents in a reciprocal licensing deal.

Income is hardly a forgotten issue. If the perceived values of the exchanges are unequal, a compensatory cash flow is devised, but income is not the dominant objective.

Besides pharmaceuticals, this is an important consideration in some segments of the electrical and chemical industries.

10. "Choosing" Competition

Licensing has its strategic uses when a patent is due to run out. While this may be illegal in several countries, licensing transfers the patent to a local firm that is favored by the patent holder, in order to give the former a head start over other local firms. Even after the patent agreement runs out, a separate agreement covering non-patented information and assistance—"know-how"—can be maintained.

There are many other reasons for favoring a particular firm so; there may be some present or future equity stake, a materials supply arrangement that will last beyond the patent expiry, joint ventures with that firm in third nations, and so on. The basic tactic is clear—perpetuate or extend by proxy the benefits of a patent beyond its legal life by a licensing arrangement.

11. Creation of Auxiliary Business

Any auxiliary business derived by the licensor from an agreement, whether mandated in the agreement or not, comprises extra income which often tilts the entry method decision in favor of licensing. The main categories are:

- a. Materials and components sold to licensee.
- b. Products "bought back" from licensee.
- c. Fees for future technical improvements given.
- d. Joint bidding and construction with licensee.
- e. Ad hoc technical assistance provided.
- f. Quality control and testing for licensee.
- g. Training of personnel.

In several cases, the auxiliary business is so predominant that the licensing agreement is tantamount to being a cover. A good example is the licensing of automobile assemblers who, at least in early years prior to the development of local suppliers, will buy much of the value of the automobile in parts from the licensor.

Needless to say, for the licensor, the margins on parts (especially if taken on a variable cost calculation) will, in early years, far outweigh the royalties formally stated in the agreement. This is a form of disguised imports, often aided by lower tariffs on components when the government wants local assembly. But even otherwise, for instance, in many nations which levy high duties on the import of TV sets and parts, and wish to reserve the consumer electronics industry for local entrepreneurship, a U.S. television firm has used licensing as means for entry into sheltered markets.

Since licensees are heavily dependent for components, crave the U.S. firm's new models and trademarks, and since that nation's consumers are thereby "locked-in," there is every reason to believe that in the absence of governmental intervention, this is a lucrative relationship of indefinite duration.

The licensee will seek renewal anyway, and get it unless the government injects greater competition by allowing imports, or mandates a minimum local value-added, or worst of all from the corporate viewpoint, intervenes in the agreement renewal by limiting payments on both royalties and components prices.

12. Diversification and Product Line Organization in the Licensor Company

Companies with higher-than-average diversification are more likely to choose licensing. The greater the diversification, financial and managerial resources are stretched thinner, and the firm has greater need for external support from joint-venture partners or licensees, as opposed to internalized expansion via fully-owned subsidiaries.

Alternatively, we may say that diversified firms have stronger central departments. For larger companies organized along product lines, there is usually a headquarters licensing department and/or corporate planning function which essentially performs a systematic market scanning and market entry method analysis.

In such a case, licensing is likely to be favored somewhat more often for two reasons: first, central departments in such firms are likelier to have more complete information about a country and entry method options than a product-oriented manager. Second, they lack the bias of product managers for internal expansion over contractual methods.

PRACTICE IN U.S. MULTINATIONALS

The strategy role of licensing was examined in 37 of the sample companies.⁹ Executives were asked to check off the strategic considerations which they felt were applicable to their company's international licensing.

Results shown in Table C confirm that, in practice, constraints on foreign direct investment (FDI) and on direct imports into the country comprise the single most powerful factor leading to the use of licensing.

Creation of auxiliary business is the next most important factor, with product cycle maturity and ability to keep the licensee dependent listed next. It is noteworthy that, while reciprocal licensing may be important in the pharmaceutical and some chemical products, its strategic importance is low in the all-industry context. So also is the use of the "choosing-competition" consideration (although we should recognize that executives must be loath to check this on a questionnaire).

Table D examines in more detail how strategy relates to the question of compensation or the different types of return from licensing. Managers were supplied with several strategic reasons in random order, and asked to score each from "Not Applicable" to "Highly Important."

The results shown in Table D support the assump-

ACTUAL USE OF STRATEGY VARIABLES

Percentage Occurrence in Sample

Strategic Concept (from Table B)

1. Product Cycle Standardization	41.7
2. Environmental Constraints on FDI	66.7
3. Constraints on Imports	74.0
4. Licensor Firm Size	25.0
5. Research Industry	25.0
6. High Rate of Technology Turnover	25.0
7. Perpetuation of Licensee Dependency	41.7
8. Product vs. Process Technologies	33.3
9. Reciprocal Exchanges of Technologies	8.3
10. "Choosing Competition"	8.3
11. Creation of Auxiliary Business	58.4
12. Diversification	25.0

Table C

licensee will often tip the balance in favor of the licensing option. In the same vein, but with a lower degree of importance, are getting "other business in the licensee's country (e.g. introducing other product lines, other joint ventures with licensee, etc.) and "supply of finished products to the licensee" for sales in that nation.

"Grant-back" clauses are often written into agreements, obliging the licensee to pass onto the licensor any technical improvements during the life of the agreement. This may be a crucial strategic motivation in particular cases. But, the low scores for this strategy criterion in Table D confirms the finding from the agreement sample where, while 40 out of 99 sample agreements contained grant-back clauses, in only 12 of

COMPENSATION STRATEGIES FROM INTERNATIONAL LICENSING

	Rank	Mean ^a	No. of Companies			
			Highly Important:3	Important:2	Somewhat Significant:1	Not Applicable:0
Low-Cost source of components/products for use in your other plants or markets	8	0.12	1	3	4	27
Direct licensing income (e.g. Royalties, lump-sum fees)	1	2.23	19	9	3	4
Export of components or materials to licensee	2	1.06	1	12	10	12
Export of finished products to licensee	4	0.71	3	4	8	20
Access to technical improvements made by licensee on licensed items	5	0.57	1	3	11	20
Reciprocal exchange of technology and patents	7	0.17	2	0	0	33
Other business in licensee's country	3	0.82	2	5	13	15
Other (Please specify) ^b	6	0.29	2 ^c	1 ^d	2 ^e	30

- a. The mean is for 35 responding companies. Two firms did not respond. Quantification ranges from Highly Important = 3 to Not Applicable = 0.
- b. Under "Other", the responses written in are shown below:
- c. "To protect our trademark registered in the country"; "U.S. imports prohibited".
- d. "The license arrangement was a stepping stone to a joint-venture."
- e. "At the request of important U.S. customers, their overseas affiliates were licensed by us." "Unspecified" reason.

Table D

tion that a primary motivation is cash income generation (as opposed to using licensing as a means to other ends, such as creating additional business in licensee nations, reciprocal exchanges of technology, etc.)

The next criterion in order of importance is the export of materials or components to the licensee. As mentioned earlier, a principal objection to some licensing agreements is that direct income, by way of fees and royalties, is deemed inadequate.

Studies have shown ad valorem royalty rates to average only 3 to 5% on an all-industry basis. Thus, extra income from margins on items supplied to the

the agreements had technical information of any significance actually been received by licensors.

This idea is carried to the ultimate extent in cases where the predominant motivation is reciprocal exchanges of technology and marketing rights, most frequently in the pharmaceutical and chemical industries. Here, Table D shows only two companies describing this criterion as highly important, whereas 33 considered it not applicable.

Among other motivations for overseas licensing were pressure to license from a foreign government, preventing a trademark or patent registration from

NUMBER OF OVERSEAS LICENSEES PER U.S. LICENSOR FIRM

Sample Distribution

#of Licensees Between	0-10	11-20	21-30	31-40	41-50	51-60	60-100	101-150	151-200	201-300	►250
#of Licensor Firms	15	5	3	1	2	1	1	2	2	0	2

Range: 1-419 licensees; Mean for Respondents: 50.47 licensees; No Response: 3 Firms

TABLE E

LENGTH OF PAST LICENSING EXPERIENCE

Before 1950	1950-60	1960-70	After 1970	No. of Responses	No. of Firms
16	4	8	5	4	

Table F

lapsing, and technology licensed to the overseas affiliates of a U.S. licensee or customer at the latter's request. While minor and occasional in the overall sample, no doubt to the particular companies involved, these considerations may have been paramount at the time.

The number of overseas licensees in the sample shown in Table E appears to follow a Chi-square distribution, with a mean of 50.47 licensees, but a median of only 17; and as many as 15 licensor firms have less than 10 licensees. An interesting fact, however, is that, in a substantial majority of firms, the number of nonaffiliate licensees exceeded the number of their overseas equity affiliates. The number of licensees and affiliates are reasonably correlated positively. The fewer the number of licensees, the lower the firm's overall international activity.

Table F shows how long firms have engaged in international licensing. A majority began after 1950, the start of the big American multinational expansion. In this period, the higher number for the 1960s is congruent with the fact that U.S. direct investment also experienced the fastest growth in that decade.

CONCLUSION

The ability to rely almost solely on equity investment as a means for overseas expansion of the firm has been considerably eroded by changes in the international economic environment in the last decade. While licensing as an overseas business mode continues to have several drawbacks, it definitely has a significant role and contribution to make to corporate profits under selected strategy and environmental circumstances detailed above.

The key point made by this paper is that the time has passed when firms can afford the luxury and cer-

titude of ruling out licensing to any but controlled foreign affiliates. To do so is to miss significant income opportunities.

In a more complex, risky and regulated environment, a licensing arrangement, carefully designed as to its long-term implications and with auxiliary transactions wrapped around the technology transfer core, can sometimes produce as attractive an income stream as a direct investment, and with lower risks.

By the same token, an inventory of processes and technologies in the company can reveal neglected licensing opportunities. Several firms have found that an organized program of "marketing" selected technologies all over the world can yield handsome incremental profits. The study done on a sample of firms shows that many are moving in these directions and are incorporating licensing into their strategic planning.

NOTES

1. The 80% figure is corroborated by other studies such as Lightman, J., "Compensation Patterns in U.S. Foreign Licensing," *IDEA*, Spring 1970, or Lovell, E., *Appraising Foreign Licensing Performance*, New York, Conference Board, 1970.
2. This conclusion is verified in a study of 66 licensor companies by Telesio, P., *Foreign Licensing Policies in Multinational Enterprises*, DBA dissertation, Harvard, 1977.
3. LDC licensee propensity to export was 57% of the already low propensity for industrial nation licensees, the difference being significant at the 0.02 level.
4. See Eric Hayden, *Technology Transfer to East Europe: U.S. Corporate Experience*, New York, Praeger, 1976.
5. See Telesio, Footnote 2.
6. *Wall Street Journal*, March 9, 1981, p. 25.
7. The two are: (a) An analysis of aggregate U.S. Commerce Department data in Contractor, F., "The Choice of Licensing Versus Direct Foreign Investment as a Function of Country and Industry Characteristics," Working Paper, Graduate School of Management, Rutgers University; and (b) Telesio, P., *op. cit.*
7. See Davies, H., "Technology Transfer Through Commercial Transactions," *Journal of Industrial Economics*, December 1977; and Lall, S., "The Patent System and the Transfer of Technology to Less-Developed Countries," *Journal of World Trade Law*, January 1976.
9. With two companies dropped from the initial 39, the sample still remains reasonably representative.