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Technology payments

The subject involves three problem circles:

1. Evaluation of the technology - What is the technology "worth" or in other words, is the "price" demanded by the licensor or transferor correct or is it exaggerated?

2. Forms of payment - What are the possible forms for paying such "price" and which is the most advantageous form for payi it?

3. What other forms or sorts of payment for technology occur whe concluding a contract?

1. Evaluation of the technology or of the consideration demanded

A preliminary remark: Since the most important element of the "tec nology" is the "know-how", and since those elements that do not be long to the public domain, are the intellectual property of the pe son developing it /even if not covered by a patent/ and remain such property, title to such know-how does not change. Consequentl the transaction is not a sale, and therefore the consideration pai is not a price. Nevertheless, for the sake of simplicity, the word price will be used.

Immaterial goods are always individual "commodities". There is no formula for their pricing, logic alone must be followed in trying to determine the value and the price of a licence and of a techno- logy.

Let us consider some methods logic should be based upon.

1.1 Rules of thumb - Business sense

They are usefully applicable if the technology is not a mono- polistic one.

- Most used one: The total licence fee should be around 50 % of 1 year's profit made by the licensee under the licence.
- 25 % of the estimated total profits.
- 10 % of capitalized costs.
- In some industries: 1-2 % of the total sales value of the new product.
  5-10 % of the total sales price.

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1.2 Typical royalty rates for so called standard technologies are shown in Annex 1.

1.3 An analysis of factors considered by the parties appeared in literature indicates the following ones:

Licensor: - Costs of developing and patenting
- of maintaining the technology /development/
- of assistance in the transfer
- of assistance by absence of staff /losses/
- of losses due to potential risks through losing control of technology /dissemination infringement/
- of losses in potential penalties.

These are measured against:
Incomes - from licence fees and
- other potential advantages.

Licensee: - Licence fees will reduce his profits
- He has to carry most of the risks
- How much it would cost him to develop the technology or a similar alternative
- How much he could gain by taking the licence instead
- How much an alternative process taken from another licensor would cost and how much could be gained thereby.

1.4 An American analysis of the licence fee determining practice of a considerable number of American companies in a number of countries gave the following conclusion as to "pricing":

Licensor:

Lower limit of the offered price is determined by taking: the sum of expenses involved with the transfer and incomes from an alternative investment of such efforts at their present value discounted at a given interest rate.

Upper limit - two factors are considered:
- value of the technology to the licensee /in the evaluation of the licensor/
- at what price the licensee could obtain the same technology

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from another supplier /in evaluation of the licensor/

The lower value of these two factors is taken as the upper limit.

Licensee:

Maximum price acceptable by the licensee is determined by the lowest value of the following three factors:

- Profits obtainable by using the given technology
- Price of a similar technology of competitors
- Expenses for developing the technology by his own means.

1.5 An analysis of the practice of Japanese licensor companies shows the application of a consideration system or method.

Depending upon the degree of market predictability for the given item, they take various bases for reference:

- Product quantity multiplied by unit price of product
- Marketable product quantity multiplied by product unit pric
- "Value" of the technology transferred /e.g. the economy or the value added made by it multiplied by the number of its applications/
- The same "value" multiplied by product quantity
- The same "value" multiplied by the marketable product quantity
- The profits realized.

Then they take a licence fee considered to be average in the particular branch also depending on the nature of the agreement and on the value of the licence, as well as a percentage share from the profits between the licensee and the licensor together with some correction factors and take a product by multiplying the reference base by the correction factor.

An example:

In the case of an average rate of 4 % in the given branch, if the know-how transferred is applied only to 50 %, if public interest motivates its introduction and it involves a large input of investment, the correction factors are 0,5, 1,5 and 0,8, and the corrected licence fee will be:

4 x 0,5 x 1,5 x 0,8 = 2,4 %.

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1.6 A value estimation method /Prof. Korán/

Basics:

The value of the licence can be approached by the following relationship: $L = z \times i \times Q$,

where "z" appears in percentages, "i" in years and "Q" in terms of money in the selected currency.

The "z" rating factor and the "i" time factor serve mainly for assessing qualitative relationships. Their contents can be interpreted by means of functions

$$z = f/u, b, c, t/$$

and

$$i = f/v, h, c/,$$

wherein "u" rating factor reflects novelty, "b" complexity of tas and solution, "o" level of solution within its own category, "v" development rate in the given industrial branch, "h" share of the new technology in the branch, "e" class of value volume.

Thus, "z" being a potential factor, depending on the technical level, complexity and importance can be termed as royalty ra or licence fee rate, "i" being again a potential factor depend- ing on the development rate, frequency of use and on volume value, whilst "Q" means the annual added value or profit or pr duction value or other characteristic mass value.

Excellent results have been acieved with this method. Details can be found in Chapter VI.13 "Payments in Transfer of Techn logy Agreements" of UNIDO's Manual for Technology Transfer Negotiations.

1.7 Ranking methods /unweighted and weighted/ and the Point Syst Method for technology assesment

They all give valuable insight into appropriateness of techn logies, the risks involved and their impact on national scar city factors. They are based on the comparative analysis of actual offers of licensors or transferors, by giving various weights or points to the critical factors of the project. /S "The Evaluation of Technology" by Prof. Árni/.

1.8 Some conclusions on the various above scientific value analys methods /1.4-1.7/ that can be found in literature:

- All of them take uncertain conditions and factors for grant
- It is common in them:
  - They consider profits made by the licensee by using the technology
  - They consider the prices of competitors.
- Their use is nevertheless advantageous, because:
  - They give a better insight than not doing anything
  - Many factors can be correctly calculated
  - All of them force us to reply to questions we have to loo into
  - None of them replace a thourough analysis of the actual a individual situation and conditions.

The level of price is basically determined by competitive prices - if there is competition at all for the same process, or by an alternative process - if there is an alternative.

As to the real "value", the expected profits will be indicati

1.9 Here we arrive at the rule of thumb and to the most commonly applied practice, the principle of profit-sharing. Indeed, it is reasonable: you give me a technology that enables me to make a profit and you get a share of it.

This leaves us with four questions:

- How high are the profits going to be?
- For how many years?
- How should it be shared?
- How should the licence fee be paid as such share?

Profits how high?

To determine the amount of profits, we have to determine:

- Capital demand
- Production costs
- Return of capital
- Length of making profits /leads to the question: For how l

To determine capital demand is relatively simple and goes wi the least uncertainty, also relatively most exactly.

But, it can only be relatively exact, if it costs roughly as

much as had been calculated. This not only needs expert calculation and planning, but also a well organized investment realization within time and budget, as well as good contracting and procurement.

Calculation of return of capital is more intricate with more uncertainties. This needs expertly carried out market researc early contact with potential clients and buyers.

But not even this is enough, because there is also another question: How long are prices going to remain at that level?

In other words: Profits - For how long?

We need an analysis of market trends, including what alterna ive products could be expected and what alternative processes This requires a complex and permanent survey of literature, including patent literature. This work must remain a permanen practice even after the project is implemented.

Yet, once we have calculated the total demand for capital an the possible return of such capital for the selected technol gy, we also have a fair value for the annual profits - at le for a reasonable number of years.

If we do such analysis on a comparative basis, comparing com peting offeres, we not only obtain information, but are also helped to find the best solution.

Another important feature: Price is not the only important c dition in a contract! Warranties, technical and other assist ance are no less important in the comparison.

Share of the profits, how?

This is only a symbolic way to express the nature of the lic ce fee, since the licensor does not run the business and can not be made responsible for the commercial success of the project.

Consequently, it might happen, that notwithstanding the fact that the technology is good and the licensor has met his ob- ligations, because of incorrect preparation of the project, incorrect practice of the technology or poor management in other fields, the licensee has either no profits or less tha

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expected. Needless to say, this does not mean that the licens would not be entitled to get licence fees. This would not be fair to the licensor. He should be entitled to some reward. This is the role of the minimum royalties. Similarly, it woul not be fair to the licensee, that should the project be a fai ure due to any reason, he should be compelled to continue to pay minimum annual royalties over a long period. Two things should be done and foreseen in the contract:

- Reasons of the failure should be jointly analysed and the situation jointly repaired - if possible; and
- If there is no possibility to make the project lucrative, the contract should include a provision permitting the parties to dissolve it in joint decision - or to put it into a ice-box until the proper conditions are created.

Remark: The more critical technical factors are guaranteed as "value warranties", the more such risks could be reduced, and the more the licensor is involved in each pahse of the well o ganized project realization, the greater are the chances for a success.

<u>The share of the profits must be equitable to both parties</u> and keep them interested in the success.

<u>Some methods to check</u>:

- Compare licence fee against internal rate of return of capi al. Licence fee is economically acceptable, if internal rat of return of capital for licensee is reduced by the licence fee payment obligation by only about 20-30 %.
  Example: - Invested capital could be returned at the rate of 14,8 % in 5 years without licence fee payment
  - A 25 % reduction in such a rate would increase return by 2 years.
  - Consequently, investment would become lucrative in 7 years, instead of 5 - Too much.
- Check rate of return of the licence fee payment only
  - Calculate total licence fee payments over first 5 years
  - Divide this figure by total profit of one year at full capacity production
  - Figure obtained is acceptable if it does not exceed approximately 5 years.

- A method independent from profit calculations:
  - Take sales profit figures applicable in the branch
  - Assume licensor's share of such profit rate is 1/8 to 1/6 depending on value of technology /continuing support, patent protection, trade-mark etc./
  - The result will be a reasonably fair share for the licens

  Example: - Applicable sales profit figure: 24 %
  - Royalty rate: 3-4 % on net sales price.

1.1o WORKING METHOD SUGGESTED:

- Calculate capital return
- Make market and market trend analysis
- Calculate cost of developing the product or process yourself
- Investigate cost of alternative licence and what profit it would provide /ask for other offers and analyse separately and comparatively/
- Evaluate licence and technology by 2-3 suggested methods
- Assess by rule of thumb
- Check result by methods mentioned for checking

1.11 Two more remarks:

- Since licence fees are paid from profits, profits are usually higher. Thus, it is the licensee and his country, who get the greater share. This is one of the factors of the Japanese successes: they took a great number of licences. BUT: they absorbed them fast and immediately started to further develop them.
- If the licensor has a powerful research and development department, it is in the interest of the licensee to make the term of the licence as long as possible to get the results of the development, even if he has to pay royalties over a longer period. Consequently, the generalised decisio of certain government agencies limiting both the percentage of the royalties and the term of the contract seems to be rather short-sighted and not only waive such development results, but also make the licensor lose his interests in the success of the project.

2. Forms or methods of licence fee payment

Basic forms: - Lump-sum payments /once-and-for-all payments/
- Running royalties /long-term payment/
- Combined - Entry fee + royalties.

Lump-sum payments

Two categories:

- A once-and-for-all single amount.
  The correct name is: Lump-sum fix
- Lump-sum royalty paid-up
  Means that by paying the amount of the lump-sum, a certain capacity of production is licensed and paid for. Should the licensee produce and sell more, he has to pay for the excess production running royalties.

The lump-sum fix can be split into parts and linked to certain dates or supplies.

Advantages of the lump-sum fix payment for the parties

For the licensor:

- Gets his money immediately
- He has no more obligations and no more risks.

For the licensee:

- Gets the technology package, pays for it and has no more financial obligation
- No accounting, book-keeping required
- The amount payable is less due to lack of interests
- It may be added to the capital investment costs and financed.

Disadvantages for the parties

For the licensor:

- The total sum of royalties might be higher in the case of succes

For the licensee:

- Has to pay the total amount immediately, whilst fruits can be collected later only
- Licensor has no incentive for success of the project

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- Licensor has no obligation to reduce his risks
- No cooperation between the parties.

Conclusions

- This form is appropriate only when a continuous cooperation is not required.
- There is no way to correct later any errors made in fixing the licence fee.
- If still selected, it is sound to split it and link instalments to certain events /delivery of documentation, successful PGT - Performance Guaranty Test/.

Running royalty payments only

The most characteristic feature of licence agreements is the long-term cooperation of the parties. It is only natural therefore, that the rewards of the licensor should also have a relation to the success of the cooperation. This is most easily achieved by means of the royalty payments, the moral of which is exactly such correlation between reward and the extent of successful exploitation as measured by the quantity or value produced.

The royalty could be related to the price of the product, or to some natural unit of the product or production, such as quantity /pieces, weight, surface, volume/. Should this be impossible for some reason, it could be related to the quantity of the material processed.

The relationship between payment obligation and production could be linear, progressive or degressive /"quantity bracketed, downward adjusted"/.

If it is related to the price, it is fixed to a percentage of the price. It should be specified in the contract what sort of price, net or gross, if gross, at what parity, if net, what factors shoul be deducted. If it is related to some natural unit, the royalty is usually a fix amount stipulated in the agreement. The contract should always specify, how the royalty should be calculated.

As to the height of the percentage:

In the case of mass products, it is usually rather low. E.g. in the mineral oil production it could be a few thousandths per ton

/0,001-0,009 %/ton/, but it could run from 10 to 30 % in the pharmaceutical industry or from certain products of similar valuable and monopolistic technology.

It is usually advantageous for the licensee, because it is paid from money already earned or from incomes to be received in the near future. A further advantage is that it follows inflation. Als it gives freedom to the licensee in pricing.

Some of these advantages is lost, if it is based on natural units.

Sub-types or sub-varieties

- Running royalty with a "quantity-bracketed downward adjusted" feature means that royalty scales are degressive with increasing production quantity scales.
- Running royalty with a progressive scale is the inverse of the former one.
- Running royalty with a rate decreasing in time intends to consider the moral wear and tear of the technology. It does not app if further developments are transferred.
- Annually maximized royalty payments - an annual maximum is fixed
- A maximized royalty payment - a total amount is fixed as a maximum payable.
- Running royalty with an annual minimum. An often used form. Its role is to stimulate production and prevent blocking. It is backed by a financial security /a bank guaranty or an L/C or D/C, e.g. by a revolving L/C/. Its value is usually abt. 1/3 of the royalties expected in one year. There is usually a grace period for the introduction of the new technology with 0 or a reduced minimum.
- Split royalties. This form is applied if more rights are licensed /patents, models, know-how, copyright, trade-mark/. It may be of particular advantage if it is to be expected that the different elements get greater or lesser relative importance as time goes by.

With all these advantages, it has a considerable disadvantage for the licensor that he does not get any amount at the conclusion of the contract that would cover his expenses involved with the trans

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fer and no consideration of all the work involved in the development of his technology.

The combination of and "entry fee" and running royalty payments

This is perhaps the most frequently used form, because it combines the advantages of both above mentioned systems.

Whilst there are quite wide polemics in literature as to the role and contents of these two parts of payments, practice shows, that their proprtion varies with the actual interests of the two parties at the time of concluding the contract. And of course, it also depends on their negotiating powers and skills.

The entry fee could usually be 20-30 % of the estimated total licence fee payable under the contract, but it could be anything else.

Summary

- In any of the forms, licence fee will be based on the profit spliting principle.
- All payment forms can be reduced roughly to the same total amount of licence fee payable. The reference base is the profit and all future payments are converted to the "present value" by discounting them at a given rate of interest, which is then adjusted to the terms of the contract.
- The licence fee is evaluated on the basis of profits but is expressed as a percentage of the net sales price invoiced.
- It is prudent to check the value so obtained by means of the rules of thumb and other methods indicated.

An important aspect: Advantages offered by the new product or technology are shared not only by the licensor and the licensee, but also by the clients of the licensee. There is no business success, if not all of the interested parties find their own advantages and interests.

Duration of payments

In the case of patent plus know-how licences it is usual to have a term equal to the life of the patents in the territory licensed.

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In the case of know-how only licences, there is a great variety, depending upon the complexity of the know-how and possibilities for improvements. Thus, they may run from 6 months to 5 to 10 years, with possibilities for prolongation.

Trade-mark licences: May run indefinitely.

Software licences are usually perpetual. There are usually no royalty payments involved. Parallel maintenance agreements are concluded and renewed at the need and discretion of the parties.

3. Payments for technical assistance and other activities involved in transfer of technology transactions

Training

Since training is perhaps the most important channel for the transfer of the technology or know-how, it is considered in general that a certain training should be provided by the licensor under the financial cover of the licence fee. It also should be remembered, that in a licence agreement there are two "goods" involved: the know-how /patented or not/ and the permission for its use.

Of course, if a prolongued or a repeated training is considered necessary, this should be separately paid for. Even in the case referred to, expenses involved with the travel and stay of the trainees must be covered by the licensee. Also, if the trainer has to stay at the licensee's plant for a prolonged period, the licensor is entitled to indemnification.

Consultations

It is a general practice that consultations are free as such, if they are at the place of the licensor. Again, travel and stay of the staff members of the licensee, or if the consultations are at the licensee's place, of the consultants, are to be borne by the licensee. Such payments are effected by remittance, sometimes in advance.

Supervisions

They are usually not free of charge and are to be paid at the rate customary with the company of the licensor. Of course, they are different for leading engineers, masters and operators.

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There is quite a considerable difference between rates demanded by American, Japanese or European companies.

Complete plants

There are various constructions for payment:

- Lump-sum
- Cost reimbursable
- Target price
- Combined payment: - Licence fee - Entry fee + running royalties
  - Services
  - Equipment lump-sum

Payment schedules - if lump-sum payment is selected

Most often: - Advance payment /10-20 %/
- Payments against progress of work /60-70 %/
- 1. last instalment /10 %/ against Provisional Acceptance certificate on successful Performance Guaranty Test /PGT/ Run
- 2. last instalment /10 %/ against Final Acceptance certificate after expiry of the Mechanical Guaranty Period /this instalment may be replaced by a bank guaranty letter.

Price revision formulae

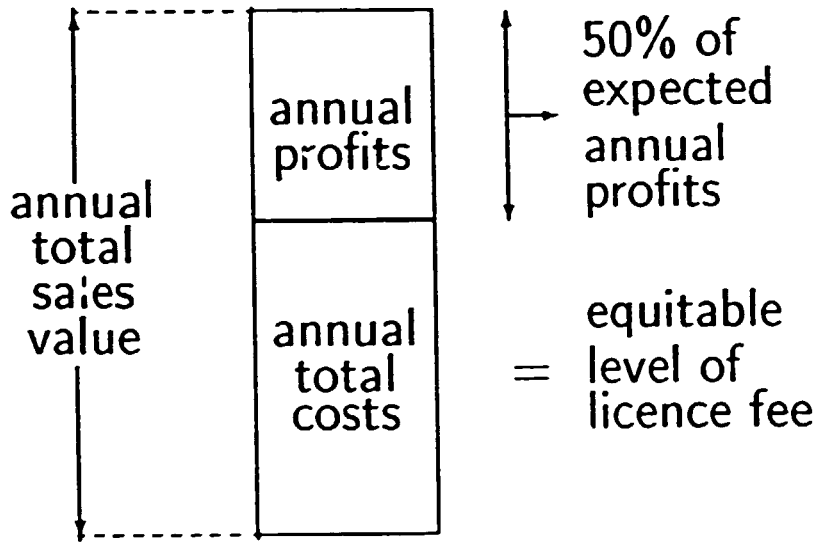
Applied if the investment takes longer time and wages and material prices are expected to be subject considerable changes. Quite a number of such formulae are suggested and available in literature.

TYPICAL ROYALTY RATES

Heavy chemicals	0.5 - 1
Paintings	3 - 5
Pharmaceuticals	
- Traditional products	3 - 5
- Advanced, e.g. Biotec.	5 - 10
Food processing	2 - 3
Organics (Plastics, Synthetic Resins)	2.5 - 8
Cosmetics	2 - 8
Mechanical ind.	1.5 - 3
Electronics	4 - 6

Obs: Values represent % of net sales

"RULE OF THUMB" FOR DETERMINING THE LICENCE FEE



(Does not apply for high-tech.)

FACTORS DETERMINING THE VALUE OF THE LICENCE (OR TECHNOLOGY)

- The TYPE OF PURPOSE it serves and the VALUE of that service
- What it COST THE OWNER to obtain or develop
- The NUMBER OF SUPPLIERS that can offer it

BASIC QUESTIONS FOR LICENCE FEE EVALUATION

- Profit—how much?
- For how many years?
- How to split profits between licensee and licensor?
- What modality to use for paying the licence fee?

LICENCE FEE vs. INTERNAL RATE OF RETURN

Licence fee economically acceptable if internal rate of return on capital for licensee is reduced by licence fee payment obligation by only about 20–30% (in the chemical industry).

EXAMPLE:

- Assume invested capital could be returned at the rate of 14.8% in 5 years without licence fee payment obligation
- A 25% reduction in such a rate would increase return by 2 years
- Consequently, investment would become lucrative in 7 years, instead of 5.

QUICK METHOD FOR CHECKING RATE OF RETURN OF LICENCE FEE ONLY

- Calculate total licence fee payments over first 5 years
- Divide this figure by total profit of one year at full capacity production
- Figure obtained is acceptable if it doesn't exceed approximately 5 years

INDEPENDENT METHOD FOR CHECKING CORRECT ROYALTY RATE

- Disregard profits
- Take sales profit figure applicable in branch of industry in question
- Assume licensor's share of such profit rate is 1/8–1/6 depending on value of technology and contract conditions (continuing support, patent protection, trade mark, etc.)
- The result will be a reasonably fair share for the licensor

EXAMPLE:

- Applicable sales profit figure: 24%
- Royalty rate = 3–4% on net invoiced sales price

ASSESSMENT OF LICENCE FEES

- Calculate capital return
- Undertake market and market trend analysis
- Calculate cost of developing the product or process yourself
- Investigate cost of alternative licence and what profit it would provide
- Evaluate licence by
  - Root-Contractor method
  - consideration system or
  - Korán method
- Assess by rule of thumb
- Check result by methods indicated in the Visuals 14, 15 and 16

BASIC FORMS OF LICENCE FEE PAYMENTS

- LUMP-SUM
  (one single amount or a once-and-for-all payment)
- ROYALTIES
  (running or long-term payment)
- combined: ENTRY FEE + ROYALTIES

HOW IS A ROYALTY SPECIFIED?

EITHER IN

- MONEY PER UNIT OF PRODUCT (manufactured or sold), measured in
  - WEIGHT;
  - VOLUME; or
  - NUMBERS (PIECES) of units:

$$\frac{\text{price in dollars}}{\text{tons (kg), m}^3\text{ (litres), pieces}}$$

OR

- PERCENTAGE of MONETARY VALUE of the PRODUCT manufactured or sold:

$$\frac{\text{price in dollars}}{100} \times \text{royalty rate}$$

DURATION OF LICENCE FEE PAYMENTS

TYPE OF LICENCE	POSSIBLE DURATIONS
patent-only	• up to expiry of patent
one single business opportunity	• term of the business
know-how-only	• once-and-for-all payment • 12 months • 5 - 10 years
trade-mark	• usually indefinite (trade mark protection renewable)
software	• perpetual • until used • until cancelled because licensee violated secrecy and copyright obligations
industrial design	• life of such protection • indefinite
combined rights	• full-term patent life • 10 years with renewal rights • full-term patent with split royalties and tapering rate for know-how

WHAT IS A LICENCE?

LICENCE = EXPERT
KNOWLEDGE
(know-how)

plus

PERMISSION
TO USE IT

WHAT IS KNOW-HOW?

KNOW-HOW = KNOWLEDGE AND EXPERIENCE that can be used in practice

WHAT IS A LICENCE FEE?

LICENCE FEE = CONSIDERATION for a

- PERMISSION (GRANT) ONLY,
  if no know-how is required

OR

- PERMISSION (GRANT) + KNOW-HOW