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Assessing technical co-operation: the case of rural industry

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The assessment exercise reported here resulted from an increasing emphasis under the ILO's World Employment Programme on critical investigation of operational problems in the area of technical co-operation and policy implementation.

It was decided to review a number of recently or nearly completed ILO/UNDP rural industry and handicrafts promotion projects for the dual purpose of improving the ILO's future performance in designing and monitoring technical co-operation schemes and also of making a modest contribution to the more general problem of *ex post* project evaluation. Here we shall attempt to assess what happened in each of these projects and then to develop a measure of their contribution to the respective national economies.

I. The sample

In choosing our sample, a number of criteria were applied, some technical and some practical. In the first place we wanted projects that centred on creating directly productive activity. Secondly, each project should be fairly modular, in the sense that improving the lot of its clientele was more or less independent of other ancillary assistance. Finally, the projects as a group should provide interesting and useful comparisons and be fairly representative of current ideas on promoting rural industry. Practical considerations in the shape of time, staff and data available further constrained the choice.

Eleven projects were originally selected but it was subsequently found that only eight yielded enough comparable data for the exercise. These eight projects are described in summary fashion in table 1. They varied in duration from 3 to 12 years, with identifiable project costs ranging from US$192,000 to US$1.8 million. The UNDP contribution typically covered the principal foreign exchange component of the exercise: the cost of experts and short-term consultants, fellowships and imported equipment. The host-country contribution was usually in the form of physical facilities and counterpart personnel.

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Table 1. Eight ILO/UNDP rural industry projects (including handicrafts)

Project	Industry	Duration	Project cost (US$ '000)			ILO experts	
			UNDP	Counter-part	Total	Posts	Man-months
A	Woollen carpets	1967-76	246	285	531	3	164
B	Woollen carpets	1964-70	120	1 305 [1]	1 425	1	72
C	Woollen carpets	1972-76	210	76	286	1	53
D	Artistic handicrafts	1973-76	1 215	625	1 840	10	308 [2]
E	Artistic handicrafts	1973-76	1 032	767	1 799	15	297
F	Ceramics	1972-76	146	75 [3]	221	1	42
G	Wood carving	1969-74	144	48	192	1	47
H	Leather tanning	1959-71	220	—	220	1	128

[1] Includes $466,000 of in-kind payments provided by FAO under the World Food Programme. [2] Does not include 38 associate expert man-months provided under bilateral funding. [3] Of this figure $20,000 were provided by a private charitable organisation.

With respect to international personnel, the number of posts refers to predetermined assignments in which the expert remained for one year or more. The man-months figure includes regular posts plus short-term consultants.

Origins of the projects

Among technical co-operation projects every case is a special one.

Project A originated when a group of unemployed women, outcasts from nomadic tribes, migrated to the country's new capital city. Project C was the outcome of three years of drought, culminating in civil unrest and an emergency request for UNDP assistance. Similarly Projects D and F were the result of a compelling need for visible constructive action following labour riots, coinciding with the presence in the area of ILO advisers with a background in artistic handicrafts.[1] Project H was initiated in response to the labour displacement following a ban on poppy growing. The wood carving scheme (Project G) was selected as the only workable option for revitalising a hunting-and-gathering aboriginal group which had failed to integrate into the surrounding society. Finally, two projects (B and E) were a continuation and expansion of established programmes.

Project descriptions

Projects A, B and C involved carpet weaving, an activity in which the ILO has a strong technical capability. The same ILO expert was active in Projects A and C, where he introduced the same technological innovation.[2] All three projects involved establishing self-sufficient training-cum-production centres, one such centre for Project A, a national network of centres for

Project B, and one centre complemented by a cottage industry " putting-out " system for Project C.

The two large-scale projects (D and E) were virtually identical twins. Both dealt with artistic handicrafts. Both were carried out in the same region. Both were pioneering ventures in the sense that no significant artistic crafts tradition predated the technical co-operation efforts. And both were planned, promoted and designed by the local administrative offices of the ILO and the UNDP. Each consisted of establishing a series of autonomous centres designed to train craftsmen, operate a production centre and serve as the principal marketing channel. Activities included a range of crafts (wood carving, jewellery, doll making, ceramics, silk-screen printing, etc), all either for sale to visiting tourists or for export. The trainee craftsmen for both projects were to be unemployed youths who as yet lacked any specific skills.

Project F was carried out in the same country as D and under virtually identical conditions. Its clientele (unemployed youths) and its market (tourists) were also much the same, but it was considerably smaller both in size (one expert) and scope (ceramics only).

The wood carving project (G) aimed to revitalise the wood carvers of a pacified aboriginal tribe in order to rehabilitate the people culturally and also to introduce them to a cash economy. The ILO expert first established a trading-post with stocks of barter goods and then spent several months touring the region, locating the old master wood carvers, buying some of their carvings and promising to buy others if they were of sufficiently good quality. Then, after cataloguing his purchases and printing an illustrated brochure including photographs of the carvers, he established a depot in Rotterdam and sold the carvings to museums and universities in Europe and North America. The money from these sales was then used to buy more barter goods for the individual carvers (e.g. flashlights, axes, fishing lines), as well as some communal goods for the tribe (e.g. a generator, X-ray unit and simple equipment for the local hospital, educational and recreational materials for the area's primary schools and an assortment of tools for 50 villages). Once the academic ethnographic demand had been satisfied, the carvers were encouraged to produce high-quality items for sale to commercial art dealers, selective gift shops, discriminating tourists, and the like. In 1971 the project was given a statutory purchasing monopoly in order to prevent private traders descending upon the villages and flooding the market with low-quality goods. From 1972 to 1974 the expert's services were limited to three months each year during which he returned to the project area to ensure that things were going well under the control of the local officials.

The leather tanning project (H) was located in one of the world's least developed economies. It is distinguished from other projects by its unusually long duration (12 years) and by the fact that it served three distinct client groups. After a preliminary feasibility analysis by an outside consultant in late 1958, the first expert (arriving in late 1959) directed his efforts for two years to extension work with about 30 local tanners of cow and buffalo hides.

During this time a centre was being built which, as it turned out, was only able to handle small and light-weight skins. Then the expert shifted to a second client group of 20 " preservers " who pickled sheep and goat skins. He organised these into a production co-operative using the centre's equipment as a common facility. When he left in December 1966, however, the co-operative broke up and the centre effectively ceased to operate.

A second ILO expert was sent to reactivate the centre in March 1968. In September 1969 there was a change in government policy, to the effect that the promotion of leather tanning would henceforth concentrate on the establishment of modern small factories. Formerly the responsibility of the Rural Development Department of the Ministry of the Interior, the centre was now placed under the Ministry of Mining and Industry; its new functions were to assist the Investment Advisory Service in promoting investment in mechanised tanneries and to train the skilled workers (the third group of project clientele) which such tanneries would need. ILO/UNDP involvement in the centre ended in June 1971.

What generalisations can we make about our sample? The objective of all these ventures was to create productive employment on a full- or part-time basis. In almost every case prior events predetermined a particular client group. In over half the instances (C, D, F, G and H) the projects were initiated to meet social or political objectives as well as to increase output and employment *per se*. In only one of the eight (H) can it be said that the social profitability of other possible areas of technical co-operation was seriously considered. On the other hand, there were only three instances (D, E and F) where projects were launched with no tradition of craft skills to build upon.

II. Project assessments

As Professor Hirschman has put it, " The development project is a special kind of investment [implying] the introduction of something qualitatively new and the expectation that a sequence of further development moves will be set in motion." [3] At what point of this " sequence " should the project be measured? It is possible to distinguish at least five levels at which a project's value may be quantified: (i) the amount, quality and timing of the inputs; (ii) the number of individuals trained; (iii) those who attain a minimum level of proficiency in the new skill(s); (iv) those who actually succeed in applying their new knowledge and skills; and finally, (v) the net additional national income that results from the new economic activity. Each is progressively more difficult to measure and most project evaluations confine themselves to the first three levels. Yet it is only the fourth and fifth which bear directly and immediately on higher standards of material well-being.

Quantification of the projects' direct results

Let us begin our examination of these eight projects by quantifying their direct identifiable results. Technical co-operation consists of a flow of services

Table 2. Directly quantifiable project results

Project	Number of people trained	Number of trainees employed	Other jobs created	Income to craftsmen (US$)	Gross annual production (US$)
A	300	206	.	164 400	118 000 [1]
B	1 000	1 000	72	198 500	364 500
C	300 [2]	1 450	24	56 570	152 000
D	125	38	14	66 000	132 000
E	170	50	20	82 750	120 000
F	22	20	0	26 000	26 000 [3]
G	.	300 [4]	3	1 200 [4]	20 000
H (i) Tanners	.	−11 [5]	0	15 300	15 300 [3]
(ii) Preservers	.	10 [6]	0	3 100	3 100 [3]
(iii) Technicians	9	9	0	1 700	1 700 [3]

[1] A major problem throughout the history of this project was the exertion of political pressure to pay the weavers a wage plus fringe benefits substantially in excess of the value of their product. An external evaluation mission calculated that the weavers' income in both cash and kind was approximately double the amount which would make the carpets profitably saleable within the region. [2] When this project started, there was a functioning co-operative with 1,200 active members. During the project's lifetime 300 more people were trained in carpet weaving and all co-operative members were trained in the use of a new metal loom and cotton warp. At the time of writing, 250 weavers are employed at the co-operative's workshop and another 1,200 weave at home. [3] In these cases the available data did not allow a separate estimate of gross annual production. The incremental income to the craftsmen is taken as a reasonable surrogate. [4] This project involved reviving a craft that had ceased to be practised among primitive bushmen. The " income to craftsmen " was the amount spent by the local authorities on barter goods and medical supplies. [5] Employment in this industry is on a piece-work basis. The project improved the quality of the local tanners' leather, which enabled them to compete with imported leather and with tanners in other regions of the country. The result was that they came to spend more of their time on market-related activities and less on production-related activities. Thus, because of the protective tariff and because the project never spread to other regions as planned, the fortunate few tanners who benefited were able to increase their income but produce *less* leather and thereby *increase* the underemployment of the piece-workers. This is estimated to have been equivalent to the annual earnings of 11 full-time adult unskilled workers. [6] The clientele of this project were initially making an inferior form of leather which was actually a preserved skin. Their craft was gradually dying out as a result of competition with tanned leather. Through the project, the craftsmen were in effect upgraded from skin preservers to proper tanners. Of the original 20, it is assumed that at least half would have been driven out of business had their techniques not been upgraded in this way. Therefore the project " increased " the number of employed craftsmen by ten.

aimed at transferring knowledge and skills which enable the recipients to increase their usable productive capacity. We can obtain a first-order estimate of a project's impact, therefore, from the number of people trained and then employed and their respective earnings and output. The results of each project in these terms are presented in table 2. For the sake of comparability, we have converted all monetary units into US dollars at the " free " exchange rates given by the World Bank in its *Current Position and Prospects* reports for the countries concerned.

Where reasonably accurate figures for employment and output were not available in reports or from interviews with the principals, we have constructed three alternative estimates. As an upper bound for employment, we have assumed that all completing participants, less those who are specifically identified as having gone elsewhere, have been employed in the field in which

Table 3. Estimates of direct benefits from Project H

Item	Hide tanners	Skin preservers	Factory technicians
Profits (US$) [1]			
Upper bound	15 273	9 251	.
Lower bound	9 818	836	.
Best estimate	9 818	2 054	.
Wages (US$)			
Upper bound	4 582	5 236	2 145
Lower bound	−1 964 [2]	436	589
Best estimate	−1 964 [2]	1 037	1 942
Employment	(FAE)	(Actual jobs)	(Actual jobs)
Upper bound	26	50	9
Lower bound	−11 [2]	2.5	3
Best estimate	−11 [2]	10	9

[1] Before any allowance for depreciation or indirect overheads. [2] See footnote 5 to table 2.

they were trained. The lower bound assumes that only those who are specifically identified as continuing in that field have in fact done so. The third or " best " estimate is located within these bounds on the basis of a subjective judgement after weighing all the evidence contained in the files. With respect to earnings, the upper bound is the figure reported by the expert as the amount a proficient graduate craftsman can earn. The lower bound is 60 per cent of the unskilled rural wage rate, the argument being that the individual would abandon the trade if earnings did not reach this Spartan minimum.[4] The " best " estimate is fixed in the same manner as for employment. Where the individual has employed others to work with him, these workers and their earnings are included.

In addition to incomplete or unreliable data, we have also had the problem of comparability, particularly where one project created new jobs while another strengthened or improved existing ones. In such situations we have estimated the " full-time adult equivalent " (FAE) by dividing the net increase of incomes by the amount earned by an unskilled but fully employed rural male adult.

As an example table 3 presents these estimates for the leather tanning project (H). For the sake of simplicity and because of space limitations, in the rest of this paper we have presented only the " best " estimates for each project.

Social profitability

Let us now raise our sights and consider the projects from the perspective of their social profitability. In recent years elaborate techniques have been

evolved for calculating the social profitability of development projects.[5] These involve revaluing project inputs and outputs at shadow prices (for labour, capital and foreign exchange) which better reflect the true opportunity cost of these resources than do existing market prices.

Such techniques are usually developed as part of the feasibility study carried out before a project is undertaken. Moreover, most of them assume an easily measured, saleable output. In making *ex post* evaluations, the handicap of having to make assumptions about physical productivity is, at least in theory, removed. Be it *ex post* or *ex ante*, the purpose of such a calculation is to determine whether and by how much project benefits exceed costs. This involves computing the present value of the stream of benefits a particular project creates and then expressing it in the form of a ratio to project costs.

In the case of a technical co-operation project, however, accurate accounting of inputs and outputs may not in itself be enough. Many of a project's benefits are in the form of indirect social effects whose contributions to national income cannot be directly assessed. Indeed, these indirect social benefits are often the primary objective of the project in the first place. It should also be remarked that the *net* social impact of a project—by raising expectations that cannot be satisfied, by opting for short-run solutions that create long-run problems—is not necessarily positive. Given these facts, and lest undefined and unmeasured social benefits be used to justify every doubtful project, it would seem prudent to make allowance for social benefits only in those cases where they are easily quantified or of unchallenged major significance.

For the present exercise our procedure has been as follows. On the benefits side, beginning with the value of total production generated by the project (gross annual production in the last column of table 2), we subtract recurrent annual costs which include all imported commodities and government subsidies (e.g. contribution of materials, financing of operating deficits, the salaries of government-paid personnel). It is assumed that the resultant net annual benefits continue indefinitely after the project is completed. To determine its present value this net annual benefits stream is then multiplied by the reciprocal of the discount rate, which we have taken as 10 per cent.[6]

On the costs side, the recurrent annual costs have already been subtracted from the gross benefits. For the capital costs, the total UNDP expenditure plus that portion of the host-country contribution covering rent and depreciation charges are divided by the lifetime of the project. This annual capital cost is then either discounted back or compounded forward (again at a 10 per cent discount rate) to the year in which project benefits commence. These two figures, then, the present value of the net annual benefits continuing indefinitely and the present value of the unrecoverable capital costs calculated to the year when benefits commence, constitute respectively the numerator and denominator of the final benefit/cost ratio. Ten such calculations are presented in summary form in table 4.

To measure social profitability in this way is admittedly extremely rudimentary. The procedure assumes that pure unemployment exists: the full amount

Table 4. Benefit/cost ratios

Project	Net annual benefits (US$ '000)	Year benefits start	Project duration (years)	Total cost (US$'000)	" Present value " costs [1] (US$'000)	" Present value " benefits [2] (US$'000)	Benefit/ cost ratio
A	−48	2nd	10	531	226	−480	−2.12
B	17	1st	6	1 425	1 138	170	0.15
C	126	2nd	4.5	286	238	1 260	5.29
D	6.5	2nd	4	1 840	1 465	65	0.04
E	54	2nd	3	1 799	1 535	540	0.35
F	26	2nd	3	221	203	260	1.28
G	20	2nd	3.5	192	127	200	1.57
H (i) Tanners	15.3	3rd	3	39	43	153	3.56
(ii) Preservers	3.1	2nd	8	149	120	31	0.26
(iii) Technicians	1.7	2nd	2.5	32	35	17	0.49

[1] After compounding forward or discounting back to the year in which benefits start. [2] After multiplying the net annual benefits (assumed to be a perpetual stream) by the reciprocal of the interest/discount rate (i.e. $^1/_{0.1} = 10$).

of measured employment and earnings are treated as benefits on the premise that the trainee's alternative job opportunity is taken by someone else. What about external benefits and external costs? External benefits in the form of increases in output may occur in *(a)* firms which supply inputs, *(b)* firms which purchase the output of the project for use as an intermediate good, and *(c)* firms which cater to the consumer demand deriving from the income generated by the project. The first case is taken into account by virtue of using sales (less imported inputs and government subsidies) as a measure of output. On the other hand, forward linkages and the Keynesian income multiplier—*(b)* and *(c)*—are ignored.[7]

External costs or diseconomies are also ignored. These consist of reductions in output which are suffered to the extent that less efficient producers are driven out of business and to the extent that project activities divert administrative, technical and supervisory skills, capital and foreign exchange from other uses.

Beyond the estimates of gross annual benefits and reported capital costs, there are five other factors that influence these ratios. In terms of the mechanics of the calculation, the benefit/cost ratio will be larger (i) the lower the recurrent costs, (ii) the lower the discount rate, (iii) the sooner benefits commence, (iv) the earlier the higher benefits of the project are achieved, and (v) the later the higher costs of the project are incurred.

The most striking aspects of these calculations is the generally low benefit/cost ratios. This is so despite the fact that many of our procedures are biased in the opposite direction. Recurrent costs have been estimated at levels lower than they actually were (particularly in Projects D and E) on the premise that greater efforts at efficiency and economy will be forthcoming once external

funding terminates. Only officially recorded capital costs have been included. In some cases we have used average annual investment costs instead of the actual profile in which the bulk of the costs is incurred in the early years. With respect to benefits, we have assumed that they start at the earliest possible date, that their full annual value is attained from the first year, and that this value is maintained in perpetuity with no diminution. More data and greater rigour would most probably have resulted in even lower ratios.

III. Conclusions

On the basis of our sample of eight post-project assessments, what statement about technical co-operation in the field of rural industries might we hazard? Clearly, our findings at this stage can only be tentative hypotheses for confirmation or refutation by further research covering a much larger sample. In the meantime we shall venture to draw what seem to be the appropriate lessons. These may be grouped into three categories, relating respectively to project management, choice of activity, and project design.

Concerning project management, there would seem to be three fairly straightforward points. The first, recognised by all, is the necessity for care and luck in the recruitment of experts. Three of the four projects with benefit/cost ratios greater than 1 had experts possessed of truly outstanding energy, adaptability and imagination. That one of these was also involved in a failure demonstrates that a good expert is not in himself sufficient. A second point is the need for autonomy, which implies a determination on the part of the executing agency and the national government to insulate the project as much as possible from political interference and bureaucratic struggles among local ministries and donor agencies. The final point is the timely provision of inputs: long delays in equipment delivery, counterpart recruitment and the like curtail the effective working time of the expert and hence both delay and lower the level of project benefits.

Our tentative conclusions about choosing a field of activity for a technical co-operation venture are more novel. The projects that arouse most enthusiasm among officials in both the donor and the host countries seem to be those calling for simultaneous action on several fronts. Yet, judging from our sample as well as from other observations,[8] these endeavours tend to bear meagre fruit. The relatively successful projects, on the other hand, have generally sought to provide a single missing ingredient (a market outlet in the case of Project G) or to remove a single bottleneck (a raw material shortage in Project C, primitive tanning methods in Project H). Where a whole range of integrated activities has to be undertaken for the project's objectives to be reached—tapping an untried market, utilising a new source of raw materials, training from scratch, and developing a new organisation—as was true for Projects A, D and E, failure is more probable.

Success is far more likely in supplying a missing component that will bring idle capacity into play than in building new capacity from the ground

up. Again, as Projects C and H illustrate, because the technical problems to be solved are fewer and the motivation to succeed is stronger, it is easier to save threatened jobs than it is to create new ones.

It is a corollary of the idle capacity approach that the project client group should already be active in the trade or craft being developed. Where employment is an over-all policy goal, it is a natural impulse to provide training directly to the unemployed (Projects A, D, E and F). Yet, as we have seen, the effective yield of this client group compares unfavourably with that of persons who have already demonstrated their taste for the trade, their minimum natural aptitudes and their motivation to work. Although less dramatic than working directly with the unemployed, the indirect method is far more sure: as technical co-operation with producers in an existing industry reduces costs or introduces new products, output expands and the number of unemployed diminishes.

This brings us to the third and final area, project design. Large-scale, multi-expert projects seldom work well. This is so for several reasons. They normally attempt to build new capacity rather than increase the utilisation of the capacity that is already there. Their prominence alone attracts a great deal of outside interference. Finally, their organisational complexity creates severe management problems that distract project personnel from their main job of providing assistance. The evidence at hand suggests that projects are likely to be more successful if they are comparatively small, of three to four years' duration, offer training or other services to *all* members of an established industry, work through proven organisational channels, and avoid the creation of new administrative structures.

These findings from direct observation of eight projects provide some testable hypotheses about technical co-operation—its general level of success as it is currently organised, what works and what does not—which can serve as grist in the mills of future researchers. It is hoped that the substance of our findings will persuade both scholars and aid donors that this type of *ex post* evaluation is well worth undertaking.

Notes

[1] It must be said, however, that even before the riots the government had exhibited an interest in obtaining UN assistance to develop handicraft organisations.

[2] The innovation consisted of a new metallic horizontal loom which keeps the warp yarn under tension. He also substituted cotton for wool or mohair as the warp yarn. In addition to conserving the scarce raw material, these changes raise both the economic value and the labour intensity of the hand-knotted carpets.

[3] Albert O. Hirschman: *Development projects observed* (Washington, Brookings Institution, 1967), p. 1.

[4] Where a rural wage is not available, we have used the wage of a night-watchman as reported in the UNDP *Report on living conditions* for the country in question.

[5] See, for example, OECD: *Manual of industrial project analysis in developing countries* (Paris, 1968); UNIDO: *Guidelines for project evaluation* (New York, United Nations, 1972; Sales No.: E.72.II.B.11); and L. Squire and H. G. van der Tak: *Economic analyses of projects* (Baltimore and London, Johns Hopkins University Press, for the World Bank, 1975).

[6] This conforms with the recommendation of a United Nations group of experts that " the time preference of the present generation for immediate rather than postponed consumption should be reflected in a discount rate of about 10 per cent ". See United Nations Research Institute for Social Development and Office of Social Affairs: *Cost-benefit analysis of social projects*, Report of a meeting of experts held in Rennes, France, 27 September-2 October 1965 (Geneva, 1966), p. 23.

[7] The Keynesian multiplier holds only to the extent that pure excess capacity exists. This situation is most likely to obtain for goods and services provided by the informal sector. However, a large proportion of the increased income of the formerly unemployed person and the relatives who were supporting him will probably be spent on formal sector goods whose production has positive opportunity costs. Thus, although the income multiplier is unlikely to be negative, it is also unlikely to be very large.

[8] See, for instance, the discussion of experience with ten large FAO/ILO integrated rural development projects in L. Richter: " Some tentative conclusions and recommendations ", in ILO: *World Employment Programme : rural employment promotion through integrated rural development*, Report of an ILO Advisory Working Group (Geneva, 1974; mimeographed).

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