Keith Marsden

Services for Small Firms

The Roles of Government Programmes and Market Networks in Thailand

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Services for small firms: The roles of government programmes and market networks in Thailand

Keith MARSDEN *

Many developing countries have established programmes of assistance to small firms. A common feature of these is an Industrial Service Institute (ISI) which provides research, training, technological development, information, marketing and other services to small firms. ISIs have been operating for up to two decades in some countries, often with the support of international organisations such as UNDP, the ILO, UNIDO and, latterly, the World Bank. Although no systematic evaluation of their performance has been undertaken, doubts are being expressed about their cost-effectiveness. It is suggested that small firms can acquire the know-how and assistance they need through the existing market networks composed of numerous enterprises of all types and sizes, specialised in different product and service fields, which have commercial relationships with small firms as suppliers of inputs or buyers of their output. The services offered by these enterprises are usually included in the price of the commercial transaction being performed and market competition, it is claimed, ensures that each firm gets what it pays for. However, in the case of public programmes, some critics argue, substantial costs are imposed upon society as a whole, while small firms derive little benefit because the ISIs lack the specialised knowledge, skills and perhaps motivation to meet their needs efficiently. More constructive roles for governments, the critics say, would be to (i) create the right environment for co-operative interaction between firms by establishing appropriate incentives and policies, and (ii) use their administrative skills (e.g. by organising seminars conducted by specialised firms) to promote the transfer of know-how in situations where market networks are weak or absent.

These questions were examined during a survey made by the author in Thailand in July 1982. The survey focused on the metal-processing industry (engineering) but also covered some ancillary products made from plastics and rubber. Discussions were held with the entrepreneurs or managers of ten small-to-medium-sized firms (employing between 15 and 130 workers) making components for diesel engines, motor-cycles, motor vehicles and

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other types of machinery and equipment. The components manufactured included gears, starting handles, air cleaners, filters, suspension arms, springs, conveyor rings, hooks, nuts and bolts, fuel tanks, silencers, cock drain pipes, shafts, rocker arms, cylinder heads, bearing cases, rubber shock absorbers, reflectors, rear-view mirrors, headlamps, tension pulleys, ball-nut cams and tool-box casings. The processes employed ranged from casting (steel and alloys), forging, heat treatment, turning, boring, die-casting, bending and welding to electroplating, mixing, injection moulding, pressing, polishing and spraying.

In addition, some suppliers and customers of these firms were inter-viewed. These consisted of a large-scale assembler of agricultural diesel engines and tillers, a machinery importer, an export trading company and a packaging material manufacturer. Government programmes for small-scale industry development were reviewed with senior officers from the Department of Industrial Promotion and the Industrial Service Institute. Finally, talks were held with representatives of bilateral and multilateral aid programmes for small-scale industry in Thailand, the Secretary of the Association of Thai Industries, the marketing director of a major Thai conglomerate, and faculty members from Kasetsart University and the Asian Institute of Technology.

During these discussions the inter-relationships among the firms and organisations were viewed from the perspective of users or providers of services. The small/medium-scale entrepreneurs were questioned about the problems encountered in their businesses and where they obtained assistance or information to deal with them. The providers of services were asked how they responded to these needs and why they chose a given response. The findings are based upon a small sample, but according to the respondents the behaviour and attitudes described in this article are fairly typical of the engineering and allied industries in Thailand. Moreover, the situation in Thailand is of broader interest because it illustrates general problems faced by small enterprises in developing countries and by government programmes set up to assist them.

Sources and types of assistance to small firms

The firms visited ran into numerous technical or managerial problems during the course of their day-to-day operations and the longer-term development of their businesses. Workers had to be recruited, trained and motivated to do high-quality work. Machines broke down or malfunctioned. Raw materials reacted to processing in unexpected ways. Customers rejected finished products because they failed to meet specifications. New technologies had to be evaluated and absorbed. Delivery schedules had to be maintained in the face of worker absenteeism. Stock levels had to be kept to a minimum because of the scarcity or high cost of working capital. New markets had to be found to compensate for the decline or loss of orders
elsewhere. The profitability and survival of these firms depended on their ability to find the right solutions to these problems and apply them rapidly.

In many cases, the firms could cope by drawing upon the extensive experience and skills of the entrepreneurs, managers and their own technical staff. In others, external sources of assistance were called in as troubleshooters in emergencies. More frequently, however, certainly as far as the most progressive entrepreneurs were concerned, the problems were anticipated and forestalled by means of collaboration with these external sources of know-how on a continuing basis, as part of their normal commercial relationship. Examples are given below by source of assistance.

1. Customers

All the firms surveyed were making components for two or three large-scale manufacturers or assemblers of diesel engines, agricultural tractors and tillers, motor-cycles or other transport vehicles, as well as selling spare parts through wholesalers and undertaking one-off jobs or small batch production for smaller customers. The largest customers provided extensive guidance, especially while a new component was being introduced into their production system. The procedures of a Japanese-Thai joint venture established in 1980 were discussed in some detail with its managers and ten of its suppliers (subcontractors). Other large machinery or vehicle manufacturers follow similar policies, so that there are probably several hundred enterprises engaged in subcontracting activities for large-scale engineering companies in Thailand. The transfer of know-how illustrated below reflects a mutuality of interests between contractor and subcontractor. The former obtains quality components more cheaply than if he made them himself (because of the subcontractor’s specialisation and lower overheads). The latter obtains more secure, expanding markets and access to information, advice and services he would otherwise be unable to procure for himself, either because his firm is too small or because he lacks the time to do so.

The main factory of the joint venture (JV) has a capacity of 100,000 engines a year, but concentrates on the grinding of the main bearing case and the finishing of the crank case, followed by the assembly of the 289 parts which go into the basic model. Following Japanese subcontracting traditions, and in response to Thai government regulations which require that 60 per cent of the parts must be manufactured locally by the end of the third year of operation, many of these parts are obtained from 46 independent suppliers in Thailand under close supervision of the JV. The initial selection of subcontractors was made by a team of engineers from Japan representing the parent company and some of its Japanese suppliers.

Those selected then participated in a series of trials with progressively larger batch sizes to test whether they could meet production and quality standards. The JV supplied drawings of each component, process charts specifying the machine operations required and quality control charts
indicating how the components should be inspected and checked at various processing stages. Advice was given on the selection of additional machine tools or testing equipment if necessary. During the trial runs frequent visits were made by members of the JV’s purchasing department, composed of nine engineers and five technicians with postgraduate experience in the engineering industry and, in some cases, in the Japanese parent company. Seven Japanese engineers also spent a year or more in Thailand providing specialised advice on operations in the main JV factory and in its suppliers’ factories.

In addition to this expertise, the subcontractors benefit from a sophisticated inspection laboratory in the JV factory. This is equipped with advanced diagnostic and testing machinery – including an electronic three-dimension measuring machine which checks all the relevant dimensions of a part against the specifications that have been coded into it – thus allowing early diagnosis of the causes of part defects, which may arise from deficiencies in the raw material or at any point in its further processing, and enabling remedial action to be taken before excessive wastage of materials and machine time has been incurred. Individual subcontractors could not afford to install or maintain such a laboratory themselves.

Apart from quality control systems, the JV provides advice in other areas of management where desired. These include plant layout, stock control, costing and job ticketing. Marketing of the specific components incorporated in the finished product is of course handled by the JV. Expansion of sales of JV engines results in increased demand for the parts supplied by its subcontractors. The JV provides training for its network of 600 dealers throughout Thailand, most of whom have mechanics and workshops attached. It also runs courses for farmers on how to operate and maintain engines and tillers. Instruction in simple repairs is given, partly through mobile service teams.

Association with one or more major customers like the JV enhances the ability of small engineering firms to diversify and expand their sales in other markets, because it demonstrates high standards of workmanship. Several of the firms visited had framed certificates, announcing their appointment as official suppliers to these well-known companies, prominently displayed in their offices to impress potential clients.

Other potential sources of marketing assistance are the export companies set up during the last five years at government initiative and with financial support from the major banks and industrial firms. These companies maintain sales offices abroad and occasionally arrange for foreign experts to advise Thai firms on the selection of materials and packaging techniques. However, they concentrate on final consumer goods such as foodstuffs, furniture and electrical equipment. They do not appear to have promoted international subcontracting between the Thai engineering industry and machinery or vehicle manufacturers overseas.
2. Machinery suppliers

Small firms can obtain a variety of services from their machinery suppliers. One of those visited employs 6 workers and produces gears and starting shafts for tractors as well as sugar machinery and undertakes general job engineering contracts for other customers. It recently installed an advanced electronically controlled Swiss grinding machine because it was getting too high a reject rate from its manually controlled universal grinders (dimension variations due to labour turnover and inadequate supervision). The supplier provided an engineer to install and set up the machine and train its operators. A two-year suppliers’ credit and maintenance and operational manuals were part of the package deal.

Another firm had experienced coloration and breakages in its plastic oil filter caps due to faulty settings in an injection moulding machine. The manufacturers of this machine supplied an engineer to make the necessary adjustments. A third firm, producing fly-wheel nuts, air cleaners, tension pulleys and bolts, had encountered difficulties in its heat treatment plant, causing variable hardness and roughness in texture. On the advice of its main customers these problems had been solved by the acquisition of an electronically controlled heat treatment and annealing unit manufactured in the Federal Republic of Germany. The manufacturer sent an engineer for one month to train the workers in its use.

Most specialised industrial machinery is imported through agencies based in the country. One is a widely diversified import/export trading house (TH) which has been established in Thailand for over 100 years. In the industrial equipment field, the TH’s main lines are printing machinery, fork-lift trucks, conveyors, cranes, packaging machinery, hand tools and welding machines. It also carries a full range of office machinery. Its after-sales service department employs 110 engineers and mechanics. Quoted prices include on-site erection, installation and training by engineers from the original suppliers for a 14-day period and a 12-month full guarantee covering any repairs or adjustments required. The TH offers preventive maintenance contracts to its customers (for a fee), involving periodic servicing performed by mobile teams. It provides interest-free credit for up to nine months; beyond that period, it arranges for leasing or hire purchase on request, through specialised finance companies. Credit is also obtainable directly from the machine manufacturers and from bilateral aid programmes. The TH’s after-sales staff has been trained abroad by its suppliers (well-known names in their fields in Denmark, the Federal Republic of Germany, Italy, Sweden, the United Kingdom and the United States). In the data- and word-processing fields, it runs training courses for the staff who will operate the equipment in its customers’ offices. The TH counts many small-to-medium-sized firms among its clients.

Before selecting new machinery, the owners or managers of small firms visit trade fairs in Thailand and abroad. They also read technical journals.
(mostly from Japan, the United States and Europe since there is no specialised engineering journal published in the Thai language). They are thus kept in touch with technological developments in their fields, and by shopping around are usually able to find the piece of equipment with the performance characteristics they require and at a price they can afford. Perhaps because those visited had some years of experience in their fields, they appeared to get better value for their money than some managers of new, large-scale projects in the public sector. The TH manager confirmed that his small-scale customers were usually shrewd and prudent buyers.

A particular advantage of the training provided by machinery suppliers is that it is associated with a specific technology and is undertaken at the time the new technology is introduced into the customer's factory or office. Thus, unlike more general institutional training, it enables the skills acquired to be applied immediately and prevents them from atrophying through lack of opportunity to use them. The instructors are also familiar with the range of tasks a particular machine can perform in production conditions which are very different from classroom simulations. With the existing machinery already installed in the firm, new recruits are given on-the-job training by the firm's own skilled workers. For most machine operators training lasts not more than two or three months. None of the firms visited participated in formal apprenticeship schemes, nor did they use government training facilities on a part-time basis. Occasionally supervisors were sent to seminars organised by suppliers or Japanese technical assistance programmes.

3. Material suppliers

The suppliers of raw material inputs are another useful source of information and help when required. Queries about the properties and processing characteristics of different qualities of steel can be addressed to the importers who, if necessary, will refer them back to the producers abroad (mostly in Japan). A press shop making rear-view mirrors has entered into a technical licence agreement with a Japanese glass manufacturer. This covers all the processes involved in cutting and backing the glass, moulding the frame, pressing and bending the attachments and final assembly. A technician from the press shop was sent for six months' training in Japan and the licensor recommended the machinery required.

Another firm visited makes components and household utensils from plastic. It relies heavily on the know-how of its suppliers of PVC, polyethylene, cellulose, etc. This know-how is not confined to the technical characteristics of these materials, but also covers new design applications which are particularly important in the consumer product fields.

A small manufacturer of shock absorbers and rubber mountings and gaskets for JV engines benefits from the testing facilities of a large-scale supplier of rubber and plastic. The JV specified the type of rubber to be used (quoting Japanese standards) and also provided drawings and testing charts.
used by its main supplier of these components in Japan. Tests to be performed included spring control, oscillation time and amplitude and breakdown load.

In the packaging field, discussions were held with the Technical Services Manager of an integrated pulp and paper plant which makes liner board, corrugated paper, boxes and multi-wall sacks. It assists its customers in packaging design (including graphics) and in technical troubleshooting for the packaging operations. It has also translated into Thai and published technical booklets obtained from its associates in Australia and Japan. The booklets illustrate packaging flow lines, describe tests for box compression resistance and bursting strength for bags and reproduce palletising charts and patterns for corrugated fibre containers. This is all information which the customers cannot readily obtain from non-specialised sources (such as the ISI, the Thailand Institute for Scientific Research or the Standards Institute) or learn from their own experience, and can result in considerable savings from reduced wastage, loss or breakage during storage, packaging and transport.

4. Public institutions

Government policy for the promotion and development of small-scale industries is co-ordinated through the Department of Industrial Promotion (DIP) of the Ministry of Industry. The DIP is responsible for providing various types of assistance to small-scale industrialists ranging from technical training to low-cost loans. It comprises eight divisions:

- The Planning Division co-ordinates the programmes and activities of all the divisions, undertakes technical and economic surveys and prepares feasibility studies for industrial projects.
- The Industrial Service Institute (ISI) in Bangkok renders technical training, extension and advisory services in the light engineering field. Services available are industrial engineering and design, heat treatment, electroplating, machine shop practice, tool and die design, foundry technology, woodworking and packaging. ISI Bangkok was established in 1966 with UNDP support. The ILO and UNIDO provided expert services for several years.
- The Industrial Service Institute (Northern Region) at Chiang Mai. This performs similar functions to the ISI in Bangkok and has also received support from the ILO and UNIDO.
- The Handicraft Promotion Division (HPD) offers training courses in handicrafts production and assists producers to improve product design and quality. The HPD also helps entrepreneurs to market their products.
- The Industrial Productivity Division (IPD) conducts seminars and training courses in business and management practices. Consultancy
services are offered in marketing, management, production and quality control.

- The Cottage Industries Division (CID) provides training and extension services in cottage-type activities throughout the country. It also engages in R and D activities to develop labour-saving tools and processing methods to increase production efficiency, improve quality and use more domestic raw materials.

- The Textile Industry Division (TID) offers training courses and consultancy services to textile producers.

- The Small Industries Finance Office (SIFO) offers low-cost, long-term loans to small-scale entrepreneurs to establish or expand their enterprises.

The DIP employs approximately 1,000 people. The budget of the Industrial Service Institute, which is the main government institution covering the engineering firms surveyed during the mission, is 9.3 million bahts (22.6 bahts = US$1) for fiscal 1982/83. It has a staff of 150 in Bangkok.

Considering the size and relatively long establishment of these government programmes, the services available were remarkably little known to the enterprises visited. Most had never heard of the ISI or the DIP. Only one had used their facilities very briefly – attending a seminar on oil hydraulics organised by the ISI but (significantly) conducted by a Japanese firm.

The impression left behind after discussions with the principal officers and division heads of the DIP, and visits to their workshops, classrooms and offices, was that some of the functions described above existed more on paper than in reality. The equipment in some of the training workshops was antiquated and appeared to be seldom used. No courses were being carried out at the time of the survey. Although about 1,000 persons had participated in training programmes during the previous financial year, most of the programmes had lasted for only a few weeks. A significant proportion of the trainees were the DIP’s own extension staff who had been recruited to man its 42 new provincial offices being set up under the current five-year plan (with five to ten officials per office). The ceramic division had been shut down. The last heat-treatment course had been given two or three months previously.

The main handicaps recognised by the Director were (i) inexperienced staff recruited directly from college, (ii) low salaries (3,000 bahts a month for a BA in engineering), and (iii) inadequate funds to cover operating costs – only 1 million bahts a year for materials.

Some of the constraints, however, may be endemic in government institutions of this type, since similar difficulties are encountered in other countries. In particular they suffer from lack of up-to-date, specialised know-how and an insufficient understanding of economic forces and market behaviour.
The problems experienced by small firms are specific to the products produced and the materials and machinery used. Rapid changes and innovations take place in all three areas. Advisers must be familiar with these developments and be continuously involved in the industries concerned before they can make reliable diagnoses of problems and suggest appropriate solutions which carry conviction with established entrepreneurs, who have mostly gone beyond the stage when advice based upon general principles or theoretical knowledge is of value to them. Although dedicated and enthusiastic, most of the technical staff of the DIP lack practical experience and know-how. The few who had previously worked in industry found it difficult to keep up to date while running in-school training courses. Furthermore, since the range of expertise required to cover the needs of all types of small-scale industry is very broad, institutions such as the DIP cannot afford to hire or retain a qualified staff of specialists to cater to more than a fraction of the trades in which small firms are engaged. However, prospective entrepreneurs may benefit from DIP training courses which give them a basic grounding in management techniques and accounting systems.

Other potentially useful functions of the DIP are to provide guidance to financial institutions on new investment opportunities which would be viable on a small scale and to identify overall constraints to small-scale industry development which could be removed by policy reforms. However, recent reports on surveys undertaken in provincial cities reveal a lack of understanding of the economic forces which determine the viability of small-scale industry and of how entrepreneurs respond to market opportunities and market conditions. Its approach to industrial promotion appears to be natural resource-oriented, recommending further processing of local raw materials without taking into account economies of scale or finding out whether demand is already being satisfied from other sources. Problems reported by entrepreneurs are accepted at face value without the underlying causes being identified. There is too ready an assumption that these problems should be tackled by direct government intervention without questioning whether the Government has the capacity or resources to deal with them. Thus the reports suggest that the Government should supply wood to furniture factories to overcome shortages in some areas; that it should advise entrepreneurs on plant layout, accountancy, marketing and training techniques; that it should reduce direct costs of production by subsidising electricity, water, telephone services and credit. There is apparently no awareness of the role of other enterprises in providing these inputs through market networks or of ways in which the Government could stimulate these inter-relationships through fiscal incentives without imposing an additional burden on the budget. As an example, abolition of the sales tax on components produced for other manufacturers would encourage subcontracting. The cost in immediate revenue forgone could be more than offset by savings in government programmes and by increased tax returns from businesses in the future through improvements in efficiency and profits. The
reports attribute weaknesses in past government programmes to lack of authority: "Low-ranking government officers who have direct contact with the entrepreneurs do not possess any authority while high-ranking officers with authority do not know the actual situations." But the real weakness seems to be a lack of relevant know-how, for reasons noted above.

Market behaviour and the policy framework

The inter-firm and inter-industry linkages illustrated in this paper are the product of several forces. To some extent they are inherent in any competitive market. It pays the manufacturers of machinery, engines, vehicles and tractors to provide a variety of services to their suppliers and subcontractors in order to lower the cost and/or raise the quality of their components. If their own final products are too expensive, or they break down too frequently in use, they will lose sales to their competitors and their profitability and ultimate survival may be at risk.

Similarly, it is in the interest of suppliers of raw materials and equipment to ensure that their customers use these inputs efficiently, because repeat orders will ensue and their reputation among prospective clients will be enhanced. The persons directly involved in providing these services (members of the purchasing and after-sales service departments in particular) are also motivated to perform well. They operate in production situations which provide a direct feedback on the results of their efforts and advice. Their salaries and even their jobs may depend on their effectiveness.

Of course, this does not mean that the availability of these support services through market networks results in optimal levels of efficiency in small-to-medium-sized engineering firms in Thailand. Previous surveys by consulting engineers have revealed several deficiencies. There are inevitable gaps in experience and knowledge in newly industrialising countries, as well as financial constraints which hinder the adoption of the best practices. The extent to which services are used is also influenced by market opportunities and the balance between the incentives and disincentives created by government policy.

The market for engineering products has been expanding rapidly in Thailand in recent years. As shown in table 1, value added grew faster than in manufacturing as a whole in four out of five engineering subsectors during the period 1975-80.

The engineering group accounted for 14.0 per cent of total manufacturing value added in 1980, and provided 25.5 per cent of manufacturing employment in 1977. The main sources of growth have been the expansion of domestic demand and exports. Import substitution has contributed little, as indicated in table 2. The Thai engineering industry appears to have become more competitive in international and domestic markets. Exports have grown as a percentage of domestic production while the rate of import penetration by foreign manufacturers has declined, as shown in table 3.
### Table 1. Growth of value added in engineering, 1975-80

<table>
<thead>
<tr>
<th>Sector</th>
<th>Value added 1</th>
<th>Average annual growth rate (%)</th>
<th>% share in total manufacturing value added</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic metals</td>
<td>408</td>
<td>710</td>
<td>11.7</td>
</tr>
<tr>
<td>Metal products</td>
<td>519</td>
<td>632</td>
<td>4.0</td>
</tr>
<tr>
<td>Non-electrical machinery</td>
<td>621</td>
<td>1,102</td>
<td>12.2</td>
</tr>
<tr>
<td>Electrical machinery</td>
<td>468</td>
<td>1,237</td>
<td>21.5</td>
</tr>
<tr>
<td>Transport equipment</td>
<td>2,387</td>
<td>4,812</td>
<td>15.1</td>
</tr>
<tr>
<td><strong>All manufacturing</strong></td>
<td>37,146</td>
<td>60,597</td>
<td>10.3</td>
</tr>
</tbody>
</table>

1 Million bahts in 1972 prices.
Source: NESDB, Ministry of Commerce.

### Table 2. Sources of growth of engineering output, 1975-80 (% contribution to increase)

<table>
<thead>
<tr>
<th>Sector</th>
<th>1975-79</th>
<th>1978-80</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Domestic demand</td>
<td>Import substitution</td>
</tr>
<tr>
<td>Metals and metal products</td>
<td>64.1</td>
<td>-1.0</td>
</tr>
<tr>
<td>Machinery</td>
<td>60.8</td>
<td>4.4</td>
</tr>
<tr>
<td>Transport equipment</td>
<td>81.2</td>
<td>18.3</td>
</tr>
<tr>
<td><strong>All manufacturing</strong></td>
<td>79.5</td>
<td>-7.7</td>
</tr>
</tbody>
</table>


### Table 3. Share of imports and exports in engineering output, 1975-80

<table>
<thead>
<tr>
<th>Sector</th>
<th>Exports as % of domestic production</th>
<th>Imports as % of domestic production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic metals and metal products</td>
<td>21.9</td>
<td>32.8</td>
</tr>
<tr>
<td>Machinery</td>
<td>7.5</td>
<td>33.1</td>
</tr>
<tr>
<td>Transport equipment</td>
<td>0.2</td>
<td>0.9</td>
</tr>
<tr>
<td><strong>All manufacturing</strong></td>
<td>15.0</td>
<td>20.6</td>
</tr>
</tbody>
</table>

Source: NESDB, Ministry of Commerce.
The development of the Thai engineering industry has been influenced by several policy instruments. Their net effect appears to be positive, but some have been conducive to growth and efficiency and others have tended to retard or hamper development. In some cases, the same instruments have pulled in opposite directions by discriminating between different subsectors or firms.

The principal policies affecting the industry are reviewed below.

1. Investment promotion incentives

These incentives, authorised by the Board of Investment (BOI) for selected projects, may include exemption from corporate tax for three to eight years, exemption from 90 per cent of import duties on raw materials and machinery, exemption from business tax on local inputs and additional tariff protection from competitive imports in the form of an import duty surcharge. Recent information on the sectoral distribution of promoted projects is not available, but it is estimated that between January 1975 and March 1977 engineering firms comprised 15 per cent of (investment-weighted) approved applications for promotion and roughly 35 per cent of existing promoted investment. The latest Five-Year Plan, 1982-87, proposes to strengthen export incentives by providing a tax rebate expressed as a fixed percentage of the value of exports, paid at the time of export. It would also be desirable to extend the existing incentives to the subcontractors supplying promoted firms (which are usually large). This would stimulate inter-firm linkages and enhance the employment impact of promoted projects, and so bring down the capital cost per job in promoted firms, which in 1979 was 2.3 times that in new investment projects in manufacturing as a whole.

A further reform that deserves consideration would be to reduce or eliminate duty exemptions on imported machinery. These exemptions result in zero or even negative protection for domestic manufacturers of machinery as regards that segment of their potential market composed of promoted firms (which accounted for 17.4 per cent of total manufacturing output in 1979 and probably a significantly higher share of investment). Moderate levels of protection for engineering firms can be justified on the same grounds as for other infant industries. A strong domestic machine-building sector can help to diffuse technological change more widely throughout the economy and ensure that it is better adapted to the needs and circumstances of the domestic market.

2. Tariff protection

The domestic markets for engineering products are subject to widely varying levels of nominal and effective tariff rates. In general, consumer durables such as household appliances and automobiles are given much greater protection than are industrial machinery and agricultural equipment.
Nominal rates in 1981 were 150 per cent for cars and 80 per cent for electrical appliances, compared with 15 per cent for wood- and metalworking machines and 2 per cent for tractors and agricultural equipment. Effective rates of 10 per cent and -10 per cent were estimated for the last two categories in 1978. However, the production of television and household appliances and motor cars yielded negative value added at world market prices, so that effective tariff rates could not be computed for them. The tariff structure clearly places at a disadvantage those sectors of the engineering industry with the greatest scope for establishing linkages with other sectors, including agriculture. A more uniform tariff structure would be desirable, requiring a reduction in the rates for consumer durables and a moderate increase for machinery and some intermediate products. There were some moves in the first direction in 1981-82 (e.g. from 100 to 38 per cent for colour television sets) and the Five-Year Plan document states that it is intended to “adjust import taxes to levels which are not excessively high” as a means of restructuring industry and increasing efficiency. No specific proposals are made, however.

3. Domestic content legislation

The Ministry of Industry has specified several product areas which must use a minimum percentage of material inputs made in Thailand within a period of three to five years. For motor-cycles the domestic content has been set at 70 per cent, for passenger cars at 50 per cent, and for diesel engines at 60 per cent. These controls have encouraged domestic subcontracting and have put considerable pressure on the final assemblers to transfer know-how to their suppliers in order to meet quality standards in the short transition period allowed. However, there is always the risk with such legislation that costs and prices may rise if the domestic markets for particular components are too small to reach the optimum scale of output. This risk is accentuated by the wide variety of models produced (there are seven automobile assemblers, for example) and the high levels of protection accorded to some final products. No comparative cost information could be obtained, so we are unable to assess what the actual impact has been in Thailand. The fact that component and spare part manufacturers are able to export some of their production suggests that they are cost-competitive, but their position would certainly be strengthened by a rationalisation of product lines. Lower levels of protection for consumer durables should stimulate this process.

4. Business taxes

Most commercial transactions involving goods and services (except export and retail trade) are subject to a business tax (or sales tax), expressed as a percentage of the gross turnover of each enterprise for each product manufactured. Rates vary according to product. In the engineering sector
they range from 1.65 per cent on motor-cycle and automobile parts for assembly to 3.3 per cent on machine tools and agricultural machinery, 7.7 per cent on nuts and bolts and 33.0 per cent on finished automobiles. This tax is in addition to corporate income tax imposed on profits.

Although business tax is a major source of government revenue (21 per cent in 1981), it has four drawbacks. First, it is biased in favour of imported goods because they are taxed only once, whereas domestic goods are taxed at every stage of production and sale when these operations are performed by different enterprises. Second, differential rates distort demand by discriminating against certain types of goods. Third, because the tax is assessed only on transactions between firms, it encourages vertical integration of production processes within firms and discourages subcontracting and other commercial relationships among independent firms which are integrated horizontally (i.e. specialised by process). Fourth, very small firms that require the services of wholesale traders (for inputs and sales) are penalised compared with firms that can obtain their supplies from other manufacturers or sell directly to their customers. The costs and final prices of the output of small firms are raised not only by the additional transactions involved, but also because the business tax rate imposed on wholesalers is high (7.7 per cent). To eliminate these defects it has been suggested that the business tax be replaced by a value-added tax. Perhaps because its administration and assessment would be more complicated (requiring firms to keep more sophisticated accounts) and because of the fear of revenue loss, this reform has not been implemented. A study of countries which have successfully applied a value-added tax would make the case more convincing.

Conclusions

On the basis of the sample of firms and organisations surveyed, it appears that small-to-medium-sized engineering firms have access to a wide range of services through existing market networks and that these commercial sources are better qualified technically and more highly motivated than public institutions providing similar services. However, the options available to very small firms (those with fewer than 20 workers) may be more restricted. They have less chance of being selected as subcontractors, they buy machinery less frequently (perhaps relying on the second-hand market), they may depend upon wholesalers (with limited technical knowledge) for material supplies and sales and they may not have the time or the money to attend trade fairs or read trade journals.

It therefore seems desirable that the Government should focus its efforts on this category of very small firms and on prospective entrepreneurs. The cost-effectiveness of government programmes could be increased in three ways.

First, greater weight could well be given to the Government’s role as a catalyst – bringing skills and know-how possessed by specialised firms and
organisations to the attention of the potential users by means of seminars, training courses, demonstrations, exhibitions and information services drawing upon these sources. The Government could advantageously use its organising and administrative talents to improve the transfer of know-how between market participants, rather than attempt to replicate their specialised skills in its own staff. Familiarity with some major industrial sectors would still be an asset, of course.

Second, working groups could be formed to plan and supervise activities in each industry to be covered. These would be composed of representatives of the specialised chambers of commerce and industry and heads of the appropriate DIP departments. Within the engineering industry chambers exist for agricultural machinery, the automotive industry (covering automobile assemblers and parts manufacturers) and the iron and steel industry. Participation of practising industrialists in these working groups should ensure that the services provided by the DIP and the ISI are tailored to the specific needs of each sector. Involvement of the specialised chambers of commerce and industry (which are grouped together in an overall National Chamber) should make it easier to call upon expertise from other sectors when required (e.g. for plastic and rubber components). A further advantage arises from the membership of these national chambers in regional (ASEAN) federations and associations which have already begun to co-operate in various activities – standardisation of products, collection and dissemination of market information, arranging plant visits for technical personnel, studying and recommending changes in tariff structures, etc.¹

Third, steps could usefully be taken to strengthen the DIP’s economic analysis capacity, thereby enabling it to identify policy biases and make specific recommendations for reform to the various ministries responsible. This analysis would involve not only an assessment of the impact of particular policies on industry, but also an understanding of the revenue implications of any changes and of the administrative adjustments that would be necessary. The reforms suggested earlier in this article would need to be scrutinised from these points of view before implementation. Indeed the lack of such understanding may account for delays in executing reforms which have been accepted in principle. More thorough economic analysis of market opportunities would also assist the financial institutions providing investment funds and working capital to small-scale industry, and serve as a guide for the selection of prospective entrepreneurs and the design of training courses for them.

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Note

¹ See UNIDO: The role of the private sector in industrial and technological co-operation in ASEAN, Studies on regional co-operation in the field of industry (Vienna, UNIDO, 1982).


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