THE RELEVANCE OF SMALL-SCALE MANUFACTURING IN INDUSTRIAL DEVELOPMENT

Kieran A. Kennedy*

Introduction

In this paper I shall argue that, notwithstanding the many disadvantages attached to small-scale manufacturing industry, this sector nevertheless has a continuing role to play in industrial development. I shall also argue that this role can be enhanced by the use of suitable policies, and I shall sketch the outlines of an appropriate strategy in Irish conditions.

While there are many ways of defining what is "small", in this paper I shall adopt the IDA (Industrial Development Authority) bench-mark of firms with less than 50 persons engaged. It may be useful at the outset to give a picture of the relative importance of small manufacturing firms in Ireland compared to other countries on the basis of this criterion. Table 1 shows for the more advanced industrial countries the shares of employment in different establishment size classes. While the establishment concept is not ideal, it is impossible to get comparable data on enterprises for a wide range of countries; and moreover for manufacturing units with less than 50 persons engaged, the two concepts largely overlap in practice. It will be seen that the proportion of total manufacturing employment located in small establishments varies considerably across countries. Ireland, with 24 per cent, does not have a particularly high concentration of employment in small units. Its share is about the middle of the range, but in view of the small size of the domestic market it might have been expected to be high – given the evidence of a strong tendency for establishment size differences to be positively correlated with size of market [Pryor, 1972].

Neither is the overall average size of establishment in Ireland particularly low (Table 2, cols. 1 and 2). But it is also noteworthy that, at the other end of the size scale, Ireland has a relatively small share of employment in large establishments (Table 1), and that the average size of its large establishments is low (Table 2). More so than in most countries, employment in Irish manufacturing is concentrated in middle-sized establishments

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Table 1: *Manufacturing Employment in Various Countries, Divided into Establishment Size Classes**

	<50	50-199	200-499	⩾500	
	Small	*Small-Medium*	*Medium-Large*	*Large*	*Total*
Country and Year	*% of Total*	*% of Total*	*% of Total*	*% of Total*	*No. '000*
		50-249	250-499		
United States (1977)	15.3	28.1	15.6	41.0	18,515.1
Japan (1978)	46.9	32.6		20.5	12,509.1
West Germany (1980)	9.1	21.3	18.4	51.2	7,482.0
United Kingdom (1979)	13.5	16.3	16.1	54.1	6,925.6
Italy (1971)	26.1	26.8	16.4	30.6	3,990.1
Spain (1978)	39.2	22.3	15.3	23.3	2,727.8
Canada (1975)	17.3	27.2	20.8	34.8	1,748.5
South Africa (1976)	12.3	22.9	22.2	42.6	1,359.9
Belgium (1970)	23.5	22.7	17.1	36.7	1,170.3
Switzerland (1975)	38.4	25.3	14.5	21.7	953.7
Netherlands (1981)	18.0	23.7	15.8	42.5	856.3
Sweden (1981)	16.5	24.3	18.9	40.2	825.3
Austria (1981)	11.5	47.3		41.2	596.1
Finland (1980)	17.2	28.3	23.2	31.3	525.3
Denmark (1981)	25.1	29.6	20.0	25.3	359.0
Norway (1980)	28.6	31.9	18.6	21.0	356.3
New Zealand (1975/76)	32.5	28.8	15.7	23.0	286.9
Israel (1980)	27.6	72.4			275.8
Ireland (1980)	23.7	33.6	22.2	20.4	242.5
Northern Ireland (1979)	12.0	25.7	26.4	35.9	129.7

*The size classes are as follows with the exception of the US: *Small,* less than 50 persons engaged; *Small-medium,* 50-199; *Medium-large,* 200-499; *Large,* 500 or more. For the US, the small-medium class covers 50-249 persons engaged, and the medium-large class 250-499.

Source: See Appendix One.

(50-500 persons engaged). It is hardly surprising in the light of this picture that there has been emphasis in the recent debates on Irish industrial policy on the need to build stronger and larger companies. Whatever about the merits of such an approach, however, it is not incompatible with maintaining or enlarging the small firms segment – as the evidence for other countries, especially Japan, shows.

Table 2: *Average Size of Establishments in Manufacturing, Various Countries*

	Establishments with 10 or more persons engaged	*Establishments with 20 or more persons engaged*	*Establishments with 500 or more persons engaged*
	(1)	(2)	(3)
United States (1977)	111	152	1,324
Japan (1978)	47	93[a]	1,231
West Germany (1980)	n.a.	175	1,546
United Kingdom 61979)	140	210	1,599
Italy (1971)	58	99	1,364
Spain (1978)	56	89	1,201
Canada (1975)	97	133	1,305
South Africa (1976)	123	164	1,194
Belgium (1970)	86	129	1,301
Switzerland (1975)	58	96	1,204
Netherlands (1981)	93	137	1,652
Sweden (1981)	101	147	1,298
Austria (1981)	126	156	1,328
Finland (1980)	92	126	954
Denmark (1981)	67	101	1,096
Norway (1980)	65	98	947
New Zealand (1975/76)	59	90	918
Israel (1980)	80	131	n.a.
Ireland (1980)	74	100	812
Northern Ireland (1979)	122[b]	154	1,329

a. Figure relates to 1975.
b. 11+
Sources: As for Table 1.

Limitations of Small Firms

The economic literature indicates that small firms suffer from many limitations. It is important that policy debates take cognisance of these – if only as an antidote to the euphoric prospects held out by some proponents of small scale development. Many of the disadvantages arise from the inherent operation of economic forces, such as economies of scale and external economies. Others arise because of artificial impediments imposed on the free operation of economic forces, such as monopolistic practices.

The distinction between the two is not always clear-cut, however, since some "artificial" restrictions (such as patents), which may give rise to short-term inefficiencies, may be essential to secure long-term progress. I will now review briefly the findings about the disadvantages of small firms in regard to the major functions of manufacturing businesses.

Technology

It is widely accepted that the bulk of small firms in all countries are technologically unsophisticated. The vast majority of small firms do not have a sustained R & D programme of their own, and they face financial and managerial constraints in even knowing about technological developments, let alone applying them. What is true for the general run of firms, however, is not necessarily true for all. There is a good deal of evidence that, at the inventive stage of new technology, small firms, or even individuals working on their own, have made a disproportionately large contribution [e.g. Jewkes, Sawers and Stillerman, 1969; Bolton Report, 1971; Kamien and Schwarz, 1975]. Their role is generally less important at the stage of innovation, however, because of the heavy costs often incurred in developing, testing and marketing new products and processes. Freeman (1971), for instance, in a survey of 1000 important innovations in the UK over the period 1950-70, found that small firms accounted for about 10 per cent of the total: this was about half of their share in employment, though it was twice their share of R & D expenditure.

As might be expected, the contribution of small firms to technological advance varies considerably by product type. In the last two decades, the innovative role of small firms has been evident in such areas as electronics and scientific instruments, whereas there are other areas – such as aerospace, motor vehicles and many chemicals – where small firms are of no consequence. This is due largely to the differential impact of scale economies, but economies of scale in turn vary through the life cycle of a given product. Innovative small firms tend to be concentrated more at the early stage of the product cycle, when technological development is rapid and fluid, and the key to competitive success lies more in non-price factors, such as product performance [Abernathy and Utterback, 1976].

There is evidence that small firms in the US make a more important technological contribution than in other countries, especially in regard to radical technological breakthroughs [OECD, 1982]. As regards Ireland, the low levels of technical innovation in indigenous industry generally and their heavy reliance on foreign technology have been cited in several studies [e.g. Cooper and Whelan, 1973; Allen, 1979; Telesis Report, 1982; O'Brien, 1985]. The evidence of variation by size of firm suggests that the position is even worse among small firms. The NBST (1981) data show that only 2 per cent of firms with less than 50 workers engaged in any R & D activity compared weith 21 per cent of firms employing 100 or more.

The NBST (1982) survey of 90, mostly small, firms in the engineering, chemicals and plastics sector found that only one-quarter of the firms could be regarded as innovative; while within the sample, the measure of innovativeness adopted suggested declining innovation with decreasing size. The study concluded that the technical capacity either for internal product or process development, or for absorbing external technological assistance, was low.

Marketing

Small firms are frequently confined to markets which are locally based or specialised in character. Trade across national frontiers often necessitates elaborate distribution arrangements as well as a certain outlay on market research, advertising and promotion beyond the resources of small firms. Added to these, poor marketing capacity and expertise preclude many small firms from exporting. In fact, in most countries the extent of exporting tends to be low among small firms. Clearly, this characteristic, if irremedial, would gravely curtail the degree to which an export-led growth strategy could be built on small firms.

In Ireland, the absence of a marked orientation towards exporting among indigenous industry generally has been noted in several studies [e.g. Telesis Report, 1982; Bradley, 1983] but the evidence suggests that the deficiency is greater among small firms. The survey by Gorman, Handy, Moynihan and Murphy (1974) conducted in 1973 found that, among firms with less than 100 persons engaged, almost 1 in 2 had no exports whatever, as compared with 1 in 5 among firms with 500 or more engaged. For 1979, the survey reported in Coras Trachtála (1980), taken in conjunction with the IDA data on the size structure of manufacturing, indicates that over two-thirds of firms with less than 50 employees had no exports at all, as compared with only one-third of firms with 100 or more employees. Nevertheless the average value of exports per employee in small exporting firms was much the same as the overall average. Moreover, though small firms accounted for a much lower share of exports than their share of output or employment, the share of total manufactured exports at 11 per cent is not inconsequential.

Japan is one of the few countries where small firms make a large contribution to exports. This has been made possible by subcontracting, of which there are two distinct types – industrial and commercial. Industrial subcontracting concerns the production of components for the product of the contractor. Commercial subcontracting arises where firms supply specified finished products, ready for the market, to a trading company which handles marketing – though it may also supply finance, technical assistance etc. to the subcontracting firms. According to MITI (1978), the proportion of subcontracting firms among small and medium firms (e.g. employing less than 300 persons) was about 60 per cent in the mid-1970s.

Clearly such arrangements, if they work, can help to overcome the scale and other barriers that preclude small firms from penetrating export markets. Whether and how they can be applied in a different culture, however, is problematic. As regards industrial subcontracting, the Telesis Report (1982) noted that "very few examples exist of successful Irish companies in traded, skilled sub-supply businesses, and many imports are still occurring in skilled supply businesses which should be locally sourced because of high logistic cost" (p.121). O'Farrell and O'Loughlin (1981) found that only 11.4 per cent of the materials and components used by the largest New Industry sector, metals and engineering, were sourced domestically, though there is also evidence of an upward trend [O'Farrell, 1982]. In regard to commercial subcontracting, the major effort to apply this idea in Ireland, the Irish National Trading Corporation, failed after a short time with significant losses. Despite this failure, the ideas nevertheless remain of interest, if the sources of past failure can be identified and overcome. O'Donnell and Murray (1983) have reviewed the experience of other, smaller "development companies" in Ireland, and have suggested guidelines for the extension of this approach.

Finance

It is widely recognised in all countries that small enterprises are hampered in their efforts to start-up or expand business because of difficulties in obtaining finance. They are too small and insufficiently well known to raise capital on the Stock Exchange. Conventional lenders, such as the banks, tend to cast a jaundiced eye on their loan applications because they often offer little security, may have no track record, and may be unfamiliar with the niceties of presenting a good financial case. Furthermore in a dynamic environment, small industry will be in a constant state of flux with many new entrants and many closures, so that the risk of failure is quite correctly seen by lending agencies to be high. The difficulty cannot be adequately met by charging higher interest rates to such borrowers to cover the greater risk and handling costs of such loans (though in practice the cost of credit to small firms is generally somewhat higher than for large firms). Paradoxically the higher the interest rate the greater the prospect that the business cannot start-up at all or will fail, since little or no operating profit may be made in the first couple of years.

This finance gap – sometimes termed the "MacMillan gap" since it was first highlighted in the Report of the MacMillan Committee on Finance and Industry (1931) – has been the subject of policy intervention in most countries. Public agencies for giving loans or loan guarantees to small firms – sometimes involving interest subsidies – have been widely used. Non-repayable capital grants are much less common than in Ireland, and where provided they are generally used as an instrument of regional policy, or to overcome particular barriers in relation to financing innovation or marketing.

The United States has witnessed the greatest development of venture capital institutions to meet the finance needs of small firms, especially those with growth prospects. These institutions generally take equity holdings in a portfolio of firms, which are thought to have strong growth potential. It is recognised, of course, that in the event there will be many failures and only a limited number of high-flyers; but the expectation is that the small number of high-flyers will secure an adequate overall rate of return. Following the sharp cut in the capital gains tax rate from 49 per cent to 28 per cent in 1978 and 20 per cent in 1981, there has been an explosion in the growth of venture capital investment in the US, which rose more than five-fold from 1978 to 1983, with over half of the total concentrated in computer and other electronic activities (Gonenc, 1984). It should be emphasised, however, that venture capital in the US is not a means of finance for the generality of small firms. It is highly selective – in 1981 the 200 largest venture capitalists supported only 800 new ventures – and it is directed only at firms that are expected to reach a scale suitable for "over-the-counter" stock listing within 5-10 years, at which stage the venture capitalists realise their investment by selling their shares.

The evidence for the existence of a finance gap in Ireland is somewhat mixed. The various surveys of new enterprises reviewed in Murray (1981) all cited finance as the major initial problem, and in most cases the start-up finance had to come from family sources. This is akin to the situation in the US [Stevenson, 1985] and, in itself, is not necessarily an undesirable state of affairs in the initial stages. A study by the NBST (1982) reporting the results of a separately commissioned survey relating to the finance of innovation in small firms, concluded that a finance gap does exist, especially for equity capital for start-ups where a high level of risk is involved. The study also found, however, that there was no major manifestation of demand for finance from small firms, but argued that there may be a strong latent demand which would be manifested if more suitable sources of funds could be provided. As in other countries, Irish financiers have expressed difficulties in dealing with small firms. Proposals for loan finance prepared by small firms "are often badly thought out with unrealistic assumptions of costs and sales . . ." (ibid). The financiers also stated that small firms lacked planning, had short time horizons, were often inadequately capitalised and had serious working capital problems, frequently using VAT and PAYE as forms of extended credit. O'Connor and Lyons (1982) found in a survey of 28 small Irish firms that promoters of new ventures do not use the full variety of sources of financial support available. O'Farrell (1985) reported that 37 per cent of the firms in his sample of new enterprises could not have begun without the availability of the IDA capital grant, while in a further 37 per cent of cases, the grant influenced the size and scope of the business.

Management

In very small firms the owner/manager of an enterprise will typically combine in himself all functions of management, as well as perhaps spending some of his time working on the factory floor. This can have undoubted advantages in keeping overhead costs down and facilitating ease of communication. But it can give rise to many problems, since the manager will be expert in one or two key areas but quite inexperienced in other aspects of business. Gorman, Hynes, McConnell and Moynihan (1975) found that one in three of the small firms in their sample had neither a system of budgetary control nor of costing, and that only one in four had a company plan extending beyond one year. Such deficiencies are difficult to overcome since the manager is often so vital to the day-to-day functioning of the firm that he cannot take time off to attend even short-term management courses, assuming he were aware of such services and conscious of his need for them. In fact, there is evidence of a marked lack of awareness among Irish small firms of the services available to them from different agencies, public and private [NBST 1982].

As the very small firm grows, the need arises for a more delegated managerial structure with professional input in areas where the owner/manager is less skilled. Many small firms fail to overcome this hurdle – for several reasons. The manager may fail to identify the need, he may lack the knowledge of how to cope with it, or he may even be unwilling to move from essentially one-man control. There is also a reluctance on the part of good quality middle management to accept employment in the small firm, which often offers less security and prospect for promotion than larger corporate structures.

The Performance of Small Firms

Why then, despite the many disadvantages listed in the previous section, does a significant small firm sector survive at all in every country, and how well does it perform? There are three classes of reasons for the existence of small firms. First, the *minimum economic scale* of plant remains small enough in a variety of activities to permit efficient operation on a small scale. Broadly speaking the activities most favourable to small firms are those involving low capital intensity, low fixed costs, batch production techniques, non-repetitive tasks, and personalised skills. Moreover, unit cost may be minimised at different scales for different dimensions of cost, and the weights of these costs may differ at different stages of the production process – leading to the parcelling out of some activities on subcontract to small firms.

Second, *market factors* may enable firms to survive below the minimum economic scale of production. This is more probable where markets are localised by reason of transport costs, where advertising is unimportant,

and where there is a high degree of service in delivery. Small firms may be used by large firms to meet unanticipated increases in demand or seasonal peaks. Where there are major economies of scale in marketing or other significant entry barriers in penetrating markets, small firms can still survive if pooled marketing arrangements are available.

Third, there are *dynamic factors* at work all the time. The industerial structure is constantly changing, and at any given time the small firm sector will include formerly large firms in decline and new firms on the way up. Moreover, as already noted, the minimum economic scale itself changes with technological change, the life cycle stage of products, and relative cost of transport, communications, fuel etc. It had commonly been thought that these changes made for ever-larger scale of operations, but developments in the seventies have caused some revision of that view [see, e.g. Prais 1976, Bollard 1983].

These considerations suggest that what we call the small firm sector is likely to be one, not only of great diversity, but also in a constant state of flux; and that this variability should be borne in mind in any policy approaches to the sector. One of the few empirical attempts to explain the relative importance of small industry in different manufacturing industries [White 1982], succeeded in accounting for less than half the inter-industry variance in US manufacturing. The variables which turned out to be significant with the expected sign were the degree of capital intensity (—), the recent growth of the industry as a proxy for the newness of industry (+), and the distance from the market (—).

Another significant variable, with a somewhat unexpected positive coefficient, was the fraction of sales accounted for by consumer goods. Variables which did not prove to be significant were the ratio of value added to sales (a proxy for the degree of vertical integration) and, surprisingly, the ratio of advertising to sales. A similar analysis undertaken on Irish data by Kennedy and Healy (1985) yielded no worthwhile results: although the multiple correlation coefficient was significant, the proportion of explained variance was less than 10 per cent, and none of the coefficients of the individual explanatory variables used was significant. The study also found, however, in a comparison of the position in Ireland, the UK and Norway, that there was a high degree of concordance in the relative importance of small industry across different manufacturing branches.

The performance of small industry may usefully be considered under three heads: efficiency, growth and general social benefits.

Efficiency

Despite the many disadvantages that attach to small firms, there is no evidence that they are in general less efficient than large firms in the use of resources. It is very difficult, of course, to measure relative efficiency, and most studies deal with partial measures such as productivity or profitability. Studies in all countries have found that average labour productivity in small firms is below the average for all manufacturing. But wage earnings also tend to be lower in small firms, and if productivity is measured in terms of net output per £ of wages, rather than per worker, the gap disappears [Bolton Report, 1971; Kennedy and Healy, 1985]. Moreover, capital intensity (i.e. capital per worker) is generally lower in small firms, and capital productivity (output per unit of capital) higher [see e.g. World Bank, 1978].

The many studies on the relationship between size and profitability offer mixed results, with some showing that profitability increases with size and others that the relationship is inverse. A more clear-cut conclusion common to almost all such studies is that the *variability* of profit is inversely related to size – a major factor being the dependence of small firms on a limited range of production, with consequent inability to offset losses on some lines against profits on others. The interesting attempt by Ahmed (1976) to derive a measure of social efficiency for firms in the Irish plastics industry – weighting the inputs by the opportunity cost of factors rather than by market prices – found no significant difference between small and larger firm size classes.

Growth

Let us see first how the share of small industry, and the average size of firm, have changed over time. In Ireland, the share of total manufacturing employment in small establishments fell from 33½ per cent in 1929 to 21 per cent in 1968, though the absolute level of employment in small establishments rose by 72 per cent in this period. Since 1968, there are some indications of a slight rise in share, but it is difficult to be certain of this due to changes in the methods of data collection. The overall average size of establishment almost doubled between 1929 and 1975 (from 30 to 59 persons per establishment) but this measure should be treated as a broad approximation since the average size is sensitive to the erratic data collection for very small establishments. There are no comparable data for the long term trend in enterprises, but it may safely be presumed that the decline in the share of small enterprises, and the rise in average size of enterprise, was more pronounced than for establishments.

The evidence for other countries is not clear-cut, with conflicting findings in different studies depending on differences in time periods, range of countries, size denominators etc. Broadly speaking, the evidence points to a large rise this century in the average size of establishment, and in the

share of total employment accounted for by large establishments with 1000 or more employees; and these tendencies would be even greater for enterprises [ILO, 1956; Bolton Report, 1971; OECD, 1971, and Pryor, 1972]. In regard to the share of small establishments in total manufacturing employment, however, the position is more varied with declines in some countries and increases in others. There is some suggestion of an upward movement in their share in the 1970s [Bannock, 1981; and Binks and Coyne, 1983], but this may reflect no more than the effect of contracting manufacturing employment – since an equiproportionate employment decline in firms at all size levels results in a larger proportion in the smallest size class. All of the foregoing relates to employment: if output were used, then there is no doubt but that average size of firm, however defined, would have risen more because of the rise in output per worker. It does not follow, however, that the share of output in small firms would have declined more (or increased less, as the case may be) than its employment share, since there is no strong evidence that the pace of productivity growth has been markedly lower in small firms.

While evidence on the changing share of small industry over time is of interest, it does not answer the question whether there is any tendency for small firms to grow more or less rapidly than large – since the firms that appear in a given size group in one year are not necessarily those that appear in the same size group in another year. To answer that question it is necessary to track the same set of firms over time. An analysis of Irish manufacturing establishments for the period 1973-80 along these lines found that mean growth declined with size; that the dispersion of growth declined with size; and that among declining establishments the probability of outright closure decreased with size [Kennedy and Healy, 1985]. Thus while there is greater variability in growth performance among small firms, they are more likely to achieve a higher growth of employment. Taking account of new entrants also, the overall contribution of small firms to employment growth was considerable [*ibid.*, and O'Farrell, 1984a].

There is a large literature on this subject internationally, and broadly speaking, the findings are in the same direction as in Ireland. The most striking recent findings in that regard are those of Birch (1979) in relation to US manufacturing data, based on a data-file of individual firms at different dates. Between 1969 and 1976 when total US private manufacturing employment fell by 151,000, employment in establishments of 1-20 employees rose by 543,000, and almost two-thirds of this increase was in independent single-establishment firms. The only size classes with net gains in employment were those with up to 50 persons engaged, and employment in new firms less than five years old amounted to a high proportion of the total net increase in employment.

There has been some questioning of Birch's findings, particularly in regard to the extent of the contribution of small firms to overall employment growth in the US. The NESC (1983:21) report has drawn attention to some difficulties in establishing the precise basis of some of Birch's results. Moreover, there seems to be an outright conflict of evidence between Birch's findings that independent single-establishment firms with less than 20 persons engaged accounted for 52 per cent of the total private sector employment increase in the period 1969-76, and the finding of Armington and Odle (1982) that small firms with less than 100 employees accounted for 39 per cent in the period 1978-80. The difference may, of course, be merely a reflection of the different time-periods involved; but if so, it constitutes a warning about generalising from a particular period. Though the difference between the two studies is substantial, it is a matter of degree, however, since Armington and Odle confirm Birch's findings that, in both the economy as a whole and in manufacturing, employment grew faster in small firms than in large. The same is true of the critique by Fothergill and Gudgin (1979), whose evidence relating to the UK suggests that small firms are a better bet for employment growth than large firms, but who also emphasise that a satisfactory overall employment growth is unlikely without a positive net contribution from the larger firms.

General Social Benefits

Many commentators stress a number of wider benefits for the welfare of society arising from the presence of a vibrant small industry sector. In particular it provides a training and testing ground for the emergence of larger enterprises: as the Bolton Report (1971) put it, "Almost all the present large firms started off as small firms and grew, in one way or another, to their present size." Second, it can help to maintain a competitive environment, exercising some restraint on the monopolistic tendencies of larger firms, and providing a spur to innovation. In the latter connection, it is noteworthy that the surge of innovation in small firms in the US in the second half of the 1970s arose partly because established firms had cut back on R & D activity in the face of the economic crisis.

Third, small-scale industry can be used as an effective instrument of regional policy, especially in locations that could not sustain large-scale industry. Even in larger locations, dependence on a single large-scale plant can have traumatic social consequences in the event of failure. Moreover, the local availability of efficient subsuppliers is helpful in attracting larger industry to a particular location. Fourth, the existence of small scale firms widens choice for consumers, particularly where personalised service is important, and for managers and workers with a preference for the generally more varied environment of small business. Such benefits have rarely been quantified, and would, indeed, be difficult

to quantify. It is therefore difficult to assess their importance, but they could be significant.

Small Firms in a Development Strategy

In seeking to enlarge the industrial base in a small, peripherally-located, relatively newly-industrialising country like Ireland, enough has been said, I think, to indicate that small firms cannot form the only, or indeed, the main component. There *are* major economies of scale in production; the export marketing capability of individual small firms is limited; innovations, as distinct from inventions, can generally be exploited fully only by large-scale firms; while large firms are often necessary to provide markets for small – either directly through subcontracting, or indirectly by increasing incomes.

Equally, however, it should be clear that there is a continuing place for small firms within any developing industrial environment. In particular the contribution of small firms in screening new entrepreneurs, in expanding employment and in regional development can be significant. The great diversity of the small firm sector must of course be taken into account in assessing their role; and in particular the fact that some small firms are valuable for what they are (i.e. capable of operating efficiently at a small scale), while a minority are valuable for what they can become (i.e. capable of growth into efficient large firms).

To accept that small industry has a continuing role, however, is not in itself sufficient justification for policy intervention, and still less for more favoured treatment of small than large firms. Even the existence of market imperfections limiting the role of small firms justifies intervention only if a positive net benefit is likely to accrue; and in this regard it will hardly be denied that policy interventions can sometimes make matters worse. In order to justify specific policy intervention, therefore, it is necessary, at least, to give plausible reasons why such intervention is likely to produce a net gain to society.

This question, of course, has been widely debated in regard to overall industrial policy, not only in Ireland but in many other countries as well. There is a broad cleavage of opinion between those who favour only minimal intervention to establish a favourable overall environment (e.g. through provision of infrastructure, education etc. and reduction of imperfections in the price structure), and those who perceive more fundamental imperfections in the economic environment (e.g. barriers in access to markets or to key factors of production, such as technology and finance) which cannot be overcome without industry-specific intervention. Moreover, within the latter school of thought there is a wide range of opinion about the nature and extent of industry-specific measures. This is not the place to examine these debates. The question I shall consider here

is a more limited one: granted that industrial policy for larger firms follows the lines recommended by the Telesis Report (1982), and accepted in principle if not in practice by the White Paper on Industrial Policy (1984), is there any case for attention to small firms? In other words, if the main thrust of industrial policy is geared towards the selective development of a limited number of large, export-oriented firms, capable of standing on their own in international competition,[2] what should be the stance of policy in regard to small industry? Before giving our own answer to that question, let us look briefly at the record of the IDA small industry programmes, the stance to small industry taken by the Telesis Report and by the Industrial White Paper, and also at the situation in other countries.

The SIP and EDP

The Small Industry Programme (SIP) begun in 1967 accounted for 14 per cent of the IDA capital expenditure in 1983, three-quarters of the SIP expenditure being on grants for purchase of fixed assets which are given at a more favourable rate than for large industry. Employment in SIP approved establishments doubled from 12,000 in 1973 to 24,244 in 1980, rising from 5½ to 10 per cent of total manufacturing employment. Not all of this can be attributed to the effects of the SIP alone, of course, no more than the growth in NIP industry can be attributed solely to the new industry grants. SIP establishments are overwhelmingly indigenous and are heavily concentrated in the metals and engineering and the wood and furniture industrial groups. The employment is widely dispersed regionally, confirming the *a priori* expectation that small industry can be particularly adaptable to locations that could not sustain a large industry. Some firms have shown a capacity to grow into larger firms but they are as yet a very small minority. [Kennedy and Healy, 1985; and O'Farrell, 1984b].

While the grant rate (as a percentage of fixed assets) is higher for SIP than for New Industry firms, the grant cost per approved job is considerably less, due to the lower anticipated capital intensity. Moreover, examination of the outcomes in the second half of the 1970s showed that a higher proportion of SIP approved jobs were converted into actuality, while the rate of closure was not greatly different [Kennedy and Healy, 1985]. Thus the grant cost per actual job was less than half that for New Industry generally, and only about one-quarter that of indigenous New Industry. In evaluating such findings, however, the inter-dependence between the different components of industry should be kept in mind: without the development of larger firms, many of the new small firms would not have been possible.

The Enterprise Development Programme (EDP), inaugurated in 1978 and administered separately from the SIP, is confined to first-time entrepreneurs from a segment of the potential business community which might not otherwise have sought aid from the IDA to set up a new enterprise.

Persons who have qualified include professional, managerial and technical staff previously working in semi-state or private enterprises, as well as Irish people who were working abroad in technological and business environments. The expected employment in the first stage of an EDP project is typically of the order of 40-50 persons as against 8-10 in the typical SIP project. A majority of the EDP projects are in electronics or other high-skill engineering activities, and only a few in "traditional" activities like clothing or textiles, and even then only where they have special fashion/design characteristics. Cogan and McGovern (1984), however, found that "the number of genuine technology-based companies assisted under the EDP has been small". More than half of the EDP projects are aimed at least partially at export markets from the start, whereas the vast bulk of SIP projects are aimed initially at the home market. Under the EDP programme the normal financial and advisory assistance provided under the SIP has been supplemented by guaranteed loans for working capital purposes, interest subsidies, and in some cases direct equity shareholding where this is deemed useful.

Telesis and the White Paper

The Telesis Report is rather ambivalent in its approach to small firm development. While the whole thrust of the report is towards "the building of fewer larger companies with strong internal capability", it goes on to say that this is not regarded as a substitute for the development of small industries but rather "as a supplement in those cases where the business opportunity is large and the chances for success are great" (p.234). Though the report is strongly critical of the extent of the "hand-holding" activities by the development agencies, it nevertheless suggests that strong regional offices could maintain some of the intensive hand-holding functions of the Shannon Free Airport Development Company (SFADCo) – functions which went beyond most of the other development agencies. It is clear, however, that the report favours the handling of small industry projects "as part of an integrated indigenous development charter" to build structurally strong firms and to foster linkages, rather than dealing with them in any special way or by any special agency. It may not be unfair to say that the Telesis approach concentrates on having a good first division league without any special attention to the schoolboy leagues.

While the Government White Paper (1984) on Industrial Policy did not spell out its reasons for special attention to small industry, it nevertheless envisages the continuation of the Small Industry Programme, subject to certain modifications. In accordance with the approach to manufacturing as a whole, there is to be greater selectivity in grants to small industry. These are to be confined to firms directly exporting, or supplying high skill, high technology goods to larger exporting firms, or displacing

imports in activities where imports constitute at least 25 per cent of home sales. In practice, however, the third of these criteria would encompass most of the activities that are now eligible, though it is stated in the White Paper that in future "the onus of proof for import displacement will be on the firm seeking grant assistance" (p.37). It is not made clear whether the grant rates would continue to be higher for small than for large industry. There is, however, a clear desire to secure greater equity involvement either by the small firms themselves or by private investors in financing small firms – with a target of a minimum ratio of equity to total project cost of 40 per cent. Moreover banks and lending agencies are to be given a greater incentive to vet and monitor projects, since in future the IDA will limit loan guarantees to 80 per cent. The White Paper also announced a number of initiatives in regard to the development of linkages, subsupply and co-operative trading, which will be tested first on a pilot basis.

Other Countries

Almost all countries take at least some steps aimed specifically to help small industry. Two contrasting patterns of intervention can be identified – active neutrality and positive discrimination. Active neutrality consists in interventions designed to remove disadvantages facing small firms that are not justified by the operation of free market competitive forces. These may arise from legal, institutional or administrative factors, or from imperfections in the marketplace itself. In practice, of course, it is often difficult to determine whether disadvantages faced by small firms arise from genuine diseconomies of scale or from artificial barriers. Positive discrimination, on the other hand, would involve the provision of facilities and incentives to small firms which are not offered to large feirms. The basis of such an approach may be that the market is sufficiently imperfect in relation to new small entrants that only by positive discrimination can such firms be put on an equal footing with large. Alternatively, it may be based on broader economic or social benefits that are thought to accrue from having a vibrant small industry sector.

The political philosophy as well as the economic environment helps to determine the balance between these two approaches adopted in different countries. The US and Japan are usually cited as examples of positive discrimination in favour of small firms. In both cases, however, the measures adopted do not involve cosseting of small firms or shielding them from market forces: on the contrary, both the US and Japan are quite demanding in their expectations of small firms, and policy measures are geared to realising these expectations. In the US, small firms are looked to to create more competition in an already highly competitive environment. There is a premium on very rapid growth, and proprietors are expected to dilute their equity in order to finance that growth. In Japan there is a strong emphasis on flexibility and adaptation, and small

firms are expected to co-operate with each other and with larger firms in achieving these goals. Indeed there is a sense in which the small firms sector in Japan is "exploited" in that it is expected to bear the brunt of responding flexibly to recessions and other economic shocks. It is impossible to say, however, how much of the acknowledged vibrancy of small industry in the US and Japan is due to policy measures, and how much is due to the special ethos ofe those societies, of which policy itself may be a reflection.

Historically the majority of western countries have leaned towards a policy of active neutrality, but in recent years, there has been a considerable broadening in the scope of policies and institutions aimed at helping small industry. A number of factors have given rise to this. Increasing unemployment has induced policy-makers to look to small firms as sources of job creation. Concern for peripheral or depressed regions, which do not provide attractive locations for large industries, has led to greater encouragement for developing more small industries in these regions. The technological backwardness of the generality of small firms, and the innovative potential of a minority, have both contributed to increasing the technological services offered to small firms. It should also be said that in many countries programmes aimed specifically at small firms have emerged piecemeal in response to immediate pressures rather than on the basis of a well thought-out plan. This has often resulted in a proliferation of agencies dealing with small firms without adequate consideration of their effects and without clearly-defined overall objectives.[3]

The Case for Special Attention to Small Industry in Ireland

For the following reasons I believe that, while small firm policy should not be isolated from overall industrial strategy, there is a good case for continued special attention to that sector. First, Ireland already has a sizeable number of small firms, employing over one-fifth of the total engaged in manufacturing and more than one-third of those engaged in indigenous firms. The majority of the small firms will never become large, but their efficiency is not a matter of indifference from the standpoint of employment preservation. Clearly, in view of the high degree of flux demonstrated in the small firm sector in all countries, no policy can or should aim at the survival of all of them. Equally, however, the more of the existing and new small firms that can be induced to raise their efficiency, the greater will be their contribution to the whole process of industrialilsation. This task often poses quite different issues for those involved in dealing with large firms.

Second, it is clear that there are many opportunities potentially available to subsuppliers, given that only a small proportion of the subsupply needs

of the new large firms have been met domestically. These opportunities, however, will continue to be unrealised unless the skill levels of subsupplying small firms can be upgraded, and there is no evidence that this will happen quickly through the unaided operation of market forces. Third, as mentioned before, small firms have an important role as a component of regional policy.

Fourth, there is the case of the minority of small firms that can become large. Given the poor record to date of the generality of medium-to-large indigenous firms, it would be unwise to look to this section alone as the base for building a selected number of large strong firms. Moreover, the absence in Ireland of a significant "spin-off" process, characteristic of more developed industrial structures, has been noted by several scholars [Cogan and Onyenadum, 1981; and Murray, 1983]. To enlarge the pool of potentially dynamic enterprise, therefore, it will be necessary also to look to the promotion of new first-time enterprise and the further development of the more promising of the existing small firms that have shown a potential for growth. Given the great uncertainty that inevitably attaches to enterprise development, the small industry sector provides a relatively cheap experimental setting. In its initial stages, this process of nurturing promising candidates requires a somewhat different outlook and instruments from that appropriate to the enlargement of firms that are already of some size and experience. For example, the Telesis Report regards it as vital that the strong firms be encouraged to provide their own capabilities in research, marketing etc., something that would neither be feasible nor economic in many new or small firms until they had reached a reasonable scale. Moreover, the energies of the development agency staff responsible for the large companies would be dissipated if they were also responsible for building from scratch the pool from which they were drawing.

The Method of Approach

The foregoing arguments would point to the adoption of a more explicit two-tiered approach to small industry. The *first* tier would be concerned with raising efficiency in a wide range of small firms in the interests of employment creation, realisation of subsupply opportunities, and regional policy. The *second* tier would seek to identify and develop a selected number of new and existing small industries to the point where they could be handed over as possible candidates for further enlargement by the division responsible for building structurally strong companies.

The first tier would operate much like the present SIP with some reforms. While being selective, it would be only moderately so and the objective would be to keep the administration of the scheme as simple as possible. Expansion grants would be related to a more realistic view of prospective employment increases, and set at a limit per job by reference to the

growing number of other state job creation schemes. There is a case for allowing flexibility in the uses to which the grant is put, rather than relating it primarily to fixed assets. In addition, loan guarantees would be given in selected cases to overcome financial constraints on expansion, including finance for working capital. In such cases the repayment schedule would try to recognise the distortionary impact in conditions of inflation of high nominal interest rates, as well as the fact that the break-even point, even for viable projects, is generally not reached for a few years. This approach could add to the risk that the guarantee would be called upon, but without such an approach expansion could be arrested in many cases that would prove viable.[4]

This first tier of the programme could best be handled on a regional basis, since the level and type of assistance can be standardised sufficiently to enable effective delegation without undue anomalies arising. The regional offices would also be concerned to raise efficiency in existing small firms that would not qualify for an expansion grant – either because of the poor growth prospects of the activity, or the unwillingness or incapacity of the management to expand – and would have responsibility for co-ordinating the various advisory services. The present administrative upper limit of 50 persons engaged would continue to apply. Apart from increasing the efficiency of small industry, the first tier would give an opportunity for risky ventures or untried entrepreneurs to prove themselves, and perhaps qualify at a later stage for inclusion in the second tier.

The prime consideration in selecting firms for the second tier, whether they were first-time or established small firms, would be that they had substantial growth prospects and a willingness on the part of their proprietors to co-operate in the steps needed to realise that growth potential quickly. The objective would be to lift the firms speedily into the middle size range. An important criterion in choosing firms would be the capability of the management team to bring about and maintain enlargement. Obviously this cannot be assessed definitively at the start, but what can be observed is the ability to learn rapidly and adapt – qualities emphasised by Murray (1984). There would be a presumption in favour of building on selected firms at an early stage of the life cycle of an industry – where product quality and performance are key competitive elements – though probably more so at what O'Brien (1985) calls the early "growth phase" rather than the "emergent phase". It should be borne in mind, however, that cash flow pressures in developing innovative products can be eased by manufacturing and selling a stable technology product in the short-term [Lynam, 1982].

Some track record in exporting would also be desirable: certainly the capacity to penetrate export markets at an earlier stage than in larger

countries is essential in Ireland to the achievement of rapid firm growth. Long-run growth and viability are more likely to be assured, however, by concentrating on achieving high shares in segmented markets rather than building many diffuse export positions with weak market shares.[5] There is evidence that a record of international work experience is likely to prove helpful to new founders [Murray, 1983]. The firms in the second tier should continue to be handled by the Small Industries Division until they had reached a level of say 100 employees. Afterwards, a proportion of them would hopefully qualify for selection for further development into the large, structurally-strong companies, favoured by Telesis. The programme would most appropriately be handled nationally, and the Enterprise Development Programme should be absorbed into it.

While the incentives offered would be more extensive and generous, they would also be accompanied by a tougher attitude towards performance and would be phased by reference to progress towards targets. If small firms are to grow, they have to be prepared to dilute their equity and develop a management structure appropriate to a larger scale. Unwillingness by the proprietors to undertake the necessary measures should be taken as evidence that the firm was not seriously committed to the steps needed to sustain expansion, and it should be referred back to the first tier. The development authority would need to be given a high degree of flexibility in the range and extent of incentives offered. The scale of these incentives should be in line with those to be used in developing Telesis-type large companies, making due allowance for differences in size – though they would not necessarily be in the same form. For example, grants to small firms to provide their own R & D capability may not be of much value on their own, unless there is also access to advisory services and laboratories with facilities for design experimentation and prototype development. Indeed, it would seem sensible to experiment on a limited basis with a variety of different forms of incentive, and assess the results of each before it is applied on a wider basis or scrapped. Firms of the second tier would be the kind that would be suited to the use of a coherent government purchasing policy – aimed at encouraging innovation and development rather than mere protection.

Given the generosity of the incentives, the question arises whether there should not be provision for at least partial repayment of grants by successful candidates or, alternatively, a sharing in profits by giving some of the funds in the form of equity participation. While there is a case for this, it is an issue that should be settled on the same basis for second tier small firms as for large firms. It should also be noted that firms in the second tier are precisely the type that would interest private venture capital institutions, and efforts should continue to develop the range of such facilities.

Conclusion

The development of small firms poses a variety of problems, many of them quite distinct from those involved in building large firms. Indeed as Bannock (1981:104) aptly notes, "To treat small firms in the same way as large is usually, in fact, to discriminate against them". While policy for small industry should be determined within the framework of overall industrial policy, there is a good case for continued specialised attention to small firms. The major benefits to be expected for this specialised attention are two-fold: first, the enhancement of the contribution of manufacturing to employment creation in a wide range of small firms; and, second, the growth of a proportion of them into medium sized firms, with potential for still further enlargement in a small minority of cases.

Appendix One: Notes on sources to Table 1.

United States: *Census of Manufacturers, General Summary,* Table A.

Japan: *Japan Statistical Yearbook 1981,* Table 61.

West Germany: *Statistisches Jahrbuch 1982.* Data relate to "betriebe", and exclude "handwerk" activities.

United Kingdom: Report on the Census of Production 1979, Summary Tables", *Business Monitor,* PA 1002, Table 6.

Italy: *Annuario Statistico Italiano 1980,* Table 157. Data relate to "unita locali" and exclude 536,131 units (1,311,800 workers) of "argitiant".

Spain: *Censo Industreal de Espana 1978, Etabliciemtos Industriales, Resumen Nacional.* Data include mining.

Canada: *Manufacturing Industries of Canada: Types of Organisation and Size of Establishments, 1975.*

South Africa: *South African Statistics, 1982.*

Belgium: *Recensement de l'Industrie et du Commerce 1970.* Tome 1, Table I. Data include mining as well as manufacturing.

Switzerland: *Statistisches Jahrbuch 1982,* p.151.

Netherlands: *Statistical Yearbook of the Netherlands 1982,* p.186. Data cover only establishments with 10 or more persons engaged.

Sweden: *Industri 1981. Prelimmara Branschdata.* Data cover mostly only establishments with 5 or more persons engaged.

Austria: *Statistisches Handbuch 1982.*

Finland: *Yearbook of Nordico Statistics 1982,* Table 72. Data relate to establishments with 5 or more persons engaged.

Denmark: *Industri og Energi 1983,* Statistiske Effterretminger. Data relate to establishments with 6 or more persons engaged.

Norway: *Yearbook of Nordic Statistics 1982.* Table 72. Data relate to establishments with 5 or more persons engaged.

New Zealand: *Census of Manufacturing Series A, General Statistics Bulletin No. 1, 1974-75 and 1975-76.*

Israel: *Statistical Abstract of Israel 1982.* Data include mining as well as manufacturing, but the mining component is very small.

Ireland: IDA *Annual Employment Sruvey.*

Northern Ireland: *Analyses of United Kingdom Manufacturing (Local) Units by Employment Size, Business Monitor,* PA 1003, Table 3.

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NOTES

[1]Murray (1983), however, reports a more optimistic picture for the engineering industry.

[2]A well-documented case for that approach in relation to electronics and other high technololgy activities is made in O'Brien (1985).

[3]See, for example, Beesley and Wilson (1982) in regard to the situation in the UK.

[4]Carroll (1985) reports that in the PIMS data on new business units started by large corporations, the average unit took 6 to 8 years to break even, and longer still to earn a satisfactory return. While, clearly, independent units could never survive so long, the figures provide a salutary reminder that instant profitability is rarely attainable, and point to the need for financial arrangements that will give promising firms a reasonable time to prove themselves.

[5]An issue in regard to the evolution of large companies in ireland which has not been discussed as much as it deserves in the context of development strategy is the effective locus of expansion of their production facilities. Given the small size and peripheral location of the economy, the natural evolution of a rapidly growing Irish firm within the EEC would be to locate some plants closer to major markets – just as the evolving firm in the US will tend, as it grows, to distribute production plants around the US. There is more than transport costs involved: as O'Brien (1985) notes, "The information for marketing is necessary to give commercial direction to R & D and this relationship is difficult to conduct at a distance." To date, the popular reaction to expansion into production facilities overseas by Irish indigenous companies has been one of hostility, whereas it may be an inescapable element if strong indigenous companies are to emerge. If so, it poses major issues for overall industrial development strategy that need to be addressed, but are beyond the scope of this paper.