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PICKING RUNNERS

Opportunity Industries for Inverness & Nairn

FINAL REPORT June 1994

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Synopsis

Inverness and Nairn need new business development to offset the decline of North Sea construction. The aim of this study was to identify several industries that might feature in such a development, and how to encourage them.

On the basis of several criteria concerning growth, compatibility and comparability one hundred candidate industries were selected. These were ranked on the basis of potential local growth and an assessment of long-term viability.

From the rankings ten specimen industries were chosen (not all from the top) and profiled. A 'diamond' model of competitive advantage was used to identify the characteristic features of each industry and what it needed to succeed in a specific place. The model considered the needs of the industry for resources, for supporting infrastructure, for access to markets and for a corporate base. The ability of Inverness and Nairn as a locality to meet these needs was assessed.

The ability of Inverness and Nairn Enterprise and its allies to influence the industry was reviewed, considering seven different approaches to business initiation. Outline action plans were prepared.

To illustrate prioritisation the ten specimen industries were ranked according to likely economic impact, likely long term viability, and the capacity of the enterprise network to influence them.

Recommendations are

1. to commence action plans on five industries
2. to profile a further twenty, and
3. to estimate total resource requirements across the action plans, as an input to future workplans and strategy development at Inverness and Nairn Enterprise

In addition to industry-focused actions the work highlights the importance of strengthening the company base in the locality, and a need for generalised support in engineering and in information technology.

Introduction

What are the opportunities for economic growth in Inverness and Nairn? How can the locality earn income from outwith its boundaries? How can it generate employment to offset recent losses?

This report sets out a four-step logical approach to select areas of opportunity from the global business environment, and some first elements of an action plan designed to command support, and to secure commitment to priorities within that plan.

It did not need a special Inverness and Nairn study to determine the broad sectors of industry that are growing in the world or in Europe. What was needed was to sift out the opportunities that are relevant to Inverness and Nairn. [1] The study sought to capture global growth industries and particular niches, then applied knowledge of the Highland and Scottish economies and some explicit criteria to select potential candidates. It is the beginning of a process in which Inverness and Nairn Enterprise can make the final selections of targets and identify appropriate actions.

Considerable attention was required to ensure the project scanned a wide enough horizon, employed a proper sense of perspective, and applied a fine enough focus.

The key to value-for-money from the project is to ensure it does not gather dust on the shelf - it must not be an intellectual exercise but rather the starting point to a coherent down-to-earth plan of action.

[1] To take a non-industrial illustration, it would be irrelevant in the Highlands that the world mango market was outstripping the banana market, but highly relevant if turnip demand was outdoing carrots.

MANAGEMENT SUMMARY

A Challenge

A town needs something to do. Being on the way to somewhere isn't enough. Being a service centre for somewhere is undistinguished. Even when the somewhere is as beautiful and important as the Scottish Highlands and Islands.

For a generation oil construction has been the *something* for Inverness to do, albeit at one remove. McDermott's at Ardersier has provided up to 2000 jobs for skilled people. But now the North Sea has firmly set out on its terminal decline. The oil industry everywhere is turning away from giant constructions, and towards high technology wellhead, subsea and downhole equipment. Like a welder made redundant, Inverness and Nairn must look around for alternative employment.

Inverness and Nairn Enterprise, an enterprise company contracted to foster the local economy, commissioned **COGENT** STRATEGIES INTERNATIONAL LTD to identify development prospects. This document summarises the process and conclusions.

Industries in Inverness and Nairn Today

The steel fabrication industry was a key distinguishing feature and a major 'export' earner in the Inverness and Nairn economy. However it has never been the only breadwinner. There are other strong industries producing goods and services to serve customers outwith the immediate locality for which local people and companies are paid.

Of the 32 000 people employed in Inverness and Nairn, a large minority work in industries which are apparently significant net exporters from the locality. Using the standard industrial classification we can break industrial structures into 352 categories. Twenty-five of them, employing 14 000 people, are substantially over-represented in Inverness and Nairn employment compared with UK norms.

A further 38 industries, employing 10 000 people, are somewhat over-represented, indicating that Inverness and Nairn is a net exporter beyond its boundaries.

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If these prominent industries are grouped then seven salient clusters of related industries can be easily identified, covering three quarters of employment. Most salient, although relatively small, are ***forestry and forest products***, employing some 1400 people. Next most prominent are ***food industries led by fish processing***. A total of 3400 food-related jobs in the locality break down into 300 agricultural and 200 fish-related, 400 other food manufacturing. The remainder are in food and drink distribution, mainly but not wholly serving Inverness and the surrounding area - 500 wholesale, 1600 retail and nearly 800 in restaurants and canteens. Thus about one quarter of food-related jobs comprise an 'export' cluster i.e. are devoted to serving people outwith the Inverness and Nairn locality.

This eating-out category overlaps with the ***tourist trade***, which has total employees (double-counting on the restaurants) of nearly 4000 and a number of self-employed people in addition.

The four remaining clusters reflect Inverness' geographical position as a transport node, the gateway to the Highlands, and its status as the regional capital. They are ***health services, construction, market-related services for Highland region*** and ***administrative services for the region.*** Each employs between two and five thousand people, depending on the precise definition, and around a third of these people 'export' their services beyond district boundaries to the rest of the Highlands or beyond. The right hand column in the table below shows a rough estimate of the 'premia' employees, those over and above the number necessary to satisfy the needs of Inverness and Nairn alone.

CLUSTER	Employment	of which *'premia'*
Forest products-related	1392	964
Food-related	3362	1097
Tourism-related	3848	1821
Health services	4244	2321
Construction-related	2598	1001
Other market services	2945	965
Other admin services	4656	1226

This is, in fact, a rather diverse structure for a town of this size. The main external sources of commercial income are tourism and agriculture/forestry/fishing. Other income circulates in the Highland economy, sometimes with and sometimes without the intervention of government as tax collector and manager.

Needs from New Industries

Although not excessively concentrated, these sources of income are fragile and to a significant degree outwith the control of local people. Tourism is dependent on income levels in England and abroad, and on exchange rates. For farm forest and fish products then prices, capacity, or both, are set to a large degree by national or international regulation. Public spending on administration and construction is subject to public control which is primarily exercised at UK national government level.

The provision of tradable services other than tourism, and the production of tradable goods, would strengthen and diversify the economy and place a degree of control in local hands.

It would thus provide a more sustainable employment level. Particularly welcome would be work for people with skills and backgrounds related to those that have become available as a result of the Ardersier rundown, and work with a market beyond the Highlands.

A Process of Refinement

Scanning

Three broad approaches were used to scan for industries.

Outward scan

The first was outward-looking, reviewing the fastest growing industries in Europe, both historically and forecast, and those industries where world trade has changed, or is expected to change, substantially.

In terms of output growth then ***software***, followed by ***electronic and other hardware*** to support it, have been and are expected to remain the lead industries. ***Financial services***, ***healthcare*** and ***air travel*** are the other key growth industries in developed countries, creating and responding to changing patterns of consumption and technology. ***Rising energy*** consumption is a key feature of growing economies outwith the developed world.

These industries also figure when shifting trade patterns are considered, but so also do ***instruments***, a wide range of ***forest products***, ***chemicals*** and ***clothing***. Rather to our surprise there has been little detailed work on sectoral implications in developed countries either of the 1989 revolution in former communist countries or in the impact of GATT. Extensive original research would be needed to create it, so the main conclusion to be drawn is that competition will be heightened in those industries where less developed countries will gain - textiles and labour-intensive consumer goods.

Filling gaps

The second approach was to review the Inverness and Nairn economy in the light of national averages, but more specifically to investigate industries which thrive in similar towns to Inverness but are not present or are under-represented.

The comparator towns chosen were Dumfries, Shrewsbury, and Wilhelmshaven in East Friesland, Germany.

Each of these towns has its dominant specialisms: plastics and milk in Dumfries, engine manufacture and aerospace in Shrewsbury, defence, process industries and residual engineering industries (after the closure of typewriter manufacturer) at Wilhelmshaven.

But beyond these niches there are some industries, mainly service industries, which are much stronger in the comparators than in Inverness and Nairn. These include ***laundries*** and ***cleaning***, industries ***ancillary to agriculture*** (feed, vets, machinery), ***'meat' processing*** of some kind and ***private sector medical services***. The comparators have some regional services which in the Inverness and Nairn case are organised differently - power and gas supply, justice. They also include a number of industries - property dealing, miscellaneous personal services - where there is a strong 'entrepreneurial' or market-oriented culture.

Special reasons

Some industries were included because of special reasons and particular opportunities presenting themselves.

Workshops

We held a workshop in mid-March 1994 to discuss the scanning mechanism and the strengths and weakness of Inverness and Nairn as a location. The workshop brought

together Inverness and Nairn Enterprise directors and senior staff, members of the local business community, senior staff of Highlands and Islands Enterprise, **COGENT** STRATEGIES INTERNATIONAL LTD and other consultants. It validated both the scanning mechanisms and the evaluation procedure and clearly concluded that if practical use was to be made of this study, the definition of an 'industry' must be fairly narrow. A fine screen must be used when sifting for opportunities.

What is an industry?

Defining an industry very broadly - for example 'engineering'- is not helpful. It leads to no precise conclusions and no targets for actions. On the other hand defining an industry very narrowly involves a large amount of work and detailed knowledge, is likely to be a hit-or-miss affair, and can involve looking repetitively at related segments.

With the workshop conclusion that the analysis should tend towards a detailed approach it became clear that the profiling of each industry should be deepened beyond that specified in the brief and that - even if the number of specimen industries was maintained around ten - the resources initially available for the study could not extend to the full scope of opportunities available to Inverness and Nairn.

Industry Profiles

The ten industry profiles developed each consisted of a summary and five elements:

1. A brief review of why the industry was included - growth prospects, whether it filled a gap in the economy, whether technology had ended a particular phase, or trade patterns were changing.

2. A discussion of the structure of the industry on a global or European basis, under four headings:

   Customers and demand
   Resources
   Supporting industries
   Company structure and leading companies

3. A review (necessarily based on limited knowledge of the local economy), of the suitability of Inverness and Nairn as a base for the industry, under the same four

headings. This is presented in text, but also crudely quantified in a 'diamond assay' of Inverness and Nairn's strengths against what the industry normally expects and needs to prosper.

4. An assessment of the suitability or likelihood of seven different approaches to business development.

    i. Growing existing companies
    ii. Diversifying existing companies
    iii. Reconstructing existing companies
    iv. Local start-up
    v. Implanted start-up using entrepreneurs from outside
    vi. Inward investment
    vii. Inward licensing

5. Suggestions for an action plan, based primarily on the strengths and weaknesses of the local economy and the ability of the enterprise company and its allies to influence them, from 3 and 4 above.

Priorities

Although resources allowed us to profile no more than ten specimen industries, we set out to illustrate how a larger number might be prioritised.

This involved a very informal estimate of the economic impact that an industry might have in the locality. This included direct jobs, jobs in supporting industries, jobs which might be induced by higher income levels, less existing jobs likely to be displaced. Other contributions to local GDP were also included. The estimate was then combined with the 'diamond' score from 3 above, and an assessment of the plausibility of development mechanisms from 4 above, to yield an overall priority.

Thus the priority mechanism summarised

1. What an industry can offer Inverness and Nairn.
2. What Inverness and Nairn can offer the industry.
3. What Inverness and Nairn Enterprise and its allies can do to bring them together.

No Racing Certainties

Seven of the ten specimen industries stood out from this prioritisation process:

1. Private Healthcare
2. Laundries and Cleaning
3. Wooden Furniture
4. Windmills
5. Poultry Processing
6. Medical Instruments
7. Synthetic Structural Timber

The three other specimen industries are not unattractive, but in our view would be less likely to repay effort, primarily because Inverness and Nairn do not yet have the specialised human resources or company structures required to provide a viable base which will be robust in international competition.

This is not an exercise in picking winners. It is creation of a form book to help pick *runners*. For even one to have a good chance of finishing the course the field must be large.

The form book we present is a good guide, but not infallible. The best bet for Inverness and Nairn Enterprise is to follow what the form book suggests: its conclusions are set out in the sheet that follows.

Conclusions

A Difficult Task

Choosing industries which could prosper in Inverness and Nairn is a difficult task. The area has substantial natural resources and human resources which are well educated, but not especially skilled or specialised. Its customer base is small and neither prosperous nor particularly sophisticated in most respects. Supporting industries are weak, especially higher education and general engineering, and the logistic situation is not good. The corporate base is very weak indeed.

No industries approach the basic strength that tourism has now attained or that steel fabrication achieved in its heyday. We have developed a numerical scale and on the basis of this no candidate scores more than two thirds the level of tourism

Five to Carry Forward

Of the ten industries examined as specimens, then we recommend that a start is made on action plans for five of them : ***Private Healthcare; Laundries and Cleaning; Wooden Furniture; Windmills;*** and ***Medical Instruments.***

Many More Industries to Scan

We are keenly aware that the narrowing-down process has been too arbitrary *because it must be taken to a fine level of detail* Having now determined an appropriate level of detail, having narrowed the field from about 400 candidate industries to about 100, and having profiled some 10 of the 100, then it is clear that at least a dozen, preferably a further 20 industries should be profiled if an informed choice is to be made.

Resources Must Be Identified

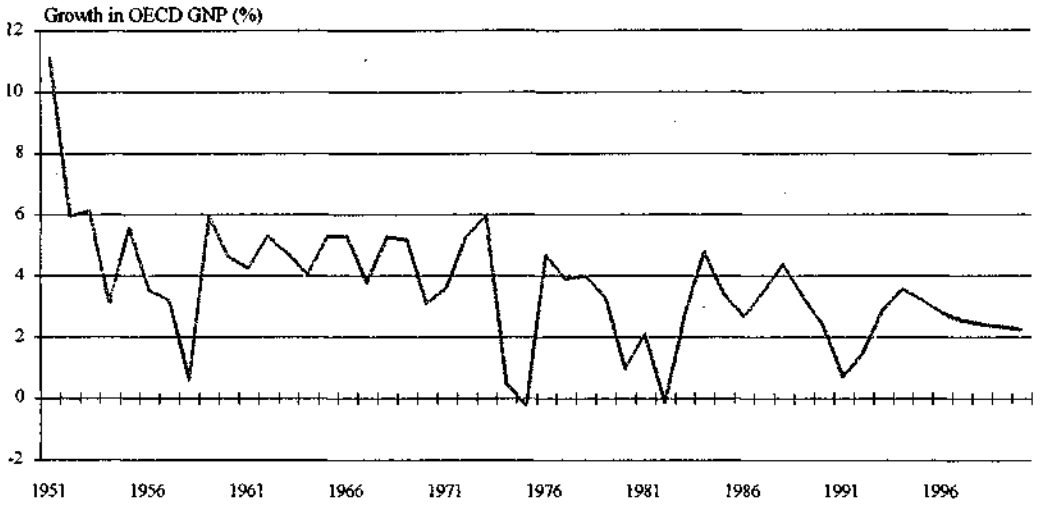
The development of action plans for the ten specimen industries means that it will now be possible to estimate the resources that will be required for a sensible industrial development strategy. Planning for these resources should go hand in hand with the further refinement process.

The Growth Context

Successive post war decades have seen the growth rate of the industrial world halve. Output of the 'average' industry grew at over 5 per cent per year in the 1950s and will grow at less than 2.5 per cent through the 1990s. Growth in productivity has meant that employment prospects have shifted from substantial growth to, on a global basis, stagnation at best.

Cogent's own economic forecasts for the 1990s show a significant recovery in OECD demand growth after the bad start of 1991/92 but - except in the unlikely event that oil prices went below $14/barrel again and stayed there - not enough to bring the average 1990s growth up to the level of the 1980s.

Growth in the OECD economies - recovering oil price scenario



Source : QOTA forecast, December 1993

Scotland's share of world GDP has shrunk over the post war period from 0.55 per cent in 1950 to 0.31 per cent today, so average Scottish industrial performance has been much worse than the world average.

To this depressing picture there have been striking industrial exceptions. Globally a clutch of electronics-related industries, aerospace, air travel and financial services have taken off. In Scotland nuclear energy, offshore oil and gas, and electronics-related industries have provided income and, to a lesser extent, employment.

Inverness and Nairn has in the past earned some of the income accruing to these exceptional industries, and their supporting industries, most notably from oil and gas construction. The labour force in the locality has shown that it can compete at international levels of skill and productivity. Now, as some past growth industries move beyond maturity, a new wave of 'industrial' developments is sought.

Growing Industries in a Changing World

Fast growing industries offer opportunities as existing firms will expand while new firms will find it easier to become established. In many instances the fast growing industries we can identify have been technology-driven such as software, semiconductors, instruments and telecommunications. In some industries leisure demand has been the driving force, for example air transport and media services. In other industries, such as pharmaceuticals and consumer electronics, a blend of demand and technological factors has been important In areas such as financial and business services a combination of political, economic and technological factors has caused changes in market structures and led to growth. It is these fast growing industries which present some of the best opportunities for Inverness and Nairn.

In order to scan for future growth industries a suitable data source first had to be identified. Initially there were two sources available - those of the Swiss based firm Prognos and the European consortium Ereco.

Prognos is the most established and widest in scope. It divides all the industrial economies of the world into 25 sub-sectors. However we found that Prognos gives only limited detail in the areas of manufacturing and services. We wanted to identify opportunity industries much more precisely than wide classifications such as 'Social and Personal Services' or 'Food, Beverages and Tobacco'. Differences between countries are of secondary importance because Inverness and Nairn is starting from a clean slate. That might not be the case in looking at prospects for an existing industry. As the work progressed it was discovered that the sectoral detail was the critical detail for the work in hand and *at this stage* the country detail of Prognos was less relevant.

The Ereco data (for which we acknowledge gratefully the access provided under Scottish Enterprise's contract) went statistically much further into sectors and is a primary source of the following numerical work on growth and accelerating industries. Ereco's report also provided valuable non-forecast information to augment our own files and other sources. Ereco identifies over 60 economic sectors in data relating to the economies of the European Union. Around 40 of these have grown faster than the European average of 2.6%, a dozen more than twice as fast.

Were we to supplement the work, we would consider focusing on the US market as a third independent source of forecasts.

More than just growth ...

Accelerating industries are those where there has been an increase in the rate of growth. This is important because industries which show fast rates of growth do not always offer opportunity. Growth may be slowing which could lead to over-investment and poor prospects for new entrants. This has been experienced in the past, particularly with capital intensive industries, but also for financial services in the late 1980s. Additionally existing growth may be already accounted for by virtue of the existing infrastructure of the industry and the strategies of firms already established in it. Industries where growth rates have been low but which are expected to improve may offer more opportunity than fast growing industries in a state of decline.

... change ...

Industries where there is a change in the pattern of trade offer opportunities and are potentially a source of future jobs. In order to identify these industries we have examined changing patterns of trade, in volume terms, over a five year period.

When examining changes in the patterns of international trade United Nations trade statistics were used as they are the most comprehensive data, covering around 1,000 separate economic activities for trade around the world. From an economic development perspective this is adequate.

... and its drivers

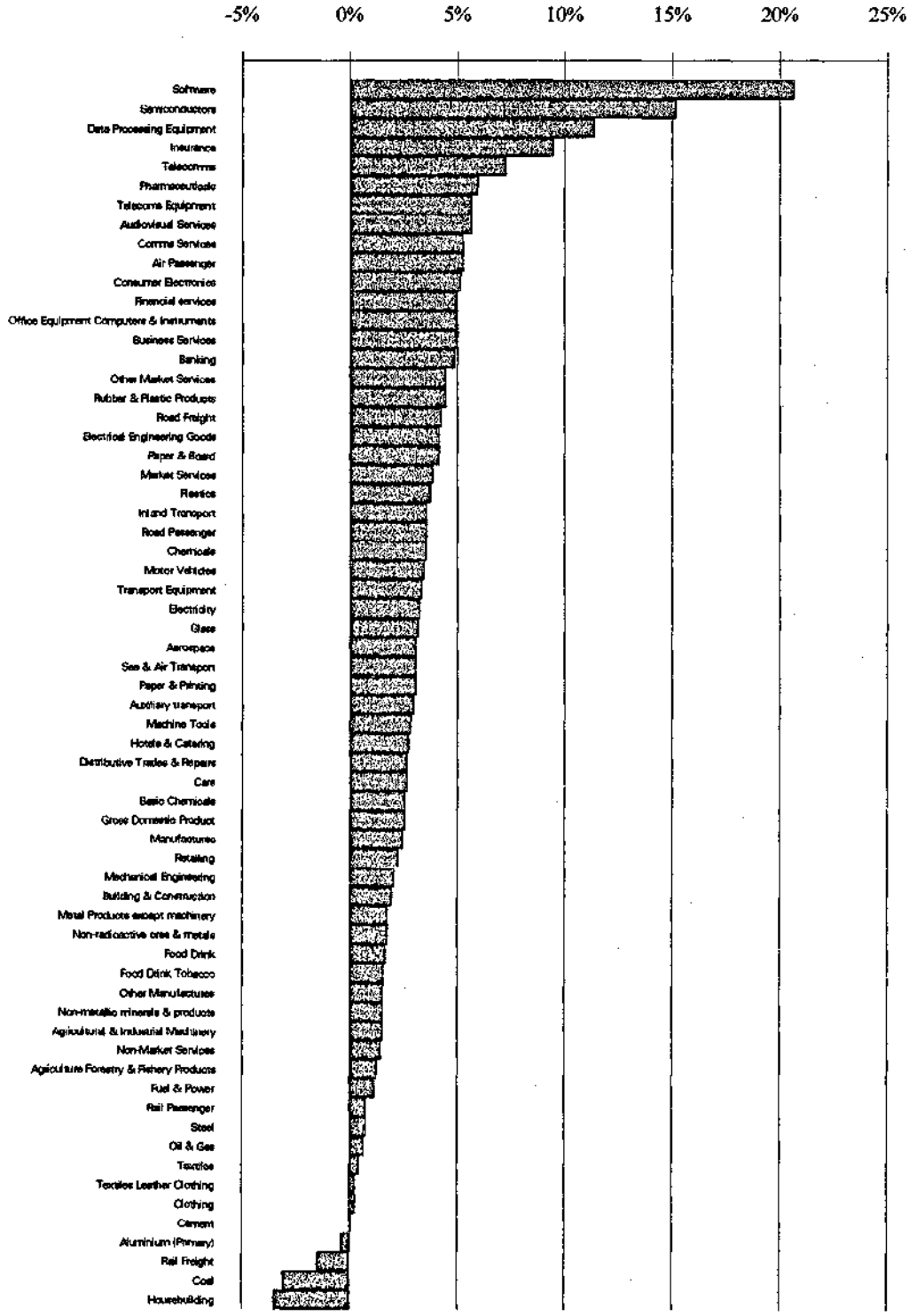
We have also considered three major political events that will affect markets in the future. Firstly, the dramatic changes taking place in Eastern Europe from 1989 onwards, where fundamental changes in the operation of the economies of these countries are affecting the supply-side while the demand-side is also changing as the distribution of income changes and shifts in the price mechanism take effect. Secondly, the creation of the Single European Market in 1992 has implications that are only now beginning to be experienced. Thirdly, the conclusion of the most recent round of GATT negotiations and the establishment of the new World Trade Organisation in 1994 will eventually have sweeping implications for industrial success and failure

Historical growth rates...

The top ten growth industries are:

		Growth Rate 1982-1991
1.	Software	20.7%
2.	Semiconductors	15.2%
3.	Data Processing Equipment	11.4%
4.	Insurance	9.5%
5.	Telecommunications	7.3%
6.	Pharmaceuticals	6.0%
7.	Telecommunications Equipment	5.7%
8.	Audiovisual Services	5.7%
9.	Communications Services	5.3%
10.	Air Passenger Transport	5.3%

Historical Growth Rates - 1982-91



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... dominated by computers ...

Decreasing costs of both software packages and personal computers coupled with increasing use of standard computer packages helped the software industry to flourish throughout the 1980s. The growth in software in the early 80s corresponds to large hardware installations and the sudden rise to dominance of PCs in 1983/84. These factors created a huge demand for software by new computer users. Once this began there was then a continuing demand for more and better software causing a boom in software development.

The computer boom resulted in two other computer related industries following the high growth path - these were semiconductors, growing at 15.2% between 1982 and 1991, and data processing equipment growing at 11.4% over the same period. In semiconductors the growth in production exceeded that of the EU average, growing at a rate of 25% between 1982-86 then slowing slightly to 17% in the latter half of the 80s. Computer equipment manufacturers are by far the biggest market for semiconductors with other markets including industrial electronics, telecommunications, weapons and vehicles.

Data processing equipment also showed double-figure growth in the 80s. This sector includes all kinds of hardware from computers themselves to printers and terminals etc. Again this sector burgeoned with the rise of PCs in the early part of the 1980s. This was followed by development of hardware designed to improve the performance and scope of the applications. There were also trends in miniaturisation which will continue into the 90s. This market is very competitive with product innovation a major feature. United States and Japanese companies dominate the market with IBM the world leader, and one European company in the top ten, namely Siemens-Nixdorf of Germany.

... but financial shamans chase the electronic wizards ...

The insurance industry was the fourth fastest growing industry in Europe, at a rate of 9.5%. The USA is the leading insurance market but Europe's growth rate exceeded that of the US in the 80s while the Japanese market actually experienced decline for the first time since the late 1940s. Growth in non-life insurance has been greater than in life insurance. The

greatest growth in Europe was found in Portugal, Spain and Italy. The UK has taken over as leader in the EC, displacing the former West Germany, and now ranks third in the world.

Will the future reflect the past ?

However future opportunities depend on future, not historic growth. Will the future reflect the past? Most forecasts certainly suggest that it will. The following graph, based on the Ereco forecasts, illustrates a strong link between the future and the past. The Prognos industries fitted even more tightly into this mould.

We suggest three reasons:

1. Most industries have momentum so it is *unlikely* a new factor will come along to seriously disrupt past growth patterns

2. Even if there are new factors they can be difficult to spot from a rational process of analysis.

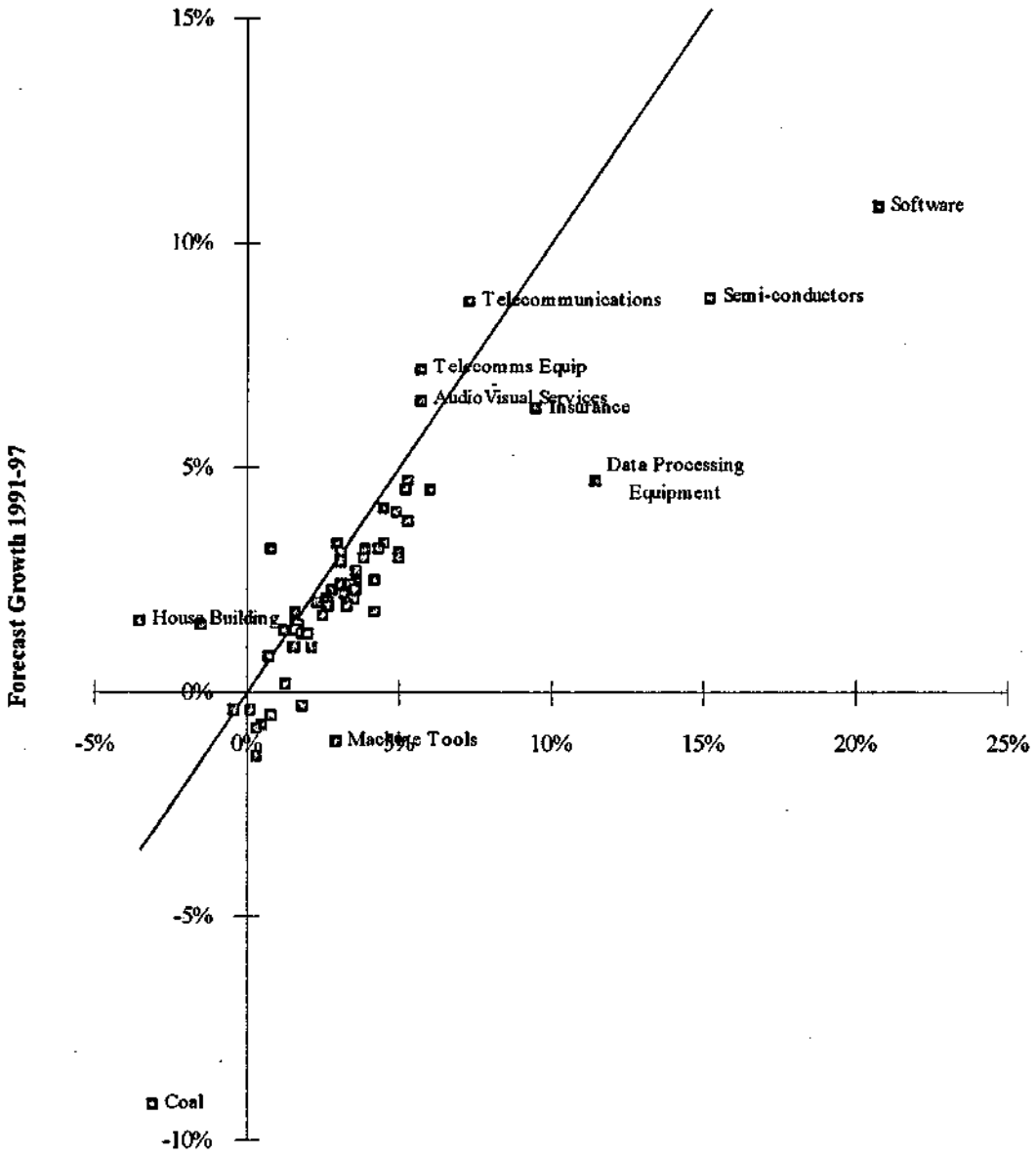
3. Differences between sectors are likely to feature less in a forecast than in real life.

There are several outliers. Those to the right of the line are the industries which experienced particularly high growth during the 80s, and all are expected to slow down.

Some declining industries also merit mention. Coal declined in the 1980s and is expected to decline even further into the 90s. Primary aluminium, once important to the Highlands but now beset by overcapacity problems, is the only other industry where Western European production is slated to decline in both decades.

The house building sector declined in the first period but is forecast to be a growing industry into the 90s showing significant turnaround. Rail freight is also expected to turn round.

Forecast Growth versus Historical Growth




Growth forecast %pa
-10%
-8%
-6%
-4%
-2%
0%
2%
4%
6%
8%
10%
12%
Sectors Sorted by Historical Growth Rates
Software
Semiconductors
Data Processing Equipment
Insurance
Telecomms
Pharmaceuticals
Telecoms Equipment
Audiovisual Services
Comms Services
Air Passenger
Consumer Electronics
Financial services
Office Equipment Computers & Instruments
Business Services
Banking
Other Market Services
Rubber & Plastic Products
Road Freight
Electrical Engineering Goods
Paper & Board
Market Services
Plastics
Inland Transport
Road Passenger
Chemicals
Motor Vehicles
Transport Equipment
Electricity
Glass
Aerospace
Sea & Air Transport
Paper & Printing
Auxiliary transport
Machine Tools
Hotels & Catering
Distributive Trades & Repairs
Cars
Basic Chemicals
Manufactures
Retailing
Mechanical Engineering
Building & Construction
Metal Products except machinery
Non-radioactive ores & metals
Food Drink
Food Drink Tobacco
Other Manufactures
Non-metallic minerals & products
Agricultural & Industrial Machinery
Non-Market Services
Agriculture Forestry & Fishery Products
Fuel & Power
Rail Passenger
Steel
Oil & Gas
Textiles
Textiles Leather Clothing
Clothing
Cement
Aluminium (Primary)
Rail Freight
Coal
Housebuilding

Looking ahead in detail ...

The forecast growth for the European economy is shown in the blue graph above. The length of the bars reflects forecast growth, but industries are listed in the same order as their historic growth rate.

Although the top ten growth industries for the nineties look very similar to those the eighties, for many industries growth is slowing.

		Growth Rate 1991-1997	Acceleration
1.	Software	11.0%	-9.9%
2.	Semiconductors	8.8%	-6.4%
3.	Telecommunications	8.7%	1.4%
4.	Telecommunications Equipment	7.2%	1.5%
5.	Audiovisual Services	6.5%	0.8%
6.	Insurance	6.3%	-3.2%
7.	Communications Services	4.7%	-0.6%
8.	Data Processing Equipment	4.7%	-6.7%
9.	Consumer Electronics	4.5%	-0.7%
10.	Pharmaceuticals	4.5%	-1.5%

Even steep deceleration will not prevent software and semiconductors remaining the fastest growing industries in Europe. However data processing equipment is expected to fall to rank 8th : so the electronic boxes will contain more chips, and implement more programs, but the number of boxes will not multiply quite so fast. Telecommunications and telecommunications equipment will accelerate into the top five growth industries.

The market for software will continue to grow and while the initial surge of market penetration will slacken, it has a long way to reach maturity. In addition to development of applications and new applications for existing hardware types, new hardware will call for new software. Future software development is widely foreseen in areas such as communications (voice & hand writing recognition; virtual reality), small handheld personal computers with basic database and time management functions, and domestic and

professional multimedia applications. Airlines, banking and insurance are the most important customers for individual and large system software development.

Data processing equipment is also experiencing a slowdown in growth and falling profitability. IBM, Olivetti and many others recorded financial losses in 1992 causing redundancies and 1993 results are very mixed. IBM appears to be bottoming out, Compaq is doing rather well, but Digital has announced plans to halve its European workforce. This is an international phenomenon with US and Japanese suppliers being hit just as hard as those in Europe. It can be linked to recession but also to increased competition from newly industrialising countries and to the saturation of some markets. Another factor is the growing trend towards the upgrading and improvement of already installed systems making the purchase of new hardware a secondary issue. Growth is to be expected in 'palmtop' computers/notebooks and high speed PCs. The economic recovery will help this industry to grow during the 90s.

In the semiconductors sector growth is expected to slow to less than 9% from the 15% experienced in the 80s. This slowdown can be partly attributed to over-capacity resulting from the downturn in the computer industry while other markets such as telecommunications and cars have provided some compensation. Technological advance will continue in this sector and the possibilities for semiconductors will increase. However European production generally lags behind in terms of technology, for example micro-processors are almost entirely dominated by American firms. Japan and the US continue to dominate the market holding respective market shares of 36% and 28%. In Europe the largest players are Philips, Siemens and SGT-Thomson.

Outwith electronics, as the echoes of Big Bang and other financial liberalisations die away, growth in the insurance sector will not be as fast in the nineties as the previous decade, falling back towards the slower growth of GDP.

Accelerating Industries

One should be cautious about investing in even a fast growing industry if future growth is already spoken for in the industrial plans of others. Conversely, an industry which is accelerating may offer particularly good investment opportunities, whatever its previous performance was. The following are the industries showing the largest improvement in growth prospects between the late 1980s and mid 1990s:

		Acceleration 1982-1997
1.	House Building	5.1%
2.	Rail Freight	3.0%
3.	Rail Passenger Transport	2.4%
4.	Telecommunications Equipment	1.5%
5.	Telecommunications	1.4%
6.	Audiovisual Services	0.8%
7.	Auxiliary Transport	0.3%
8.	Fuel and Power	0.2%
9.	Food, Drink and Tobacco	0.2%
10.	Oil and Gas	0.1%

In Cogent's view the overall forecast level of economic growth, and therefore the acceleration, may be understated in the Ereco forecast. Nevertheless the sectoral list should survive.

The house building sector shows the biggest turnaround in growth from a decline of 3.5% in the 80s to anticipated growth of 1.6%. Housing can be sub-divided into two categories - individual housing and apartment blocks. The latter are more usually associated with larger construction companies. In Europe these two markets are similar in size although this varies by country. In the UK, Belgium and the Netherlands individual houses predominate whereas blocks of flats are more common in countries of southern Europe such as Italy, Spain and Greece. The ratio is almost equal in France and Germany. Growth is expected particularly in the UK where the level of construction is very low and the requirements for renewal of the housing stock are high compared to other countries in Europe. As well as turning round itself, an improvement in housebuilding offers better prospects for industries associated with it, such as building materials and furniture.

Rail transport exhibited the next biggest turnaround. This sector is still small especially when compared to road transport which increased its market share during the 80s. Rail passenger transport is performing well and is mostly domestic travel. International rail travel will see an increase with the opening of the Channel Tunnel providing high-speed rail links to continental Europe. This will reduce travel time compared to flying and will be cheaper. Both freight and passenger rail transport are gaining from growing congestion and pollution on roads.

Deregulation of rail companies across Europe could result in more efficient operation and is likely to be when combined with new investment offering opportunities to suppliers. Deregulation should allow both rail freight and passenger rail transport to compete more effectively with other forms of transport. High speed rail links can compete effectively with air travel as total travel times are comparable but in most countries the price of a rail ticket proves far cheaper than to travel by air. Rail transport is a relatively clean form of transport as it does not need to use the more polluting sources of energy although noise pollution is a problem. Railways could also be important in reducing congestion on roads and in the air. A high quality, high speed rail service can compete successfully against other forms of transport.

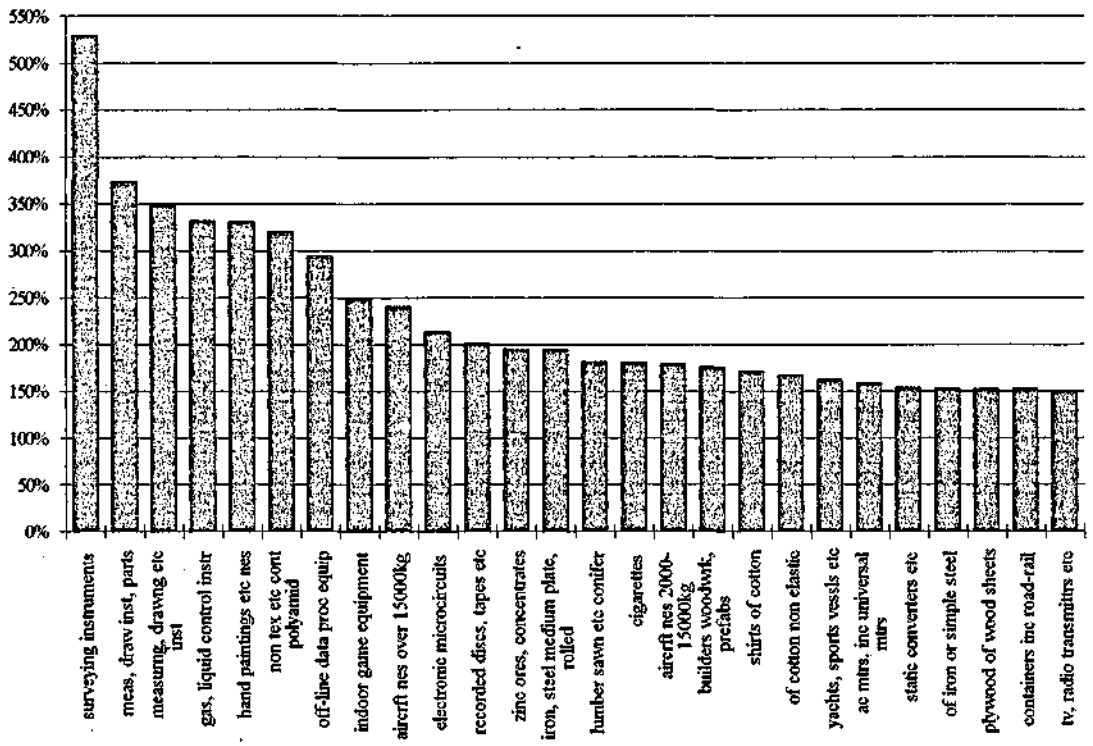
Audiovisual services have appeared as a growth industry both historically and in the forecast. This sector is also accelerating. Sustained growth is expected in this sector, particularly from household expenditure on video, satellite and TV. Cinemas are also showing an upturn with the trend being towards the multiplex format. The market for cable services in the UK is far less than in the rest of Europe although some opportunities do exist. Satellites have now become an almost compulsory transmission device which will continue to thrive regardless of any other technological advances. At the same time satellite TV subscriptions have boomed all across Europe. The video sector remains fairly strong but growth is now levelling out.

In the advertising part of audiovisual services the main growth area has been TV advertising which has grown steadily while other advertising media have suffered. Some American firms are now beginning to break into the European market, for example Time Warner.

Trade Shift Industries

Whereas growth prospects related to services as well as to goods, authoritative historical trade statistics are primarily confined to goods. In compensation, instead of the sixty categories contained in the most detailed forecasting models, historical trade statistics look at the world broken down into nearly a thousand types of goods.

The graph shows the 25 items with the greatest total increases in trade value in the world over the period 1986-1990.



The top ten industries are listed below with their respective growth rates.

		Trade Shift 1986-1990
1.	Surveying Instruments	530%
2.	Measuring, Drawing Instruments - parts	374%
3.	Measuring, Drawing Instruments	348%
4.	Gas, Liquid Control Instruments	332%
5.	Hand Paintings	331%

6.	Off-line Data Processing Equipment	293%
7.	Indoor Game Equipment	249%
8.	Aircraft over 15000kg	241%
9.	Electronic Microcircuits	213%
10.	Recorded Discs, Tapes etc	202%

Instruments feature strongly in this list with the four sectors showing the biggest increases in trade all being instruments. All show an increase in world trade in excess of 300% with surveying instruments surpassing 500%.

The list also deliveries of aircraft in the period covered and sales of secondhand aircraft from country to country. The main factors affecting demand are the orders for civil jet aircraft of large airlines and the public procurement of military equipment. An expansion in world air traffic with passengers up 50% and freight slightly more resulted in aircraft orders showing a peak in 1990. There has also been a demand for modernisation of existing aircraft in order to meet safety, noise and pollution guidelines.

Orders for civil aircraft have dropped off dramatically since 1990 primarily as a result of the recession and the over-ordering which led up to the peak. The military sector has been affected by the breakout of 'peace', budget cutbacks in developed countries, and low oil revenues in the middle east, In most scenarios growth will continue to be slow due to continuing cuts in defence budgets and fewer international conflicts.

Trees also growing

The trade shift analysis also revealed the forest industries cluster to be performing well across a range of products. Significant increases in world trade occurred over a broad spectrum of activities all the way from cut logs through wood processing, the manufacture of wood products and even into paper making. This is summarised below:

	Trade Shift 1986-1990
Sawn lumber etc - conifer	181%
Builders woodwork, prefabs	176%
Plywood of wood sheets	153%
Conifer logs in the rough	130%

Saw-, veneer-logs conifer	125%
Wood manufactures nes	116%
Fuel wood nes, charcoal	112%
Plastic coated paper	109%

Although partly a figment of the US construction cycle, these figures do reflect a genuine increase in world demand and growing limitations on traditional trade patterns for lumber.

Eastern Europe - 1989 - and its impact on trade

The collapse of the iron curtain has resulted in dramatic economic and political changes in central and eastern Europe. The impact on the countries directly involved is barely understood, except for the smaller countries of central Europe, so it is hardly surprising there has been little work published on the effects the changes will have on world markets.

Some of the major issues relate to the conversion of military forces into civilian occupations. Some relate to the creation of joint ventures, which have become especially important in Hungary and the Czech lands. Local privatisation is an issue in other places. The pattern of industrial developments will be affected by the developing strength of legal systems, whose stability depends on the authority of the new states and their legitimacy as social problems get progressively more extreme. The introduction of market pricing and abolition of administrative production decisions is progressing at different speeds in different places.

For example, demand for software in eastern Europe was expected to be high. In anticipation, several large companies set up offices near this market but the demand for software turned out to be lower than was expected. This can be attributed to eastern Europe's indigenous software development which has produced equivalents, legal and illegal, to most western packages. One of the first packages able to carry out optical character recognition was developed in Hungary. However some companies such as Hewlett-Packard and (historically) Wang have had success in these markets which the industry still believes offer good longer-term trade prospects.

Semiconductors - the large financial resource required to develop a microelectronics industry has generally prevented eastern European nations from doing so. A fairly advanced industry was present in the former GDR but caused significant pollution problems. Many of these firms have either been liquidated or sold to Western investors. It is unlikely that Eastern Europe will become an important marketplace for semiconductors.

Insurance used to be an entirely state activity in most eastern European economies. In the medium to long term there are likely to be opportunities for private insurance in these markets for foreign companies. Access to markets will differ by country, some having strict regulation while others offer almost free entry. In most countries' privatisation of state insurance activities has already taken place or is underway.

The European Single Market - 1992 - has it happened yet?

There were many studies into the effects of 1992 and the creation of the Single European Market. The main issues relate to trade barriers, public procurement (which does not just apply to industries where the customer is the public sector) and industries where tax or regulatory standards are to be harmonised. While agreeing with the identification of issues, COGENT would disagree quite fundamentally with many of the sectoral conclusions of the major study focused on Scotland (Ernst & Young for the SDA).

The largest industrial markets in the EU are engineering, electronics and communications, industrial chemicals and textiles and clothing.

Construction is an important sector to Scotland, employing around 7% of the workforce in 1991 (133,900 persons) compared to 13% (240,000) in 1987. Opportunities arising through free border movement, transport deregulation and changes in standards are not specific to Scotland and will be experienced throughout the EU, with much greater impact on short journeys over land frontiers than over sea trips or long road distances with ferries or tunnels intervening. Increased market access was nevertheless anticipated as a benefit of 1992 but 'physical' opportunities, particularly in building materials, are limited due to high transport costs and differences in preferences across Europe. Opportunities were expected to be greater in the contracting sector. with new markets opening (EU national public contracts); market growth (tourism, EU projects eg ERDF) and the scope of a wider range of resources (lower cost labour, higher quality materials). Anecdotal evidence is that the increase in trade has tended to be *in*wards rather than outwards.

Objectively Scotland's competitive position in the food and drink market is only likely to alter substantially if harmonisation of tax rates is agreed. This would probably be detrimental to food, as British food suffered from VAT imposition, but beneficial to whisky. The price of whisky is expected to fall in the biggest markets, France and the UK, while rising in other markets such as Italy and Spain. Excise duties are more important than the level of VAT. Cost savings are also likely due to reduced transport costs and new labelling regulations

However Scottish meat and lamb are highly reputable and in a more international purchasing environment the reputation can be marketed. The market is changing with beef consumption falling in Northern Europe while rising in Southern Europe, but for the present the BSE scare is significant. Previous EU regulation has already cut a swathe

through the abattoirs of Scotland. Both underline how it is important for producers to conform to new standards, and the potential benefits of quality assurance schemes.

Engineering is a highly significant sector for Scotland accounting for one quarter of manufacturing output, and any developments in Inverness and Nairn should be viewed also in a national perspective. Germany is still the largest market in the EU for engineering products and the source of greatest EU competition. The effects of 1992 will differ between engineering sectors. Barriers to trade arise from nationalistic public procurement and the desire to maintain a national capability for security of supply, and will not be completely demolished. This is especially true in the cases of defence and nuclear power. Opportunities for existing Scottish mechanical engineering industries arise in fluid pumping equipment, process plant equipment and pressure vessels while there are threats to offshore fabrication and equipment suppliers and mining equipment. In the EY/SDA study few opportunities were perceived in the electrical (as distinct from electronic) engineering sector, although this runs counter to our perception of the structure of public procurement in continental countries. The study sees some opportunities in transport engineering sub-contracting and component supply, particularly automotive electronics, due to improved market access.

The single market was perceived in the study as offering neither opportunity nor threat to military shipbuilding or defence manufacturing. While such a judgement may have been thought necessary for public consumption, it clearly does not reflect political reality as developments over the 'European' fighter have shown. EU considerations should weigh heavily on any individual proposals which Inverness and Nairn Enterprise might look at in these sectors. With slightly more legitimacy the same was found for aerospace equipment 'because the market is a global one with high import penetration'. However there are already significant EU joint-ventures in this area and it is important to look beyond the chapter and verse of the Single European Act. The study saw no discernible opportunity for locomotive and automotive assembly due , it said, to the small size of this sector in Scotland.

In financial services market access and competition were and are expected to increase, especially in fund management. Retail banking and insurance face moderate opportunities and these could have reflections in activity in Inverness or Nairn Fund management presents opportunities due to the existing high level of sophistication and expertise in Scotland, and this could have spin off with a slight effect on Scotland's international financial reputation Opportunities for a greater volume and range of services will result through market growth and greater access to markets. However there are significant

barriers to entry here such as competing branch banks and access to national clearing systems. There may be a threat of Scottish banks being acquired by banks in EU countries.

The market for computing and information services will increase with the impact of 1992 and will provide some opportunities due to the size of the computing sector. Transport costs will fall and there will be harmonisation of computing standards. Trends in pan-European broadcasting will provide more opportunities in independent TV/film producing and direct satellite broadcasting. Engineering and related consultancies will find improved access to European markets due to the opening of public procurement markets and also harmonisation of standards/qualifications that will allow Scottish firms to use their expertise on the Continent. The granting of Objective 1 status offers some small additional boost in this type of area for Inverness and Nairn.

There will be market openings for pharmaceuticals and in biotechnology as a result of the expected increase in demand due to better access to markets, increase in market size and grant funding. Pharmaceuticals also benefit from falling R&D costs and the possible rationalisation of production facilities. Patent protection will be improved as this becomes standardised throughout the Community. It is also proposed to standardise testing procedures. Price levelling will also take place thereby reducing margins in countries where such products are highly priced, notably Germany, Netherlands and the UK. However there will still be competition from suppliers from outwith the EU who are not subject to the same safety requirements. Scottish firms could also take advantage of EU research grants.

Until recently each EU nation maintained a state monopoly in the telecommunications industry. This is an industry with very little presence in Scotland but 1992 promised to bring about significant changes in the European industry The harmonisation of standards allows there to be a single community-wide telecommunications market producing goods to a single specification which can be sold in all member states. This would result in cost savings all through the production process from design to manufacture to marketing and sales. Given the progress made in establishing technical standards and de-regulation of the trading environment access to markets will improve.

The manufacture of customer premises equipment (ie telephones, faxes, telex etc) was identified by Ernst & Young as the principal source of opportunity here, while improvements in the markets for switch and transmission equipment are also anticipated. Opportunities to invest in R&D, establish production facilities, engage in market research and acquisition of distribution channels were seen as some of the best possibilities for

Scotland as a whole in this sector. New markets for pan-European digital mobile cellular telephones are expected to open up presenting an opportunity for increased sales.

The electronics sector includes computers, components, defence electronics and consumer electronics. US companies account for over 70% of turnover in the Scottish electronics industry while much of Scottish indigenous production consists of components manufactured for use by multi-nationals operating in Scotland. Improved market access, market opening and increased inward investment are all expected. The biggest effect is to be felt by the computing and defence equipment sectors followed by components, consumer electronics and software where medium impact was expected. Harmonisation of standards in this industry will present opportunities to firms in Europe. 1992 will also promote competition and lower prices. Scottish component makers may need to focus more on sales to US and Japanese producers who establish facilities in Scotland rather than within the Community - Philips-Siemens are in the Netherlands and Germany; SGS-Thomson are in France and Italy. Market growth is expected to accelerate as economies of scale reduce costs and competition increases which reduces margins resulting in lower prices thereby stimulating demand for electronics goods. More inward investment is considered likely consequently providing more opportunities for local suppliers. Proximity to customers is an important factor. Principal production centres are likely to be outside Scotland for native-European companies. This gives Scotland an important opportunity through increased sales of Scottish-made components to companies that are located in Scotland, but the main relevance to Inverness and Nairn would appear to be in relatively small niches.

A small increase in demand was anticipated in the industrial chemicals industry as a result of the opening of markets and growth in Southern Europe. Reduced transport costs are more likely to materialise eventually, given the disappearance of frontier formalities within the Community, but the relative position for Highland locations will thereby worsen. Testing costs are also expected to fall. Harmonisation of oil product duties poses a threat to Scottish industry as it previously benefited from a preferential regime in comparison to the rest of the EU. Costs may also arise through compliance with EU standards on health and safety and the labelling of toxic chemicals in addition to costs incurred in complying with environmental standards. 1992 will increase competition and increase the chance of mergers and takeovers and (in contrast to Ernst & Young) Cogent expects this trend to have some significance to the Scottish industry. In Scotland the pharmaceuticals and fine chemicals sector is the largest in the chemicals industry followed by industrial chemicals based on petroleum. Although the industry is concentrated at BP, ICI, BXL (all at Grangemouth) and Exxon and Shell (Mossmorran), there are significant plants in Ayrshire

and near Dumfries. Given an appropriate specific site and adequate environmental conditions, a chemical development in the Inverness area need not be ruled out.

GATT 1994 - what kind of new organisation for world trade?

There has been little work done on the sectoral effects of the most recent GATT negotiations on trade liberalisation. The main issues which have been examined in published documents involve trade shifts between the third world and the first world, affecting industries such as agriculture and textiles where third world benefits are expected. GATT is expected to increase world trade by up to 10 per cent over the next ten years by creating a more competitive and integrated world economy. The EU, including Scotland, will benefit from this by improved market access particularly if, in industries such as textiles, if it is able to hold its upmarket *cachet.* But the general trade increase is tiny compared with the product-specific historical trade growth rates, one hundred times as great, which have already been identified in the trade-shift analysis above Most identifiable benefits to producers will accrue to exporters in developing countries and much of the effects of the agreement will pass Inverness and Nairn by, except that local residents will benefit from more and cheaper consumer choice.

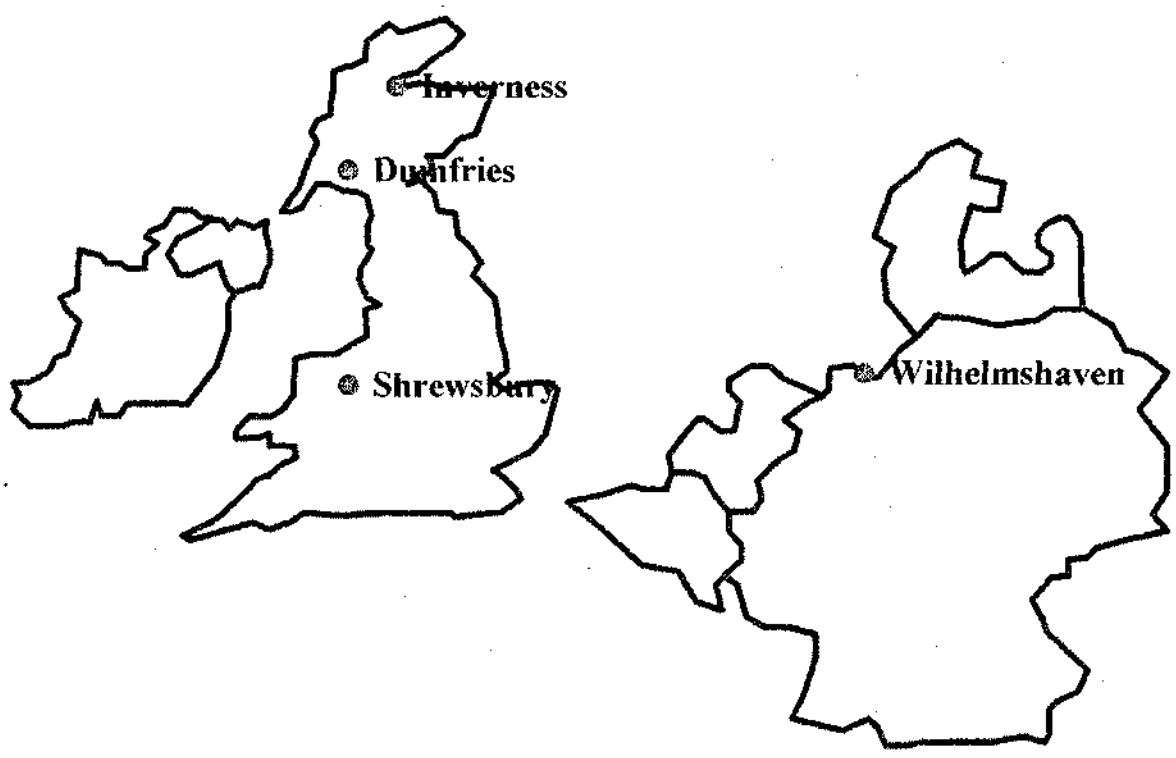
The eventual end of the multifibre agreement makes it unlikely that it would be worthwhile seeking to fill some of the gaps in clothing manufacture which can be statistically identified in Inverness and Nairn, and which are exposed in the next chapter.

What Do Similar Cities Do?

The purpose of the comparator cities is to provide a benchmark for gap industries, niche industries and snug-fit industries. We were glad to find that they also offered useful examples beyond the merely statistical. In our experience it is often especially valuable to compare economic development initiatives internationally, where a different set of economic, legal and governmental assumptions can spark ideas in a Scottish context that are particularly creative.

The particular economies considered were Shrewsbury (England), Wilhelmshaven (Germany) and Dumfries (Scotland).

This section of the report introduces a brief outline of the lessons learned from each with an outline of the economic structure of Inverness.



The Economic Structure of Inverness

The brief for the project specifically excluded a detailed analysis of the economy of Inverness and Nairn, which has previously been examined by the enterprise company. However some analysis was essential in order to extract more detail than that presented in existing economic audits, and to facilitate comparison with other places. It also provided an informal check as to whether the Porter paradigm applies to existing industries in Inverness and Nairn - are successful industries are found together in related clusters?

This analysis was done using Census of Employment data for 1989, the latest year available at the start of the study for all comparator areas. The data was collected from the UK Department of Employment NOMIS computer system at the four-digit level of the Standard Industrial Classification. This breaks the structure of British industry down into 335 industrial segments. From this total

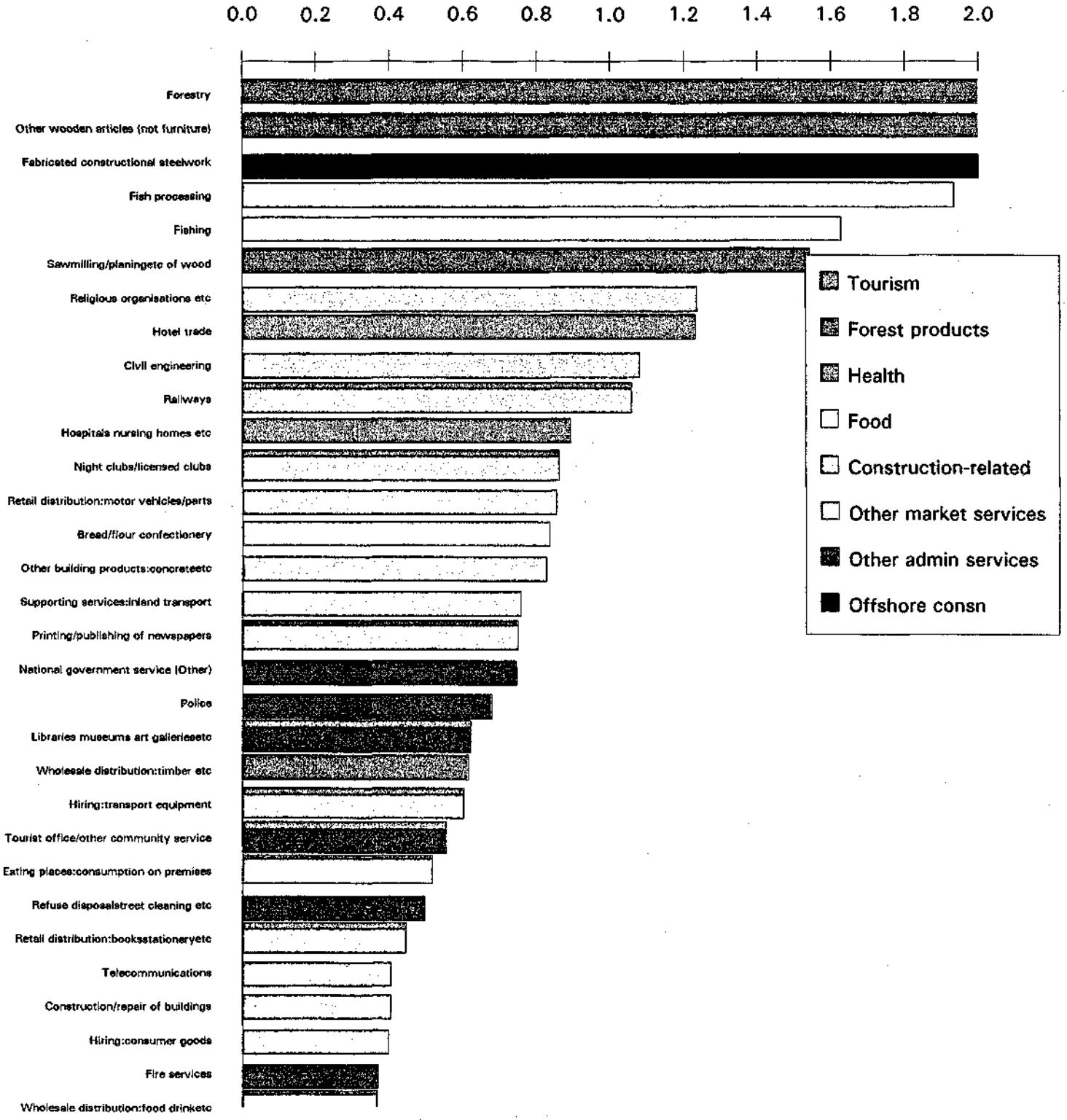
- 192 are missing in Inverness and Nairn
- 49 are significantly underrepresented and employ 2300 people
- 31 are underrepresented and employ 5600 people
- 38 are substantial. Together these employ 10 600 people
- 25 are particularly strong, and together these employ 14 000 people

The top 30 are shown in the graph on the page following.

The scale on the graph measures 'salience'. Inverness and Nairn represent about 0.17 per cent of GB employment, and an industry where Inverness employment was also 0.17 per cent of the GB total would gave salience of 0. However in the hotel trade Inverness and Nairn have about 0.55 per cent of GB employment, so the salience of hotel employment is calculated as Log(0.55/0.17), which is 1.23. In contrast, in activities auxiliary to banking and finance Inverness and Nairn have only about 0.022 per cent of GB employment, so the salience negative . It is calculated as Log(0.022/0.17) or -2.01.

The steel fabrication industry was a key distinguishing feature with a salience 2.08. It could be looked upon as a major 'export' earner in the Inverness and Nairn economy. However it has never been the only breadwinner. There are other strong industries producing goods

Salient employers in Inverness and Nairn

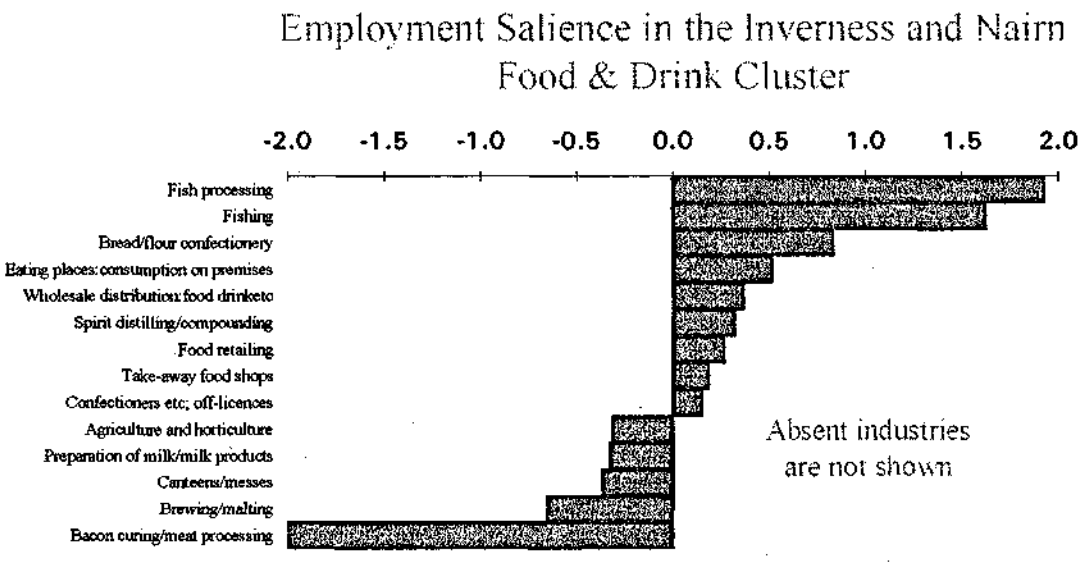


and services to serve customers outwith the immediate locality for which local people and companies are paid.

We found that the remaining prominent industries could sensibly be grouped. The colours on the graph show this grouping. The seven salient clusters of related industries can be easily identified, covering three quarters of employment. Although we have not fully elaborated it, nor formally tested it, it certainly would seem that successful industries found in Inverness and Nairn can be 'clustered' together in groups of related segments, as Michael Porter suggests.

The most salient group, although relatively small, is ***forestry and forest products***.. Forestry itself (including Forestry Commission and private sector staff employed in Inverness while not actually working there) and 'other wooden articles' (Norbord) are very prominent. Taking its less prominent components into account this cluster employs some 1400 people. They are concentrated in the 'upstream' industries - forestry itself, basic sawmills and distribution and bulk products - but there is a presence in some downstream segments.

Next most prominent are ***food industries led by fish processing***. A total of 3400 food-related jobs in the locality break down into 300 agricultural and 200 fish-related, 400 other food manufacturing. The remainder are in food and drink distribution, mainly but not wholly serving Inverness and the surrounding area - 500 wholesale, 1600 retail and nearly 800 in restaurants and canteens. Thus about one quarter of food-related jobs comprise an 'export' cluster i.e. are devoted to serving people outwith the Inverness and Nairn locality.



This eating-out category overlaps with the ***tourist trade***, which has total employees (double-counting on the restaurants) of nearly 4000 and a number of self-employed people in addition. There are a number of overlaps, which are shown on the main graph.

The four remaining clusters reflect Inverness' geographical position as a transport node, the gateway to the Highlands, and its status as the regional capital. They are ***health services, construction, market-related services for Highland region*** and ***administrative services for the region.*** Each employs between two and five thousand people, depending on the precise definition (for example, restaurants might be counted again under market related services), and around a third of these people 'export' their services beyond district boundaries to the rest of the Highlands or beyond. The right hand column in the table below shows a rough estimate of the 'premia' employees, those over and above the number necessary to satisfy the needs of Inverness and Nairn alone.

CLUSTER	Employment	of which *'premia'*
Forest products-related	1392	964
Food-related	3362	1097
Tourism-related	3848	1821
Health services	4244	2321
Construction-related	2598	1001
Other market services	2945	965
Other admin services	4656	1226

This is, in fact, a rather diverse structure for a town of this size. The main external sources of commercial income are tourism and agriculture/forestry/fishing. Other income circulates in the Highland economy, sometimes with and sometimes without the intervention of government as tax collector and manager.

The comparator cities are, in general, bigger than Inverness and Nairn. This was deliberate, as we were to some extent looking for models towards which Inverness and Nairn might develop, and these may be easier to find in a slightly larger economy. They each have their lead industries. The table on the following page provides some basic comparative statistics and gives some indication of those lead industries. It is followed by a profile of each city.

Summary of Key Data from Comparator Cities

	Inverness and Nairn	Nithsdale	Shrewsbury & Atcham	Wilhelmshaven	Friesland (exc Wilhelmshaven)
Area (sq km)	3211	1433	602	710	
Population (000s)	73	57	93	93	97
Employment (000s)	33	26	42	38	30
Unemployed (000s)	3.2	2.7	3.4	6.9	..
Unemployment (%)	8.9	9.6	7.5	15.2	..
Gross Value Added in Manufacturing £m	119	107	100	..	..
Key Industries	Forest products	Forestry	Engines	Engineering	Food
	Tourism	Other transport	Publishing	Food cluster	Office machinery
	Construct-ional Steelwork	Milk/milk products	Agriculture	Office Machinery	Oil refining
	Fish processing	Opencast coal working	Medical cluster	National govt (Naval base)	Engineering
	1991	1991	1991	1990	1990

Wilhelmshaven

The city of Wilhelmshaven lies on the German west coast on the banks of the Jade bay. It was inaugurated as a port in 1869 and has grown to a population of 93,000 - the largest city in the Friesland region. Friesland is sparsely populated and relies on tourism.

The city has suffered from a major rundown of employment from the Olympia typewriter factory, which at one time employed 11,000 and as recently as 1987 employed 2,500. The main remaining 'employer' is the armed forces, as the City is Germany's main naval base and only deep water port.

Comparing the industrial structure of the city with British norms, and making the best allowance we could for differences in the classification system, a number of industries stand out. The tourism/leisure cluster in Friesland and Wilhelmshaven includes

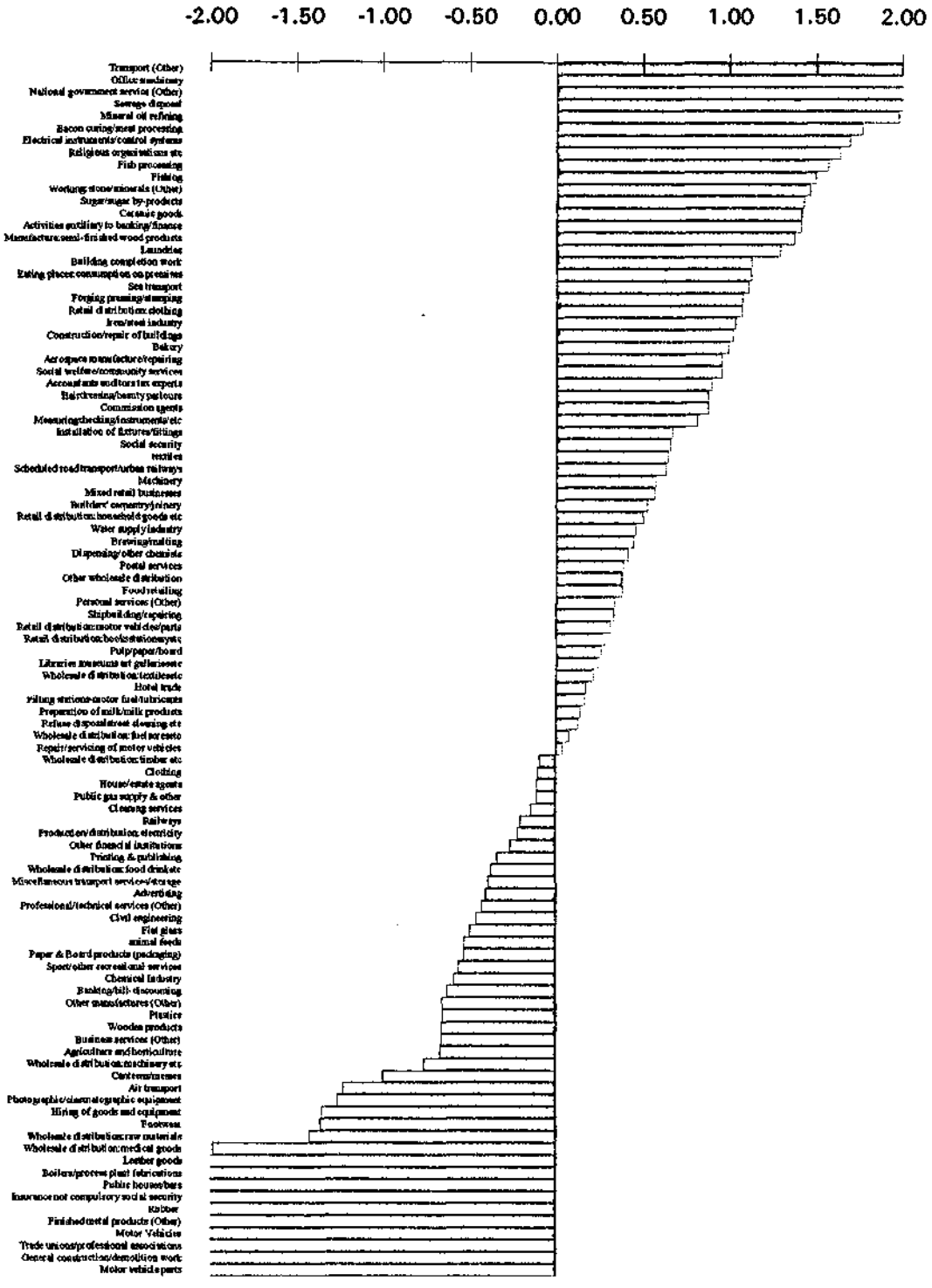
208 people in domestic service
394 in religious organisations
2192 in eating places and miscellaneous accommodation
764 in hairdressers and beauty parlours
248 in libraries and museums

The food cluster includes

831 in meat processing
200 in fish processing
82 in fishing
1015 in bakery
108 in milk products
82 in sugar

Some other clusters found in Wilhelmshaven reflect its industrial specialisation (for example, office machinery, forging and stamping) including some parallel to Inverness and Nairn (for example forest products: 312 in builders' joinery, 291 in board, 86 in wood semi-manufactures) and its role as regional centre (clothes retailing 1482, welfare services 5268).

Employment Salience in Friesland District (inc City of Wilhelmshaven) relative to GB



Its geographical situation and recent industrial history therefore make Wilhelmshaven a fairly good basis for comparison with Inverness and Nairn. There are 43 industries where employment in Wilhelmshaven/Friesland is at least twice the Inverness and Nairn level (after adjusting for overall size) These can be split into six groups (some of the 43 industries have been combined with others for clarity)

Industrial specialisation different to Inverness and Nairn

Office machinery, Chemicals, Armed Forces, Oil Refinery, Power generation

Engineering-related industries possibly relevant to Inverness and Nairn

Ship/boat building and repairing; Forging, pressing, casting; Plastics; Photographic equipment; Other mechanical engineering; Instruments

Other manufacturing possibly relevant

Sugar; Semi-finished wood products; Paper and board; Leather goods; Ceramics; Meat and bacon processing; Clothing; Textiles; Milk products.

Commercial services

Commission agents; Miscellaneous transport; Advertising; Cleaning; Wholesaling; Laundries; Building completion; Accountants; Estate agents

Personal and public services

Domestic services; Miscellaneous; Hairdressing and beauty; Social security; Social welfare; Clothes retailing.

Other

Water; Stone working; Transport

A further 14 industries are more prevalent in Wilhelmshaven than in Inverness and Nairn. Except for joinery and shopfitting these are all service businesses relating to the role as regional centre.

Conclusions

The comparison with Wilhelmshaven throws up several candidate industries which merit investigation as opportunities for Inverness and Nairn. It *highlights the weakness of the Inverness and Nairn miscellaneous engineering sector* and suggests **scope for development** in the **food related** and **forest products** clusters.

In addition, the service sector (private and public) is much better developed in Wilhelmshaven, probably reflecting higher income levels and more government spending per capita in Germany than the UK. Specific opportunities suggested by the data are **cleaning**, **laundries** and **hairdressing/beauty**, all of which would adhere to the tourist cluster. In addition, there is a suggestion there are more commercial intermediaries (commission agents, real estate etc.) suggesting a more entrepreneurial culture.

Industrial development

Wilhelmshaven is seeking to use the Olympia site as the core of an industrial park. It has firm links with Scotland including a strong twinning with Dunfermline. The Rosyth dockyard was originally built to counter the threat from the Kaiser's naval arsenal in Wilhelmshaven.

Recommendations

Specific industries have been included in the 'Hot 100'. Wilhelmshaven would be a particularly appropriate comparator for service industries (even the prosaic 'laundries' and 'cleaning' sectors) and the development of the industrial park would merit further study. The city council and the development agency responsible for the park are both prepared to accept a study team.

Shrewsbury

Shrewsbury was selected as a comparator on the basis of similar size to Inverness and Nairn (37,000 employed) and the fact that its position relative to mid-Wales broadly corresponds to that of Inverness and Nairn relative to the Highlands. The analogy is less strong, however, in that Shrewsbury is much closer to the industrial West Midlands than Inverness is to Scotland's central belt.

Shrewsbury is an engineering centre. It has a substantial engine works employing 1000 and an aerospace factory employing over 600. It has, like Inverness and Nairn, a strong medical cluster (3392 employed in hospitals, 200 in dentists, 865 in 'Other medical institutions', 67 in medical equipment). It also has a strong agricultural industry (1300 employees) and several particularly strong related industries (Fur goods 16, Animal feeds 120, Agricultural machinery 210, Vets 86, Tractors 34, Refrigeration machinery 26).

A total of 38 industries are recorded as present in Shrewsbury, but absent in Inverness and Nairn. Thirty five more are over twice as prevalent in Shrewsbury as in Inverness and Nairn. Many of these can be grouped as follows:

Industrial Specialisation

Engines, engineers tools, aerospace, electronic consumer goods

Agricultural and Food Related

Animal feeds; food processing machines; tractors; miscellaneous food; refrigerating machinery; slaughterhouses; animal by-products; agricultural machinery; veterinary practices; agriculture; bacon/meat processing.

Publishing, Literature etc.

Authors; printing machines; periodicals; other printing/publishing

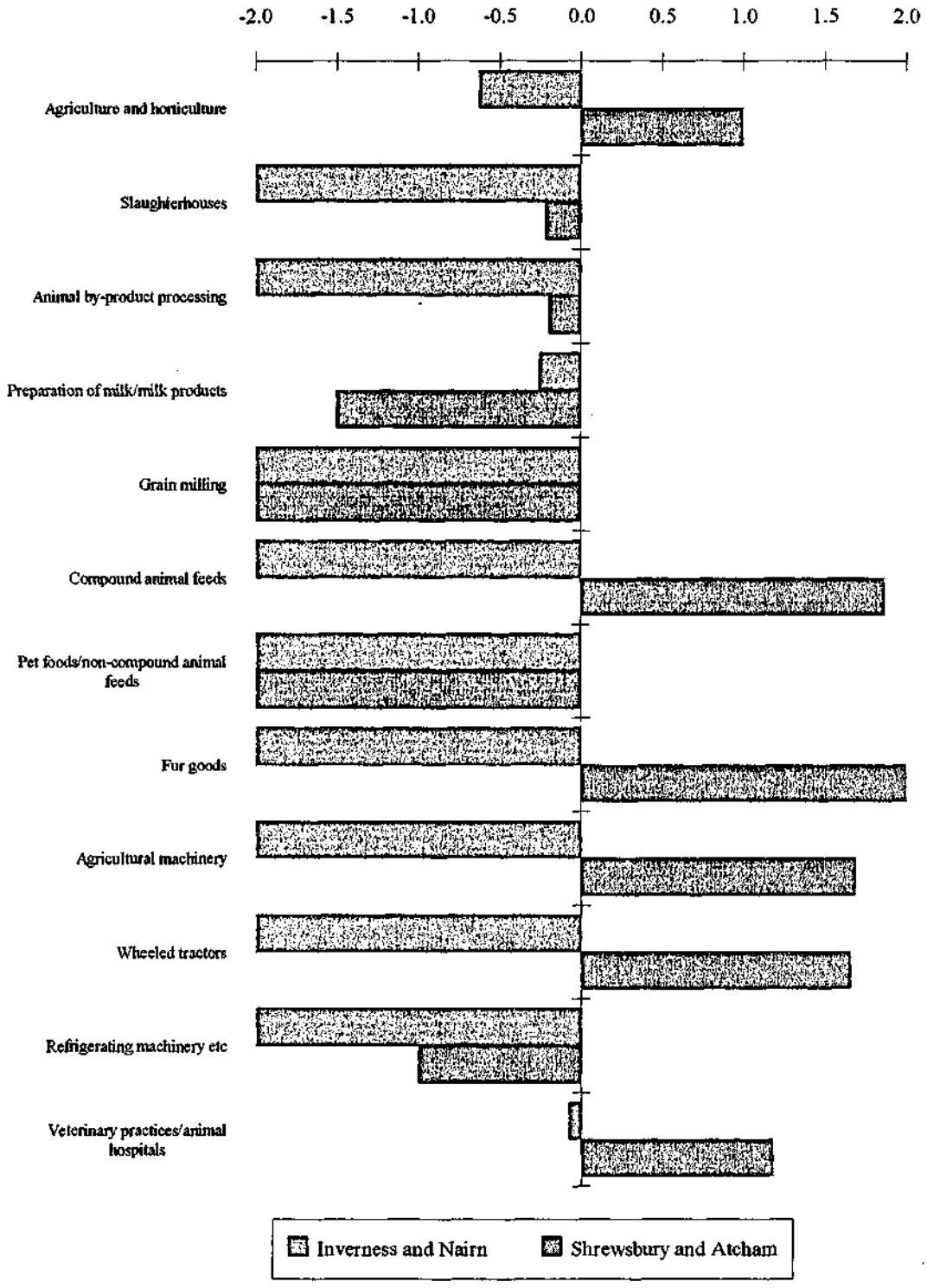
Medical

Agency nurses; medical equipment; dental practices; cosmetics; spectacles; medical wholesales; vets; other medical institutions.

Commercial Services

Equipment hire; advertising; cleaning; real estate dealers; laundries; estate agents; dry cleaning.

Comparison of Inverness and Shrewsbury Saliences Relative to GB in Agriculture



Miscellaneous Manufactures

Clothing related (lingerie, womenswear); furniture; plastics and rubber.

Regional Services etc.

Water; power; ready mix concrete; quarrying; public houses; wholesaling (various).

There are then a further two dozen industries which are stronger in Shrewsbury than in Inverness and Nairn. Many of these are 'regional' services - education, banking, professional services, lawyers, insurance. By comparison the two dozen industrial segments where Inverness is much stronger than Shrewsbury include tourism and leisure (8 segments) and public administration (3 large segments - police, national and local government) and civil engineering/construction.

Conclusion

Industries from three clusters: agriculture-related, publishing and commercial services are all candidate industries for Inverness and Nairn. In medical/healthcare Shrewsbury has a radically different commercial structure - perhaps partly due to being in the English NHS, but only partly - and draws on its equipment manufacturing linkages.

Dumfries

Arguably, Dumfries is to Galloway and Dumfriesshire as Inverness is to the Highlands. The District of Nitsdale, which includes the town of Dumfries, is relatively small (17000 employees) but the region as a whole has over 50,000 employees. One of the most salient clusters of industries, forest products (2000 employees), it shares with Inverness. The town has a number of other industrial specialisations, notably milk products (Nestle-Carnation) with 800 employed in the sector; textiles (hosiery/menswear employing over 800 in Nitsdale and a similar number in Dumfries and Galloway); and plastics (Plastics, rubber and plastics products employ 3000 in Dumfries and Galloway)

A total of 48 industrial segments are present in Dumfries and Galloway but absent (or nearly so) in Inverness and Nairn. The majority fall into six clear clusters

Chemicals Related

Plastics semi-manufactures; rubber products; nuclear fuel; explosives; pharmaceuticals; other plastic products; rubber tyres; synthetic resins.

Textiles Related

Womenswear, hosiery, menswear, woollens, carpets, leather, workwear, footwear.

Minerals and Metals

Ceramics, aluminium, glass, quarrying, coal, doors and windows

Forest Product Related

Packaging board, other paper/board products, paper and board, doors and windows, semi-finished wood products, cork.

Agriculture and Food Related

Refrigerating machinery, slaughterhouses, animal feeds, miscellaneous, animal by-products, poultry processing, confectionery, vegetable processing, grain milling.

Publishing, Information etc

Books, computer services, periodicals, authors, higher education.

Only the forest products and the food/agriculture clusters exist significantly in Inverness and Nairn. For these two industries the Dumfries and Galloway clusters are measurably

more diverse (and therefore mutually supportive). If the list is extended to include the thirty industries which, in relative terms, are twice as big in Dumfries and Galloway as in Inverness and Nairn, then food and agriculture-related segments again figure (agricultural machinery, milk products, meat processing, vets) and furniture and builders' joinery are added to the forest cluster. The bars to the right on the following graph indicate forest and related industries where Dumfries has a relatively stronger position than Inverness and Nairn. These indicate that there are 5 forest products industries present in Dumfries but effectively absent in Inverness and Nairn, and a further 3 which are significantly bigger in Dumfries. Only in 4 segments is Inverness and Nairn relatively bigger.

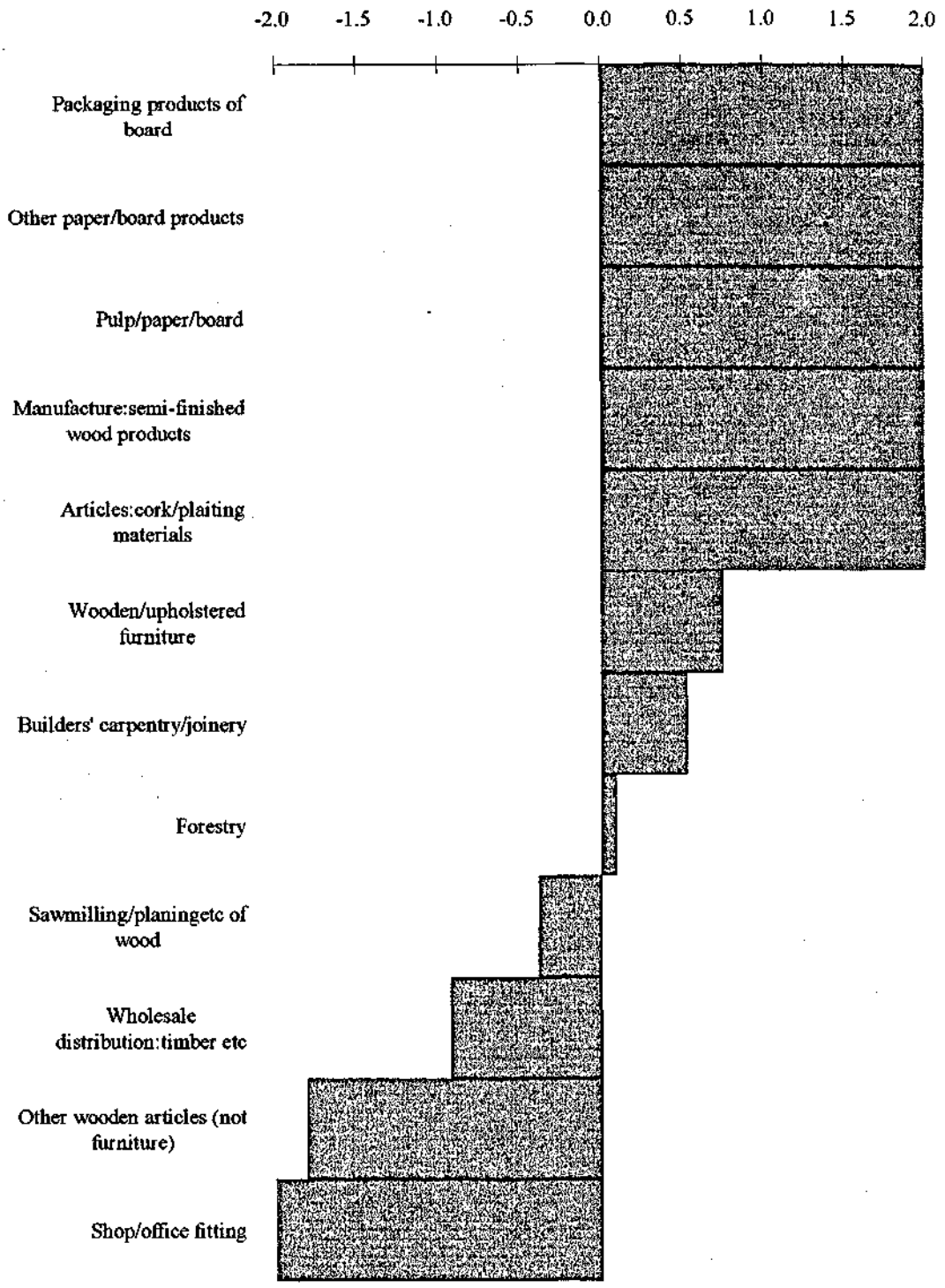
It is also clear that the medical cluster, Inverness' strongest service suit, is more diverse and commercial in Dumfries. Dental and medical practices employ twice as many, agency nursing is significant, medical wholesaling is eight times the size, but the basic medical institutions are only three quarters the size.

Some regional or local services (various transport industries, laundries, justice, equipment hire and industrial or commercial wholesaling and property development are two to three times as big in Dumfries and Galloway as they are in Inverness and Nairn.

Conclusions

The Dumfries area has three clear industrial specialisations which have no counterpart in Inverness and Nairn. Other industries are more closely paralleled. These suggest that scope for diversifying the agriculture-food cluster in Inverness and Nairn would include a wide range of supporting and parallel industries, and it should be possible to move downstream in the forest products cluster. The strength of the information and education sector merits examination.

Dumfries Relative to Inverness and Nairn in the Forest Products Cluster



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A Preliminary Ranking

These four tables list 100 industries suggested by the foregoing analysis.

They include first a preliminary subjective 'Diamond Assay' of viability in Inverness and Nairn. This owes its origins to a model of national competitive advantage promoted by Professor Michael Porter, and subsequently developed by COGENT. Second is an estimate of potential based on European growth. Third is an estimate broadly based on gap analysis. These are all more-or-less subjective estimates which we have made to reduce a long list of industries to a shorter list.

Finally the three estimates are combined with an estimate of scale, usually based on UK employment (or a surrogate) in an overall assessment. Industries in ten small clusters chosen for further analysis are highlighted. These we have termed specimen industries.

Opportunity Industries in Inverness Nairn

COGENT hypotheses Preliminary Assessment	Customers	Resources	Support	Companies	Carats
Conifer logs in the rough	6	8	4	4.5	321
Lumber sawn etc - conifer	5	7	5	4.5	291
Laundries/Dry Cleaning	7	7	3.5	3	270
Cleaning Services	6.5	7	4	2	246
Windmills	5	8.5	2.5	1	197
Plywood etc. of wood sheets	2	8	3.5	3.5	191
Road Haulage	7	4	4	2	187
Wooden/Upholstered Furniture	4	7	3.5	2.5	186
Hairdressing/beauty parlours	4	6	4	3	183
Comms Services	4	5	4	4	181
Oil & Gas	4	5	4	4	181
Builders woodwork, prefabs	3	8	3.5	2	181
Poultry slaughter/Processing	4.5	6	4.5	1.5	176
Medical Care Institutions (Other)	4.5	6	4	2	174
Semi-finished Wood Products	2	8	3.5	2.5	171
Medical/Surgical/Orthopaedic Instruments	6	5.5	2.5	2	166
Fuel & Power	4	6	3	3	163
Scheduled Road Transport/urban railways	5.5	4	4	2.5	162
Indoor Game Equipment	4	3	5	4	161
Preparation of Milk/Milk Products	4	5	4	3	161
Telecommunications	4.5	4	4	3.5	160
Agency/private midwives nurses etc	4.5	6	4	1	157
Miscellaneous Foods	5	4.5	4	2	153
Sea Transport	4	6	4	1	147
Bacon Curing\Meat Processing	4	6	4	1	147
Other Road Passenger Transport	6	4	3	2	145
Agricultural Machinery	7	2.5	3	2	139
Builders' Carpentry/Joinery	3	7	2	2	131
Ship/boat building and repair	5	5	3	1	128
Wholesale Distn: Medical Goods	5	4	4	1	127
Yachts, Sports Vessels	5	4	4	1	127
Dental Practices	4	4	4	2	124
Boilers/process plant fabrications	2	6	3	2	111
Compound Animal Feeds	5	4	2.5	1.5	109
Slaughterhouses	4	4	4	1	109
Small Part Engineering	5	3.5	3	1.5	109
Extraction of Stone/Clay/Gravel	2	5	3.5	2.5	108
Business Services	3	4	3	3	106

Opportunity Industries in Inverness Nairn

COGENT hypotheses Preliminary Assessment	Customers	Resources	Support	Companies	Carats
Telecoms Equipment	6	2	3	1.5	104
Packaging products of board	2	6	3	1.5	104
Animal By-product processing	3	5	3.5	1	102
Soft Drinks	4.5	3	4	1	101
Textiles and Clothing	3.5	4	2.5	2	91
Measuring, Drawing Instruments and Parts	3	4	2	3	91
Printing & Publishing of Books	3	3.5	3	2.5	90
Ready Mix Concrete	3	3	3.5	2.5	90
Sewage Disposal	4	3	3.5	1	85
Owning/Dealing in Real Estate	3	4	3	1.5	84
Audiovisual Services	3	4	2	2	77
House Building	2.5	4	2.5	2	77
Domestic Services	3	3	2.5	2.5	76
Engineers Small Tools	4	3.5	2	1	72
Rail Freight	3.5	2	3	2	70
Air Passenger Transport	3	2.5	2	3	69
Auxiliary transport (Harbour Auth,Lighthc	3	3	2.5	2	69
Rail Passenger	4	2	3	1	65
Wholesale Distn: textiles	4	3	2	1	65
Hosiery and Other Knitted Goods	2	4	2	2	64
Personal Services (Other)	2	3.5	2.5	2	63
Banking	3	3	2	2	63
Electrical Instruments/Control Systems	3	2	2	3	63
Aerospace Manufacture and Repair	3	3	2.5	1	58
Recorded discs, tapes etc	3	2.5	3	1	58
Chemical Industry	3	3	2	1.5	57
Colour TV receivers	4	2	2	1	53
Computer Services	3.5	2	1	2.5	52
Food Drink Tobacco Processing Machiner	3.5	2.5	2	1	52
TV, radio transmitters etc	2	3	3	1	52
Consumer Electronics	3	3	2	1	52
Surveying Instruments	3	3	2	1	52
Misc Chemical Products	2	2	2	3	51
Gas, Liquid control Instruments	3	2	2	2	51
Software	3.5	2	2	1	47
Footwear	3	3	1.5	1	47
Metal doors windows etc	2	3	2.5	1	46
Office Equipment Computers and Instrum	3	2	2	1	41

Opportunity Industries in Inverness Nairn

COGENT hypotheses Preliminary Assessment	Customers	Resources	Support	Companies	Carats
Shirts of cotton	3	2	2	1	41
Women's/Girls Light Outerwear/Lingerie	3	2	2	1	41
Men's/Boys Tailored Outerwear	3	2	2	1	41
Insurance	2.5	2.5	2	1	41
Other Financial Services	2	3	1.5	1.5	41
Metal working machine tools	2.5	2	2	1.5	40
Semiconductors	1	4	1.5	1	38
Hand Paintings	3	2.5	1	1	37
Digital Central Processors	3	2	1	1	32
Office Machinery	3	2	1	1	32
Forging pressing stamping	3	2	1	1	32
Electronic Microcircuits	2	2	2	1	31
Aircraft nes >15000kg	2	2	2	1	31
Ceramic goods	2	2	2	1	31
Motor Vehicle Parts	2	2	2	1	31
Explosives	2	2.5	2	0	28
Sugar/sugar by products	3	1	1	1	24
Data Processing Equipment	2	2	1	1	23
Off-line Data Processing Equipment	2	2	1	1	23
Electronic Consumer Goods (Other)	2	2	1	1	23
Pharmaceuticals	2	2	1	1	23
Plastics semi-manufactures	1	2	1	1	16
Other rubber products	2	1	1	0	11
Internal Combustion Engines	1	2	1	0	11
Mean	3.4	3.7	2.7	1.7	85
SD	1.3	1.8	1.0	1.0	64.8

Opportunity Industries in Inverness Nairn

COGENT hypotheses Preliminary Assessment	Growth prospects
Windmills	50.0%
Computer Services	11.0%
Software	11.0%
Semiconductors	8.8%
Telecommunications	8.7%
Telecoms Equipment	7.2%
Colour TV receivers	7.2%
TV, radio transmitters etc	7.2%
Audiovisual Services	6.5%
Insurance	6.3%
Comms Services	4.7%
Data Processing Equipment	4.7%
Off-line Data Processing Equipment	4.7%
Consumer Electronics	4.5%
Office Equipment Computers and Instrum	4.5%
Digital Central Processors	4.5%
Electronic Microcircuits	4.5%
Electronic Consumer Goods (Other)	4.5%
Pharmaceuticals	4.5%
Medical Care Institutions (Other)	4.0%
Wholesale Distn: Medical Goods	4.0%
Packaging products of board	4.0%
Owning/Dealing in Real Estate	4.0%
Domestic Services	4.0%
Banking	4.0%
Chemical Industry	4.0%
Misc Chemical Products	4.0%
Office Machinery	4.0%
Air Passenger Transport	3.8%
Laundries/Dry Cleaning	3.5%
Hairdressing/beauty parlours	3.5%
Business Services	3.5%
Aerospace Manufacture and Repair	3.5%
Aircraft nes >15000kg	3.5%
Auxiliary transport (Harbour Auth,Lighthc	3.3%
Other rubber products	3.3%
Road Haulage	3.2%
Rail Passenger	3.2%

Opportunity Industries in Inverness Nairn

COGENT hypotheses Preliminary Assessment	Growth prospects
Personal Services (Other)	3.2%
Other Financial Services	3.1%
Cleaning Services	3.0%
Medical/Surgical/Orthopaedic Instruments	3.0%
Yachts, Sports Vessels	3.0%
Measuring, Drawing Instruments and Part:	3.0%
Surveying Instruments	3.0%
Gas, Liquid control Instruments	3.0%
Hand Paintings	3.0%
Plastics semi-manufactures	3.0%
Sea Transport	2.9%
Scheduled Road Transport/urban railways	2.7%
Plywood etc. of wood sheets	2.5%
Wooden/Upholstered Furniture	2.5%
Indoor Game Equipment	2.5%
Other Road Passenger Transport	2.5%
Electrical Instruments/Control Systems	2.5%
Ship/boat building and repair	2.4%
Conifer logs in the rough	2.0%
Lumber sawn etc - conifer	2.0%
Builders woodwork, prefabs	2.0%
Fuel & Power	2.0%
House Building	2.0%
Ceramic goods	2.0%
Motor Vehicle Parts	1.9%
Internal Combustion Engines	1.9%
Poultry slaughter/Processing	1.8%
Recorded discs, tapes etc	1.6%
Semi-finished Wood Products	1.5%
Preparation of Milk/Milk Products	1.5%
Miscellaneous Foods	1.5%
Bacon Curing\Meat Processing	1.5%
Builders' Carpentry/Joinery	1.5%
Dental Practices	1.5%
Compound Animal Feeds	1.5%
Slaughterhouses	1.5%
Animal By-product processing	1.5%
Soft Drinks	1.5%

Opportunity Industries in Inverness Nairn

COGENT hypotheses Preliminary Assessment	Growth prospects
Printing & Publishing of Books	1.5%
Rail Freight	1.5%
Sugar/sugar by products	1.5%
Ready Mix Concrete	1.4%
Engineers Small Tools	1.3%
Metal doors windows etc	1.3%
Forging pressing stamping	1.3%
Agricultural Machinery	1.0%
Boilers/process plant fabrications	1.0%
Small Part Engineering	1.0%
Sewage Disposal	1.0%
Food Drink Tobacco Processing Machiner	1.0%
Explosives	1.0%
Oil & Gas	0.8%
Wholesale Distn: textiles	0.0%
Extraction of Stone/Clay/Gravel	-0.3%
Textiles and Clothing	-0.8%
Footwear	-0.8%
Metal working machine tools	-1.1%
Hosiery and Other Knitted Goods	-1.2%
Shirts of cotton	-1.4%
Women's/Girls Light Outerwear/Lingerie	-1.4%
Men's/Boys Tailored Outerwear	-1.4%
Agency/private midwives nurses etc	
Mean	3.3%
SD	5.2%

Opportunity Industries in Inverness Nairn

COGENT hypotheses Preliminary Assessment	GAP prospects
Aerospace Manufacture and Repair	2.0
Chemical Industry	2.0
Compound Animal Feeds	2.0
Consumer Electronics	2.0
Data Processing Equipment	2.0
Digital Central Processors	2.0
Domestic Services	2.0
Electronic Consumer Goods (Other)	2.0
Explosives	2.0
Forging pressing stamping	2.0
Hand Paintings	2.0
Internal Combustion Engines	2.0
Metal doors windows etc	2.0
Metal working machine tools	2.0
Office Equipment Computers and Instrume	2.0
Office Machinery	2.0
Other rubber products	2.0
Personal Services (Other)	2.0
Pharmaceuticals	2.0
Plastics semi-manufactures	2.0
Printing & Publishing of Books	2.0
Recorded discs, tapes etc	2.0
Sewage Disposal	2.0
Ship/boat building and repair	2.0
Slaughterhouses	2.0
Wholesale Distn: Medical Goods	2.0
Windmills	2.0
Yachts, Sports Vessels	2.0
Poultry slaughter/Processing	1.9
Animal By-product processing	1.8
Builders woodwork, prefabs	1.8
Packaging products of board	1.8
Semi-finished Wood Products	1.8
Telecoms Equipment	1.8
TV, radio transmitters etc	1.8
Wooden/Upholstered Furniture	1.8
Agency/private midwives nurses etc	1.7
Electrical Instruments/Control Systems	1.7

Opportunity Industries in Inverness Nairn

COGENT hypotheses Preliminary Assessment	GAP prospects
Gas, Liquid control Instruments	1.7
Hosiery and Other Knitted Goods	1.7
Plywood etc. of wood sheets	1.7
Semiconductors	1.7
Software	1.7
Agricultural Machinery	1.6
Food Drink Tobacco Processing Machiner	1.6
Medical/Surgical/Orthopaedic Instruments	1.6
Misc Chemical Products	1.6
Shirts of cotton	1.6
Small Part Engineering	1.6
Soft Drinks	1.6
Women's/Girls Light Outerwear/Lingerie	1.6
Colour TV receivers	1.5
Computer Services	1.5
Engineers Small Tools	1.5
Miscellaneous Foods	1.5
Motor Vehicle Parts	1.5
Off-line Data Processing Equipment	1.5
Electronic Microcircuits	1.4
Footwear	1.4
Owning/Dealing in Real Estate	1.4
Wholesale Distn: textiles	1.4
Bacon Curing\Meat Processing	1.2
Dental Practices	1.2
Sea Transport	1.2
Cleaning Services	1.1
Indoor Game Equipment	1.0
Surveying Instruments	1.0
Audiovisual Services	0.8
Ready Mix Concrete	0.8
Medical Care Institutions (Other)	0.7
Men's/Boys Tailored Outerwear	0.7
Other Road Passenger Transport	0.7
Sugar/sugar by products	0.7
Textiles and Clothing	0.7
Builders' Carpentry/Joinery	0.6
Laundries/Dry Cleaning	0.6

Opportunity Industries in Inverness Nairn

COGENT hypotheses Preliminary Assessment	GAP prospects
Oil & Gas	0.6
Scheduled Road Transport/urban railways	0.6
Aircraft nes >15000kg	0.5
Auxiliary transport (Harbour Auth,Lighthc	0.5
Boilers/process plant fabrications	0.5
Fuel & Power	0.5
Extraction of Stone/Clay/Gravel	0.4
Preparation of Milk/Milk Products	0.4
Road Haulage	0.4
Banking	0.3
Hairdressing/beauty parlours	0.3
Insurance	0.3
Measuring, Drawing Instruments and Part:	0.2
Other Financial Services	0.2
Air Passenger Transport	0.2
Business Services	0.1
House Building	0.1
Ceramic goods	0.0
Comms Services	0.0
Conifer logs in the rough	0.0
Lumber sawn etc - conifer	0.0
Rail Freight	0.0
Rail Passenger	0.0
Telecommunications	0.0
Mean	1.29
SD	0.70

Opportunity Industries in Inverness Nairn

COGENT hypotheses Preliminary Assessment	Customers	Resources	Support	Companies	Carats	GAP prospects	Growth prospects	Potl = Growth + gap/10	Potl *carats *0.1	Nat'l Employment	N*PotlCts	Specimen Industry
Cleaning Services	6.5	7	4	2	246	1.1	3.0%	140%	34.4	293242	10088991	Laundries and Cleaning
Windmills	5	8.5	2.5	1	197	2.0	50.0%	700%	137.7	70000	9640750	Windmills
Chemical Industry	3	3	2	1.5	57	2.0	4.0%	240%	13.7	342391	4704452	
Textiles and Clothing	3.5	4	2.5	2	91	0.7	-0.8%	62%	5.7	815433	4613312	
Wooden/Upholstered Furniture	4	7	3.5	2.5	186	1.8	2.5%	205%	38.2	101329	3868868	Wooden Furniture
Road Haulage	7	4	4	2	187	0.4	3.2%	72%	13.5	240176	3233730	
Telecommunications	4.5	4	4	3.5	160	0.0	8.7%	87%	13.9	225911	3149595	
Fuel & Power	4	6	3	3	163	0.5	2.0%	70%	11.4	232666	2654719	
Medical Care Institutions (Other)	4.5	6	4	2	174	0.7	4.0%	110%	19.2	136851	2623092	Private Healthcare
Scheduled Road Transport/urban railw	5.5	4	4	2.5	162	0.6	2.7%	87%	14.1	167031	2357768	
Aerospace Manufacture and Repair	3	3	2.5	1	58	2.0	3.5%	235%	13.6	163428	2217922	
Banking	3	3	2	2	63	0.3	4.0%	70%	4.4	463700	2044917	Financial Services
Owning/Dealing in Real Estate	3	4	3	1.5	84	1.4	4.0%	180%	15.2	133881	2030305	
Comms Services	4	5	4	4	181	0.0	4.7%	47%	8.5	225911	1921825	
Business Services	3	4	3	3	106	0.1	3.5%	45%	4.8	398174	1899290	
Computer Services	3.5	2	1	2.5	52	1.5	11.0%	260%	13.6	137743	1871239	Software/Computer Services
Miscellaneous Foods	5	4.5	4	2	153	1.5	1.5%	165%	25.2	72153	1818526	
Software	3.5	2	2	1	47	1.7	11.0%	280%	13.1	137743	1803056	Software/Computer Services
Oil & Gas	4	5	4	4	181	0.6	0.8%	68%	12.3	138648	1706480	
Yachts, Sports Vessels	5	4	4	1	127	2.0	3.0%	230%	29.2	51163	1494471	
Laundries/Dry Cleaning	7	7	3.5	3	270	0.6	3.5%	95%	25.6	57477	1472920	Laundries and Cleaning
Ship/boat building and repair	5	5	3	1	128	2.0	2.4%	224%	28.7	51163	1466946	
Hairdressing/beauty parlours	4	6	4	3	183	0.3	3.5%	65%	11.9	109126	1298054	
Small Part Engineering	5	3.5	3	1.5	109	1.6	1.0%	170%	18.5	67614	1250014	
Audiovisual Services	3	4	2	2	77	0.8	6.5%	145%	11.2	111123	1240688	
Wholesale Distn: Medical Goods	5	4	4	1	127	2.0	4.0%	240%	30.5	35411	1079327	
Poultry slaughter/Processing	4.5	6	4.5	1.5	176	1.9	1.8%	208%	36.5	28198	1029340	Poultry Processing
Bacon Curing\Meat Processing	4	6	4	1	147	1.2	1.5%	135%	19.8	48748	967404	
Packaging products of board	2	6	3	1.5	104	1.8	4.0%	220%	22.8	40281	919414	
Insurance	2.5	2.5	2	1	41	0.3	6.3%	88%	3.6	256132	918489	Financial Services
Consumer Electronics	3	3	2	1	52	2.0	4.5%	245%	12.7	65851	838942	
Telecoms Equipment	6	2	3	1.5	104	1.8	7.2%	252%	26.1	31871	833267	
Dental Practices	4	4	4	2	124	1.2	1.5%	135%	16.7	48182	806567	
Medical/Surgical/Orthopaedic Instrum	6	5.5	2.5	2	166	1.6	3.0%	190%	31.6	24175	763628	Medical Instruments
Sea Transport	4	6	4	1	147	1.2	2.9%	149%	21.9	33225	727727	
Hosiery and Other Knitted Goods	2	4	2	2	64	1.7	-1.2%	158%	10.1	62794	634973	
Builders' Carpentry/Joinery	3	7	2	2	131	0.6	1.5%	75%	9.8	63294	621864	Structural Processed Timber
Agency/private midwives nurses etc	4.5	6	4	1	157	1.7		170%	26.6	22807	607750	Private Healthcare
Engineers Small Tools	4	3.5	2	1	72	1.5	1.3%	163%	11.7	49909	583698	
Women's/Girls Light Outerwear/Linge	3	2	2	1	41	1.6	-1.4%	146%	6.0	91836	549730	
Agricultural Machinery	7	2.5	3	2	139	1.6	1.0%	170%	23.7	23144	547876	
Digital Central Processors	3	2	1	1	32	2.0	4.5%	245%	7.8	69578	545492	
House Building	2.5	4	2.5	2	77	0.1	2.0%	30%	2.3	235152	541437	
Motor Vehicle Parts	2	2	2	1	31	1.5	1.9%	169%	5.2	98305	515020	
Gas, Liquid control Instruments	3	2	2	2	51	1.7	3.0%	200%	10.2	48840	498168	
Pharmaceuticals	2	2	1	1	23	2.0	4.5%	245%	5.6	87637	493834	
Electrical Instruments/Control System	3	2	2	3	63	1.7	2.5%	195%	12.3	38822	476928	
Indoor Game Equipment	4	3	5	4	161	1.0	2.5%	125%	20.1	22817	459192	
Personal Services (Other)	2	3.5	2.5	2	63	2.0	3.2%	232%	14.7	29725	436185	
TV, radio transmitters etc	2	3	3	1	52	1.8	7.2%	252%	13.1	31871	417638	
Wholesale Distn: textiles	4	3	2	1	65	1.4	0.0%	140%	9.1	45868	417399	
Data Processing Equipment	2	2	1	1	23	2.0	4.7%	247%	5.7	69578	395273	
Semiconductors	1	4	1.5	1	38	1.7	8.8%	258%	9.9	38822	383115	
Colour TV receivers	4	2	2	1	53	1.5	7.2%	222%	11.8	31871	374994	
Electronic Consumer Goods (Other)	2	2	1	1	23	2.0	4.5%	245%	5.6	65851	371070	
Other Financial Services	2	3	1.5	1.5	41	0.2	3.1%	51%	2.1	161834	336332	Financial Services
Surveying Instruments	3	3	2	1	52	1.0	3.0%	130%	6.8	48840	330158	
Printing & Publishing of Books	3	3.5	3	2.5	90	2.0	1.5%	215%	19.4	16798	325944	Publishing
Off-line Data Processing Equipment	2	2	1	1	23	1.5	4.7%	197%	4.5	69000	312639	
Soft Drinks	4.5	3	4	1	101	1.6	1.5%	175%	17.7	16751	296807	

Opportunity Industries in Inverness Nairn

COGENT hypotheses Preliminary Assessment	Customers	Resources	Support	Companies	Carats	GAP prospects	Growth prospects	Potl = Growth + gap/10	Potl *carats *0.1	Nat'l Employment	N*PotlCts	Specimen Industry
Metal doors windows etc	2	3	2.5	1	46	2.0	1.3%	213%	9.9	29796	293528	
Preparation of Milk/Milk Products	4	5	4	3	161	0.4	1.5%	55%	8.9	32375	286681	
Plywood etc. of wood sheets	2	8	3.5	3.5	191	1.7	2.5%	195%	37.2	7488	278526	Structural Processed Timber
Footwear	3	3	1.5	1	47	1.4	-0.8%	132%	6.2	44789	276393	
Builders woodwork, prefabs	3	8	3.5	2	181	1.8	2.0%	200%	36.2	7488	270691	Structural Processed Timber
Rail Passenger	4	2	3	1	65	0.0	3.2%	32%	2.1	128595	267478	
Aircraft nes >15000kg	2	2	2	1	31	0.5	3.5%	85%	2.6	100000	263500	
Compound Animal Feeds	5	4	2.5	1.5	109	2.0	1.5%	215%	23.5	11075	260138	
Semi-finished Wood Products	2	8	3.5	2.5	171	1.8	1.5%	195%	33.4	7488	250052	
Slaughterhouses	4	4	4	1	109	2.0	1.5%	215%	23.4	10422	244240	
Other Road Passenger Transport	6	4	3	2	145	0.7	2.5%	95%	13.8	17220	237206	
Air Passenger Transport	3	2.5	2	3	69	0.2	3.8%	53%	3.7	60578	222336	
Measuring, Drawing Instruments and I	3	4	2	3	91	0.2	3.0%	50%	4.6	48840	222222	
Misc Chemical Products	2	2	2	3	51	1.6	4.0%	200%	10.2	20180	205836	
Boilers/process plant fabrications	2	6	3	2	111	0.5	1.0%	60%	6.7	29525	196637	
Forging pressing stamping	3	2	1	1	32	2.0	1.3%	213%	6.8	28524	194420	
Food Drink Tobacco Processing Mach	3.5	2.5	2	1	52	1.6	1.0%	170%	8.9	20993	186470	
Auxiliary transport (Harbour Auth,Lig	3	3	2.5	2	69	0.5	3.3%	83%	5.7	31951	183646	
Metal working machine tools	2.5	2	2	1.5	40	2.0	-1.1%	189%	7.6	22580	171772	
Electronic Microcircuits	2	2	2	1	31	1.4	4.5%	185%	5.7	29712	170398	
Sewage Disposal	4	3	3.5	1	85	2.0	1.0%	210%	17.9	8335	149217	
Hand Paintings	3	2.5	1	1	37	2.0	3.0%	230%	8.5	16000	135240	
Rail Freight	3.5	2	3	2	70	0.0	1.5%	15%	1.0	128595	134543	
Office Equipment Computers and Inst	3	2	2	1	41	2.0	4.5%	245%	10.0	12612	126688	
Extraction of Stone/Clay/Gravel	2	5	3.5	2.5	108	0.4	-0.3%	37%	4.0	30737	123109	
Other rubber products	2	1	1	0	11	2.0	3.3%	233%	2.6	37872	97066	
Office Machinery	3	2	1	1	32	2.0	4.0%	240%	7.7	12612	96860	
Animal By-product processing	3	5	3.5	1	102	1.8	1.5%	195%	19.8	4383	86964	
Ready Mix Concrete	3	3	3.5	2.5	90	0.8	1.4%	94%	8.5	9572	81204	
Internal Combustion Engines	1	2	1	0	11	2.0	1.9%	219%	2.4	32197	77563	
Conifer logs in the rough	6	8	4	4.5	321	0.0	2.0%	20%	6.4	11761	75564	
Shirts of cotton	3	2	2	1	41	1.6	-1.4%	146%	6.0	12589	75358	
Lumber sawn etc - conifer	5	7	5	4.5	291	0.0	2.0%	20%	5.8	11761	68390	
Recorded discs, tapes etc	3	2.5	3	1	58	2.0	1.6%	216%	12.5	4861	60636	
Men's/Boys Tailored Outerwear	3	2	2	1	41	0.7	-1.4%	56%	2.3	24775	56883	
Plastics semi-manufactures	1	2	1	1	16	2.0	3.0%	230%	3.7	13013	47888	
Ceramic goods	2	2	2	1	31	0.0	2.0%	20%	0.6	49644	30779	
Explosives	2	2.5	2	0	28	2.0	1.0%	210%	5.9	4441	26346	
Sugar/sugar by products	3	1	1	1	24	0.7	1.5%	85%	2.0	6772	13815	
Domestic Services	3	3	2.5	2.5	76	2.0	4.0%	240%	18.2	0	0	
Mean	3.4	3.7	2.7	1.7	85	1.29	3.3%	162%	14.3	82200.5	990758.3	
SD	1.3	1.8	1.0	1.0	64.8	0.70	5.2%	91%	15.5	113365.7	1595219.7	

Picking ten specimen industries

The 'diamond assay' tends to favour forest products industries, where resources and support are important. Activities strengthened by the skills and facilities of the local hospitals are second, but typically lower technology ones. Particularly prominent at the bottom of the table are a number of high technology industries, all rated especially low on the absence of local corporate structure and supporting activities, in particular higher education, local computing support, and (for manufacturing) a practical general engineering base.

The 'gap' and 'growth' assessment intersperses the two lists, favouring industries to complete or augment existing clusters - forestry and healthcare- but also nominating more technologically-related industries.

Size criteria tend to favour industries sold to consumer markets.

The ten specimen industries produced by this process are:

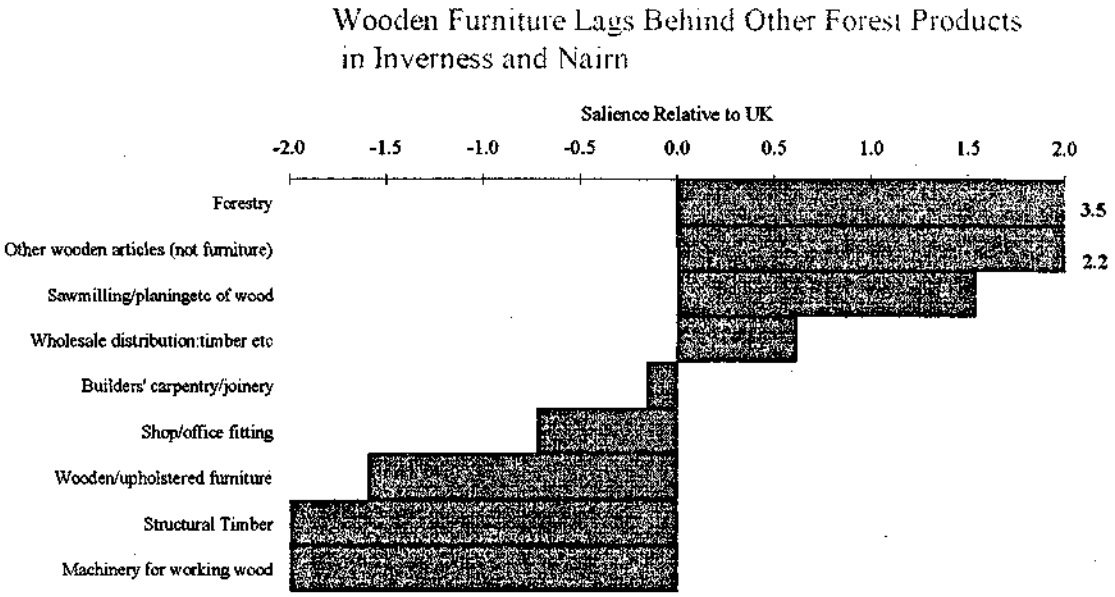
- Private healthcare;
- Laundries and cleaning;
- Wooden furniture;
- Windmills;
- Poultry processing;
- Medical instruments;
- Structural timber derivatives;
- Software and computer services;
- Financial services; and
- Publishing.

Some omissions which also merit examination include:

- Chemical and bio-chemical processes (perhaps related to health and/or physical resources)
- Local road haulage
- Aerospace repair
- Property development
- Business services
- Miscellaneous food
- Boatbuilding - small vessels
- Hairdressing and beauty (tourism-related)
- Miscellaneous engineering and tools
- Audiovisual services
- Wholesaling (various specialisms)
- Meat processing
- Board
- Agricultural machinery
- Instruments
- Indoor game equipment
- Doors and windows
- Animal feeds
- Road passenger transport
- Food processing machinery
- Artists and paintings
- Animal by-products
- Garments
- Ceramics

We would emphasise that all of these merit serious examination. Our experience with the ten specimen industries was that closer analysis caused us to change views on viability. We also believe that while it is possible to decide whether, on balance, an industry is a likely *runner* it is almost impossible and very dangerous to believe one can spot winners.

Wooden Furniture



Summary

The furniture industry offers an opportunity to build on a growing timber resource base, to capitalise on market trends towards more environmentally friendly products, and to exploit industrial restructuring which is going on for commercial and technical reasons. Currently Inverness and Nairn employ only 30 people in the wooden furniture industry and the target would be to increase this several-fold.

Whilst subject to economic cycles, the furniture market is growing in Scotland and the rest of the UK, and is strongly linked to housebuilding which is the industry with the best acceleration prospects in Europe. Most of the furniture industry's sales are through a retail industry which is restructuring, and although Inverness and Nairn is geographically remote from consumers, the movers and shakers amongst retailers might be ready to consider supply of significant quantities of mass produced furniture from Inverness and Nairn. A much smaller-scale opportunity avoiding commercially powerful intermediaries may exist in relation to tourism, using the tourism cluster as both a customer and a sales channel for more individual and fitted furniture.

Inverness and Nairn has the germ of a corporate base already, in existing manufacturers and in Norbord. Large scale manufacture would require strengthening of the engineering infrastructure and a logistically excellent location to aid both outgoing and incoming transport. Nairn would be a strong candidate.

Background

Inverness and Nairn are strong in four sectors of the wood and wood products industry - forestry itself, sawmilling, timber distribution and 'non furniture articles' - ie board. They are weak in four, of which furniture is the second weakest. Only 30 people are employed, whereas to match the rest of the local forest products 'cluster' over ten times this number would be employed, and even to match Dumfries or Shrewsbury local employment could be trebled.

The furniture market has grown fast, and international patterns of trade are changing. It can be segmented by type of furniture (seating, storage, kitchen etc) by customer segment (by income), by material, and by production technology. Punctuated by normal economic cycles, demand is rising across most product groups, across all income ranges, for environmentally friendly and uniform materials, and for both mass-produced and small-production-run furniture.

Customers and Demand

The UK market for wooden and upholstered furniture grew rapidly during the late 1980s but slowed in the consumer recession with a fall of 21% in real terms between 1989 and 1991. The highest value products in this sector are wooden cabinets, seating, tables and sideboards.

Rising incomes and economic cycles aside, there are two main influences on demand - firstly the setting up of a home, usually through marriage, and secondly having children. The rise in home ownership is an important growth factor, and may be especially relevant in Scotland as patterns of home ownership continue to evolve. On a European scale then Ereco forecast a revival in housebuilding as the most significant acceleration in any industry's prospects. The industry declined at a rate of 3.5 per cent over 1982 to 1991 and is forecast to grow at 1.6 per cent over 1991 to 1997.

Demographics, however, will not help growth in the longer term as the biggest age group, the 25-34 year-olds, will decline in the UK between 1998-2008. The 25-44 band account for over half of furniture purchases but this proportion varies with type of furniture.

Kitchen furniture has the closest links to the housing market so, for example, it suffered first from the UK recession. Sales grew 25% between 1986-88 but then fell by 17.5% between 1988 and 1991. Increased export sales partly compensated for the decline, with

their value rising by almost 70%. However export sales still only represent 5% of sales and in the short term are unlikely to be buoyant because of the continental recession. Final customers tend to be quite sophisticated in the kitchen furniture market. There is continual customer pressure for improved design and style although the cost factor is important. Customers are seeking value for money, style and durability, and environmental features are becoming increasingly important in this market.

Some sectors appear to be saturated - for example people are tending to have smaller kitchens leaving little or no room for items such as a kitchen table and chairs. The industry sees bedroom furniture as showing the best prospects for volume growth, particularly beds and cabinets.

UK customers prefer solid wood over more delicate products and also favour plain woods rather than ornate ones. In terms of style there is a fairly even split between modern, traditional (ie dateless) and period furniture. Darker woods are generally preferred to lighter ones except for kitchens where lighter shades are preferred. There has been a growing trend in green consumerism with customers actively trying to avoid tropical hardwood furniture, especially in the younger age groups. A survey (BMRB) showed that over 50% of Scottish consumers would try to avoid purchasing items of furniture made from tropical hardwoods.

High street retailers still dominate the consumer market but out-of-town centres have been growing fast:

Market Share of Retail Outlets

	Market share	
High Street furniture stores	55%	
Department stores	10%	
MFI	13%	
Other DIY	11%	
Other out-of-town	7%	700 UK stores and growing
		IKEA (6 UK stores?) is world's largest
Mail order	2%	
Builders merchants (excluding Magnet)	small	primarily kitchen & bedroom

IKEA, the largest furniture retailer in the world, although legally Dutch is Swedish-owned and controlled. It deals mainly in flat-pack furniture much of it now manufactured in

Eastern Europe and usually considered well-designed and low-cost. The high street chains include Habitat (now owned by IKEA) Furnitureland and, in Scotland, Reed. Of the DIY stores Texas Homecare is the most committed to furniture, holding the leading share of retail pine furniture and also concentrating on flatpacks.

The high street and large retail groups would be the customers for any large-scale furniture manufacturer and some of them will be highly sophisticated hard bargainers.

Office and institutional furniture is also a potential market where buyers are less concentrated, although less wood-using. The role of Inverness as a regional centre and of the Highlands as a tourist area could perhaps support smaller fittings for public buildings.

Finally, crafted furniture and reproductions have a role as part of the tourist industry in several locations and we should expect 'furniture as souvenir' to appeal to some of the same income groups and age ranges as do Highland holidays.

Resources

Skilled labour is required to manufacture finer furniture but there is also a need for less skilled people in various stages of production. Flat pack furniture is produced as part of a conventional engineering operation. Design is a critical and highly skilled human resource, whose importance extends far beyond the aesthetic to the functional character of the furniture and to the manufacturing, logistics and assembly processes.

Wood is clearly the main physical resource. In selecting the wood from which to manufacture furniture the environment is now an important consideration. Leading wooden furniture producer Ercol uses only beech, ash and elm obtained from sustainable forests for its solid wooden furniture. Other companies are also becoming more environmentally conscious. For example Wade Furniture sponsors a sustained wood management programme for tropical timber in Belize. The German firm Poggenpohl now uses recyclable materials in its products. Most DIY stores try to use hardwood from sustainable forests whether tropical or non-tropical. Many, including B&Q and Texas, are phasing out non-sustainable timber and timber products by 1995. While fast-growing hardwoods have a clear advantage, an effect of this trend is to favour furniture made from softwoods and from composites made from softwoods.

Support

The furniture industry needs support both from the 'downstream' network providing physical distribution, and sales functions including wholesaling, retailing, mail order and contract sales, and from the 'upstream' industries providing materials and services. Material inputs include not just raw timber but also partly-processed timber and metals and parts, adhesives, finishes and other chemicals, and packaging materials and (especially in the case of the timber) the inward logistic network to the factory.

Other support comes from both the supply and servicing of machinery and equipment, especially that used for flat pack furniture which is produced as part of a conventional engineering production process, in some countries integrated with the sawmill and board plant.

Companies

The UK produces mainly traditional styles of furniture with the more innovative styles imported from Europe, sometimes at high prices on the basis of design cachet and quality of finish. Imports represent 40% of sales, with Germany accounting for a high proportion of these. However, Britain's overall competitive position appears to be improving with export sales improved in 1990, rising 16% on the previous year, and kitchen furniture exports rising 70 per cent over 1988-91

There are 5000-6000 furniture manufacturers in the UK. Most are small firms but not *very* small: 69% of employment in furniture manufacture is in factories with over 35 employees. Total value added is £1.5bn and employment is over 94 000, at relatively low wages.

The largest independent firm is MFI Furniture Group plc making primarily for its own retail stores. Recently the subject of traumatic changes in structure and ownership, MFI owns both the Hygena and Schreiber names which account for approximately 30% of the self-assembly market. Hillsdown Holdings is a company involved mainly in the food industry but also owns Christie-Tyler plc, the UK's biggest furniture manufacturer and Walker and Homer Group plc, leaders in the upholstered furniture market.

In bedroom furniture the main companies are Silentnight Holdings plc, Airsprung Furniture Group plc, Slumberland plc, Reylon Group plc, Sleepeezee (owned by Hillsdown) and Spring Ram Corporation plc. In dining room furniture the major wooden furniture player is Hillsdown via Christie-Tyler (which owns G-Plan), others include Cornwell Parker plc

(Parker Knoll), and Ercol Furniture Ltd which operates at the upper end of the wooden furniture market concentrating in living room and dining room furniture.

Many companies have failed during the recent recession with direct selling companies faring particularly badly. Companies tend to operate on a regional basis and few have national distribution networks. The market for kitchen furniture is particularly competitive, although MFI dominates having 30% of value sales.

Inverness and Nairn Position

Most of the ***customers are a long way away***. There are no retail chains based in Inverness and Nairn and although the local retail sector is relatively large for a small community, a local producer is unlikely to have privileged access to retail chains. Nor are local residents likely to be an especially demanding customer base. There are probably possibilities to sell to tourists, particularly if suppliers can offer a reliable 'send it home' delivery service.

Inverness has a ***significant forest resource*** which will continue to grow in volume well into the next millennium. The sitka spruce of which the new plantations consist are not ideal species for traditional furniture manufacture but this wood can be employed and its drawbacks in use can be offset by treatment and are counterbalanced by processing advantages, particularly important for scale manufacture, such as uniformity.

Inverness employs around 30 people in the wooden and upholstered furniture sector, out of a Scottish total of approximately 3300, so there is a ***human resource base*** for expanding ***production skills***. High quality design resources are available in this industry in Scotland and it is possible that the 'lifestyle' attractions of the Highlands would have some pulling power for individuals, but Inverness could ***not realistically*** expect to create ***a vibrant design centre***.

Inverness has ***handicaps*** to overcome as regards ***support.*** It lacks machinery and equipment suppliers and maintenance contractors, and reliance on the road network to reach markets would raise the cost. For products where the value per cubic metre was high - up-market goods and flat packs where little air is transported - this should not be a serious disadvantage. The Highland tourism cluster could provide support both as a customer and as a sales channel, and the ISDN offers a marginal advantage for the mail order sector.

Inverness has ***no major companies operating*** in this industry however there may be potential to expand existing firms and encourage other forms of investment. Smaller firms

include AM Woodware in Ardersier who design and manufacture furniture. The area has several dealers and repairers of furniture and the presence of Norbord is an asset.

Development Repertoire

Growing existing companies

This is a possibility and we should review it. Marketing expertise is probably the critical aspect.

Diversifying existing companies

Some of the companies now involved in shop and office fitting and other wooden articles may provide a skill base for moving into furniture for 'export'. We think it unlikely that Norbord would consider a 'downstream diversification' but we should discuss the issue and the company could provide assistance or key staff.

Reconstructing existing companies

We are not aware of any opportunities.

Local start-up

This would depend on the supply of entrepreneurs.

Implanted start-up

This is a prima facie possibility. The competencies required of the implanted management would be design, market access and production management.

Inward investment

This also a possibility, building on the burgeoning availability of Scottish timber. Possible inward investors will in many cases be financially weak at present and are likely to have spare capacity at their existing facilities, so a particularly far-sighted investor would be required. UK manufacturers, continental Europe and the Nordic countries, and North American firms would all be possible sources.

Inward licensing

IKEA's mode of operation in particular is to commission manufacture to its own designs, and this is likely to spread further through the industry. Licences are therefore likely to be available. Licences may be essential to any large-scale production, but the development of local design capability would be essential to eventual long term survival. A process or

product may need technical licensing - for example for machining or adhesive systems- will be readily obtained.

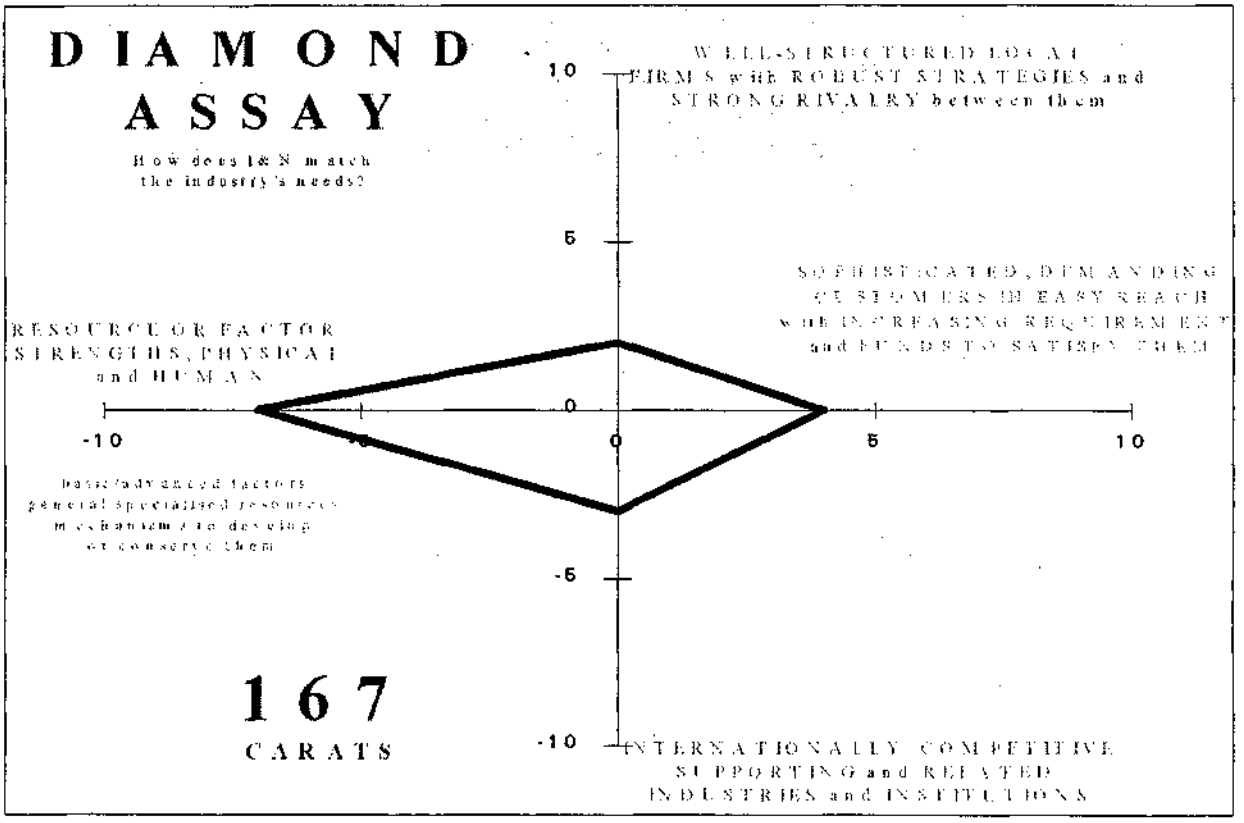
Action plans

Small scale manufacture:

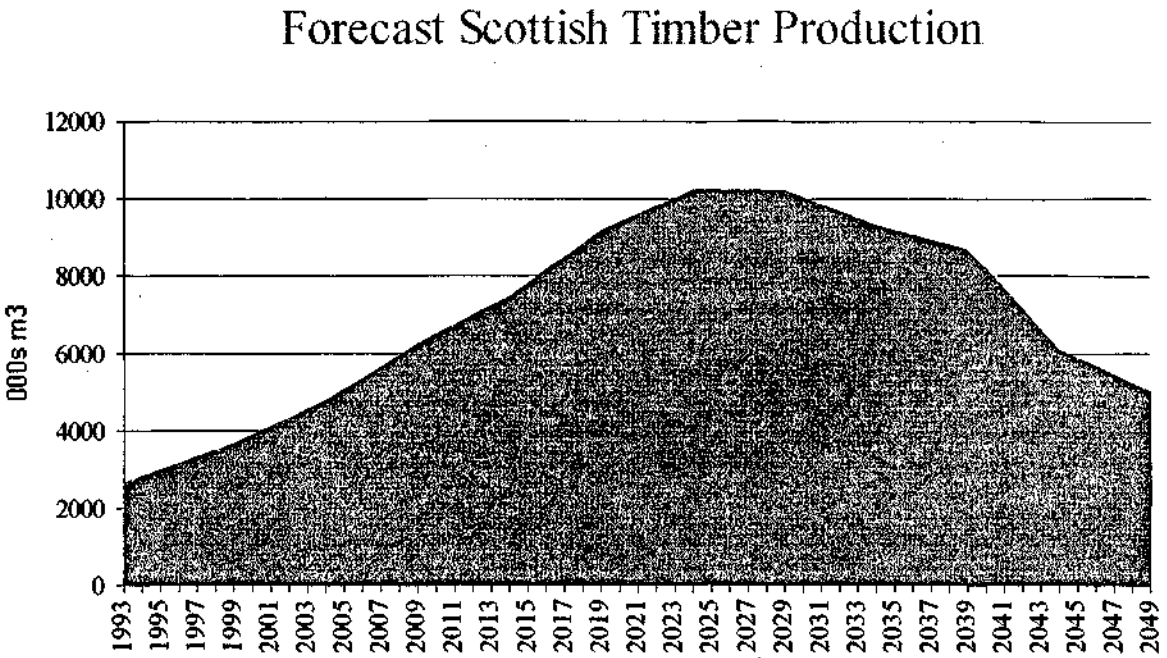
1. Market research on 'furniture as souvenirs'
2. Review of interest from existing firms and craftsmen

Large scale manufacture:

3. Approach IKEA, MFI for outline discussions
4. Survey Poggenpohl etc
5. Review possibilities with Norbord
6. Preliminary desk research and contacts with potential inward investors



Structural timber derivatives



Summary

The dramatic growth in Scotland's timber resource offers an opportunity to manufacture solid structural products similar to the sheet products from Norbord. These are technologically advanced but gaining in acceptance. An enterprise would employ over 100 people and provide a good commercial stimulus to existing industries.

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Background

Timber has many advantages as a building material : it is usually strong, easily machinable, has good insulating properties and wide acceptance in many applications. It is normally considered aesthetically appealing.

However it has disadvantages: it is not uniform, nor is it produced from a uniform material. The production of usable material can involve wasting a lot of the tree, or using it in very low-value applications. Timber can warp, especially if not properly treated, and it is flammable. It is subject to infestation and its mechanical properties are not as favourable as some competitive materials, nor are they fully predictable.

Increasingly these drawbacks can be overcome in new wood-based materials. Treatment of the wood and inclusion of other materials in composites can offset problems of uniformity, flammability, and liability to infestation. They can significantly enhance mechanical or insulating properties and make them more predictable. This can be done with little detriment or arguably an enhancement of the aesthetic appeal.

Some of these relatively advanced materials are made at an existing factory, Norbord at Nairn, which after a financial restructuring is successfully surviving in a niche in a difficult market.

The UK is a substantial importer of timber and timber products, at a substantial cost to the UK balance of payments.

Scotland's tree crop is set to multiply by a factor of four over the next 30 years. The doubling over the past 15 years has already permitted the building of a large paper mill at Irvine, and expansion of a board mill in Workington, fed by Scottish timber, and sawmills in several places, also fed by Scottish timber. These are in addition to the Norbord development. There is scope for further large developments in the future.

These offer several opportunities for Inverness and Nairn : structural timber derivatives has been chosen as one because it raises issues of innovation and market and corporate structure. Other forest-based opportunities should be actively pursued as well.

Customers and demand

Aside from paper and packaging industries, the main clients for forest products are the construction industries. The determinants of demand are fashion, cost (the full cost of construction including cutting, assembly, erection etc), properties and regulation. There is a market leadership effect where larger construction companies set trends, on the basis of their technology, their management, their labour force skills or their marketing, and these companies are clearly 'lead customers'. Both tradition and government regulation exert a conservative influence on the trade, and this may be to good or bad effect. Architects are key specifiers.

Synthetic structural timber products have been tested elsewhere and are finding increasing markets in North America. They have recently been used in showpiece projects for the Winter Olympics in Lillehammar and so increasing acceptance is likely. They would nevertheless still be considered innovative, and for them to be taken up quickly on a reasonable scale they would probably both have to be adopted by a substantial building firm and endorsed by the relevant trade and professional bodies.

Access to markets would also be conditioned by government, especially building regulations. These vary between Scotland and England and are influenced by the professional establishment. Some harmonisation within Europe is in progress.

Construction costs are high in Britain, and the housing stock is not obviously better than elsewhere, so there will be increasing pressure for more cost-efficient processes and products.

Resources

The principal resources required to make hitech timber products are knowledge of the technology and access to timber. A high order of techno-commercial sophistication and acquaintance with the construction industry exist in companies and timber research institutions and university departments in a number of countries.

The ideal properties of the timber resource are a degree of uniformity to ease processing, 'strong enough' fibres, and accessibility. Plantation timber is more uniform than the natural timber still harvested in Russia, parts of Canada and equatorial and southern hemisphere crops. Relatively slow-growing timber will be composed of longer-stronger fibres, although of course the tree species is important too. Accessibility means easy road rail or river access to the mill.

Support

Good logistics industries to bring the timber and ship the product out are critical, and transport costs are a significant part of product total costs. In product development support will also be need from the suppliers of resins and other non-timber ingredients, and from the manufacturers of tools

Companies

We recommend below that INE and HIE should acquaint themselves with the products and producers in greater detail than we have been able to do within the constraints of this study. Our present understanding is that products are available from a number of companies in the North American market and on a one-off basis in Europe. We are not clear how many separate fabrication facilities these represent.

Inverness position

Inverness and Nairn ***have the trees*** and will have them in abundance for the foreseeable future. The ***technology can be bought***, and we understand it would be possible to obtain processes from the United States, Canada, Germany (Austria), Scandinavia or possibly even Japan. Determination of which processes and products to licence would require a high order of techno-commercial sophistication and acquaintance with the UK (and possibly European) construction industries. This would be a key skill which may or may not be present in Norbord.

Development repertoire

Growing existing companies

Norbord would have a clear interest and competence, as might other less sophisticated companies.

Diversifying existing companies

See above.

Reconstructing existing companies

Possible.

Local start-up

Possible, but external links would be needed to access technology.

Implanted start-up

Very possible - effectively to Norbord model.

Inward investment

This would probably be desirable to derive the best access to an implementation of technology.

Inward licensing

Technology would definitely be required, and could be available from both commercial and other sources (academic, research institutions).

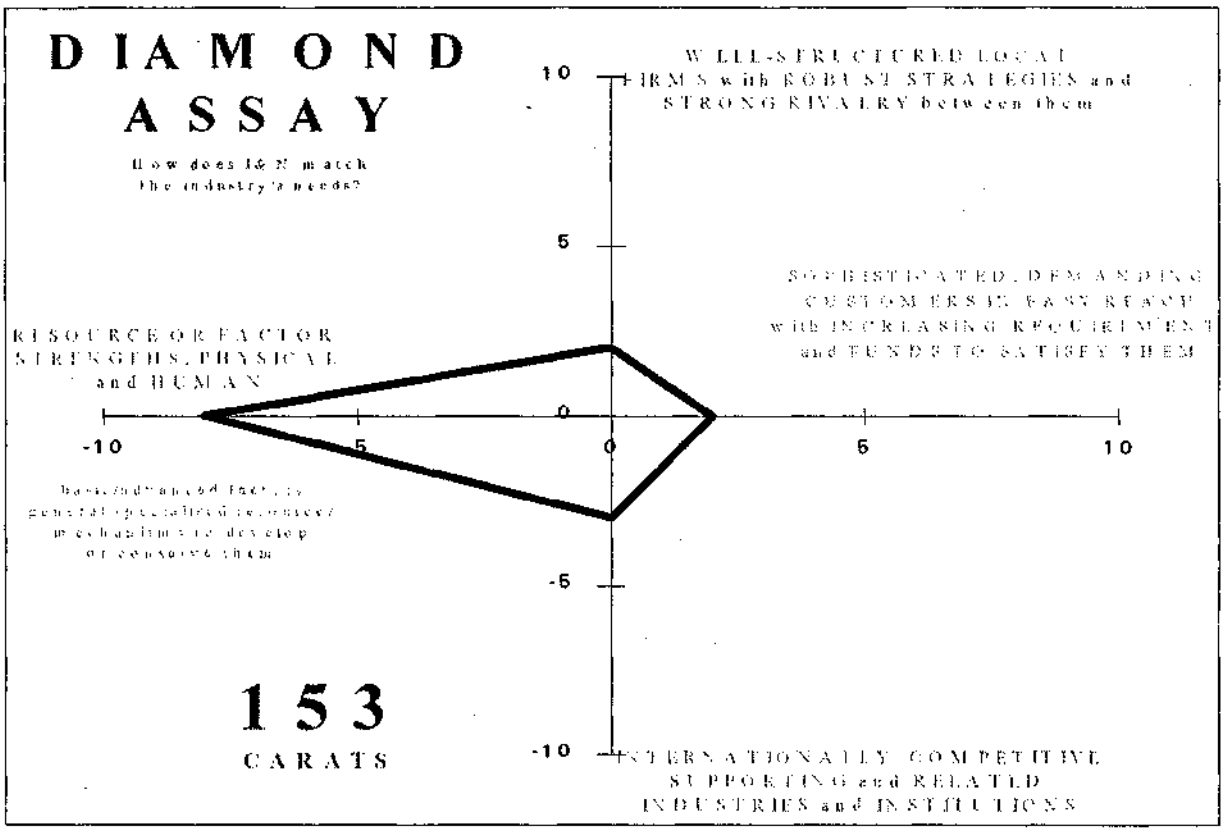
Action plans

1. Discussions with Cogent and Norbord. These would need to recognise that the proposal could result in a rival establishment for Norbord. There is room in the market for more than one.

2. Technology position paper (Canadian Forestry Institute? Scandinavian institutes?)

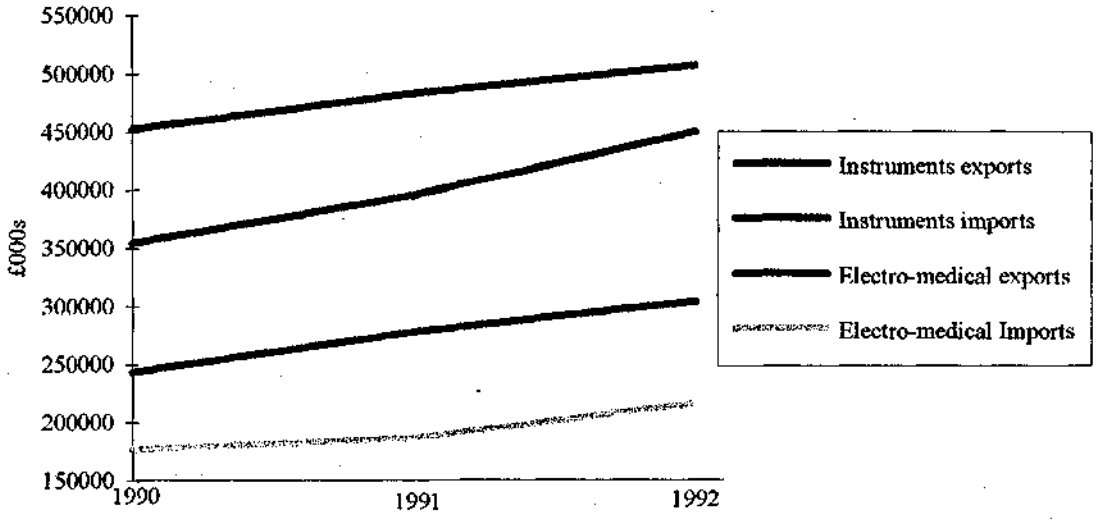
3. Review building regulations with architects, construction industry and government bodies.

4. Sketch business plan.



Medical Instruments

UK Trade in Medical Instruments is Continuing to Rise



Summary

Inverness and Nairn employ only 3 people in the medical instrument industry, whereas to match Shrewsbury they would employ 56. Inverness does, however have an institutional base, with products from Raigmore hospital having been successfully commercialised in the past. Trade in medical instruments has been growing fast - over 11%/year

The UK medical equipment industry employs over 24,000 people with a turnover of £1.4bn in 1992. Geographically the industry in primarily located in the south of England with London representing 16% of firms in the market. Other centres are in Oxford, Cambridge, and Birmingham. Scotland has 4% of firms and 1200 employees but also has very highly reputable teaching hospitals and high calibre medical scientists.

The international trade situation is favourable with new prospects arising in Eastern European markets, the Middle East, Asia and Japan as well as the traditionally successful markets of the European Union and the United States.

Skilled human resources and finance are the two major resource needs and Inverness has access to both. Support industries are generally engineering and electronics related, areas where Inverness and Nairn is not particularly strong but could benefit from facilities in

Aberdeen. The local customers are the NHS hospital trust and to a limited extent private health care institutions.

Background

At this stage it is best to define the sector broadly to cover all types of medical and surgical equipment and orthopaedic appliances: artificial limbs, electro-medical equipment (eg pacemakers, stimulators), syringes, hearing aids, needles, operating tables, resuscitation equipment, scanning and X-ray apparatus etc.

There has been a trend towards the use of smaller lighter, devices and non-invasive surgery such as cardiac surgery via fibre optic endoscopes or the destruction of gall and kidney stones using shock waves from outside the body. However, there has been a slowdown in the European and US markets due to the recession with particular difficulties within the European Union due to regulations which have created problems for many smaller firms. The new EC Standards are embodied in the Medical Devices Directive which agrees a single standard across Europe for every product in terms of safety and technical standards. This is to be enforced from January 1995.

The sector has been much more electrically oriented since the 1970s. Originally the only major pieces of electrical equipment were X-ray and radiotherapy machines. There is now a much wider range of electrical equipment including relatively new innovations such as CT (computerised tomography) scanners, nuclear medicine devices which use gamma rays, and ultrasound equipment. Laser surgical equipment is also becoming increasingly sophisticated.

Customers and Demand

The NHS, including the new NHS trust hospitals, is probably still the largest single customer in the world. In 1991 the NHS spent £1.4bn on clinical supplies and services of which approximately half was spent on consumables and laboratory equipment. The new NHS Supplies Authority, set up in 1991, is to take over national responsibilities for supplies and services

The private health care sector is still quite small in the UK, although growing, and most commonly performs operations such as cardiac surgery and implants and replacements. Purchases of equipment were estimated to be £70m but this includes drugs and other supplies.

A wide range of purchasing organisations can be found in other countries, from the purely commercial to the purely state. There is also an over-the-counter market where key customers are the retail pharmacy chains. While less elaborate in use, products for this market are not necessarily less sophisticated in technology.

Growth of private medicine and NHS restructuring should all add variety to the UK medical instrument market. As different trusts and companies seek to differentiate themselves in the marketplace they will come to need different instruments. But in the shorter term tight budgets may inhibit innovative purchases and the instrument market will certainly become more price sensitive.

The residential care sector is the second biggest customer and is mostly government funded. Purchases consist mainly of beds, rehabilitation and monitoring equipment. Demand is high but budgets, both in the public and private sector, tend to be tightly controlled. This market will increase as life expectancy rises. The number of people aged over 80 will double over the next 10 years making this sector increasingly more important.

Growth areas within the medical instruments sector are gynaecology, trauma and orthopaedic surgery, plastic surgery and cardiology. There is also an increase in the use of what is termed 'minimally invasive surgery', ie surgery where there are no major cuts to the body. This innovation has resulted in the growth of endoscopic equipment. Growth has been more pronounced in the electro-medical sector than in non-electro medical. Sales in the electro-medical sector increased by over 30% between 1988-91 while non-electro-equipment grew 23% over the same period. Electro-medical equipment sales continued to grow in excess of 18% during 1991-92. The market for surgical implants has shown particularly impressive growth of over 85% since 1989. Medical electronics are also increasing in importance with sales growing 57% between 1988-92. However, these growth patterns in this industry are accompanied by falling profitability in the sector - falling from 9.2% to 7.3% in the period 1988 to 1991.

The graph shows how rapidly UK trade in medical instruments has been growing and Britain's strong positive trade balance, with exports twice as high as imports. Over half of instrument exports and over 40% of electromedical exports go to EU countries. The other principal export market is the USA. Imports and exports are rising in concert, usually a sign of developing niche markets.

Resources

A strong medical instruments industry draws on skilled resources from both medicine and instrumentation - the latter increasingly shifting from the electrical to the electronic, photonic (optics) and nuclear. Internationally Boston is a major centre with 13,000 employees in the city and environs because it combines these resources. UK companies have been pioneers in surgical instruments and imaging technology. One of the inventors of magnetic resonance instruments came from Aberdeen and won a Nobel prize for his work.

Support

For its routine operations, medical instrument manufacture draws mainly on conventional 'engineering' support firms including equipment supply and servicing and electronics. Low value high turnover products may require good logistic support. For non-routine and development activities an innovative local medical system (eg teaching hospital) and a problem solving hi-tech engineering sector provide critical support. Specialist knowledge from related firms can be important where regulatory approval or formal endorsement is required.

Companies

In the UK and Europe, four fifths of firms employ from 10 to 20 employees. Small, even family-owned businesses manufacture the smaller and less capital intensive instruments. Larger firms tend to dominate in specialisms which are capital-intensive or technology intensive as the following examples show:

Surgical instruments : Bard, Timesco, Convatec
Monitoring equipment: Baxter, Oxford Medical Systems, Vickers and many others
Imaging equipment : GEC (Picker), Siemens, Philips, General Electric (IGE)

The industry is multinational. For example GEC, plc better known for defence and telecommunications activities, manufactures medical equipment through a subsidiary, Picker International. Principal items are CT scanners, nuclear and imaging equipment. This accounts for 6% of GEC's sales. Baxter Healthcare is a subsidiary of Baxter International Inc. The company has four sites in the UK and Ireland. They make principally dialysis equipment, cardio-vascular, diagnostic systems and oxygenators. IGE Medical Systems is a division of the US General Electric making X-ray systems, ultrasound, CT, imaging and nuclear equipment. Vickers plc through Vickers Medical own

Medlec in the UK and several other firms in the US and Europe. It makes neuro-diagnostic equipment, EEG machines which measure brain activity and EMG equipment for measuring nerve and muscle responses. Oxford Instruments is a small family owned business which manufactures monitoring equipment. 40% of Oxford's activity is research. Also worthy of mention are Ethicon, a subsidiary of Johnson & Johnson of the US and Keymed which is a subsidiary of the Japanese Olympic Optical Company.

Companies usually take one of three forms in this sector being either small firms, large health care companies or multi-business firms.

Inverness and Nairn Position

The concentration of medical services in Inverness and Nairn provides a better base than might be expected for routine business, but the lack of a teaching hospital or significant research activity is a major handicap on the customer side.

Inverness has historically had a nucleus of the medical resources in terms of specialised staff and sufficient engineering and instrumentation resources to contribute to the major historical example of an instrument developed in Inverness and Nairn - the Raigmore blood testing equipment. In this instance the instrumentation skills were provided from within the medical establishment.

The existing support base in Inverness was too weak to carry the blood tester through to local manufacture. It was made in England and marketed by an international company.

Inverness has no strong companies with no real contacts. Unless a 'world beater' innovative large market instrument was developed, meriting its own sales effort, then marketing needs to be done as part of a product range.

Inverness' historical experience has been of a development which successfully reached the marketplace, but as a result of manufacture and marketing by companies outwith Scotland. In terms of the chain reaction metaphor, Inverness and Nairn showed that it could very successfully fire a detonator, but the local industrial infrastructure was far below critical mass.

Current NHS reorganisation provides both an opportunity and a threat to the industry: it could release resources from the public sector for a private start-up, but it could also cause critical medical resources to be lost from the area.

Development Repertoire

Growing existing companies

None

Diversifying existing companies

It might be possible to build on strengths in the non-medical instruments area.

Reconstructing existing companies

The ongoing NHS reorganisation provides an excellent impetus.

Local start-up

With appropriate specific personnel this is where the best prospects lie. It would require substantial assistance in international marketing and establishing links with health care institutions

Implanted start-up

This may offer some medium-term opportunities *provided* local start-up/re-organisation is first successful. The enterprise company has some plans in hand, and has found that the lifestyle advantages of Inverness are appealing to would-be medical entrepreneurs

Inward investment

Probably not a possibility. Inverness' only attraction to an inward investor would be on a cost basis, and it is unlikely that unit labour costs would be low enough to overcome higher logistics costs. Capital incentives would not attract an inward investor either.

Inward licensing

This option should be energetically explored once a local base is established. The mechanisms set up for scanning inward licensing opportunities might also be of use.

Action plans

1. Detailed local assessment of firms and individuals that might diversify into instruments

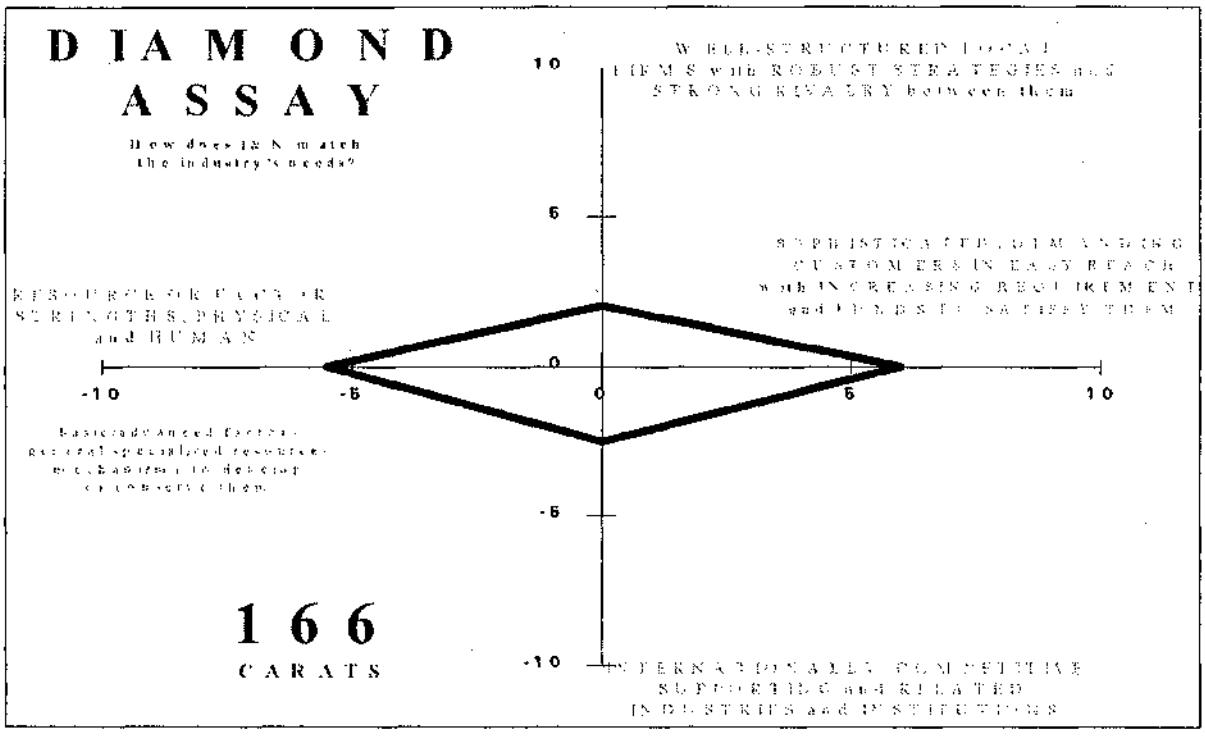
2. Discussions with Hospital Trust on resource management issues

3. Review 1 and 2 urgently and sketch a business plan if champion is available

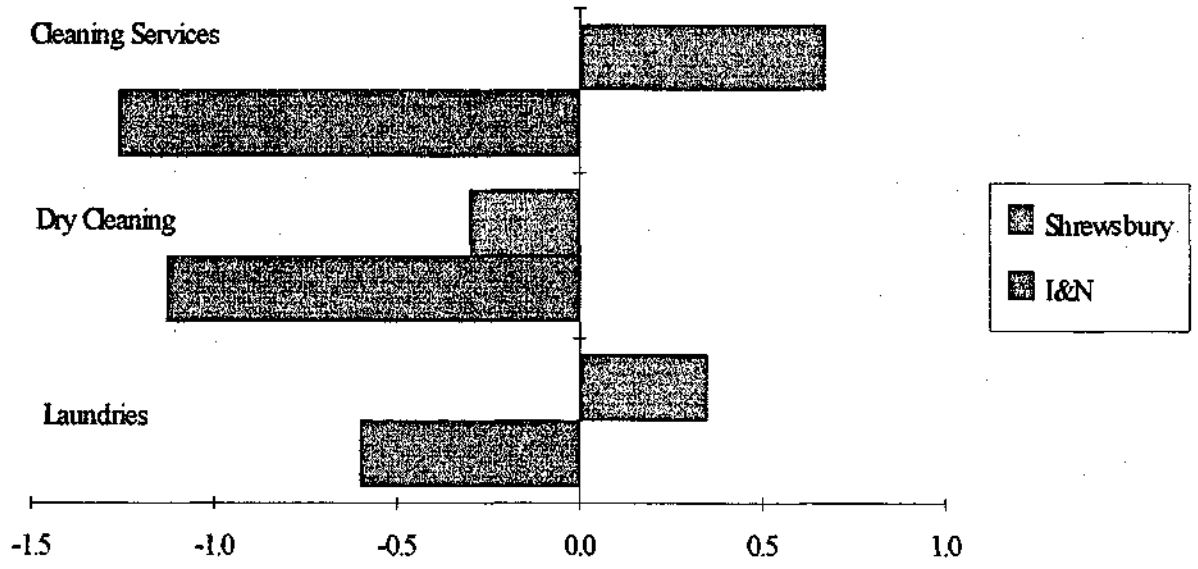
4. Program to review market opportunities in detail and match to capabilities
   - research and customer contact, inward licensing review

5. Further progress of implanted start-up programme.

6. Strengthen engineering support



Laundries and cleaning services



Summary

The laundry and drycleaning industry appears to offer an opportunity for Inverness and Nairn on two counts : firstly that it appears to be a gap in the economic structure of the city, all the more surprising because of the importance of tourism; and secondly that *prima facie* some of the laundry facilities that exist in the city in the health service might be suitable for market testing.

Commercial cleaning is somewhat similar, and is potentially a much larger employer. However, it would appear that premises are being cleaned up to a reasonable standard, and so the commercial opportunity is to reduce the cost and raise the standard by a more commercial operation. This would also in theory have the advantage of allowing businesses who currently hire casual staff to focus on their main activity, and thus enhance their contribution to the economy. Against this must be set possible social costs and benefits if an informally-organised sector becomes more formal.

The sectors are sensibly considered together because they have overlapping sets of clients and because some of the UK-scale companies in them span both sectors (Initial, Rentokil for example).

Developing a corporate structure would seem to be the first priority for Inverness and Nairn, and this could be done on the basis of local skills being used to restructure or spin off from existing organisations and to start new ones. Some injection of knowledge and competitive edge from outside would seem helpful, but there would be significant benefits in retaining a local base. The equipment supply and service network is probably the critical supporting industry, and may need strengthened.

A market survey and review of existing suppliers is proposed.

Existing recorded employment is 158 (37 laundry and drycleaning, 121 cleaning) An industry structure reflecting the rest of the UK would employ over 500 (approximately 100 and 400) with added value of about £15 mn.

Background

The laundry industry is not a glamorous or particularly hitech industry. Looked at as a business opportunity, the laundry industry probably needs to be considered with drycleaning, linen hire and associated services. It is recorded as employing 24 people in Inverness and Nairn, and drycleaning as 13. National averages (on a GB basis) for these two industries would be 44 and 40. Comparability with Dumfries or Shrewsbury would put the laundry figure substantially higher even than this, perhaps double, and further raise the drycleaning estimate.

The position is similar with cleaning services, which are a much larger employer. Inverness and Nairn employ 121 people, compared with a national average for a town of the same size of 428, and a figure to match Shrewsbury of 837! Probably the Inverness figure is reduced because people are either self employed (or employed in the black economy) or employed under other headings, including hotels, health and local government. The commercialisation of cleaning services does not appear to have gone as far in Inverness and Nairn as elsewhere.

Customers and demand

The customer mix of successful laundries clearly depends on where they are. Hotels, offices, restaurants, sports clubs, hairdressers, hospitals and nursing homes are all conventional customers: the use of uniforms, institutionalised sleeping arrangements, and larger scale commercial premises would all be indicators of demand. There are not many customer categories where the laundry bill would be a major element of cost, and not many customers who are so large that they could exert excessive buying power over suppliers, so from the launderer's point of view the commercial clout of the customer is rarely a problem.

The exception to this is customers who are so large that they do their own laundry in house (traditionally most hospitals would fit this category) or so small that the trouble or expense of using a commercial service cannot be easily justified. Thus the market is essentially middle size users who see their main business as excluding laundering.

For cleaning then the demand is primarily premises-dependent, and only large owners or users of premises have substantial buying power.

Resources

Laundries are relatively energy and labour intensive, and need premises reasonably accessible to their markets, adapted for the safe use of chemicals, with appropriate effluent facilities, and available for night working. Retail facilities clearly need appropriate shop sites.

In the laundry business entrepreneurs of spirit and some commercial ability are required to seek out customers. Most labour is relatively unskilled, although safety training is important and the quality of the product is affected by the skill and care of the employee. Wages in the industry are low, and so in order to compete successfully premises should be located in an area where employees are not bearing commuting costs.

In cleaning then the challenge of managing and motivating a relatively unskilled workforce with limited direct supervision must be met.

Support

Supporting industries are chemical distribution, both for laundry and dry-cleaning chemicals, packaging and logistics.

The supply and maintenance of equipment is important, and normally distributors have a regional catchment area. There are perhaps a dozen significant distributors in Scotland.

Companies

The barriers to entering the laundry business are not large, and in most places large and small companies appear to be able to coexist. The drycleaning market has become concentrated due to branding and the benefits of advertising promotion, and economies of scale which have led to centralised facilities in cities. Similarly linen services, especially for commercial premises have been branded and Initial (BET) and Rentokil are amongst the market leaders. They have a particular advantage where the customer has a multi-site operation, in that they can provide services in several places against a central contract.

The fact that relatively few people are recorded as employed in the cleaning sector will be partly an indicator of self-employment and partly of inclusion in other industries - cleaning will not have been split off as a separate service. Probably a more commercially organised sector will be able to create more wealth, by doing a better job or operating at a lower cost, or both. However it would also have a social impact and there may be social issues that INE wish to consider here too. A corporate structure and rivalry between firms may boost efficiency, but that might not be everything.

Inverness position

On the face of it Inverness, with its large tourist industry and strong health and other regional services offers an ***excellent potential market*** for laundry services and for cleaning. In the latter there may be social objections to commercialisation which the Enterprise Company would want to consider, but looked at as an opportunity for narrowly-defined economic development there appears to be scope. A well-run laundry and cleaning industry would also seem likely to make a contribution to upgrading the quality of the tourist product offered by Inverness and Nairn.

Premises, effluent disposal and ***local staff availability*** would appear to be the ***main resource issues***, and it would be likely that these could be met with lower grade industrial

premises close to districts where unemployment is hitting hardest. This social benefit might offset social objections to commercialisation if there were any.

Support industries do exist in Invernesshire (CLE, WAC), and we expect them to be either ***already adequate or reasonably easy to augment***. A logistic chain to supply chemicals already exists to serve the institutional purchasers and the existing industry, and would easily cope with and profit from any expansion. The displacement of business currently channelled through retailers would be small.

Distribution of equipment and spares, and provision of repairs and servicing, would be a slightly greater problem, because of the urgency with which they can be needed. However, equipment supply and servicing is an area of service infrastructure which may be important for other industries included in the development plan, and so having a laundry and cleaning industry as a customer could help to contribute to a critical mass.

Companies already exist in these industries in Inverness. They could be enlarged or new start ups or inward investment could be encouraged. The probability is that start ups would provide the best multiplier and dynamic benefits to the local economy, *provided the quality of the product was good.* The indirect benefits to tourism and other customer industries will not be realised, and the labour market benefits will be diminished if expansion of the industries is substandard.

Priorities to strengthen Inverness

The structure and strategy of companies in the industry would be the first priorities for improvement suggested by the analysis, followed by support services especially equipment supply and maintenance.

Development repertoire

Growing existing companies

This may well be possible, dependent on the quality of management

Diversifying existing companies

The relative ease of entry and advantages of local knowledge may mean that more 'general' entrepreneurs could be persuaded to review these industries. Our main concern would be that the entry received due management attention and that the quality of service provided was high.

Reconstructing existing companies

Spinning companies off from public sector bodies is a clear possibility. It has been done with mixed results elsewhere, and it would be important to learn the lessons that are available.

Local start-up

Would be clearly possible.

Implanted start-up

Because of the potentially large customer base a start-up implanted cold could be difficult to foster: but a businessman /or woman with experience of the industry elsewhere would certainly have skills to contribute.

Inward investment

The larger companies in the industry normally expand by acquisition, buying up existing local businesses. We believe that the economic development benefits would be greater from a local initiative, where the profits as well as the salaries stayed in the Inverness and Nairn economy. We would therefore lean against approaching a national company as a potential inward investor, although there could be more of a case for considering a Scottish candidate. We do think, as discussed above, that someone with outside experience could be a valuable asset.

Inward licensing

We do not think that licensing or franchising would be required.

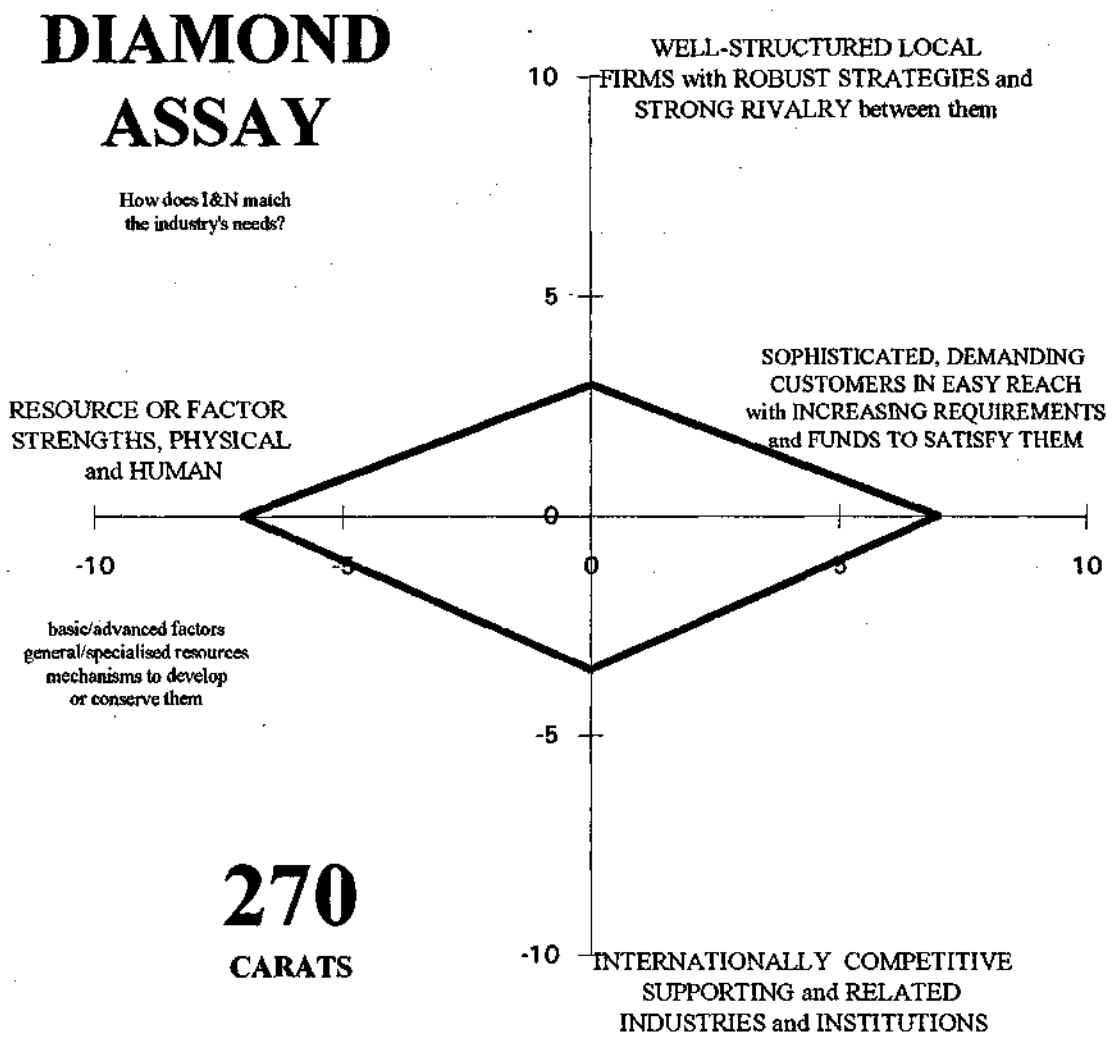
Action plans

1. Detailed survey of existing companies and organisations in the industries in Inverness & Nairn including parts of public bodies and other industries.

2. Market survey of customers and potential customers

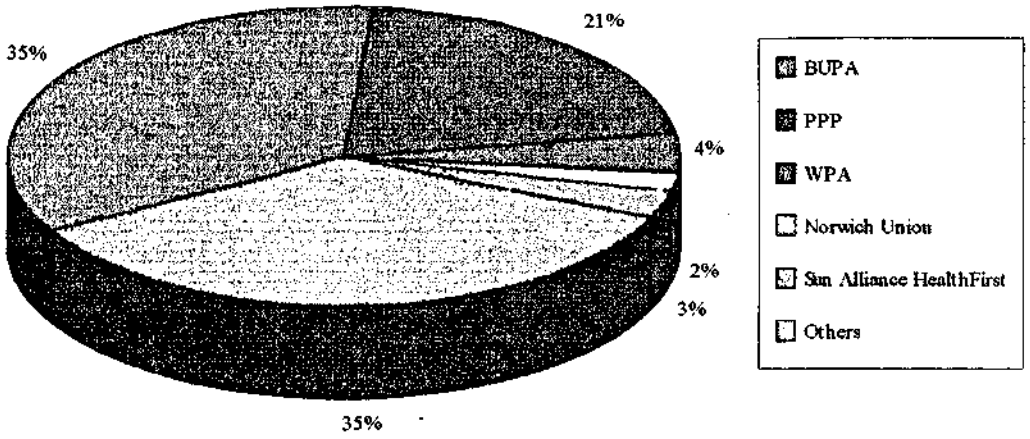
3. Review of equipment supply and service chain

4. Approach potential entrepreneurs - inside or outside the industry



Private Healthcare

Market Shares in Private Medical Insurance in the UK



Summary

Private healthcare was identified as a special niche industry in terms of cluster completion in the Inverness and Nairn economy. This sector also showed very high growth rates throughout the 80s, which are widely forecast to continue. The Inverness and Nairn cluster was almost entirely NHS dominated, in contrast to all three comparator cities.

Growth prospects for the sector are good due to the growing numbers of elderly people and the decline in public provision of this kind of service, but there is strong pressure on prices from both local authority and private purchasers. Opportunities can be seen in the form of joint-partnerships between private healthcare and the NHS.

The future of private healthcare in the UK seems assured under future Conservative governments and, given financial constraints, would be hard for a Labour government to reverse. Recovery from a weak situation now will be fuelled by longer-term economic recovery. The recession is however providing a motivating force in the development of a wider variety of products to suit differing abilities to pay.

There is a prima facie case for marketing the locality as one for retirement, thus capturing income through homes for the elderly. In addition, public or private, the competitive

advantage of individual health services based in Inverness must be reviewed, as NHS reorganisation poses both a threat *and* an opportunity.

Background

As a regional centre Inverness has already a strong health service, which is doing at least as well servicing the local community as many in other areas. It is, of course, subject to the same organisational and financial pressures as other areas, and so may be seen as being in a state of flux. The gap analysis showed that in all three comparators a more commercially diverse healthcare system exists, prompting us to examine private healthcare. Since the delivery of public healthcare is inevitably going to continue changing in Inverness and Nairn, it is sensible to ensure that any opportunities for economic development as well as to enhance the standard of healthcare should be examined.

Private health care has been a growth industry throughout the 1980s encouraged by government policy. There are two main sectors: private hospitals and private care homes. Hospitals generate about £1bn in revenue every year compared to the £3.8bn generated by the care homes' sector. This industry will undoubtedly continue to grow as a result of the ever increasing number of elderly people in the population. The private sector now accounts for just under 10% of all hospital revenue and almost 60% of total care home revenue. These shares increase for areas where NHS waiting lists are long.

Private health care offers a speed of service generally not found in the NHS. There are now 120 private hospitals and over 15,000 residential/nursing homes. There are also a small number of clinics for the mentally ill, drug/alcohol dependency and the terminally ill. The private sector provides a more extensive service in these sectors.

Some NHS work is carried out in private hospitals in order to reduce waiting lists. This interplay between the public and private sectors is growing in importance. There are also pay beds which are used for NHS private treatment ie run by the NHS for a fee.

GP Fundholders are GPs who are able to control their own budgets and buy treatments from their preferred hospital. Fundholding GP's can refer patients to private hospitals for treatment to ensure faster treatment but this represents only a marginal source of revenue to the private sector. However there appears to an emerging trend towards 'superfunds' whereby a group of fundholding GP's combine their resources in order to function more successfully.

Customers and Demand

There are over 15,000 homes for the elderly in the UK providing 350,000 places. This includes places for chronically ill and disabled people. The total number of places in this sector is rose by 6% in 1990 and a further 3% in 1991. This growth took place mostly in the private sector while places in the public sector have actually declined. Voluntary/charity run homes accounted for the rest of the growth.

Care for the elderly is thus the largest part of the UK private health care sector mainly in the form of nursing and residential homes. A large amount of finance for long-term care originates from the public sector through community care funding. This system used to operate through the DSS which made payments based on its assessment of need but in general failing to meet the full cost which then had to made up by families or charities. The Community Care Act of 1993 switched the DSS funding to the control of Local Authorities. Under the new regime the individual does not get to select the home they wish but "the Local Authority negotiates on the basis of community requirements" ie places the individual. 60% of turnover for residential homes comes from the public sector. This amount is likely to fall as public spending does not cover the full cost of such care and also because the elderly population is rising.

The private hospital sector is much smaller, with about 6,000 beds and 120 private hospitals. Private health care suppliers have been hit by the recession resulting in lower occupancy rates with further reductions to be expected with diminishing levels of private medical insurance starting to filter through. The number of people with private medical insurance has probably fallen for the first time since the 1970s, primarily due to the recession in the South East England.

Resources

Specialised buildings, appropriately qualified staff and (especially for hospitals) access to equipment and technology are important resources.

Support

Private Health Insurance is a major support industry for private medical care, and the larger private hospitals are associated with insurance groups. Only around 14% of the population have private medical insurance. Take up is much higher in London and the South East,

more than double the rate in Scotland (Scotland 7.9%; London 18.7%). The vast majority are covered through company schemes which pay lower premiums than private customers. Take up is low among the 15-24 group but this picks up in the 25-34 age group as peoples careers begin to progress. The highest proportion of subscribers to private medical insurance are the 35-45 age group and generally in management posts where this is offered as a perk. There is a marked fall off among the over 65s perhaps as people retire in which case some company policies lapse. A drop in private medical insurance advertising expenditure is expected due to redundancies and low spending in the sector. Costs and claims are rising so it is becoming increasingly important to ensure that this kind of insurance is still affordable and in response companies are now offering restricted cover schemes. For example, PPP introduced Value Plan; WPA launched 'Elect 17', a low cost scheme covering a wide variety of non-life threatening conditions.

Although politically sensitive, it is also clear that public health care provision 'supports' and shares facilities with the private sector. Especially in small communities, senior doctors often combine public employment and private practice, in the existence of a labour market for nursing staff and auxiliaries.

Support also comes from the engineering sector, particularly medical equipment and instruments, and from property services, including cleaning and laundries, which are often similar to those used in the tourism industry.

Companies

Leading hospital operators are BUPA, CGE (Compagnie Generale des Eaux), Compass Healthcare Ltd, Independent British Hospitals plc and Community Hospitals Group plc. There are also some smaller operators such as the British Pregnancy Advisory Service. Most US operators left the UK market as a result of falling profits in US markets. The only remaining US firm is Humana. European penetration on the other hand has been increasing with CGE as a good example. CGE, the French water utility company, bought Great Northern Health Management in 1986. It operates, among others, 3 psychiatric hospitals in the UK. Nuffield was established in 1957 by BUPA as a charity, becoming independent in 1980 and now owns the greatest number of hospitals in the UK.
Some of the large scale companies involved in care for the elderly include Takare plc, Westminster Health Care (owned by NME of the US), Cresta Care and Ashbourne Homes plc which is by owned by Stakis plc.

The main companies in the private medical insurance market are BUPA (British United Provident Association) which is by far the market leader with a 35% market share. Second biggest is PPP (Private Patients Plan) with a 21% share of the market. PPP has a particularly high penetration of the over 65's market. Other major players are WPA (Western Provident Association) with 4%; Norwich Union (2%); and Sun Alliance Health First (3%). BUPA also has interests in homes for the elderly, health screening and nursing agencies.

Inverness and Nairn Position

The **customer** issue is a thorny one. Reorganisation of existing health services is likely to be of limited economic development benefit, unless customers from outwith the Highlands can be attracted. Development of homes for the elderly would therefore depend on accessing customers not currently resident in the locality, and is only worthwhile if they bring with them savings or capital, or a stream of income. As private healthcare generally grows there is also a defensive motive, as local residents may be attracted or sent for treatment to hospitals elsewhere. The specialisms at risk from private or public sector "poaching" would need to be identified.

In the Wilhelmshaven area significant emphasis is placed on promoting the area as one for retirement, and the German system of local and regional government finance makes this an attractive option for the local economy. New elderly residents bring with them both their private assets and an allocation of federal government funding based on need. A detailed feasibility calculation would be required to ascertain the impact on Inverness and Nairn of ailing or elderly incomers : it would not be sensible to set out to attract them if they are in fact a net economic burden. Such an evaluation should take account not just of the financial 'rules' for funding places, but also of such issues as local government finance 'capping'.

Inverness has adequate **resources** for non-specialised medical care but lacks the spread of highly specialised medical staff that is associated with a major teaching hospital. It has nursing staff and property and **support** services appropriate for care of the elderly.

There are several small **companies** involved in care homes. These include Belle Vue Nursing Home, Clachnaharry Nursing Home, Elmgrove House Nursing Home and Fairfield Nursing Home (all in Inverness); in Nairn there are Croft Nursing Home, Duncraig Nursing Home and Nairn & Northern Counties Convalescent Home

Development Repertoire

Growing existing companies
Possible

Diversifying existing companies
Possible diversification from tourism

Reconstructing existing companies
Possible reconstruction of public

Local start-up
Possible

Implanted start-up
Possible

Inward investment
Possible

Inward licensing
Franchising could be a good way to 'import' customers but at the expense of remitting profits away from the core.

Action Plans

1. Detailed review with Health Board to identify likely split of local public/local private/distant public/distant private provision of health services to the Highland population by specialism/condition. That is, where does Inverness and Nairn's *medical* comparative advantage lie? (Jointly funded by HA?)

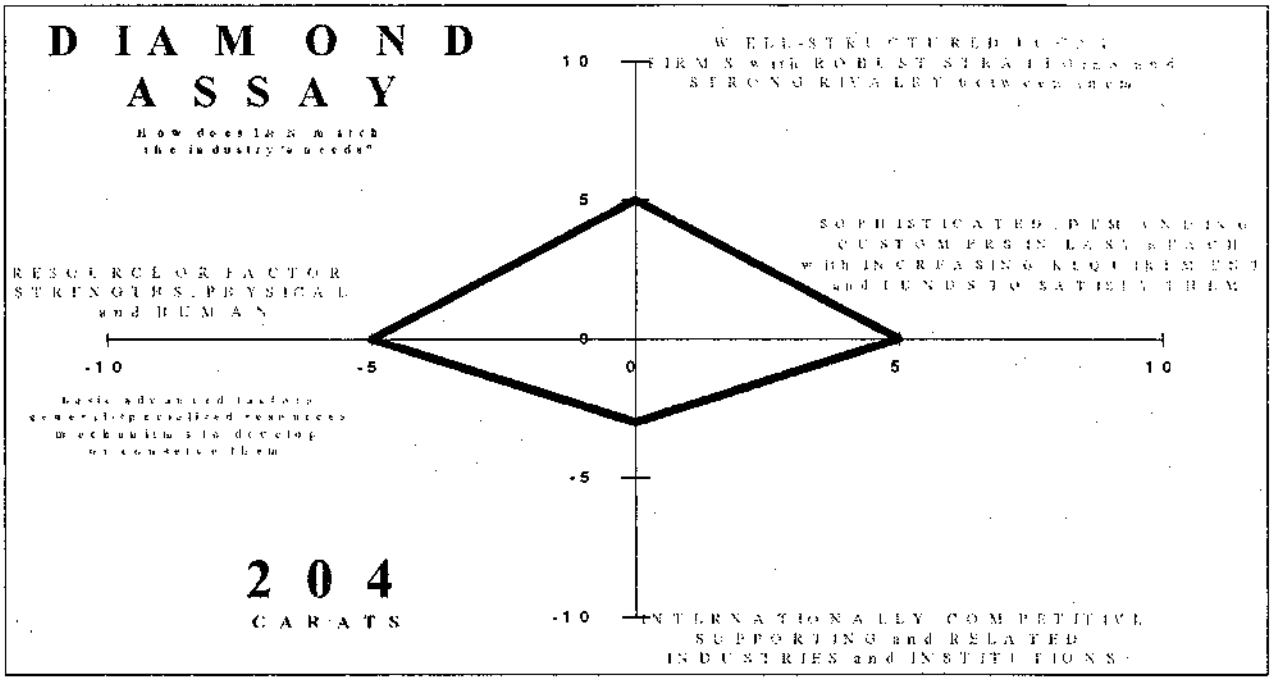
2. Market research on possibilities of attracting in patients to fit results of 1.

3. Evaluation of net economic benefits of promoting retirement to Inverness and Nairn.

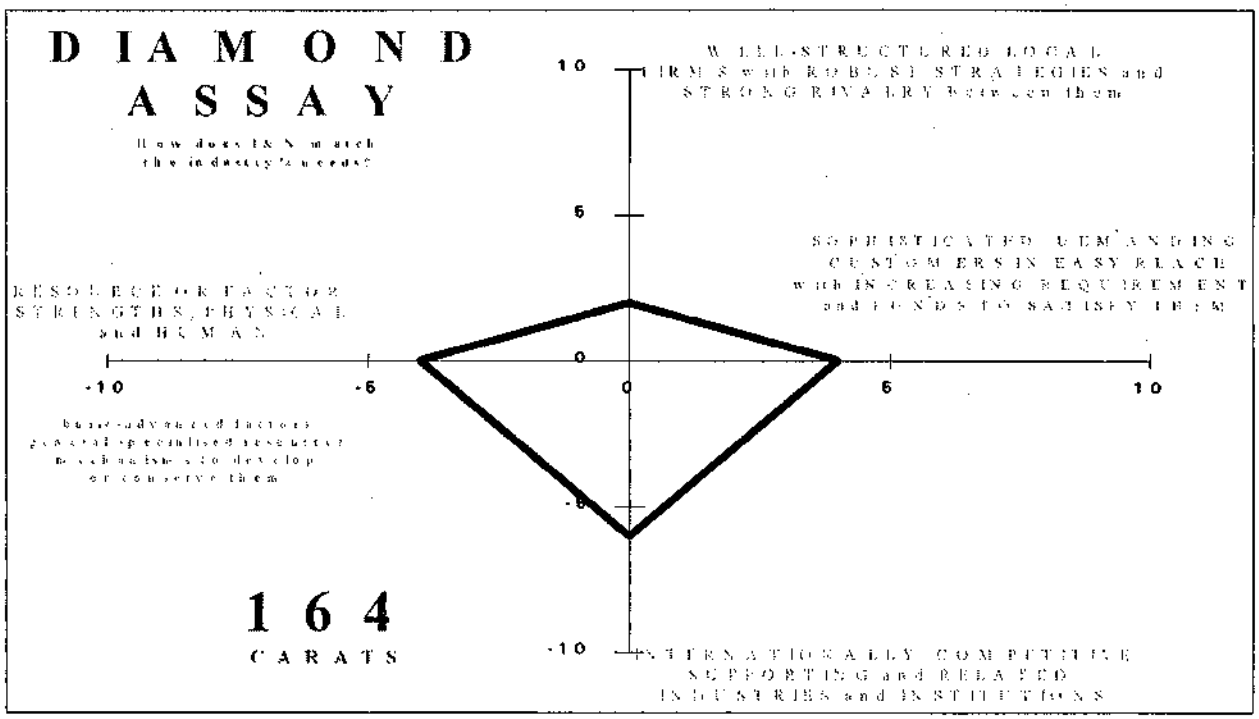
4. Survey/competence assessment of existing elderly care establishments.

We have considered the local viability of the hospital and homes sectors separately in the two 'Diamond Assays' below. In fact a 'health economy' initiative would sensibly have to cover both and would entail developments in other areas, such as agency nursing.

Homes for the Elderly



Private Hospitals



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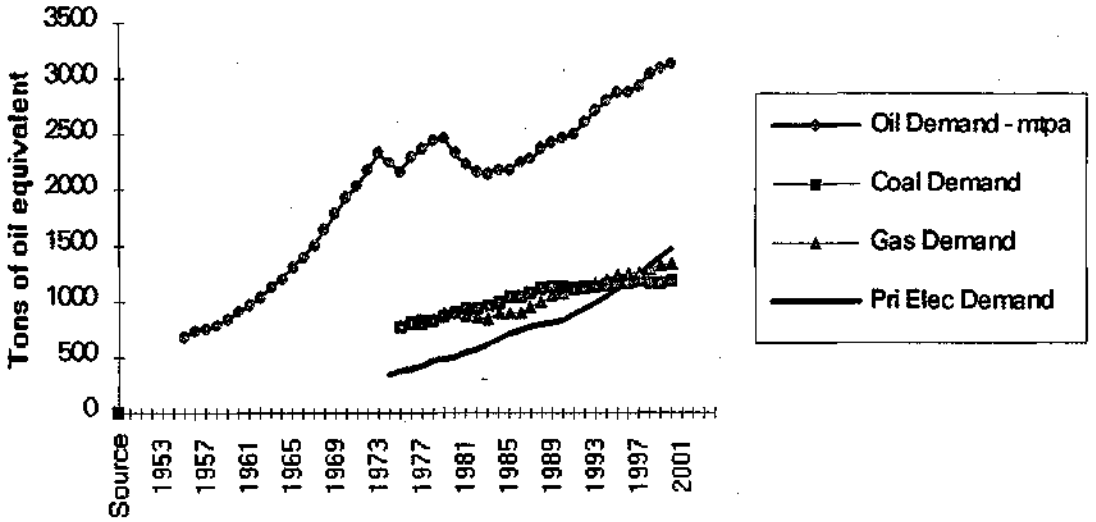
Windmills

Energy demand keeps growing
- and primary electricity is growing fastest



Summary

The windmill industry (wind turbine generators as they should be called) offers an opportunity for Inverness primarily on the basis of its expected growth. The technology has reached reasonable maturity, aspects of it are similar to work done in Inverness, and licences are available. Price conditions are poor now but are almost certain to improve over the coming few years. Demand is growing and the market for windmills will become less and less of a buyers' market. Government and inter-government support is fairly strong and the EU is anticipating wind power generation to increase by a factor of 20 in the next decade.

The 'local' customers, Hydro Electric and Scottish Power, are reasonable prospects. They face government pressure to generate from renewable sources, they are located in the windiest populated part of the European Union, and it is in their interests to strengthen the Scottish engineering industry. They have taken part in development projects and so will be reasonably sophisticated. Scottish Power has recently sought planning permission for a 29 windmill farm which will itself be a contract of over £10 mn. The main drawback with them is that have adequate generating capacity for the short term, so that their current needs are developmental rather than fundamental. There are also question marks about the capacity of the Scottish electricity grid easily to absorb wind generated capacity.

The resources required for a viable windmill industry are access to technology (licences are available on the open market), a number of skilled engineers, and reasonable logistics. Whilst it is not advantaged, Inverness is not unduly disadvantaged in these respects. Support industries are general engineering - for which initially Inverness might rely on Aberdeen and the central belt -construction industries at the place of installation, instrumentation and logistics.

There are about two dozen windmill companies in Europe, mainly in Germany and Denmark. Howden's of Glasgow left the industry when in financial difficulties in the late 1980s.

Existing employment is nil. A small successful windmill manufacturer making 20 per year would employ up to 100 people and add value of about £5 mn per year to the Inverness and Nairn economy. Output of a thousand windmills per year would be possible if a venture was highly successful and supplanted an existing company.

Background

For many years, while 'big' windmill technology has been developing, Scotland has been in effect holding a watching brief. The National Engineering Laboratory at East Kilbride became involved in design and testing. Howden's, the Glasgow-based engineering company, not only made windmills but also owned a windfarm in California. Several Scottish organisations took part in the European community's THERMIE programmes, some of which were aimed at windpower.

The largest operational windmill in the world, Näsudden, is located on the southern tip of the Swedish island of Gotland, and has a capacity of over 2 MW. This design is the culmination of experiments which took place in the late 1970s and early 1980s, including construction of the well-known machine on Orkney and a number of windfarms in Denmark. After the oil price rise of 1973, the technical development was worked up from farm-based machines producing at most a few dozen kW output and intended to be used in isolation, in areas not reached by transmission grids. The design, materials and control systems have now been focused to make larger machines which can themselves feed into a grid. Just as the technology for 500kW machines was reaching its first maturity in the mid 1980s, the oil price collapsed. This put price pressure on the then developers so that they could not meet their costs, and the largest companies in the world, Danish-based, underwent significant financial reconstructions

The technology has since developed further, as existing windfarms have provided a testbed and as research projects have come to fruition. Some aspects of the black art of windmill engineering are quite widely known, having been extensively rehearsed at colloquia and in some cases being freely available because they were originally financed with public money. Other aspects are available on licence on strictly commercial terms, usually on a royalty basis. Thus the main barriers to entry - ignorance and proprietary technology - can now be economically overcome. Skills of machining and assembly of quite large structures are required, and these are not remote from the skills which were honed amongst the Arderseir workforce.

Customers and demand

The main customers for larger windmills are electricity utilities. One thousand windmills correspond to a large power station. In some countries the utility may or must buy electricity from other suppliers, and so these other suppliers are also potential customers for a windmill maker. Initiatives to privatise and restructure public bodies sometimes means that not only is the electricity utilities' bargaining power coming down, but also that new and substantial customers are appearing.

The determinants of demand for windmills themselves are the demand for energy, the cost and availability of windpower in relation to other energy sources, the availability of finance, and government regulation. Currently there are about 20,000 windmills in operation connected to electricity grids, 80% in California and 17% in Denmark.

Outside the former communist countries, energy demand is rising strongly, especially in developing countries. Global energy demand rose by over 2 per cent per annum from 1982 to 1992, and in developing countries it rose at 6 per cent per annum. Other fuels are currently at their cheapest ever in real terms, mainly because of disruption in former communist countries and Opec's equivocal policy, so the relative cost of windpower is likely to improve. The EU's plans are equivalent to more than a doubling in installed capacity every year for the next decade.

Financial constraints on demand are loosening. Partly this is due to lower interest rates, but mainly it is because developing countries are climbing out of their debt difficulties, and because the public sector both internationally (the World Bank and EU, for example) and nationally is happy to finance soft energy.

Government regulation in most countries is pro-windmill, because of the desire to diversify energy dependence, but there is a threat of environmental pressure against windmills on grounds of visual amenity. Currently this is being fostered by more traditional energy lobbies, which see windmills as a real threat. Serious opposition to windmills is unlikely to develop in places that need the energy. Even elsewhere, any really powerful opposition may depend on the number of windmills installed - in other words, resistance may be part of the price of success.

Resources

There was a time when highly qualified engineers were essential to develop a product. However now experts see the technology as well-worked-up and widely available, so that for example the EU has de-emphasised it in its THERMIE programme.

The resource of wind for testing and development is one in which Scotland has a unique comparative advantage. The west coast is on the 6 metres/second isovent : more detailed models of suitability, based on wind frequency, minimum speeds, gustiness and so on show the north west tip of Denmark, where there are many windfarms, as the only part of Europe approaching Scotland for suitability.

Support

Making windmills is a middle-tech engineering activity with some hitech elements. It is most easily done in an area where there are specialised engineering and engineering service companies - heat treatment, specialised casting, machine tool servicing, part stockholding , high performance paint shops and so on. However, because it is capital equipment then good scheduling and management can probably enable a manufacturer to access most of these support services at some distance. The exception might be finishing operations like painting, when the windmill is in its semi-assembled state.

Companies

Most of the producers are concentrated in Denmark and Northern Germany. Vestas and Bonus of Denmark and Tacke of Germany are probably the most significant, but additional market research would be needed to establish market shares. AEV, Enercon, Euroturbine, Suedwind, GET, HSW, Fries, Nordex, Nordtank, Tacke, Ventis, Windmaster, Windtechnik, and Windstream are all known to offer 500kW machines.

Inverness position

Inverness is slightly **disadvantaged on the customer side**, because the Scottish power generators do not need new capacity. The collapse of energy-intensive industries in Scotland, and slow growth of consumer demand, means that quite old capacity is ample for their needs. It is only as this is retired that significant new capacity will be needed. However the Scottish renewable order means that there is a Scottish demand and Scottish Hydro, as an innovative company with a tradition of non-fossil sourcing, should be a valuable customer. Scottish Power recently put out for tender a 29-windmill farm on the Clyde coast.

Skilled resources are available in Scotland and it is possible, with the reorganisation of the National Engineering Laboratory, that highly skilled individuals might specifically welcome opportunities to locate in Inverness. Scotland is blessed with **excellent wind conditions**, the best in Europe. The **yards at Arderseir** would be a good site for pillar fabrication.

Inverness' **support industries are not as good as might be desired**, but developing support for engineering is a prerequisite for most manufacturing, so should be a priority. In the meantime Aberdeen and the central belt offer good support, but at a distance.

Inverness has **no strong companies**, but the industry is quite **open to entry**. It might be that one of the potential local customers was willing to participate, and other sources of finance could be available. There might be some residual benefit available from Howden's closed operation, but this would require investigation.

From these four factors, the main priority to help a nascent industry to viability would seem to be the development of support industries, and the identification of a few key individuals, skilled in engineering and international energy marketing. Whilst the former may call on several aspects of economic development, the latter probably requires little more than appropriate cash inducement.

Priorities to strengthen Inverness

The need for companies is obvious. Local demand could be helped by influencing Hydro Electric, both informally and through official government channels or regulation. But the key priority for a long-term-viable industry would be to strengthen engineering support companies. These could turn Inverness from an outsider to a good contender.

Development repertoire

Growing existing companies

There are no existing windmill companies in Inverness or Nairn.

Diversifying existing companies

We are not aware of any obvious candidates that could easily diversify into windmills, although local expertise (particularly at McDermott's) might bring forth suggestions.

Reconstructing existing companies

Conceivably Scottish Hydro or part of McDermott's or some of the other Moray Firth engineering sector could spin off an appropriate engineering function.

Local start-up

Would develop on the availability of appropriate skilled engineers, and would definitely need an injection of marketing expertise.

Implanted start-up

This is probably the best bet. The key priority would be to identify personnel and several search methods could be considered.

Inward investment

None of the existing windmill companies in Europe is in a position to contemplate substantial inward investment - their financial and management resources are stretched building themselves up. Conceivably the US could be different, but given the state of the European market Inverness would not offer much to an inward investor, except the West coast wind.

Inward licensing

With many technical companies raring to go, and with a recent history of subsidised research, there are lots of licence opportunities. This is probably an essential strategy, coupled with one of the above options.

Action plans

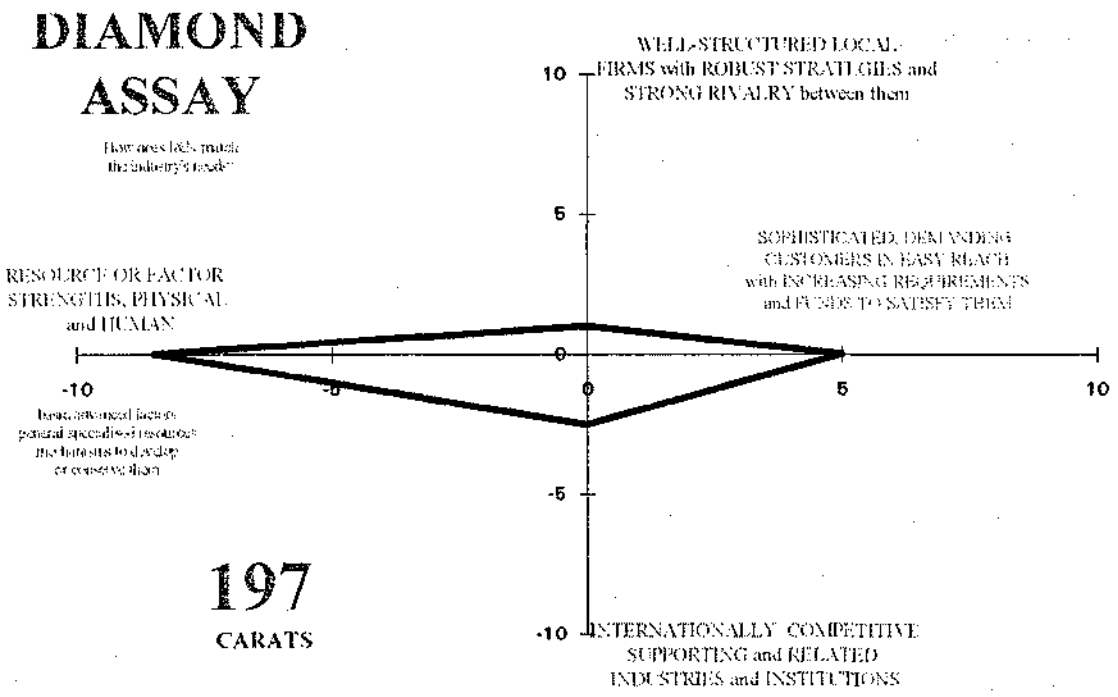
1. Update on EU situation and Scotland's position within it.

2. Identify residual Scottish capacity at NEL, Howden's and academically. Determine key individuals.

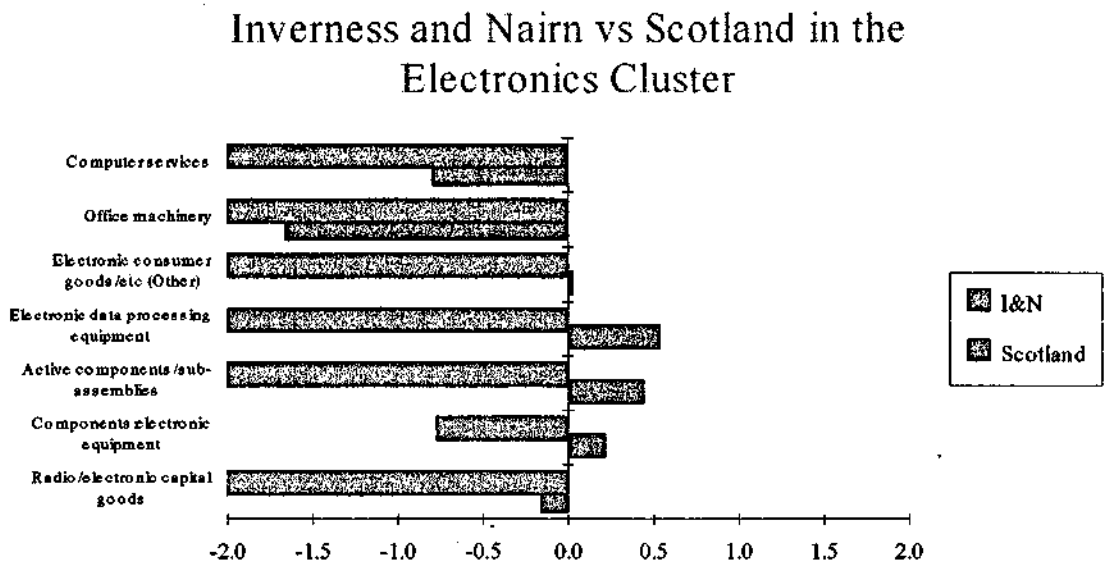
3. Identify licensors and investigate US companies.

4. Specify in more detail support companies needed and develop plan to access existing support elsewhere in the short term and grow local support in the long term.

5. Prepare business plan and financial requirements.



Software/Computer Services



Summary

The software industry was identified as a growth industry, showing the fastest rate of growth of all industries both historically (1982-91) and in the forecast for the 90s. The industry, while still the fastest growing, has now begun to slow.

The availability, falling cost, and improving performance of standard packages have drastically widened the market for general software. Airlines, banking and insurance remain the most important customers for individual software development. Government, retailing and manufacturers are other major customers.

The main support industries are communications, training and standards administration. Resources include computers and a variety of skilled personnel with finance an essential third resource. The major companies in the international software industry are IBM, Fujitsu, AT&T, Microsoft, Digital Equipment Corporation and Hewlett Packard.

Inverness and Nairn have no sophisticated comparative advantage in respect of resources, supporting industries or companies present, and no strong customer base. This makes it very hard to see the locality as a centre for producing software. The city must, however, apply effectively software produced elsewhere, and to do this the infrastructure could be strengthened.

The creation and use of combined workspace presents opportunities for Inverness and Nairn to become more competitive in software use and would enable a skills pool to be created. Existing companies in the field have some potential for expansion but mainly to serve local markets and inward investment seems likely to be hard to obtain or retain.

Background

Software and computer services form a large, fast-growing, and rapidly changing group of industries which can be segmented in many ways. Five segments are considered here:

- **Hardware implementation** - the configuration of a required technology based on a measure of need.
- **Software consultancy and supply** - the specification of need considered against availability of "off-the-shelf" software, potential customisation of "off-the-shelf" *build* packages and the development of turnkey "made-to-measure" software solutions.
- **Data processing** - volume input - eg. as carried out by Bank clearing centres.
- **Database activities** - including the design and management of data, development of the business model and customisation of standard database packages.
- **Miscellaneous computer-related activities** including project management, training, management of change and organisational development issues relating to the uptake of computerised systems

Customers and Demand

The industry's major customers are government, financial and commercial services. Defence and tax collection, banking, stockbroking and insurance, retailing, transport and utilities are all now predominantly computer-based. In industry design, production planning and inventory management are critical areas. Computers are used everywhere but especially where there are large numbers of transactions (usually large numbers of people) or very sophisticated processes.

For larger customers the demand for user-friendly, inter-operable systems has had a big impact on the move to OPEN systems standards, and communications technology is changing the geographical pattern of hardware and software use.

Traditional applications have deepened and broadened as technological advance has cut the cost of owning and running a computer system. Cost reductions are continuing, for

example a 486 processor microchip - the mainstay of office support PCs - came down in price by 18% in the space of two weeks in January/February of 1994.

Computerised office support is now in the price range of single-shop or small-network retailers, small accounting and business service companies, local factories or primary health practices.

Resources

Apart from its customers' machines, the software industry's own computers are an essential resource. They may need to be more sophisticated than the client's, or to simulate aspects of his more sophisticated machine. Compatibility via OPEN standard helps to ensure an upgrade path and protect the initial investment.

Finance is required both to purchase hardware and furnish working capital and can be difficult to obtain in an industry lacking many tangible assets.

People are critical to software and several kinds of skills are required. Research and development of software calls for exceptionally bright sparks and specialists in computer science, many with higher degrees. These people cluster around universities, especially in IT towns and districts (Massachusetts, Silicon Valley, and up-to-a-point Silicon Glen). System engineers again with higher degrees, may be less centrally-located, working directly with a manufacturer or specialist consultancy. Applications developers are more widespread and nearer the users, and typically are qualified to degree or equivalent level, as well as benefiting from skills transfer from an experienced peer group. General systems staff require some skills of numeracy and logic which can be built up from local and manufacturers' training courses in specific applications. Other more specific skills are acquired from users, both in-house and from bought-in training packages

Support

The main support areas of importance are communications, training and standards.

Broad band ISDN removes most disadvantages of remote location. Less sophisticated systems can be used for networked services and communications between peripheral and main computers.

There are several kinds of training support. **Formal courses** can provide an understanding of concepts, a "first principles" grounding and advanced working knowledge of specific

software. These courses range from short intensive training run by the manufacturer or software supplier through NVQ/SVQ courses, polytechnic certificates to first and master's degrees and doctorates. **On the job/skills transfer** can occur once a basic awareness and understanding of the computers and systems in use is achieved. Combined with a knowledge of their related operations software and the analysis and design techniques available, much is to be learned from working with "experts", understanding the problem-solving approach, how the analysis exercise translates to a specification and from there the transition to the final package. In any particular application area then ***knowledge of the application*** is developed from the business staff in testing and training and the preparations for change. This is difficult to achieve from textbooks and is better learned from a working solution to a real problem.

Standards were historically set by the American National Standards Institute (ANSI) as a US government defence R&D initiative. They are now set by major players collaborating to define OPEN systems standards such as the X_OPEN Portability Guide (currently XPG3+) which defines a minimum level of compatibility.

Standards ensure that investment in technology is not so "locked in" and so make it easier to contemplate a 'small scale' software industry. They apply not only to hardware but to all system components including to system software - the computer engine - eg. UNIX; to database software - structures for storage, access and retrieval of data - eg. ORACLE; to applications software - to end-user tools incorporating a standard data manipulation language - eg. SQL; and to the human-computer interface. Provision of generalised standards support has been of particular benefit to the industry outside IBM.

Companies

The software industry has traditionally been led by the big players such as IBM (31% market share), Fujitsu (now including ICL, 8%), Microsoft (6%), and so through the top ten to Digital Equipment Corporation (2%). These together account for 69% of the market and several of them also make hardware. Information technology companies are grouped in world IT centres - such as Massachusetts (MIT) and California (Silicon Valley) but the largest are outside these clusters- Microsoft in Seattle, IBM in New York. Dominating local economies, they attract their own clusters of spin-offs and suppliers.

Without exception, every major development of a computer industry base which has lasted has been supported by substantial injections of public funding.

Better global communications for voice and data now means that it is no longer essential to be near the IT world centres to be a player in the software development stakes, but so far traditional influences on location have held sway. Medium sized companies sometimes group near key user markets, notably defence centres (Britain's M4 corridor) or financial services. Small firms which have spun off from a larger firm or institution tend either to stay close to it or to move nearer to users.

Some longer range mobility is evident with growing competition from India and Singapore (See, for example, E.Yourdon: *The Decline and Fall of the American Programmer*).

Scottish attempts to consolidate and grow software companies include the setting up of a ***Software Innovation Centre*** and the ***Scottish Software Federation*** and ***SOFTNET*** - embryonic at the moment but building towards a ***network of Scottish Software Centres***.

Inverness and Nairn Position

Inverness is not significantly disadvantaged as far as the communications network is concerned, but has ***few of the skilled human resources*** and ***no significant educational institutions*** specialising in information science as support. The ***key customers*** with a stronger-than-average local presence are ***health*** and ***public administration***, but there are no head offices or major facilities of local client groups. ***Tourism*** might offer itself as a strong local industry with distinctive software needs. Existing ***firms*** are small and devoted mainly to serving local needs, although Hoskyns (a subsidiary of Sema, Europe's second largest software house with 1.9% of the world market) has recently established a small offshoot in Forres and the presence of British Telecom (1.2% of the world computing services market) offers some base.

Priorities to strengthen Inverness

The role of software services as support to other industries is so important that even if it never becomes a lead sector, Inverness and Nairn must pay attention to the software and computer service industry if it is not to hold others back. The development of the University would appear to be a key opportunity, offering some scope to add education and training support to the already good communications position. A start can be made to provide training services and would be a market creating exercise. It would be a significant opportunity for local educational establishments.

Ensuring that the key local buyers of computer services pay adequate attention to local service supply also offers some general strengthening on the customer front. It *might* be that computerisation possibilities in tourism also offer a particular customer group, but the priority should be to strengthen tourism with potential spin off to local computer services rather than the other way round.

Development Repertoire

Growing Existing Companies

The "independent" information technology and systems consultants in Inverness & Nairn can be encouraged to develop. Provision of a focused business centre or incubator could encourage them to coalesce or to derive some benefit from rivalry. A skills pool is then more easily identified to tackle bigger projects and the bigger projects in turn facilitate skills transfer and perhaps the learning centre for new recruits or placement students. To be credible in the community it would be important to position this realistically in the marketplace - not as 'son of Silicon Valley' but as a workmanlike step forward for a developing city.

Diversifying Existing Companies

We know of no clear candidates.

Restructuring Existing Companies

See 'growing' above. It might be that IT departments from existing users could be encouraged to relocate in the centre if they are under pressure for space. In general. however, it is better to stay near the user.

Local start-up

With success this will be a regular small scale phenomenon.

Implanted start-up

Inverness as capital city of the Highlands and an attractive and healthy place to stay, might attract individuals willing to re-locate. Since the key requirement would be to transfer the skills and market contacts of outsiders into the locality, a precondition would be to strengthen support mechanisms so that the start-ups are not orphans.

Inward Investment

Development of support and human resources would appear to be a critical factor if Inverness is to stand a chance in the general chase for software-related inward investment projects.

Inward Licensing

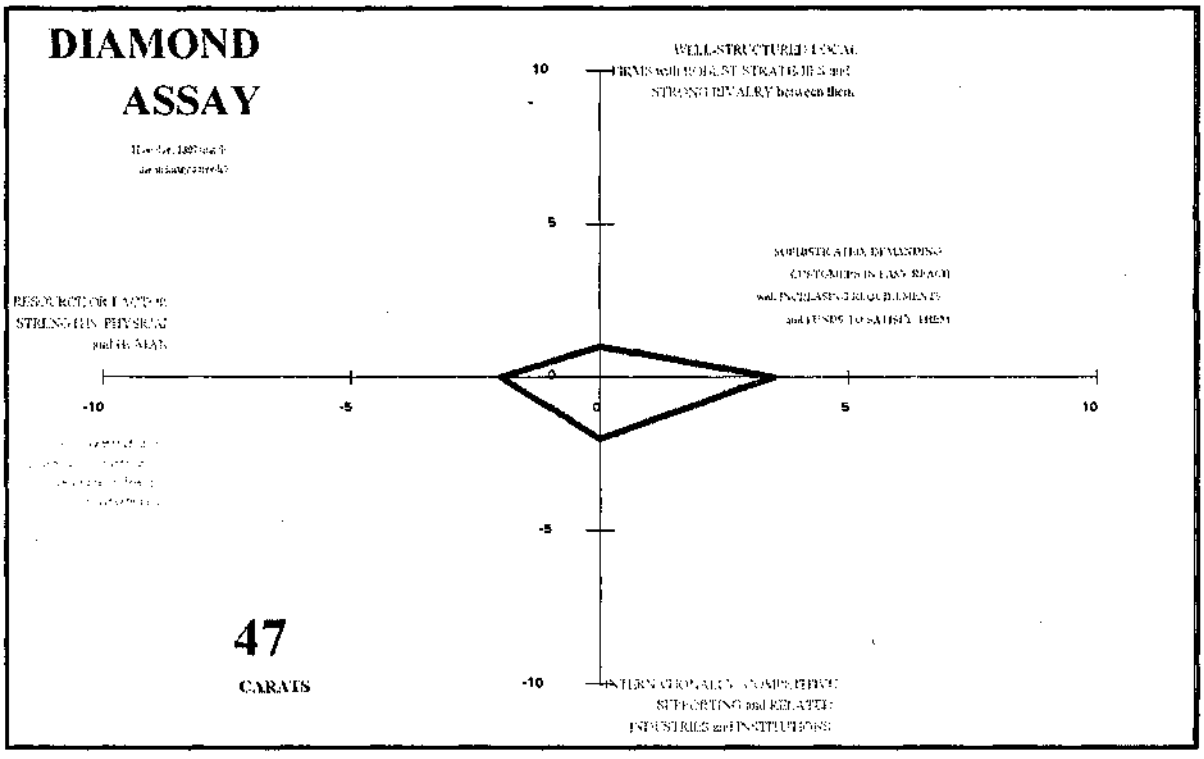
If required and possible at all, licensing would be easily done from Inverness.

Action Plans

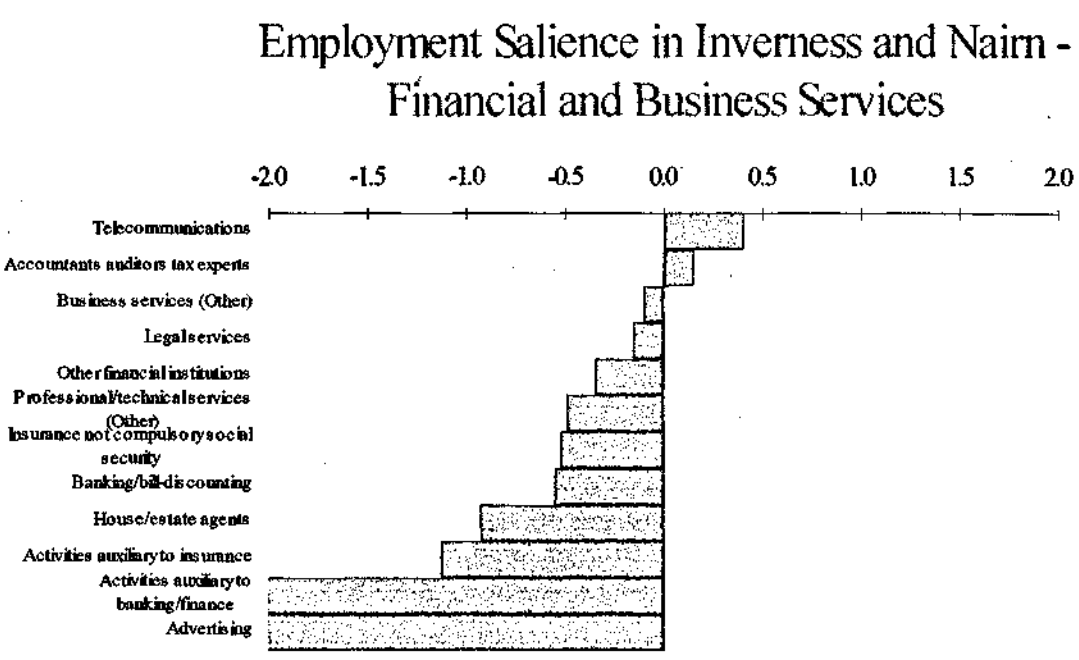
1. Maintain Inverness and Nairn profile in Scottish inward investment activity

2. Detailed skill review : training facilities and courses offered, skills existing in the Inverness & Nairn independent IT/IS community, skills in local IT users' departments, opportunities and barriers for local IT training provides to upgrade their offerings.

3. Software incubator feasibility : local independents' reaction, availability of premises, business plan and financial requirements.



Financial Services



Summary

Financial services has been a very substantial growth industry and will remain one. The trend, helped by information technology, is to bigger and bigger global companies, focused in global clusters in New York, Tokyo, London and Frankfurt

Smaller operations are either overspill in terms of back offices or distance marketing done cheaper away from the core, niches beneath the attention of large companies, or local market service functions.

Inverness and Nairn has no special local customers or very special advantage in accessing distant ones. It has no specialised resources, weak or non-existent supporting industries and no significant local firms. Its main role in financial services (which it will need to defend) is as a regional service centre.

Inverness and Nairn' only plausible development strategy is to attract investment from outside. A weak diamond betrays a lack of competitiveness, indicating Inverness and Nairn should not devote excessive resources to seeking financial service investors. This conclusion may be difficult to swallow and might be confirmed by the Enterprise Company after talks with Locate in Scotland and a Scottish Financial Institution

Background

Financial services, led by market liberalisation, by advancing technology, and by increasing incomes is one of the fastest growing industries. Insurance, at 9.5%, was the fourth fastest-growing European industry over 1982 to 1991, and 'Other Financial Services' and banking were just outside the top ten. After Big Bang and legal changes, financial services led Britain's boom of the late 1980s.

London led, but Scotland's twin financial centres joined in. A particular feature was pressure from large institutions to locate functions outwith central London - sometimes headquartering in the suburbs, sometimes keeping on a London core and moving support further away. This trend was caused pressure in property markets but helped by new technologies for data handling and transmission, and gave rise to a wave of investment in the provinces. Although the London property pressure is now less, the wave is still detectable.

With its communications capabilities, Inverness may be a candidate location for 'back office' administrative activities and for marketing. Direct marketing and service supply have taken off in insurance and increasingly in banking and Glasgow has developed a niche.

Customers and Demand

The whole community is a customer for financial services: money goes everywhere. Particularly sophisticated customers are the holders of large assets, such as energy companies, those with many transactions, such as retailers or paymasters, and the financial services industry itself.

In Europe the financial services sector grew strongly during the 1980s and is forecast to continue to grow, but at a slower rate. Insurance was the fastest growing sector at just under 10% with future growth expected to be around 6%. Other financial services, which include fund management, grew at approximately 5% in the 80s, with this expected to fall to around 3% between 1991-97 and banking is expected to fall from 5% to 4%.

The USA is the worlds' leading insurance market although Europe is catching up by growing throughout the 1980s. The UK has taken over as leader in the EU, displacing Germany, and now ranks third in the world after Japan, where local markets are declining for the first time in 50 years. Spain is expected to show rapid growth and structural change in Germany may offer business opportunities.

Resources

Financial services uses very specifically skilled and educated labour at the core, more generally educated people in sales and administration, sophisticated information technology and communications networks.

In metropolitan Scotland there has been a ready supply of high quality school-leavers willing to enter the insurance industry at lower cost than in the rest of the UK. Short commuting journeys which can be fitted to extended working hours have helped provide staff for telemarketing. In international markets there is some advantage in being an English speaking nation.

Good well-serviced office accommodation is an increasingly necessary resource.

Support

As well as being a direct resource for some operations, communications and information services are a key general support. Electronics and written media are significant together with the legal and accountancy professions. Government can also be seen as a supporting economic activity, as can regulatory bodies and voluntary ones, such as Scottish Financial Enterprise.

Air transport with good connections to other financial centres is important

Companies

The loosening of national political constraints, formerly imposed by nations to ensure financial probity and protect national sovereignty, is having a dramatic effect. The benefits of improved information storage and processing have accelerated the trend to larger and larger companies. This has left market niches to be served by very small specialised companies. Small and middle-size companies are being swallowed up. Only the residual national or EU/US restrictive legislation prevents mergers continuing apace.

The major financial companies in the world come from the major economies, the US and Japan, but the Brits are among the biggest in Europe. The major companies in Scotland include Europe's largest insurance company, Standard Life based in Edinburgh and General Accident whose main office is in Perth. The Royal Bank of Scotland's Direct Line Insurance has in excess of 1m policy holders and is the leading telephone based insurance

provider and the Royal has now introduced telephone home banking. Abbey National has a telephone mortgage business operating from Bournemouth and life assurance and some building society functions from Glasgow. In fund management firms are generally small but there are a large number of them. Most deal with UK funds with only 10% coming from abroad.

Inverness and Nairn Position

Scotland maintains two mainly-indigenous banks (i.e. not counting Clydesdale), the Edinburgh insurance operators and central belt fund managers, significant back office and telephone service especially in Glasgow (Direct Line, Britannia Life and Barclays Stockbroker Services, AA Insurance Brokers). These qualify the central belt as a substantial secondary financial centre in global terms.

Inverness and Nairn employ few people relative to the UK in financial services although do perform well in some business services, particularly telecommunications and accountants, as the graph illustrates. Auxiliary activities to banking and insurance are the weakest sectors. Even to serve the local market, employment is relatively slight: this may be related to different productivity levels or to the structure of local demand. In banking itself Inverness and Nairn employs 390 people whereas to match Shrewsbury, employment would be in excess of 450. Insurance also offers scope for a further 50 jobs on the basis of Shrewsbury's performance.

Inverness and Nairn has no special local customer base but competitive access via telecommunications networks, which are a *key resource* Apart from a high weighting of accountants Inverness and Nairn has few specialised human resources.

A local financial service operation would need to be largely self-supporting as support services are not very strong. Most of the services (law, advertising, computer systems) which would need to be larger than average to a support financial services industry are currently not even large enough to support local needs.

Of the firms engaged in the financial services sector the larger ones are Ernst & Young and Ledingham Chalmers. Ernst & Young have 4 other offices in Scotland employing over 800 people and countless offices worldwide. Ledingham Chalmers provides legal services and employs 50 people in Inverness.

Development Repertoire

Growing existing companies

None significant to grow

Diversifying existing companies

No obvious candidates

Reconstructing existing companies

No realistic prospect

Local start-up

No entrepreneurial skill base is apparent

Implanted start-up

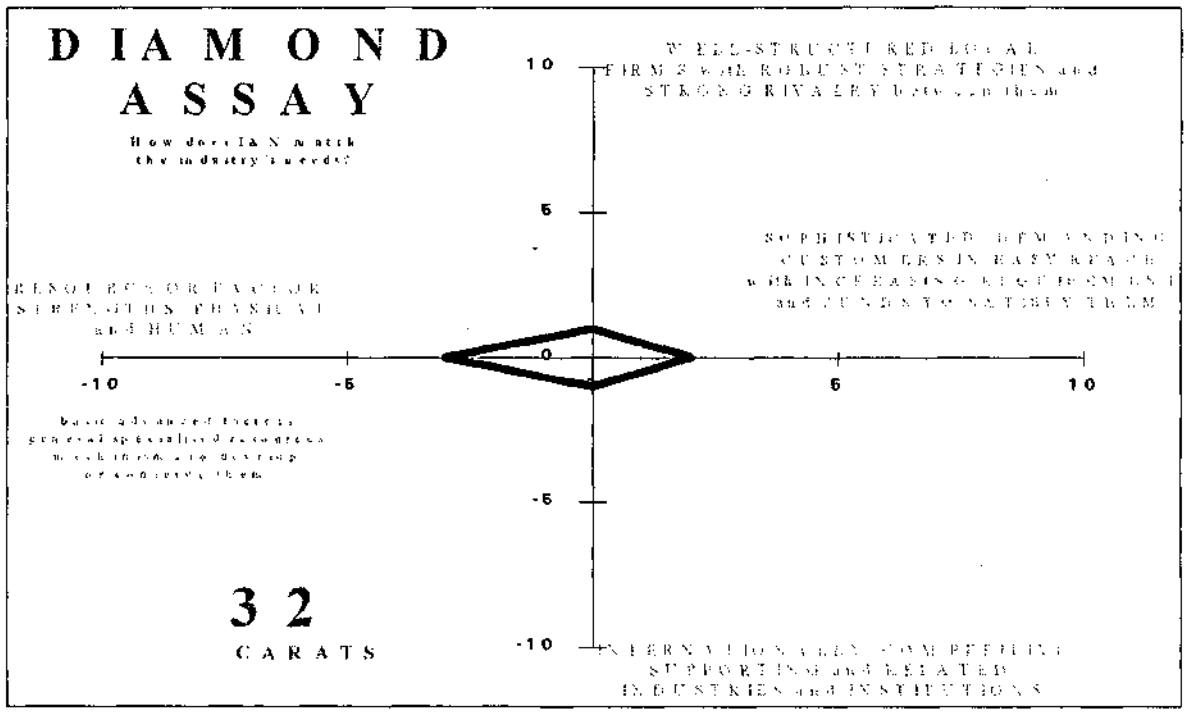
This is possible, as a life-style choice by proprietors, but would not be large or easy find. Given the importance of personal contacts for niche players, it would in effect be a tiny inward investment

Inward investment

Given the weakness of the 'diamond', inward investment will be hard to attract. US or Japanese firms expanding into Europe *might* be persuaded to locate back offices away from major customers.

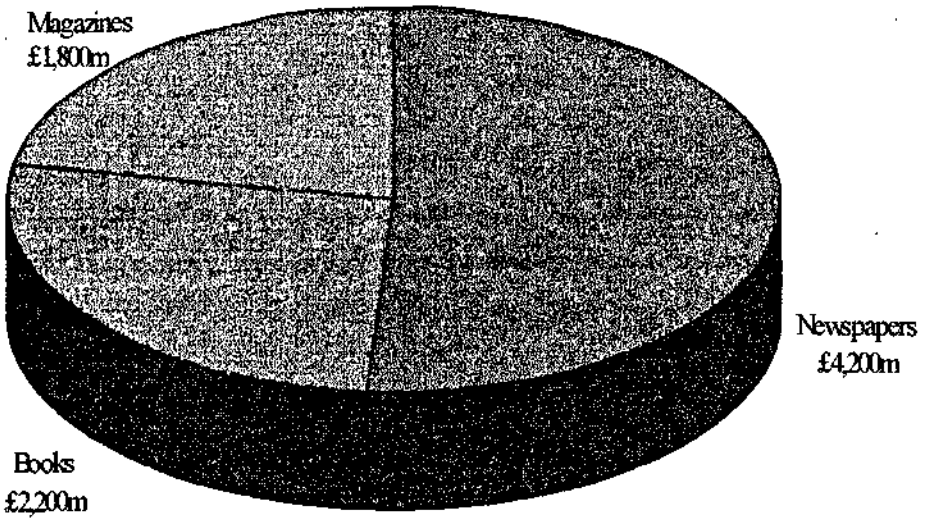
Action plans

The negative conclusion of this profile could be mistaken. It should be reviewed critically with Locate in Scotland (what can Inverness and Nairn offer non-Scottish investors?) and with a friendly Scottish institution (Royal Bank or SFE). If the diagnosis is confirmed then no resources are appropriate.



Publishing

Sales by Sector in UK Publishing 1990



Summary

Of the three sectors of publishing, Inverness already has regional newspaper publishing and some magazine printing. Book publishing exists to a small degree in Nairn.

Although nominated to us, publishing is a difficult area to develop a coherent industrial strategy. The mainstream of the industry depends on population centres for customers, resources and support, and large firms dominate the industry. Niche operations do exist which can thrive in places like Inverness and Nairn, and some small firms do. Searching for such opportunities from outside the industry is a needle-in-a-haystack task. Even if it was successful the economic returns would be low.

Action plans put forward involve due diligence and awareness of publishing when promoting tourism and education, but no special effort opposite the industry itself.

Background

Publishing was suggested to us, at the workshop session, as a potential information-based industry.

Publishing is a big business that likes big cities and favours big firms. London has always been a major global centre : two hundred years ago it was unsuccessfully challenged by Edinburgh and in this generation it has been challenged more successfully by New York. Large conglomerates form a large part of the publishing industry with two thirds of UK sales accounted for by 7 or 8 companies.

Despite the advantages of scale, there are also thousands of small and medium size publishers, and barriers to transferring information are falling, so perhaps small cities should not give up hope.

Over the past 70 years paper-based publishing has lost out on growth to electronic media. But falling costs, rising incomes, increased leisure time and burgeoning advertising have boosted the overall market for published and broadcast material so that print has grown nevertheless.

Customers and Demand

Customers for books are mainly in the 25-54 age range. More women than men tend to buy books but this gap is narrowing. Around one third of books are bought as presents for children. 30% of all books are bought during the Christmas period (October-December).

The UK has the largest book publishing industry in Europe but it has also been hit by the fall in consumer spending which has fallen more for books than other aspects of consumer spending. Over 70% of value sales are from the consumer market, in volume terms this rises to 88%. Reduced spending by schools and universities has increased the pressure to raise consumer sales. The children's and reference sector is growing strongly with the volume of children's books sold doubling over 1981-88 while school books have declined in importance. The output of children's titles has risen sharply over the last 20 years.

There are slender profit margins in book publishing and profits that are made are often unevenly distributed with an estimated 90% of profits coming from 10% of output. This means that a publisher must have a few profitable titles to make up for break-even\loss-making titles.

Independents dominate book retailing although high street multiples have a 35% share and book clubs a 12% share. Advertising is less important here than in newspaper publishing - best-sellers are a major part of a publisher's advertising and promotion. Only 14 companies spent more than £200,000 on advertising in 1991, most spend nothing.

Resources

Authors are the principal resource, and premises can be important. The networking skills and creative skills in the publishing industry must also be set alongside significant technological skills in editing, production and legal aspects.

Support

Printing is the critical support industry for paper publishing, followed by logistics (especially for ephemeral material), paper and binding. Graphic origination and translating are also important in some books.

Companies

Large publishing houses, several of which started in Scotland, compete via their ability to offer authors large advances, their credibility with reviewers, their marketing expertise and their sheer clout.

Smaller firms are propelled towards niches, and must recognise that they are unlikely to retain authors without the economies of scale in promotion and finance of large firms. There are a total of about 3000 UK book publishers.

Inverness and Nairn Position

Inverness and Nairn has strong local bookshops, and the ***demand*** for books on tourism and leisure and with a Scottish interest is likely to be higher than elsewhere. But however high the quality of demand in these specialisms may be, the quantity is low. Access to other markets is inevitably hindered by distance, and by the lack of Scottish book wholesaling facilities.

As a location the Highlands will have attractions to some authors, giving Inverness and Nairn some special access to the key resource. This is augmented by the personal history and current niche market of one of the existing companies in Nairn, David St John Thomas.

In the longer term plans for a Highland University offer a potential source of authors, and a small-scale academic press might have useful synergy with the University project. Publishing of materials for distance learning is an existing niche, but full research would be needed to determine how crowded it is and the likely impact of electronic multimedia publishing. Distance from the generality of less critical resources is an undoubted handicap, probably more important than distance from market, although there are clearly niches where it does not matter. The technical aspects of human resource development - that is training, can be readily acquired in Scotland (there are courses in Stirling and Edinburgh) but the scope for learning-on-the-job and networking-in-the-job is clearly limited.

Printing as a key support is available locally, and also in Orkney and Aberdeen which are easily reached by air or surface means. Logistics are probably not adequate to support newspaper or magazine publishing except for monthlies or quarterlies.

Companies in Inverness and Nairn include regional newspaper production and magazine production for a wider network. Highland Printing and Publishing Group Ltd is a division of Peter Press Ltd. The company's turnover is between £2m-£5m and it employs about 150 people.

Inverness and Nairn has a few small companies in the book publishing industry:
David St John Thomas in Nairn was established in 1989 and has about 60 titles in print, mainly in transport and Scottish topics. It also publishes a periodical for writers, and so may have strategic significance. Banain Books, also of Nairn, has 26 titles. The Iona Press, based in Inverness, has three titles in print, about Iona. Other highland publishers include Findhorn Press in Forres, which was established over 20 years ago and has about 25 titles in print; Acair Ltd of Stornoway, with over 150 titles, mainly in Gaelic; and Whittles Publishing of Caithness with 15 titles in science and engineering topics.

Development Repertoire

Growing existing companies

Current activities in publishing and in printing could expand but no large growth is apparent.

Diversifying existing companies

Not relevant

Reconstructing existing companies

Not relevant except for small possibilities of start-ups by existing staff

Local start-up

Small

Implanted start-up

This is an opportunity in small niches where a metropolitan environment is not required.

Inward investment

A small amount of electronic outworking might be feasible. Some routine and solitary creative functions could be carried out in Inverness and Nairn.

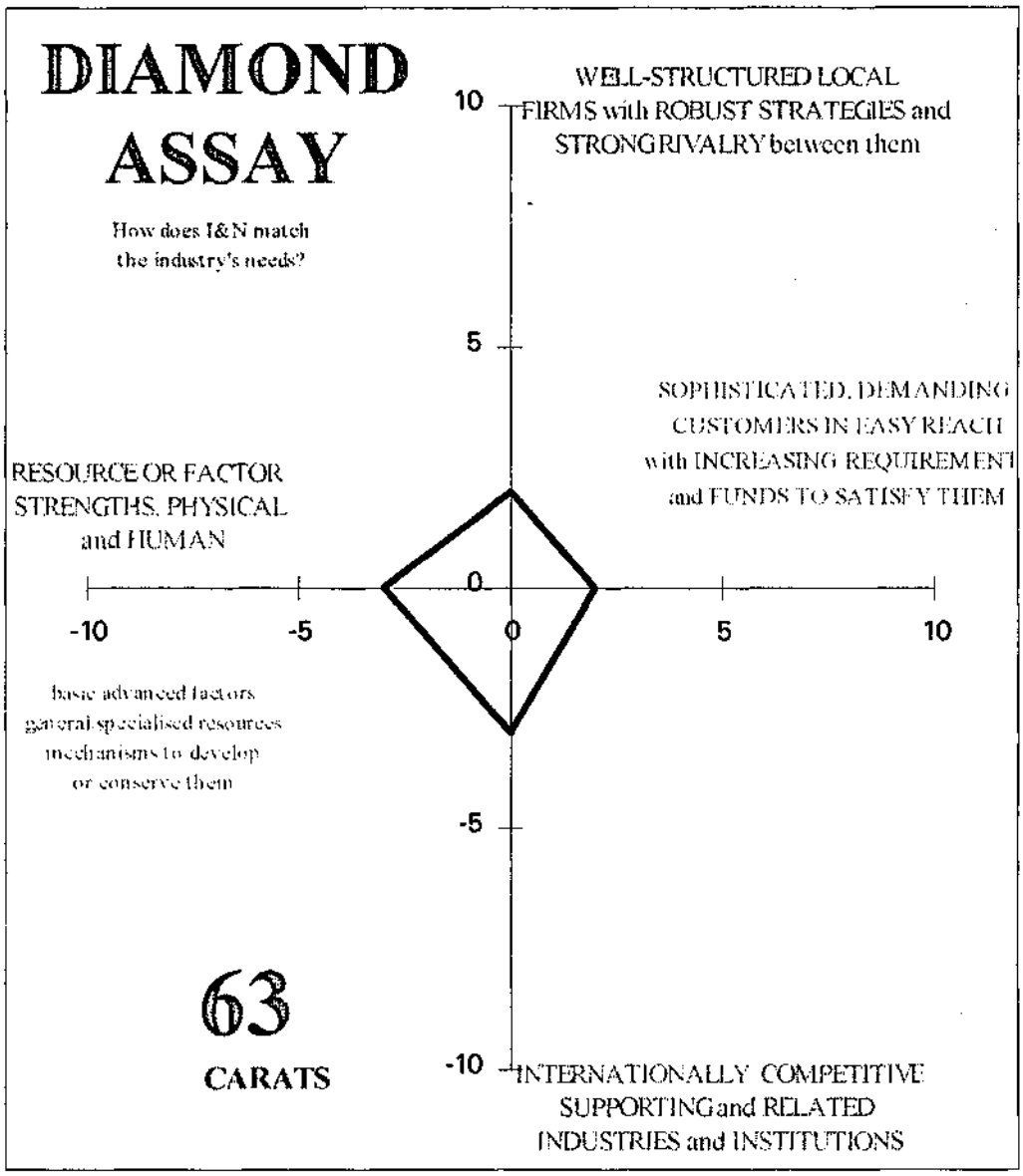
Inward licensing

Not needed.

Action Plans

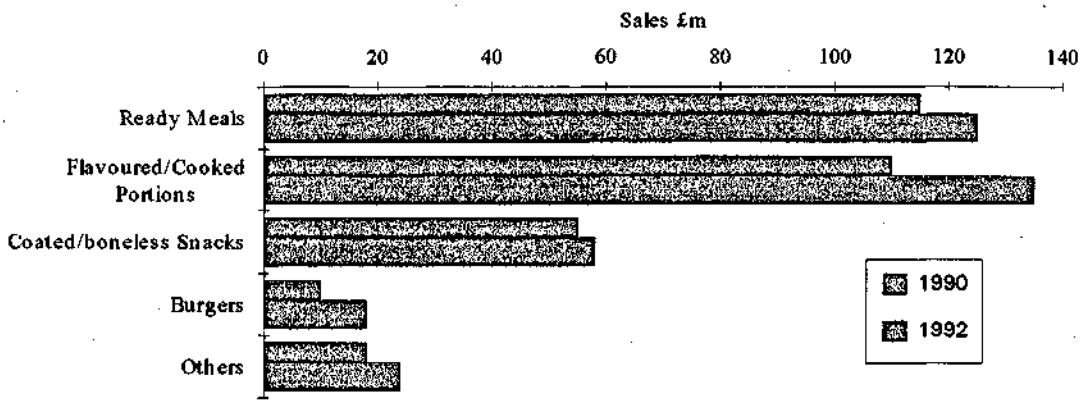
1. Consider use of purchasing policy of HIE network to strengthen Nairn publishing and Inverness printing.

2. Ensure that publishing is considered as part of education and tourism initiatives in the Highlands and Islands



Poultry Processing

The Market For Processed Chicken Has Continued to Grow Despite the Recession



Summary

This sector was identified as a gap in an otherwise strong food cluster in Inverness and Nairn. Poultry processing also offers opportunity due its continuing growth in a generally stagnant food industry. Poultry is the fastest growing meat product in the UK.

A typical poultry enterprise employs over 200 people, at relatively low wage rates (average gross wages of only £9000 per head) but at low skill levels and some of them part time or (especially) seasonal. It turns over £20 mn per year, serving a catchment area of 0.5 mn people. It purchases birds and many services locally, to the tune of £12 mn.

The market for processed chicken products is growing in the UK, even continuing to grow throughout the recession. It is the processed product end of the market which offers the highest value products although primary chicken predominates in volume sales. There are 9 major firms in the UK market with competition coming mainly from the major producers of France, Italy and the large US firms.

The resources required to make a poultry processing industry successful are the availability of various low skilled workers and higher skilled food technologists, supply and servicing of machinery and equipment. Scientists, engineers and technicians are all required to push new technology.

Inverness and Nairn has no presence in this sector while it has proven successful in the processing of other foods, particularly fish. This may provide the relevant expertise in food technology and hygiene. The area is already successful in agriculture and *prima facie* Inverness and Nairn could readily support a poultry farming sector to supply a processing industry. Such a sector would employ a further 100 or 200 people in the district.

The emerging niche market in this sector is the rearing and processing of free range poultry which emerged due to increasing consumer dislike of intensive production methods resulting in a switch away to higher priced and higher value-added free range produce.

This is where the opportunities for Inverness and Nairn lie. Additionally, imports are likely to fall due to the devaluation of sterling which effectively negated Europe's price advantage in this sector. Harmonisation of standards within the European Union will make it more difficult for foreign suppliers to access UK markets presenting UK producers with greater opportunities and bigger markets.

The main market for a poultry factory in Inverness and Nairn would be the central belt of Scotland. It would be sensible to review turkey as a lead product because the seasonal pattern of employment would complement tourism. 'Other poultry' would be less demanding of large scale bird supply, and might fit better with perceptions of Scottish specialised foods and tourist-related markets.

Background

The poultry market segments into the type of bird (chicken, turkey and 'other poultry', into different presentations (whole, jointed, processed, recipe dishes) and different preservation systems (fresh, frozen, chilled). Amongst these segments 'other poultry' includes duck, goose, guinea fowl and quail, and processing to recipe dishes range from jointing or sausage manufacture to sophisticated cuisine.

The poultry meat sector is growing faster than any other meat sector. Within this, turkey has been growing faster than chicken. The engines of growth are the 'processability' of poultry, its perceived lightness and healthy characteristics, its acceptability across cultural and social barriers, and low and falling prices. The only other meat sector to have shown any growth between 1988 and 1992 is mutton and lamb.

The recession saw a shift away from fresh poultry meat to cheaper frozen primary poultry products. However, processed products actually increased 17% in value between 1990-1992. The market for cooked chicken is declining due to the ever increasing variety of processed chicken products. It is the fresh and chilled goods end of the market that provides the high value products although frozen items account for almost 68% of this market.

In 1992 chicken accounted for 29% of all meat supplied in the UK. This compares with pork's 20% and beef and veal's 26% share. Consumption has been on the increase, growing 7% between 1988 and 1992 with total consumer spending amounting to £1.8 bn. Whole birds account for over half of volume sales but only 38% in value terms - this was not helped by lower prices for poultry in 1992. The market for turkey is largely dependent on Christmas sales with whole birds accounting for almost 60% of volume sales (40% value).

Poultry is increasing as a share of meat supplied in the UK. This shift is aided by the growing perception of poultry products as healthy because of their low fat content. General health awareness has resulted in a shift away from red meat and has improved poultry's image. Skin apart, poultry is a low fat meat with no saturated fats.

Customers

Multiple grocers accounted for 56% of poultry sales in 1992. It is the large multiples who are at the forefront of the development of processed products including chains such as

Marks and Spencer and Sainsbury/Tesco. More grocers and convenience stores are starting to recognise the potential of processed poultry products and are now starting to build a larger share of the market at the expense of the larger multiples. Marks and Spencer's market share in the processed poultry market fell by 3% over the period 1990 to 1992. Other customers are butchers with a 16% market share, freezer centres (7%), Co-ops (5%), independents (3%) and other outlets (13%). Producers also supply to retail distribution channels, catering distribution channels and companies performing further processing. The ultimate consumers are the public. BMRB estimates that 90% of housewives buy plain chicken and a third buy processed products. Poultry has an advantage in that it is competitively priced relative to other meats and is attractive to consumers despite the recession. The convenience factor of processed products is also an advantage.

UK imports of poultry doubled over the period 1988-92 to 164,000 tonnes. Imports come mainly from France, Denmark and the Netherlands but more competition is likely with the advent of the single market. Currently, Europe has the advantage here due to UK food legislation which foreign suppliers do not have to comply with. The Food Safety Act of 1991 was introduced in reaction to the salmonella scares of the time forcing British suppliers to bear the costs of compliance with these laws while our European competitors did not. This only serves to enhance continental Europe's position as the UK's principal source of poultry imports.

The recent round of GATT talks will also have implications for this market. GATT provides that EU producers must make at least 5% of their market available to non-EU imports. In 1992 UK poultry only had 1% non-EU imports thus there remains the question of the impact of another 4% of foreign imports. This agreement will be phased in from 1994 onwards.

Another important factor in this market is the growing unfavourable consumer perception of intensive production methods. As a result the emerging niche sector is free range production with correspondingly higher priced products and higher margins.

Resources

In Britain over 28,000 people are employed in this sector with 4,700 of these jobs in Scotland. In food processing there are primarily two levels of human resources required - low skilled processing staff and higher skilled food technologists. Other necessary resources are plant and equipment, finance and a good local transport network.

Support

An essential support industry is agriculture, specifically the poultry farming sector. Other essential aspects of support are waste disposal services and equipment supply and service. Refrigeration and freezing are also important and should be identified separately to other equipment. Logistics are also important especially for fresh poultry where quick delivery to the market is essential, and packaging is a key part of the offering to the customer.

Companies

The biggest UK company in this sector is **Hillsdown Holdings** whose poultry activities are split into Moorland Poultry and Premier Poultry. In addition to primary poultry the company's product range includes pizza-burgers, turkey steaks/burgers, etc. Hillsdown are vertically integrated grower-producers with operations including breeding, hatcheries, rearing farms and processing factories. **Marshalls** is a fully integrated, Scottish based producer-processor in both the fresh and frozen chicken markets. **Sovereign Poultry** is another integrated producer but it has detached itself from the frozen whole chicken market due to intense competition from imports. They now concentrate on frozen value added products, for example chicken Kiev, chicken Napoleon, etc. Sovereign has also developed free range chicken through its subsidiary company Home Farm. **Sun Valley Poultry** is the UK processing division of the Cargill conglomerate based in the USA. Sun Valley market the Golden Moments and Meal Maker brands. They are not in the market for whole chicken but they have expanded into processed items. **Grampian Country Food Group Ltd** is another integrated Scottish firm active in the poultry sector. **Moy Park Poultry** pioneered the free range chicken market. The US firm **Tyson** has entered the UK market claiming to be the largest poultry processor in the world. Tyson has plans to start production facilities in the UK when they consider that volume sales are sufficient to justify such an undertaking. Other firms worthy of mention are **Podley's** and **Webbs Country Foods**. The largest UK turkey processor is **Bernard Mathews plc**. It is a common characteristic of this market to find producer/processors which contract production from farmers situated close to the processing units.

Inverness and Nairn Position

An industry developing from Inverness would have a local ***customer*** base from local residents, the hotels and catering facilities in the area and health and education institutions. The ***mass market*** to support a facility of adequate scale would be in the ***central belt***, Aberdeen being available but small and already with a local producer. However Inverness and Nairn suffers due to distance from markets in the rest of the UK and is remote from the London-based buyers of the big chains.

Inverness benefits from a clean environment and the perception of 'greenness' that this brings. Basic labour supply would be plentiful and Inverness and Nairn has some of the higher skilled personnel required. Inverness and Nairn lacks any poultry farming resource actually in the locality at present so to capitalise on the gap would require an integrated producer-processor, the separate development of the poultry farming and processing sectors, and initially the purchase of chickens from neighbouring areas.

Inverness is ***strong in support*** industries such as ***refrigeration/freezing*** and local transport links while showing ***weak***nesses in aspects of ***waste disposal and equipment supply*** and servicing. In order to create a viable industry here it is essential to encourage the support industries.

Inverness has no poultry processing **companies** but the market both locally and in a UK context appears capable of supporting this kind of operation with demand rising and a relatively strong customer base. Local poultry farmers are Invernairn Products Ltd of

Newton of Park, Nairn who also have operations in Ardersier and Croy. There are several dealers in poultry and game in the area including Deep Freeze Supplies Ltd and Fraser Duncan (Game Dealer) Ltd. The area already has some manufacturers of prepared food products including Highland Food Producers Ltd in Inverness.

Development Repertoire

Growing existing companies

There are no existing poultry processing companies in Inverness or Nairn

Diversifying existing companies

Diversification of existing food processing companies into poultry would be unlikely to be based on existing factories, for health reasons, but clearly existing food industry management should be consulted on their reactions to a poultry opportunity.

Reconstructing existing companies

We would require to rely on local knowledge to assess the possibilities

Local start-up

This is a possibility if the local expertise was present but would require support in the setting up of either independent or integrated chicken growers before processing of local poultry could begin. Possibly process chicken from other areas.

Implanted start-up

This also presents opportunities but faces the same agricultural input problems as a local start-up.

Inward Investment

European companies may consider this once EU production standards are harmonised. The US presents a better opportunity with the presence of large processors eager to break into European markets and establish production facilities within the EU.

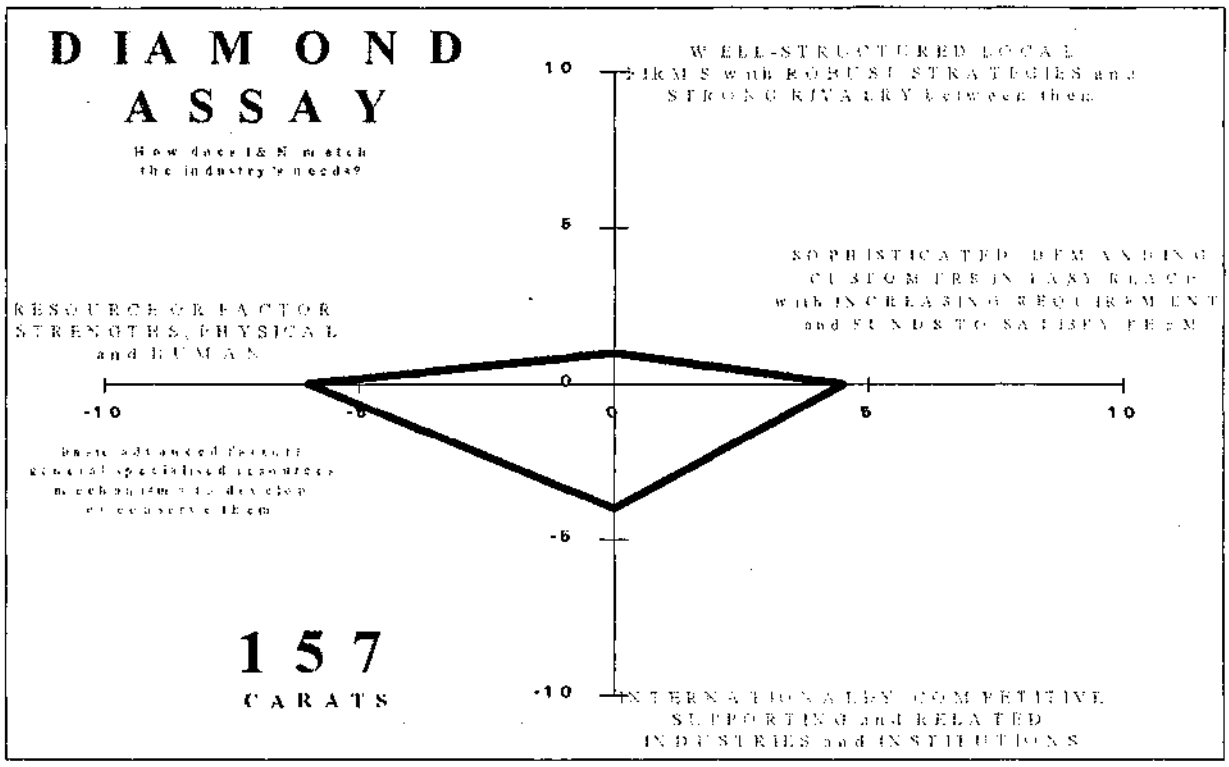
Inward Licensing

Production of recipe dishes may require licensing of formulations.

Action Plans

1. Further study of the poultry industry to assess the scale of an appropriate factory, its range of products, and the number and size of poultry farms to feed it.

2. Discussions/interviews with poultry farmers



Priorities Between Industries

In this section we recommend priorities between the ten industries which have been profiled. We emphasise that the number of industries is far too few, but the example does serve to illustrate the application of three key criteria

- long-term viability as shown by the diamond
- potential local economic impact
- ability of the Enterprise network to influence

Firstly, we believe that the dominant basis for targeting an industry for Inverness and Nairn must be its prospects for long term viability in a competitive market. Only if its cost basis, its access to markets, its ability to keep up with or lead innovation, and only if its resources and support are secure, is it worth the effort that will be needed.

We have borrowed and extended a model of national competitive advantage developed by Professor Michael Porter of Harvard Business School. For each industry we have reviewed who the customers are, what access Inverness and Nairn might have to them, and especially what access to the leading edge customers. We have evaluated the resources that the industry needs-physical, human and especially skilled, specialised human resources, and how much Inverness and Nairn Enterprise can provide them. We have specified the supporting and related industries that the industry requires, and again informally assessed how well Inverness and Nairn can provide them or could develop then. Finally we have looked at the organisation structure of the industries - the companies, their size, who controls them, the ways in which they compete - and compared the global industry with the company situation locally and any corporate angles that Inverness and Nairn might open up.

Secondly, it is clear that a sizeable impact on the local economy is desirable. We have made a conditional assessment of the *direct* impact each industry might have in Inverness, based mainly on the numbers that might be employed if activity could be raised to match related sectors, or comparable cities, or if a plausible share of European employment growth could be obtained. We have included a moderate allowance for displacement of existing jobs, where relevant.

Thirdly, if Inverness and Nairn Enterprise and others are to apply resources to an industry, then they must be applied cost-effectively. Effectiveness will depend on what an enterprise company *can* do to develop an industry. While it is traditional to say that the options are restricted to three - grow existing firms, start new firms, or obtain inward investment, we have considered a development repertoire with seven options :

1. Grow existing firms
2. Diversify existing firms
3. Restructure existing firms
4. Start new firms from a local base
5. Attract entrepreneurs from elsewhere to start new firms in Inverness and Nairn
6. Attract inward investment from non-I&N firms
7. License in technology from elsewhere (this would normally be combined with one of the earlier options, but is treated separately because the licensing can be the critical step)

Quantification

Although we are reluctant to quantify too glibly, to compare over a dozen indicators for a significant number of industries we must use numerical methods.

Competitive advantage has been quantified by scoring each of the four factors out of ten (where five would be the score in a place where the industry was 'comfortably established'). On the basis that a particular strong factor or a *combination* of factors lends competitive advantage then the four scores are combined by calculating the square of each and the six cross-products (A*B, A*C, A*D, B*C, B*D and C*D) and adding them to yield a score out of 1000. In keeping with the diamond metaphor (although Porter apparently referred to a baseball diamond) this score is measures in carats. A 'comfortably established' industry would score 250, one with significant competitive advantage would score over 500.

On a very rough assessment, we would estimate the Highlands tourist industry scoring about 440 and offshore construction industry, *in its heyday*, about 510.

Economic impact has been assessed as the potential size of a large development in the industry itself in terms of jobs and the number of indirect jobs created amongst suppliers. With allowance for profit and average income levels the first is used to calculate direct GDP, the second indirect GDP, and the two together to calculate GDP induced when the direct and indirect incomes are spent.

To respect the traditional weighting on identifiable employment creation, the impact score is calculated as annual GDP effect + 10 times the annual direct and indirect job creation.

The ability of Inverness and Nairn Enterprise is assessed numerically on the basis of the feasibility of the seven items of the development repertoire. To each item a score of 0 (infeasible), 1 (feasible) or 2 (very promising) has been attached. The overall rating on influence is a combination of the *highest* score for an individual item and the *average* score across all items, with the emphasis on the former.

Results

Sustainability

Overall, Inverness and Nairn appears to have its best comparative advantage in seven of the ten specimen industries. In order these are:

- laundries and cleaning;
- windmills;
- wooden furniture;
- poultry processing;
- structural timber derivatives;
- private healthcare; and
- medical instruments

In all of these except laundries the 'scores' fall well short of 250, the number needed for a locality with potential to keep up with the global norm.

Impact

Our assessment of impact depends on a view of the size of the candidate industry, a plausible initial scale in Inverness and Nairn and its linkages into the rest of the regional economy. Five industries should employ directly over 100 people - healthcare, laundries/cleaning, furniture, windmills and poultry. Structural timber might. The largest multiplier impacts probably come from poultry, while proportionally the wood-related industries are also credited with backwards multipliers, covering pre-processing.

Four industries emerge with the potential for significant economic impact: health care, poultry, furniture and windmills. Laundries, structured timber and financial services would

be non-negligible, if they could be sustained. Medical instruments and software are less likely to contribute, and publishing has vanishingly small economic impact.

Ability to influence

For the great majority of the industries we could discern several ways in which economic development might be procured. Only for software and financial services does it seem that difficulty would be experienced.

Overall prospectivity

The ten industries, on this scoring system, fall into four groups.

Private healthcare stands out because of substantial job creation, a fairly strong diamond, and an ability to influence, especially *now* when the NHS is in flux.

Laundries/cleaning, furniture, windmills and poultry processing all offer 'average' job creation and better-than-average ability to influence and viability. They form the second group.

Medical instruments and structural timber form the third group, behind the second because of reduced scope for economic impact.

Finally software, financial services and publishing all have weak diamonds as well as problems in other aspects.

Taking sustainability, influencability and impact together, private healthcare is a clear potential winner. Laundries/cleaning, furniture, windmills and poultry are close to each other in second place, led by the first. Structural timber and medical instruments are way down and software, publishing and financial services are at the bottom. Fundamentally it is the low scores for specialised human resources which make the main contribution to placing these industries at the bottom of the table. This underlines the need to boost the knowledge and skill structure of the Highlands in general and Inverness and Nairn in particular.

Ranking the Specimen Industries

INDUSTRY	Customers / 10	Resources / 10	Support / 10	Companies / 10	Diamond Strength / 1000	Impact Score	Influencability / 100	Strength *Impact *Influence
Private Healthcare	4.5	4.5	4.5	3.5	**181**	**4008**	**98**	**71**
Laundries & Cleaning	7	7	3.5	3	**270**	**1782**	**93**	**45**
Wooden Furniture	4	7	3	2	**167**	**2662**	**88**	**39**
Windmills	5	8	2	2	**193**	**2280**	**88**	**39**
Poultry Processing	4	6	4	2	**164**	**3120**	**75**	**38**
Medical Instruments	6	5.5	2.5	2	**166**	**1662**	**88**	**24**
Structural Timber	2	8	3	2	**153**	**1663**	**90**	**23**
Software & Computer Services	4	2	1.5	1.5	**53**	**1002**	**45**	**2**
Financial Services	2	3	1	1	**32**	**1818**	**38**	**2**
Publishing	2	3	2	2	**51**	**222**	**85**	**1**
Average	**4.1**	**5.4**	**2.7**	**2.1**	**143**	**2022**	**79**	**28**

Summary of Action Plans

Private Healthcare

1. Detailed review with Health Board to identify likely split of local public/local private/distant public/distant private provision of health services to the Highland population by specialism/condition. That is, where does Inverness and Nairn's *medical* comparative advantage lie? (Jointly funded by HA?)

2. Market research on possibilities of attracting in patients from other areas to fit results of 1.

3. Evaluation of net economic benefits of promoting retirement to Inverness and Nairn.

4. Survey/competence assessment of existing elderly care establishments.

Laundries and Cleaning

1. Detailed survey of existing companies and organisations in the industries in Inverness & Nairn including parts of public bodies and other industries.

2. Market survey of customers and potential customers

3. Review of equipment supply and service chain

4. Approach potential entrepreneurs - inside or outside the industry

Wooden Furniture

Small scale manufacture:

1. Market research on 'furniture as souvenirs'
2. Review of interest from existing firms and craftsmen

Large scale manufacture:

3. Approach IKEA, MFI for outline discussions
4. Survey Poggenpohl etc
5. Review possibilities with Norbord
6. Preliminary desk research and contacts with potential inward investors

Windmills

1. Update on EU situation and Scotland's position within it.

2. Identify residual Scottish capacity at NEL, Howden's and academically. Determine key individuals.

3. Identify licensors and investigate US companies.

4. Specify in more detail support companies needed and develop plan to access existing support elsewhere in the short term and grow local support in the long term.

5. Prepare business plan and financial requirements.

Poultry Processing

1. Further study of the poultry industry to assess the scale of an appropriate factory, its range of products, and the number and size of poultry farms to feed it.

2. Discussions/interviews with poultry farmers

Medical Instruments

1. Detailed local assessment of firms and individuals that might diversify into instruments

2. Discussions with Hospital Trust on resource management issues

3. Review 1 and 2 urgently and sketch a business plan if champion is available

4. Program to review market opportunities in detail and match to capabilities
- research and customer contact, inward licensing review

5. Further progress of implanted start-up programme.

6. Strengthen engineering support

Structural Timber Derivatives

1. Discussions with Cogent and Norbord. These would need to recognise that the proposal could result in a rival establishment for Norbord. There is room in the market for more than one.

2. Technology position paper (Canadian Forestry Institute? Scandinavian institutes?)

3. Review building regulations with architects, construction industry and government bodies.

4. Sketch business plan.

Software and Computer Services

1. Maintain Inverness and Nairn profile in Scottish inward investment activity

2. Detailed skill review : training facilities and courses offered, skills existing in the Inverness & Nairn independent IT/IS community, skills in local IT users' departments, opportunities and barriers for local IT training provides to upgrade their offerings.

3. Software incubator feasibility : local independents' reaction, availability of premises, business plan and financial requirements.

Financial Services

The negative conclusion of this profile could be mistaken. It should be reviewed critically with Locate in Scotland (what can Inverness and Nairn offer non-Scottish investors?) and with a friendly Scottish institution (Royal Bank or Scottish Financial Enterprise). If the diagnosis is confirmed then no resources are appropriate.

Publishing

1. Consider use of purchasing policy of HIE network to strengthen Nairn publishing and Inverness printing.

2. Ensure that publishing is considered as part of education and tourism initiatives in the Highlands and Islands

Inverness' overall competitive advantage

Reviewing the ten specimen industries has required a relatively detailed examination of the strengths and weaknesses of Inverness and Nairn.

This scoring system, despite being subjective and applied only to a few industries, showed a clear difference across the four factors required for viability. The mean scores were:

Corporate Base	2.1
Customer Access	4.1
Resources	5.4
Support	2.7

Building the Corporate Base

The clearest single conclusion from the analysis of sustainability in the specimen industries is the weakness of the corporate base in Inverness and Nairn. This confirms the importance of company support activities by the Local Enterprise Company and by Highlands and Islands Enterprise.

This is further confirmed by the conclusions drawn on development repertoire. 'Implanted start up' is the most common feasible approach with 'inward investment' second. Amongst the locally-based solutions then diversifying existing firms or institutions is seen as possibly appropriate for private healthcare, laundries/cleaning, windmills and publishing. This makes it in general a better bet than 'local start up', where all the stronger candidates are related to the push 'out' of the health service - private health care, laundries/cleaning, and instruments.

This finding of a weak corporate base was also borne out by some conclusions from the gap analysis, which suggested that particularly 'commercial' or entrepreneurial industries were under-represented.

Customer access

In terms of customer access then laundries and instruments are rated highly, with windmills and medical instruments also better than the global average. Publishing, structural timber and financial services are rated relatively low, because of the distance from centres of population.

The operative conclusion must be that business in Inverness and Nairn must make strenuous effort to keep abreast of global markets. In particular, we would suggest that it may often be beneficial to 'leap frog' the UK market and concentrate market monitoring on overseas markets. The 'right' overseas market varies from industry to industry: as a general rule wealthier markets may be hoped to lead the way and so North American (particularly markets served from places 'like' the Highlands) and Northern Europe are sensible general targets.

Resources

Resources was the only area where the average score was more than 5. Good assessment of resources has arisen, in our ten specimen examples, from one of two sources: natural endowment of physical resources and human resources from the established healthcare industry.

For knowledge industries where skilled human resources are needed, other than healthcare, Inverness and Nairn has scored low: software, publishing and financial services.

Support

Supporting industries are in general very weak. Support would appear to be deficient for financial services, where one part of the industry tends to support another, so there is a chicken-and-egg situation. Inverness has neither chicken nor egg, just an empty nest. However, the joke does not extend to poultry itself which is seen as the best-supported industry in relation to its needs. We also had no positive, and some negative, evidence on the strength of the miscellaneous engineering sector. This has led to a low rating for the support available to instruments and windmills.

In almost every case then logistics has been seen as a problem of support, but rarely a critical one. Strategically it means that Inverness and Nairn is unable on a day-to-day basis to compensate for the inevitable distance to mass markets. In the longer term it can win

only through good management of the logistic support available and by emphasising other strengths.

Support from government specifically for generalised economic development is of course strong in the Highlands and Islands, through the HIE network and Objective 1 status. However, a non-interventionist national government philosophy contrasts radically with most other world regions 'similar' to the Highlands, and this may explain some differences between, say Washington State and the Highlands. The absence of a higher education sector is a clear difference from other similarly positioned, but larger, places.

Appendix: Are Diamonds Forever?

For each industry, COGENT has developed a simple way of assessing the competitive strength of Inverness and Nairn as a location. We have extended an idea put forward by Professor Michael Porter of Harvard University in *'The Competitive Advantage of Nations'*

COGENT does not agree that Professor Porter's work is revolutionary, but it does think it is useful. COGENT people played an important role in a major study *'The Competitive Advantage of Scotland'*, which was the first rigorous application of the methodology below the level of a nation state.

Professor Porter argues that four broad attributes of a nation:

> *"individually and as a system constitute the diamond of national advantage, the playing field that each nation establishes and operates for its industries. These attributes are:*
>
> i. ***Factor Conditions.*** *The nation's position in factors of production, such as skilled labour or infrastructure, necessary to compete in a given industry.*
>
> ii. ***Demand Conditions.*** *The nature of home-market demand for the industry's product or service.*
>
> iii. ***Related and Supported Industries.*** *The presence or absence in the nation of supplier industries and other related industries that are internationally competitive.*
>
> iv. ***Firm Strategy, Structure, and Rivalry.*** *The conditions in the nation governing how companies are created, organized, and managed, as well as the nature of domestic rivalry.*
>
> *The determinants create the national environment in which companies are born and learn how to compete. (See the diagram 'Determinants of National Competitive Advantage.') Each point on the diamond - and the diamond as a system - affects essential ingredients for achieving international competitive success: the availability of resources and skills necessary for competitive advantage in an industry; the information that shapes the opportunities that*

companies perceive and the directions in which they deploy their resources and skills; the goals of the owners, managers, and individuals in companies; and most important the pressures on companies to invest and innovate.

Professor Porter sets these four factors out in the shape of a diamond. His model is a playing field or baseball diamond, but in extending it we have used the jewel analogy.

We have looked in turn at each of the four points of the diamond in terms of the characteristics of the global position and what Inverness and Nairn might do. An outline proforma, as used at the workshop, is attached. This summarises the global position on each point of the diamond, and Inverness and Nairn's position in terms of existing strengths and weaknesses, opportunities and barriers.

The main purpose was as an analytical device - a four dimensional mental checklist - to assure that relevant aspects of an industry were considered. While we are wary of too-easy quantification, to enable quick comparisons between industries we estimated a 'score' for each point of the diamond. Inverness and Nairn would score five on a point, out of a possible ten, if it fully matched the world average with respect to the industry.

When it comes to prioritising industries then we believe there is a role for both objective and subjective criteria. Views about the prospects for an industry are not completely summarised in a percentage growth rate, and the degree of 'fit' between an industry's resource needs and the factors available in Inverness and Nairn cannot be brought down to a single number. While we do not believe in spurious quantification, it can be helpful to see how scoring schemes affect any list of priority industries, COGENT has developed software to do this.

We combine four scores assessed on each axis of the diamond to give an overall 'carat value' as a simple numerical indicator of the sustainibility of an industry in Inverness and Nairn. This is based both on the values of the scores and on the interactions between them. The maximum possible score is 1000 but an industry which had no special features, which only matched the global average in every respect, would score 5 on each point of the diamond and only 250 overall.

The diamond is shown in graphical form, with larger diamonds representing stronger industries. Due to limitations of the graphics package, minus signs appear on the scales for resources and support. These should be ignored.

The axis pointing upwards thus measures the strength of the corporate base in Inverness and Nairn. An industry where there was a significant number of firms, vying with each other but with the industry as a whole staying in some kind of dynamic equilibrium, would gain a high score. We have described this as the 'corporate aerobics' approach to company strength : companies that keep fit by vying with each other at home are better able to compete overseas. Fewer firms reduces the scope for rivalry, and so reduces the score, but so at this level does a subjective judgement of the quality of the companies, their management and the interaction between them. Rivalry is important, so a single company even with excellent management would not rate a very high score, but it must be rivalry worth the name, between worthy rivals.

The axis to the right measures demand in the market: Porter concentrates on the 'sophistication' of customers, arguing that the more demanding they are the more they will press for innovation. In practice, the demandingness of consumers depends significantly on what they have been exposed to, the comparisons they can make, and the quality or qualities they think they can obtain. This means that demandingness tends to go with higher incomes (for consumer goods) or international industries (for industrial goods). Porter emphasises both demandingness and proximity, and there clearly is a trade off between the two. It may be easier for a development agency to do something about effective or perceived distance to customers than to what the customers themselves want - but cowardice should not be a reason for not attempting the latter.

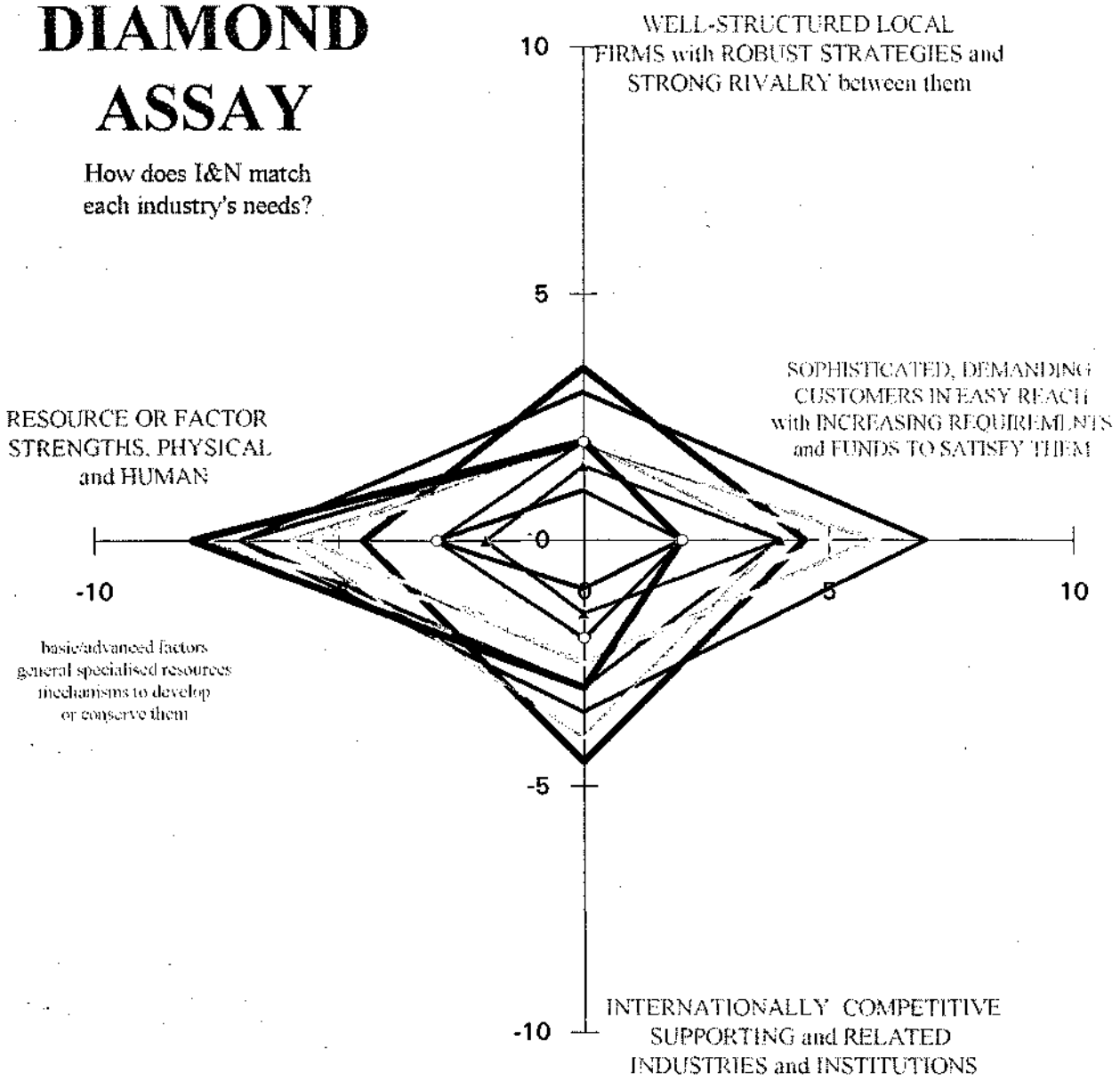
The downward axis represents the strength of supporting and related industries and institutions. Supporting industries most clearly includes suppliers of goods and services, in particular flexible suppliers able to respond to or even stimulate demand for innovations. It also includes research technical and training institutions, and other industries which, while not related, use the same inputs or infrastructure. It includes many aspects of the physical infrastructure. To score highly on these the industry must be able to draw on the existence and the efficiency of this infrastructure, infraindustry and infraservices.

To the extent these factors lose their generality they can be considered specific factors in the business of the industry, and set alongside basic physical and human resources and more specialised physical and human resources. These are primarily measured along the leftward- pointing axis. A thriving industry does not only need to draw on such resources, but needs the mechanism to regenerate them.

The assessed diamonds for the 10 specimen industries are shown in the final figure.

DIAMOND ASSAY

How does I&N match each industry's needs?



Combining the axes

Although we are reluctant to quantify too glibly, to compare even four indicators for a significant number of industries we must use numerical methods.

Competitive advantage has been quantified by scoring each of the four factors out of ten (where five would be the score in a place where the industry was 'comfortably established'). On the basis that a particular strong factor or a *combination* of factors lends competitive advantage then the four scores are combined by calculating the square of each and the six cross-products (A*B, A*C, A*D, B*C, B*D and C*D) and adding them to yield a score out of 1000. In keeping with the diamond metaphor (although Porter apparently referred to a baseball diamond) this score is measures in carats. A 'comfortably established' industry would score 250, one with significant competitive advantage would score over 500.

On a very rough assessment, we would estimate the Highlands tourist industry scoring about 440 and offshore construction industry, *in its heyday*, about 510.