Foreword by An Taoiseach

The competitiveness of Ireland's economy is the key focus of government policy to ensure that our enterprises have the right conditions and the right incentives to enable them to win success and to go on doing so. Competitiveness is the foundation for employment growth and increased living standards. A major objective of the Government is to ensure that the overall environment for investment by the traded goods and services sector in Ireland is more favourable than it is in other countries. The performance of the Irish economy in recent years indicates that some success has attached to government policies in this area. The challenge now is to build on the success that has been achieved.

With a rapidly changing world economy, continuous review of policy and of the environment for the development of existing and new enterprises is essential. Ireland's skills, infrastructure, labour and capital markets, science and technology and public administration are among the important determinants of Ireland's future economic success. Competitiveness analysis takes an overview of these issues, recognising the way in which they are linked. It provides an essential framework for good policy formulation and its implementation.

A central element in Ireland's economic success has been the partnership established between workers, employers and government. The most recent expression of this is Partnership 2000, and this Government is committed to its full implementation as the best foundation for economic stability and social progress in the future. As agreed in Partnership 2000, the National Competitiveness Council was established in the Summer of 1997, with representation from all the social partners. It will provide a vital input to government action on competitiveness, by assessing the factors that determine competitiveness and identifying the actions most urgently needed to maintain and enhance that competitiveness.

I am pleased therefore to introduce the first reports of the National Competitiveness Council. The Council has produced a summary statement on competitiveness - The Competitiveness Challenge - as well as the first Annual Competitiveness Report for 1998. The Government greatly appreciates the work of the Council and the relevant Ministers will give careful consideration to its recommendations in the formulation and implementation of policy

An Taoiseach
Bertie Ahern T.D.

Council Members

Brian Patterson	Chairman
Kevin Bonner	Partner, Business Insight
Donal Byrne	Chairman, Cadbury Ireland
Des Geraghty	Vice President, SIPTU
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Introduction

The National Competitiveness Council was established by the Government in May 1997 as part of the Partnership 2000 agreement. The Council's terms of reference require it to report to the Taoiseach on key competitiveness issues, with recommendations on policy actions required to improve Ireland's competitive position.

Competitiveness has been an issue of concern to most countries in recent years. The growth of international trade has been accompanied by growth in foreign direct investment. The increased competition for such investment is driven by technological change, improved communications and product innovation. Globalisation is a new form of industrial organisation where enterprises have linked production and marketing centres distributed across the world.

Ireland's economy has enjoyed great success in recent years, and globalisation, as well as many national policy developments, has played a part. There has already been widespread comment and analysis of the phenomenal growth in GDP, in trade, in foreign investment and in living standards.

Leaving that to one side, the Council intends to look at the future and to develop a picture of how Ireland can take best advantage of its own strengths and the opportunities offered by the world economy. It will develop a statement of what is needed in competitiveness terms for the future successful performance of the Irish economy, based on objectives under key headings such as costs, education and training, labour and capital markets, telecommunications, energy and other factors. The Council will set out measures to achieve these targets.

In its work, the Council will base its recommendations on practical experience in the enterprise sector as well as on studies and research on international developments and policy experiences. The Council will include reflections of the views of business people themselves, the problems they encounter and the most urgent issues they identify for their own competitiveness. The Council will make its recommendations focusing on the key issues and on specific policies where change can be coherent and significant and of central value to Ireland's competitiveness. It will not only make recommendations, however, but also encourage action through direct dialogue with policy-makers. Consensus will in some cases need to be established in order to achieve the necessary changes, and the Council will play its part in promoting that consensus. Monitoring progress in implementing recommendations will also be an important part of the Council's work.

However, the work of the Council will include examination of immediate competitiveness issues, because if these are not dealt with, longer term objectives will be even more difficult to achieve. The first findings of the Council are that initial priority should be given to education and training, costs, the information society and telecommunications. Education and training are critical because they determine the skills of the labour force to meet changing demands. These will form the core of the Council's work programme in 1998.

This first report is intended to provide a basis for the Council's work next year and thereafter, by providing an initial overview of competitiveness issues and how Ireland measures up by comparison with other countries. A very broad range of issues has been chosen both to show how the different issues are all related to competitiveness and also to allow for selection of areas of concentration in the future. In all cases, the issues examined are those where policy change can make a difference: identifying the key areas and the actions needed is the purpose of the Council's work.

Executive Summary

This report is a review of Ireland's competitive position. It analyses data on a large number of indicators of competitiveness, in order to assess the areas in which improvements are needed to enable Irish enterprises to compete successfully in the years to come. It analyses the reasons for the weaknesses identified, and indicates the actions needed to address them. The actions indicated are government actions: changes are needed also at enterprise level, but they are not the direct remit of this report.

The report has two purposes. The first is to identify priority areas for action to improve competitiveness. This is part of the mandate of the National Competitiveness Council, and the report is therefore a first step in the execution of that mandate. The second purpose is to provide reference material for policy makers, to help further refine the actions needed in all areas of policy to improve Ireland's competitiveness.

Assessing Ireland's competitiveness by comparing us with other countries has a precise objective: the identification of weaknesses to determine corrective action. Inevitably, this means that the report is critical in nature and focuses on areas of unsatisfactory performance rather than those where action is less urgently needed. This is not to deny the considerable progress achieved in recent years but instead to identify the ways in which that progress can be sustained and enhanced in the years to come.

There are other reports that make international comparisons, such as the World Competitiveness Report and its rival the Global Competitiveness Report, that use a similar approach. But they provide only an overview of issues, and they cannot contribute in detail to the policy debate in a particular country, nor can they be used as a practical tool for policy makers.

This report covers four main areas of action: human resource development, business services, infrastructure and public finance and administration. Under these headings, more detailed policy issues are analysed and conclusions drawn for policy action. However, competitiveness is not an end in itself. Its purpose is to improve standards of living and the quality of life on a sustainable basis. Socioeconomic objectives of high income levels, low unemployment and a generally improved quality of life are therefore important in competitiveness analysis. Progress towards targets of this kind is important in assessing to what extent efforts to improve competitiveness are succeeding.

The year 1987 saw a turning point in economic policy and performance, with the conclusion of the first national agreements on incomes and employment. It began a period of steady consolidation of the public finances. From 1992 onwards, the benefits of this progress have begun to be realised; with remarkable growth in output, employment and living standards. This performance looks set to continue in the immediate future, with high levels of business confidence and a continued growth in foreign direct investment. Although it has been reduced to below the European average, unemployment remains the key issue in socioeconomic terms. It is very high by global standards but declining, whereas unemployment in other European countries is at a slightly higher level than Ireland, and is stagnant. The issue of long-term unemployment is of particular concern in Ireland. In spite of record employment growth in recent years, the impact on long-term unemployment levels has only recently been felt, due to increases in the size of the labour force (because of the natural increase in the population, increased female participation and net inward migration).

Although Ireland's recent economic performance has been outstandingly good, an analysis of our competitiveness indicates that we may not reach such heights in the future. Global trends will accentuate the need for improved competitiveness to sustain present growth, to deepen it to include more of the Irish-owned enterprises, as well as to broaden it to include the full range of economic sectors, especially services. The global trends include the rapid growth of international trade, the growth of regional blocs, and the increased convergence between

trade, investment and technological change, in the form of globalisation. Increased innovation and the creation of the information society will be key determinants of success. At a European level, EMU will heighten the need for competitiveness, as will the growing challenges of Eastern European countries, even before EU enlargement. In the light of these developments, it is essential to assess the degree to which policies, sectors and enterprises can meet the challenges set by the dynamics of the world economy. Moreover, our present success has the established social partnership as an essential component. Policies for the future will have to enhance this partnership and allow it to play a new role in meeting the new challenges ahead.

What is Competitiveness?

There are many definitions of competitiveness. But, in practice, the most useful way to look at it is: Success in markets that delivers a better standard of living for all. Success at the level of individual enterprises means more employment, higher incomes, a wider choice of goods and services, and more rewarding work and leisure. More income also allows for more public services to be provided that also improve the standard of living and the quality of life. However, the success of enterprises is determined not only by their own competence but also by a wide range of actions that are taken at a national level.

Priorities for Competitiveness

There are many aspects of competitiveness, and government action, even with a reduced role for the State in recent years, will still affect most of them. But government action to address competitiveness always has resource implications, even if no spending is involved: i.e. vision-making or a range of issues is a complex task and can be demanding in legislative and administrative terms. Priorities for action need to be identified, so that the most urgent steps needed to influence competitiveness can be taken. This report highlights eleven key areas:

1. ### Skills

   Skills represent a centrally significant area for competitiveness. Skills determine the success of enterprises and the educational and training system have a major role in determining skills availability now and in the future. These systems in turn have to be responsive to present and future needs, recognising the requirements for the most crucial skills and ensuring that programmes are in place to deal with them. Skills are a key priority for Ireland, in particular, because of the high-technology emphasis of much of Ireland's foreign-owned industry, and also because of the need to improve the range of skills in the Irish-owned sector, particularly in relation to management and marketing. Ireland has at present a very low share of vocational and apprenticeship training in secondary education compared to other countries, and this will seriously affect the skills profile of the labour force. Other evidence also suggests that Ireland's position in job-related continuing education and training is very low compared to some other European countries.

2. ### Education

   The skill levels and flexibility are determined, ultimately by education, where Ireland has roughly a middle position in international terms, but more immediately by training, which in turn has to be based on an assessment of the future requirements of the enterprise or the sector in question. Educational strengths in Ireland include high quality in mathematics and science education and a steady improvement in the stock of education in the labour force. Ireland's net enrolment in tertiary education in the age group 18-21 is good, and this will lay the ground for future progress.

   For skills and education, the key areas of action include the raising of the school leaving age, the trebling of training expenditures as a share of sales, and urgent action to address deficiencies in languages and technician skills availability. All these measures should be seen in the context of Partnership 2000, which defined a broad but integrated agenda for employment and growth.

3. Tailored Policies

The Irish enterprise sector is a complex one and generalisations are not easy. But there are perhaps three groups of enterprises where the characteristics are very different in terms of scale, skills and orientation. Ireland has a modern technology based sector, largely foreign-owned, that is focused on exports in fast moving and technologically advanced industrial and services sectors. Ireland also has a "traditional" manufacturing sector, largely Irish-owned, that is more dominated by small firms producing products with a different trade orientation, a lower skill content and where margins are also lower. Finally, Ireland has an indigenous services sector, one that is expanding rapidly in line with increasing living standards. It is the sector where entrepreneurship is most likely to be found, but it faces its own problems of skills and costs. It is clear that "average" indicators for the economy, in the areas of productivity, profitability and trade do not reflect this three-way division. Policy actions have to see behind the average figures and recognise the differences that are there. Action to close the gaps between the groups in terms of skills, profitability and market orientation is urgently needed.

4. EMU

In reviewing priorities, the issue of European Economic and Monetary Union (EMU) is clearly of central significance. EMU represents a strategic choice for the Irish economy as a whole. For enterprises, apart from the functional issues of the changeover, it means new competition as well as new opportunities. If Ireland is part of EMU, doing business with the other countries that join will be easier. There will be no foreign exchange transaction costs and pricing decisions will be simplified. EMU may therefore provide an opportunity to move into new markets with less difficulty than previously envisaged.

For existing markets there will be questions of rationalisation and possible new competition. If the UK is not one of the first countries to join EMU, and Ireland is, there will be a number of effects on Irish enterprises whether or not they export to the UK. The degree to which all Irish enterprises are prepared for increased competition will be the major concern of policy in the years to come. For enterprises largely dependent on the UK market there will be short-term tactical issues of diversification, financial risk management and balancing of exchange rate risks through sourcing of goods and services in the UK rather than in other countries. There are, however, more fundamental questions of strategy also raised by the new market possibilities that will be brought about by EMU. Enterprises that at the moment are competing mainly in terms of price in their export markets will have to develop a wider strategy of competing on quality, innovation and speed of delivery.

As regards public policy, EMU also raises a number of issues. With the removal of the option of altering the exchange rate (especially in response to sterling movements) and with agreed EU guidelines for government deficits and government debt, the policy choices will need very careful consideration. Measures to improve competitiveness will have to take account of continuing restraint in government expenditure. As a result, imaginative and effective responses to the needs of enterprises will increasingly be the main focus of policy development. Innovation will be a requirement in the public sector just as much as it is in the private sector.

5. Costs

A further key priority is that of costs. These are an important basis of competition, even if now frequently accompanied by other factors such as quality, innovation and speed to market. The single largest cost is that for wages and salaries. In Ireland, these amount to approximately 26.5 per cent of total input costs. Movements in wages therefore have a much greater effect on production costs than movements in any other input. The next largest item, credit and insurance, is only 3.2 per cent of total inputs, and this is followed by building and construction (2.5 per cent). Other smaller elements of total costs include: electricity, gas and water (1.6 per cent); communication services (1.3 per cent); and petroleum products and natural gas (0.3

per cent). These figures point not only to the critical importance of wages in total costs, but also to the need to avoid very detailed coordination of other costs that are a small part of the total. The figures are the average for the economy as a whole: costs structure vary by sector.

Ireland's increase in nominal unit labour costs has been the lowest in all EU countries over the last five years. In general, Ireland's labour costs are lower than most EU competitor countries and growing at a slower pace. But comparing on a world-wide basis, many rapidly growing manufacturing exporters, especially in Asia, have wage rates that are only small fractions of those in Ireland. Even though productivity gains in Ireland have been remarkable in the five years to 1996, they cannot compensate on their own for such low labour costs in countries who are or soon will be our competitors. Other measures of labour costs, such as hourly labour costs for production workers in manufacturing, also show Ireland in a good position as far as OECD countries are concerned, especially as regards high technology sectors.

On the remaining major cost items, the picture in the credit and insurance area is mixed. Interest rate convergence towards EMU will continue to reduce the burden of interest on some companies and may increase the availability of cheaper capital for expansion. Insurance costs in Ireland are, however, very high, and the levels of critical insurance items such as for employee liability are substantially higher than for our European counterparts. Building and construction costs are at an "average" level: Ireland ranks in position 7 or 8 out of 15 European countries.

Electricity costs in Ireland are at an average level, while gas prices are at a middle level. Heavy fuel oils are very expensive in Ireland compared to other countries. Ireland's published telecommunications costs are generally above average although charges for mobile phones are quite competitive.

6. Taxation

Another important priority is that of taxation, especially in relation to investment. Ireland has a low share of non-residential fixed investment in GDP, with a rank of 20 out of 21 countries. Even if GNP is used, Ireland is still in position 18. To bring the Irish share up to earlier levels requires significant action to improve the returns on investment (as well as action in improving the availability of capital). The top rate of corporate tax in Ireland was at 38 per cent, one of the highest of the countries analysed: Ireland was in position 20 of 28 countries in 1996. However, corporation tax was reduced to 32 per cent in 1997. Recent policy targets for corporate taxation of a reduction to 12.5 per cent by 2006 for all sectors are a further important step in improving the reward to risk ratio. But they need to be accompanied by other reductions in personal taxation: the main indicators for income tax rates show Ireland with higher rates than the majority of countries, although this data refers to 1994. While for the top rate of income tax in 1996 Ireland ranks 16 out of 27 countries (in 1998 this should improve to fourteenth position), the lower threshold for this rate makes Ireland even less competitive than the rate would suggest and makes us less attractive therefore for investment (including foreign investment). Success in attracting foreign investment has been notable and US manufacturing investment has seen the highest returns of all in Ireland. The special rates of corporation tax for manufacturing and internationally-traded services have played a key role in this success, and continued favourable tax reform will be essential for its continuance as much as for new investment by Irish-owned companies.

7. Trade Diversification

Analysis of trade data in this report underlines the need for trade diversification as a policy priority. With regard to the manufacturing sector, Ireland's exports are not well diversified either in terms of the industrial branches concerned, or in terms of the destinations. Although export performance has been outstanding, and was better than all OECD countries in 1996 (except for Turkey) the exports are, compared to other countries, concentrated on a few sectors and a few countries. Ireland is in

position 22 out of 24 in terms of its composition of exports, and in position 20 out of 24 in terms of the destination of exports. Concentration is often a good thing at the firm level, but at the country level it means a lack of flexibility and resilience for the economy as a whole. Services exports in particular offer scope for expansion. This needs to be encouraged and supported: growth in services exports will be an important way of achieving diversification. The advent of EMU provides an opportunity for accelerated diversification of exports, but it is an opportunity that must be taken advantage of if EMU is not to represent a significant threat for Irish enterprise.

8. Labour Market

A key determinant of labour costs and the functioning of the labour market in general is the taxation system. As to the functioning of the labour market in terms of its flexibility, Ireland has an elastic labour supply which responds well to economic activity, despite a lower female participation rate than in other EU countries and a relatively low level of part-time and temporary employment. Migration is however a feature of the Irish labour market that contributes to its flexibility.

9. Innovation

Investment in technological innovation is critically important and this is low in Ireland by international standards, even though some of the conditions are in place. For instance, Ireland is close to the EU average in the number of science and engineering degrees awarded and business expenditure on R&D is 1 per cent of GDP, a middle ranking performance. Overall, however, the science and engineering resources are not being mobilised into innovative investment, as witnessed by the relatively low level of diversification of manufactured exports by industrial sector, which is concentrated in only a few branches.

The most critical need is to increase the level of investment and to channel it into innovation, particularly in the area of services. Only by innovating can Ireland continue to compete internationally and only innovative investment can realise sufficiently attractive returns to bring investment levels up. A level playing field is required and a variety of measures will be needed to achieve this, including further improvements in taxation to encourage investment by rebalancing the risk/reward ratio and also in new measures to mobilise the human resources into innovation activity.

10. Telecommunications and the Information Society

In infrastructure, the most critical area is telecommunications, because this affects the efficiency and innovation potential of all firms, because it can help overcome our natural geographical disadvantages, and, most importantly, because it is a central input to a number of new manufacturing and services industries, thus determining foreign investment patterns. Telecommunications is a central ingredient of the information society. The information society, or post-industrial society, is one in which information is produced, communicated and used intensively. Just as steam and steel technologies drove the industrial revolution, the technologies driving the information revolution are:

- Data processing;
- Data storage;
- Data communication/transmission;
- User-friendly software.

It is the combination of these technologies, together with rapidly improving price/performance ratios which is contributing to their increased pervasiveness in businesses and in the home.

Ireland’s competitiveness in the future will be determined by the degree to which the opportunities offered by the new information technologies are grasped. Ireland’s published tariffs are above average, particularly for leased lines, and should be lower

in order to allow the new investment possibilities to be realised. A target of reducing telecommunications costs to the lowest quartile in Europe should be pursued. Moreover, there is a gap between Ireland and other countries in telecommunications infrastructure. Heavy investment in broadband telecommunications ahead of demand is needed to maintain competitiveness in the future and to realise the potential of the information society.

11. Public Administration

Public administration is a key determinant of competitiveness. While the role of the State has changed in many countries, the importance of public administration especially in regulation has increased.

Competition policy will be the main area where public administration can improve competitiveness. Increased competition in the telecommunications sector will lead to lower costs, helping the spread of the information society. Competition will also help lower costs for electricity. Greater competition in the field of gas and fuel oils supplies should be addressed through increased liberalisation and market monitoring.

The regulatory environment will be an important determinant of investment, including foreign investment. At present the planning framework is clearly unfavourable by comparison with some other competitor countries and action is urgently needed to simplify and speed up the planning process, as well as in the development of pre-planned solutions for investors.

Improvements in public administration will be needed on a continuous basis to ensure the accuracy and timeliness of its decision-making. With the ever growing requirements for international competitiveness, public administration has to respond flexibly and imaginatively to rapid changes in requirements. The Strategic Management Initiative (SMI) in the civil service is an important step in this direction.

Conclusion

The above issues are in most cases interrelated. Moreover, action needed in a number of areas is being identified through the work of, for instance, the Information Society Commission, the Irish Council for Science, Technology and Innovation (ICSTI) and other bodies. The National Competitiveness Council sees its role not as duplicating the work of existing bodies, but rather as adding value to it, reinforcing the conclusions of other bodies, drawing on them as appropriate, and synthesising them into integrated sets of proposals that address the major issues for Ireland’s competitiveness. To do this, the Council will establish a framework for analysis and focusing of recommendations, setting out a vision of what can be achieved and defining the steps needed to make it a reality.

What is Competitiveness?

Overview

Competitiveness is a widely used term and there are many definitions of it[1]. The approach taken to competitiveness in this report is a pragmatic one, with the general idea that competitiveness means success in markets that translates into general increases in welfare. The assumptions are that:

- Many aspects of public policy affect the growth of the enterprise sector;
- The growth of the enterprise sector affects overall prosperity;
- Competitiveness is increased by measures that intensify linkages if they are positive ones and reduce them if they are negative ones;
- Competitiveness is measured by overall prosperity and steps towards this prosperity also indicate progress in competitiveness.

Different types of competitiveness can be distinguished: competitiveness potential, competitiveness performance, and competitiveness process. The last of these is, broadly, the organisational and administrative framework that permits the competitiveness potential to be achieved in terms of performance[2].

Most measures of competitiveness address potential, by looking at items such as costs of intermediate inputs and factor costs. Measuring wage rates in different countries, for instance, is a first step of this kind. Broader measures of human resources and technological resources would also be measures of competitiveness potential. Measuring competitiveness performance is usually carried out in terms of international trade performance, such as looking at how a country has increased its share of an export market.

In this regard, it is important to take account of other variables as well as costs. The ability of businesses to gain share in their target markets is not normally dependent on just one of the key variables: cost, price, relative quality, innovation, intellectual property, product or customer focus, or speed of reaction. Each factor has a part to play, and they interact. Moreover, the timing of strategy will differ for different variables. Relative price is a short-term weapon in most markets. Price movements can be followed by competitors almost immediately, while intellectual property, innovation and quality improvements take years to emulate[3].

The main concerns with respect to competitiveness arise from the developments of world markets. The main tendencies in international trade include rapid growth, globalisation, the growth of regional blocks, and the growth of foreign direct investment. Increasingly, policy has to recognise the interrelations of trade and industrial policy, and the infrastructure and business environment that is provided in member countries has to reflect the need to meet growing competition. Growing competition means that change is more frequent and more wide-reaching. This means the kind of industrial structure needed is one that at least adapts quickly to change. The target however should be an industrial structure that is not only reactive but through an increasing innovation activity is itself a determinant of that change. Innovation means new companies, new processes and new products. Encouraging new companies to emerge, and encouraging existing companies to innovate can then ensure the needed flexibility within industry. But they have to be accompanied by measures for the provision of education and training that allows the work force to play its full part in such a flexible structure.

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[1] See Annex 1 for a selection of definitions

[2] Peter Buckley et al. “Measures of International Competitiveness: A Critical Survey” Journal of Marketing 1988

[3] Clayton, Tony and Carroll, C. “Building Business for Europe: Evidence from Europe and North America on “Intangible” Factors behind Growth, Competitiveness and Jobs”. Final Report to the European Commission by PIMS Associates Ltd and the Irish Management Institute, December 1994

Globalisation

Accelerating technological change is altering the nature and location of production. This, together with trade liberalisation, and the free movement of capital, is driving the phenomenon of globalisation. Indeed, the foreign direct investment that has contributed so much to Ireland's growth is a direct manifestation of globalisation, where a product can be designed in one country, using raw materials from a second, be manufactured in a third, using components from a fourth and be marketed in a fifth. Ireland has to take advantage of these trends. Strategies of free trade and the encouragement of foreign direct investment will have to be supplemented by new strategies of enhanced investment and commercial partnership links with other part of the world.

The convergence, diffusion and pervasiveness of information and communications technologies is giving rise to a new type of economy and a new society, the information society. These technologies are already offering significant potential for productivity, efficiency and competitiveness gains in the enterprise sector and are impacting on the location decisions of inward investors. To make the most of the opportunities and ensure that competitiveness is maintained and expanded in this new context, far reaching actions will be needed in the areas of education and training, competition policy, telecommunications infrastructure and in encouraging the take-up of information and communications technologies by enterprises. The report of the information society working group has recognised these interrelations and put forward a range of necessary actions, whose implementation will be necessary if Ireland is to play its full part in the coming global economy. Specific aspects of this technology are already driving the phenomenon of globalisation of production and the growth in international trade in services. Industrial automation allows for distributed production, for increased flexibility, rapid response, minimisation of waste, and an increased precision and quality. The education, training and management systems need to respond to and capitalise on the opportunities. The diffusion of information and communications technologies will require careful planning and targeted investment at the enterprise and the national level. Bio-technology is another rapidly developing field where the impact on markets and production location is expected to be very significant. Education and training systems have to take account of this also.

Who are our Competitors?

In business, it is normal practice to identify a company's principal competitors, and to develop strategy according to the role of the competitors in the market, the products and services they are offering, and the way they are distributed. This cannot be done at a national level. Firstly, as economists such as Paul Krugman have pointed out, it is companies, and not nations, that compete. Secondly, it is not correct to classify countries as competitors with the implication that they are in some way antagonists. However, countries clearly do compete in terms of attracting a limited number of Foreign Direct Investment (FDI) projects. What is happening in practice is that governments are understandably concerned about the success of the enterprises in their countries, their profitability, and their employment creation, and therefore try to put in place the policies and institutions that will help these companies.

However, success tends to breed success; export markets may see progress by a number of companies from the same country. The reasons for this are complex, and depend on cultural factors, and the interaction between companies as well as the usual competitiveness factors of cost, and policy and institutional support, which will apply to all the companies from that country. Looking at Ireland's competitiveness, it is desirable therefore, to look at who are the market leaders, which enterprises are posing the greatest challenges to Irish enterprises, and which countries they are from, in order that the policies and other competitiveness factors in those countries can be more closely identified and learned from.

Ireland is in fact competing in two markets. The first is that of international trade, which is, as noted in the section above on globalisation, a strongly contested arena, where waves of economies are attempting to win market share and to move up the value chain. With the general lowering of tariff barriers, the world economy is tending towards a single marketplace for many manufacturers, and increasingly for services also. Ireland as one of the most open

economies in the world is heavily committed to success on world markets; export growth is central to the Irish economy, and both the foreign-owned companies in Ireland, and increasingly, Irish companies are committed to exporting.

A second market in which Ireland competes is that for foreign direct investment. Foreign direct investment is a growing phenomenon, which is, as noted, linked to globalisation. It tends to bring both additional growth and employment, as well as exposure to new technologies, and upgrading of skills. It is now a highly valued addition to the economy in almost all countries, and governments compete strongly to attract new foreign direct investment projects, with a range of incentives including tax concessions, grants, the provision of factories and other infrastructure, and other benefits.

With respect to trade the identification of competitors against whom Ireland should measure itself is complicated, because of the growing integration of world trade. In principle, Irish exporters are competing against all countries. Some distinctions may however be made. Firstly, as Table A shows, Irish-owned manufacturing firms are much more likely to export to the UK than to any other single country, and exports to the UK amount to 42 per cent of total exports of Irish-owned firms. Foreign-owned firms exporting from Ireland are less heavily dependent on the UK market, and more oriented to Continental Europe. The kinds of competition encountered in both these markets are complex, and it varies depending on the particular industrial sector concerned. However, the generalisation can be made that on the UK market the principal competitors are UK firms, whereas on the continental market they tend to be firms from third countries. In trade terms, the growing competition from producers in developing countries, especially Asia, is increasingly noted. In addition, there appears to be rapid growth in competition for Irish exporters from Eastern Europe.

Table A Export Markets for Irish Manufacturers

Sector	Ownership	UK %	Other EU %	USA %	Elsewhere %
Food, beverages and tobacco	Irish	37.4	35.8	4.6	22.2
	Foreign	41.2	31.6	5.0	22.2
Textiles and clothing	Irish	60.7	25.2	8.8	5.4
	Foreign	49.7	43.0	2.6	4.9
Wood and wood products	Irish	90.7	8.6	0.0	0.7
	Foreign	61.0	33.2	0.9	4.9
Pulp and paper, printing and publishing	Irish	67.1	20.0	9.7	3.3
	Foreign	20.0	62.7	4.2	13.1
Chemicals	Irish	61.3	26.3	2.9	9.5
	Foreign	13.4	55.4	9.8	21.4
Rubber and plastics	Irish	69.6	24.5	3.0	2.9
	Foreign	27.1	67.2	1.0	4.7
Other non-metallic minerals	Irish	30.3	7.1	55.5	7.0
	Foreign	36.8	49.4	4.1	9.7
Basic metals, metal products	Irish	55.1	34.4	6.0	4.5
	Foreign	31.3	35.7	5.7	27.4
Basic metals, metal products	Total	40.3	35.2	5.8	18.7
	Irish	58.6	23.2	8.5	9.8
Machinery and equipment	Foreign	20.7	51.3	9.3	18.7
	Total	27.3	46.4	9.2	17.1
Electrical and optical equipment	Irish	38.4	42.0	9.3	10.3
	Foreign	21.2	51.3	16.1	11.4
Transport equipment	Irish	19.8	25.6	32.1	22.6
	Foreign	7.2	76.3	12.6	3.9
Other manufacturing	All	23.7	41.3	7.1	27.9
All manufacturing	Irish	42.1	32.2	7.3	18.4
	Foreign	22.5	50.9	10.8	15.6

Source: CSO Census of Industrial Production 1996

With respect to foreign investment, the competitors may be more clearly identifiable. In general, an international company will decide in principle to locate in Europe, or another part of the world, and if the decision is taken to locate in Europe, then Ireland will be competing with other investment locations within Europe. The principal locations that are in question are usually in the UK (especially some regions such as Wales, Scotland and the North East of England), and also the Netherlands. The rise of Eastern Europe as an investment location has also been noted. Even though these countries are not yet members of the EU, they have trade agreements with them and are much nearer in geographical terms. Developing countries are also increasing their share of world foreign direct investment, with China in particular, accounting for 14 per cent of investment in 1994. With increasing globalisation, Asian and Eastern European countries should also be seen as competitors for Ireland in FDI.

EMU

Globalisation has been described above as an important determinant of competitiveness requirements. The pressures of world markets will continue to increase the need for enterprises to adapt to change, and for governments to look at the policies and institutions that are needed to help their enterprises grow and thrive. To some extent, Irish enterprise has been insulated from this process by the sharp distinction between exporting and producing for the domestic market. When exporting, companies need to consider special distribution and payment systems, but also complicated pricing issues and currency questions, including making provision for changes in exchange rates. When producing for the domestic market, companies do not have exchange rate difficulties; they price their goods and receive their payments in Irish pounds.

EMU, however, will change this completely. The introduction of the euro that will replace all the currencies of the member countries of EMU will mean that a huge new market will be created. It can be seen either as the extinction of the Irish domestic market as it exists or as the extension of that market enormously. Irish enterprises dealing with a domestic market of 3.5 million will find themselves, in principle, dealing with a market of perhaps approaching 300 million.

EMU represents the completion of the European Single Market that began in 1992. In that process, technical barriers to trade between European countries, as well as restrictions on the movement of labour and capital were removed. With the introduction of the euro the remaining barriers between constituent countries' trade will be language, and some remaining cultural differences. While Ireland's position in foreign languages is not good, our use of English, which is increasingly an international business language, gives some advantages in this regard.

A number of trends already observed in European industry and services can be expected to accelerate as a result of EMU. Mergers and acquisitions were an expected consequence of the single market, and these have been seen increasingly, most notably in the food, distribution and financial sector, as well as in high-tech sectors, such as electronics. The single currency will have an impact on the retail and on the distribution sectoral in general. With the removal of a number of national currencies, a significant difficulty for the spread of retail groups across national boundaries will be removed. Again, in the banking and financial services industry, there is scope for considerable rationalisation in financial markets, once a single currency is introduced. Capital markets will tend to centralise and the future of a continued large number of stock exchanges across the EMU area is uncertain. Assisted by new technology, large banks will have ambitions to spread their reach across Europe, and United States banks will see this also as a significant opportunity. Positive features of EMU may also include a greater foreign direct investment from outside the EU attracted by the growing market size and the simplicity of dealing with a single currency.

For Irish companies, these trends will create difficulties, in that they will increase competition both within the EMU market as a whole and on the Irish domestic market in particular. Just as it will be easy for Irish firms to export to France and Germany when the single currency is in place, so it will be easy for companies from those countries to export to Ireland. If the scale of continental companies continues to increase that will further accentuate the competitiveness problems for Irish industry and the services sector.

The benefits of EMU for Irish enterprises should also be noted. Given that the euro will be managed by an independent European central bank and that a stability and growth pact has been agreed by member governments to ensure fiscal discipline once EMU is established, there are grounds for expecting macro-economic stability. Inflation may therefore continue to be low. The same may also be true of interest rates, assuming that world market conditions are favourable and that the euro is not challenged by speculation. The result of this should be a positive climate for investment in Ireland.

The international role of the euro will also be a positive factor. It will be a large currency, second only to the dollar. Irish firms have up to now often had to quote prices in the currency

of their markets. There will be increasing opportunities to quote prices in euro even when dealing with countries outside EMU, such as the UK. In addition, some international commodities, whose prices at the moment are quoted in dollars, may in future have the prices denominated in euro. This means that there will be additional savings in foreign exchange transaction costs and on uncertainty for Irish companies who use such commodities for their production.

A more uncertain effect of EMU will be its role in changing the external aspects of economic policy. At the moment, Ireland is one of the most open economies in the world, with exports and imports together amounting to 153 per cent of GNP. In the future, Ireland will be a member of a single currency area, where external trade will amount to perhaps 30 per cent of European GDP, representing a much more closed economy. There is a danger that, increasingly, external trade and financial policy on the European Union may be influenced by this, more concerned with protecting the internal market than in accelerating the liberalisation of world trade. Ireland's competitive position will on the other hand always need open trade and investment policies to overcome the limitations of its small size.

The position of the UK with regard to EMU is of particular significance to Ireland. The UK will not join EMU at its inception on 1st January 1999, but has said it intends to join later. To some extent, this simplifies the position for Irish industry, and especially for Irish firms that export to the UK. They will still have a foreign exchange problem, in that they will have to take account of possible exchange rate fluctuations between the euro and sterling. However, given the size of the euro it may be possible for them to quote prices in euro in some instances. Again, the euro area will be an attractive single market for UK exporters, who may be able to develop strategies based on this. Some UK firms may operate in euro even while sterling exists as a separate currency. This may allow them to increase their competitive advantage in the euro area, which includes Ireland.

In general, EMU is therefore likely to intensify the need for increased competitiveness in Irish industry, since it will bring a sharp increase in both opportunities and competition. There is a restricted outlook for EU funding for Ireland in the future, and thus for more direct support to the enterprise sector. There are also growing pressures on Ireland with respect to the tax incentives that it offers the manufacturing and financial services sector. All this means that Ireland will have to concentrate more on institutional and infrastructural support. Institutional support will include the vital areas of education and training, competition policy and public administration and infrastructural support will include actions to improve telecommunications and to accelerate progress towards the information society, and to develop the transport system.

Costs

All enterprises compete on the basis of costs, although costs are not the only basis of competition. In considering Ireland's competitiveness, the question of costs is a very important one; the costs of different goods and services that an enterprise uses will determine the price at which they can offer their goods or services on the market. If this price is higher than that of a competitor, they will lose market share. It is therefore essential that costs do not go out of line with those of Ireland's competitors.

This statement needs to be elaborated, since there are a number of components of costs of an enterprise. Ireland cannot have costs lower than our competitors for all products and services. This is particularly so because Ireland is part of one of the richest parts of the world, where labour costs are much higher than in the majority of countries. Since labour costs are usually the greatest single element of total costs, it follows that countries where labour costs are low will always have a competitive advantage, other things being equal. However, other things are not always equal, and the quality, sophistication and innovative character of a product from Ireland or another developed country cannot always be matched by countries with much lower labour costs.

In the end, however, it is the total cost structure of an enterprise that determines its profitability. If in Ireland some costs are out of line with those of our main competitors, we can still compensate by having lower costs for other inputs to the production process, provided that the total effect of the costs allows the enterprise still to be profitable. If for instance, wage costs are lower in Ireland than in the UK, this may be enough for some enterprises to allow them to produce slightly more cheaply than UK producers, even though they will have perhaps slightly higher costs for some materials.

Table B shows some principal inputs to the production structure of the Irish economy as a whole. Wages and salaries are the largest single input at 26.49 per cent. Imports are the next largest item, pointing to the significance of exchange rate movements on total costs. These influences will be reduced to some extent through the introduction of EMU, although the exact scale of EMU area imports in total inputs to production is not known precisely. Credit and insurance is the next most important item, followed by rentals, and building and construction. Costs in these areas are primarily market driven, although public policy especially in the areas of competition and regulation has an important role to play in keeping them low.

Table B Some Important Inputs to All Sectors

Sector	%
Wages and salaries	26.49
All imports	16.33
Credit and insurance	3.17
Building and construction	2.48
Electricity/gas/water	1.59
Communication services	1.28
Petrol products	0.32
Inland transport	0.26
Maritime/air transport	0.13
Auxiliary transport	0.09

Source: CSO Input-Output tables

Two other items of significance are electricity, gas, water and also communications services. Although the significance of these costs is not as high as other items, they are still important. There are some other aspects to them, also they have important qualitative aspects as well. Communications services in particular will determine the progress of the enterprise sector in adapting to new technologies leading to the information society. Both the utilities and communications services are still government-owned and for this reason, particular attention needs to be paid to the costs of their services, since in most cases they have few direct competitors.

It should be stressed that the cost structure outlined in Table B is only an “average” structure. Table C attempts to summarise how important the cost items are for individual sectors. Data was used that divides the economy into 41 sectors, and a count was made of how often each of the cost items was a significant element in the total costs of each of the 41 sectors. Any case where the item was at least 1 per cent of total inputs is included in the count. All this data derives from the latest input-output tables for Ireland, which refers to the year 1990. Input mix and relative prices will have undergone considerable change since then, but in the absence of later data covering the economy as a whole, the figures gives the best available picture of the cost structure of all sectors. They should not be taken as conclusive, but they can give a broad indication of the relative importance of cost terms

Table C Economic Sectors: Frequency of Significant Cost Items	
Wages and salaries	38
Business Services	31
Wholesale and retail trade	26
Electricity/gas/water	22
Building and construction	16
Communication services	12
Credit & insurance	12
Inland transport	6
Repair/recovery services	4
Petrol products/natural gas	1
Lodging/catering services	1
Maritime/air transport	1
Auxiliary transport	1

Wages and salaries are understandably at the top of the list on 38 occasions. The sector of business services, which would include finance and insurance intermediaries, real estate, lawyers, accountants and computer services among others is a significant item in 31 cases. Wholesale and retail trade is also important in 26 cases ahead of electricity, gas and water.

Table D shows the percentage of wages and salaries as a percentage of all inputs. It has been sorted to show the different significance of wages and salaries in different sectors. In general, services sectors have the highest share, but a number of manufacturing activities have a high wages and salaries share of total inputs, with most of them being above the average figure of 26.5 per cent quoted for the economy as a whole. These percentages indicate that, for almost all sectors, wages and salaries is the most significant component of all costs, and cost considerations and their impact on competitiveness have to take this dependency very much into account.

Table D Wages and Salaries as a % of All Inputs			
Other non-market services	78.9	**Agric./industrial machinery**	26.1
General public services	58.0	**Other manufacturing products**	25.0
Other market services	49.8	**Agric./industrial machinery**	24.9
Auxiliary transport	48.1	**Tobacco products**	23.3
Credit & insurance	47.2	**Wooden products/furniture**	22.4
Non-market health services	46.4	**Business services**	21.4
Other transport equipment	41.5	**Electrical goods**	19.9
Paper/printing products	36.1	**Repair/recovery services**	19.2
Motor vehicles	36.1	**Leather/footwear**	19.1
Wholesale/retail trade	33.1	**Maritime/air transport**	19.0
Non-metallic mineral products	32.6	**Beverages**	16.5
Inland transport	32.2	**Other food products**	15.2
Textiles/clothing	31.5	**Chemical products**	14.2
Metal products (excl. mach.)	29.2	**Coal/ignite/briquettes**	11.7
Lodging/catering services	28.6	**Office machines**	11.0
Rubber/plastic products	28.1	**Milk & dairy products**	8.4
Electricity/gas/water	28.1	**Meat/meat products**	7.3
Building & construction	27.8	**Petrol products/natural gas**	6.0
Communication services	26.1	**Agric./forestry/fishing**	4.5

However, there are other costs as noted that are not insignificant in size. Given that, for many companies, the profit margins represent a small percentage of total inputs and can be very low in small firms, all major cost items have a strong impact on profitability. For this reason, it is of interest to examine a number of key inputs and to determine in what sectors they are most important.

Table E shows the top ten users of a number of different cost items.

Table E Top Ten Users of a Number of Different Cost Items

Top Ten Users of Business Services	% of inputs	Top Ten Users of Building and Construction	% of inputs
Credit & insurance	8.9	Communication	19.9
Lodging/catering services	8.7	General public serices	12.2
Wholesale/retail trade	8.3	Lodging/catering	9.3
Tobacco products	7.2	Auxiliary transport	6.1
Maritime/air transport	5.5	Inland transport	4.6
Other market services	4.3	Electricity/gas/water	3.5
Woodenproducts/furniture	4.0	Building & construction	3.3
Repair/recovery services	4.0	Wholesale/retail trade	2.9
Top Ten Users of Communication Services	**% of inputs**	**Top Ten Users of Credit ans Insurance services**	**% of inputs**
Communication Services	10.1	Credit & insurance	52.6
Lodging/catering services	3.9	General public services	3.6
General public services	3.8	Lodging/catering services	3.2
Other manufacturing products	3.4	Repair/recovery services	2.8
Office machines	2.6	Inland transport	2.6
Credit & insurance	2.4	Wholesale/retail trade	2.5
Auxiliary transport	1.9	Auxiliary transport	2.3
Business services	1.7	Business services	1.6
Wholesale/retail trade	1.4	Building & construction	1.4
Other market services	1.4	Other market services	1.2
Top Ten Users of Electricity Gas and Water	**% of inputs**	**Top Ten Users of Electricity Gas and Water**	**% of inputs**
Electricity/Gas/Water	18.6	Metals and ores	5.6
Coal/Ignite/briquettes	4.6	Lodging/catering services	3.3
Non-metallic mineral products	2.9	Chemical products	2.4
Rubber/plastic products	2.4	Wooden products/furniture	1.9
Other market services	1.8	Auxiliary transport	1.7

This table indicates the importance of the cost items in terms of which sector uses them the most. For instance, for an important cost item such as electricity, gas and water, the sector itself is the biggest user, but it is followed by metals and ores where electricity, gas and water is 5.6 per cent of total inputs. Coal/lignite/briquettes at 4.6 per cent is the next highest user.

International Comparisons

There are several published international comparisons of competitiveness. The OECD itself publishes a compendium of statistical indicators and policy summaries that cover most of the areas generally accepted as related to competitiveness. (Data on Ireland, is however, poor). The best known comparisons are, however, the World Competitiveness Report and its rival, the Global Competitiveness Report.

The World Competitiveness Report is produced by the IMD, Lausanne, Switzerland. It defines competitiveness as the ability of a country to create added value and thus increase national wealth by managing assets and processes, attractiveness and aggressiveness, globality and proximity, and by integrating these relationships into an economic and social model. The World Competitiveness Report ranks Ireland at position 15 in 1997 from a position of 22 in 1996. The report contains 224 indicators, with 152 hard data indicators and 72 soft indicators from the executive opinion survey to which about 3,000 executives world-wide responded. The survey data is given a weighting of one-third and the hard data a weighting of two-thirds. The IMD admits that this is somewhat arbitrary.

The Global Competitiveness Report is produced by the World Economic Forum in Geneva. It shows Ireland as having risen to position 16 from position 26 in 1996. The World Economic Forum defines competitiveness as 'the ability of a country to achieve sustained high rates of growth in GDP per capita'. This report ranks countries on 155 different criteria including economic performance, the development of financial markets, the quality of infrastructure, technology, business management, political institutions and the flexibility of labour markets. Ireland's position has improved due to improvements in its high quality business management and technology coupled with an excellent economic performance. The main data sources are the IMF, ILO and the World Bank. Much data comes from a survey of world business executives which received only 2,000 responses in 1996. There are some 47 indicators which come from hard sources, and 108 from the survey.

The difficulty with these reports is that the survey data is open to question. It is known, for instance, that the IMD questionnaire is sent to government agencies. The survey questions are not always very precise. Moreover, the fact that Ireland's position has changed so dramatically in one year raises doubts about the methodology used.

Another related analysis is the Economist Intelligence Unit Global Outlook, which gives the 'business environment' ranking of 58 countries. Here Ireland is in position 11 for the period 1992-96, but is forecast to be in position 18 in the period 1997-2001. A qualitative assessment is also given, 'good' for the first period and 'very good' for the second. The decline in ranking is due to the fact that Ireland's business environment is not expected to improve as much as that in other countries. Hong Kong, in position 1 from 1992-96 will fall to 14, to be replaced by the Netherlands in first position. The UK will remain in second position.

Whatever the source of data and the exact methods used, any table that summarises the competitiveness position of a large number of countries to give a single index value for each inevitably loses much important information. Also, it should be remembered that tables cannot answer the question: what has caused this ranking and how can it be changed?

Most recently, UNICE have produced a report entitled "Benchmarking Europe's Competitiveness: from analysis to action". The report seeks to address the issue of Europe's loss of competitiveness over recent years and recommends the actions needed to reverse this trend, based on what are identified as successful experiences of countries in Europe and around the world that have tackled similar problems. It compares twenty framework conditions across EU countries and other developed countries and calls for action to improve the European business environment, to streamline the public sector and make it more effective, to reduce the weight of burdens imposed on companies and to reform labour markets. Ireland emerges quite favourably from the report, with good performances in most of the indicators relative to other EU countries. Indeed, Ireland is singled out as a successful performer amid

Europe's declining competitiveness. However, Ireland continually falls short of the US and Japan, who continue to outperform Ireland and Europe for the majority of indicators.

Table F List of Policy Issues Addressed in the Competitive Report	
Subject	**Number of Indicators**
Human Resource Development	
1 Education levels	6
2 Education policy and performance	5
3 Labour costs and productivity	7
4 Work incentives	11
5 Employment	6
Business Services	
6 Science and technology potential	4
7 Science and technology performance	7
8 Trade	6
9 Financial Markets	7
10 Investment	4
Infrastructure	
11 Telecommunications infrastructure	9
12 Telecommunications costs	14
13 Transport and communications costs and infrastructure	4
14 Energy costs	7
15 Property and construction costs	7
16 The environment	5
SME Competitiveness	
17 SME performance	6
Public Administration	
18 Public administration	5
Socioeconomic Performance	
19 Socioeconomic Performance	5
TOTAL	**125**

As was seen above, the existing bodies that compile world reports on competitiveness use a fairly comprehensive range of factors, although they give them different weights. The OECD, in its latest collection of indicators on competitiveness, uses a similarly broad range of topics for analysis[4].

Some commentators go further and suggest key or fundamental issues in competitiveness. UBS, the Swiss bank, says that the key determinants of competitiveness nowadays are man-made, based on the exploitation of technological progress and corporate structures geared towards total factor productivity growth. Global firms are reducing the relevance of traditional analysis of competitiveness in terms of trade and exchange rates[5].

[4] Industrial Competitiveness: Benchmarking Business Environments In The Global Economy. OECD, 1997

[5] Global Economic Themes. UBS Global Research, 1997

The consultancy company DRI/McGraw-Hill talks of a "vital cycle of competitiveness", in other words moving away from the idea of a linear process. The shared characteristics of successful economies are: a supportive national economic and policy environment, evolving industry clusters, responsive economic structure and supportive institutional setting.

The EU Commission notes that the primary responsibility for ensuring that European enterprises remain competitive lies with the enterprises themselves. Pointing to EU-wide action on the single market, the Uruguay Round and competition policy, the Commission nevertheless notes that "Framework conditions set at national level continue to exercise a decisive effect on competitiveness, in particular those relating to the operation of labour and capital markets, to human resource development and innovation as well as many measures that affect product markets"[6].

The EU Commission has also established a Competitiveness Advisory Group, which in its first report noted that a country's or region's competitiveness crucially depends on its ability to invest in intangibles - knowledge, skills, creativity, thus creating the basis for better quality jobs. "The competitiveness game for Europe, as for other advanced regions of the world, mainly revolves around the ability to accumulate and improve human capital"[7].

The Competitiveness Council's task is to produce action-oriented recommendations that will target the key obstacles to improved competitiveness. This first report on competitiveness gives an overview of all competitiveness issues where policy change can make a difference. This has been principally through comparing statistics from different countries, to see how Ireland measures up to competitor countries under a broad range of policy headings. A summary of the issues covered is given in Table F and shows the number of indicators used in each case. It should be noted that all indicators which involve GDP (excluding Table 19, columns 3 and 4, GDP per capita) are adjusted to GNP for Ireland due to the large difference between GDP and GNP for Ireland. The full country coverage, including OECD and other countries is given in the Annex tables. The indicator tables in the text give a partial country coverage, showing the indicators for Ireland, and a selection of other countries (Japan, the Netherlands, New Zealand, UK and the US).

[6] First Annual report on the competitiveness of European industry. EU Commission, 1996

[7] Enhancing European Competitiveness - First Report, Competitiveness Advisory Group, June 1995

Human Resources Development

Key Points
Ireland has a roughly middle position in education levels
Ireland's 'stock' of education is below average for the EU, but the underlying trends will improvethis, particularly the large percentage of younger persons who have higher education qualifications.
Raising the average school leaving age and increasing the numbers in full time education is a policy priority.
Ireland at present has a very low share of vocational and apprenticeship training in secondary education compared to other countries and this will seriously affect the skills profile of the labour force.
Indicators in Top Quartile
Percentage of people aged 25-34 with higher education qualifications
Indicators in Second Quartile
Net enrolment in tertiary education - 18-21 (%)
Indicators in Third Quartile
Education participation - age 16 (%)
Percentage of population 25-64 years that has attained third-level education
School expectancy for a 5 year-old child
Indicators in Bottom Quartile
Percentage of the population 25-64 years old that has attained second-level education

Education and training are very important for competitiveness. Education and training at a global level follow three broad tendencies:

- Education systems are being adapted to meet the needs of enterprise;
- The skill content of work is increasing. Literacy, numeracy and, more fundamentally, an ability to solve problems are becoming more important.
- Competitiveness is increased by measures that intensify linkages if they are positive ones and reduce them if they are negative ones;
- Because of technological change and its accelerating progress, existing skills and knowledge tend to be superseded rapidly, requiring continual updating. This means that ‘lifelong learning’ is needed

Globally, the basis of competition is changing because of the increasing importance of skills. There is a direct link between education and training and productivity, and without such increases in productivity a country competes only at the low skill cost end of the market. Foreign investment is also determined by the availability of education, skilled and productive workers. The OECD[8] has pointed out that one of the essential components of fast economic growth in Ireland over the past three decades has been a rapid improvement in the average level of education in the workforce. Moreover, the OECD states that this investment in education and training has been as effective a form of capital accumulation as increases in physical capital. However, the skills in question have to be specific skills, tailored to the needs of the dynamic industrial and service sectors that are the focus of foreign investment, such as electronics and financial services. If Ireland does not continue to add to the availability of skills, its ability to attract foreign investment and to compete internationally will disappear.

In early 1997 the Forfás Skills Group identified potential demands for software graduates, technicians and those with language skills. To address the immediate needs the number of places allocated to the computer science area for growth that was already planned was increased from 1,200 to 1,800. In addition, the number of places on one year post graduate programmes in computer applications open to those with suitable primary degrees has also been increased. The output in 1997 from this one year programme, including those under the Advanced Technical Skills Programme, will be over 800. It is planned to increase this output to over 1,200 in 1998. A range of new courses in the technological sector in computing and associated disciplines, software engineering and multi-media applications development have also been approved.

In July 1997, the Government approved a capital investment of £5 million for this year to meet such emerging and critical skills demands in the high technology sector. Also, in July, the Minister established a joint education/industry task force to improve the supply of technicians for high technology industries. Arising from the work of the task force, the Minister announced the setting up of a new industry/college initiative to jointly recruit and educate and train technicians. Training courses have also been introduced at post leaving certificate level which are designed to develop multi-lingual teleservices/telemarketing skills.

Encouragingly, in November 1997 the Government announced the establishment of the £250 million Education Technology (Investment) Fund to develop technology education at all levels, ranging from primary school to advanced research. The fund will aim to modernise the infrastructure of third-level institutions, to develop new areas of activities where emerging skills needs have been identified and to promote innovation. Among the broad areas to be targeted for support are skills needs, craft needs and vocational education needs (PLCs and apprenticeship).

While the above initiatives are very welcomed, it is crucial that continued work be undertaken in the area of identifying potential skills gaps and planning in advance to alleviate them. The de Buitleir Committee on post second-level places, due to report in the near future, is a relevant initiative of this kind.

Training to address skill shortages is not just a matter for government: the enterprise sector itself needs to be more active in this field and to commit more resources to it. In Ireland, there is a relatively low level of in-company training, upgrading and adaptation of skills compared to many of our competitors. In 1993, 23 per cent of companies carried out no training of their employees, and the problem is most acute among small and medium enterprises (SMEs).

Levels of Education

The first analysis, therefore, is of the levels of education and training in a country. This reflects the operation of past policies and the commitment of the enterprise sector to train its own staff. The levels of skills, education and training will powerfully affect a number of other areas, such as the flexibility of the workforce, the likelihood of innovation and the attractiveness of a country as a location for foreign investment. Table 1 shows levels of education, as seen in terms of six variables. The first indicator in column 1 of Table 1 shows net enrolment in all public and private secondary education of aged 16 as a percentage of the age group concerned. It gives a picture of the number of persons entering the workforce without secondary education past the age of 16. Ireland has a middle position (14 out of 25 countries), with 93.2 per cent of all 16 year olds in second-level education. This is just under the EU average of 95.4 per cent. (Full tables are available in Annex 4, abridged six country tables are inserted in the text.)

The second indicator in this table shows the degree to which the age group 18-21 is in third-level education. Here, Ireland's position is a high one (7 out of 24 countries). No less than 30.5 per cent of the 18-21 age group is enrolled in education, compared to 23.6 per cent in the UK and around 11 to 12 per cent for countries such as Germany, Austria, Hungary and Sweden, where the figures may be affected by compulsory military service. Thus, while Ireland's position in secondary education appears to be an 'average' one compared with other

countries, the position with regard to third-level education is much better. However, tertiary enrolment figures will be affected by the school leaving age. This differs from country to country. The figures will also be affected by the presence of apprenticeship systems in other countries.

The next two indicators (columns 3 and 4 of Table 1) look at the 'stock' of education, by looking at the adult population beyond the usual age of education, but still within the workforce, i.e., those between 25 and 64 years of age. The extent to which this age group has had third-level or upper secondary level is given in columns 3 and 4. For third-level education, Ireland ranks 14 out of 22 for the population aged 25-65, below most EU countries except France, Spain, Portugal and Greece. The percentage figure for Ireland is not so far behind other EU countries. However, for the population aged 25-34 (column 6) the situation is much better. Ireland ranks second in Europe with 31.2 per cent of the 25-34 age group having higher education qualifications. This shows that the stock of educated people in the workforce is increasing rapidly. For upper secondary education, Ireland takes position 17 out of 22 countries, and only Portugal and Spain among EU countries have lower values. The value for Ireland at 46 per cent is a long way behind many other countries such as the UK (74 per cent), Czech Republic (73 per cent), Switzerland (82 per cent) and Germany (84 per cent). The last indicator (in column 5 of Table 1) is expected years of schooling for a five-year-old child. Here, Ireland ranks 15 out of 23, but in fact the value (15.2 years) is not greatly below the best value (Belgium at 16.9 years).

Table 1

		1	2	3	4	5	6
Education Levels	**Indicator**	**Education participation age 16 (%)**	**Net enrolment in tertiary education - age 18-21 (%)**	**% of population 25-64 years) that has attained third level education (%)**	**% of population 25-64 years) that has at least upper secondary level education (%)**	**School expectancy for a % year-old child (years)**	**% of people aged 25-34 with higher education**
Country	Observations	25	24	22	22	23	15
Ireland	Value	93.2	30.5	19	46	15.2	31.2
	Rank	14	7	14	17	15	2
Japan	Value	96.4	-	-	-	-	-
	Rank	3	-	-	-	-	-
Netherlands	Value	97.5	22.1	21	59	16.8	24.2
	Rank	2	11	9	13	2	7
New Zealand	Value	94.3	30.9	23	57	15.8	-
	Rank	10	6	5	14	11	-
UK	Value	87.1	23.6	21	75	15.1	24.5
	Rank	18	10	9	5	17	6
US	Value	95.4	34.9	32	85	15.6	-
	Rank	9	4	2	1	13	-

Figure 2.1 below shows the percentage of the population graduating from upper secondary education at the typical age of graduation. Also illustrated is the percentage of those graduating from vocational and apprenticeship programmes. Although Ireland has a very high completion rate in general, the ratio graduating from vocational and apprenticeship programmes is second lowest among the 22 countries observed.

Figure 2.1 Ratio of Upper Secondary Education Graduates by Population at Graduation, by Type of Programme

The majority of graduates from Irish secondary education are completing general education programmes. Thus while the Irish education system performs very well in ensuring that a high percentage of those of school-leaving age have completed education, there is a low proportion of those completing vocational and apprenticeship programmes. This in turn will impact on the skills profile of the workforce, as well as the careers pursued by those graduating, unless augmented by post-secondary vocational training.

The present low proportion of vocational type education is a result of conscious policy decisions and acceptance among policy makers that the best approach for Ireland is not to develop a separate vocational stream within second-level education. In light of this a major restructuring of the senior cycle has been carried out, involving:

1. The introduction of the transition year;
2. A revision of the Leaving Certificate Programme;
3. The introduction of the Leaving Certificate Applied Programme;
4. The development and the expansion of the Leaving Certificate Vocational Programme.

The education system therefore provides the basis for vocational and apprenticeship training, in that it intends to ensure a broadly based education for all, with vocational options and orientation, up to the completion of the second-level stage. However, this in turn sharpens the requirement for specific training systems and a national system of certification over and above the general education system. Also, a serious matter of concern is the low level of publicly provided management training courses that are geared specifically towards owner/managers.

Table G shows the level of job-related education and training undertaken by the employed population in 1994 for selected countries. The data show that there was a higher level of job-related training in Ireland than in Belgium, Spain, Greece and Italy, but much lower than that in Denmark and the UK. However, care must be taken when interpreting these data, as they do not measure the volume of training in hours or days. Similar data from 1992 showed that training levels were higher in the Netherlands, the UK, Germany and Denmark than in Ireland. A general trend across all countries was that workers with a higher level education were more likely to engage in job-related training. Continuing changes in technology and work practices will require a higher level of job-related training than is currently being undertaken. The recent white paper on Human Resource Development clearly sets ‘Strengthening commitment to

lifelong learning and training' as an objective and highlights how education and training costs to the individual have been reduced in recent years.

Table G Participation in job-Related Continuing Education and Training as a % of the Employed Population Aged 25 to 64 (During the 4-Week Period Prior to being Surveyed) 1994

Country	%
Denmark	15
United Kingdom	13
Ireland	4
Belgium	3
Spains	3
Greece	1
Italy	1

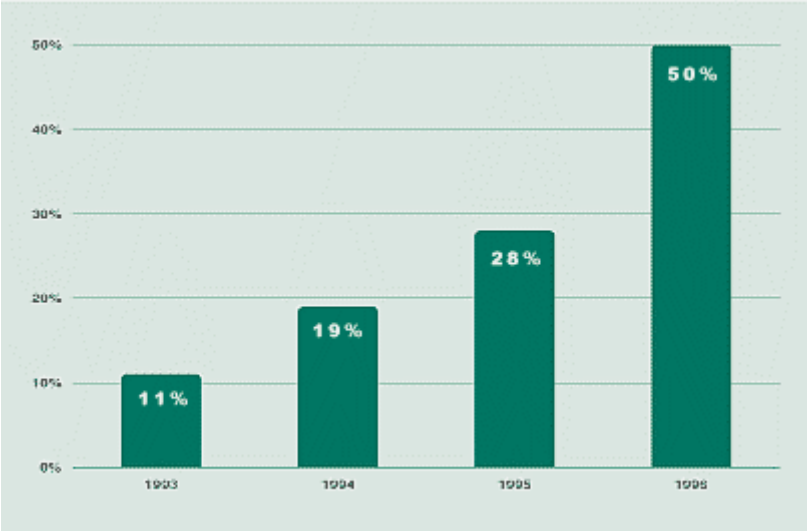
Source: OECD Education at a Glance, 1996

Conclusions

In summary, Ireland's education levels among the population aged 25 to 65 are not particularly good , although the position is much better for the population aged 25-34 and improving every year.

Figure 2.2 illustrates the significant change in Ireland's position since 1965. The proportion of the relevant age cohort continuing on to third-level education has been increasing steadily. Importantly, Ireland has one of the highest tertiary enrollment rates in the OECD.

Figure 2.2 Rate of Transfer to Third-Level Education (Annual Intake into Third-Level Education Divided by the Population, aged 17)



Source: Department of Education Statistical Report 1994/95

However, the trends towards ongoing job-related training need to be accelerated more widely. Wider participation in secondary education is the first step towards this, especially by increasing the school-leaving age and by ensuring that educational and training programmes are available which are relevant to all students aged 15 and 16. Moreover, the Department of Education's own target of ensuring that 90 per cent of 16-18 year olds complete senior cycle should be closely monitored and adjusted. This is clearly a necessary requirement to improve Ireland's international standing. There are already proposals to increase the school leaving

age to 16, and there is an ongoing expansion of Youthreach, which seeks to provide early school leavers with a second chance at education, training and work experience. (There are now 4,975 places under this scheme). These measures need to be accelerated.

The recent white paper on human resource development found apprenticeship training to be an expensive form of training in need of further improvements. The entire area of apprenticeship training needs further analysis. The development of the Leaving Certificate Vocational Programme (LCVP) and the Leaving Certificate Applied Programme (LCAP), which places greater emphasis on vocational elements of the curriculum is a step towards a greater training focus. (There are 20,100 students following these two year programmes from September 1996 and these figures are expected to rise considerably to around 32,000 in 1997).

Finally, the establishment of the VTOS programme to educate the long-term unemployed is broadly welcomed and should be given full encouragement in the future.

Education Policy and Performance

Key Points
Quality is above average in maths and science
Greater public priority is needed for education, especially early childhood and primary education.
Indicators in Top Quartile
Indicators in Second Quartile
Average achievement in maths, age 14
Average achievement in science, age 14
Number of teaching hours per year in lower secondary education
Indicators in Third Quartile
Minimum hours in language class, age 13
Indicators in Bottom Quartile
Ratio of students to teaching staff - secondary education

This section examines indicators of government action with respect to the development of education and training in the country. In contrast to the first table, therefore, Table 2 looks, not at the levels of progress attained in this field, but at the degree to which it is given priority by policy makers at present, and thus the degree to which it can be expected that improvements will take place in education and training in the country in question in the years to come. This section also looks at education performance, in particular by measuring the quality of education.

Measuring public expenditure on education gives some indication of policy priority, but it can be misleading, because education costs can vary very much from country to country. For example, teachers' salaries might be much lower in one country than another as might teaching materials costs. Moreover, in some countries, private funding, such as tuition fees, textbooks and transport costs are quite high so public expenditures give only a partial picture of total educational investment. In general, the outputs of the education sector are a better measure of performance and the effectiveness of policy and input data should be analysed in this light.

Table 2

		1	2	3	4	5
Education Policy and Performance	**Indicator**	**Number of teaching hours per year in lower secondary education**	**Ratio of students to teaching staff - secondary education**	**Average achievement in maths (eighth grade)**	**Average achievement in science (eighth grade)**	**Minimum hours in language class (13 years)**
Country	Observations	18	19	23	23	24
Ireland	Value	735	16.4	527	538	110
	Rank	8	16	11	7	8
Japan	Value	-	15.6	605	571	-
	Rank	-	15	1	2	-
Netherlands	Value	954	-	541	560	155
	Rank	4	-	5	3	3
New Zealand	Value	869	15.0	508	526	-
	Rank	6	13	15	15	-
UK	Value	-	15.2	502.5	534.5	-
	Rank	-	14	17	10	-
US	Value	964	-	500	534	-
	Rank	3	-	19	11	-

Source: OECD, Education at a Glance, 1996; E.U. Commission, Key data on Education, 1995

The first two indicators refer to a specific policy-related issue, the quality of education. This is measured by the number of teaching hours, giving one indication of the inputs, in substantive terms, and also by the ratio of students to teaching staff by level. This latter gives an indication of the degree of attention that people would receive in the educational process and thus of how much it is likely to benefit from it. In the first of these indicators, Ireland scores high compared to other countries at position 8 out of 18 countries. However, in pupils per teacher, the performance is not as good, with a ranking of 16 out of 19 countries.

Measuring outputs rather than inputs is a better way of assessing quality and, by extension, the impact of the educational system on the competitiveness of the Irish economy. The next two indicators cover average achievement in mathematics and in science at age 14. Ireland does quite well in mathematics (11 out of 23) and even better in science (7 out of 23). The figures for the UK are 17 and 10. Japan is best for mathematics, and the Czech Republic for science. The distribution of scores for Ireland does not differ significantly from those of other countries. But it should be noted that the Czech Republic, Hungary and Russia, all of which are competitors, rank ahead of Ireland in these fields.

New data on the performance of 9 year olds in mathematics and science puts Ireland in an even better position, 6 in mathematics and 8 in science, as Table H show. It is a particularly good result because science is not generally taught in Irish primary schools.

With regard to language skills column 5 of table 2 shows the minimum number of hours per annum a thirteen year-old must spend learning a foreign language per annum. There is no minimum for Ireland and it is not compulsory for a thirteen year-old to study a foreign language. However, most thirteen year olds do opt to study at least one foreign language, in which case the Department of Education recommends that the subject be taught for at least 110 hours per annum. The position on foreign language skills is clearly unsatisfactory, as these are not only important for the competitiveness of the economy as a whole but are the principal focus of specific new foreign direct investment, especially in call centres and similar services. Foreign language will also significantly affect the possibilities for development of the content industries of the information society. Recently, the Department of Education have announced that continental languages will be introduced into 200 primary schools in 1998 and 1999. This is a positive step and all encouragement should be given to spread this programme to all primary schools.

Table H Performance of 9 Year Olds in Maths and Science		
Rank	**Science**	**Maths**
1	Republic of Korea	Singapore
2	Japan	Republic of Korea
3	United States	Japan
4	Czech Republic	Hong Kong
5	England	Czech Republic
6	Canada	**Ireland**
7	Singapore	United States
8	**Ireland**	Canada
9	Scotland	Scotland
10	Hong Kong	England
11	New Zealand	Cyprus
12	Norway	Norway
13	Iceland	New Zealand
14	Greece	Greece
15	Portugal	Portugal
16	Cyprus	Iceland
17	Iran	Iran

Source: Third International Mathematics and Science Study, 1997

Conclusions

Some specific aspects of primary education have already been identified in “Shaping Our Future” as a requirement for attention in the future, including above all the need to focus more on language skills. Another requirement identified is that all those at school leaving age should either obtain the Leaving Certificate or a recognised qualification as part of a new system of on-the-job training. Addressing these deficiencies would also improve Ireland’s placing in several categories.

The importance of skills development can be seen through examining the skill content of the modern industry and services sectors internationally, and more particularly through Ireland’s own experience of foreign direct investment. There have been two directions of influence. Investment in education, including the development of engineering, and related areas in previous decades has had a major benefit in encouraging FDI. But FDI has played its own part in skill upgrading also, giving opportunities for improved skills by learning from companies who are the leaders in their own sectors. This has meant training in best practice in a variety of essential disciplines, including production management, marketing, distribution and quality management.

The skills question has to be addressed at all levels, however. The foundations of flexibility and adaptability in the labour force come from the education system. The kinds of analytical and problem solving skills that are needed by the new types of individual technology and organisation are the essential foundation, as are the ability to work as a team and to share responsibilities. But even with this basis there will be an ever changing need for special skills. This will therefore be a required policy and investment focus on a continuing basis. The skills group, has already identified some crucial areas for attention in key skills for FDI and growth. These are being addressed both through the provision of additional places in third-level institutions and through raising awareness among school leavers of the career opportunities being created. Recently, the Government has announced the establishment of a £250 million Education Technology (Investment) Fund. This will make a significant contribution both to

improving the educational infrastructure and provide for the creation of at least 7,000 new third-level college places at degree and technician level in high technology areas.

Monitoring skill requirements and availability and their forecasting will remain a critical component of enterprise strategy development, and international benchmarking will be very important in this regard. Skills is one of the areas for EU pilot benchmarking programmes, in which Ireland is participating, and this development needs both to be encouraged and integrated as appropriate into human resources planning and policy development at a national level.

However, the existing measures and initiatives need to be supplemented and enhanced. Assessment of skill requirements has to be carried out as part of a system: forecasts of demand have to be responded to by the education and training systems. The education sector has to be more formally part of that system, and government commitment to its success should be more sustained, and even more significant in terms of resources.

Elements of a good system include the following:

- A formal annual review of skill shortages and future requirements;
- Incorporation into this review of trends in industrial organisational and technological change;
- Recognition of the continuing requirements for increased skill levels in areas other than high tech;
- Enterprise as one of the values to be promoted by the education system;
- Integration of enterprise sector training commitments into overall planning of requirements.

Recently, an important initiative has been launched to promote dialogue between government, business and educational institutions in relation to the education and training needs of the economy, to develop and facilitate the forecasting of skill requirements and to provide mechanisms for the speedy implementation of decisions. This initiative is broadly welcomed, but must be continually monitored in order to measure its effectiveness.

Labour Markets

When labour markets function well, workers are readily employed, and well compensated. In these circumstances, they are ready to take work when it is offered and to change jobs willingly. When labour markets work badly, workers are reluctant to take employment and out of a feeling of insecurity are reluctant to change jobs. With regard to wages, if they are too high, the future of the related jobs is in doubt, because of international competitiveness. Accordingly, this section discusses these different aspects of the labour markets, reviewing the degree to which this crucial aspect of competitiveness functions in Ireland as compared to other countries.

Labour Costs and Productivity

Key Points
Irelands labour costs are lower than most EU competitor countries
Productivity figures also compare favourably, Ireland has the highest growth performance in productivity over the last few years
However, there is a wide divergence between thr Irish-owned and foreign-owned sectore: value-added per worker is far higher in the foreign-owned sector
Indicators in Top Quartile
Nominal unit labour costs, average annual change
Productivity (annual average change)
Unit labour costs in the business sector, percentage increase
Pay for time worked (per hour) for manufacturing (Swedish Krona)
Hourly laboyr costa for production workers in manufacturing (US$)
Indicators in Second Quartile
Total labour costs (wage and non-wage) for manufacturing workers
Compensation per employee, average annual change
Indicators in Third Quartile
Indicators in Bottom Quartile

Table 3, column 1, gives a first indication of trends in labour costs by showing the annual average changes in compensation per employee in recent years. Here Ireland has been performing well compared to other EU countries. Cost increases have been contained to an average growth of 3.9 per cent per annum. This is below the EU average of 4.7 per cent (although behind Denmark and Finland (both 3.4 per cent) and two competitors for foreign direct investment, France and the Netherlands (both at 2.8 per cent)).

Nominal unit labour cost changes (column 2) show even better results with Ireland having the lowest increases in all EU countries over the last five years.

Table 3

		1	2	3	4	5
Labour Costs and Productivity	**Indicator**	**Compensation per employee (annual average chenge)**	**Nominal unit labour costs (annual average chenge)**	**Unit labour costs in business sector (% increase)**	**Pay for time worked (per hour) for manufacturing workers (Swedish krona)**	**Total per hour labour costs for manufacturing production workers (Swedish krona)**
	Year	**1991/1996**	**1191/1996**	**1997e**	**1996**	**1996**
Country	Observations	15	15	23	18	20
Ireland	Value	0.039	-0.044	-0.5	71	96
	Rank	5	1	2	4	6
Japan	Value	-	-	0.5	83	140
	Rank	-	-	6	8	11
Netherlands	Value	0.028	0.010	1.3	89	157
	Rank	1	3	10	11	12
New Zealand	Value	-	-	1.7	-	-
	Rank	-	-	11	-	-
UK	Value	0.048	0.024	2.6	71	95
	Rank	10	7	15	4	5
US	Value	-	-	3.1	85	119
	Rank	-	-	18	10	8

Source: OECD, Progress Towards Convergence, 1996; OECD Economic Outlook, 1997; Swedish Employers Confederation

Since 1990, changes in unit labour costs in Ireland have been amongst the lowest amongst observed countries (Figure 2.3). Low wage increases and increases in productivity have contributed to this performance. Ireland is currently ranked second out of the 25 countries observed for this indicator. Column 3 predicts that Ireland will have the second lowest growth of all in unit labour costs in 1997. Columns 4 and 5 show that per hour labour costs in Ireland are also low by international standards.

Figure 2.3 Unit Labour Costs in the Business Sector, % Change

Source: OECD Economic Outlook, No. 60, December 1996

Table 3, column 6 and Figure 2.4 give the hourly compensation costs for production workers in manufacturing for 1996, in US$, using 1996 exchange rates. They refer to the costs of an hours work to a manufacturer, including all the associated costs, which are the taxation, the social welfare contributions and a part of any fringe benefits that may be applied. Germany is the most expensive for production workers, whilst Mexico has the lowest compensation costs. However, as productivity levels vary significantly across countries, higher compensation costs do not necessarily signify a lack of competitiveness. For this indicator Ireland is currently ranked fourth out of the 20 countries observed. Ireland is seen to be lower than most other OECD countries. Only Mexico, New Zealand, Portugal, and Spain are lower.

Figure 2.4 Hourly Compensation Costs for Manufacturing Workers (US$)

Source: US Bureau Of Labor statistics

What matters in investment decisions as far as labour costs are concerned is the total compensation package, rather than the non-wage costs. The data for 1996, used in Table 3, column 6, show Ireland and the UK at about the same level for hourly compensation costs.

With regard to the UK, although average costs are about the same as in Ireland in 1996, the large appreciation of sterling in 1997 means that Irish labour costs are lower than those in UK. Moreover, the position differs at the sectoral level. In 1996, for traditional industries, Ireland had higher costs than the UK, but for the more advanced sectors (such as machinery and equipment, electronics) Ireland had a clear advantage, which will have been reinforced by the appreciation of sterling. The position also differs at the regional level. It has been suggested that wage costs in the UK outside London are in fact lower than in Ireland. However, the recent strengths of sterling will have countered this.

Table I Average Wage Per Hour in US$ in 1996						
	Unskilled	Semi-skilled	Secretarial/ clerical	Engineer	Accountant	Managerial
Japan	18.04	20.77			25.01	
South Korea	7.30	8.36	6.51		13.03	
Taiwan		7.21	11.45	12.93	11.75	40.21
Hong Kong	9.31	7.45	8.69	22.96	14.90	37.24
Ireland	8.00	11.40	9.00	14.75	20.00	22.00
Singapore	4.13	6.02	5.27			21.32
Hungary	1.70		3.60		5.70	3.00
India	0.57	0.72	1.14	2.39	2.29	
China			2.02	2.75		2.93
Indonesia	0.40	0.87	1.15		6.06	10.10
Malaysia	0.58	0.89				9.75
Philippines	0.86	1.39	1.06	1.80	1.59	8.17
Thailand	1.08	1.41	3.29	3.16	2.77	7.33
Vietnam	0.65	1.27	1.54			

Source: Economist Intelligence Unit: 1996

Labour costs in Asia have recently been cited as major causes of concern for the future of foreign direct investment in Ireland. Table 1 above clearly shows that per hour wages in many developing Asian countries are far below those of Ireland. However, these figures need to be interpreted with caution. Firstly, labour productivity is far lower in developing countries, thereby increasing per unit labour costs. However, reliable data for developing countries on per unit labour costs is difficult to come by.

Productivity figures also show Ireland in a relatively good position (Table 3, column 7). Ireland has seen the highest annual average changes in productivity over the years 1991-1996 of all EU countries. The growth rate of productivity was over 8 per cent, while the EU average was only 2 per cent.

Since 1991 cumulative productivity growth in Ireland has been 54.2 per cent compared to 14.9 per cent in the UK. Sweden has recorded the next highest level of productivity growth at 20.6 per cent.

Table 3			
		6	7
Labour Costs and Productivity	**Indicator**	**Hourly compensation costs for production workers in manufacturing (US$)**	**Productivity (annual average change - %)**
	Year	**1996**	**1991/1996**
Country	Observations	20	15
Ireland	Value Rank	14.1 4	8.2 1
Japan	Value Rank	21.0 11	- -
Netherlands	Value Rank	23.3 12	1.7 9
New Zealand	Value Rank	11.0 2	- -
UK	Value Rank	14.2 5	2.3 5
US	Value Rank	17.7 8	- -

Source: EMI;Progress Towards Convergence, 1996; US Bureau of Labour Statistics

Productivity

The impressive growth in productivity at national level, by comparison with other countries, has, however, to be seen in context. Looking at manufacturing, most of productivity growth can be attributed to the very strong performance of the overseas-owned sector. While Irish-owned enterprises have been improving very much in recent years, their overall levels of productivity have not reached those of the overseas-owned sector. The contrast between the two can be seen very strikingly in Table J, which shows value-added per employee. This is calculated from IEE data and measures value-added by subtracting total expenditures from total sales. For Irish-owned enterprises, the value-added per employee is £6,650 while for overseas companies, it is £43,010. There is little variation in this between companies of different sizes; the best performing group (large Irish-owned enterprises) still has value-added per employee of one-fifth that of overseas-owned large companies.

Table J Value-Added per Worker in£'000				
	Large	**Medium**	**Small**	**Grand Total**
Irish	9,119	5,906	5,548	6,651
Overseas	48,433	34,578	49,420	43,015
Grand Total	38,629	20,924	15,962	27,902

Source: Forfás IEE sample data, 1995

Conclusions

Overall, labour cost competitiveness is very good and productivity increases have also been high. If these trends can be sustained overall competitiveness will be further enhanced. “Partnership 2000” represents a consensus on labour costs as part of a wider system of cooperation between the social partners. But this will have to be accompanied by enhanced training and innovation measures if productivity gains are to be continued. The wide gap in productivity, suggested by the figures on value-added per worker, between the Irish-owned and overseas-owned enterprise, is however, very great. A combination of measures, including support to repositioning of Irish-owned enterprise into higher value-added sectors will be required, as called for in “Shaping Our Future”.

Work Incentives

Key Points
For average income tax, Ireland is middle ranking country for the period in question
For single people with no children Ireland's average income tax rate is high by international standards
Other tax rates such as the top rate of income tax, compare favourably with many other countries
The income tax wedge, and more broadly the tax receipts as a percentage of GNP need to be reduced steadily. Some progress has been made on reducing the tax wedge in recent budgets
Indicators in Top Quartile
Non-wage labour costs
Social insurance expenditure and other labour taxes as a percentage of total labour costs
Indicators in Second Quartile
Employers social security as a % of gross labour costs
Marginal (income plus employees social security) tax rate, married, 2 children
Indicators in Third Quartile
Tax wedge
Top rate of income tax, nominal
Average income tax rate, married, 2 children
Income tax plus employees social security contribution rate, married 3 children
Income tax plus employees social security contribution rate, married 3 children
Indicators in Bottom Quartile
Average income tax single, no children
Marginal (income plus social security) tax rate, single, no children

Since every enterprise needs labour, the incentives for taking a job obviously affect competitiveness. If income taxes are too high some people will not take up jobs. This is especially so if income taxes are not harmonised with the social welfare system. In such cases, the unemployed will be deterred from taking up paid employment. An important factor in the functioning of the labour markets is the so called “tax wedge”. This is the difference between the cost to the employer of the worker and what the worker receives as take home pay. In Ireland, the difference is usually employers and employees PRSI, and the income tax on the wages. If the tax wedge is perceived as too great, it will act as a disincentive to taking up work, and will also create upward pressure on wages. Lower PRSI and personal taxes play a key role in facilitating increased employment by reducing employment costs and the size of the tax wedge.

If the employment costs appear too far out of line with the UK, for example, certain sectors of the Irish economy can move elements of production to the North of Ireland or to England where they also have production plants. And the tax wedge plays its part also, in driving up costs, especially because the UK and Ireland are essentially a single labour market.

Progress has been made in recent budgets on restructuring employer’s PRSI. The lower rate has been reduced to 8.5 per cent, and the threshold for applying will be increased from £260 to £270 per week as of April 1998. The standard rate of employers PRSI has also been slightly reduced from 12.5 per cent to 12 per cent. The tax wedge has been reduced also,

especially since 1993, through reductions in the personal income tax rate, increases is personal allowances and a widening of the standard rate tax bands.

International comparisons of some of the key variables are shown in Table 4. The average income tax rate in the first column shows the percentage of average earnings taken in income tax. Since every country will have its own system of tax free allowances and tax bands, simple comparisons of the income tax rate as such are not sufficient, and the figures give only a very crude picture.

By this standard, Ireland was a middle-ranking country in 1994. It is at position 12 out of 19 countries. For a married couple with two children, the income tax rate is 15.5 per cent. But this contrasts dramatically with Japan (tax rate of 1.7 per cent) and Greece, the best at 0.5 per cent. For single people with no children the average income tax rate (column 2) is high by international standards, and Ireland ranks 15 out of 19 countries at 23.1 per cent. Japan and Greece maintain their high positions. Internationally, the UK is worse than Ireland for married couples (at position 13) but much better for singles (position 9). It is important to note that the standard rate of income tax has been reduced steadily to 24% and that tax bands have been widened since 1994. Obviously then, the average income tax rates will have fallen.

Table 4

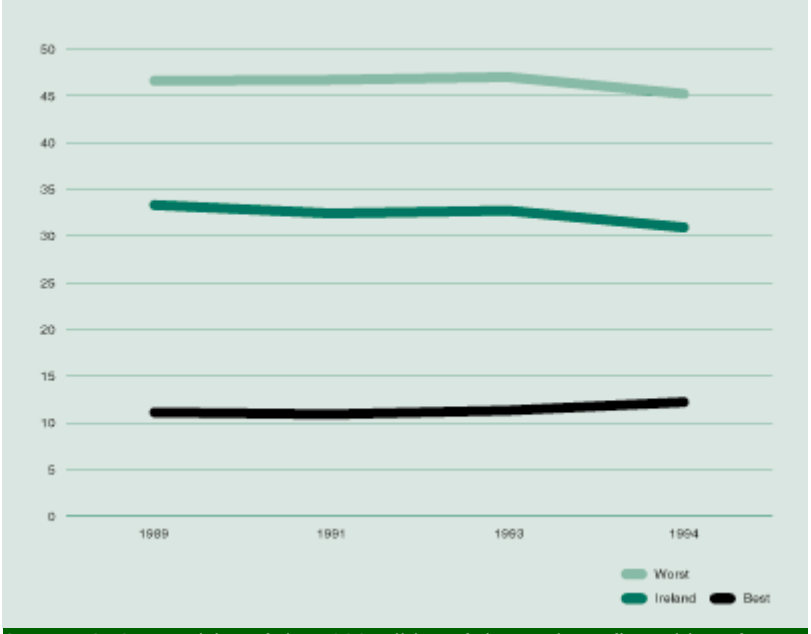
		1	2	3	4
Work Incentives	**Indicator**	**Average income tax rate (% of average earnings) - married, 100, 0, 2 children**	**Average income tax rate (% of average earnings) - married, 100, no children**	**Employers social security contributions as a % of gross labour costs**	**Income tax plus employees social security contribution rate - as a % of average earnings - married, 100, 0, 2 children**
	Year	**1994**	**1994**	**1994**	**1994**
Country	Observations	19	19	20	19
Ireland	Value	15.5	23.1	12.2	19.7
	Rank	12	15	10	11
Japan	Value	1.7	7.3	7.5	14.5
	Rank	2	2	5	5
Netherlands	Value	5.1	7.8	7.9	30.8
	Rank	6	3	7	17
New Zealand	Value	21.6	24.3	-	21.6
	Rank	16	16	-	14
UK	Value	15.7	18.1	10.2	17.5
	Rank	13	9	8	10
US	Value	13.6	18.2	7.7	21.2
	Rank	10	10	6	12

Source: OECD/DAFFE/CFA/WP2(95)10

As regards employers social security contributions, as a percentage of gross labour costs, these can also be seen as an indicator of competitiveness, in that they amount to a burden on the employer and an additional disincentive to job creation. It is nevertheless striking that high percentages are found in some high income countries, such as Austria, Belgium, Italy and Sweden, with low values in otherwise wealthy countries, such as Finland, the Netherlands, Norway and the UK. Ireland's position (Table 4, column 3) is above that of the UK, and well above that also of the US, which has a value of 7.7 per cent. Ireland's figure of 12.2 per cent is not a high one compared to most of continental Europe. This figure can give a misleading picture as there is a ceiling for employers' contributions in Ireland while there isn't in other countries, such as the UK. Also, it does not reflect lower rates that apply at lower wage levels.

Furthermore there are important differences across countries in the extent of employer-provided benefits, such as unemployment compensation, maternity benefits, health insurance and pensions. The impact of these are not captured by employer social security contributions. Thus, an economy with a low employers social security contribution rate could impose a high cost on employers through high mandatory employer-provided benefits. For example, Australia and Mexico have recently introduced measures requiring all employers to contribute to funded systems on behalf of their employees. In Ireland there are no mandatory employer-provided sickness benefits, whereas in the UK employers must pay a flat rate statutory sick pay (SSP) for the first 28 weeks.

Figure 2.5 Average Income Tax plus Employees Social Contributions (% of Average Earnings) - Single, 100, No Children



Source: OECD, Revision of the 1996 Edition of the Tax/Benefit Position of Production Workers

Income tax plus employee social security contribution rate as a percentage of average earnings relates to the perceived attractiveness of employment and the willingness to take up job opportunities, because employees will be more inclined to take up regular employment if they see take home pay as a reasonable portion of their gross earnings. This indicator is thus an amplification of the average income tax rate.

Ireland, at 30.9 per cent, is currently ranked thirteenth out of the 19 countries observed for this indicator. The UK, at 26.5 per cent, is ranked tenth. The changes in the 1997 budgets should reduce the tax wedge, especially for single workers earning around the average production wage.

Greece retains its number 1 position for single earners while the Czech Republic does best for married couples (Tables 4, columns 4 and 5).

Table 4

		5	6	7	8
Work Incentives	**Indicator**	**Income tax plus employees social security contribution rate - as a % of average earnings - single, 100, no ch**	**Marginal (Income plus employees social security) tax rate - married, 100, 0, 2 children**	**Marginal (Income plus employees social security) tax rate - married, 100,no children**	**Non wage labour costs - PRSI, pension, pay in kind and holiday (Swedish Krona)**
	Year	**1994**	**1994**	**1994**	**1996**
Country	Observations	19	19	19	20
Ireland	Value	30.9	34.7	55.7	25.0
	Rank	13	8	17	3
Japan	Value	20.0	22.8	26.2	57.0
	Rank	2	2	2	10
Netherlands	Value	41.3	46.7	57.0	68.0
	Rank	18	15	19	14
New Zealand	Value	24.3	63.0	33.0	-
	Rank	6	19	6	-
UK	Value	26.5	35.0	35.0	24.0
	Rank	10	9	8	2
US	Value	25.9	30.0	30.0	34.0
	Rank	8	6	4	6

Source: OECD/DAFFE/CFA/WP2(95)10; Swedish Employers Confederation

The marginal (income tax plus employee social security) tax rate show the diversity of approach adopted within OECD countries, as well as others to the collection of tax (columns 6 and 7 give the indicators for married and single people). The rate varies from 20 per cent in Greece to 57 per cent in the Netherlands for the marginal rate for a single person including both income tax and social security. In this category, Ireland at 55.7 per cent is close to the Netherlands value. In its report, UNICE also looks at the marginal tax rate for a single person with 200 per cent of the average wage. This places Ireland in a slightly better position, with a marginal tax rate of 50 per cent. Again, the Irish figure will have fallen slightly due to recent changes in the budget.

A broad indicator of non-wage labour costs, including pensions and holidays as well as PRSI is given in column 8. This data shows Ireland with the lowest non-wage costs of all the countries for which data was available except the UK and Canada. (However, Eastern European counties would certainly have lower figures). This indicates that the burden on employers is relatively light in Ireland compared to a number of other countries in Europe, in particular, those that offer comparable attractions for foreign investment, such as France and the Netherlands.

Another indicator in Table 4, column 9, summarises social insurance contributions and other labour taxes as a percentage of total labour costs, thus giving an overview of the degree to which the taxation system acts as a burden on the creation of employment. From this point of view, Ireland performs relatively well, being in fourth position out of 16 countries. At 15 per cent, the rate is lower than the level of the majority of OECD countries except Denmark (8 per cent), UK (13 per cent) and Japan (14 per cent).

The income tax wedge measures the gap between the cost to the employer of employing someone and the net pay received by that person. The reduction of the tax wedge was set as a target in “Shaping our Future”, because of the argument that the tax wedge impacts negatively on employment. An increase in the tax wedge tends to affect wage bargaining and

increase total labour costs. The figures are given in Table 4, column 10. The tax wedge for Ireland at 55 per cent is of the same order as a number of other European countries, such as Belgium, Finland, Germany, Italy, Luxembourg, the Netherlands and Norway, but Ireland ranks 13 out of 21. Ireland's tax wedge is higher than countries such as Portugal and Spain, and perhaps more importantly from the point of view of competitiveness, higher than the UK, which has a value of 44 per cent. Even here, however, the figure is much higher than in countries other than European OECD members, such as the US (35 per cent) and Japan, which has the lowest figure (26 per cent). "Shaping Our Future" called for a reduction in the tax wedge and also an elimination of the differential with the UK. Recent changes announced in the Budget have reduced the tax wedge but up to date internationally comparable data is unavailable at present. The report by UNICE contains more recent data (1996) on the marginal tax wedge for an average production worker in OECD countries. It reflects Ireland in eighteenth position among 22 countries, with a marginal tax wedge of over 60 per cent.

Table 4

		9	10	11
Work Incentives	**Indicator**	**Social insurance expenditure and other labour taxes as a % of total labour costs**	**Tax wedge**	**Top rate of income tax nominal**
	Year	**1995**	**1994**	**1996**
Country	Observations	16	21	27
Ireland	Value	15	55	48.0
	Rank	4	13	16
Japan	Value	14	26	50.0
	Rank	3	1	18
Netherlands	Value	23	55	60.0
	Rank	9	13	26
New Zealand	Value	-	39	33.0
	Rank	-	6	2
UK	Value	13	44	40.0
	Rank	2	9	8
US	Value	22	35	39.6
	Rank	8	4	7

Source: OECD/DAFFE/CFA/WP2(95)10; Swedish Employers Confederation; International Tax Summaries, Coopers and Lybrand, 1996

Taxation is difficult to measure in comparative terms, but one indicator is that of the top rate of income tax (Table 4, column 11). Here it can be seen that Ireland's rate is below that of a number of OECD countries. Canada is in first position at 29 per cent, while Ireland is again in a middle ranking position (16) at 48 per cent, but the December 1997 budget has reduced this rate to 46% which will be effective from April 1998. (However, employment levies in Ireland bring the rate to 48.5 per cent in practice). As in a number of other respects, it can be noticed that New Zealand's competitive position in this regard is a better one. Again, however, New Zealand's geographical peripherality will always require to be offset to a greater extent than most other countries. Again, from Ireland's point of view, the markedly lower top rate of income tax to be seen in the UK is a factor in determining competitiveness from a number of aspects. Firstly the attractiveness of foreign investment will be to a degree influenced by the top rate of income tax paid. Secondly, the availability of skilled staff, given the open labour markets between Ireland and the UK will also be influenced. Thirdly, the low rate of income tax is likely to induce more entrepreneurial activity by lowering the risk/reward ratio. For these reasons, the influence of this top rate of income tax, although lower than in other competitor countries, such as Belgium, Denmark, and the Netherlands, should be carefully considered.

Overall, Ireland occupies a middle ranking position on work incentives and is less competitive than the UK for most of the indicators. The tax wedge, as well as specific details of taxation as reflected in the overall tax to GNP ratio need to be addressed, both from the point of view of improving work incentives and the climate for foreign direct investment. It should be

emphasised in particular that both the opportunity as well as the necessity for improvements in taxation systems now prevail. Demographic trends, as well as growth trends, indicate that a reduction in the dependency ratio will be likely for a period. This will create important opportunities for increasing work incentives in particular and enterprise incentives in general.

Another issue to consider is the level of income at which taxpayers start paying the higher rate of tax. In Ireland at present unmarried taxpayers pay at the higher rate at relatively low levels of income. However, in the UK, unmarried earners only pay the top rate of income tax at much higher levels of income. This second dimension must also be considered when analysing the impact of the top rate of income tax.

Conclusions

The tax wedge is an important focus for policy because it summarises significant ways in which government action determines competitiveness, and there are employers PRSI, employees PRSI and personal taxation. These affect production costs both directly and indirectly, since they determine many aspects of the way the labour market works.

However, they have different effects on different sectors. While the tax wedge will have an overall effect on costs and work incentives, the composition of it is also important. Levels of personal income tax may affect the availability of particular skills, for instance, especially because they will be compared with other countries. Highly skilled people, for instance in the computer and telecommunications industry or in financial services are part of an international labour market, and they will be influenced in location by the levels of personal taxation. In turn, this affects the pattern of direct foreign investment. Nevertheless, it is also to be noted that labour shortages exist at different skill levels, such as in the construction sector and in personal services, and they exist also in traditional industries such as clothing.

These shortages should also be considered in determining changes in personal taxation and other components of the tax wedge. “Partnership 2000” states that the Government will introduce personal tax reductions of £900 million over the next three years. Revenue buoyancy appears likely to increase the possibilities in this regard. However, the precise way in which these reductions are implemented in terms of income tax rates and bands will be very important in affecting the availability of skills for particular sectors and the functioning of the labour market as a whole. Careful consideration of those effects should form an essential part of any programme of reductions in personal taxation now and in the years to come.

Employment

Key Points
There has been significant progress in industrial relations in Ireland since 1986: the number of industrial disputes fell 126 in 1985 to 32 in 1996. This trend continued with 16 disputes in the first half of 1997
The percentage of woman in employment in Ireland is still below the EU average but is rising. In 1996, the employment rate for working age women (ages 15-64) was 43.5 per cent compared to an EU average of 48.4 per cent
Part-time employment and temporary employment rates are relatively low
Ireland has a very elastic labour supply which responds well to economic activity. Female participation rates, in particular, increase more dramatically when economic activity increases
Within Europe, Ireland is in a middle ranking position with regards to labour regulation, however, in a global context, Ireland and Europe are over regulated
Indicators in Top Quartile
Indicators in Second Quartile
Indicators in Third Quartile
Work days lost in industrial disputes
Incidence of part-time employment
Incidence of temporary employment
Level of youth employment
Indicators in Bottom Quartile
Long-term unemployment
Female activity rate (percentage of population 15-64)

The last section looked at work incentives, but another way of looking at the labour market is to see how it functions in terms of providing employment for different groups. In other words, is it mobilising the country's resources and doing so effectively?

Labour market regulation is important for competitiveness because it is widely believed that over-regulation can increase indirect labour costs, prevent flexible working hours and discourage firms from firing and hiring employees, thereby increasing unemployment levels which eventually lead to higher taxes. As can be seen from the Table K below, Ireland's labour market is not overly regulated in comparison to other European economies. This table is somewhat misleading in that it relates to 1994. Recently, the UK government agreed to sign up to the EU social charter, which will see a number of regulations introduced in the areas of employment protection and working time. The British Labour Party have also promised to introduce a national minimum wage in the near future. What this table does show is that Ireland has one of the least regulated labour markets in Europe.

UNICE identifies strict hiring and firing rules as an important barrier to the smooth functioning of labour markets. In its benchmarking competitiveness report, UNICE ranks Ireland in third position out of 16 for strictness of protection against dismissals, which means that Ireland is not restrictive in this regard.

An important measure of the labour market is the degree to which good industrial relations are found. An imperfect indicator of this is the days lost in industrial disputes, but it is a widely used indicator and one that is taken by many to represent the state of labour relations in the country. This is given in Table 5, column 1. For this reason, the figure for Ireland of 103 days lost per 1,000 civilian employed is not a good result, being exceeded only by eight countries

including Finland, Greece, the Netherlands and Spain. However, on closer examination it is seen that one or two specific disputes in sheltered non-traded services sectors have distorted Ireland's figures. We lag behind the UK in terms of 'days lost in industrial disputes' but this may be due to the fact that the ILO uses different measurement techniques in Ireland than the UK. Irish figures measure stoppages lasting at least one day or with at least 10 days not worked. UK figures exclude political strikes, but includes stoppages involving fewer than 10 workers or lasting less than one day only if 100 or more workdays are lost.

Table K Degree of Regulation in Various European Labour Markets

	Working time	Fixed-term contracts	Employment/ protection	Minimum wages	Employee representation	Synthetic index
UK	0	0	0	0	0	0
Denmark	0	0	0	0	2	2
Portugal	1	1	1	1	0	4
Belgium	0	1	1	1	1	4
Ireland	2	0	2	0	0	4
Austria	1	1	1	0	2	5
Netherlands	1	0	1	1	2	5
Finland	1	1	1	1	1	5
Germany	1	1	1	1	2	6
France	1	1	1	2	1	6
Italy	1	2	2	2	0	7
Spain	2	1	2	2	0	7
Sweden	1	2	1	1	2	7
Greece	2	1	2	2	1	8

Source: OECD Employment Outlook 1994

Figure 2.6 Number of Industrial Disputes in Ireland

Source: CSO Quarterly Industrial Disputes Release

Figure 2.6 above shows the significant decline in the level of industrial unrest in Ireland since the mid-1980s. This has been brought about by a succession of national agreements that have ensured moderate wage claims, in return for tax reforms and increased employment

arising from a buoyant economy. In 1994 the number of work days lost to industrial disputes was at its lowest level since 1922. The transformation in industrial relations is further evidenced by the 75 per cent decline in work days lost to industrial disputes to 1.3 million for the period 1987-1997, from 5.2 million for the period 1977-1987

It is also striking that the transition to the market economy in Eastern Europe has not been marked by a significant number of days lost in industrial disputes; scores for these countries are of the same order as the most prosperous OECD members.

An important employment indicator is that of female participation, which measures the degree to which the resources of a country are fully mobilised, bringing the full range of abilities to bear on the problems of economic growth, and measures also the degree to which both sexes have access to employment. Ireland, at 47.9 per cent, ranks 12 out of 15 countries, with only Greece, Italy and Spain having lower values. Most EU economies have much higher values, going as high as 78.0 per cent in Sweden. Ireland's female participation rate is less than two-thirds of the Swedish one. The EU average is 57.3 per cent.

Table 5

		1	2	3	4	5	6
Employment	**Indicator**	**Days lost in industrial disputes per 1,000 civilian employment**	**Female activity rate (% population 15-64)**	**Incidence of part-time employment**	**Incidence of temporary employment**	**Level of youth unemployment (15-24)**	**Long-term unemployment as a % of the total labour force**
	Year	**1993/1995**	**1995**	**1995**	**1994**	**1996**	**1996**
Country	Observations	27	15	28	18	28	28
Ireland	Value	102.8	0.479	11.6	9.4	18.2	6.72
	Rank	19	12	19	11	21	25
Japan	Value	1.3	-	21.4	10.4	6.6	0.66
	Rank	4	-	12	8	2	3
Netherlands	Value	114.0	0.585	36.5	10.9	11.4	3.28
	Rank	20	9	1	7	10	17
New Zealand	Value	32.7	-	22.4	-	11.7	1.03
	Rank	12	-	9	-	11	7
UK	Value	16.1	0.675	22.1	6.5	14.7	2.94
	Rank	7	4	10	15	15	16
US	Value	46.2	-	18.3	2.2	12.0	0.51
	Rank	14	-	14	18	12	2

Source: OECD, Employment Outlook 1997; ILO Yearbook of Labour Statistics; EU Employment in Europe, 1996

However, women's participation has been rising considerably in Ireland. In 1990, the rate was 42.4 per cent. It increased to 44.5 per cent by 1992, and 48.4 per cent by 1994, falling back slightly to 47.9 per cent in 1995. The rate increased to 48.8 per cent in 1996.

Table 5, column 3, shows the percentage share of part-time employment in the workforce. For Ireland, it is 11.6 per cent, while the leading country in this regard, the Netherlands has 36.5 per cent. Part-time jobs not only improve access to employment but also allow for increased flexibility within the enterprise system. Ireland's share is below the EU average of 15.3 per cent and, the value for the UK is more than double that of Ireland.

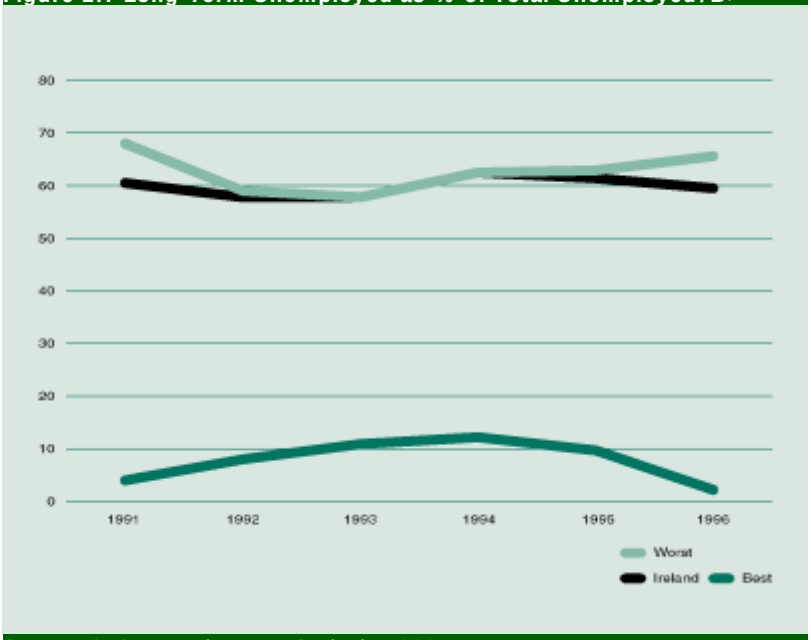
For temporary employment, Ireland's showing is less markedly below most other countries at 9.4 per cent compared to an EU average of 11.0 per cent (Table 4, column 4). Ireland ranks 11 out of 18. Temporary employment is an indication of competitiveness to the extent that it

sometimes implies flexibility in labour markets, but if it is associated with uncertainty, lack of training etc., then the productivity losses could outweigh any flexibility gained. It should also be noted that two economies that would be regarded as having flexible labour market conditions, the United States and United Kingdom, have low levels of temporary employment.

The flexibility of Ireland's labour market is, however, enhanced by the importance of migration. Returning emigrants have provided additional skills to the labour market and contributed to recent growth. Foreign migration to Ireland has had an employment impact also, especially in the services sector.

There has been a steady decrease in the unemployment rate from an annual average standardised unemployment rate (SUR) of 15.6 per cent in 1993 to 9.9 per cent in late 1997. Table 5, column 6 shows long-term unemployment directly as a percentage of the total labour. Ireland compares very unfavourably with other countries, ranked 25 out of 28 countries. Figure 2.7 shows the true trend in long-term unemployment as a percentage of total unemployment. However, recent data from the CSO labour force survey show that the number of long-term unemployed fell from 103,000 to 86,000 between April 1996 and April 1997. The share of long-term unemployment in the UK rose significantly between 1990 and 1995 from 28.5 per cent to 43.5 per cent.

Figure 2.7 Long-Term Unemployed as % of Total Unemployed /B>



Source: OECD, Employment Outlook, 1996

With regard to the level of youth unemployment, the rate for Ireland was 18.2 per cent in 1996, nearly two percentage points below the rate in 1995. At the same time, it should be noted that a surprising number of countries where income levels would be higher than in Ireland, such as Belgium, Finland, France and Italy have higher or much higher rates. This pattern is not however, carried over into the even more serious issue of long-term unemployment, for only two other countries, Italy and Belgium have the same high levels of around 62 per cent of the unemployed having been so for more than one year. In 1997 the relevant figure for Ireland was 56 per cent. The EU average is 48.6 per cent, and the UK and Netherlands are below these at around 43 per cent. It should be noted that the Active Labour Market Policies (ALMPs) have been introduced in Ireland specifically to target youth unemployment.

Conclusions

Ireland is at an advantage vis à vis many other EU member states in that it has an available supply of labour to meet increased demands arising from improved economic activity. Increased labour availability comes from the natural increase in the population, from increased female participation, returning emigrants, and migrant workers from other countries. Notwithstanding the relatively low level of part-time and temporary employment, the labour market is elastic. However, bottlenecks in labour supply are increasingly appearing at a sectoral level, for example in the software sector. It is, however, a market that can be significantly affected by policy action in the fields of taxation, social welfare and education and training. The conclusions in this report on these issues are therefore of direct relevance to the functioning of the labour market, and national policies must take account of such interactions.

Ireland makes inadequate use of labour resources as seen in the levels of unemployment and of women's participation. The position is however improving under both these headings. There are also low levels in terms of part-time and temporary employment. Policy review needs to examine issues of equality and reform in the light of these concerns, especially from the point of view of the taxation and social welfare systems. The recommendations of the task force on long-term unemployment, and those of the National Economic and Social Forum will be particularly important in this regard. A long-term target of no more than 50,000 long-term unemployed by 2010 was set out in "Shaping our Future". A full range of policy actions were defined that will address the problem through a combination of human resources development measures and employment-generating growth. They include a raising of the school-leaving age and, a new national system of traineeship. The agreements in Partnership 2000 provide additional impetus to a resolution of this problem.

Business Services

Technological Innovation

Technological Innovation Potential

This chapter examines a number of support services and industrial policy issues that have an important impact on the competitiveness of the economy. The issues considered include technological innovation, international trade, finance and investment, and the information society. Some of these issues are related directly to public support and the institutions provided. This would be especially true in the areas of technological innovation and international trade. Technological innovation is a particularly important non-cost area of competitiveness because it is at the heart of changes in world industry and services and the phenomenon of globalisation. The area of finance has both a cost and a non-cost aspect. The costs of finance for investment have an important share of overall costs, as was seen in Chapter 1. The availability of capital for small enterprises, start-ups and new investment in general (which will also affect technological innovation) are an essential driver of growth in the economy as a whole. Policy for the information society is a component of competitiveness and although it is considered to some extent in this Chapter in Section 3.1.3, the issues involved cross over into other areas such as education and training and telecommunications.

Key Points
Ireland is close to the EU average in the number of science/engineering degrees awarded
There is a relatively high level of science/engineering graduates, but there is considerable scope for more of them to move into research
Non-business expenditure on R&D in the Irish economy is two-thirds of the EU average
Postgraduate students in third-level colleges account for half of researchers in higher education and government institutions
Indicators in Top Quartile
Science graduates as a percenyage of the labour force 25 to 34 years old/B>
Indicators in Second Quartile
Percentage of degrees in natural science, maths, computer science , engineering and architecture
Researchers per 1,000 labour force in higher education and government institutions
Indicators in Third Quartile
Non-business expenditure in R&D as a percentage of GDP
Indicators in Bottom Quartile

Science and technology, through their links with the industrial innovation process, are the main drivers of economic growth. Technological factors lie behind most product and process innovations while information technology now permeates all aspects of the modern enterprise. Knowledge and innovation are the keys to future competitiveness. The complexity of new technology, and the speed with which it changes and evolves, make it difficult for individual companies, and in particular small companies, to meet all their own needs in terms of innovation. Enterprises must therefore be supported by a national system or infrastructure, which together, produce a competitive industrial sector. Research institutions, including third-level colleges, are an important component of this system. The training and production of a sufficient number of highly skilled people in science and engineering disciplines is a prerequisite for a modern society.

Table 6 illustrates the Irish performance in four indicators which measure the potential of the economy in terms of human resources output in science and technology, and R&D performance in third-level colleges and research institutes.

The first two indicators relate to human resources available. Looking at degree subjects in 1994 Ireland is ranked 11 out of 27 with regard to the proportion of science/engineering degrees awarded. The share in the total of degrees awarded in natural, physical and computer science, engineering and mathematics is 30 per cent in Ireland, very close to the EU average of 30.5 per cent. The second indicator - science and technology graduates as a proportion of the labour force aged 25 to 34 - shows Ireland leading the world in the production of technical graduates, ahead even of Japan. The UK is in third place but its value is less than two-thirds that of Ireland. The EU average is less than half of the value for Ireland.

Table 6

		1	2	3	4
Science and Technology Potential	**Indicator**	**Science and technology degrees awarded as a % of the total number of degrees awarded**	**Science and technology graduates as a proportion of the labour force 25 to 34 years of age (per 100,000)**	**R&D expenditure in higher education and government institutions as a percent pf GDP ***	**Researchers in higher education and government institutions per 1,000 labour force**
	Year	**1994**	**1993**	**1996**	**1993**
Country	Observations	27	25	27	27
Ireland	Value	30.0	2.751	0.47	2.6
	Rank	11	1	19	11
Japan	Value	31.1	2.679	0.91	3.9
	Rank	9	2	4	2
Netherlands	Value	22.5	775	0.98	3.1
	Rank	20	15	1	6
New Zealand	Value	19.0	942	0.73	2.8
	Rank	25	11	11	8
UK	Value	31.7	1.799	0.69	1.6
	Rank	7	3	13	16
US	Value	18.2	1.180	0.63	1.5
	Rank	262	7	15	19

* GNP is used in place of GDP for Ireland

Source: OECD Eduaction at a Glance, 1996, OECD, MSTI, 1, 1997

The total level of R&D in a country is divided into business-performed R&D and that performed outside the business sector in third-level colleges and research institutes. The next two indicators in Table 6 measure the performance of research in the non-business sectors and hence reflect the potential impact on industrial competitiveness via the exchange of knowledge, ideas and people.

In terms of total non-business expenditure on R&D Ireland ranks well below the EU average, but in eleventh position, and above the EU average, in non-business researchers. This disparity between expenditure and numbers is a reflection of the relatively unique situation here in the colleges where a high proportion of researchers are post-graduate students as distinct from permanent research personnel; the shortage of career research posts and the absence of R&D support for technicians and equipment in the higher education sector contribute to the overall low ranking as measured by R&D expenditure.

Conclusions

To summarise, the competitiveness potential of Ireland in terms of science and technology - a key determinant of innovation and of competitiveness in international markets, both for trade and for the attraction of foreign investment - is mixed in terms of human resources. Outputs of science and technology graduates in Ireland are the highest in the world, though imbalances exist in industry between demand and supply in specific areas. The already high level of

these indicators could mean that the system will have difficulty in coping with increased demands for more technical graduates.

While the number of researchers in non-business sectors is reasonably high, there is an inadequate level of infrastructural support for their activities. This will have longer-term implications for the quality of training of researchers and hence for the availability of suitably qualified people for R&D in industry. The weaknesses in the availability of technicians have already been noted in Chapter 2.

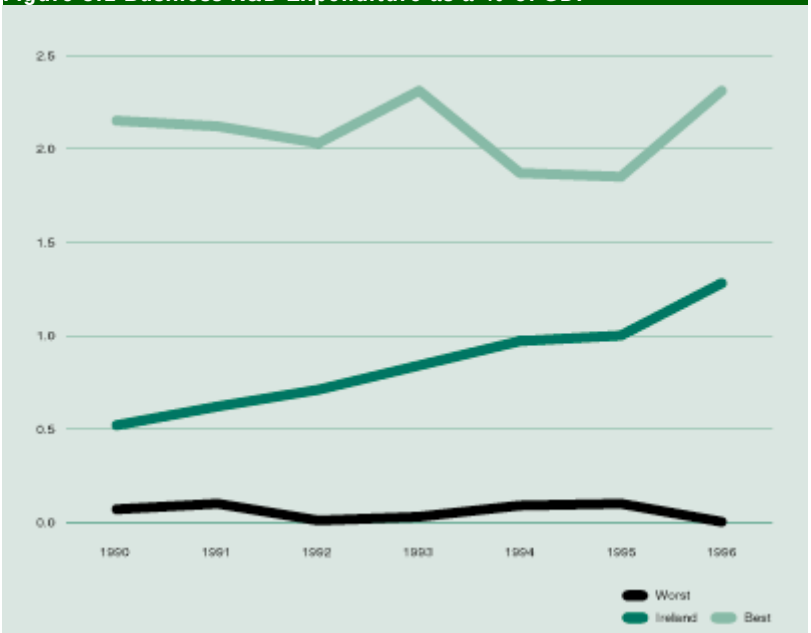
Technological Innovation Performance

Key Points
Business sector expenditure on R&D is 1 oer cent of GDP (1.13 per cent of GNP), compared to the EU average of 1.15 per cent.
ISO 9000 is widely implemented in Ireland
Patent registrations in Ireland are dominated by overseas investors
There is a very low level of petenting by Iriah investors in the US market
Diffusion of information technology is relatively strong as reflected by the growth in the Irish IT market
Indicators in Top Quartile
ISO 9000 per capita
Indicators in Second Quartile
Business R&D expenditure as a percentage of GDP
Researchers per 1000 labour force in business sector
Indicators in Third Quartile
Patents granted in US per capita
Size of information technology market, as percentage of GDP
Growth in IT market
Indicators in Bottom Quartile
Dependancy ratio as measured by number of patents origionating abroad compared to those filed by residents

Technological innovation is an area where internationally comparable data have always been sparse. In the past it has been customary to use Business Expenditure on R&D (BERD) as a surrogate for all technological change within enterprises. This is clearly unsatisfactory, and recent Eurostat initiatives on innovation surveys are an attempt to address this problem. This year will see an EU-wide innovation survey carried out, following which comparable data will be available (at least for EU member states) on key indicators such as levels of technology transfer and the extent to which new product introductions are reflected in sales figures.

Ireland’s R&D performance, especially that of Irish-owned industry, has long been a source of concern. Ireland has historically spent less on R&D than most other modern economies. However, there has been strong growth in recent years. Real R&D expenditures have been growing at 20 per cent per annum since 1991. Figure 3.1 highlights that R&D expenditure by Irish business as a percentage of GDP has doubled since 1990. The OECD traditionally groups R&D performing-countries into three categories: high, medium and low. Ireland has now moved towards the average of the medium-performing countries, having been in the low category until recently. Ireland is currently ranked ninth out of the 26 countries observed.

Figure 3.1 Business R&D Expenditure as a % of GDP*



* GNP is used in place of GDP for Ireland

Source: OECD, Main Science and Technology Indicators, No. 2, 1995

Table 7 provides some measures of our relative competitiveness in technological innovation in enterprises. BERD as a per cent of GDP will be affected by the sectoral breakdown of the GDP in each country. Thus, a country that has a large manufacturing sector will tend to have a higher R&D expenditure, as percentage of GDP, while economies oriented more towards agriculture or services may have a lower value because these may be less R&D intensive. Ireland's BERD as a percentage of GDP has risen rapidly in recent years to reach 1 per cent compared to the EU average of 1.15 per cent. However, there is still room for improvement. The overall position is masked by the dominance of foreign-owned firms, which account for two-thirds of business R&D; a relatively small number of these account for 50 per cent of BERD in Ireland. Ireland has a middle ranking in terms of the number of business sector researchers than in R&D expenditure.

Table 7

		1	2	3	4
Science and Technology Performance	**Indicator**	**Business R&D expenditure as a % of GDP ***	**Business R&D researchers per 1,000 of the labour force**	**ISO 9000 Certificates per million capita - total to December 1995**	**Dependency ratio (non-residential/ residential patent applications)**
	Year	**1996**	**1994**	**31/12/95**	**1994**
Country	Observations	26	26	26	26
Ireland	Value	1.13	1.8	456	49.61
	Rank	9	13	4	23
Japan	Value	1.95	5.6	30	0.16
	Rank	2	2	22	1
Netherlands	Value	1.09	1.8	344	28.25
	Rank	10	13	5	21
New Zealand	Value	0.31	0.9	480	12.54
	Rank	22	18	3	12
UK	Value	1.34	3.0	9.1	4.03
	Rank	8	6	1	5
US	Value	1.85	5.9	34	0.93
	Rank	4	1	21	2

* GNP is used in place of GDP for Ireland

Source: OECD, MSTI, 1997, Mobil Survey 1996

Quality is not a direct measure of innovation but it is closely allied, in the sense that it reflects a continuous review of products and processes within an enterprise. Companies that think hard about what they are doing and what are the needs of their customers, are more likely to innovate. Some correlation is therefore to be expected. In this respect, the quality indicator in Table 7 column 3, which measures the ISO 9000 certificates per million of population gives an encouraging result for Ireland. Only three countries, the UK, Australia and New Zealand have a higher figure, showing that proportionately, the main quality systems standard, ISO 9000, is widely being put into practice in Ireland.

At the same time, it should be noted that ISO 9000 provides only a framework and does not of itself guarantee high quality.

Patent data must be interpreted with extreme care but do provide a broad indication of the extent to which R&D is leading to the exploitation of proprietary technology for commercial gains. One indicator is that of the dependency ratio which gives the ratio between non-residential and residential patent applications. The higher the figure, the more the country in question has a foreign origin for the patents registered there. Clearly direct comparisons between countries are not possible with this indicator because it will be affected by how interesting the domestic market is to foreign inventors (who would of course include all the manufacturing companies that develop new products), but it is nevertheless noticeable that there are only a few countries which have a higher ratio than Ireland and these are Belgium, (where the figure is very similar to that of Ireland), Greece and Portugal. Of course, the impact of the foreign-owned sector is also strongly felt in this area, as multinationals benefit from the research of their parent companies which may have been patented elsewhere.

Looking at patents registered in the US, one of the most open and innovative economies in the world, gives an indication of how competitive other countries are. For a company to be granted such a patent represents a statement that the company concerned is a serious player on global markets. For this reason, the low value for Ireland is a matter of concern. Not enough innovation at an advanced level is taking place in indigenous Irish companies.

It is important, however, to distinguish between invention and application. Even if an enterprise or a country is not as successful as other countries in new inventions, what matters in the end is success in the application of new inventions. New techniques, new processes and new products have to be conceived but also to be developed, defined in practical terms, implemented in production terms and delivered to the market in an effective and profitable way. Skills in these later stages can be even more important for competitiveness.

Table 7

		5	6	7
Science and Technology Performance	**Indicator**	**Patents granted in US (per million capita)**	**Size of Information technology market (% of GDP *)**	**Growth in information technology market (compound annual growth rate)**
	Year	**1991/1995**	**1994**	**1987-1994**
Country	Observations	25	24	24
Ireland	Value	23.3	1.5	9.1
	Rank	16	18	13
Japan	Value	184.1	1.7	11.5
	Rank	1	11	8
Netherlands	Value	56.9	2.1	11.8
	Rank	9	7	7
New Zealand	Value	19.7	3.0	14.4
	Rank	3.0	1	4
UK	Value	45.6	2.1	7.6
	Rank	13	7	18
US	Value	-	2.8	8.7
	Rank	-	2	15

* GNP is used in place of GDP for Ireland

Source: OECD, Information Technology Outlook, 1997; National Patent Offices, National Science Foundation

The two indicators relating to the penetration of information technology into the economy (as measured by the spend of IT producers) provide a mixed picture. On the one hand Ireland is ranked 18 out of 24 in relation to the size of the IT market (a relatively poor performance) while, on a more positive note, there is relatively strong growth in the Irish IT market. These indicators provide a good measure of the rate of diffusion of a key technology, one which is critical to the productivity and efficiency of both private and public sectors. However, the size and growth rate of the domestic IT market does not fully capture the importance of the IT sector in the Irish economy. There is a high trade in IT products and Ireland was the seventh largest importer and exporter of computing equipment of all OECD countries in 1993. It is estimated also that 40 per cent of all PC package software sold in Europe is produced in Ireland.

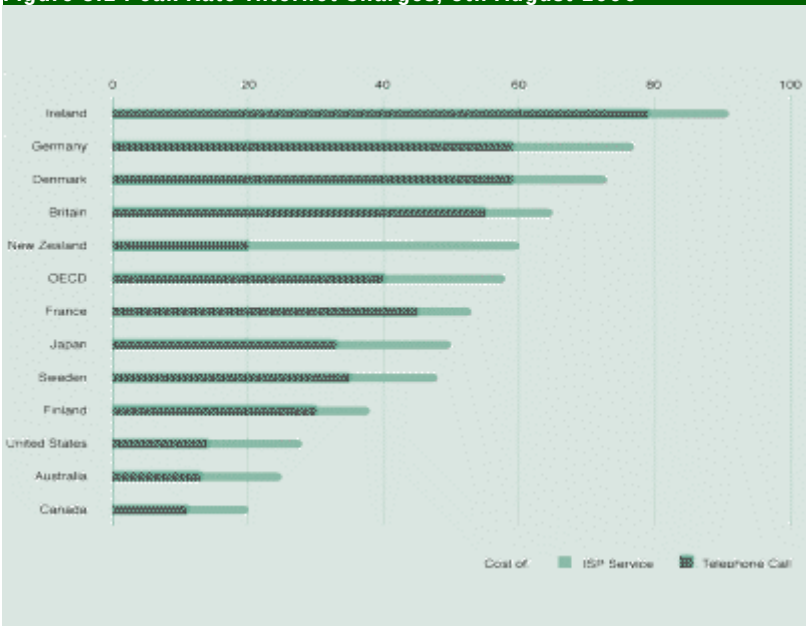
The Information Society

The information society, or post-industrial society, is one in which information is produced, communicated and used intensively. The industrial revolution in the nineteenth century was driven by steam and steel technologies. The technologies that will make possible the information society include advances in hardware, software and telecommunications. Information and Communications Technologies (ICTs) are having and will continue to have a profound effect on the economy and society. Productivity growth, improved product and services design and faster response to market needs are all aspects of competitiveness that are directly affected by the new technologies. The new technologies are inevitably reducing jobs in some areas, but they are creating them in others. International comparisons of ICT

expenditure were carried out by UNICE. These comparisons placed Ireland in ninth position out of the 19 countries examined. While Irish expenditure on ICT as a percentage of GDP was marginally above the European average, it is significantly lower than the US, Switzerland and Sweden which show the highest percentages. As a percentage of GNP however, Ireland's position improves to around seventh place.

A number of initiatives are under way in Ireland to accelerate progress towards the information society, and it is important to emphasise that steps towards it will represent improvements in Ireland's competitiveness. The Information Society Commission, established within the Department of the Taoiseach, has now produced its first report. Measures such as connecting all schools to the internet and the Information Age Town Competition are underway, and work is under development on an Information Society Leaving Initiative, and on the feasibility of establishing a Digital Park. In November 1997 the Government announced the establishment of a £250 million Education Technology investment fund. The fund will aim to modernise the infrastructure of third-level institutions, develop new areas of study to deal with high technology skills gaps and promote innovation. In November the Government announced a £50 million investment which aims to have every school connected to the internet by next June. Within three years 60,000 computers will be supplied to Irish schools and 20,000 teachers will be trained in IT. These measures, while welcome, will need sustained support and will have to be supplemented by action in other spheres. Other countries are not standing still. The US plans to have every classroom connected to the internet by the year 2000.

Figure 3.2 Peak Rate Internet Charges, 5th August 1996



Source OECD - *20 hours onlinr per month

The issue of telecommunications costs is examined in Chapter 4.1.2 of the report. However, there is an important aspect of these that will directly affect the developments of the information society. Access to the investment for the majority of users in Ireland is through telephone lines (rather than ISDN links). Thus business use of the internet, in particular, will be affected by the peak home cost of local telephone calls to the internet Service Provider (ISP).

As the box above shows Ireland had the highest peak ratio internet access charges in 1996. Its ISP service charges were below the OECD average, but the telephone call component of the total costs of access was so high that Ireland's competitive position with respect to a key area of business information and a key building block of the information society is being serious weakened.

Conclusions

Ireland has a good basis for rapid development of the information society, at least in terms of general levels of education, skills and combined with a considerable role in the Irish economy played by the world's leading companies in computers, software, electronics and telecommunications. Moreover, as an English speaking country, Ireland has a significant national advantage in these sectors. There are weaknesses in the physical infrastructure and these are discussed in Section 4.1.1 of this report. Measures to improve it through an expansion of broadband telecommunications capability are urgently needed. The costs of telecommunications as they affect internet access must also be reduced to levels comparable to those in competitor countries, and preferably below them.

Other measures needed to improve Ireland's position with regard to the information society include the following:

- Increased investment in the provision of information and communications technologies to schools, as well as in teacher training and in the preparations of courseware. It should be noted that the recently announced Education Technology Investment fund includes £25 million in capital provisions for school IT projects.
- Awareness programmes, targeted both at the business community and at the general public to point out the competitive advantages to be gained by the adoption of ICTs and the benefits in terms of improved quality of life.

In general there are positive signs in relation to innovation. There is continuing significant increase in business sector expenditure on research and development, with Irish levels approaching the EU average. Appreciation of the importance of quality and continuous improvement is reflected in the relatively high number of companies qualifying for ISO 9000. The penetration levels of information technology are showing good growth.

International Trade

Key Points
Ireland's manufactured exports are not well diversified by sector or by country
However, export performance has been in the top quartile of all OECD countries in 1997
While overall trade openness is high, there is no scope for increased openness in services trade
Indicators in Top Quartile
Export performance for total goods
Trade openness
Indicators in Second Quartile
Producer prices - Manufacturing (1990 = 100)
Indicators in Third Quartile
Trade openness in services
Indicators in Bottom Quartile
Manufacturing export concentration by country
Manufacturing export concentration by sector

International trade is a central issue in competitiveness for two reasons. Firstly, if trade performance is good, this is a measure of how competitive the economy is at international level. Secondly, it is only by participating in international trade that an economy can learn and develop. If a country does not participate fully in trade, it misses exposure to the latest technologies and techniques. It misses also the opportunities that are continually emerging for

new markets and new products. So international trade data can show the competitiveness of the Irish economy at present, and it can also show how likely it is that competitiveness can be maintained in the future, through the learning experience of participating in international trade.

Table 8

		1	2	3	4	5	6
Trade	**Indicator**	**Manufacturing exports - concentration, standard deviation of exports by country**	**Manufacturing exports - concentration, standard deviation of exports by sector**	**Export performance for total goods - % change from last period**	**Producer prices - manufacturing (1990=100)**	**Trade openness - exports + imports (of goods and services)/GDP ***	**Trade openness in services - (service exports + service imports)/service output**
	Year	**1993**	**1993**	**1996**	**Q2 1997**	**1995**	**1994**
Country	Observations	24	24	27	25	26	12
Ireland	Value	0.052	0.156	4.2	110.0	152.8	0.4
	Rank	20	22	6	14	2	8
Japan	Value	0.050	0.070	-6.8	97.1	17.3	0.1
	Rank	19	2	27	2	26	12
Netherlands	Value	0.048	0.105	-1.6	104.5	100.2	0.5
	Rank	16	12	19	7	5	5
New Zealand	Value	0.045	0.059	-1.8	108.9	58.8	-
	Rank	13	1	20	11	15	-
UK	Value	0.033	0.105	0.7	125.8	57.8	0.3
	Rank	2	10	12	19	17	9
US	Value	0.043	0.123	1.2	110.4	24.1	0.1
	Rank	8	18	11	12	25	11

* GNP is used in place of GDP for Ireland

Source: OECD, Main Economic Indicators, 1997, OECD, Economic Outlook, 1997

An indicator (Table 8, column 2) shows export concentration indices which measure the degree to which exports are concentrated in a few areas and the availability of bilateral trade data on manufacturing makes it possible to measure this. Broadly speaking, the more diversified the exports of a country are the more resilient will be the economic structure to sudden shocks and the better adapted it will be to take advantage of new opportunities. By this standard, Ireland's exports are not well diversified industrially and its score brings it to position 22 out of the 24 OECD countries. New Zealand is the most industrially diversified and Japan next most. While Ireland has strong export performance in two very different groups of products, food and electronic machinery and equipment, there is a range of industries not well covered in Irish exports. This means that our diversification is low.

Another way of looking at diversification of exports is in country terms (Table 8, column 1). The more unevenly distributed exports are across countries, the more vulnerable are those exports to sudden shocks. Ireland's exports are not well diversified in country terms either ranking 20 out of 24. Germany is the most diversified and the UK next. Both the industrial and country diversification indices refer to manufactured exports only, and so the influence of other exports, such as agricultural raw materials, minerals and most importantly services, is excluded. It should be noted, however, that exports may not be well diversified by export market due to the additional costs associated with exporting beyond the UK. These costs would include re-labelling and additional transport costs, among others.

Concentration and diversification are important issues, and the priorities are different at different levels. An enterprise will do better initially by concentrating on a limited range of markets, because of limited resources. The same is true for official export promotion measures, which will also be constrained by available resources. Clearly it makes sense in

this case also for some concentration of effort. But for a country as a whole, the diversification of markets provide a degree of stability and protection against stocks.

The same is true for concentration and diversification in sectoral terms. Enterprises, of course, have to concentrate their efforts. But sectorally a diversified economy is a more stable and flexible economy, and one that is therefore more ready to take advantage of new growth opportunities as they occur. A diversified export pattern will reflect this characteristic.

The UK market

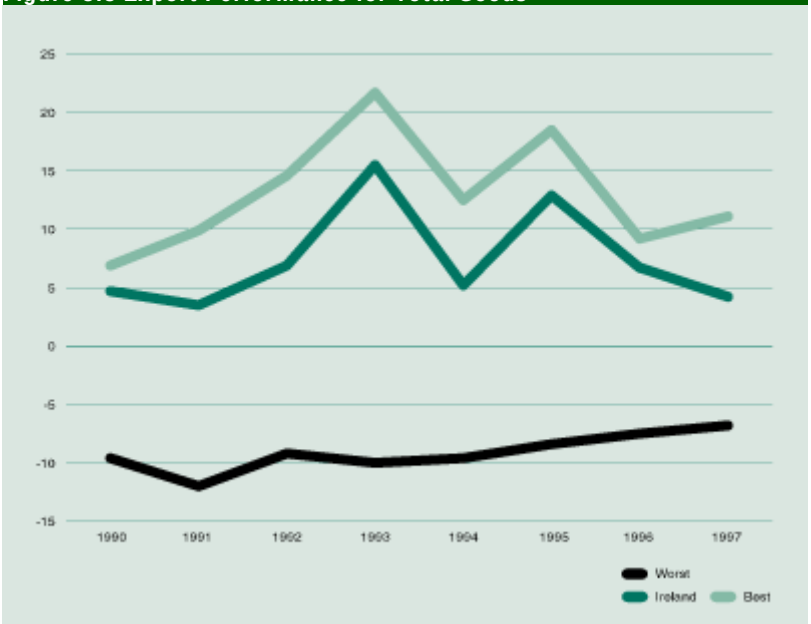
A difference between Irish and overseas-owned companies is seen in the approach to the UK market. Exports to the UK are much more important among Irish-owned enterprises than among overseas-owned. The Irish-owned sector exports 42.5 per cent of its exports to the UK alone, compared with 22.9 per cent for the overseas-owned sector. The concentration on the UK market among Irish-owned enterprises is even more marked as the size of enterprise decreases. Thus small Irish-owned enterprises send 54.3 per cent of their exports to the UK, i.e., more than half. For medium-sized enterprises the figure is 43.7 per cent, and even for large Irish-owned enterprises, they still export 36.7 per cent of their exports to the UK. This contrasts with the overall share of the UK market in total of export markets for both sectors combined as 26.9 per cent. Thus, the general argument that diversification of export markets is desirable from the point of view of reduced risk of vulnerability in the future is accentuated by the need for Irish-owned enterprises, in particular, to diversify further from the UK market, in order to reduce their vulnerability and also to participate in wider markets to foster their competitiveness. The EMU process will be the main driver of such trends in the future. The figures are given in Table L.

Table L Share of UK Exports in Total Exports, %

Ownership	Large	Medium	Small	Grand Total
Irish	36.7	43.7	53.3	42.5
Overseas	21.2	26.8	18.0	22.9
Irish	23.1	31.7	33.5	26.9

Source: Forfás IEE sample data

Figure 3.3 Export Performance for Total Goods



Source: OECD, Economic Outlook, No. 60, December, 1996

A small, open economy, such as Ireland, must achieve export competitiveness if it is to be successful. Ireland's export performance throughout the 1990s has been strong. Exports have been growing at a much faster rate than the growth in our export markets. This suggests a strengthening competitiveness and an increasing share of world markets. The UK's export performance has remained relatively stagnant since 1990. For 1996, Ireland is currently ranked sixth out of 27 countries for this indicator.

The export performance indicators given in Table 8, column 3, look at the growth of exports and compare it to the growth of the markets concerned. In other words, they measure how successful the country has been in improving its market share. Ireland's rank reflects our strong export growth in recent years which has been at a rate far above the growth of world trade or of the developed countries GDP in general.

Table M Export Share of Sales %

Ownership	Large	Medium	Small	Grand Total
Irish	49.8	52.7	36.5	49.2
Overseas	91.8	82.0	75.2	87.6
Irish	83.0	70.6	51.8	75.6

Source: Forfás IEE Survey

The good performance of Irish exports has to be seen in context, with account being taken of the division between Irish-owned and foreign-owned companies, which operate in practice. Overseas-owned companies are much more oriented towards exporting than Irish-owned enterprises. IEE data suggests that 87.6 per cent of sales were exported for overseas-owned companies in 1995, compared with 49.2 per cent for Irish-owned enterprises. Small Irish-owned enterprises have a much reduced export orientation, amounting to 36.5 per cent of sales, or less than half the orientation of the small overseas-owned companies. (See Table M).

Enterprises that do not export are not only missing out on the market growth opportunities that exporting provides, but more importantly are not learning through increased competition the necessary management, design, quality and innovation skills that are necessary to survive in the future.

The next variable in Table 8, column 4, is the change in producer prices in manufacturing. This is clearly an indicator that reflects an important aspect of competitiveness. Ireland does not score particularly well by comparison with many OECD countries, since the ranking achieved is 14 out of 25. However, the growth to 110.0 is below that in the EU as a whole (113.7), and well below that in the OECD as a whole (115.0), as well as also being below that in the UK (125.8), which is in position 21.

Trade openness indicators show that Ireland has one of the highest values. It is one of the most open economies in the world at position 2 out of 26 with trade openness at 152.8 per cent of GNP. The measure is an important one, because it shows the degree to which the country is part of the international production system. There are a few countries, not given in the table, which would have higher values, but these tend to be economies such as Hong Kong, Singapore and Panama, which would include redistribution activities in their international trade. Ireland has a high score compared to other countries in the world which points to a considerable potential for improved competitiveness in the future. High imports mean that Ireland is exposed to the best technologies and the best products. High exports mean that Ireland is successful in winning its place in competitive world markets.

Conclusions

In summary, Ireland's trade performance shows that competitiveness overall, from this point of view, is quite good but diversification of exports in both product and market terms should be a priority. The search for new export products and markets should be a policy priority both to decrease vulnerability and also to increase the linkages between Ireland and the

international production system. Similarly, the lack of openness in services trade (Table 8, column 6), (compared to the very high openness in trade as a whole) means that, in this field, Ireland is disadvantaged, because the services industries are not sufficiently exposed to international competition and are not as export-oriented as other countries' services industries are. When EMU takes place this position may change to some extent, but it should be an additional policy priority to increase Ireland's trade openness in services both indirectly through the application of competition policy and more directly through increased export promotion.

Because of Ireland's trade openness, competitiveness is a more important issue for Ireland than it is for some other countries, and trade policy is a particularly important element of enterprise policy in general. Trade policy is determined at EU level and the EU Commission acts as negotiator with other trading partners. Ireland should be particularly active in trade policy development at EU level, and because of the special role of foreign investment (particularly US foreign investment) in Ireland it is important that EU policy gives adequate reflection to Ireland's special needs.

Finance

Key Points
Ireland has a very high spread between reported deposit and lending rates, compared to other countries
The rate of return on capital is higher than the EU average
Some interest rates in Ireland are higher than in major competitors, but convergence towards EMU will reduce these gaps
Indicators in Top Quartile
Cumulative venture capital raised as a % of GDP
Indicators in Second Quartile
Money market rates
Interest rate spread - absolute
Rate of return on capital in the business sector
Indicators in Third Quartile
Government bond yields
Long-term real interest rates
Short-term real interest rates
Indicators in Bottom Quartile
Interest rate spread- % of deposit

Capital for the start-up operation and expansion of enterprises is a crucial factor of production. The availability of capital and its costs are both critical components of competitiveness. While availability and cost are related, the issues as far as the enterprise is concerned are often different. Thus, for instance, the availability of capital for large enterprises is a different question to that for small. Large enterprises, with a lower risk profile, may obtain capital on more favourable terms than small enterprises, from banks and other lenders, but they also have the option of equity markets as a source of capital, an option not readily available to small and medium enterprises. Starting up an enterprise is particularly difficult. Very often a small entrepreneur will use a combination of different sources of finance for a start-up enterprise; a mortgage for the property, hire purchase or leasing for the equipment and an overdraft to cover current capital requirements. The combination is often precarious and inappropriate to the expected pay back period. The venture capital approach in which finance is provided along with management guidance and the provision of new equity for smaller enterprises are among the issues that were considered in the document “Shaping Our Future” and in a subsequent study undertaken by Forfás on financing the development of Irish enterprise. It should be noted that legislation now enacted requires the public sector to pay invoices promptly or else face interest payments. This should ease the cash flow problems of all companies, but should be particularly beneficial to SMEs who often operate with extremely tight cash flows.

Interest rates are an important consideration in all investment decisions. It should be noted that as European Economic and Monetary Union (EMU) approaches, interest rates among the countries likely to be in the first groups of countries to qualify as EMU begins on 1st January 1999 have been tending to converge. This pattern has been clearly observed since about mid-1996 and it can therefore be expected that Ireland’s prime rate will converge towards those of Germany, France, the Netherlands and other likely qualifying countries.

From 1999 onwards, there will be a single interest rate for the euro and no separate rate for the Irish pound or any other of the constituent currencies. However, individual enterprises, particularly SMEs, might be charged a premium according to their credit rating in the market

place and according to an assessment of their ability to repay. The advent of the euro will reduce what at the moment is still a competitive disadvantage for Ireland, and one that creates higher costs for Irish firms compared to those in competitor countries. Lower cost finance such as the subsidised loan scheme has improved the availability of finance to SMEs in recent years but it should be noted that there are some problems relating to the length of these loans being incompatible with SME cash flow requirements.

Also, because of the low level of profitability of many Irish-owned companies, they are more vulnerable to movements in interest rates. To make things worse, some companies have an inadequate equity base. Undercapitalisation is a particular problem for SMEs and the source of many failures and missed opportunities. This means that they depend more heavily on bank borrowing than would ideally be necessary. It has been noted in Ireland that SMEs face particular difficulties because of their inability to use book debt as loan collateral. This problem still exists even though legislation was introduced in 1995 to ease the situation. Often this forces firms to use invoice discounting which is a costly alternative.

Government bond yields give a final indicator of the cost of capital (Table 9, column 1). However, given the tendency of most governments to borrow on international capital markets, they reflect more the perceived reliability and stability of the government, its ability to pay, and the choice of currencies made in the pattern of sovereign borrowing.

Table 9

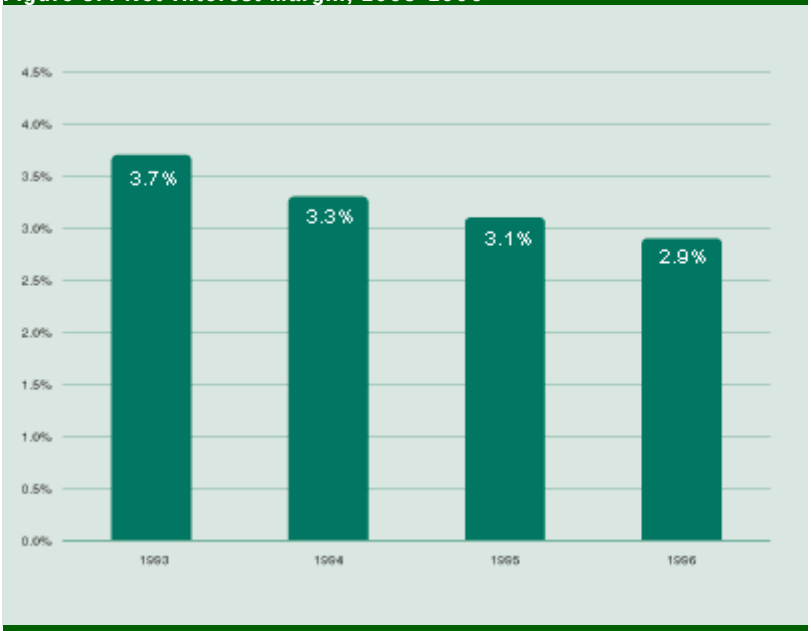
		1	2	3	4
Financial Markets	**Indicator**	**Goverment bond yields (61)**	**Interest rate spread - absolute**	**Long-term real interest rates**	**Money market rates (60b)**
	Year	**01/08/96**	**01/08/96**	**1997e**	**01/08/96**
Country	Observations	20	24	20	22
Ireland	Value	7.7	3.1	6.5	4.96
	Rank	15	9	11	11
Japan	Value	2.4	2.4	2.6	0.48
	Rank	1	4	1	1
Netherlands	Value	6.6	2.3	5.7	2.82
	Rank	10	3	5	3
New Zealand	Value	8.2	3.7	7.6	-
	Rank	18	13	18	-
UK	Value	8.2	2.9	7.2	5.69
	Rank	17	8	16	14
US	Value	6.6	2.9	6.9	5.22
	Rank	11	7	13	13

Source: IMF International Financial Statistics, 1996; OECD Economic Outlook, 1997

An imprecise indicator of how well capital markets are functioning is the spread between deposit and lending rates. This can give indications of the degree of competition between financial institutions, although it will also be conditioned by the different time horizons of lenders and borrowers and a number of other factors. In Ireland's case, the spread between the interest rates of 3.11 per cent gives Ireland a position of 9 out of 24. While this is a reasonable figure, it can be expected that the increased competition in the banking and related sectors as a result of EMU may contribute to an improvement in the position. However, absolute differences are being considered here, and they reflect the level of interest rates in general in the countries concerned.

Figure 3.3 below shows the trend in the average net interest margin (differential between 'Prime, large commercial customers' & 'AA overdraft and term loan' rates) of four Irish financial institutions over the period 1993-1996. Increased competition in the financial market has resulted in reduced net interest margins.

Figure 3.4 Net Interest Margin, 1993-1996



Source: Central Bank Annual Reports

An indicator of the interest rates for expansion of the enterprise sector will be seen in the long-term real rates (Table 9, column 3), which will apply to the kinds of borrowing needed to finance acquisitions, capital equipment and set up new enterprises. The figures in the table show that these rates, as far as Ireland is concerned, are higher than a number of competitor countries in the EU. Among other EU countries, only Italy, Spain, the UK and Sweden have a higher rate and given available data for OECD countries, Ireland would therefore be the ninth highest in the whole group, with Mexico at 23.5 per cent. An alternative interest rate of significance for short-term borrowing is the money market rate (Table 9, column 4). Ireland has improved in this regard and is now ranked 11 out of 22, higher than the UK.

Table 9

		5	6	7
Financial Markets	**Indicator**	**Rate of return on capital in the business sector**	**Short-term real interest rates**	**Cumulative ven. cap raised as a % of GDP ***
	Year	**1997e**	**1997e**	**1996**
Country	Observations	20	20	14
Ireland	Value	16.3	5.5	1.04
	Rank	7	15	3
Japan	Value	13.0	0.7	-
	Rank	15	1	-
Netherlands	Value	18.0	3.1	1.06
	Rank	6	3	2
New Zealand	Value	19.5	7.1	-
	Rank	3	18	-
UK	Value	13.3	6.3	2.84
	Rank	13	17	1
US	Value	18.7	5.4	-
	Rank	4	14	-

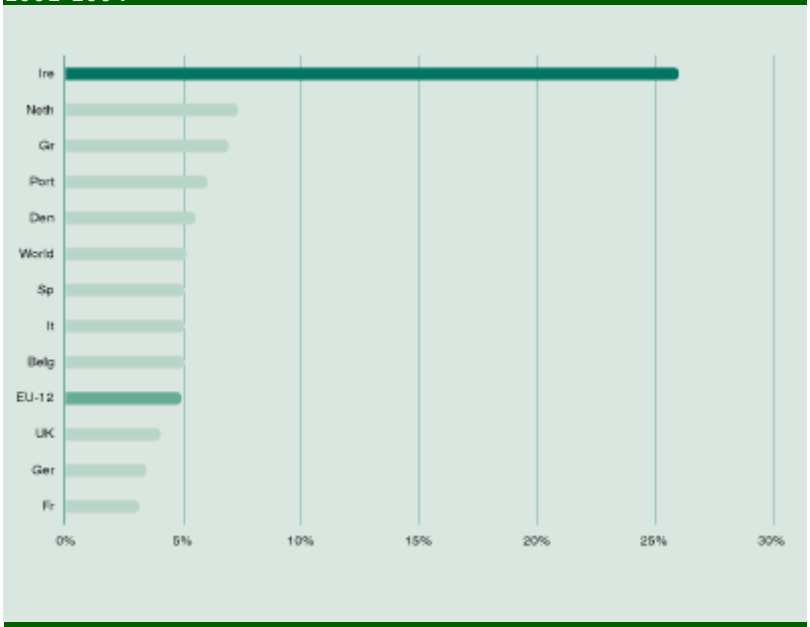
* GNP is used in place of GDP for Ireland

Source: OECD Economic Outlook, 1997; European Venture Capital Yearbook, 1996; e=estimate

One indicator of business performance and attractiveness is the rate of return on capital in the business sector (Table 9, column 5). Ireland ranks seventh out of twenty countries at 16.3 per

cent. However, care must be taken when interpreting these data. Greece ranks the highest whilst Switzerland ranks the lowest. Nonetheless two alternative sources of data illustrate the profitability of foreign industry in Ireland and the increase in the profitability of Irish industry generally in recent years. Data from the US Department of Commerce show that US firms operating in Ireland have the highest rate of return compared to all other countries. Figure 3.4 below show the rate of return on US manufacturing investment abroad in selected EU countries over the period 1991-1994. The rate of return on US manufacturing investment in Ireland, 26.0 per cent, is significantly higher than the EU-12 average, 4.9 per cent. This may be due in part to transfer pricing or perhaps different degrees of factor intensity, but is still an impressive figure.

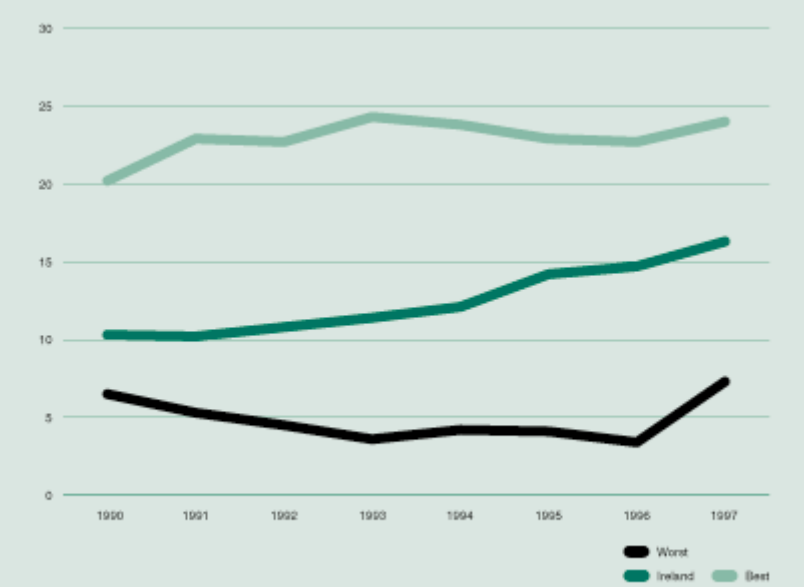
Figure 3.5 Rate of Return on US Manufacturing Investment Abroad, 1991-1994



Source: US Department of Commerce

Since 1990 there has been an increase in the rate of return on capital in the business sector in Ireland. This is probably a reflection of the buoyant economic conditions. However, as highlighted above, care should be taken when analysing these data. Nevertheless, the data from the Forfás Irish Economic Expenditures Survey confirm that the profitability of Irish-owned firms has increased in recent years. Profits as a percentage of sales have risen from 3.9 per cent in 1989 to 6.1 per cent in 1995.

Figure 3.6 Rate of Return on Capital in Business Sector



Source: OECD, Economic Outlook, No. 60, December, 1996

An important source of finance is venture capital, especially for entrepreneurs who may find it difficult to avail of other types of finance. Table 9, column 7, shows cumulative venture capital funds as a percentage of GDP in order to demonstrate the availability of venture capital in an economy. Ireland scores well in third position out of fourteen entries. These figures reflect the fact that the Irish venture capital market is one of the most highly developed in Europe thanks to the influences of the UK and the USA, the most developed venture capital markets in the world.

Table N Comparison of Employers Liability and Public Liability Insurance Costs

		Ireland £	UK £	% of Irish	Netherlands £	% of Irish
Seafood	EL	15,821	4,519	29		
50 Staff	PL	4,868	1,094	22		
	Total	20,689	5,612	27	2,161	10
Stained Glass	EL	4,932	1,297	26		
7 Staff	PL	1,177	303	26		
	Total	6,109	1,600	26	446	7
Kitchen Utensils	EL	24,421	4,764	20		
55 Staff	PL	6,131	3,704	60		
	Total	30,552	8,468	28	4,463	15
Handcut Crystal	EL	898	333	37		
3 Staff	PL	469	292	62		
	Total	1,367	625	46	125	9
Timber Furniture	EL	3,198	620	19		
4 Staff	PL	517	203	39		
	Total	3,715	824	22	169	5

Source: Deloitte and Touche report on the economic evaluation of insurance costs in Ireland, 1996 on behalf of the Dept. of Enterprise and Employment

Finally, an important aspect of the financial services industry, insurance, is considered in this chapter. Table N compares Irish insurance costs with those in a selection of European countries for a range of hypothetical companies. It is obvious that the average cost to Irish business for employers liability and public liability insurance is substantially higher than for European counterparts. The high cost of insurance in Ireland has been attributed to the legal

system and the levels of awards made. A more detailed version of Table N is available in Annex 3.

Conclusions

There are two important aspects to emerge from the above analysis. Overall, the rate of return on capital is higher than in other EU countries. The gap between lending and borrowing rates is high. However, EMU should, through greater competition, cause some harmonisation. It should also be noted that Ireland's level of interest rates reflects, interalia, the very strong growth of the economy.

Chapter 1 noted the high component of finance and insurance in total costs for production across the economy. While lower interest rates will have reduced the significance of these total costs, the substantially higher insurance costs in Ireland compared to other European countries, is a serious constraint on competitiveness. Action to reduce these through more competition in the sector and improvements in the legal system is an urgent requirement.

Investment

Key Points
\total foreign direct investment (FDI) is low in Ireland by comparison with other countries
However, Ireland is highly successful in winning greenfield investment projects and business expansions
Investment levels are very low compared with other countries
The risk/reward ratio for investment needs to be reduced by further reductions in corporation tax for the services sector and in capital gains tax
Indicators in Top Quartile
Ratio of education expenditure to non-residential fixed investment
Indicators in Second Quartile
Indicators in Third Quartile
Top rate of corporation tax
Indicators in Bottom Quartile
FDI inflow as % of GDP
Non residential fixed investment as a % of GDP

The significance of foreign direct investment flows in the economy of the country concerned can be measured by showing them as a percentage of GDP (GNP in Ireland's case) (Table 10, column 1). The figure for foreign direct investment inflows as a percentage of GDP in 1996 in Ireland was not, however, numerically significant for the economy. Ireland ranks 24 among the 25 countries for which data was available. Countries such as the UK have, however, a much larger share of FDI in GDP and this can be attributed to investment through acquisitions of UK companies and through investment in property, factors which are not significant in Ireland.

Greenfield Investment

Table O below shows Ireland's share of all the investment projects approved in the EU, Poland, Hungary and the Czech Republic between January and June 1997. The figures show that by number of projects won, relative to the size of the economy, Ireland was clearly the most successful country in 1997.

Table O Manufacturing Investment Jan-June 1997

	Expansions	Greenfield	% of European total	% of European GDP	Ratio of share of projects to share of GDP
UK	152	274	34.5	12.81	2.69
France	28	54	6.7	17.87	0.37
Ireland	35	60	7.7	0.75	10.27
Netherlands	10	32	3.4	4.6	0.74
Germany	13	77	7.3	28.04	0.26
Belgium	16	33	4	3.13	1.28
E. Europe	36	116	13.2	2.1	6.29
Poland	21	60	6.6	1.1	6.00
Hungary	16	32	3.9	0.48	8.13
Czech	9	24	2.7	0.52	5.19
Other	35	100	10	30.69	0.33
Total	371	862	100	1	100

Source: Ernst & Young

From January to June 1997, Ireland won 8 per cent of greenfield manufacturing projects and 9.5 per cent of expansions for which a European location was being sought. As regards manufacturing investment from the US in 1995, Ireland was the market share leader winning 30 per cent, followed by the UK, which won 19 per cent. Even though Ireland's share of FDI in Irish GNP is a relatively low one, it is probably the case that the Irish FDI figures more precisely refer to the kinds of foreign investment that bring most direct and indirect benefits to the economy, i.e. greenfield investment or expansion of existing plant.

The benefits of foreign investment have to be seen in terms not only of job creation, but in terms of skill-enhancement and technology diffusion. A comparison of the statistics in Table 10 with the earlier statistics on trade gives a better indication of the degree to which the country in question is playing a significant role in the world production system. Foreign investment in Ireland makes major contributions to export performance and trade openness.

Non residential fixed investment as a percentage of GDP is an indicator of the commitment being made to expansion of productive capacity in the economy. As can be seen in Table 10, column 2, Ireland ranks 19 out of 21 countries in this respect and, in fact, the value given in the table for Ireland is about half of what it was even ten years ago. "Shaping our Future" emphasised the importance of expanding the non-residential fixed investment as a proportion of GNP, in order to ensure that the enterprise sector allocates sufficient resources to all categories of investment needed to maintain and increase competitiveness in the future, including plant and machinery, training and R&D.

Table 10

		1	2	3	4
Financial Markets	**Indicator**	**FDI inflow as a % of GDP ***	**Non-residential fixed investment as a % of GDP ***	**Ratio of education expenditures to non-residential fixed investment**	**Top rate of corporation tax**
	Year	**1996**	**1995**	**1994**	**1996**
Country	Observations	25	21	16	28
Ireland	Value	0.2	0.109	0.574	0.38
	Rank	24	19	3	20
Japan	Value	-	0.244	0.204	0.38
	Rank	-	1	15	20
Netherlands	Value	0.8	0.149	0.350	0.35
	Rank	18	10	12	13
New Zealand	Value	4.3	0.160	-	0.33
	Rank	3	7	-	6
UK	Value	2.9	0.136	-	0.33
	Rank	6	12	-	6
US	Value	1.2	0.136	0.447	0.35
	Rank	12	12	7	13

* GNP is used in place of GDP for Ireland

Source: OECD Main Economic Indicatore, S=Basic Structural Statistics, Oct 1997; OECD, National Accounts, Vol. II, 1983-1995; International Tax Summaries - Coopers & Lybrand

Table 10, column 3, also shows the ratio of educational expenditures to non-residential fixed investment. This is a crude measure of the technology choices being made in different economies between expanding different technological priorities. The lower the ratio, the more the emphasis is being put on fixed investment goods, including machinery and equipment, as opposed to, at a national level, increasing the stock of skills. The emphasis being allocated to education or to skills content therefore is higher in those countries with higher values in the table. Ireland is in general in a better position than most countries, at 3 out of 16. However, the indicator has to be examined in conjunction with the previous one, that showed that non-residential fixed investment in Ireland is very low as a percentage of GDP.

Table 10, column 4, shows the top rate of corporation tax for 25 countries. This indicator is a crude one, because different countries will have many different tax bands and allowances. It shows Ireland in the bottom quartile at 38 per cent, in position 20 out of 28. In the December 1997 Budget the rate was reduced to 32 per cent from 36 per cent. A lower rate of 25 per cent applies to the first £50,000 of profits.

However, the 32 per cent rate of tax does not apply to manufacturing companies, internationally-traded services or companies located in the Irish Financial Services Centre (IFSC). Companies carrying out these activities pay a lower rate of 10 per cent. Approximately 45 per cent of all corporate taxes are paid by firms subject to the lower 10 per cent rate.

The recent announcement of the move towards a single new low rate of corporate tax of 12.5 per cent will confer a significant competitive advantage on Irish industry. This rate will apply to all forms of traded activity, not just manufacturing and internationally-traded services, as was the case previously with the 10 per cent rate. This means that the rate of tax referenced in Table 10 will be reduced dramatically from 38 per cent to 12.5 per cent. This would improve Ireland's ranking to top of the 25 countries listed, although this may take some years to come fully into effect.

Conclusions

Overall, the investment position can be summarised by saying that the levels need to be increased significantly. This can be achieved through a combination of measures, addressing in particular the need to increase the reward/risk ratio. Investment will take place if the returns are perceived to be attractive. Capital gains tax will be relevant to many investment decisions and its reduction will be critical for the encouragement of increased investment levels. (From December 1997 capital gains tax was reduced from 40 per cent/26 per cent to 20 per cent, except for disposals of development land which remain taxed at 40 per cent). However, both corporation tax and personal income taxes will play a pivotal role.

With regard to corporation profits tax, the arguments for a low rate are conclusive despite continuing criticism by a few other member states of the EU. Ireland has significant disadvantages as a location for industry, because it is not near to European markets nor to North America, and it has only a small domestic market. Special measures such as low tax rates are necessary to attract foreign investment. The extension of these low rates to the service sector will provide an essential encouragement to balanced growth in the Irish economy.

Precisely because taxation is recognised to be an important instrument of competitiveness, attention will continue to be focused on it internationally, and pressures for harmonisation may increase. The need therefore is to address the full range of measures to improve investment levels. These include increasing the potential for innovation to allow new firm to emerge and new products and services to be offered. By increasing the choices for investment, the levels may be encouraged to rise.

Infrastructure

Telecommunications

Telecommunications are at the centre of much industrial strategy. Liberalisation of telecommunications in many countries, and privatisation of previously state-owned telecommunication companies is being carried out not so much because of principles of economic liberalism but rather out of a recognition that an efficient telecommunications system is the basis of much international competition in industry and services. Cheap telecommunications reduce production costs and high quality telecommunications make possible a wide range of new goods and services, produced and provided globally.

Telecommunications have a very important role in determining competitiveness. Mobile investment projects, particularly in international services, will be attracted to these countries that have advanced telecommunications services in place, and where both the availability and costs are attractive. This is particularly so for a range of new businesses such as software development, multi-media production, call centres, and shared service operations. All multinational companies need to create “intranets” within the company that allow for joint work on projects and the quick transfer of large volumes of data around the world. And all companies, large or small, now need easy and cheap access to the internet and the commercial databases.

The telecommunications infrastructure in Ireland has been regarded as well advanced and of good quality and has been a significant marketing tool for the attraction of foreign direct investment with significant discounts offered on bulk international tariffs and free phone calls. However, it has been identified in “Shaping Our Future” as requiring significant new investment if that competitive advantage is to be retained. In particular, the issue of the capacity, cost and availability of broadband transmission services were highlighted as being important for the creation of internationally-traded services industries that could add to the stock of foreign-owned and Irish-owned enterprises in Ireland, using the new technologies to provide a wide range of information-based services. The development of an advanced telecommunications network providing access to broadband services at competitive prices is essential to the competitiveness and efficiency of the enterprise sector and to Ireland evolving to a fully developed information society and service-based economy into the next century.

The Regulator

The primary task of the regulator is to licence companies to provide telecommunications services including radio based services in Ireland and to ensure that the markets for telephony and radio spectrum are properly regulated. The regulator also has a major role in encouraging and facilitating competition. However, the regulatory regime is not intended to br intrusive or onerous, instead the regulator seeks to encourage market players to reach agreement on their own.

Under Section 7 of the Telecommunications (Miscellaneous Provisions) Act, 1996, the Minister - not the regulator - has responsibility for monitoring and regulating the price of telecommunication services for a period of five years. As competition in the market in Ireland evolves over the coming years it is possible that operators may wish to cross subsidise or lose money on more competitive services while raising prices of more sheltered market segments. Price regulating and monitoring, either through placing a floor on retail prices of services in more competitive market segments or a cap on retail prices in segments more sheltered from competitive pressures is, therefore, an impoetant part of the role of the regulator in creating genuine competition in the market. Regulating and monitoring of telecommunications services should be vested in the office of the regulator as soon as possible and in advance of the 5 year period.

Telecommunications Quality and Availability

Key Points
Ireland has one of the lowest penetration of telecommunications in the EU
However, Ireland has high levels of leased lines, indicationg advanced use of telecommunications by enterprises
The telecommunications infrastructure needs heavy investment in broadband to meet competitive challenges and demand for new services
Indicators in Top Quartile
Indicators in Second Quartile
Expenses per telephone mainline
Leased line connections as a peercentage of telecommunicationns mainlines
Percentage of telephone lines connected to digital exchanges
Indicators in Third Quartile
Internet hosts per 1,000 capita
Faults per 100 telephone lines per year
Investment in telecommunications per capita, Avg. 1992-1994
Income tax plus employes social security contribution rate, married 2 children
Indicators in Bottom Quartile
Main telephone lines per capita

A first indication of the availability of telecommunications is given by the numbers of telephone main lines per 100 inhabitants (Table 11, column 1). Ireland is in position 22 out of 27 countries, and the value is only about two-thirds that of the UK or the Netherlands. More recent data (1997) for Ireland indicates that the figure has increased to 39 from 36.6. However, comparable figures for other countries are, as yet, unavailable.

A crude measure of the quality of telecommunications systems is given by a pair of indicators (in Table 11, columns 2 and 3), expenses per telephone mainline and faults per 100 telephone lines per year. Expenses in Ireland are low, but this may be not as encouraging as it seems; a relatively modern system, such as exists in Ireland may require less maintenance than in other countries. The higher expenses per telephone mainline in Spain, Mexico, Canada and Austria may reflect merely the age of the equipment being used. Faults per 100 telephone lines a year provides a better measure of quality and here Ireland ranks eleventh out of 15 countries with 17 faults per 100 lines in 1995. However, the definition of faults used by the International Telecommunications Union (ITU) is regarded as inappropriate by Telecom Eireann, whose figures would put Ireland in a better position. Ireland's reported figures, unlike those of other countries, incorporate equipment and wiring faults, as well as the usual line and exchange faults. The most recent figure for line faults and exchange faults per annum for Telecom Eireann is 14 per 100 lines, which would put Ireland in eighth position.

Another quality indicator is provided by the percentage of telephone faults cleared by the next working day (Table 11, column 4). The value for Ireland at 85 per cent is above the unweighted EU average of 73 which is low due to the strikingly poor result for Germany at 21.9 per cent. The value for the UK is 80.2 per cent, below that of Ireland. While the Irish figure is still in the third performance quartile it should be noted that Telecom Eireann do offer a guaranteed quick response time (i.e. 4 hours) to many corporate customers.

The degree to which capacities and quality are being increased in telecommunications world-wide can be measured by the amount of investment taking place. An average figure for the years 1992-1994 shows investment in telecommunications per capita (Table 11, column 5) in Ireland is in a low position, 10 out of 15. In fact, some countries have average per capita investments as high as almost three times the Irish figure, such as Switzerland and Austria.

In the EU, public telecommunications investments are around 30 per cent of PTT revenues: in Ireland the average is around 20 per cent, but is rising.

Table 11

		1	2	3	4	5
Telecommunications Infrastructure	**Indicator**	**Mainlines per 100 habitants**	**Expenses per telephone mainline (US$) - adjusted for degree of urbanisation**	**Faults per 100 telephone lines per year**	**% of telephone faults cleared by next working day**	**telecommunications per capita (US$ per capita) Average 1992/1994 - exel land and buildings**
	Year	**1995**	**1994**	**1995**	**1994**	**1992/1994**
Country	Observations	27	28	15	22	15
Ireland	Value	36.6	506	17	85.0	70.88
	Rank	22	12	11	13	10
Japan	Value	47.9	778	1.7	-	-
	Rank	16	24	1	-	-
Netherlands	Value	51.7	740	2.5	93.0	-
	Rank	11	19	3	5	-
New Zealand	Value	7.0	693	-	86.0	-
	Rank	17	17	-	11	-
UK	Value	50.2	520	-	80.2	62.64
	Rank	13	13	-	16	11
US	Value	62.7	585	16.9	-	-
	Rank	2	16	10	-	-

Source: ITU, Statistical Yearbook, 1995

In Ireland, as in other countries, the local access network is the real infrastructure bottle-neck. It is almost completely narrow-bandwidth copper-cased with very little high-bandwidth fibre. At present there is evidence of infrastructure gaps emerging in terms of capacity, availability of service and the price of advanced services. In Ireland high capacity lines are currently charged for in multiples of 2 Mbit/s, limiting the returns to scale on the higher capacity units required by an increasing number of enterprises.

The degree of technological progress in the telecommunication system is indicated by the percentage of telephone lines connected to digital exchanges (Table 11, column 6). By this standard Ireland does not score particularly well. In 1994, the value for Ireland is 68.0 per cent giving a rank of 13 out of 29 countries. (Telecom Eireann gives a figure of 80 per cent for 1997, with a target of 100 per cent by 1999). The 1994 value for the UK was much higher at 82.7 per cent and two EU countries, France and the Netherlands have 100 per cent of telephone lines connected to digital exchanges. The weaknesses of the Eastern European countries in this regard are striking, with the values for the Czech Republic, Hungary and

Poland at 15 per cent, 41 per cent and 17.7 per cent. The lowest value is for Russia, at 12.2 per cent. The involvement of many telecommunication companies in Eastern Europe, in which they detect a significant market may bring about a rapid improvement in this regard, which will also have the effect of greatly increasing the competitiveness of the economies and their attractiveness for foreign direct investment.

The degree to which enterprises are taking full advantage of telecommunications may be crudely measured by looking at the number of leased connections as a percentage of telecommunications main lines (Table 11, column 7). An enterprise that is taking full advantage of telecommunications, to exchange information between production sites and other business areas, will tend to use dedicated lines, rather than making individual telephone calls. Computer links will also tend to use dedicated lines. From this point of view, Ireland's showing is very good, ranking 4 out of 15 countries, and behind the UK, Finland and Belgium. However, it may also reflect attempts to minimise call charges.

The diffusion of new technologies in telecommunications may also be indicated by the level of use of the internet (Table 11, column 8). In fact, this is an indicator of wider issues also, since the rapid growth in services available on the internet and the use of information and communications technologies mean that an economy that is not exploiting these technologies is one that is falling behind and diminishing in competitiveness. The figures for internet hosts per capita show that Ireland is in a middle position, 11 out of 19. The highest value is for Finland followed by Iceland and Norway. The advantages of internet access and its diffusion to as many enterprises as possible will require that telecommunications capabilities be continually upgraded and this is the basis for the argument for broadband expansion made above. In addition, however, it should be noted that the cost of local calls will affect business use of the internet. In the US, such calls are free, and this certainly encourages the widespread business use of the internet in that country (while in some cases overloading the system).

Table 11

		6	7	8	9
Telecommunications Infrastructure	**Indicator**	**% of telephone lines connected to digital exchanges**	**Leased line connections as a % of telecommunications mainlines**	**Internet hosts per 1,000 capita**	**Mobile cellular telephones per 1,00 capita**
	Year	**1994**	**1992**	**30/10/96**	**01/11/96**
Country	Observations	29	15	19	18
Ireland	Value	68	2.39	9.8	68.11
	Rank	13	4	11	11
Japan	Value	75	-	-	-
	Rank	10	-	-	-
Netherlands	Value	100	1.05	23.6	59.86
	Rank	1	10	6	14
New Zealand	Value	98	-	-	-
	Rank	3	-	-	-
UK	Value	83	2.96	16.1	111.09
	Rank	7	1	7	6
US	Value	69	-	-	-
	Rank	12	-	-	-

Source: ITU, Statistical Yearbook, 1995

Mobile cellular phones per 1,000 capita (Table 11, column 9) is an indicator of the spread of the new telecommunication technology in the country. Moreover, since the price of handsets has fallen dramatically, it is less an indicator of consumer demand than one of the availability of the necessary infrastructure in the form of a cellular radio network across the country. Cellular communications infrastructure is important from many points of view from enterprise

operation and management; cellular computer networks are one example. However, in the absence of a developed infrastructure, the markets will not develop and the use of the technology will not pervade the industry and services sectors. The figures in the table show that Ireland is in position 11 out of 18 countries. The leading country is Finland, followed by Sweden and Norway. The UK is in sixth position. The advent of competition in the mobile cellular telephony in Ireland will certainly increase the numbers, but there is no reason to assume that Ireland's relative position will necessarily improve. However, due to the massive growth in the mobile phone market in 1997 Ireland's value has improved dramatically. Indeed, company claims of 450,000 subscribers (Eircell - 350,000, Esat - 100,000) would leave Ireland with a ratio of 124 mobiles per 1,000 persons by the end of 1997.

Conclusions

In general, Ireland occupies a medium ranking among the indicators of telecommunications quality and availability. Investment in broadband is essential if Ireland's telecommunications are to play a powerful role in enterprise development. Broadband will provide the possibility of a whole new range of services developing and a whole new range of industries being established. Ireland's attractiveness as an investment location will be significantly enhanced by such expansion. The example of Malaysia is instructive. They have dramatic expansion plans in this regard that will involve the provision of broadband all across a wide corridor of the country. The purpose is to create a dynamic growth area where new industries and services can locate that can take full advantage of the possibilities for information-based activities that such an advanced telecommunications infrastructure can provide. Broadband investment is urgently needed if internationally-traded services, as well as many other sectors are to be attracted to Ireland, and if new enterprises are to grow and thrive.

Telecommunications Costs

Key Points
2Mbits leased line charges are among the highest in a group of 10 EU countries
Detailes costs for local and intr-EU calls are high
Ireland needs lower telecommunications costs because of our trade openness and geographical position
Indicators in Top Quartile
Cellular mobile tariff basket
Indicators in Second Quartile
Percentage of telephone lines connected to digital exchanges
Indicators in Third Quartile
Cost of peak local call (3 minutes) ECU
Voice grade leased lines natioanl circuits - connection (ECU)
Costs of intra-EU call, 3 min peak
Indexof business 'telecommunications basket' charges, 1990=100
Analogue leased lines national circuits - annual rental 30km (ECU)
Analogue leased lines national circuits - annual rental 100km (ECU)
Analogue leased lines international half circuit to USA (ECU)
Indicators in Bottom Quartile
2 Mbit leased lines national circuits - annual rental 30km
2 Mbit leased lines national circuits - connection (ECU)
2 Mbit leased lines national circuits - annual rental 100km (ECU)
2 Mbit leased lines international half circuit to USA (ECU)
Cost of international call (per minute) ECU
Cost of national call (per minute) ECU

Costs of telecommunications have two effects on the competitiveness of enterprises. Firstly, as part of the total inputs to a production process, they affect the costs of output. Secondly, in that connection fees in particular may act as a constraint on the take up of new technology, they can inhibit enterprises from moving to more efficient means of information exchange, market intelligence and production control.

The first indicator in Table 12 gives connection charges for 2 megabit bit (2 Mbit) per second leased lines national circuits. The prices are given in ECU. It can be seen that Ireland has fallen far behind its competitors. In position 13, Ireland has costs that are 80 per cent above those of the UK in position 12. The cheapest connection charge (Italy) is only 3 per cent of the Irish charge. Rental charges for such lines will affect current costs, but if they are high will discourage use of them at all. The annual rental for 100 km (Table 12, column 3) in Ireland is,

at 60,000 ECU, 76 per cent more than the monthly rental in the UK. The Irish charge is four times that of Sweden. The position with regard to 30 km rentals (Table 12, column 2) is worse with Ireland having the second highest cost of the ten EU countries covered in the survey in the EU, more than 3 times that in the UK and 4.5 times that of Sweden. The cost of a 2 Mbit half circuit leased line to the USA is 12.8 per cent higher than in the UK and 71 per cent higher than the Netherlands.

Table 12

		1	2	3	4	5
Telecomms Costs	**Indicator**	**2Mbit/s leased lines national circuits - connection (ECU)**	**2Mbit/s leased lines national circuits - annual rental 30km (ECU)**	**2Mbit/s leased lines national circuits - annual rental 100km (ECU)**	**2Mbit/s leased lines international half circuit to US (ECU)**	**Voice grade lessed lines national circuits - connection (ECU)**
	Year	**01/01/96**	**31/01/97**	**31/01/97**	**31/01/97**	**01/01/96**
Country	Observations	13	10	10	10	14
Ireland	Value	18,328	51,000	60,000	325,000	489
	Rank	13	9	8	8	8
Japan	Value	-	-	-	-	-
	Rank	-	-	-	-	-
Netherlands	Value	8,889	31,000	45,000	190,000	222
	Rank	10	7	6	1	2
New Zealand	Value	-	-	-	-	-
	Rank	-	-	-	-	-
UK	Value	10,960	20,000	34,000	288,000	1,504
	Rank	12	3	2	4	144
US	Value	-	-	-	-	-
	Rank	-	-	-	-	-

Source: Cutting the Cost, Analysis, 1997; DG X111, Tariff Data 1996

Table 12

		6	7	8	9
Telecomm Costs	**Indicator**	**Analogue leased lines national circuits - annual rental 30km (ECU)**	**Analogue leased lines national circuits - annual rental 100km (ECU)**	**Analogue leased lines international half circuit to US (ECU)**	**Cost of local call (3 minutes - peak time) ECU**
	Year	**31/01/97**	**31/01/97**	**31/01/97**	**01/01/96**
Country	Observations	10	10	10	15
Ireland	Value	3,800	5,900	33,000	0.14
	Rank	7	7	7	9
Japan	Value	-	-	-	-
	Rank	-	-	-	-
Netherlands	Value	2,000	3,200	18,000	0.16
	Rank	3	3	2	11
New Zealand	Value	-	-	-	-
	Rank	-	-	-	-
UK	Value	3,100	4,600	38,000	0.14
	Rank	5	4	9	9
US	Value	-	-	-	-
	Rank	-	-	-	-

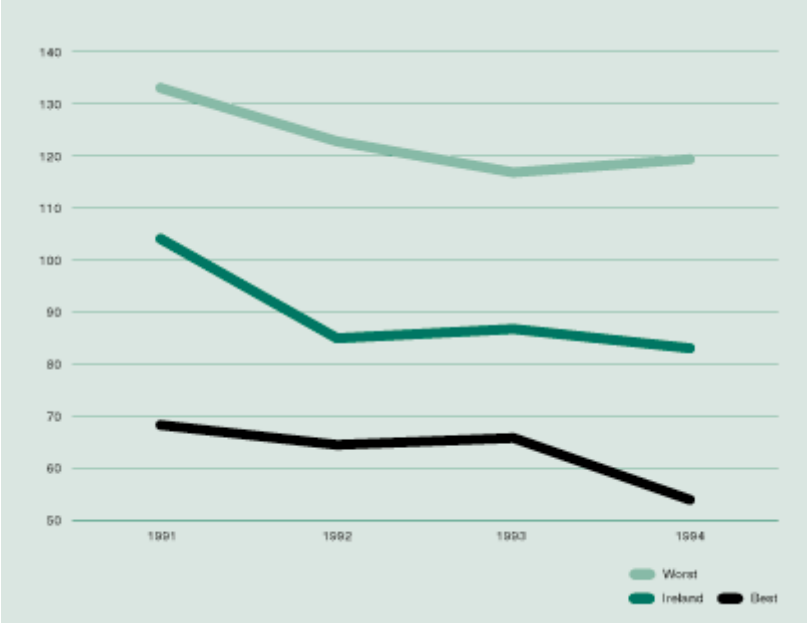
Source:Cutting the Cost, Analysis, 1997; DG X111, Tariff Data 1996

Another kind of leased line is for dedicated telephone voice transmission and here Ireland's connection and rental charges (Table 12, columns 6, 7 and 8) follow the same pattern as for data transmission. The position for Ireland is still at 8 for connection, 7 for rental of 100 km, 7 for 30 km line and 7 for international half circuit to the USA. These rental costs are 4.5, 4.2 and 2.2 times respectively the costs in the cheapest countries.

The cost of a peak time local call for three minutes in Ireland (Table 12, column 9) is one of the higher figures in the EU. The value is the same as that in the UK, but above the EU average and above the values for some other EU countries, such as Finland, France, Germany and Luxembourg. It should be noted that local call charges are very important for internet usage. For intra-EU charges (Table 12, column 10) the ranking of Ireland is similar, but the UK has the lowest charges. Since the data was compiled, Ireland's charges for intra-EU calls have been lowered to 1.30 ECU. If other countries' figures are unchanged, this would bring Ireland to second position overall. A 'basket' of cellular mobile tariffs (Table 12, column 13) puts Ireland in a better position, at position 5 out of 23 countries.

The cost of national calls in Ireland are the second most expensive of the countries surveyed, at 4 times the cost in Sweden, the cheapest. International calls are the most expensive of the countries surveyed, and almost twice the cost of the UK, the cheapest.

Figure 4.1 Index of Business Telecommunications Charges (1990=100)



Source: OECD, ECO/EDR/TAB(95)15

Figure 4.1 shows an index of business telecommunications charges since 1991. Telecommunications tariffs have declined from 104.1 in 1991 to 83.0 in 1994. Ireland ranked fourth out of 23 countries. Business telecommunications costs have declined the most in Norway.

Table 12

		10	11	12	13	14
Telecomms Costs	**Indicator**	**Cost of intra-EU call (3 minutes peak time) ECU**	**Cost of national call (per minute) ECU**	**Cost of international call (per minute) ECU**	**Cellular mobile tariff basket**	**Index of business 'telecommunications basket' total charges - OECD average = 100**
	Year	**01/01/96**	**31/01/97**	**31/01/97**	**01/01/95**	**1996**
Country	Observations	15	10	10	23	24
Ireland	Value	1.80	0.12	0.75	992	131.7
	Rank	10	9	10	5	18
Japan	Value	-	-	-	2,304	107.3
	Rank	-	-	-	22	13
Netherlands	Value	1.73	0.07	0.71	1,653	54.6
	Rank	8	4	8	19	6
New Zealand	Value	-	-	-	1,186	103.4
	Rank	-	-	-	12	11
UK	Value	1.24	0.05	0.38	1,214	92.4
	Rank	1	3	1	14	9
US	Value	-	-	-	1,620	114.8
	Rank	-	-	-	18	16

Source: Cutting the Cost, Analysis, 1997; OECD/CCET/DSTI (96) 32; ECO/GEN (96) 15/REV1

Business telecommunications charges can also be measured as a total “basket” of charges representing the composite charge for a specified collection of different telecommunications services. While the detailed requirements for enterprise will in fact vary between countries (with for instance a very open economy like Ireland’s needing to maintain more foreign communications than countries with a larger domestic market), the figures nevertheless give some indication of the “average” costs of telecommunications (Table 12, column 14). Here Ireland ranks at position 18 out of 24 countries. Charges have reduced by 17 per cent since 1990, although in other countries they have been reduced by a greater factor.

It is extremely important to note that the above information is based on published Telecom Eireann tariffs and that many companies avail of substantial discount packages offered by Telecom Eireann and other private telecommunications companies.

Conclusions

The main conclusion to be derived from the above is that published telecommunications charges in Ireland are still fairly high compared to many countries, particularly for leased lines, even though there have been significant reductions over earlier years. The influence of privatisation and liberalisation in other countries has yet to find its full effects: increased competition within other countries will mean that the poor position of Ireland at present in terms of relative costs may deteriorate. Ireland’s trade openness and need to attract FDI especially in new areas that are telecommunications-based means that costs must be further reduced. The main policy instrument available is to increase competition. The objective should be to bring telecommunications tariffs into the lowest quartile in Europe, with a particular focus on convergence with UK tariffs for international calls, and also on reducing peak local charges to encourage more internet usage, as discussed in Section 3.1.3

Transport

Transport and Communications Costs

As noted in Section 3.3.2, Ireland is disadvantaged geographically with respect to its investors and its markets, and compensations for this have been found in the incentive system, the levels of education and in corporate taxation. However, improvements in competitiveness have to be sought in all levels, and the transport related fields is one where action will bring important benefits. This is relevant to many kinds of competition, but particularly, with respect to Irish firms serving the Irish market. In this case, the internal infrastructure has to be made more competitive. At present, even low value perishable commodities such as sandwiches are imported from England. This would indicate low transport costs for Ireland-UK trade.

Quality and Availability

Key Points
Tentative indicators are that insurance and freight charges are competitive
Infrastructure is poorly developed
However, detailed data on international comparisons is in short supply
Indicators in Top Quartile
Insurance and freight as a % of total trade
Social insurance eapenditure and other labour taxes as a percentage of total labour costs
Indicators in Second Quartile
Indicators in Third Quartile
Letter costs - EU domestic tariffs
Indicators in Bottom Quartile
Rail infrastructure indicator
Road infrastructure indicator

Transport Infrastructure

Table 13, column 4, shows a composite indicator for road networks throughout Europe. This indicator is calculated using roads per capita, roads per square kilometer and motorways and trunk roads as a percentage of total roads. It should be noted that these figures are based on 1992 figures. Since then, the Irish motorway building programme has increased Ireland's composite score from 2,029 to 5,943. Comparable figures for other countries are not yet available for 1995. However, the indicator does show the considerable underdevelopment of the roads network relative to other European countries. This underdevelopment has lead to increased congestion, which increases costs for business both directly and indirectly via labour costs.

Table 13, column 3, shows a composite indicator for rail networks throughout Europe. The indicator is calculated using data on railway per capita, railway per square kilometer and the percentage of the rail network, which is electrified. Ireland has a low score primarily due to the lack of an electrified rail network.

Table 13

		1	2	3	4
Transport and Communications Costs and Infrastructure	**Indicator**	**Insurance and freight (debit + credit) as % of total trade**	**Letter costs - EU domestic tariffs**	**Rail infrastructure indicator**	**Road infrastructure indicator**
	Year	**1992**	**31/12/96**	**1992**	**1992**
Country	Observations	26	15	18	19
Ireland	Value	2,025	32	288	2,029
	Rank	5	9	17	17
Japan	Value	3,563	-	-	-
	Rank	12	-	-	-
Netherlands	Value	5,493	27.4	8,744	24,039
	Rank	19	3	10	7
New Zealand	Value	4,004	-	-	-
	Rank	15	-	-	-
UK	Value	2,138	28.1	5,851	12,229
	Rank	6	4	12	10
US	Value	1,942	-	-	-
	Rank	4	-	-	-

Source: Institute of Air Transport, 1996; IATA, Airport and En Route Aviation Charges Manual, 1996

As over 18 per cent of Irish exports, in value terms, in 1992 passed through Irish airports, airport charges are therefore an important element in the cost competitiveness of such exports and in particular for an island country such as Ireland. The quality and availability of air services is important for timeliness and speed of delivery of Irish exports. While for higher value-added products the cost of such transport can be a less significant part of total input costs, at the same time ensuring their delivery in rapid response to market changes is critical. However, the elimination of duty-free shopping for intra-EU travellers will remove a large source of income for many airport operators. The loss of income from duty-free shopping may thus result in an increase in airport charges. The ability of Aer Rianta to absorb this income loss whilst maintaining capital investment will have an important impact on future airport charges.

A final indication of transport and communications costs is the total of insurance and freight as a percentage of total trade. At 2 per cent, Ireland is in a good position, fifth out of 26 countries, with the figure being half the EU average. The four countries ahead of Ireland (Hungary, Canada, the US and Switzerland) each have a land border with their major trading partners and Ireland's competitiveness in this regard appears good by comparison with other geographically disadvantaged "peripheral" countries, such as Norway (ranking 26), Portugal (17), Sweden (11), and Denmark (24).

Although the rate of diffusion of information and communications technologies is increasing in the enterprise sector, letter post remains a significant business communication medium. Comparative figures from 1996 for the cost of sending a first class letter to another country in Europe are given in Table 13, column 2. Ireland was in ninth position and its average value was only just above that of the EU average, it should be noted that 'An Post' have recently announced a reduction in tariffs which bring Ireland's charges more in line with the EU average.

Conclusions

As air transport accounts for only 18 per cent of exports from Ireland it is the road and ports infrastructure that need to be the main focus of policy. These are linked policy questions. For instance, technologically-advanced ports that offer good facilities for efficient exports will prove inadequate if there are not proper road facilities to cater for the traffic to and from them.

Additional suitable data on comparative transport costs were not available for the compilation of this report. As transport is central to the competitiveness of the enterprise sector and the economy, further work on benchmarking Ireland's performance in this area is required.

Two initiatives in this regard will need sustained support. The first is an EU pilot programme on benchmarking logistics systems, examining world best practice and how it is achieved. This will take advantage of economies of scale by bringing together a number of EU countries to do the necessary comparisons, with countries on the periphery of the European market being especially involved. Forfás is leading this project at European level.

A second initiative that will be particularly directed towards addressing Ireland's special disadvantage is the establishment of a National Logistics Centre, in which Forfás is actively engaged. The centre will, through research and consultancy services, further the diffusion of advanced logistics techniques throughout the economy, and thus serve to counter geographic disadvantages in a way in which competitive unit transport costs cannot achieve on their own.

Energy

Key Points
Electricity costs for enterprises are at a medium to high level
Small and medium enterprises are particulerly disadvantaged, although there are now steps to improve the situation
Heavy fuel oils are very expensive in Ireland compared to other countries
Gas prices are in a medium position for medium and large users, with prices below the unweighted EU averages for both categories
Indicators in Top Quartile
Indicators in Second Quartile
Gas prices - industrial rate excluding VAT (41860 GJ/250 days/4000hours)
Indicators in Third Quartile
Heavy fuel oil prices for industry (US$ per toe)
Automotive diesel oil prices for commercial use (US$ per toe)
Industrial electricity prices - 2 million kWh per annum (large users)
Industrial electricity prices - 16,000 kWh per annum (medium users)
Gas prices - industrial rate excluding VAT (4186 GJ / 200 days)
Industrial electricity prices - 30,000 kWh per annum (small users)
Indicators in Bottom Quartile

Energy costs are often a key component of industry. In the operation of certain industrial processes, for instance in chemicals and metallurgical industries, the energy inputs can be very high. Investment decisions, such as the aluminium smelting operations in Aughinish Island can crucially turn upon the cost of electricity, for instance, rather than any other input costs, because of the overwhelming energy content of inputs. Energy costs are also critically dependent on world market prices of oil and a complex set of interactions between different energy prices is determined by substitutability and conversion costs. Many enterprises cannot easily switch from one form of energy to another and, in addition, electricity generation may also be unable to adjust its inputs quickly to meet changes in relative costs. Therefore, it is necessary to consider the costs of a number of different energy sources.

Automotive diesel oil prices represent a key input into transport costs (Table A 14, column 1). Ireland is in sixth position out of 11 countries, more expensive than Finland, Germany, Luxembourg, Mexico and New Zealand. It is however, slightly cheaper than the nearest competitor country, the UK. Heavy fuel oil prices for industry are high in Ireland, with the country being 15 out of 23 countries overall (Table 14, column 2). The prices are as much as 30 per cent above those in the UK, and well above a number of other EU countries also. Especially in EU countries, these discrepancies cannot be explained by different value-added tax regimes alone.

A breakdown of industrial electricity prices for large, medium and small-scale enterprises (Table 14, columns 3, 4 and 5) shows Ireland in ninth, eleventh and tenth position respectively out of 16 countries. The figure for small and medium enterprise is particularly important as this represents in Irish terms a significant proportion of total firms and one which will require expansion if the full possibilities for economic growth and development in the future are to be realised. It should be stressed that published electricity tariffs can give a very misleading picture. Larger enterprises can negotiate discounts. In the UK privatised utilities are cooperating with local authorities in offering incentives for the location of foreign investment.

Table 14

		1	2	3	4	5
Energy Costs	**Indicator**	**Automotive diesel oil prices for commercial use (US& per toe)**	**Heavy fuel oil prices for industry (US$ per toe)**	**Industrial electricity prices - 2 million kwh per annum - large users (ecu) VAT excluded**	**Industrial electricity prices - 160,000 kwh per annum - medium users (ecu) VAT excluded**	**Industrial electricity prices - 30,000 kwh per annum - small users (ecu) VAT excluded**
	Year	**1995**	**1995**	**1/1/97**	**1/1/97**	**1/1/97**
Country	Observations	11	23	16	16	16
Ireland	Value	1,022	181	6.91	11.32	13.51
	Rank	6	15	9	11	10
Japan	Value	-	189	-	-	-
	Rank	-	17	-	-	-
Netherlands	Value	1,219	198	6.20	11.23	11.55
	Rank	10	19	6	11	8
New Zealand	Value	369	236	-	-	-
	Rank	2	22	-	-	-
UK	Value	1,087	143	3.21	7.52	10.18
	Rank	9	7	7	5	6
US	Value	-	114	-	-	-
	Rank	-	4	-	-	-

Source: International Energy Agency, Energy Prices and Taxes, Fourth Quater 1995; Eurostat Energy and Industry, 1997

Further improving the ranking for electricity charges will prove difficult as Ireland suffers economies of scale disadvantages as a result of the small market size and the relatively low population density. However, the ongoing reforms in the ESB should yield some future productivity gains and cost competitiveness. It should be noted that the application of the most recently sanctioned 6.5 per cent increase in electricity prices, which is being introduced over three years, has been structured in a way that strongly favour SMEs.

Table 14

		6	7	
Energy Costs	**Indicator**	**Gas prices = industrial rate excl. VAT (4186 GJ/200 days)**	**Gas prices = industrial rate excl. VAT (41860 GJ/250 days/4000 hours)**	
	Year	**1/1/97**	**1/1/97**	
Country	Observations	14	14	
Ireland	Value Rank	6.0 8	3.8 6	
Japan	Value Rank	- -	- -	
Netherlands	Value Rank	6.6 11	4.1 7	
New Zealand	Value Rank	- -	- -	
UK	Value Rank	3.3 1	2.6 1	
US	Value Rank	- -	- -	- -

Source: Eurostat Energy and Industry, 1997

Finally, natural gas prices for medium and large industry users in Ireland are below unweighted EU averages. The UK price level is consistently lower than Ireland's, although they benefit from economies of scale arising from a larger network. The higher population and enterprise density results in lower distribution costs. Moreover, these may be unsustainably low due to price discounting in an effort to gain market share in the wake of privatisation.

Conclusions

Overall, the competitiveness of Ireland in terms of energy costs is not particularly good. The high costs of heavy fuel oil for smaller industrial users need particular attention. In general, the opening of the natural gas and electricity markets to competition over the next few years should result in more competitive pricing of energy to industry and to other users in Ireland. An important issue in electricity prices is the way they are determined. Some electricity is generated from peat, at a higher cost than other sources. The requirement on the ESB to use this fuel is for social reasons, but it carries costs that are incurred by all users.

The Government should pay for the extra costs involved, or alternatively, remove the requirement. The Culliton Report pointed out that "the financial and ultimately the potential social consequences of a reduction in the price of milled peat should be addressed by government directly, and not hidden in a cross-subsidy between the two state-sponsored bodies". A Survey of 12 industrial electricity consumers who have plants both in the UK and Ireland was carried out in late September/early October 1997. It compared electricity costs for comparable factories in the two countries. The conclusions were that in general Irish prices (in Irish pounds) were 2.83 per cent higher than UK prices (in sterling). Thus, as long as the Irish pound is this much below sterling, the prices would be the same. However, there is some evidence that there is significant price variation in the UK between some regions and industrial sectors.

Planning, Property and Construction

Property and the Planning Process

Property rental costs are an important component of overall costs. In addition, the availability of suitable buildings or office space will be an important determinant of all enterprise investment for expansion.

Often, especially for new foreign investment projects, that involve manufacturing, the final decision will depend on the availability of serviced land, on planning approval for the buildings or the processes involved. Frequently, there is a combination of these at issue. In today's business environment, where product life cycles are shortening and "time to market" can be critical, companies are increasingly unwilling to contemplate delays in production start-up that may result from planning process in investment locations. The planning processes have become an important issue in competitiveness.

It is increasingly the case that where large-scale investments are being made in competitor locations in Europe, ahead of Ireland, investors are citing the relative speed of the planning process as one of the factors that influenced their location decision. The planning process here can take up to nine months, or more if subject to judicial review. The intense competition being faced by the development agencies for mobile investment projects, in industries with short lead-times to full production, such as pharmaceuticals or electronics, requires certainty, speed and consistency from the planning process. Competitor locations such as the UK can grant planning approvals within twenty-eight days of application and are thereby at a significant competitive advantage to Ireland.

The important distinction between the Irish planning system and that in other European countries such as the UK, France, Germany and the Netherlands is that in those countries development can commence on foot of the decision of the planning authority, with no recourse to third-party appeals. The planning systems in Germany, the Netherlands and France are essentially development plan-led, where the development plan dictates the use, nature, extent and form of acceptable development, thereby providing a high degree of certainty to prospective developers and eliminating the need for third-party appeals. These countries are therefore in a position to make a decision on an application within a statutory two month time period. In respect of a number of large scale investments into the UK over the past 18 months, such those by Siemens, Lucky Goldstar and Hyundai, the speed and certainty of the planning process there was cited as one of the factors that influenced the location decision.

Notably, the Department of the Environment and Local Government in conjunction with the development agencies has commenced work on this issue and legislation is expected by mid-1998. However, it is important that developments be closely monitored to ensure the highest quality planning legislation is implemented. Moreover, the review of planning legislation and systems currently underway needs to ensure a speeding up of the process for all business applications.

Property and Construction Costs

Key Points
Industrial and office occupancy costs are in a middle-ranking position, but significantly below the UK
Skilled and unskilled labour costs also compare well with many countries but the UK costs are lower and in Eastern Europe dramatically so
Building materials prices are high
Planning procedures in Ireland place us at a severe competitive disadvantage
Indicators in Top Quartile
Construction skilled labour costs
Unweighted average of skilled and unskilled labour costs, ECU per hour
Indicators in Second Quartile
Building Costs - Industrial (per m^2 - IRP£)
Indicators in Third Quartile
Average of Ranks for Carpentry, Steel Reinforcement, Concrete and Cement Material Costs
Building Costs - Offices (per m^2 - IRP£)
Industrial Occupancy Costs (IRP£ per sq. m)
Office Occupancy Costs (IRP£ per m^2)
Indicators in Bottom Quartile

Ireland's industrial occupancy costs are at an average level (Table 15, column 1). This means that the rental charges per square metre in Ireland of £60 per annum are above a number of EU countries, but equally, below a number of others. With respect to the UK, they are significantly below. Other countries such as France and Germany, which might also be expected to be competitors for foreign investment, are above that figure.

Another ingredient of enterprise costs, especially important in the case of the services sector whose likely expansion represents a key strategic direction for Ireland, is office occupancy costs (Table 15, column 2). The same ranking is observed as that for industrial occupancy costs; Ireland ranks 8 out of 14. Again, the UK costs are significantly higher with the UK ranking 13 out of 14 countries in this regard and 12 out of 14 in terms of industrial occupancy.

Table 15

		1	2	3	4
Property and Construction Costs	**Indicator**	**Industrial occupancy costs (IRP£ per sq. m.)**	**Office occupancy costs (IRP£ per sq. m.)**	**Building costs - industrial (per m^2 - IRP£)**	**Building costs - offices (per m^2 - IRP£)**
	Year	**01/03/96**	**01/03//96**	**1995**	**1995**
Country	Observations	14	14	14	14
Ireland	Value	60.0	226.0	377	915
	Rank	8	8	7	8
Japan	Value	168.0	676.4	-	-
	Rank	14	14	-	-
Netherlands	Value	-	-	369	933
	Rank	-	-	5	9
New Zealand	Value	-	-	-	-
	Rank	-	-	-	-
UK	Value	78.0	398.2	318	7.9
	Rank	12	13	3	4
US	Value	53.2	189.1	-	-
	Rank	6	4	-	-

Source: Jones Lang Wootton; Hamilton Osborne King; European Property Bulletin, 1996

Building costs in Ireland are again at an “average” level (Table 15, columns 3 and 4). or industrial units and offices, Ireland is at 7 and 8 position out of 14 countries. For building materials (Table 15, column 5), Ireland is again in a middle position at 10 out of 18 countries.

Table 15

		5	5	7
Property and Construction Costs	**Indicator**	**Average of ranks for carpentry, steel reinforcement, concrete and cement material costs**	**Construction skilled labour costs (per hour - ECU)**	**Unweighted average of skilled and unskilled labour costs (Q1 1994 -ECU per hour)**
	Year	**Q1 1994**	**Q1 1994**	**Q1 1994**
Country	Observations	18	16	15
Ireland	Value	9.75	12.50	11.22
	Rank	10	4	3
Japan	Value	10.00	-	-
	Rank	12	-	-
Netherlands	Value	13.50	23.65	23.35
	Rank	17	14	12
New Zealand	Value	-	-	-
	Rank	-	-	-
UK	Value	6.50	9.16	7.72
	Rank	5	3	2
US	Value	11.33	37.47	31.84
	Rank	14	17	15

Source: SPON, European Construction Handbook, 1996

Skilled labour costs (Table 15, column 6) are an area where Ireland’s performance is very good in costs terms. Ireland has lower figures than all EU member countries, except Portugal and the UK. However, the available statistics for Poland show that skilled labour costs are

only 5 per cent of those in Ireland thus, indicating in the future the possibilities of increased competition from Eastern European countries. The statistic for UK labour costs, (the average of skilled and unskilled labour costs, Table 15, column 7) is also important since the UK is a major competitor for Ireland in attracting foreign direct investment. Total labour costs are also low for construction in Ireland, in position 3 out of 15, after Portugal and the UK.

The high cost of building materials in Ireland can perhaps be explained to some extent by geographical location and the high costs of transporting heavy materials that are imported, but it is difficult to see why costs should be sharply higher than in the UK, for instance (approaching 50 per cent more).

Conclusions

Ireland's competitiveness is being seriously affected by the present planning process, especially with regard to foreign investment projects. Action is urgently needed, especially to introduce pre-planning of industrial sites. Proposals have been made by Forfás to the Department of the Environment in this regard. They include selection of sites, planning their development, preparation of a generic Environmental Impact Statement, and a streamlined consultation and appeal process. Such measures are essential if Ireland's uncompetitive position with respect to the planning process for inward investment is to be redressed. Recently a commitment has been made to address the issue and progress is under way with legislation on a revised planning process for strategic industries expected by mid-1998.

With respect to property and construction costs, they are in general at a middle level of competitiveness. The high materials cost in Ireland appear to be offset by the lower labour costs, but building costs for factories and offices are higher than in the UK. In spite of this, occupancy costs in Ireland are lower than in the UK.

The Environment

Key Points
Carbon Dioxide emissions from energy use are high by international standards
Nitrogen dioxide and sulphur dioxide emissions are also high
Recycling levels are low by comparison with other countries and this is an urgent policy concern
Indicators in Top Quartile
Indicators in Second Quartile
Indicators in Third Quartile
CO_2 Emissions from Energy Uses (tonnes/capita)
Per capita NO_x emissions from fossil fuels
Recycling activity: recovery ratio - Glass (%)
Indicators in Bottom Quartile
Recycling activity: paper/board recover ratio
Per capita SO_x emissions from fossil fuels (t SO_x)

“Sustainable industrial development must allow industry to pursue its primary functions of generating wealth and employment while minimising impacts on the environment”. This quotation from “Sustainable Development: A Strategy for Ireland” sums up the integration of enterprise development and the environment. A number of statistics on the environment are given in Table 16. CO2 emissions from energy uses (Table 16, column 1) show the contribution of industrial and domestic use to environmental degradation through global warming. These show Ireland to be in position of 17 out of 26, indicating a less than good performance by OECD standards. This in part reflects certain structural disadvantages that the Irish electricity system has relative to most of our EU partners regarding CO2 emissions such as high fossil fuel dependency. Statistics on specific pollutants, nitrogen dioxide and sulphur dioxide indicate the degree to which the harmful emissions from the use of fossil fuels are contained. Ireland’s performance is less than good with respect to nitrogen dioxide (position 16 out of 27) and much less good for sulphur dioxide (19 out of 25). (Table 16, columns 2 and 3).

Table 16

		1	2	3	4	5
Energy Costs	**Indicator**	**CO_2 emissions from energy uses (tonnes/capita)**	**Per capita NO_x emissions from fossil fuels (kg NO_x)**	**Per capita SO_x emissions from fossil fuels (kg SO_x)**	**Recycling activity: recovery ratio - glass (%)**	**Recycling activity: recovery ratio - paper/board (%)**
	Year	**1995**	**1992**	**1992**	**1993**	**1990**
Country	Observations	26	27	25	14	18
Ireland	Value	9.7	37	53	29.0	3.0
	Rank	17	16	19	10	18
Japan	Value	9.2	12	7	-	49.6
	Rank	15	2	2	-	3
Netherlands	Value	11.6	35	9	76.0	50.3
	Rank	20	13	4	1	2
New Zealand	Value	8.2	43	-	-	-
	Rank	13	19	-	-	-
UK	Value	9.6	38	47	29.0	31.0
	Rank	16	18	17	10	12
US	Value	19.9	75	63	-	28.6
	Rank	25	25	21	-	14

Source: OCED, Main Economic Indicators, Basic Structural Indicators, Oct 1997; Eurostat, Basic Statistics of the European Union

The reuse of materials through recycling activity measures the efficiency of the economy as a whole in reducing costs and it also measures the contribution of the economy to the conservation of easily depleted resources, such as wood and wood products. The recovery ratios for glass and paper and paperboard show the percentage amount that is recycled (Table 16, columns 4 and 5). Both of these indicators show a poor position for Ireland with only three or four countries in the EU having worse rates. Given the general lack of consumer awareness of the possibilities for recycling, and the lack of facilities for doing this, points to the possibilities for further improvement. (It should be noted that the statistics are rather old, however).

Conclusions

Overall, the environmental indicators for Ireland are probably worse than the industrial structure would call for and the recycling indicators show a poor performance. The recycling issue needs to be addressed more seriously at a policy level: facilities and incentives are clearly inadequate compared to other countries.

SME Performance

Key Points
SMEs have an important role to play in the overall development of the economy and are an essential element of competitiveness
SMEs with less tahn 50 employees suffer from lower productivity in the manufacturing and retail sectors in comparison to larger companies
More SMEs need to export and SME export markets need to be diversified
Indicators in Top Quartile
Labour productivity (*1000 ECU/PPP) 50-249 employees
Turnover limit for concession providing relief from VAT registration (US$)
Indicators in Second Quartile
Indicators in Third Quartile
Average debtor days
Indicators in Bottom Quartile
Labour productivity, 0-9 employees per firm
Labour productivity. 10-49 employees per firm

1. What are SMEs?

Definitions of SMEs are different in different countries. In Ireland small enterprises are often defined as having 50 employees or fewer, with micro enterprises having less than 10. But in other countries the definitions can be much broader. In the US, for instance, there are definitions for most sectors to make clear what firms are eligible for support from the Small Business Administration (SBA). Very often, 500 employees is the limit. Only in retail and wholesale trade is the limit lower, usually 100 employees. The SBA for some sectors has a limit in terms of the value of turnover rather than in terms of employees.

In Japan also there are variable limits depending on the sector concerned. They are defined for each sector of industry by the Small and Medium Enterprises Basic Law. Thus for manufacturing and mining, etc., the enterprise must not have more than 300 employees or £500,000 capitalisation. For the wholesale sector, the limits are not more than 100 employees or £160,000 capitalisation. For the retail and services sector the limits are not more than 50 employees or £50,000.

In the Republic of Korea the distinction between large enterprises and SMEs is based on the type of industry, the number of employees, and the amount of sales. In general manufacturing, the enterprise with no more than 300 employees is regarded as an SME. There is a definition of “small-scale enterprises” by number of employees. For manufacturing, etc. the enterprise must not have more than 20 employees, while for commercial and service sectors the limit is 5 employees.

The European Union has recently adopted a standardised definition of SMEs which is to be used for all cases where eligibility is to be assessed and programmes are to be targeted. To be classified as an SME or a micro-enterprise, the enterprise has to satisfy a criterion for number of employees (micro fewer than 10, small fewer than 50, and medium fewer than

250). It also has to satisfy financial criteria, either in terms of its turnover or in terms of its balance sheet total. The amounts are specified in ECU and will be adjusted every four years to take account of changes in the economy. Looking even at the European criteria, therefore, it is clear that the definition of small firms is not necessarily one that is useful in Ireland. In manufacturing only 2 per cent of Irish enterprises would have more than 50 employees and the figure for the services sector would certainly be even smaller than that.

However, it should also be noted that quantitative criteria are not the only ones. Another view is that a business is an SME if it is owner-managed. This definition captures the essential characteristic of entrepreneurship. In addition it means implicitly that management resources are limited.

A small or medium enterprise in general will often be disadvantaged in several respects. Firstly it will probably lack management resources in particular with respect to specialist expertise. Managers may combine several functions, such as sales and marketing, or accounting and finance. Secondly there will be a lack of market power, so in negotiating prices of supplies or of finance the firm will have to pay more than a larger firm would. Because capital is more expensive and also because management may be too busy to think in the longer term, investment may be lacking, especially in areas such as training and R&D. Access to capital is therefore a critical issue for the small firm.

Wage costs are a very important issue for small firms. They tend to be more labour intensive than larger firms, either because of the difficulties of access to capital or because they are concentrated in the services sectors. When labour markets are tight, small firms are at a disadvantage, because they do not have the resources to compete against larger firms for the scarce labour in question.

2. Why are SMEs important for competitiveness?

The problems of small firms are important to competitiveness issues because of the potential role that this sector can play in a dynamic economy. Apart from contributing to overall growth and employment, SMEs are an essential element of competitiveness. A well-developed and vibrant SME sector will be an important source of innovation. Most new firms begin in the SME sector and they can also be a breeding ground for new products and services.

Secondly, the SME sector is a source of strength for the economy as a whole. Because it can offer a wide range of goods and services, larger firms will always have a choice of supplies and markets also. This means that the economy will have the necessary flexibility to cope with fluctuations. If the structure of the economy is a complex one, because of layers of firms that are interrelated, then shocks will lose some of their impact as they move through the economy.

In competitiveness terms, what matters is how SMEs are performing their role in Ireland compared to their role in other countries. Some countries have made the SME sector a source of considerable competitive strengths. Japan for instance has a complex system of SMEs that supply the larger better known companies through sub-contracting arrangements. Similarly, European countries such as Germany and Italy have developed their SMEs especially through sectoral specialisation. Germany is notable for medium size companies in engineering and Italy for SMEs in the clothing, leather, and ceramics sectors. In both these cases, tradition, competition and regional concentration have led to a considerable specialisation, and this means expertise in technology, design, quality and innovation.

The Italian experience has been described as a good example for enterprise development. In Italy, SMEs play a larger role than in other industrialised countries; and Italy has created some efficient mechanisms for SME promotion. European data shows very clearly that job losses in traditional sectors have not been uniform across countries. In spite of technological change and in spite of competition from lower cost producers, Italy has been able to keep job

losses in traditional industries such as clothing and textiles, leather and leather products, and food, drink and tobacco to much smaller levels. These are the kinds of traditional industries where in Ireland the job losses over recent decades have been very high. Italian small firms have clearly been a factor in maintaining employment. Not only are they very numerous, giving both job opportunities and flexibility to the industrial structure, but they have also been willing to cooperate in the sharing of facilities such as design. Industry as a whole has thus been responsive to change, to new patterns of demand, and the continued emphasis on innovation has operated in the framework of one of the oldest industrial traditions in Europe. In 1996 Italy announced a strategy to support employment in economically depressed areas. The intention is to allocate over three years an amount of about 10 billion US$ (16-17,000 billion lire), equal to 1 per cent of GDP, to promote the development of micro-enterprises.

In Japan, SMEs have always played a major role. With a national total of 6.53 million private business establishments (excluding primary industry), in 1994 SMEs accounted for nearly 6.47 million, or 99 per cent. Of the 54.16 million people in employment nation-wide (excluding those in primary industry), SMEs employed 41.42 million, or 76.5 per cent. In total value of shipments or sales, SMEs accounted for the following share of each sector: manufacturing, 51.7 per cent (in 1993); wholesale, 62.1 per cent; retail, 78.0 per cent (in 1991). These ratios have remained more or less constant over the three decades since the SME Basic Law was enacted in 1963. The SME Agency in Japan notes that "…even in times of economic adversity SMEs as a whole have consistently performed well, taking a positive approach and demonstrating their unique flexibility and creativity."

In Korea, SMEs are described as the bedrock of Korean industry, because they produce special goods that are impractical for larger enterprises to produce, and because they supply various components for larger enterprises to produce finished goods. The speed and flexibility of operation unique to SMEs are behind virtually all production. SMEs are described as continually seeking to develop technological innovations, and to formulate new products for the market. Korea also recognises the role of SMEs in stabilising the social structure, as their presence prevents dramatic imbalances of economic power. The Korean SME agency notes that "…enhancing the competitiveness of all SMEs is vital to the objective of increasing national competitive power."

3. What is the situation in Ireland?

The performance of SMEs is of great significance to Ireland, given the contribution of small business to economic growth and job creation. Businesses with under 50 employees account for 98 per cent of the country's businesses and more than 90 per cent of Irish businesses employ fewer than 10 people. In 1996, total employment growth was 50,000 while the number of new jobs in small business amounted to 43,000. Therefore monitoring their performance and examining our comparative position with other European countries is essential in realising the full potential of this sector.

Structure

Figure 5.1 Number of New Company Registrations

Source: Companies Registration Office

There is no exact definition of a small business in Ireland. Comparative statistics on small businesses are difficult, given the wide diversity and lack of standardisation of definitions and coverage. There is also no official register of businesses (as distinct from companies), which makes it difficult to get an exact estimate of the number of small businesses in Ireland. One method of calculation is to use the records of the Revenue Commissioners VAT registration data.

However, this method of estimation is not itself completely reliable. Problems arise because not all small businesses are liable to register for VAT. Those businesses that have an annual turnover of under £32,000 (or £15,000 for business supplying services) are exempt. However, based on VAT registrations, in 1995 there were an estimated 190,795 businesses in this country and 137,447 employers. New company registrations are a good indication of the environment for small business, since almost all new company formations are small businesses. The graph above shows a growth trend over the last five years, evidence of an increase in small business start-ups.

It has been estimated that in Ireland more than 80 per cent of small businesses are in services. The services sector accounted for 62 per cent of total employment in Ireland in 1996 and therefore the performance of small businesses within the service sector is an important part of overall economic performance. Complete data on the services sector is unavailable but data on certain sub-sectors is presented below along with more complete data on the manufacturing sector.

Table P % of Businesses that have Under 50 Employees (1994)						
	Services			Manufacturing		
Persons Engaged	**Retail**	**Wholesale**	**Hotel and catering**	**Textiles**	**Chemicals**	**Total Manufacturing**
1 to 9	90.3	60.9	74.2	28.7	13.6	34.4
10 to 19	6.5	20.0	11.2	20.9	9.4	21.9
20 to 49	2.6	12.9	9.0	24.8	16.1	22.0
Total under 50	99.4	93.8	94.5	74.4	39.2	98.3

Overall Productivity

The European Observatory for SMEs has estimated overall productivity figures for SMEs across Europe for all sectors. Labour productivity in SMEs is measured for different groups of enterprises. Taking three groups 0-9 employees, 10-49 and 50-249, Ireland occupies a low position with regard to labour productivity in the first two groups, being 15 out of 18 (Table 17, columns 1, 2 and 3). Only in the third group of medium sized companies (50-249 employees), does Ireland improve its position with regard to labour productivity with a rank of 2 out of 18 (Table 17, column 3). The UK in this category takes seventh position, but its ranking for the two smaller groups are 10 and 5. Given the good productivity results for the medium sized firms (50-249 employees), this suggests that the issue of labour productivity in small firms (up to 49 employees) is an issue that needs particularly to be addressed.

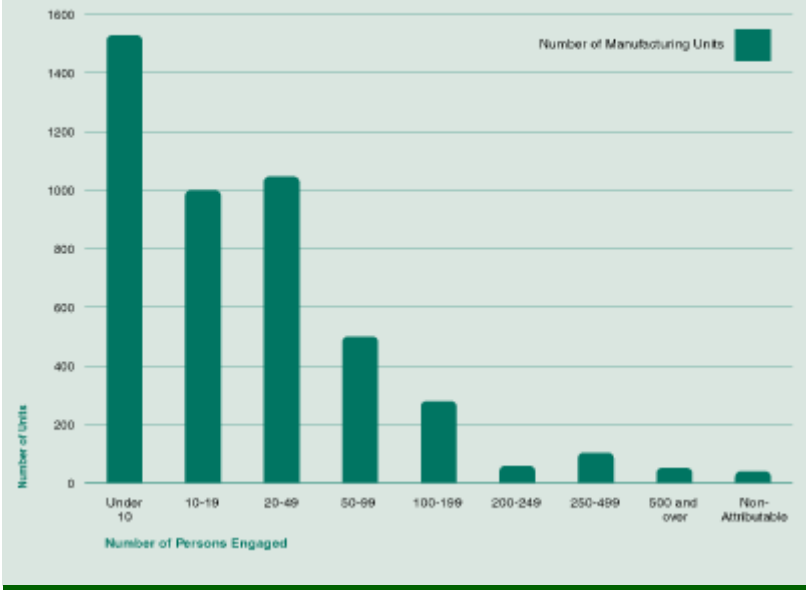
Table 17							
		1	2	3	4	5	6
SME Performance	**Indicator**	**Labour productivity (*1,000 ECU/PPP) 0-9**	**Labour productivity (*1,000 ECU/PPP) 10-49**	**Labour productivity (*1,000 ECU/PPP) 50-249**	**Turnover limit for concession providing relief from VAT registration (US$)**	**Average debtor days**	**% of SMEs that export**
	Year	**1995**	**1995**	**1995**	**01/01/96**	**1997**	**1996**
Country	Observations	18	18	18	17	16	16
Ireland	Value	20	34	68	57,140	59	34
	Rank	15	15	2	3	11	16
Japan	Value	-	-	-	269,060	-	-
	Rank	-	-	-	1	-	-
Netherlands	Value	32	39	41	-	46	55
	Rank	7	5	14	-	6	5
New Zealand	Value	-	-	-	6,880	-	-
	Rank	-	-	-	12	-	-
UK	Value	31	39	58	71,440	50	45
	Rank	10	5	7	2	7	12
US	Value	-	-	-	-	-	-
	Rank	-	-	-	-	-	-

Sources: European Observatory forSMEs, Fourth Annual Report, 1996 (Table 11.1), OECD/DAFFE/CFA/CT(96)24, Grant Thornton European Business Survey 1997

Manufacturing

Small and medium enterprises (SMEs) dominate the total number of enterprises in manufacturing. Figure 5.2 shows the figures for manufacturing. Of a total of 4,600 manufacturing enterprises, more than 3,600 have under 50 employees. In fact, over 1,500 have fewer than 10 employees.

Figure 5.2 Size Distribution of Manufacturing Units, 1994

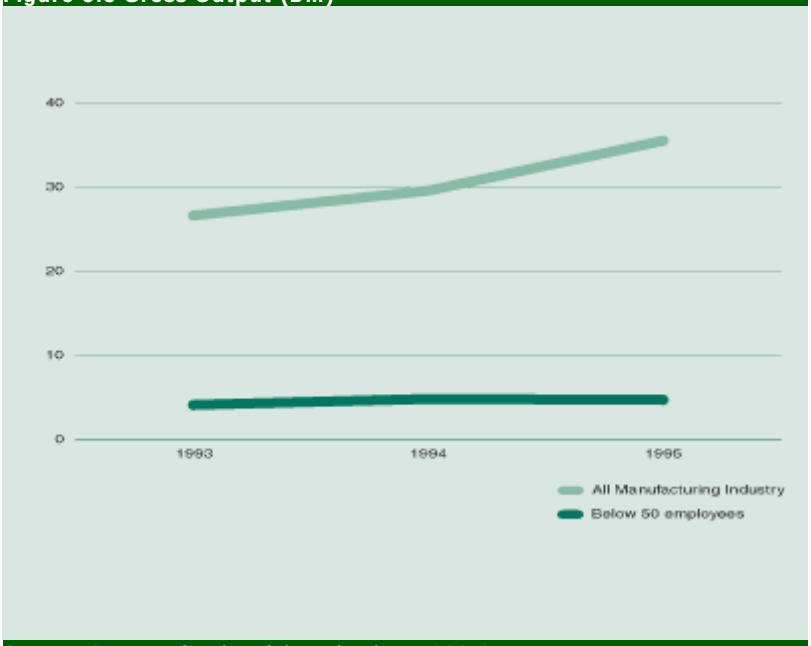


Source: Census of Industrial production, 1994

Output

The gross output of larger companies in the manufacturing sector in Ireland is clearly much larger than that of SMEs. Between 1993 and 1995 total gross output increased from £26.6 billion to £35.5 billion The gross output of SMEs appears to have remained relatively stable over the past number of years, increasing from £4.14 billion to £4.74 billion.

Figure 5.3 Gross Output (£m)

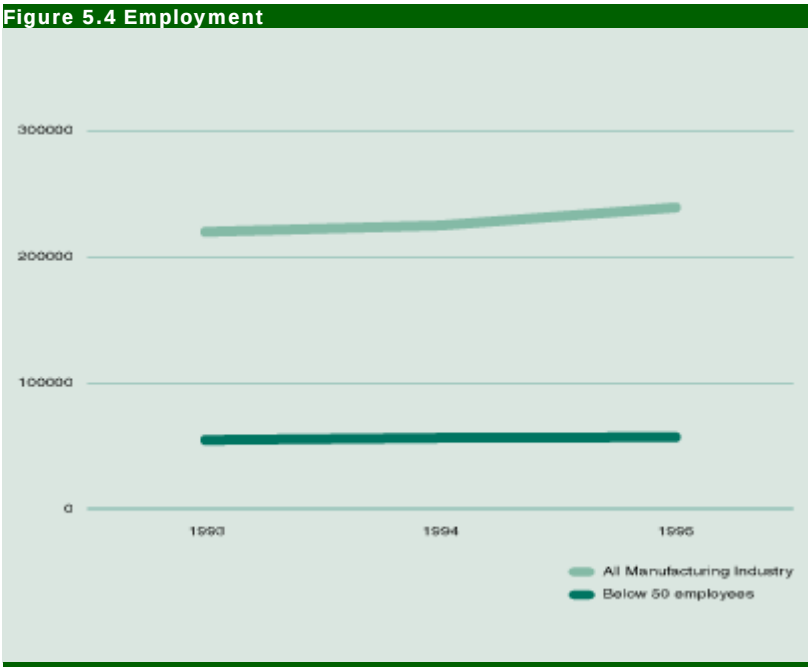


Source: Census of Industrial production, 1993-95

Employment

In manufacturing in Ireland there are clearly far more persons employed in companies with over 50 employees. Total manufacturing employment grew from 220,000 to 239,000 between 1993 and 1995, an increase of 8 per cent. However, employment growth in SMEs was only half of that at 4.2 per cent.

Figure 5.4 Employment

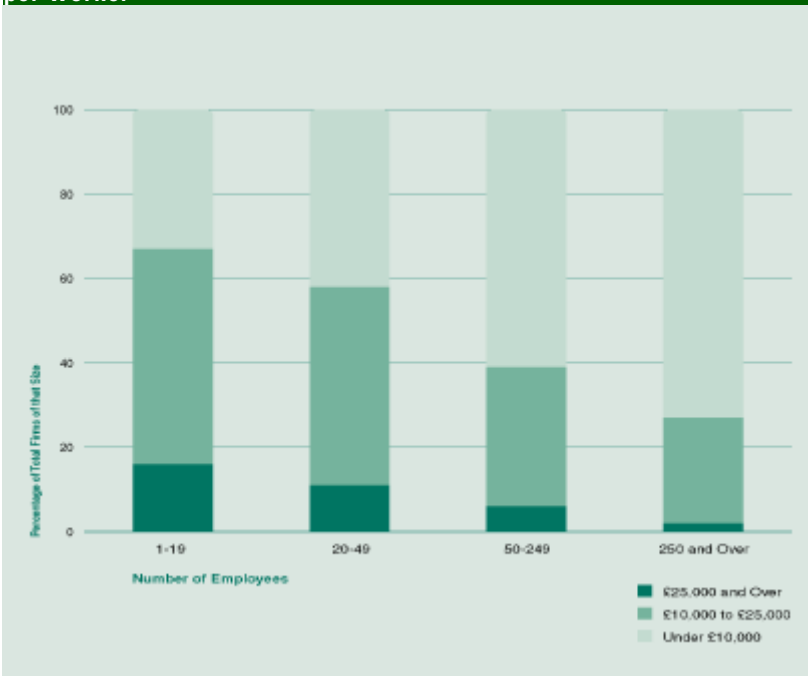


Source: Census of Industrial production, 1993-95

Productivity

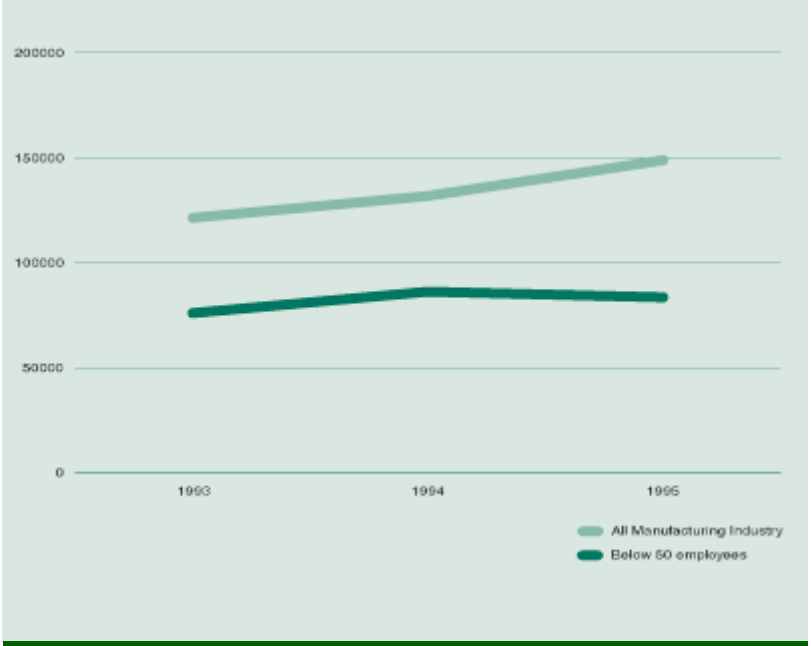
SMEs may have a tendency towards lower productivity, measured in net output per employee. Figure 5.5 shows that small manufacturing firms are much more likely to have low productivity (under £10,000 per employee) and much less likely to have high productivity (net output over £25,000).

Figure 5.5 Numbers of Manufacturing Units by Size and by Net Output per Worker



In manufacturing, output per employee (or productivity) is clearly much higher for larger companies than it is for SMEs as can be seen from the adjoining graph. Output per employee increased dramatically between 1993 and 1995 for all industry. However, for manufacturing firms employing below 50 productivity appeared to remain stagnant.

Figure 5.6 Output per Employee (£)



Source: Census of Industrial production, 1993-95

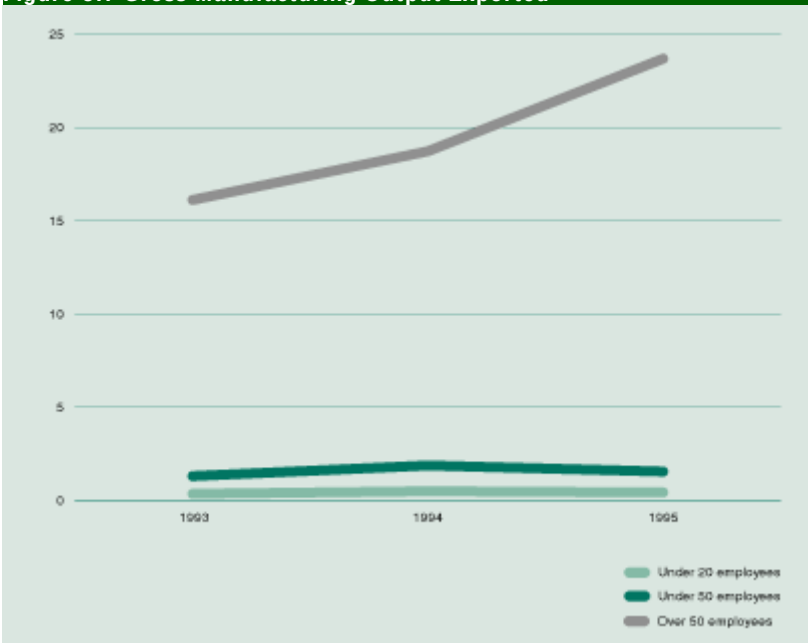
Exports

Clearly, exports from the larger company manufacturing sector are vastly greater than those from the SME sector. Moreover, exports from the larger companies increased enormously (46 per cent) between 1993 and 1995 while exports from the SME sector (below 50 employees) increased at a slower pace (20 per cent).

Table 17, column 7 (above) shows the percentage of SMEs across Europe that are engaged in exporting. Clearly, Ireland had the smallest number of SMEs engaged in exporting. Furthermore, small Irish-owned enterprises have only half the export orientation of small overseas-owned enterprises.

The Forfás IEE Survey showed that in 1995 49 per cent of Irish manufacturing SMEs exports were to the UK. Irish business must attempt to diversify and reduce the over reliance on the UK market, so as to limit their vulnerability and enhance their competitiveness.

Figure 5.7 Gross Manufacturing Output Exported

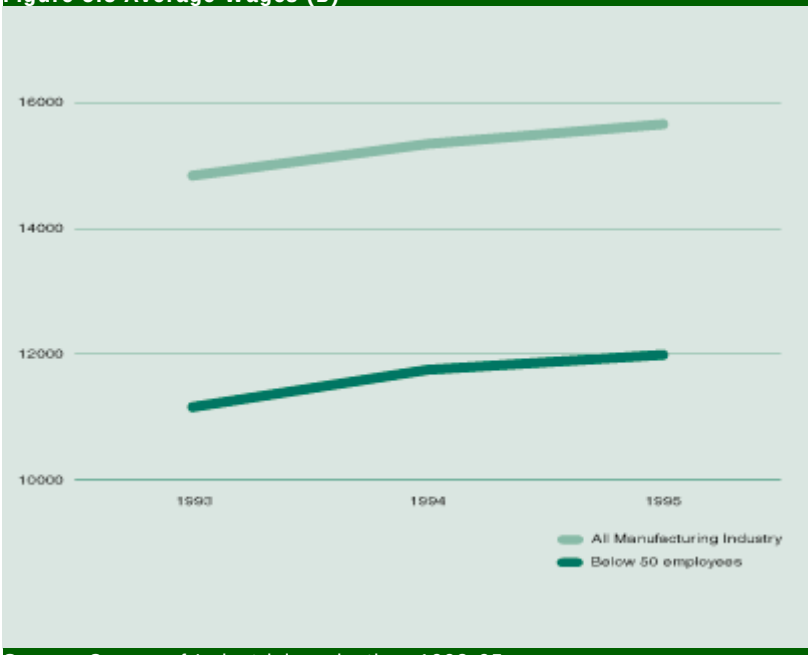


Source: Census of Industrial production, 1993-95

Wages and Salaries

The differential in salaries between larger companies and SMEs are clearly visible from the adjoining graph. In all manufacturing, the average salary rose from £14,839 in 1993 to £15,655 in 1995. Between 1993 and 1995 average wages in SMEs increased in line with those in larger companies from £11,162 to £11,992 which broadly maintains the same differential. The cost of labour enters in a very central way into small firms' decisions about whether or not to hire additional employees. Recent changes announced in the budget to encourage the long-term unemployed back into work should also be of benefit to SMEs by reducing their tax bill.

Figure 5.8 Average Wages (£)



Source: Census of Industrial production, 1993-95

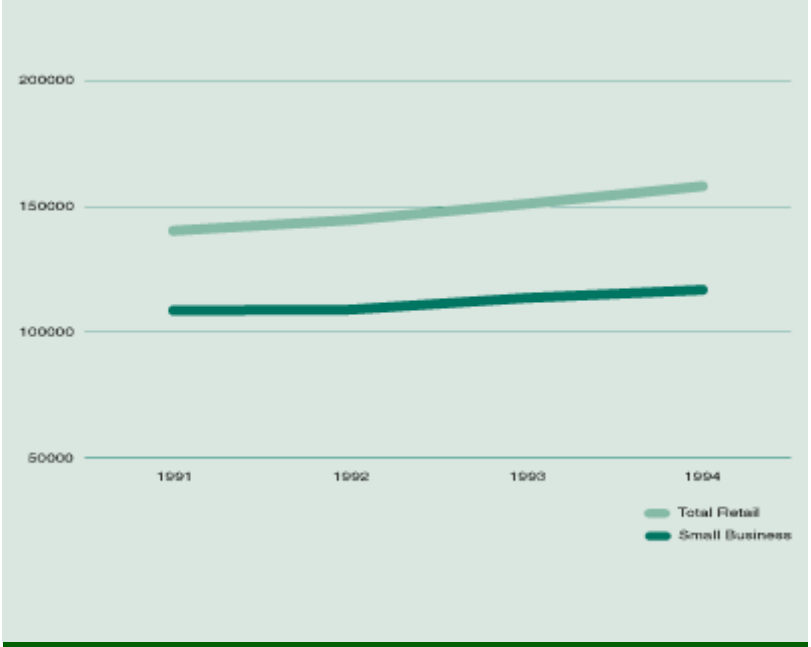
Sevices Sector

In Ireland, it is estimated that about 80 per cent of SMEs are in the services sector. Unfortunately, complete data on the services sector is unavailable. However, data on retail, hotel and catering and software sectors are presented below.

Retail Sector

The retail sector is heavily dominated by SMEs as can be seen from the adjoining graph. Total employment in the retail sector grew from 140,334 in 1991 to 158,002 in 1994, while employment in SMEs grew from 108,637 to 116,848.

Figure 5.9 Number of People Engaged in the Retail Sector

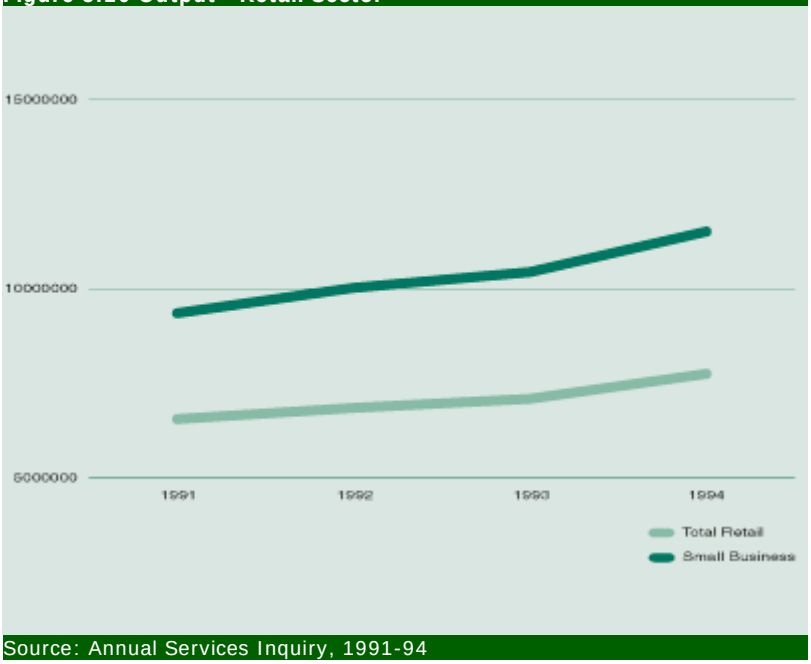


Source: Annual Services Inquiry, 1991-94

Output

Output in businesses with under 50 employees in the retail sector accounted for 67 per cent of the total output of that sector in 1994, compared to 70 per cent in 1991.

Figure 5.10 Output - Retail Sector

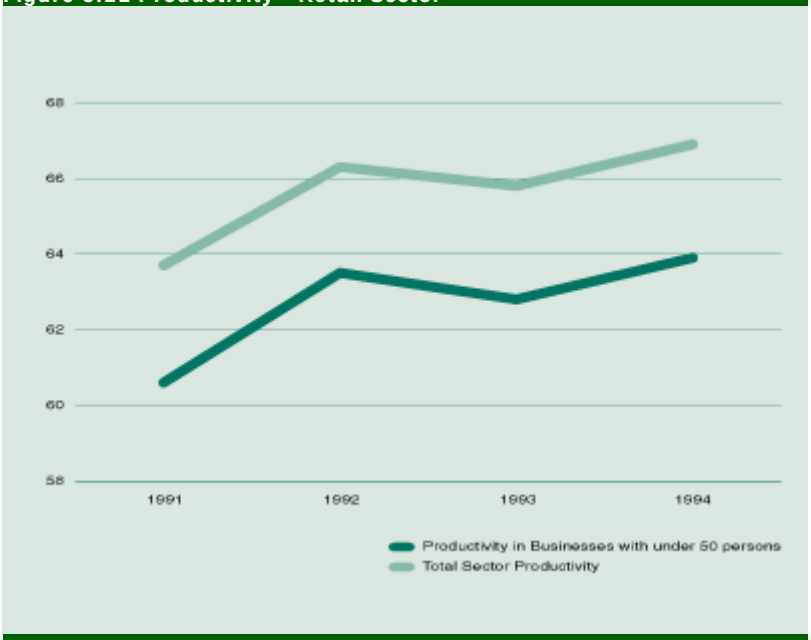


Source: Annual Services Inquiry, 1991-94

Productivity

Productivity between 1991 and 1994 was 3 per cent lower in small and medium enterprises than productivity in the retail sector as a whole. This shows no departure from the trend of the past few years. While productivity is increasing within small and medium enterprises, it is still not up to the standard of the sector as a whole.

Figure 5.11 Productivity - Retail Sector

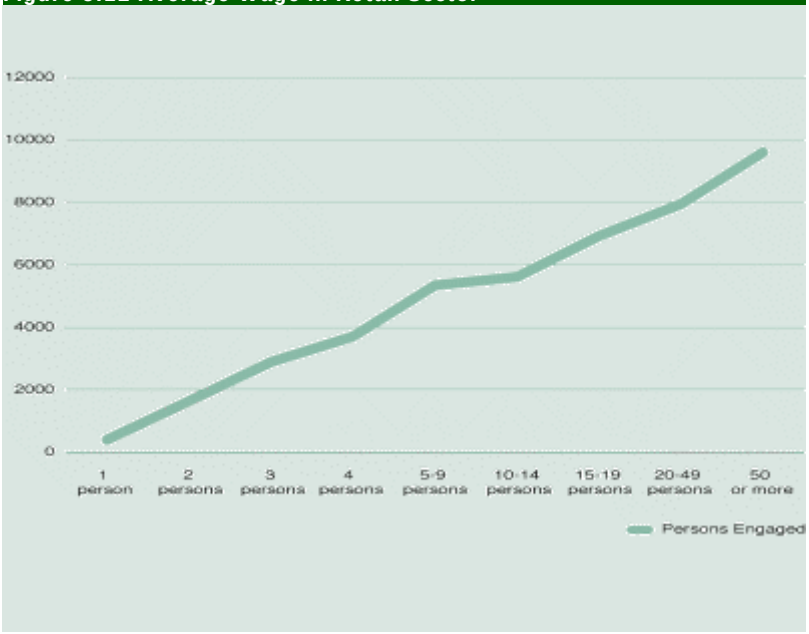


Source: Annual Services Inquiry, 1991-94

Wages and Salaries

Average wages in the retail sector clearly increase with the size of the business. On average, wages are 12 per cent lower in enterprises with under 50 persons than in the sector as a whole.

Figure 5.12 Average Wage in Retail Sector



Hotel/Catering Sector

In 1994 51 per cent of employment within hotel and catering was generated within SMEs. There is no significant change in trend from 1991.

Wages are higher both in 1991 and 1994 among small and medium enterprises. In the hotel and catering sector, output of SMEs made up 50 per cent of total output in 1994. There is no significant difference in productivity between small and large businesses within the sector.

Table Q Hotel/Catering

	1991		1994	
	Businesses employing under 50	All businesses	Businesses employing under 50	All businesses
Persons employed	23,839	42,523	24,033	46,626
Output (£'000)	484,000	879,238	525,194	1,038,841
Average Wages (£)	3,755	3,337	3,772	3,353
Productivity	23.8	21.1	23.3	23.2

Software Industry Employment and turnover in the software industry in Ireland have increased significantly over the past three years. Also, the average scale of companies is increasing. At the end of 1996, 70 per cent of indigenous software companies had under 50 employees, compared with 90 per cent of companies in 1993. In 1993, 60 per cent of indigenous firms had less than 20 employees, whereas at the end of 1996 this figure had dropped to 18 per cent.

The number of both indigenous and overseas companies employing under 50 people is given in the table below.

Table R Number of SMEs in Software Industry

	1991	1993	1995
Companies employing over 50	34	34	53
Companies employing under 50	331	383	430
Total Companies	365	417	483

4. Issues for SMEs in Ireland

Finance

There has been an encouraging increase in the number of funding sources for small business. A Developing Companies Market has been established on the Irish Stock Exchange to cater for the needs of smaller emerging companies, and the banking sector has introduced a number of lending schemes specifically targeted at SMEs. Venture capital schemes have also increased in number. Special loan schemes, operated jointly by the banks and the Government have also proved hugely successful.

Employment

Small businesses are often the first to be hurt when labour shortages emerge in an economy since larger companies are able to pay the higher wages resultant from the skills shortage. There is growing evidence to suggest that SMEs are having difficulties in finding suitable staff, both in the manufacturing and services sector.

Public administration

Regulatory and administrative requirements represent a burden on small business, usurping scarce time and financial resources that could be better spent developing the business. The tax and administrative burden on SMEs is partly determined by the turnover limit for VAT registration (Table 17, column 5). Ireland compares favourably with most countries in this regard: it has the third highest limit of 17 OECD countries. However, VAT registration involves both administrative burdens and cash flow problems, and that has been particularly hard on SMEs. The threshold from this point of view is too low, since a turnover of £200,000 annually can mean 1-3 employees. The CSO should also set a limit on the number of surveys which any one enterprise would be required to complete in a year.

Debtor days

Table 17, column 6 presents data on the average number of days a typical small firm has to wait for receipt of payment on invoices. The data shows that the Irish figure is lagging behind the European average of 53.2 days and clearly lags behind such countries as Germany and Finland.

Information Technology

IT applications are more widely used among large enterprises than among SMEs. The main reasons for this are the high costs associated with the applications, their poor suitability to the needs of SMEs and SMEs own lack of IT knowledge. The main advantages to be gained from information technology for small businesses, in terms of competitiveness and efficiency, are time and cost savings and error reductions. Other impacts of IT include increased organisational learning and improved management decisions. The increasingly related question of telecommunications is important for small firms as well as large. But large firms are in a position to negotiate volume discounts while these would not be available to SMEs.

Energy costs

Gas prices for small companies in Ireland are in a median position in Europe, ranking fifth out of ten EU countries covered by the Eurostat survey of gas prices at 1st January 1997. The price of 7.4 ECU/GJ for a usage of (418.6GJ) was just below the unweighted survey average of 7.8, but far above the UK price of 3.8. However, as already mentioned, the UK prices are probably unsustainably low.

Electricity prices for small companies in Ireland are high relative to other European countries. Ireland ranks thirteenth out of the sixteen countries examined. The cost of electricity is 13.51 ECU per kilowatt-hour for small users compared to a low of 4.66 ECU per kilowatt-hour in Denmark, which has the lowest cost. The unweighted EU average was 10.39 ECU..

5. What needs to be done?

An objective should be that the SME sector in Ireland be a main source of innovation, employment, growth and flexibility in the economy.

This means that SMEs should have as good or better conditions for start-up and growth than in any other country. In order to achieve this, policies and institutions have to be reviewed for their impact on SMEs emergence and growth. They should then be changed as needed.

The setting up of a Task Force in 1994 gave small businesses the rightful recognition as a key driving force in the economy. The Task Force set out to examine all aspects of government policy as it applied to small business and to put in place structures (Small Business and Services Forum) to ensure the development and advancement of these policy issues. The Task Force called for a new initiative on small business and made over 120 recommendations based on five policy pillars; raising money, rewarding risk, reducing burdens and providing help for small business.

More than 50 per cent of the recommendations of the Task Force have been implemented to date, resulting in a significantly enhanced operating environment for small business. The annual report on small business tracks the implementation of the Task Force's recommendations and reviews the progress being made. It also informs small businesses of the changes that are taking place. While the work of the Task Force has undoubtedly had a positive impact on small business, many challenges remain in the form of increased competitiveness within the single market, the prospect of a single currency and technological advances.

The internationalisation of SMEs is an important area in which Ireland is quite weak. Export orientation is low by European standards. Ireland is just ahead of the UK in this regard, but twelfth out of fifteen EU countries. In Austria, 70 per cent of all SMEs export, while for Ireland the figure is under 45 per cent. Given that exports play such an important role in the Irish economy, the figure is a disappointing one. Reasons for this may include the lack of language skills: Irish SMEs do not usually have someone capable of doing business in more than one language. Ireland ranks last among EU countries in this regard, with only 30 per cent of firms having executives able to negotiate in more than one language. This is less than half the EU average. By comparison, for countries such as Luxembourg, Belgium and the Netherlands the figure is 90 per cent or more.

An important issue for the development of SMEs is how they are perceived. While there has been progress, it remains the case that the role of the SME is still insufficiently recognised both by the public and in policy priorities. SMEs are not valued as highly as large companies and the proportion of time their concerns receive in policy analysis is disproportionately low. This applies particularly to established SMEs, but equally for start-ups much remains to be done. The growing enterprise culture in Ireland needs to be further encouraged, including through the education system.

In policy terms the special problems of SMEs are not fully recognised. Administrative burdens are however being reduced, and the taxation is being adjusted to re-balance the system in favour of SMEs, through the introduction of a lower rate of corporation profits tax for the first £50,000 of profits. Prompt payments legislation covering the public sector is another reform that will benefit SMEs especially, as these tend to be disproportionately affected by cash flow problems.

The necessary institutional support for SMEs is now in place to a large degree. A wide variety of support and advisory services are available to SMEs through Forbairt, ABT, the County Enterprise Boards, Business Innovation Centres, Plato and Leader programmes, etc. They will however have to be monitored and updated to reflect the changing requirements of the SME sector.

Linkages should be developed further as a means of quality upgrading

To assist small businesses to develop their competitive advantage by strengthening their capabilities in management related areas, FÁS is currently piloting the Company Development Cluster Programme. The programme is targeted mainly at companies in the early years of their development. Training of a focused nature is provided by clustering ten companies in a region.

Because of EMU, opportunity for linkages and clusters should be exploited. There is potential to increase small business linkages and sub-supply opportunities with foreign multinationals. Continued expansion of the Linkage Programme in support of small businesses is needed.

Skill mechanisms should be driven by SMEs

SMEs must be taken into consideration, through broad consultation, on the issue of future skills identification. This is critical for SMEs as any skills shortages are felt particularly hard by SMEs due to their labour intensity and their relatively lower wages.

Internationalisation

Ireland needs to consider greater action in the field of internationalisation of SMEs. Firstly they need the scale to compete successfully and increased cooperation between Irish firms is needed. Secondly there is a need for Irish SMEs to cooperate with SMEs in other countries. EMU will provide a major impetus to this. Cooperation can be in the fields of marketing and product development.

In Japan, the Small and Medium Enterprise Agency has as one of its tasks the furthering of such international links for SMEs and in Korea, the SMBA is encouraging a global outlook by inducing SMEs to compete on equal terms with foreign enterprises in the international market. In addition, it is promoting SME participation in the overseas market through overseas investment.

Public Administration

Key Points
Public administration plays a key role in competitiveness
Many countries have instituted reforms in public administration and in the regulatory process to improve competitiveness
The Strategic Management Initiative in the civil service is an important step forward in improving the efficiency and responsiveness in the public services
It needs to be broadened to cover the wider public sector
Ireland also needs its own definition of the role of public administration vis à vis the enterprise sector
Ireland needs to benchmark its public administration against that of other countries
Indicators in Top Quartile
Government spending as a percentage of GDP
Not lending (+) or borrowing (-) of general government as a percentage of GDP
Tax as a percentage of GDP
Indicators in Second Quartile
Share of general government in total employment
Indicators in Third Quartile
Indicators in Bottom Quartile
General government consolidated gross debt as a percentage of GDP

What is public administration?

Public administration is that part of government that is concerned with the execution of policy. It implements the legislative framework and the spending and taxation decisions that the government has made. It is the channel through which decisions are brought to reality. It is also the form in which the enterprise sector encounters government in its day to day operations.

A number of activities come under the heading of public administration. Regulation is the way in which the state intervenes to ensure:

- the smooth running of markets;
- the prevention of market distortions;
- the quality and availability of critical services.

The regulated services can be provided by the private sector as well as the public sector. For instance, the State regulates telecommunications, transport and energy, determining who can enter the market, what services they can provide, and what prices they can charge. The State

also intervenes when unfair competition is introduced between firms, or when a company by merging with another is likely to have a monopoly or near monopoly position in the market. Clearly the quality of the decision making by the public administration will affect the business immediately in question and the economy as a whole. Decisions have to be good ones. But they also have to be reasonably quick ones: competitive pressures in the modern economy mean that businesses opportunities open up and close off very rapidly.

Competition policy is a particularly important part of regulatory activity because it is essential for markets to function freely. The costs to the economy of market dominance by one company can be very great. The goods or services in question can be more expensive than is necessary and the range of goods and services can be restricted. Moreover, market dominance may have a tendency to perpetuate itself, if the dominant enterprise is big enough to discourage new entrants. The role of public administration in correcting any abuse of dominant position, and blocking the emergence of monopolies and near-monopolies, is vital in keeping costs down and encouraging innovation also, through encouraging a range of choices for supplies and the emergence of new companies on the market in question.

Taxation and expenditure in practical operations also represent another way in which the public administration affects the business sector, both in government purchasing of goods and services and in the allocation of grants and support and advisory services. Decision making by the public administration has to be both speedy and accurate, because the results may be crucial to the success or failure of the enterprise in question. Even the provision of information by the public administration on what are the rules can be essential for an enterprise.

From the above it can be seen that the role of public administration is a wide one. It includes the operation of government departments, i.e. the civil service. But it also includes a number of government agencies, as well as local authorities and publicly managed and funded bodies such as County Enterprise Boards, all of which interact with the enterprise sector and by their operations and effectiveness can play a very important role in the success of a business.

Why is it important for competitiveness?

In a modern economy, the role of public administration is crucial for competitiveness because of the way it determines the environment, the certainty and the efficiency of the provision of state services. This is particularly so because of the way that the role of the State has changed. Many European countries and those in other parts of the world have gone through extensive programmes of privatisation. Again, protectionism through tariffs and non-tariff measures used to be a significant area for government support for the enterprise sector. With world trade liberalisation now extensively in place, the scope for using trade policy to support the domestic industry and services sector is severely limited. For EU countries since the completion of the single market in 1992 there is no such scope at all. Again, tax concessions and grants to industry and services used to be a significant way by which countries encouraged their own enterprise sector. But increasingly there is international pressure against such measures, which are seen as unfair competition in trade or in the attraction of FDI. Government purchasing was once an important way by which governments could support their own companies, but this again is not an option for EU countries today.

Given the dramatic reduction in the role of government in general, at least as regards the range of policies it has at its disposal, it is obviously all the more important that the remaining instruments are used as effectively as possible. A number of these have already been discussed in this report. They include macroeconomic policy, as well as the role of the State in investment in education and training and the provision of infrastructure. The regulatory and support services of the State are also important, however, and there needs to be a continued focus on the efficiency and responsiveness of these if competitiveness of the enterprise sector is to be maintained and improved.

Thus the remaining issues are of substance and the manner in which that substance is delivered. The speed of decision making affects the ability of enterprises to take advantage of business opportunities. With the increase of competitive pressures the role of public administration in helping enterprises to respond quickly to market changes is very important. Decision making and the provision of information affect competitiveness, especially because delays and lack of clarity increase uncertainty and make it more difficult for enterprises to plan. Thus public administration can affect costs for enterprise, the certainty of enterprise operations and decision making for investment decisions, and through the application of regulations and the provisions of support, the availability of human resources, infrastructure, R&D, and information, along with a number of other essential services to business.

What is the situation in other countries?

There has been considerable reform in public administration in other countries along the lines outlined above. In OECD countries, in addition to the effect of trade liberalisation, there has been a general move in the 1990s to strengthen the basic legislative framework governing competition. In various countries, there has also been deregulation of mandatory licensing requirements for business sector entry as well as easing of restrictions in the retail sector, although privatisation and greater competition are still needed to improve the flexibility of product markets.

The OECD notes that "...Reform of government regulations has also become a high policy priority. Many regulations are excessively costly ways to meet economic and social goals, and others have become outmoded over time. Reform in the highly regulated sectors of road and air transport, communications, electricity and retail distribution could alone raise the level of GDP in some heavily-regulated OECD member countries by as much as six per cent in the long run."[8]

In Canada, an analysis of competitiveness and the regulatory process has lead to some conclusions that are of interest to Ireland[9]. Firstly there is recognition that the way the government chooses to regulate affects Canada's competitiveness. Regulatory programmes can affect each of efficiency, innovation and adaptation. Specifically, regulations that create entry barriers can lead to efficiency losses associated with monopoly power; confusing and costly requirements take limited resources away from more productive uses, leading to efficiency losses; detailed product specifications make innovation more difficult; and regulations that inhibit trade can hurt Canadian exporters, consumers who would like to obtain new products developed abroad, and businesses that need to have access to the process improvements developed throughout the world in order to remain competitive.

Some of the principles of regulation suggested in Canada in pursuit of an efficient private sector are the following:

- Where feasible, regulatory programmes should make use of market mechanisms to achieve their objectives.
- Regulatory requirements should be designed so that programme objectives are pursued at minimum cost to the government, regulated parties and Canadian consumers.
- Regulations should never offer to regulated firms a benefit that is not available to existing and potential suppliers of the same product or service.
- Regulatory programmes should not place unnecessary restrictions on the availability of factors of production (labour, primary and intermediate goods, business services).
- Unnecessary controls on factor prices should be avoided.
- If market entry must be restricted, managed competition is preferable to monopoly.

[8] OECD "Towards a New Global Age: Challenges and Opportunities". Policy Report. Paris 1997
[9] Treasury Board of Canada. "Competitiveness and the Design of Regulations". December 1992

- Price regulation, if required at all, should be restricted to markets that are monopolistic.
- Regulators should avoid substituting bureaucratic judgement for business judgement, except where there exists a manifest market failure, and where the cost of government intervention is less than non-intervention.
- Standards that are higher than what is typical in other countries may be desirable in some circumstances, since they may sometimes push industry to innovate, invest, and position itself better for the future. However, this approach should only be used if there is a demonstrated reason why government is better able to identify future needs. In most circumstances, firms are better positioned than governments to anticipate changes in demand.

An increasingly significant element in regulation is provided by EU legislation. The UNICE report compares the rate of implementation of single market directives among EU member states. Ireland's rate of implementation is 95 per cent placing it in fourth position compared to an EU average of 93.8 per cent.

The size of the general public sector can be gauged through various statistics as presented in Table 18, column 1, shows a first indicator of performance, general government debt as a percentage of GDP, an indicator that relates to one of the Maastricht criteria for eligibility for EMU. Ireland ranks 12 out of 15 countries, with debt at 80 per cent of GDP. The UNICE report ranks Ireland in seventh position out of 15, using 1997 forecasts, but uses GDP rather than GNP for Ireland. Net lending or borrowing by government as a percentage of GDP (Table 18, column 2), another indicator related to the Maastricht criteria, also gives pointers to how the debt ratio will change in the future. Ireland is in third place here, with a deficit of 1 per cent of GDP. However, more recent data shows that Ireland ran a surplus in 1997. Only Luxembourg, the leading country, was predicted to manage a surplus in 1997.

Table 18

		1	2	3	4	5
Public Administration	**Indicator**	**General government consolidated gross debt as a % of GDP ***	**Net lending (+) or borrowing (-) of general government as a % of GDP ***	**Government spending as a % of GDP ***	**Share of general government in total employment**	**Tax as a % of GDP ***
	Year	**1996**	**1996**	**1996**	**1996**	**1996**
Country	Observations	15	15	15	24	15
Ireland	Value	80	-1,026	40.1	17.7	39.1
	Rank	12	3	1	11	3
Japan	Value	-	-	-	8.3	-
	Rank	-	-	-	1	-
Netherlands	Value	77	-2.5	50.1	10.8	47.7
	Rank	10	5	8	4	8
New Zealand	-	-	-	14.7	-	
	-	-	-	6	-	
UK	Value	57	-3.5	41.3	19.6	37.7
	Rank	2	14	3	16	1
US	-	-	-	15.5	-	
	-	-	-	8	-	

* GNP is used in place of GDP for Ireland

Source: EU Commission, European Economy, No. 63, 1997

This good performance compared to other EU countries in the area of government finances is seen strikingly in another indicator, government spending as a percentage of GDP (Table 18, column 3). Here Ireland is in first position in the EU. At 40.1 per cent of GDP, the share is far

lower than the EU average. The UNICE report highlights this point, stating that Ireland is "The only EU country that comes near the benchmark level of public expenditure set by the US (below 33% of GDP)". While Ireland may rank highest among EU countries, it still lags behind the US and Japan.

However, the human resources position is not as favourable. Table 18, column 4, gives the share of general government in total employment. Here Ireland ranks 11 out of 24 OECD countries. But if non-EU countries were excluded, Ireland would be in position 5. A number of points could be made about the difference between EU and non-EU countries in terms of the role of the public sector, but perhaps the most striking result is that of Japan, which has occupied first position across a significant variety of indicators, once more occupies first position under this heading.

The last indicator, tax as a percentage of GDP, is given in Table 18, column 5. The rankings here are mainly determined by the rankings for spending and borrowing. Ireland is in position 3 out of 15 EU countries, with tax at 39.1 per cent of GDP. UNICE measure tax as a percentage GDP for all OECD countries and finds Ireland to be one of only a few EU countries to exhibit a ratio lower than the OECD average. In their report Ireland ranks sixth out of the 23 countries examined under this indicator.

UNICE also looks at the financial burden[10] on private sector employment. Again, while Ireland performs well relative to other EU countries, it is outperformed by the US and New Zealand.

What is the situation in Ireland?

The most significant step in improving public administration in Ireland has been the establishment of the Strategic Management Initiative (SMI). The SMI was established to review and reform the existing systems for making decisions, allocating responsibility and ensuring accountability within the Irish civil service. The aim is the delivery of an excellent service for the Government and for the public as customers and clients at all levels. Excellence in the quality of government services requires high quality policy advice, a reduction in red tape and open and transparent service delivery.

In the SMI preparations, a vision of the civil service of the future has been developed, one of an open, dynamic organisation, operating to the highest standard of integrity, equity and accountability; a civil service that makes the maximum contribution to national social and economic development and competitiveness, and makes effective use of human resource management.

Internally, a new management structure is proposed for the civil service. Existing structures are criticised for promoting a risk averse environment, where taking responsibility is not encouraged and innovative approaches to service delivery are not developed. The SMI sets out the issues that need to be addressed in the modernisation of human resource management. The civil service needs to look at how good performance is rewarded, how to deal with poor performance, how people are selected, motivated and allowed to develop, and how equality of opportunity is provided for.

A new structured approach to the control of public finances is also proposed. The existing structure is over centralised and short-term in orientation. Increased emphasis should be placed on developing responsibility and accountability.

Implementation of these changes is to be achieved through building on the work of the SMI to date. The SMI has already helped management focus on and clarify strategic issues, increased awareness of the need to improve policy formation and set more explicit objectives

[10] Two indicators are used, the ratio of population dependent on public sector source income/population employed in private sector, and the ratio of adult population/population employed in private sector.

so that progress can be more readily measured. Successful implementation of the recommendations will require sustained commitment from government, civil service and the general public. Meaningful change can only occur through communication and consultation processes to enable all those involved to gain a full understanding of the initiatives being proposed. It is important therefore that the needs of the enterprise sector, who are major users both directly and indirectly of government services be taken fully into account in this process.

Work on the SMI is under way in each government department, and will include the development of explicit performance measures, as well as service standards and action plans to implement them. As particular of the preparations for SMI a regulatory reform working group has been set up. Proposals for new regulation include a statement of impact assessment and a quality regulation checklist. Proposals on existing regulation concentrate on consolidation and on the removal of market entry restrictions. This group has had presentations and submissions from IBEC, ICTU, SFA, ISME and the Irish Exporter's Association.

Other developments in public administration that are particularly noteworthy in Ireland as far as the enterprise sector is concerned include the strengthening of the Competition Authority, whose role is envisaged to expand. The office of the Telecommunications Regulator has been established to regulate a key sector that affects the competitiveness of the whole economy.

What needs to be done?

The Task Force on Small Businesses noted a number of ways in which the regulatory impact on SMEs represented a significant burden. Even the collection of information on behalf of government departments through surveys can, for instance, represent a task that is very demanding in terms of management resources. Measures to alleviate this burden as much as possible are needed.

The SMI is a welcome development, and the fact that it is an institutionalised process, being built into every aspect of the civil service operations, is a very valuable step forward. However, it has to be brought to full implementation as a matter of urgency. Clearly, a full understanding of the process is necessary and the social partners have to be fully engaged in this. But the design and implementation of the SMI should not be allowed to delay any immediate steps that can be taken to improve the services to business provided by the state, and to improve the efficiency of use of the national resources devoted to public administration. Again, the wider question of the efficiency of the wider public service, including local authorities, and its interactions with the enterprise community, should be addressed if not within the SMI process then in some other way.

In addition, a wider context for the SMI needs to be established. It concentrates on how excellence in the delivery of services can be achieved, and it is right to do so. But there is equally a need to articulate more clearly the role in Ireland in the years to come for how the public administration can best assist the enterprise sector, and not compete with it. Principles need to be formulated to govern the way in which public administration will support the enterprise sector in the years to come. The principles set out in the Canadian example above may be a useful starting point, but other emphases are also possible. The Council intends to contribute to the formulation of such principles in an Irish context.

A final point concerns benchmarking. The need for this is particularly important for public administration. This is because it plays a key role in competitiveness. However, comparative data on the effectiveness of public administration is not available, and considerable work will be required. The EU benchmarking initiative is considering a proposal for benchmarking the regulatory environment for SMEs. This would help to collect comparative data in an important area of public administration. However, the Government should in any case initiate benchmarking of performance in relation to the defined goals of public administration.

Socioeconomic Performance

Key Points
Ireland is the leading country in employment growth
Income levels by one measure have already reached EU average levels
Unemployment is high but declining
Unemployment will continue to be the main focus of socioeconomic policy
Indicators in Top Quartile
Cumulative employment change p.a. 1995-1997
GDP growth
Consumer prices
Indicators in Second Quartile
Indicators in Third Quartile
GDPper capita/EU GDP per capita (PPS)
Indicators in Bottom Quartile
Standardised unemployment rate

For an enterprise, the objectives of competitiveness are to ensure and increase profitability or shareholder value. For a country, the objectives of competitiveness are to maintain and improve a standard of living of the population concerned. “Shaping Our Future” adopted as overarching goals some specific objectives which were regarded as defining the desired level of development to be attained over the period in which the strategy was to be implemented. These included employment, incomes and the quality of life in general. In analysing Ireland’s competitiveness from year to year, the use of basic socioeconomic indictors can indicate what progress is being made in practical terms and to what extent success is being delivered to the population at large. Table 19 includes a number of indicators describing overall socioeconomic performance. The first indicator is of cumulative employment change from 1995-1997. Here Ireland has outperformed all OECD countries, ranking 1 out of 28. The EU as a whole saw an increase in employment of 1 per cent.

Table 19

		1	2	3	4	5
Socioeconomic performance	**Indicator**	**Cumulative employment % change 1995-1997**	**Consumer prices, 12 months to Aug 1997**	**GDP growth**	**GDP * per capita/EU GDP per capita (PPS)**	**Standardised unemployment rate**
	Year	**1995-1997**	**1996-1997**	**1996**	**1996**	**Aug-97**
Country	Observations	28	28	28	17	20
Ireland	Value	12.16	1.4	7.3	103.9	10.7
	Rank	1	6	1	10	16
Japan	Value	1.80	2.1	3.6	117.9	3.4
	Rank	2.1	16	10	3	1
Netherlands	Value	6.43	2.6	2.7	104.9	5.6
	Rank	7	21	13	9	6
New Zealand	Value	10.10	1.1	2.1	-	6.7
	Rank	3	4	18	-	9
UK	Value	2.62	-3.5	2.1	99.5	6.8
	Rank	16	22	18	12	10
US	5.28	2.2	2.4	140.1	4.9	
	10	18	16	2	5	

* GNP is used for Ireland instead of GDP

Source: OECD, Employment Outlook, July 1997; EU Commission, European Economy, No. 63, 1997; OECD, News Release, 16 Oct 1997

The inflation rate is included for its impact on the quality of life and it could in any case be considered an important indicator in determining the environment for enterprise (Table 19, column 2). Uncertainty as to price levels can inhibit investment decisions. Ireland's low inflation rate means that it ranks sixth out of 28 countries. The EU average rate of inflation is 2.1 per cent and the inflation rate for the OECD as a whole is 4.3 per cent, but Ireland has a rate of only 1.4 per cent.

Figure 7.1 Inflation

Source: OECD, SG/COM/NEWS(96)103

Indeed, Ireland has enjoyed relatively low inflation since 1986. There has also been some convergence amongst other countries as inflation levels have declined worldwide. Irish inflation is currently within the level set out by the Maastricht criteria. Maintaining continued low inflation with strong economic growth and falling interest rates will be difficult but should be aided by the national pay agreement, Partnership 2000. Management of the exchange rate will be crucial in combating inflation in 1998.

Figure 7.2 Real GDP Growth

Source: OECD, Economic Outlook, No. 60, December 1996

This inflation has been accompanied by steady growth. The growth rate of GDP in Ireland in 1996 was 7.3 per cent, the highest among all 28 countries in the sample (Table 19, column 3). The growth rate was over 4.5 times the EU average and nearly three times the OECD average. The growth rate in countries such as France (1.5 per cent); Germany (1.4 per cent); and the UK (2.4 per cent) was significantly lower. The Irish economy has grown by approximately 60 per cent since 1990. This contrasts with growth of 11 per cent in the UK over the same period. Ireland's cumulative growth rate since 1990 is the highest amongst the observed countries.

The effect of this growth, which follows several years, has been to increase income levels in Ireland towards European averages. While Ireland is 10 out of 17 in terms of its GDP per capita as a proportion of EU GDP per capita, this share has been rising steadily and has surpassed that of the UK. For measuring living standards, the use of purchasing power converters gives a better indication in comparative terms and here Ireland now stands at 103.9 per cent of EU GDP per capita.

Unemployment is widely regarded as the most critical social problem affecting not only Ireland but many other countries, both developing and developed. The recent labour force survey showed job creation at record levels, and this is beginning to be translated into reductions in the rate of unemployment, which has reduced to 9.9 per cent in November 1997. (In 1994, Ireland's unemployment rate was 14.3 per cent). This is now below the EU average of 10 per cent. The rate in the UK for instance, is 6.8 per cent and Ireland's rate is far higher than countries such as Denmark, the Netherlands and New Zealand and Austria. The downward trend in Ireland's unemployment rate is occurring at the same time as increasing unemployment is seen in countries such as France and Germany.

Unemployment rates of Ireland's level indicate both inefficiencies in the economic system and represent a major social problem which competitiveness policy has to address. However, it should also be noted that immigration is having an effect. When jobs are created, the

unemployment rate in Ireland does not necessarily go down, because people come from abroad (typically returning emigrants) to take up the new jobs.

Figure 7.3 Unemployment (Standardised Rates)

Source: OECD, SG/COM/NEWS(97)4

For many years Ireland experienced the phenomenon of jobless growth. Although total output was increasing, job levels remained stagnant, and with an increasing labour force, unemployment rose greatly. Between 1990 and 1993, unemployment rose by 54,000 from 176,000 to 230,000. Since then unemployment has fallen back to 159,000. The trend in unemployment rates in Ireland and the UK are somewhat similar since 1990, with a small degree of narrowing, although the rate in the UK remains 3.9 percentage points below Ireland.

Figure 7.4 Long-Term Unemployment Rates

The long-term unemployment rate in Ireland has begun to fall recently as indicated by the 1997 labour force survey. It shows that long-term unemployment fell from 103,300 in 1996 to

86,300 in 1997 which is equivalent to a drop to 5.6 per cent of the labour force from 6.9 per cent.

Socioeconomic performance can in many respects be regarded as good. If GDP growth continues to exceed that of all other countries, this will continue to improve Ireland's relative position in GDP per capita terms and sustain the relatively good employment growth being seen. Unemployment is at such high levels, however, that employment growth will need to be continually strong to have a significant impact on the unemployment rate.

Conclusions

Ireland's competitiveness

The previous sections of this report have summarised Ireland's competitive position, analysing a number of indicators covering many issues in competitiveness. In general, Ireland ranks in a middle position among OECD countries, and towards the lower end of EU countries. In spite of this, there are certain areas where Ireland is a leader among the developed countries. This is most notable in GDP growth, export performance and productivity growth, where Ireland's recent achievements are remarkable by any standards.

The question arises as to why this should be so. If as is clearly shown in a wide range of indicators, Ireland's competitiveness is not very strong, how is it that we are seeing such spectacular growth?

The answer lies partly in the definition of competitiveness. It has a time dimension, and the present good performance has its roots in previous years. It is based on increased business confidence, which in turn has arisen because of stability in wages and prices, together with past investments in telecommunications and in education. These have provided essential encouragement both to foreign investment and indigenous industry. Moreover, the rapid growth of the most recent years has demonstrated in a very practical way the possibilities of success. It has raised expectations but has also made them more credible. A process has been initiated that could become a "virtuous circle". Growth shows the benefits of stability and the rewards of effort, and this in turn increases stability and effort so as to give more growth in the future.

The implications of this report are however less encouraging. The mediocre ranking for Ireland in many areas shows that the above "virtuous circle" will need new efforts to make it work. Growth can be sustained only if it is used to make improvements in all the areas listed. The levels of fixed investment are too low, but equally critical will be other kinds of investment, in education, in training and in R&D. Again, macroeconomic management, the functioning of capital and labour markets, and the operation of the public administration are critical areas, determining not only the cost base for enterprise but the investment decision itself. So in spite of Ireland's present high growth, it cannot be sustained unless the full competitiveness agenda is acted upon, as well as regularly modified to deal with changes in the world economy.

The Need for Benchmarking

From the above discussion, it follows that these interrelated trends should all be reflected in convergence of the policy process. Increasingly, close coordination will be needed, reflected in the dialogue between the enterprise sector, trade unions and governments. A further area for integration will concern macroeconomic policies, whose interrelations with international trade and investment policies will be a matter for close examination.

The growth in international trade, openness of world markets and the globalisation of industry already referred to above, have highlighted the need for benchmarking of competitiveness potential, performance and processes. Benchmarking at national level is needed especially for governments, trade unions, and business associations. These share a need to assess the economic environment and the infrastructure, the efficiency of labour markets and capital markets and the functioning of the national systems of innovation. By studying best practice internationally, priorities for change at a national level can be determined on the basis of shared perceptions of competitiveness. For Ireland, benchmarking on an international basis will identify the areas where policy action is needed. Ireland needs to measure its performance compared to world best practice, because increasingly it is world best practice against which it is competing.

An EU initiative on benchmarking, launched during Ireland's presidency, is of direct relevance to this. At present, four pilot programmes, on skills, on the financing of innovation, on transport and on IT and industrial organisation, have been launched. The experience gained will be valuable in the development of wider programmes that can cover a broad range of competitiveness issues, measuring each aspect against best international practice.

Competitiveness Goals

The implications of the above international trends for competitiveness policy are complex. The main conclusion is that all the principal areas are important and cannot be directly substituted for one another. This can only be done within the costs area, where high costs of some input can often be compensated for by lower costs in others. But good education cannot compensate for poor telecommunications, and an efficient public service cannot compensate for low levels of innovation. The message of globalisation is that policy action has to be rapid and comprehensive to improve competitiveness in the face of accelerating change.

In developing detailed strategies for improvement, it is important not to lose sight of overall socioeconomic objectives. For Ireland the purpose of improving competitiveness is to improve living standards and the quality of life in the country. A few years rapid growth in GDP does not mean that the social problems of Ireland have disappeared; unemployment, poverty and crime remain. Convergence on EU average levels of GDP per capita does not mean that Ireland has yet achieved the same social stability and standards of living, in a broad sense, that some other developed countries enjoy. That objective, suitably modified to respond to the concerns of Irish people, is a demanding one and will need years of effort even after the EU average has been exceeded.

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Annex 1

Definitions of Competitiveness

Definitions of Competitiveness	
Definition	**Source**
The ability of a country to achieve sustained high rates of growth in GDP per capita	World Economic Forum, Global Competitiveness Report 1996, pg.19
The ability of a country to create added-value and thus increase national wealth by managing assets and processes, attractiveness and aggressiveness, globality and proximity, and by integrating these relationships into an economic and social model	International Institute for Management Development (Economist, 01/06/96, pg. 84)
Competitiveness is relative and not absolute. It depends on shareholder and customer values, financial strength which determines the ability to act and react within the competitive environment and the potential of people and technology in implementing the necessary strategic changes. Competitiveness can only be sustained if an appropriate balance is maintained between these factors which can be of conflicting nature	Feurer, R. and K. Chaharbaghi, 1994. “Management Decision”, Vol. 32, No. 2, pp. 49-
A firm is competitive if it can produce products and services of superior quality and lower costs than its domestic and international competitors. Competitiveness is synonymous with a firm’s long-run profit performance and its ability to compensate its employees and provide superior returns to its owners	Report of the Select Committee of the House of Lords on Overseas Trade (1985)
The immediate and future ability of, and opportunities for, entrepreneurs to design goods world-wide whose price and non-price qualities form a more attractive package than those of foreign and domestic competitors	European Management Produce and Market
National competitiveness refers to a country’s ability to create, produce, distribute and/or service products in international trade while earning rising returns on its resources	Scott, B. R. and Lodge, G. C. pg. 3, “US Competitiveness in the World Economy” (1985)
Competitiveness includes both efficiency (reaching goals at the lowest possible cost) and effectiveness (having the right goals). It is this choice of industrial goals which is crucial. Competitiveness includes both the ends and the means towards those ends	Buckley, P. J. et al, “Measures of International Competitiveness: A critical Survey.” Journal of Marketing Management, (1988)
Competitiveness implies elements of	Competitiveness Advisory

productivity, efficiency and profitability. But it is not an end in itself or a target. It is a powerful means to achieve rising living standards and increasing social welfare, - a tool for achieving targets. Globally, by increasing productivity and efficiency in the context of international specialisation, competitiveness provides the basis for raising peoples' earnings in a non-inflationary way	Group, (Ciampi Group). "Enhancing European Competitiveness". First report to the President of the Commission, the Prime Ministers and the Heads of State. June 1995
Competitiveness should be seen as a basic means to raise the standard of living, provide jobs to the unemployed and eradicate poverty	Competitiveness Advisory Group, (Ciampi Group). "Enhancing European Competitiveness". Second Report to the President of the Commission, the Prime Ministers and the Heads of State. December 1995
Competitiveness is the degree to which a nation can, under free trade and fair market conditions, produce goods and services which meet the test of international markets, while simultaneously maintaining and expanding the real incomes of its people over the long-term	OECD
Industrial competitiveness is the ability of a company or industry to meet challenges posed by foreign competitors.	US Department of Energy
The ability to produce goods and services that meet the test of international markets while citizens earn a standard of living that is both rising and sustainable over the long run.	The First Report to the President and Congress, 1992 US Competitiveness Policy Council
Supporting the ability of companies, industries, regions, nations or supra-national regions to generate, while being and remaining exposed to international competition, relatively high factor income and factor employment levels.	OECD, 1996. Industrial Competitiveness: Benchmarking Business Environments in the Global Economy
Competitive advantage at firm level is the ability to consistently and profitably deliver products and services which customers are willing to purchase in preference to those of competitors.	Department of Enterprise, Trade and Employment.

Annex 2

Definitions of the Indicators

Table A1 - Education Levels

1. **Educational participation - age 16 (%)**
   Total participation (net enrolment in all levels of education) for age 16 in public and private institutions (based on head counts).
   Source: OECD, Education at a Glance, pg.122, 1996
2. **Net enrolment in tertiary education - age 18-21 (%)**
   Net enrolment in public and private tertiary education for persons aged 18-21 years of age (based on head counts).
   Source: OECD, Education at a Glance, pg.127, 1996
3. **Percentage of population (25-64 years) that has attained upper secondary level education**
   Percentage of the population 25-64 years of age that has completed at least upper second-level education.
   Source: OECD, Education at a Glance, pg.35, 1996
4. **Percentage of population (25-64 years) that has attained third-level education**
   Percentage of the population 25 to 64 years of age that has completed third-level education.
   Source: OECD, Education at a Glance, pg.35, 1996
5. **School Expectancy for a 5 year-old child**
   Number of years a five year-old entering the education system currently may expect to remain in the educational system.
   Source: OECD, Education at a Glance, pg.112, 1996
6. **Percentage of people aged 25-34 with higher education qualifications**
   Eurostat Labour Force Survey, 1997

Table A2 - Education Policy and Performance

1. **Number of teaching hours per year in lower secondary education**
   Number of teaching hours per year in public institutions.
   Source: OECD, Education at a Glance, pg.144, 1996
2. **Ratio of students to teaching staff - secondary education**
   Ratio of students to teaching staff in public education (calculations based on full-time equivalents).
   Source: OECD, Education at a Glance, pg.104, 1996
3. **Average achievement in Maths (eighth grade)**
   Overall student achievement in mathematics, eighth grade (approximately 14 years of age) based on tests administered as part of the Third International Mathematics and Science Study (TIMSS) undertaken by the International Association for the Evaluation of Educational Achievement (IEA).
   Source: OECD, Education at a Glance, pg.200, 1996
4. **Average achievement in Science (eighth grade)**
   Overall student achievement in science, eighth grade (approximately 14 years of age) based on tests administered as part of the Third International Mathematics and Science Study (TIMSS) undertaken by the International Association for the Evaluation of Educational Achievement (IEA).
   Source: OECD, Education at a Glance, pg.201, 1996
5. **Min hours in language class (13 years)**
   This refers to the minimum annual number of hours a 1 year-old student must spend learning languages. In Ireland there is no compulsion to study a foreign language but a large majority of students opt to do so.
   Source: EU Commission, Key data on Education, pg. 52, 1995

Table A3 - Labour Costs and Productivity

1. **Compensation per employee (annual average change 1991/1996)**
   Source: European Monetary Institute, Progress Towards Convergence, November 1996.
2. **Nominal unit labour costs (annual average change 1991/1996)** rate at which unit labour costs have been increasing.
   Source: European Monetary Institute, Progress Towards Convergence, November 1996
3. **Unit labour costs in the business sector (percentage increase) Percentage change from the previous period**
   Source: OECD Economic Outlook, June, 61, 1997
4. **Pay for time worked (per hour) for manufacturing workers (Swedish Krona)** denotes basic time and piece rates, shift and overtime premium, other work-related premium, incentive pay, and bonuses paid regularly.
   Source: Swedish Employer's Confederation, Wages and Total Labour Costs for Workers, 1997
5. **Total per hour labour costs for manufacturing workers (Swedish Krona)** represents pay for time worked, pay for time not worked, other cash payments, employer social security expenditure and labour cost reductions from employment subsidies.
   Source: Swedish Employer's Confederation, Wages and Total Labour Costs for Workers, 1997
6. **Hourly Compensation Costs for Production Workers in Manufacturing (US$)**
   Total compensation costs include pay for time worked; other direct pay; employer expenditures for legally required insurance programmes and contractual and private benefit plans; and, for some countries, other labour taxes.
   Source: US Bureau of Labour Statistics
7. **Productivity (annual average change 1991/1996)**
   growth rate in productivity.
   Source: European Monetary Institute, Progress Towards Convergence, November 1996

Table A4 - Work Incentives

1. **Average income tax rate (percentage of average earnings)**
   Married, 100, 0, 2 ch - the average income tax rate as a percentage of average earnings for a married couple, with only one spouse earning 100 per cent of the average production wage and with 2 children.
   Source: OECD, Revision of the 1996 Edition of the tax/benefit position of production workers
2. **Average income tax rate (percentage of average earnings)**
   Single, 100, no ch - the average income tax rate as a percentage of average earnings for a single person, earning 100 per cent of the average production wage and with no children.
   Source: OECD, Revision of the 1996 Edition of the tax/benefit position of production workers
3. **Employer's social security contributions as a percentage of gross labour cost**
   Employers social security contributions (PRSI) as a percentage of gross labour cost. Note this indicator does not account for different contribution ceilings
   . *Source: OECD, Making Work Pay (OECD/DAFFE/CFA/WP2(96)1)*
4. **Income Tax plus Employees Social security contribution rate**
   as a percentage of average earnings - married, 100, 0, 2 ch - income tax plus social security contributions (PRSI) as a percentage of average earnings for a married couple, with only one spouse earning 100 per cent of the average production wage and with 2 children.

Source: OECD, Revision of the 1996 Edition of the tax/benefit position of production workers

5. **Income Tax plus Employees Social security contribution rate**
   as a percentage of average earnings - single, 100, no ch - income tax plus social security contributions (PRSI) as a percentage of average earnings for a singleperson, earning 100 per cent of the average production wage and with no children.
   Source: OECD, Revision of the 1996 Edition of the tax/benefit position of production workers
6. **Marginal (income plus employees social security) tax rate**
   Married, 100, 0, 2 ch - the marginal tax rate (incorporating both income tax and employees social security [PRSI]) for a married couple with only one spouse earning 100 per cent of the average production wage and with 2 children.
   Source: OECD, Revision of the 1996 Edition of the tax/benefit position of production workers
7. **Marginal (income plus employees social security) tax rate**
   Single, 100, no ch - the marginal tax rate (incorporating both income tax and employees social security [PRSI]) for a single person earning 100 per cent of the average production wage with no children.
   Source: OECD, Revision of the 1996 Edition of the tax/benefit position of production workers
8. **Non-wage labour costs - PRSI, Pension, and Holidays (Swede Krona)**
   Includes vacation, public holidays, irregular bonuses, pay-in-kind, employers social security contributions and other labour taxes.
   Source: Swedish Employer's Confederation, Wages and Total Labour Costs for Workers, pg. 18, 1996
9. **Social expenditure and other labour taxes as a percentage of total labour costs**
   employers social security contributions (PRSI) and other labour taxes as a percentage of total labour costs.
   Source: Swedish Employer's Confederation, Wages and Total Labour Costs for Workers, pg. 18, 1996
10. **Tax wedge**
    the tax wedge (at the average production wage) including income taxes, social security contributions (PRSI) and consumption taxes.
    Source: OECD, Making Work Pay (OECD/DAFFE/CFA/WP2(96)1)
11. **Top rate of income tax**
    the top rate of income tax liable on personal income. Note this indicator does not take into account the level at which this rate is payable.
    Source: International Tax Summaries, Coopers and Lybrand

Table A5 - Employment

1. **Days lost to industrial disputes per 1000 civilian employment**
   The data for Ireland are taken from the CSO, Industrial Disputes at least one day or where more than 10 workdays are lost. The methodology differs among the various entries.
   Source: ILO, yearbook of Labour Statistics, 1996
2. **Female Activity Ratio**
   Labour force participation of women aged 15-64.
   Source: EU, Employment in Europe, 1996
3. **Incidence of Part-Time Employment**
   the data for Ireland refer to 1994.
   Source: OECD Employment Outlook, pg. 177, 1997
4. **Incidence of Temporary Employment**
   Source: OECD Employment Outlook, pg. 8, 1997
5. **Level of youth unemployment (15-24)**
   Level of unemployment for those aged 20-24. The data for Ireland refer to 1995.
   Source: OECD Employment Outlook, pg. 166, 1997

6. **Long-Term Unemployment**
   Long-term unemployment is defined as unemployment in excess of 12 months.
   Source: OECD Employment Outlook, pg. 177, 1997

Table A6 - Science and Technology Potential

1. **Science and technology degrees awarded as a percentage of the total number of degrees awarded**
   University-level qualifications by subject category as a percentage of total university-level qualifications.
   Source: OECD, Education at a Glance, pg.186, 1996
2. **Science and technology graduates as a proportion of the labour force 25 to 34 years of age (per 100,000)**
   Number of science graduates per 100,000 persons in the labour force 25-34 years of age.
   Source: OECD, Education at a Glance, pg.192, 1996
3. **R&D expenditure in higher education and government institutions as a per cent of GDP**
   Source:OECD, MSTI,1,1997
4. **Researchers in higher education or government institutions per 1000 labour force**
   Total R&D researchers in full-time equivalents.
   Source:OECD, MSTI,1,1997

Table A7 - Science and Technology Performance

1. **Business R&D expenditure as a percentage of GDP**
   Source:OECD, MSTI,1,1997
2. **Business R&D researchers per 1000 of the labour force**
   Source:OECD, MSTI,1,1997
3. **ISO 9000 Certificates per million capita - total to Dec. 1995**
   quality indicator.
   Source: Mobile Survey, 1996
4. **Dependency Ratio**
   ratio between non-residential and residential patent applications - a high figure indicates the country in question has a foreign origin for the patents registered there.
   Source: OECD, MSTI,1, 1997
5. **Patents granted in US (per million capita)**
   Source:national Patent Offices, National Science Foundation
6. **Size of Information Technology market (% of GDP)**
   Source:OECD, Information Technology Outlook, 1997
7. **Growth in Information Technology Market**
   Compound annual growth rate, 1987-1994.
   Source:OECD, Information Technology Outlook, 1997

Table A8 - Trade

1. **Manufacturing export concentration, standard deviation of exports by country**
   This indicator measures the degree to which a country's exports are concentrated in one market or a small number of markets. The more evenly spread the export pattern of a country the lower the standard deviation.
   Source: OECD
2. **Manufacturing export concentration, standard deviation of exports by industry**
   This indicator measures the degree to which a country's industrial exports are concentrated in one sector or a small number of sectors. The more evenly spread the

export pattern of a country the lower the standard deviation.
Source: OECD

3. **Export Performance for total goods**
   Export performance is the ratio between export volumes and export markets for total goods. The export volume concept employed is the sum of the exports of food, raw materials, energy and manufactures. The calculation of export markets is based on a weighted average of import volumes in each exporting country's market, with weights based on trade flows in 1991.
   Source: OECD, Economic Outlook, No.61, July 1997-12-18
4. **Producer prices - Manufacturing (1990 = 100)**
   Data for Ireland refer to the Wholesale price index (output of manufacturing industry).
   Source: OECD, Main Economic Indicators, Oct 1997
5. **Trade openness**
   This indicator measures the sum of total exports and imports (goods and services) as a percentage of GDP.
   Source: OECD, Main Economic Indicators, Oct 1997
6. **Trade openness in services (Exports + Imports) / Output**
   This indicator measures the sum of services imports and exports as a percentage of total services not output.
   Source: World Trade Organisation, International Trade and OECD National Accounts

Table A9 - Financial Markets

1. **Government Bond Yields (61)**
   Nominal rates.
   Source: IMF, International Financial Statistics, October 1996
2. **Interest Rate Spread - Absolute**
   this equals the lending rate(601) minus the deposit rate(60p) (Nominal).
   Source: IMF, International Financial Statistics, October 1996
3. **Long-term real interest rates**
   the data for Ireland refer to the nominal yield on 15-year government bonds minus the rate of inflation (consumer price index).
   Source: OECD, Economic Outlook, No. 61, June 1997
4. **Money Market Rates (60b) - Nominal rates**
   Source: IMF, International Financial Statistics, October 1996
5. **Rate of return on capital in the business sector**
   this indicator is calculated by dividing estimated capital income by the estimated capital stock.
   Source: OECD, Economic Outlook, No. 61, June 1997
6. **Short-term real interest rates**
   the data for Ireland refer to the nominal 3-month interbank rate minus the rate of inflation (consumer price index).
   Source: OECD, Economic Outlook, No. 61, June 1997
7. **Cumulative Ven. Cap raised as a% of GDP**
   This refers to the value of cumulative venture capital raised as a percentage of GDP.
   Source: European venture capital association yearbook, 1997

Table A10 - Investment

1. **FDI inflow as a percentage of GDP**
   Based on official national statistics from the balance of payments. This indicator has a broader definition of foreign direct investment (FDI) than just physical investment.
   Source: OECD, Main Economic Indicators, Oct 1997
2. **Non-residential investment as a percentage of GDP**
   measures the commitment being made to expansion of productive capacity in the economy.
   Source: OECD, National Accounts, Vol II, 1983-95

3. **Ratio of educational expenditures to NRFI**
   the ratio of public and private educational expenditure at all levels to non-residential fixed investment.
   Source: OECD National Accounts and Education at a Glance
4. **Top rate of corporation tax**
   the top rate of corporation tax payable on corporate income. Note this indicator does not take into account issues such as allowances or other differences in tax law. The rate of 38 per cent in Ireland applies to all business except manufacturing and internationally-traded services. The rate for manufacturing and internationally-traded services is 10 per cent.
   Source: International Tax Summaries, Coopers and Lybrand

Table A11 - Telecommunications

1. **Telephone main lines**
   per 100 inhabitants.
   Source: OECD/ECO/GEN(96)15/REV1
2. **Expenses per telephone mainline (US$)**
   adjusted for degree of urbanisation. Measures the quality of telecommunications system.
   Source: ITU Statistical Yearbook, 1995; World Bank
3. **Faults per 100 telephone lines per year**
   Measures the quality of telecommunications system.
   Source: OECD/ECO/GEN(96)15/REV1

   Source: ITU Statistical Yearbook, 1995; World Bank
4. **Percentage of telephone faults cleared by next working day**
   Source: ITU Statistical Yearbook, 1995
5. **Investment in telecommunications per capita (US$ per capita) Average 1992/1994 - Excluding Land and Buildings**
   Investment generally refers to the expenditure associated with acquiring the ownership of property and plant. These include expenditure on initial installations and on additions to existing installations where the usage is expected to be over an extended period of time. The data refer to gross investment and exclude land and buildings.
   Source: ITU Statistical Yearbook, 1995
6. **Percentage of telephone lines connected to digital exchanges**
   the number of main lines connected to digital telephone exchanges divided by the total number of main lines.
   Source: ITU Statistical Yearbook, 1995
7. **Leased line connections as a percentage of telecommunications mainlines**
   a leased circuit provides a services whereby a circuit of the public network is made available to a user or group of users for their exclusive use.
   Source:OECD/EDR/TAB(95)15
8. **Internet Hosts per 1000 capita**
   Indicates number of separate internet hosts per 1000 capita in each country. Hosts are identified by their two digit suffix (e.g., Ireland is represented by .ie). This is a slightly imperfect measure of internet penetration as some companies can use .com as a suffix or be routed through their parent company in another country.
   Source: Ripe NCC: European Hostcount
9. **Mobile cellular telephones per 1000 capita**
   Source: Pearson Professional Ltd, 1996

Table A12 - Telecommunications Costs

1. **2 Mbit/s leased lines national circuits - connection (ECU)**
   2 Mega bit per second leased lines.

Connection charges represent the charge for both ends.
Source: DGIII, Tariff Data, 1996

2. **2 Mbit/s leased lines national circuits - annual rental 30KM (ECU)**
   2 Mega bit per second leased lines.
   Source: Cutting the Cost, Analysis 1997
3. **2 Mbit/s leased lines national circuits - annual rental 100KM (ECU)**
   2 Mega bit per second leased lines.
   Source: Cutting the Cost, Analysis 1997
4. **2 Mbits leased lines international half circuit to USA**
   Source: Cutting the Cost, Analysis 1997
5. **Voice grade leased lines national circuits - connection (ECU)**
   Connection charges are for 2-wire circuits and represent the charge for both ends.
   Source: Cutting the Cost, Analysis 1997
6. **Analogue leased lines national circuits - annual rental 30KM (ECU)**
   cost of 30 km leased line for dedicated voice transmission
   Source: Cutting the Cost, Analysis 1997
7. **Analogue leased lines national circuits - annual rental 100KM (ECU)**
   cost of 100 km leased line for dedicated voice transmission.
   Source: Cutting the Cost, Analysis 1997
8. **Analogue leased lines- international half circuit to USA**
   Source: Cutting the Cost, Analysis 1997
9. **Cost of peak local call (3 minutes) ECU**
   - The duration of peak hours varies across countries
   Source: DGIII, Tariff Data, 1996
10. **Cost of Intra EU call**
    3 minute at peak time in ECU.
    Source: DGIII, Tariff Data, 1996
11. **Cost of national call per minute**
    business 3 line users.
    Source: Cutting the Cost, Analysis 1997
12. **Cost of international call per minute**
    business 3 line users.
    Source: Cutting the Cost, Analysis 1997
13. **Cellular Mobile Tariff Basket**
    Excluding VAT.
    Source: OECD/CCET/DSTI(96)32
14. **Index of business 'telecommunications basket' total charges - Average = 100**
    Source: OECD/ECO/GEN(96)15/REV

Table A13 - Transport and Communications Costs

1. **Insurance and Freight (debit + credit) as % of Total Trade**
   Source: UNCTAD, Handbook of...
2. **Letter costs**
   EU Domestic Tariffs (20 gram letter).
   Source: An Post
3. **Rail Indicator**
   This is a composite indicator developed using data on the length of the rail network, the percentage electrified and the population density.
   Source: European Conference of Ministers of Transport
4. **Road Indicator**
   This is a composite indicator developed using data on the length of the motorway network, the trunk road network, the secondary roads and the population density.
   Source: European Conference of Ministers of Transport

Table A14 - Energy Costs

1. **Automotive Diesel Oil Prices for Commercial Use (US$ per t.o.e.)**
   t.o.e. denotes tonne of oil equivalent.
   Source: International Energy Agency, Energy prices and taxes, 4th quarter 1995
2. **Heavy Fuel Oil Prices for Industry (US$ per toe)**
   t.o.e. denotes tonne of oil equivalent.
   Source: International Energy Agency, Energy prices and taxes, 4th quarter 1995
3. **Industrial Electricity Prices - 2million kilowatt-hour per annum - large users (ECU)**
   Source: Eurostat Energy and Industry, 1997-1998
4. **Industrial Electricity Prices - 160,000 kilowatt-hour per annum**
   medium-sized users (ECU)
   Source: Eurostat Energy and Industry, 1997-1998
5. **Industrial Electricity Prices - 30,000 kilowatt-hour per annum - small users (ECU)**
   Source: Eurostat Energy and Industry, 1997-1998
6. **Gas Prices - Industrial rates excluding VAT (4186 GJ / 200 days) - 4186 GJ (or 1,163,000 kWh) / 200 days**
   indicate the volume of usage and load factor by the customer category.
   Source: Eurostat Energy and Industry, 1997-1998
7. **Gas Prices - Industrial rates excluding VAT (41860 GJ / 250 days / 4000 hours) - 41860 GJ (or 11.63 GWh) / 250 days / 4000 hours**
   indicate the volume of usage and load factor by the customer category.
   Source: Eurostat Energy and Industry, 1997-1998

Table A15 - Property and Construction Cost

1. **Industrial Occupancy Costs**
   annual rental charge per square metre.
   Source: Jones Lang Wootton
2. **Office Occupancy Costs**
   annual rental charge per square metre.
   Source: Jones Lang Wootton
3. **Building Costs - Industrial (per m2 - IRP£)**
   The cost is based on a single storey unit of 3,000m_/30,000 sq. ft. of steel portal frame and brick construction with an eaves height of at least 6m/18ft. It is finished to a basic shell, with services and heating to the office space but not to the industrial/warehouse space. The cost includes professional fees.
   Source: Hamilton Osborne King, European Property Bulletin, 1996
4. **Building Costs - Offices (per m2 - IRP£)**
   The cost is based on a 3,000m_/30,000 sq. ft. self-contained, air-conditioned building in the major city in each country. The accommodation is built to a good finish, including false ceilings, carpets, lighting and power points, but excludes partitioning. The cost includes professional fees.
   Source: Hamilton Osborne King, European Property Bulletin, 1996
5. **Average of ranks for carpentry, steel reinforcement, concrete and cement material costs**
   - this indicator is constructed taking the average of the rank of each country for building input costs such as softwood sections for carpentry, steel reinforcement, concrete and cement. This methodology is used as each of the inputs are measured in different units, and therefore a straightforward average is not possible.
   Source: SPON, European Construction Handbook, 1996
6. **Construction Skilled Labour Costs (per hour - ECU)**
   Source: SPON, European Construction Handbook, 1996
7. **Unweighted Average of Skilled and Unskilled Labour Costs (Q1 1994 - ECU per hour)**
   Source: SPON, European Construction Handbook, 1996

Table A16 - The Environment

1. **CO2 emissions from energy uses (tonnes/capita)**
   Source: OECD Main Economic Indicators, 1997
2. **Per capita NOx emissions from fossil fuels (NOx)**
   Source: OECD, Environmental Data Compendium, 1997
3. **Per capita SOx emissions from fossil fuels (SOx)**
   Source: OECD, Environmental Data Compendium, 1997
4. **Recycling activity: recovery ratio - Glass (%)**
   Source: Eurostat, Basic Statistics of the European Community, 1996
5. **Recycling activity: recovery ratio - paper/board (per cent)**
   Source: Eurostat, Basic Statistics of the European Community, 1996

Table A17 - SME Performance

1. **Labour Productivity (* 1,000 ECU/PPP) 0-9**
   productivity in businesses that employ under 10 persons.
   Source: European Observatory for SMEs, Fourth Annual Report, 1996, Table 11.1
2. **Labour Productivity (* 1,000 ECU/PPP) 10-49**
   productivity in businesses that employ between 10 and 50 persons.
   Source: European Observatory for SMEs, Fourth Annual Report, 1996, Table 11.1
3. **Labour Productivity (* 1,000 ECU/PPP) 50-249**
   productivity in businesses that employ between 50 and 249 persons.
   Source: European Observatory for SMEs, Fourth Annual Report, 1996, Table 11.1
4. **Turnover limit for concession providing relief from VAT registration (US$)**
   Concessions providing relief from VAT registration. The data for Ireland refer to non-service companies. The limit is 50 per cent lower (IR£20,000 - $28,570) for services companies.
   Source: OECD/DAFFE/CFA/CT(96)24
5. **Average Debtor days**
   the average number of days an SME must wait before receiving payment of invoices.
   Source: Grant Thornton European Business Survey, 1997
6. **Percentage of SMEs that export**
   Source: Grant Thornton European Business Survey, 1996

Table A18 - Public Administration

1. **General government consolidated debt as a percentage of GDP - at market prices.**
   EU Commission, European Economy, No.63, 1997
2. **Net lending (+) or borrowing (-) of general government as a percentage of GDP** *at market price. EU Commission, European Economy, No.63, 1997*
3. **Government spending as a percentage of GDP**
   EU Commission, European Economy, No.63, 1997
4. **Share of general government in total employment**
   OECD Employment Outlook, July 1997
5. **Tax as a percentage of GDP**
   EU Commission, European Economy, No.63, 1997

Table A19 - Socioeconomic Performance

1. **Cumulative employment change 1995-1997**
   Cumulative percentage change in civilian employment.
   Source: OECD Employment Outlook, July 1997
2. **Consumer prices**
   The data refer to the 12 months to August 1997.
   Source: OECD, News release 16th October 1997
3. **GDP Growth**
   Source: OECD Economict Outlook, July 1997
4. **GDP per capita/EU GDP per capita (PPS)**
   GDP at current market prices per head of population.
   Source:European Economy, No. 63, 1997
5. **Standardised unemployment rate**
   Source: OECD/SG/COM/NEWS(97)10

Annex 3

Insurance Comparison

This table compares Irish insurance costs with those in a selection of European countries for a range of hypothetical companies. It is obvious that the average cost to Irish business for employers liability and public liability insurance is substantially higher than our European counterparts.

Definitions of Competitiveness

		Ireland £	UK £	% of Irish	Netherlands £	% of Irish	France £	% of Irish	Denmark £	% of Irish
Seafood	EL	15,821	4,519	29					13,353	84
50 Staff	PL	4,868	1,094	22					504	10
	Total	20,689	5,612	27	2,161	10	20,280	98	13,857	67
Stained	EL	4,932	1,297	26					1,624	33
Glass	PL	1,177	303	26					145	12
7 Staff	Total	6,109	1,600	26	446	7	5,520	90	1,769	29
Kitchen	EL	24,421	4,764	20					9,589	39
Utensils	PL	6,131	3,704	60					587	10
55 Staff	Total	30,552	8,468	28	4,463	15	10,902	36	10,175	33
Handcut	EL	898	333	37					508	57
Crystal	PL	469	292	62					57	12
3 Staff	Total	1,367	625	46	125	9	130	10	565	41
Timber	EL	3,198	620	19					718	22
Furniture	PL	517	203	39					88	17
4 Staff	Total	3,715	824	22	169	5	1,250	34	806	22
Gears	EL	3,623	831	23	-				1,717	47
Parts	PL	937	385	41	-				145	15
7 Staff	Total	4,560	1,216	27	-	-	2,318	51	1,862	41
Timber	EL	8,281	1,062	13					1,221	15
Stairs	PL	1,034	431	42					359	35
9 Staff	Total	9,315	1,493	16	432	5	6,400	69	1,579	17
Clothing	EL	21,344	5,587	26					23,698	111
202 Staff	PL	6,060	6,872	113					939	16
	Total	27,404	12,459	45	7,783	28	33,835	123	24,637	90
Dies for	EL	18,676	4,245	23					6,238	33
pallets	PL	3,843	1,695	44					436	11
39 Staff	Total	22,250	5,940	26	2,272	10	24,900	111	6,674	30
Corrugated	EL	14,483	8,252	57					3,856	27
Sheets	PL	2,960	1,652	56					333	11
23 Staff	Total	17,443	9,940	57	2,466	14	24,000	138	4,189	24
Totals		143,675	48,142	34	20,317	14	129,535	90	66,113	46
	EL	115,678	31,509	27					62,521	54
	PL	27,997	16,633	59					3,593	13

Source: Deloitte and Touche report on the economic evaluation of insurance costs in Ireland, 1996 on behalf of the Dept. of Enterprise and Employment

Annex 4

Detailed Tables

Table A1 Education Levels

		1	2	3	4	5	6
	Indicator	**Educational participation age 16 (%)**	**Net enrollment in tertiary education - age 18-21 (%)**	**% of population (25-64 years) that has attained third-level education**	**% of population (25-64 years) that has at least upper secondary-level education**	**School expectancy for a 5 year old child (years)**	**% of people age 25-34 with higher education qualifications**
	Year	**1994**	**1994**	**1994**	**1994**	**1994**	**1994**
	Source	OECD, Education at a glance, pg. 122, 1996	OECD, Education at a glance, pg. 127, 1996	OECD, Education at a glance, pg. 35, 1996	OECD, Education at a glance, pg. 35, 1996	OECD, Education at a glance, pg. 112, 1996	Eurostat Labour Force Survey
Country	Observations	25	24	22	22	23	15
Australia	Value	95.8	29.3	23	50	15.9	-
	Rank	8	8	5	15	9	-
Austria	Value	92.2	12.0	8	68	14.9	9.1
	Rank	15	18	20	9	18	14
Belgium	Value	103.5	37.4	22	49	16.9	32.7
	Rank	1	2	8	16	1	1
Canada	Value	94.2	40.3	46	74	16.2	-
	Rank	11	1	1	6	5	-
Czech Republic	Value	88.0	14.8	10	73	13.7	-
	Rank	16	15	18	7	22	-
Denmark	Value	93.7	9.1	20	60	16.2	26.5
	Rank	13	22	12	12	5	5
EU	Value	95.4	18.7	-	-	15.9	20.9
	Rank	-	-	-	-	-	-
Finland	Value	96.1	16.6	20	64	15.9	23.6
	Rank	6	14	12	11	9	8
France	Value	96.1	33.2	17	67	16.2	23.3
	Rank	6	5	16	10	5	9
Germany	Value	96.3	11.2	23	85	16.4	20.4
	Rank	4	19	5	1	3	11
Greece	Value	81.6	36.7	18	45	13.9	22.0
	Rank	22	3	15	18	21	10
Hungary	Value	86.1	11.0	-	-	14.1	-
	Rank	20	20	-	-	20	-
Iceland	Value	86.4	7.9	-	-	15.2	-
	Rank	19	23	-	-	115	-
Ireland	Value	93.2	30.5	19	16	15.2	31.2
	Rank	14	7	14	17	15	2
Italy	Value	-	-	8	34	-	8.5
	Rank	-	-	20	19	-	15
Japan	Value	96.4	-	-	-	-	-
	Rank	3	-	-	-	-	-
Luxembourg	Value	-	-	-	-	-	18.0
	Rank	-	-	-	-	-	12
Mexico	Value	38.9	-	-	-	-	-
	Rank	25	-	-	-	-	-
Netherlands	Value	97.5	22.1	21	59	16.8	24.2
	Rank	2	11	9	13	2	7

New Zealand	Value	94.3	30.9	26	57	15.8	-
	Rank	10	6	5	14	11	-
Norway	Value	93.9	17.1	27	80	16.4	-
	Rank	12	13	3	4	3	-
OECD	Value	-	-	-	-	15.3	-
	Rank	-	-	-	-	-	-
Poland	Value	-	14.6	-	-	-	-
	Rank	-	16	-	-	-	-
Portugal	Value	74.2	19.3	10	18	14.8	14.1
	Rank	23	12	18	22	-9	13
Russia	Value	-	-	-	-	-	-
	Rank	-	-	-	-	-	-
Spain	Value	81.9	25.4-	15	26	16.1	28.5
	Rank	21	9	17	20	85	3
Sweden	Value	96.2	12.3	-26	72	15.7	28.2
	Rank	5	17	4	8	12	4
Switzerland	Value	87.3	7.6	21	25	15.3	-
	Rank	17	24	9	3	14	-
Turkey	Value	40.9	10.5	7	20	9.2	-
	Rank	24	21	22	21	23	-
UK	Value	87.1	-23.6	21.9	75	15.1	24.5
	Rank	18	6	9	5	17	6
US	Value	95.4	34.9	32	85	15.62	-
	Rank	9	4	2	1	13	-

Table A2 Education Policy and Performance

		1	2	3	4	5
	Indicator	**Number of teaching hours per year in lower secondary education (hours)**	**Ratio of students to teaching staff - secondary education**	**Average achievement in maths (eight grade)**	**Average achievement in science (eight grade)**	**Min hours in language class (13 years)**
	Year	**1994**	**1994**	**1995**	**1995**	**1995**
	Source	OECD, Education at a glance, pg. 144, 1996	OECD, Education at a glance, pg. 104, 1996	OECD, Education at a glance, pg. 200, 1996	OECD, Education at a glance, pg. 201, 1996	EU. Comm, Key data on Ed-95. p52
Country	Observations	18	19	23	23	14
Australia	Value	-	-	530	545	-
	Rank	-	-	10	6	-
Austria	Value	651	8.0	539	558	90
	Rank	14	2	6	4	13
Belgium	Value	720	7.4	545	510	141
	Rank	9	1	3	18	5
Canada	Value	-	19.0	527	531	-
	Rank	-	18	11	12	-
Czech Republic	Value	657	12.9	564	574	-
	Rank	13	8	2	1	-
Denmark	Value	750	9.2	502	478	180
	Rank	7	4	18	23	2
EU	Value	-	-	509	520	-
	Rank	-	-	-	-	-
Finland	Value	-	-	-	-	133
	Rank	-	-	-	-	4
France	Value	660	13.2	538	498	102
	Rank	12	10	7	19	11
Germany	Value	712	14.6	509	531	130
	Rank	10	11	14	12	7
Greece	Value	569	12.3	484	497	131
	Rank	18	5	22	20	6
Hungary	Value	-	11.2	537	554	-
	Rank	-	5	8	5	-
Iceland	Value	-	-	487	494	-
	Rank	-	-	20	21	-
Ireland	Value	735	16.4	527	538	110
	Rank	8	16	11	7	8
Italy	Value	612	8.6	-	-	100
	Rank	15	3	-	-	12
Japan	Value	-	15.6	605	571	-
	Rank	-	15	1	2	-
Luxembourg	Value	-	-	-	-	300
	Rank	-	-	-	-	1
Mexico	Value	-	18.3	-	-	-
	Rank	-	17	-	-	-
Netherlands	Value	954	-	541	560	155
	Rank	4	-	5	3	3
New Zealand	Value	869	15.0	508	526	-
	Rank	6	13	15	15	-
Norway	Value	611	-	503	527	-
	Rank	16	-	16	14	-
OECD	Value	-	-	516	523	-
	Rank	-	-	-	-	-
Poland	Value	-	-	-	-	-
	Rank	-	-	-	-	-

Portugal	Value	681	13.0	454	480	105
	Rank	11	9	23	22	-9
Russia	Value	-	-	536	538	-
	Rank	-	-	9	7	-
Spain	Value	900	14.8-	487	517	105
	Rank	5	12	20	17	9
Sweden	Value	576	12.7	-519	535	71
	Rank	17	7	13	9	14
Switzerland	Value	1056	-	545	522	-
	Rank	1	-	4	16	-
Turkey	Value	996	24.2	-	-	-
	Rank	24	19	-	-	-
UK	Value	-	15.2	502	534	-
	Rank	-	14	17	10	-
US	Value	964	-	500	534	-
	Rank	3	-	19	11	-

Table A3 Labour Costs and Productivity

		1	2	3	4	5	6	7
	Indicator	**Compensation per employee (annual average change)**	**Nominal unit labour costs (annual average change)**	**Unit labour costs in business sector (% increase)**	**Pay for time worked (per hour) for manufacturing workers (Swedish krona)**	**Total per hour labour costs for manufacturing production workers (Swedish krona)**	**Hourly compensation costs for production workers in manufacturing (US$)**	**Productivity (annual average change)**
	Year	**1991/1996**	**1991/1996**	**1997e**	**1996**	**1996**	**1996**	**1991/1996**
	Source	European Monetary Institute, Progress Towards Convergence, Nov. 1996	European Monetary Institute, Progress Towards Convergence, Nov. 1996	OECD Economic Outlook, June, 61 , 1997	Swedish Employers Confederation, Wages and total labour costs for workers, 1997	Swedish Employers Confederation, Wages and total labour costs for workers, 1997	US Bureau of Labour Statistics	European Monetary Institute, Progress Towards Convergence, Nov. 1996
Country	Observations	15	15	23	18	20	20	15
Australia	Value	-	-	2.5	-	-	16.6	-
	Rank	-	-	14	-	-	6	-
Austria	Value	0.043	0.030	0.3	84	167	25.0	0.013
	Rank	7	10	5	9	15	16	11
Belgium	Value	0.0435	0.025	0.8	91	175	26.1	0.018
	Rank	7	9	7	12	18	18	7
Canada	Value	-	-	1.2	82	111	16.7	-
	Rank	-	-	9	7	7	7	-
Czech Republic	Value	-	-	10.3	14	23	-	-
	Rank	-	-	21	1	1	-	-
Denmark	Value	0.034	0.017	3	133	169	24.4	0.018
	Rank	4	5	17	18	16	13	8
EU	Value	0.047	0.028	1.3	-	-	21.2	0.020
	Rank	-	-	-	-	-	-	-
Finland	Value	0.034	0.005	-	91	160	24.5	0.028
	Rank	3	-	-	12	13	14	3
France	Value	0.028	0.021	-0.1	71	130	19.3	0.007
	Rank	2	6	4	4	10	10	14
Germany	Value	0.050	0.024	-0.9	119	213	31.9	0.026
	Rank	11	8	1	16	20	20	4
Greece	Value	0.114	0.106	6.8	39	64	-	-
	Rank	15	15	20	2	3	-	-
Hungary	Value	-	-	17.2	-	-	-	-
	Rank	-	-	23	-	-	-	-
Iceland	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Ireland	Value	0.039	-0.044	-0.5	71	96	14.1	-0.082
	Rank	5	1	2	4	6	4	1
Italy	Value	0.056	0.036	3.5	61	122	18.1	0.020
	Rank	13	11	19	3	9	9	6
Japan	Value	96.4	-	-	0.5	83	140	21.0
	Rank	3	-	-	6	8	11	11
Luxembourg	Value	0.041	0.040	-	-	-	-	0.002
	Rank	6	13	-	-	-	-	15
Mexico	Value	-	-	-	-	-	1.5	-
	Rank	-	-	-	-	-	1	-
Netherlands	Value	0.028	0.010	1.3	89	157	23.3	0.017
	Rank	1	3	10	11	12	12	9
New Zealand	Value	-	-	1.7	-	-	11.0	-
	Rank	-	-	11	-	-	2	-
Norway	Value	-	-	2.6	118	170	25	-

	Rank	-	-	15	15	17	16	-
OECD	Value	-	-	1.9	-	-	17.4	-
	Rank	-	-	-	-	-	-	-
Poland	Value	-	-	15.4	-	-	-	-
	Rank	-	-	22	-	-	-	-
Portugal	Value	0.079	0.072	0.8	-	37	-	0.012
	Rank	14	14	7	-	2	-	12
Russia	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Spain	Value	0.056	0.039-	2.2	-	88	13.3	0.017
	Rank	12	12	13	-	4	3	10
Sweden	Value	0.043	0.011	2.1	95	162	24.6	0.032
	Rank	7	4	12	14	14	15	2
Switzerland	Value	-	-	-0.4	123	191	28.3	-
	Rank	-	-	3	17	19	19	-
Turkey	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
UK	Value	0.048	0.024	2.6	71	95	14.2	0.023
	Rank	10	7	15	4	5	5	5
US	Value	-	-	3.1	85	119	17.7	-
	Rank	-	-	18	10	8	8	-

Table A4 Work Incentives

		1	2	3	4	5
	Indicator	**Average income tax rate (% of average earnings) - married, 100, 0, 2 ch**	**Average income tax rate (% of average earnings) - single, 100, no ch**	**Employers social security contributions as a % of gross labour cost**	**Income tax plus employees social security contribution rate - as a % of average earnings - married, 100, 0, 2 ch**	**Income tax plus employees social security contribution rate - as a % of average earnings - single, 100, no ch**
	Year	**1994**	**1994**	**1994**	**1994**	**1994**
	Source	OECD, Revision of the 1996 Edition of the tax/benefit position of production workers (OECD/DAFFE/CFA /WP2 (95) 10)	OECD, Revision of the 1996 Edition of the tax/benefit position of production workers (OECD/DAFFE/CFA /WP2 (95) 10)	OECD, Making Work Pay (OECD/DAFFE/CFA /WP2 (96) 1)	OECD, Revision of the 1996 Edition of the tax/benefit position of production workers (OECD/DAFFE/CFA /WP2 (95) 10)	OECD, Revision of the 1996 Edition of the tax/benefit position of production workers (OECD/DAFFE/CFA /WP2 (95) 10)
Country	Observations	19	19	20	19	19
Australia	Value	31.0	22.1	-	15.4	23.5
	Rank	15	14	-	8	5
Austria	Value	3.4	9.0	23.6	7.5	26.3
	Rank	4	4	15	1	9
Belgium	Value	10.9	18.3	34.8	10.0	30.4
	Rank	9	11	19	2	12
Canada	Value	10.8	21.5	6.6	16.2	26.9
	Rank	8	13	3	8	11
Czech Republic	Value	3.8	9.4	-	-	22.6
	Rank	5	5	-	-	3
Denmark	Value	35.7	38.1	-	36.0	45.1
	Rank	19	19	-	18	19
EU	Value	-	-	19.6	-	-
	Rank	-	-	-	-	-
Finland	Value	27.9	27.9	3.8	23.2	36.4
	Rank	17	17	2	15	16
France	Value	2.7	16.6	-	13.0	33.9
	Rank	3	7	-	3	15
Germany	Value	13.7	18.3	19.4	27.3	36.6
	Rank	11	11	13	16	17
Greece	Value	0.5	1.7	-	16.3	17.5
	Rank	1	1	-	9	1
Hungary	Value	-	-	-	-	-
	Rank	-	->	-	-	-
Iceland	Value	-	-	2.8	-	-
	Rank	-	-	1	-	-
Ireland	Value	15.5	23.1	12.2	19.7	30.9
	Rank	12	15	10	11	13
Italy	Value	-	-	46.1	-	-
	Rank	-	-	20	-	-
Japan	Value	1.7	7.3	7.5	14.5	20.0
	Rank	2	2	5	5	2
Luxembourg	Value	-	-	15.0	-	-
	Rank	-	-	12	-	-
Mexico	Value	-	-	19.4	-	-
	Rank	-	-	13	-	-
Netherlands	Value	5.1	7.8	7.9	30.8	41.3
	Rank	6	3	7	17	18
New	Value	21.6	24.3	-	21.6	24.3

Zealand	Rank	16	16	-	14	6
Norway	Value	17.7	17.7	12.8	14.7	25.5
	Rank	14	8	11	6	7
OECD	Value	-	-	-	-	-
	Rank	-	-	-	-	-
Poland	Value	-	-	-	-	-
	Rank	-	-	-	-	-
Portugal	Value	-	-	24.5	-	-
	Rank	-	-	16	-	-
Russia	Value	-	-	-	-	-
	Rank	-	-	-	-	-
Spain	Value	-	-	31.6	-	-
	Rank	-	-	18	-	-
Sweden	Value	29.3	29.3	30.1	21.4	31.3
	Rank	18	18	17	13	14
Switzerland	Value	1056	9.4	11.7	10.3	23.3
	Rank	1	7	6	9	4
Turkey	Value	-	-	7.1	-	-
	Rank	-	-	4	-	-
UK	Value	15.7	18.1	10.2	17.5	26.5
	Rank	13	9	8	10	10
US	Value	13.6	18.2	7.7	21.2	25.9
	Rank	10	10	6	12	8

Table A4 Work Incentives continued

		6	7	8	9	10	11
	Indicator	**Marginal (income plus employees social security) tax rate - married 100, 0, 2 ch**	**Marginal (income plus employees social security) tax rate - single 100, no ch**	**Non wage labour costs _ PRSI, pension, pay in kind and holiday (Swedish krona)**	**Social Insurance expenditure and other labour taxes as a % of total labour costs**	**Tax wedge**	**Top rate of income tax nominal**
	Year	**1994**	**1994**	**1996**	**1995**	**1994**	**1996**
	Source	OECD, Revision of the 1996 Edition of the tax/benefit position of production workers (OECD/DAFFE/CFA /WP2 (95) 10)	OECD, Revision of the 1996 Edition of the tax/benefit position of production workers (OECD/DAFFE/CFA /WP2 (95) 10)	Swedish Employers Confederation, pg. 18, 1996	Swedish Employers Confederation, pg. 18, 1996	OECD, Making Work Pay (OECD/DAFFE /CFA /WP2(96)1)	International Tax Summaries - Coopers and Lybrand
Country	Observations	19	19	20	16	21	27
Australia	Value	35.4	35.4	-	-	29	47.0
	Rank	10	9	-	-	3	15
Austria	Value	40.1	40.1	83.0	27	61	46.6
	Rank	12	11	18	12	20	14
Belgium	Value	45.4	45.4	84.0	27	61	46.6
	Rank	13	12	18	12	20	14
Canada	Value	51.0	46.0	29.0	17	40	29.0
	Rank	17	13	5	5	7	1
Czech Republic	Value	26.3	26.3	9.0	-	-	40.0
	Rank	4	3	1	-	-	8
Denmark	Value	47.5	56.5	36.0	8	63	60.0
	Rank	16	18	7	1	21	26
EU	Value	-	-	-	-	54	-
	Rank	-	-	-	-	-	-
Finland	Value	54.8	54.8	69.0	25	55	39.0
	Rank	18	16	16	11	13	6
France	Value	25.1	49.8	59.0	29	41	56.8
	Rank	3	15	11	14	8	25
Germany	Value	45.9	48.4	94.0	24	59	53.0
	Rank	14	14	20	10	18	21
Greece	Value	20.0	20.0	25.0	-	-	45.0
	Rank	1	1	3	-	-	12
Hungary	Value	-	-	-	-	-	48.0
	Rank	-	-	-	-	-	16
Iceland	Value	-	-	-	-	36	-
	Rank	-	-	-	-	5	-
Ireland	Value	34.7	55.7	25.0	15	55	48.0
	Rank	8	17	3	4	13	16
Italy	Value	-	-	61.0	31	57	51.0
	Rank	-	-	12	16	16	20
Japan	Value	22.8	26.2	57.0	14	26	50.0
	Rank	2	2	10	3	1	18
Luxembourg	Value	-	-	-	-	52	35.2
	Rank	-	-	-	-	12	5
Mexico	Value	-	-	-	-	27	35.0
	Rank	-	-	-	-	2	3
Netherlands	Value	46.7	57.0	68.0	23	55	60.0
	Rank	15	19	14	9	13	26
New Zealand	Value	63.0	33.0	-	-	39	33.0
	Rank	19	6	-	-	6	2

Norway	Value	35.8	35.8	52.0	18	58	41.7
	Rank	11	10	9	77	17	11
OECD	Value	-	-	-	-	-	-
	Rank	-	-	-	-	-	-
Poland	Value	-	-	-	-	-	45.0
	Rank	-	-	-	-	-	12
Portugal	Value	-	-	37.0	-	47	40.0
	Rank	-	-	8	-	10	8
Russia	Value	-	-	-	-	-	35.0
	Rank	-	-	-	-	-	3
Spain	Value	-	-	88.0	-	47	56.0
	Rank	-	-	18	-	10	23
Sweden	Value	33.0	33.0	67.0	30	60	56.0
	Rank	7	6	13	15	19	23
Switzerland	Value	29.7	31.9	68.0	17	-	-
	Rank	5	5	14	5	-	-
Turkey	Value	-	-	-	-	-	55.0
	Rank	-	-	-	-	-	22
UK	Value	35.0	35.0	24.0	13	44	40.0
	Rank	9	8	2	2	9	8
US	Value	30.0	30.0	34.0	22	35	39.6
	Rank	6	4	6	8	4	7

Table A5 Employment

		1	2	3	4	5	6
Employment	**Indicator**	**Days lost in industrial disputes per 1,000 civilian employment**	**Female activity rate (% population 15-64)**	**Incidence of part-time employment**	**Incidence of temporary employment**	**Level of youth unemployment (15-24)**	**Long-term unemployment as a % of the total labour force**
	Year	**1993/1995**	**1995**	**1995**	**1994**	**1996**	**1996**
	Source	ILO, Yearbook of Labour Statistics, 1996	EU, Employment in Europe, 1996	OECD Employment Outlook, pg. 177, 1997	OECD Employment Outlook, pg. 8, 1996	OECD Employment Outlook, pg. 166, 1997	OECD Employment Outlook, 1997
Country	Observations	27	15	28	18	28	28
Australia	Value	62.8	-	25.0	23.5	14.8	2.41
	Rank	15	-	5	2	16	14
Austria	Value	0.0	0.645	14.9	-	6.9	1.59
	Rank	1	5	17	-	4	12
Belgium	Value	27.2	0.524	14.0	5.1	20.5	7.91
	Rank	11	11	18	16	22	26
Canada	Value	116.1.0	-	18.9	8.8	16.1	1.35
	Rank	21	-	13	13	18	10
Czech Republic	Value	0.4	-	5.9	-	7.1	1.11
	Rank	3	-	26	-	5	8
Denmark	Value	78.3	0.746	21.5	12	10.6	2.33
	Rank	17	2	11	5	9	13
EU	Value	-	0.573	-	-	20.8	-
	Rank	-	-	-	-	-	-
Finland	Value	420.4	0.718	8.0	13.5	24.7	5.85
	Rank	26	3	22	3	24	24
France	Value	23.2*	0.612	16.0**	11	26.3	4.90
	Rank	9	7	16	6	26	20
Germany	Value	7.1	0.604	16.3	10.3	8.0	4.97
	Rank	6	8	15	9	6	21
Greece	Value	117.7	0.453	4.8**	10.3	26.0	5.32
	Rank	22	14	28	9	25	22
Hungary	Value	71.4	-	4.9	-	18.0	5.77
	Rank	16	-	27	-	20	23
Iceland	Value	1736.0	-	27.9	-	8.4	0.83
	Rank	27	-	2	-	7	5
Ireland	Value	102.8	0.479	11.6	9.4	18.2	6.72
	Rank	19	12	19	11	21	25
Italy	Value	45.4	0.43	6.6	7.3	34.1	7.93
	Rank	13	15	25	14	27	27
Japan	Value	1.3*	-	21.4	10.4	6.6	0.66
	Rank	4	-	12	8	2	3
Luxembourg	Value	-	0.575	7.6	2.9	9.2	0.91
	Rank	-	10	24	17	8	6
Mexico	Value	88.4	-	23.8	-	6.7	0.12
	Rank	18	-	7	-	3	1
Netherlands	Value	114.0	0.585	36.5	10.9	11.4	3.28
	Rank	20	9	1	7	10	17
New Zealand	Value	32.7	-	22.4	-	11.7	1.03
	Rank	12	-	9	-	11	7
Norway	Value	24.4	-	26.5	-	12.5	0.69
	Rank	10	-	4	-	13	4
OECD	Value	-	-	-	-	-	-
	Rank	-	-	-	-	-	-
Poland	Value	3.8	-	10.6	-	-	4.85
	Rank	5	-	20	-	-	19

Portugal	Value	23.1*	0.614	8.7	9.4	16.7	3.88
	Rank	8	6	21	11	19	18
Russia	Value	20.6	-	-	-	-	-
	Rank	8	-	-	-	-	-
Spain	Value	122.0	0.456	8.0	33.7	42.0	12.64
	Rank	23	13	23	1	28	28
Sweden	Value	157.3	0.78	23.6	13.5	15.7	1.39
	Rank	24	1	8	3	17	11
Switzerland	Value	0.1	-	27.4	-	4.9	1.22
	Rank	2	-	3	-	1	9
Turkey	Value	240.0	-	23.9	-	12.9	2.83
	Rank	25	-	6	-	14	15
UK	Value	16.1	0.675	22.1	6.5	14.7	2.94
	Rank	7	4	10	15	15	16
US	Value	46.2	-	18.3	2.2	12.0	0.51
	Rank	14	-	14	18	12	2

* Data refers to 1994
** Data refers to 1995

Table A6 Science and Technology Potential

		1	2	3	4
Science and Technology Potential	**Indicator**	**Science and technology degrees awarded as a % of the total number of degrees awarded**	**Science and technology graduates as a proportion of the labour force 25 to 34 years of age (per 100,000)**	**R&D expenditure in higher education and government institutions as a percent pf GDP ***	**Researchers in higher education and government institutions per 1,000 labour force**
	Year	**1994**	**1993**	**1996**	**1993**
	Source	OECD, Education at a Glance, pg. 186. 1996	OECD, Education at a Glance, pg. 192. 1996	OECD,MSTI, 1, 1997	OECD,MSTI, 1, 1997
Country	Observations	27	25	27	22
Australia	Value	21.5	1205	0.83	-
	Rank	22	6	7	-
Austria	Value	30.2	412	0.65	1.6
	Rank	10	24	14	16
Belgium	Value	32.0	807	0.56	-
	Rank	6	14	17	-
Canada	Value	19.3	998	0.62	2.8
	Rank	24	10	16	8
Czech Republic	Value	41.4	843	0.40	1.2
	Rank	2	12	22	20
Denmark	Value	23.4	810	0.73	2.7
	Rank	19	13	11	10
EU	Value	30.5	1059	0.68	2.3
	Rank	-	-	-	-
Finland	Value	40.2	1736	0.86	3.9
	Rank	4	4	6	2
France	Value	32.6	1453	0.87	3.0
	Rank	5	5	5	7
Germany	Value	41.3	1060	0.77	2.6
	Rank	3	9	8	11
Greece	Value	25.1	667	0.34	1.6
	Rank	16	17	25	16
Hungary	Value	28.2	374	0.38	1.9
	Rank	13	25	23	15
Iceland	Value	17.2	-	0.95	4.1
	Rank	27	-	2	1
Ireland	Value	30.0	2751	0.47*	2.6
	Rank	11	1	19	11
Italy	Value	23.6	433	0.47*	2.6
	Rank	18	22	18	11
Japan	Value	31.1*	2679	0.91	3.9
	Rank	9	2	4	2
Luxembourg	Value	-	-	-	-
	Rank	-	-	-	-
Mexico	Value	-	-	0.28	0.9
	Rank	-	-	27	21
Netherlands	Value	22.5	775	0.98	3.1
	Rank	20	15	1	6
New Zealand	Value	19.0	942	0.73	2.8
	Rank	25	11	11	8
Norway	Value	26.9	1124	0.77	3.6
	Rank	15	8	8	4
OECD	Value	-	-	0.65	1.8
	Rank	-	-	-	-
Poland	Value	23.7	484	0.45	-

	Rank	17	21	20	-
Portugal	Value	21.7	666	0.37	-
	Rank	21	18	24	-
Russia	Value	54.3	-	-	-
	Rank	1	-	-	-
Spain	Value	20.0	660	0.42	2.1
	Rank	23	19	21	13
Sweden	Value	27.9	751	0.94	3.3
	Rank	14	16	3	6
Switzerland	Value	31.3	424	0.74	-
	Rank	8	23	10	-
Turkey	Value	29.6	622	0.29	0.6
	Rank	12	20	26	22
UK	Value	31.7	1799	0.69	1.6
	Rank	7	3	13	16
US	Value	18.2	1180	0.63	1.5
	Rank	26	7	15	19

* GNP is used in place of GDP for Ireland

Table A7 Science and Technology Performance

		1	2	3	4	5	6	7
Science and Technology Performance	**Indicator**	**Business R&D expenditure as a % of GDP ***	**Business R&D researchers per 1,000 of the labour force**	**ISO 9000 Certificates per million capita - total to December 1995**	**Dependency ratio (non-residential/ residential patent applications)**	**Patents granted in US (per million capita)**	**Size of Information technology market (% of GDP *)**	**Growth in information technology market (compound annual growth rate)**
	Year	**1996**	**1993**	**31/12/95**	**1994**	**1996**	**1994**	**1987-1996**
	Source	OECD, MSTI, 1, 1997	OECD, MSTI, 1, 1997	Mobil Survey, 1996	OECD, MSTI, 2, 1996	National Patent Offices, National Science Foundation	OECD, Information Technology Outlook, 1997 (OECD/ICCP/ IE(96)8/PART1)	OECD, Information Technology Outlook, 1997 (OECD/ICCP/ IE(96)8/PART1
Country	Observations	26	27	26	26	26	24	24
Australia	Value	0.74	1.6	495	3.07	29.2	2.5	9.5
	Rank	17	15	2	4	15	3	12
Austria	Value	0.83	1.9	141	23.05	45.7	1.5	11.4
	Rank	15	12	11	19	12	17	9
Belgium	Value	1.02	-	170	56.86	47.3	1.8	8.9
	Rank	10	-	9	24	11	9	14
Canada	Value	0.96	2.4	48	15.16	81.5	2.4	13.5
	Rank	13	8	17	15	6	4	5
Czech Republic	Value	0.75	1.5	29	22.48	0.3	-	-
	Rank	16	16	23	18	24	-	-
Denmark	Value	1.05	2.1	252	33.33	62.7	1.7	9.8
	Rank	11	10	7	22	8	11	11
EU	Value	1.15	2.3	237	4.38	46.0	-	-
	Rank	-	-	-	-	-	-	-
Finland	Value	1.47	2.2	152	7.27	80.0	1.6	2.0
	Rank	6	9	10	8	7	13	24
France	Value	1.44	2.6	95	5.53	51.1	1.6	8.3
	Rank	7	7	15	7	10	13	17
Germany	Value	1.51	3.3	121	1.81	84.2	1.6	13.1
	Rank	5	5	13	3	5	13	6
Greece	Value	0.13	0.3	24	99.77	1.2	0.6	3.6
	Rank	24	21	24	25	22	23	23
Hungary	Value	0.33	0.8	-	12.62	4.5	1.6	26.2
	Rank	21	19	-	13	20	13	1
Iceland	Value	0.45	2.1	45	4.86	10.0	-	-
	Rank	19	10	18	6	19	-	-
Ireland	Value	1.13*	1.8	456	49.61	22.3	1.5*	9.1
	Rank	9	13	4	23	16	18	13
Italy	Value	0.65	1.2	84	7.34	23.0	1.1	5.0
	Rank	18	17	16	9	17	19	21
Japan	Value	1.95	5.6	30	0.16	184.1	1.7	11.5
	Rank	2	2	22	1	1	11	8
Luxembourg	Value	-	-	121	-	87.5	-	-
	Rank	-	-	14	-	4	-	-
Mexico	Value	0.07	0.1	2	18.96	0.5	0.9	-
	Rank	27	22	26	17	23	22	25.3
								2
Netherlands	Value	1.09	1.8	344	28.25	56.9	2.1	11.8
	Rank	10	13	5	21	9	7	7
New Zealand	Value	0.31	0.9	480	12.54	19.7	3.0	14.4
	Rank	22	18	3	12	18	1	4
Norway	Value	0.93	3.4	2.5	16.52	32.3	1.8	8.4
	Rank	14	4	8	16	14	9	16

OECD	Value	1.45	3.3	-	1.88	-	2.0	9.5
	Rank	-	-	-	-	-	-	-
Poland	Value	-	-	-	-	0.3	-	-
	Rank	-	-	-	-	24	-	-
Portugal	Value	0.12	-	39	395.82	0.3	1.0	7.6
	Rank	25	-	19	26	24	21	18
Russia	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Spain	Value	0.37	0.7	38	23.88	4.5	1.1	6.5
	Rank	20	20	20	20	20	19	20
Sweden	Value	2.31	3.6	125	11.96	102.7	2.2	4.7
	Rank	1	3	12	11	3	6	22
Switzerland	Value	1.88	-	295	14.60	160.7	2.3	11.1
	Rank	3	-	6	14	2	5	10
Turkey	Value	0.09	0.1	7	8.05	-	0.4	24.8
	Rank	26	22	25	10	-	24	3
UK	Value	1.34	3.0	901	4.03	45.6	2.1	7.6
	Rank	8	6	1	5	13	7	18
US	Value	1.85	5.9	34	0.93	-	2.8	8.7
	Rank	4	1	21	2	-	2	15

* GNP is used in place of GDP for Ireland

Table A8 Trade

		1	2	3	4	5	6
	Indicator	**Manufacturing exports - concentration, standard deviation of exports by country**	**Manufacturing exports - concentration, standard deviation of exports by sector**	**Export performance for total goods - % change from last period**	**Producer prices - manufacturing (1990=100)**	**Trade openness - exports + imports (of goods and services) / GDP ***	**Trade openness in services - (service exports + service imports) / service output**
	Year	**1993**	**1993**	**1996**	**Q2 1997**	**1995**	**1994**
	Source	OECD	OECD	OECD Economic Outlook, No. 61, July 1997	OECD Main Economic Indicators, Oct, 1997	OECD Main Economic Indicators, Oct, 1997	World Trade Organisation, International Trade and OECD, National Accounts
Country	Observations	24	24	27	23	26	12
Australia	Value	0.038	0.114	5.3	111.6	40.4	-
	Rank	6	16	4	15	24	-
Austria	Value	0.064	0.149	-0.6	102.4	78.2	-
	Rank	23	21	16	5	6	-
Belgium	Value	0.050	0.110	-3.9	103.6	140.4	0.9
	Rank	17	14	25	6	3	1
Canada	Value	0.134	0.162	-2.4	119.0	73.1	0.2
	Rank	24	24	21	16	9	10
Czech Republic	Value	-	-	-2.9	-	107.4	-
	Rank	-	-	23	-	4	-
Denmark	Value	0.044	0.131	-3.4	108.0	64.1	0.8
	Rank	10	19	24	9	14	2
EU	Value	-	-	-0.1	113.7	-	-
	Rank	-	-	-	-	-	-
Finland	Value	0.036	0.085	-1.4	110.7	68.2	-
	Rank	4	4	18	13	11	-
France	Value	0.043	0.096	-0.5	98.4	44.6	0.5
	Rank	7	8	14	3	21	4
Germany	Value	0.033	0.143	0.7	107.8	46.4	0.6
	Rank	1	20	12	8	20	3
Greece	Value	0.060	0.080	-2.7	187.3	43.4	-
	Rank	21	3	22	21	23	-
Hungary	Value	-	-	3.6	-	-	-
	Rank	-	-	8	-	-	-
Iceland	Value	0.047	0.160	4.4	-	67.5	-
	Rank	14	23	5	-	12	-
Ireland	Value	0.052	0.156	4.2	111.0	152.8*	0.4
	Rank	20	22	6	14	2	8
Italy	Value	0.044	0.091	-1.3	125.9	51	0.4
	Rank	11	5	15	20	18	6
Japan	Value	0.050	0.070	-6.8	97.1	17.3	0.1
	Rank	17	2	27	2	26	12
Luxembourg	Value	0.050	0.110	-	95.3	172.3	-
	Rank	17	14	-	1	1	-
Mexico	Value	-	-	11.1	328.4	58.8	-
	Rank	-	-	1	22	15	-
Netherlands	Value	0.048	0.105	11.1	328.4	58.8	-
	Rank	16	12	1	22	15	-
New Zealand	Value	0.045	0.059	-1.8	108.9	58.8	-
	Rank	13	1	20	11	15	-
Norway	Value	0.037	0.095	7.1	108.7	70	-
	Rank	5	7	2	10	10	-
OECD	Value	-	-	-	115.0	-	-

	Rank	-	-	-	-	-	-
Poland	Value	-	-	2.4	-	-	-
	Rank	-	-	10	-	-	-
Portugal	Value	0.048	0.115	4.1	-	73.8	-
	Rank	15	17	7	-	8	-
Russia	Value	-	-	-	-	-	-
	Rank	-	-	-	-	-	-
Spain	Value	0.045	0.105	6.0	119.6	47	-
	Rank	12	11	3	17	19	-
Sweden	Value	0.034	0.103	-0.5	120.4	75.5	0.4
	Rank	3	9	14	18	7	7
Switzerland	Value	0.044	0.110	-5.3	99.4	66.1	-
	Rank	9	13	23	4	13	-
Turkey	Value	0.061	0.094	3.3	4771.0	44.3	-
	Rank	22	6	9	23	22	-
UK	Value	0.033	0.105	0.7	125.8	57.8	0.3
	Rank	2	10	12	19	17	9
US	Value	0.043	0.123	1.2	110.4	24.1	0.1
	Rank	8	18	11	12	25	11

* GNP is used in place of GDP for Ireland

Table A9 Financial Markets

		1	2	3	4	5	6	7
Financial Markets	**Indicator**	**Goverment bond yields (61)**	**Interest rate spread - absolute**	**Long-term real interest rates**	**Money market rates (60b)**	**Rate of return on capital in the business sector**	**Short-term real interest rates**	**Cumulative ven. cap raised as a % of GDP ***
	Year	**01/08/96**	**01/08/96**	**1997e**	**01/08/96**	**1997e**	**1997e**	**1996**
	Source	IMF, International Financial Statistics, October 1996	IMF, International Financial Statistics, October 1996	OECD, Economic Outlook, No. 61, June 1997	IMF, International Financial Statistics, October 1996	OECD, Economic Outlook, No. 61, June 1997	OECD, Economic Outlook, No. 61, June 1997	European venture capial association, Yearbook 1996
Country	Observations	20	24	20	22	20	22	14
Australia	Value	0.081	-	0.079	0.0717	0.146	0.060	-
	Rank	16	-	19	17	11	16	-
Austria	Value	0.056	-	0.050	0.0336	0.13	0.031	0.0004
	Rank	5	-	4	6	14	3	13
Belgium	Value	0.065	0.045	0.059	0.0335	0.135	0.031	0.0069
	Rank	9	14	8	5	12	3	6
Canada	Value	0.076	0.016	0.068	0.0402	0.199	0.033	-
	Rank	14	1	12	9	2	9	-
Czech Republic	Value	-	0.057	-	-	-	0.133	-
	Rank	-	18	-	-	-	20	-
Denmark	Value	0.068	-	0.063	0.416	0.102	0.035	0.0035
	Rank	12	-	10	10	17	10	10
EU	Value	-	-	-	-	0.15	-	-
	Rank	-	-	-	-	-	-	-
Finland	Value	-	0.036	0.048	0.0354	0.097	0.031	0.0034
	Rank	-	12	3	7	18	3	9
France	Value	0.064	0.033	0.058	0.0354	0.154	0.032	0.0096
	Rank	8	10	6	7	8	8	3
Germany	Value	0.057	0.072	0.058	0.0325	0.151	0.031	0.0028
	Rank	6	21	6	4	9	3	12
Greece	Value	-	0.079	-	-	0.24	-	0.0001
	Rank	-	19	-	-	1	-	14
Hungary	Value	-	0.059	-	-	-	-	-
	Rank	-	19	-	-	-	-	-
Iceland	Value	0.055	0.090	-	0.0661	-	-	-
	Rank	4	23	-	16	-	-	-
Ireland	Value	0.077	0.031	0.065	0.0496	0.163	0.055	0.0091*
	Rank	15	9	11	11	7	15	5
Italy	Value	0.094	0.055	0.075	0.0875	0.147	0.073	0.0051
	Rank	20	16	17	19	10	19	8
Japan	Value	0.024	0.024	0.026	0.0048	0.13	0.007	-
	Rank	1	4	1	1	15	1	-
Luxembourg	Value	0.051	0.020	-	-	-	-	-
	Rank	3	2	-	-	-	-	-
Mexico	Value	-	-	0.235	0.2894	-	0.220	-
	Rank	-	-	20	21	-	22	-
Netherlands	Value	0.066	0.023	0.057	0.0282	0.18	0.031	0.0106
	Rank	10	3	5	3	6	3	2
New Zealand	Value	0.082	0.037	0.076	-	0.195	0.071	-
	Rank	18	13	18	-	3	18	-
Norway	Value	0.063	0.027	0.061	0.0497	0.073	0.035	-
	Rank	7	6	9	12	19	10	-
OECD	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-

Poland	Value	-	0.070	-	0.1750	-	-	-
	Rank	-	20	-	20	-	-	-
Portugal	Value	0.072	0.055	-	0.0737	-	-	0.0058
	Rank	13	16	-	18	-	-	7
Russia	Value	-	0.909	-	-	-	-	-
	Rank	-	24	-	-	-	-	-
Spain	Value	0.083	0.025	0.069	-	0.185	0.053	0.0031
	Rank	19	5	13	-	5	13	11
Sweden	Value	-	0.049	0.069	0.0587	0.114	0.040	0.0094
	Rank	-	15	13	15	16	12	4
Switzerland	Value	0.041	0.034	0.037	0.0207	0.033	0.017	-
	Rank	2	11	2	2	20	2	-
Turkey	Value	-	-	0.7459	-	-	-	-
	Rank	-	-	22	-	-	-	-
UK	Value	0.082	0.029	0.072	0.0569	0.133	0.063	0.0284
	Rank	17	8	16	14	13	17	18
US	Value	0.066	0.029	0.069	0.0522	0.187	0.054	-
	Rank	11	7	13	13	4	14	-

* GNP is used in place of GDP for Ireland
e = estimate

Table A10 Investment

		1	2	3	4
Financial Markets	**Indicator**	**FDI inflow as a % of GDP ***	**Non-residential fixed investment as a % of GDP ***	**Ratio of education expenditures to non-residential fixed investment**	**Top rate of corporation tax**
	Year	**1996**	**1995**	**1994**	**1996**
	Source	OECD, Main Economic Indicators, Basic Structural Statistics, Oct 1997	OECD, National Accounts, Vol. II, 1983-1995	OECD, National Accounts and Education at a Glance	International Tax Summaries - Coopers and Lybrand
Country	Observations	25	21	16	28
Australia	Value	1.7	0.168	0.364	0.36
	Rank	9	6	11	17
Austria	Value	1.6	0.200	0.278	0.34
	Rank	10	2	14	10
Belgium	Value	4.2	0.135	-	0.39
	Rank	4	14	-	23
Canada	Value	1.2	0.169	0.440	0.28
	Rank	12	5	8	21
Czech Republic	Value	5.6	-	-	0.39
	Rank	2	-	-	23
Denmark	Value	0.8	0.128	0.590	0.34
	Rank	18	15	2	10
EU	Value	30.5	1059	0.68	2.3
	Rank	-	-	-	-
Finland	Value	1.0	0.121	0.664	0.28
	Rank	15	17	1	2
France	Value	0.9	0.154	0.404	0.33
	Rank	16	8	9	9
Germany	Value	-0.1	0.151	0.476	0.45
	Rank	25	8	6	28
Greece	Value	0.9	-	-	0.35
	Rank	16	-	-	13
Hungary	Value	11.3	-	-	0.18
	Rank	1	-	-	1
Iceland	Value	-	0.105	0.500	-
	Rank	-	20	5	-
Ireland	Value	0.2*	0.109*	0.574	0.38
	Rank	24	19	3	20
Italy	Value	0.3	0.127	0.383	0.37
	Rank	22	16	10	19
Japan	Value	-	0.244	0.204	0.38
	Rank	-	1	15	20
Luxembourg	Value	-	-	-	0.33
	Rank	-	-	-	6
Mexico	Value	1.6	0.097	-	0.34
	Rank	10	21	-	10
Netherlands	Value	0.8	0.149	0.350	0.35
	Rank	18	10	12	13
New Zealand	Value	4.3	0.160	-	0.33
	Rank	3	7	-	6
Norway	Value	2.2	-	-	0.28
	Rank	7	-	-	2
OECD	Value	-	-	-	-
	Rank	-	-	-	-
Poland	Value	3.1	-	-	0.36
	Rank	5	-	-	17

Portugal	Value	0.6	-	-	0.36
	Rank	21	-	-	17
Russia	Value	-	-	-	0.43
	Rank	-	-	-	26
Spain	Value	1.1	0.185	0.303	0.35
	Rank	14	3	13	13
Sweden	Value	2.2	0.144	0.556	0.28
	Rank	7	11	4	2
Switzerland	Value	0.7	0.116	-	0.29
	Rank	20	18	-	5
Turkey	Value	0.3	0.177	0.195	0.44
	Rank	22	4	16	27
UK	Value	2.9	0.136	-	0.33
	Rank	6	12	-	13
US	Value	1.2	0.136	0.447	0.35
	Rank	12	12	7	13

* GNP is used in place of GDP for Ireland

Table A11 Telecommunications Infrastructure

		1	2	3	4	5
	Indicator	**Mainlines per 100 habitants**	**Expenses per telephone mainline (US$) - adjusted for degree of urbanisation**	**Faults per 100 telephone lines per year**	**% of telephone faults cleared by next working day**	**Investment in telecommunications per capita (US$ per capita) Average 1992/1994 - exel land and buildings**
	Year	**1995**	**1994**	**1995**	**1994**	**1992/1994**
	Source	OECD/ECO/ GEN(96)15/ REV1	ITU, Statistical Yearbook, 1995 and World Bank	OECD/ECO/ GEN(96)15/ REV1	ITU, Statistical Yearbook, 1995	ITU, Statistical Yearbook, 1995
Country	Observations	27	28	15	22	15
Australia	Value	50.9	756	-	85.0	-
	Rank	12	21	-	13	-
Austria	Value	46.5	5.4	-	93.0	206.59
	Rank	18	11	-	5	1
Belgium	Value	45.7	723	2.2	81.3	80.32
	Rank	19	18	2	15	8
Canada	Value	58.3	432	-	-	-
	Rank	5	9	-	-	-
Czech Republic	Value	23.2	178	10.7	-	41.8
	Rank	24	4	7	-	13
Denmark	Value	61.3	771	-	95.1	78.34
	Rank	4	23	-	2	9
EU	Value	-	576	-	73.0	100.00
	Rank	-	-	-	-	-
Finland	Value	55.0	338	8.3	66.4	116.36
	Rank	10	7	6	20	4
France	Value	56.4	560	6.3	86.6	-
	Rank	7	15	5	10	-
Germany	Value	49.3	835	-	21.9	-
	Rank	14	26	-	22	-
Greece	Value	49.3	272	43.4	58.6	52.82
	Rank	14	6	14	21	12
Hungary	Value	21.1	266	39.5	75.8	-
	Rank	26	5	13	19	-
Iceland	Value	55.5	769	-	80.0	91.38
	Rank	9	22	-	17	7
Ireland	Value	36.6	506	17	85.0	70.88
	Rank	22	12	11	13	10
Italy	Value	43.6	463	-	97.1	-
	Rank	20	10	-	1	-
Japan	Value	47.9	778	1.7	-	-
	Rank	16	24	1	-	-
Luxembourg	Value	55.6	970	-	86.0	-
	Rank	6	28	-	11	-
Mexico	Value	9.6	785	4.6	-	19.22
	Rank	27	25	4	-	14
Netherlands	Value	51.7	740	2.5	93.0	-
	Rank	11	19	3	5	-
New Zealand	Value	47.0	693	-	86.0	-
	Rank	17	17	-	11	-
Norway	Value	55.9	748	14	77.7	94.75
	Rank	8	20	8	18	6
OECD	Value	47.0	-	-	-	-
	Rank	-	-	-	-	-

Poland	Value	-	143	-	-	-
	Rank	-	2	-	-	-
Portugal	Value	36.1	167	38	90.0	-
	Rank	23	3	12	7	-
Russia	Value	-	-	-	-	-
	Rank	-	-	-	-	-
Spain	Value	38.5	426-	-	86.8	99.57
	Rank	21	8	-	9	5
Sweden	Value	68.1	544	-	95.0	123.34
	Rank	1	14	-	3	3
Switzerland	Value	62.6	909	14	89.0	193.44
	Rank	3	27	8	8	2
Turkey	Value	22.9	112	60.2	95.0	11.38
	Rank	25	1	15	3	15
UK	Value	50.2	520	-	80.2	62.64
	Rank	13	13	-	16	11
US	Value	62.7	585	16.9	-	-
	Rank	2	16	10	-	-

Table A11 Telecommunications Infrastructure continued

		6	7	8	9
	Indicator	**% of telephone lines connected to digital exchanges**	**Leased line connections as a % of telecommunications mainlines**	**Internet hosts per 1,000 capita**	**Mobile cellular telephones per 1,00 capita**
	Year	**1994**	**1992**	**30/10/96**	**01/11/96**
	Source	ITU, Statistical Yearbook	OECD/EDR/TAB(95)15	RIPE NCC:European Hostcount	Pearson Professional Ltd,1996
Country	Observations	29	15	19	18
Australia	Value	51	-	-	-
	Rank	21	-	-	-
Austria	Value	46	0.94	11.7	70.21
	Rank	23	12	8	10
Belgium	Value	60	2.47	9.3	38.95
	Rank	17	3	12	17
Canada	Value	88	-	-	-
	Rank	5	-	-	-
Czech Republic	Value	15	-	5.3	-
	Rank	28	-	14	-
Denmark	Value	53	0.98	28.1	248.46
	Rank	20	11	5	4
EU	Value	66	-	-	81.00
	Rank	-	-	-	-
Finland	Value	77	2.82	84.2	274.96
	Rank	9	2	1	1
France	Value	100	0.87	5.7	37.36
	Rank	1	13	13	18
Germany	Value	40	2.0	11.4	65.22
	Rank	25	6	9	12
Greece	Value	31	-	-	45.20
	Rank	26	-	-	16
Hungary	Value	41	-	-	-
	Rank	24	-	-	-
Iceland	Value	84	-	51.4	142.91
	Rank	6	-	2	-
Ireland	Value	68	2.39	9.8	68.11
	Rank	13	4	11	11
Italy	Value	67	1.24	4.5	97.11
	Rank	14	9	15	8
Japan	Value	75	-	-	-
	Rank	10	-	-	-
Luxembourg	Value	91	-	11.2	101.90
	Rank	4	-	10	7
Mexico	Value	83	-	-	-
	Rank	7	-	-	-
Netherlands	Value	100	1.05	23.6	59.86
	Rank	1	10	6	14
New Zealand	Value	98	-	-	-
	Rank	3	-	-	-
Norway	Value	71	1.86	50.4	269.42
	Rank	11	7	3	3
OECD	Value	-	-	-	-
	Rank	-	-	-	-
Poland	Value	18	-	2.1	-
	Rank	27	-	19	-
Portugal	Value	62	0.67	3.9	50.28

	Rank	16	14	17	15
Russia	Value	12	-	-	-
	Rank	29	-	-	-
Spain	Value	48	0.65	4.5	60.43
	Rank	22	15	16	13
Sweden	Value	67	1.47	37.3	274.01
	Rank	15	8	4	2
Switzerland	Value	57	2.08	3.2	87.66
	Rank	18	5	18	9
Turkey	Value	56	-	-	-
	Rank	19	-	-	-
UK	Value	83	2.96	16.1	111.09
	Rank	7	1	7	6
US	Value	69	-	-	-
	Rank	12	-	-	-

Table A12 Telecommunications Costs

		1	2	3	4	5	6	7
Financial Markets	**Indicator**	**2Mbit/s leased lines national circuits - connection (ECU)**	**2Mbit/s leased lines national circuits - annual rental 30km (ECU)**	**2Mbit/s leased lines national circuits - annual rental 100km (ECU)**	**2Mbit/s leased lines international half circuit to US (ECU)**	**Voice grade lessed lines national circuits - connection (ECU)**	**Analogue leased lines national circuits - annual rental 30km (ECU)**	**Analogue leased lines national circuits - annual rental 100km (ECU)**
	Year	**01/01/96**	**31/01/97**	**31/01/97**	**31/01/97**	**01/01/96**	**31/01/97**	**31/01/97**
	Source	DG XIII, Tariff Data, 1996	Cutting the Cost - Analysis 1997	Cutting the Cost - Analysis 1997	Cutting the Cost - Analysis 1997	DG XIII, Tariff Data, 1996	Cutting the Cost - Analysis 1997	Cutting the Cost - Analysis 1997
Country	Observations	13	10	10	10	14	10	10
Australia	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Austria	Value	1,991	-	-	-	242	-	-
	Rank	3	-	-	-	4	-	-
Belgium	Value	-	48,000	92,000	317,000	1,207	2,800	5,700
	Rank	-	8	9	7	13	4	6
Canada	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Czech Republic	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Denmark	Value	5,347	17,000	37,000	413,000	754	1,300	3,000
	Rank	6	2	4	9	11	2	2
EU	Value	7,359	-	-	-	596	-	-
	Rank	-	-	-	-	-	-	-
Finland	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
France	Value	9,308	29,000	48,000	307,000	698	3,900	6,200
	Rank	11	5	7	6	10	9	8
Germany	Value	4,246	30,000	44,000	277,000	478	3,200	4,700
	Rank	4	6	5	3	7	6	5
Greece	Value	1,192	-	-	-	442	-	-
	Rank	2	-	-	-	6	-	-
Hungary	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Iceland	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Ireland	Value	18,328	51,000	60,000	325,000	489	3,800	5,900
	Rank	13	9	8	8	8	7	7
Italy	Value	576	79,000	148,000	517,000	192	4,800	8,400
	Rank	1	10	10	10	1	10	10
Japan	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Luxembourg	Value	6,201	-	-	-	259	-	-
	Rank	7	-	-	-	5	-	-
Mexico	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Netherlands	Value	8,889	31,000	45,000	190,000	222	2,000	3,200
	Rank	10	7	6	1	2	3	3
New Zealand	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Norway	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-

OECD	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Poland	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Portugal	Value	5,164	-	-	-	233	-	-
	Rank	5	-	-	-	3	-	-
Russia	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Spain	Value	6,899	-	-	-	627	-	-
	Rank	8	-	-	-	9	-	-
Sweden	Value	8,008	11,000	14,000	304,000	995	900	1,300
	Rank	9	1	1	5	12	1	1
Switzerland	Value	-	25,000	36,000	240,000	-	3,900	6,200
	Rank	-	4	3	2	-	8	9
Turkey	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
UK	Value	10,960	20,000	34,000	288,000	1,504	3,100	4,600
	Rank	12	3	2	4	14	5	4
US	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-

Table A12 Telecommunications Costs continued

		8	9	10	11	12	13	14
	Indicator	**Analogue leased lines international half circuit to US (ECU)**	**Cost of local call (3 minutes - peak time) ECU**	**Cost of intra-EU call (3 minutes peak time) ECU**	**Cost of national call (per minute) ECU**	**Cost of international call (per minute) ECU**	**Cellular mobile tariff basket**	**Index of business 'telecommunications basket' total charges - OECD average = 100**
	Year	**31/01/97**	**01/01/96**	**01/01/96**	**31/01/97**	**31/01/97**	**01/01/95**	**1996**
	Source	Cutting the Cost - Analysis 1997	DG XIII, Tariff Data, 1996	DG XIII, Tariff Data, 1996	Cutting the Cost - Analysis 1997	Cutting the Cost - Analysis 1997	OECD/CCET/ DSTI (96)32	ECO/GEN(96) 15/REV1
Country	Observations	10	15	15	10	10	23	24
Australia	Value	-	-	-	-	-	-	132.1
	Rank	-	-	-	-	-	-	19
Austria	Value	-	0.18	2.04	-	-	1,363	148.8
	Rank	-	14	13	-	-	16	22
Belgium	Value	33,000	0.16	1.86	0.09	0.60	1,249	92.3
	Rank	8	11	11	6	7	15	8
Canada	Value	-	-	-	-	-	1,004	110.8
	Rank	-	-	-	-	-	7	15
Czech Republic	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Denmark	Value	27,000	0.16	1.17	0.04	0.48	778	48.8
	Rank	5	11	7	2	3	3	4
EU	Value	-	0.13	1.77	-	-	1,448	-
	Rank	-	-	-	-	-	-	-
Finland	Value	-	0.12	1.65	-	-	799	43.8
	Rank	-	5	4	-	-	4	2
France	Value	24,000	0.12	1.90	0.09	0.56	2,372	83.7
	Rank	3	5	12	6	6	23	7
Germany	Value	28,000	0.13	1.66	0.09	0.50	1,720	96.5
	Rank	6	7	6	6	4	20	10
Greece	Value	-	0.04	1.62	-	-	-	129.7
	Rank	-	1	4	-	-	-	17
Hungary	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Iceland	Value	-	-	-	-	-	480	37.1
	Rank	-	-	-	-	-	1	1
Ireland	Value	33,000	0.14	1.80	0.12	0.75	992	131.7
	Rank	7	9	10	9	10	5	18
Italy	Value	43,000	0.22	1.58	0.12	0.74	1,078	138.9
	Rank	10	15	2	9	9	10	21
Japan	Value	-	-	-	-	-	2,304	107.3
	Rank	-	-	-	-	-	22	13
Luxembourg	Value	-	0.13	1.61	-	-	1,748	-
	Rank	-	7	3	-	-	21	-
Mexico	Value	-	-	-	-	-	1,521	336.9
	Rank	-	-	-	-	-	17	24
Netherlands	Value	18,000	0.16	1.73	0.07	0.71	1,653	54.6
	Rank	2	11	8	4	8	19	6
New Zealand	Value	-	-	-	-	-	1,186	103.4
	Rank	-	-	-	-	-	12	11
Norway	Value	-	-	-	-	-	1,000	46.1
	Rank	-	-	-	-	-	6	3
OECD	Value	-	-	-	-	-	-	100
	Rank	-	-	-	-	-	-	-
Poland	Value	-	-	-	-	-	-	-

	Rank	-	-	-	-	-	-	-
Portugal	Value	-	0.06	2.31	-	-	1,188	185.9
	Rank	-	2	15	-	-	13	23
Russia	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Spain	Value	-	0.08	2.08	-	-	1,136	135.1
	Rank	-	3	14	-	-	11	20
Sweden	Value	25,000	0.10	1.77	0.03	0.39	1,028	49
	Rank	4	4	9	1	2	8	5
Switzerland	Value	15,000	-	-	0.07	0.50	1,046	110.7
	Rank	1	-	-	4	4	9	14
Turkey	Value	-	-	-	-	-	692	106.5
	Rank	-	-	-	-	-	2	12
UK	Value	38,000	0.14	1.24	0.05	0.38	1,214	92.4
	Rank	9	9	1	3	1	14	9
US	Value	-	-	-	-	-	1,620	114.8
	Rank	-	-	-	-	-	18	16

Table A13 Transport and Comminications Costs and Infrastructure

		1	2	3	4
	Indicator	**Insurance and freight (debit + credit) as % of total trade**	**Letter costs - EU domestic tariffs**	**Rail infrastructure indicator**	**Road infrastructure indicator**
	Year	**1992**	**30/04/97**	**1992**	**1992**
	Source	Handbook of International Trade and Development Statistics 1994	An Post	European conference of ministers of transport	European conference of ministers of transport
Country	Observations	26	15	18	19
Australia	Value	3.713	-	-	-
	Rank	13	-	-	-
Austria	Value	3.997	32.8	27,505	28,406
	Rank	14	10	4	5
Belgium	Value	5.744	31.7	25,664	69,033
	Rank	21	14	5	4
Canada	Value	0.779	-	-	-
	Rank	2	-	-	-
Czech Republic	Value	8.776	-	63,803	17,806
	Rank	25	-	1	8
Denmark	Value	6.970	37.9	2,897	11,981
	Rank	24	13	15	11
EU	Value	4.022	31	-	-
	Rank	-	-	-	-
Finland	Value	3.179	35.9	5,813	7,657
	Rank	9	12	13	13
France	Value	5.568	34.2	13,618	6,703
	Rank	20	11	8	14
Germany	Value	2.459	38.5	23,396	82,624
	Rank	7	14	6	3
Greece	Value	4.068	19.4	-	1,933
	Rank	16	2	-	18
Hungary	Value	0.757	-	-	-
	Rank	1	-	-	-
Iceland	Value	3.141	-	-	-
	Rank	8	-	-	-
Ireland	Value	2.025	32	288	2,029
	Rank	5	9	17	17
Italy	Value	5.366	29.2	9,325	16,478
	Rank	18	5	9	9
Japan	Value	3.563	-	-	-
	Rank	12	-	-	-
Luxembourg	Value	-	29.8	59,665	252,678
	Rank	-	6	2	1
Mexico	Value	-	-	-	-
	Rank	-	-	-	-
Netherlands	Value	5.493	27.4	8,744	24,039
	Rank	19	3	10	7
New Zealand	Value	4.004	-	-	-
	Rank	15	-	-	-
Norway	Value	12.414	-	7,036	8,308
	Rank	26	-	11	12
OECD	Value	-	-	-	-
	Rank	-	-	-	-
Poland	Value	6.406	-	-	-
	Rank	23	-	-	-
Portugal	Value	4.370	30.7	1,549	5,485
	Rank	17	7	16	15

Russia	Value	5.745	-	-	-
	Rank	22	-	-	-
Spain	Value	3.417	14.6	5,704	27,385
	Rank	10	1	14	6
Sweden	Value	3.456	42.5	18,716	3,460
	Rank	11	15	7	16
Switzerland	Value	1.389	-	31,181	97,627
	Rank	3	-	3	2
Turkey	Value	-	-	167	595
	Rank	-	-	18	19
UK	Value	2.138	28.1	5,851	12,229
	Rank	6	4	12	10
US	Value	1.942	-	-	-
	Rank	4	-	-	-

Table A14 Energy Costs

		1	2	3	4	5	6	7
	Indicator	**Automotive diesel oil prices for commercial use (US& per toe)**	**Heavy fuel oil prices for industry (US$ per toe)**	**Electricity prices - 2 million kwh per annum - large users (ecu) VAT excluded**	**Electricity prices - 160,000 kwh per annum - medium users (ecu) VAT excluded**	**Electricity prices - 30,000 kwh per annum - small users (ecu) VAT excluded**	**Gas prices = industrial rate excl. VAT (4186 GJ/200 days)**	**Gas prices = industrial rate excl. VAT (41860 GJ/250 days/4000 hours)**
	Year	**1995**	**1995**	**1/1/97**	**1/1/97**	**1/1/97**	**1/1/97**	**1/1/97**
	Source	International Energy Agency, Energy Prices and Taxes, 4th Quarter 1995	International Energy Agency, Energy Prices and Taxes, 4th Quarter 1995	Eurostat Energy and Industry, 1997, 8	Eurostat Energy and Industry, 1997, 8	Eurostat Energy and Industry, 1997, 8	Eurostat Energy and Industry, 1997, 11	Eurostat Energy and Industry, 1997, 11
Country	Observations	11	23	16	17	16	13	11
Australia	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Austria	Value	1,022	105	8.38	12.39	15.67	9.1	5.7
	Rank	7	2	14	16	15	12	13
Belgium	Value	-	133	7.48	11.73	15.04	4.8	3.3
	Rank	-	6	12	14	13	2	2
Canada	Value	-	111	-	-	-	-	-
	Rank	-	3	-	-	-	-	-
Czech Republic	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Denmark	Value	-	159	5.45	5.74	5.97	6.6	3.7
	Rank	-	11	4	1	1	11	5
EU	Value	1,020	164	6.90	9.80	11.50	6.6	4.3
	Rank	-	-	-	-	-	-	-
Finland	Value	967	215	4.56	6.00	6.36	6.1	4.1
	Rank	4	21	3	2	3	9	7
France	Value	-	167	6.35	9.37	11.10	5.2	3.6
	Rank	-	12	8	8	7	4	3
Germany	Value	969	151	8.92	11.69	13.63	5.8	5.1
	Rank	5	9	15	13	11	6	11
Greece	Value	-	202	5.80	7.86	8.55	-	-
	Rank	-	20	5	6	5	-	-
Hungary	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Iceland	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Ireland	Value	1,022	181	6.91	11.32	13.51	6.0	3.8
	Rank	6	15	9	11	10	8	6
Italy	Value	-	175	9.54	11.89	17.66	6.5	4.6
	Rank	-	13	16	14	15	10	9
Japan	Value	-	189	-	-	-	-	-
	Rank	-	17	-	-	-	-	-
Luxembourg	Value	813	155	7.37	10.66	13.67	5.1	4.9
	Rank	3	10	11	10	12	3	9
Mexico	Value	293	63	-	-	-	-	-
	Rank	1	1	-	-	-	-	-
Netherlands	Value	1,219	198	6.20	11.23	11.55	6.6	4.1
	Rank	10	19	6	11	8	11	7
New Zealand	Value	369	236	-	-	-	-	-
	Rank	2	22	-	-	-	-	-

Norway	Value	-	374	4.44	6.75	6.03	-	-
	Rank	-	23	2	4	2	-	-
OECD	Value	-	132	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Poland	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Portugal	Value	-	180	7.49	9.90	11.62	15.2	6.4
	Rank	-	14	13	9	9	14	14
Russia	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Spain	Value	-	186	7.03	8.43	11.11	5.4	3.6
	Rank	-	16	10	7	8	5	3
Sweden	Value	1,066	193	4.32	6.27	7.24	5.9	5.3
	Rank	8	18	1	3	4	7	12
Switzerland	Value	1,269	148*	-	-	-	-	-
	Rank	11	8	-	-	-	-	-
Turkey	Value	-	126*	-	-	-	-	-
	Rank	-	5	-	-	-	-	-
UK	Value	1,087	143	6.21	7.52	10.18	3.3	2.6
	Rank	9	7	7	5	6	1	1
US	Value	-	114	-	-	-	-	-
	Rank	-	4	-	-	-	-	-

***** Data refers to 1994

Table A15 Property and Construction Costs

		1	2	3	4	5	6	7
	Indicator	**Industrial occupancy costs (IRP£ per sq. m.)**	**Office occupancy costs (IRP£ per sq. m.)**	**Building costs - industrial (per m^2 - IRP£)**	**Building costs - offices (per m^2 - IRP£)**	**Average of ranks for carpentry, steel reinforcement, concrete and cement material costs**	**Construction skilled labour costs (per hour - ECU)**	**Unweighted average of skilled and unskilled labour costs (Q1 1994 - ECU per hour)**
	Year	**01/03/96**	**01/03//96**	**1995**	**1995**	**Q1 1994**	**Q1 1994**	**Q1 1994**
	Source	Jones Lang Wootton	Jones Lang Wootton	Hamilton Osborne King, European Property Bulletin, 1996	Hamilton Osborne King, European Property Bulletin, 1996	SPON, European Construction Handbook, 1996	SPON, European Construction Handbook, 1996	SPON, European Construction Handbook, 1996
Country	Observations	14	14	14	14	18	16	15
Australia	Value	40.1	171.0	-	-	-	-	-
	Rank	1	1	-	-	-	-	-
Austria	Value	66.1	216.6	650	1,300	10.75	21.99	19.98
	Rank	9	7	13	14	13	12	9
Belgium	Value	48.5	178.5	381	793	5.00	26.95	24.71
	Rank	4	2	8	6	4	15	13
Canada	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Czech Republic	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Denmark	Value	-	-	501	1,002	11.75	23.05	23.05
	Rank	-	-	11	11	15	13	11
EU	Value	-	-	-	-	-	17.95	-
	Rank	-	-	-	-	-	-	-
Finland	Value	-	-	-	-	4.75	16.19	13.73
	Rank	-	-	-	-	3	6	5
France	Value	89.1	299.0	375	937	12.75	16.24	13.81
	Rank	13	9	6	10	16	7	6
Germany	Value	70.6	274.5	522	1,045	8.25	29.82	27.80
	Rank	10	10	12	12	7	16	14
Greece	Value	56.9	197.5	-	-	-	-	-
	Rank	7	5	-	-	-	-	-
Hungary	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Iceland	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Ireland	Value	60.0	226.0	377	915*	9.75	12.50	11.22
	Rank	8	8	7	8	10	4	3
Italy	Value	42.8	216.5	191	651	3.25	16.38	15.88
	Rank	3	6	1	3	2	8	7
Japan	Value	168.0	676.4	-	-	10.00	-	-
	Rank	14	14	-	-	12	-	-
Luxembourg	Value	42.7	309.0	423	846	-	18.91	-
	Rank	2	12	10	7	-	9	-
Mexico	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Netherlands	Value	-	-	369	933	13.50	23.65	23.35
	Rank	-	-	5	9	17	14	12
New Zealand	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Norway	Value	-	-	-	-	9.50	21.98	20.43

	Rank	-	-	-	-	9	11	10
OECD	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Poland	Value	-	-	-	-	1.00	0.60	-
	Rank	-	-	-	-	1	1	-
Portugal	Value	-	-	220	499	9.75	8.47	6.17
	Rank	-	-	2	1	10	2	1
Russia	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
Spain	Value	53.2	180.2	325	600	8.0	12.78	11.57
	Rank	5	3	4	2	6	5	4
Sweden	Value	74.6	288.1	410	786	8.50	19.47	18.97
	Rank	11	11	9	5	8	10	8
Switzerland	Value	-	-	660	1055	15.75	-	-
	Rank	-	-	14	13	18	-	-
Turkey	Value	-	-	-	-	-	-	-
	Rank	-	-	-	-	-	-	-
UK	Value	78.0	398.2	318	709	6.50	9.16	7.72
	Rank	12	13	3	4	5	3	2
US	Value	53.2	189.1	-	-	11.33	37.47	31.84
	Rank	6	4	-	-	14	17	15

***** GNP is used in place of GDP for Ireland

Table A16 Environment

		1	2	3	4	5
	Indicator	**CO_2 emissions from energy uses (tonnes/capita)**	**Per capita NO_x emissions from fossil fuels (kg NO_x)**	**Per capita SO_x emissions from fossil fuels (kg SO_x)**	**Recycling activity: recovery ratio - glass (%)**	**Recycling activity: recovery ratio - paper/board (%)**
	Year	**1995**	**1992**	**1992**	**1993**	**1990**
	Source	OECD, Main Economic Indicators, Basic Structural Indicators, Oct. 1997	OECD, Environmental data compendium, 1997	OECD, Environmental data compendium, 1997	Eurostat, Basic Statistics of the European Community, 1996, The environment	Eurostat, Basic Statistics of the European Union
Country	Observations	27	26	25	14	18
Australia	Value	15.8	-	-	-	-
	Rank	24	-	-	-	-
Austria	Value	7.5	23	9	68.0	36.8
	Rank	11	6	4	3	10
Belgium	Value	11.6	35	25	55.0	14.7
	Rank	20	13	9	6	17
Canada	Value	15.9	68	91	-	20.0
	Rank	25	24	24	-	16
Czech Republic	Value	11.7	36	125	-	-
	Rank	23	15	25	-	-
Denmark	Value	11.6	53	30	62.0	35.4
	Rank	20	22	15	4	11
EU	Value	-	32	32	-	-
	Rank	-	-	-	-	-
Finland	Value	10.7	54	22	46.0	40.8
	Rank	18	23	8	8	7
France	Value	6.2	26	17	46.0	45.7
	Rank	6	7	7	8	5
Germany	Value	10.8	27	37	70.0	39.6
	Rank	19	9	16	2	8
Greece	Value	7.3	33	50	20.0	30.0
	Rank	9	12	18	14	13
Hungary	Value	5.6	18	72	-	-
	Rank	4	4	23	-	-
Iceland	Value	8.8	81	29	-	-
	Rank	14	26	13	-	-
Ireland	Value	9.7	37	53	29.0	3.0
	Rank	17	16	19	10	18
Italy	Value	7.4	37	25	52.0	-
	Rank	10	16	9	7	-
Japan	Value	9.2	12	7	-	49.6
	Rank	15	2	2	-	3
Luxembourg	Value	21.8	-	26	-	-
	Rank	27	-	11	-	-
Mexico	Value	3.5	15	-	-	-
	Rank	2	3	-	-	-
Netherlands	Value	11.6	35	9	76.0	50.3
	Rank	20	13	4	1	2
New Zealand	Value	8.2	43	-	-	-
	Rank	13	19	-	-	-
Norway	Value	7.8	51	8	-	26.0
	Rank	12	21	3	-	16
OECD	Value	-	38	38	-	-
	Rank	-	-	-	-	-

Poland	Value	-	29	68	-	-
	Rank	-	10	22	-	-
Portugal	Value	5.1	26	27	29.0	39.1
	Rank	3	7	12	10	9
Russia	Value	-	-	-	-	-
	Rank	-	-	-	-	-
Spain	Value	6.3	31	53	29.0	51.0
	Rank	7	11	19	10	1
Sweden	Value	6.4BR>8	45	11	59.0	42.9
	Rank		20	6	5	6
Switzerland	Value	5.9	19	5	-	49.4
	Rank	5	5	1	-	4
Turkey	Value	2.6	9	29	-	-
	Rank	1	1	13	-	-
UK	Value	9.6	38	47	29.0	31.0
	Rank	16	18	17	10	12
US	Value	19.9	75	63	-	28.6
	Rank	26	25	21	-	14

Table A17 SME Performance

		1	2	3	4	5	6
	Indicator	**Labour productivity (*1,000 ECU/PPP) 0-9**	**Labour productivity (*1,000 ECU/PPP) 10-49**	**Labour productivity (*1,000 ECU/PPP) 50-249**	**Turnover limit for concession providing relief from VAT registration (US$)**	**Average debtor days**	**% of SMEs that export**
	Year	**1995**	**1995**	**1995**	**01/01/96**	**1997**	**1996**
	Source	European Observatory for SMEs, Fourth Annual Report, 1996 (table 11.1)	European Observatory for SMEs, Fourth Annual Report, 1996 (table 11.1)	European Observatory for SMEs, Fourth Annual Report, 1996 (table 11.1)	OECD/DAFFE/ CFA/CT(96)24	Grant Thornton European Business Survey 1997	Grant Thornton European Business Survey 1997
Country	Observations	18	18	18	17	16	16
Australia	Value	-	-	-	-	-	-
	Rank	-	-	-	-	-	-
Austria	Value	11	36	64	28,110	43	64
	Rank	17	12	4	5	5	2
Belgium	Value	57	56	59	7,200	52	69
	Rank	1	2	6	11	9	1
Canada	Value	-	-	-	22,760	-	-
	Rank	-	-	-	6	-	-
Czech Republic	Value	-	-	-	-	-	-
	Rank	-	-	-	-	-	-
Denmark	Value	31	38	44	2,960	35	52
	Rank	10	9	12	15	2	7
EU	Value	-	-	-	-	61	54
	Rank	-	-	-	-	-	-
Finland	Value	27	33	40	10,590	24	51
	Rank	13	16	16	9	1	9
France	Value	33	38	45	1,820	64	49
	Rank	6	9	11	17	13	10
Germany	Value	36	43	65	4,340	38	52
	Rank	3	3	3	13	4	7
Greece	Value	16	32	24	7,444	77	55
	Rank	16	17	18	10	15	5
Hungary	Value	-	-	-	-	-	-
	Rank	-	-	-	-	-	-
Iceland	Value	32	36	48	1.920	-	-
	Rank	7	12	9	16	-	-
Ireland	Value	20	34	68	57,140	59	34
	Rank	15	15	2	3	11	16
Italy	Value	35	41	62	-	84	58
	Rank	4	4	5	-	16	4
Japan	Value	-	-	-	269,060	-	-
	Rank	-	-	-	1	-	-
Luxembourg	Value	32	58	72	11,040	56	42
	Rank	7	1	1	8	10	13
Mexico	Value	-	-	-	-	-	-
	Rank	-	-	-	-	-	-
Netherlands	Value	32	39	41	-	46	55
	Rank	7	5	14	-	6	5
New Zealand	Value	-	-	-	6,880	-	-
	Rank	-	-	-	12	-	-
Norway	Value	27	39	46	3,990	-	-
	Rank	13	5	10	14	-	-
OECD	Value	-	-	-	-	-	-

	Rank	-	-	-	-	-	-
Poland	Value	-	-	-	-	-	-
	Rank	-	-	-	-	-	-
Portugal	Value	10	21	27	12,790	61	64
	Rank	18	18	17	7	12	2
Russia	Value	-	-	-	-	-	-
	Rank	-	-	-	-	-	-
Spain	Value	34	38	44	-	73	41
	Rank	5	9	12	-	14	15
Sweden	Value	28	39	41	-	37	49
	Rank	12	5	14	-	3	10
Switzerland	Value	44	36	52	50,990	50	38
	Rank	2	12	8	4	7	15
Turkey	Value	-	-	-	-	-	-
	Rank	-	-	-	-	-	-
UK	Value	31	39	58	71,440	50	45
	Rank	10	5	7	2	7	12
US	Value	-	-	-	-	-	-
	Rank	-	-	-	-	-	-

Table A18 Public Administration

		1	2	3	4	5
	Indicator	**General government consolidated gross debt as a % of GDP**	**Net lending (+) or borrowing (-) of general government as a % of GDP**	**Government spending as a % of GDP**	**Share of general government in total employment**	**Tax as a % of GDP**
	Year	**1997**	**1997**	**1997**	**1996**	**1997**
	Source	EU Commission, European Economy, No. 63, 1997	EU Commission, European Economy, No. 63, 1997	EU Commission, European Economy, No. 63, 1997	OECD Employment Outlook, July 1997	EU Commission, European Economy, No. 63, 1997
Country	Observations	15	15	15	24	15
Australia	Value	-	-	-	-	-
	Rank	-	-	-	-	-
Austria	Value	72	-3.0	51.7	20.6	48.7
	Rank	9	10	10	17	10
Belgium	Value	127	-2.9	53.0	19.1	50.1
	Rank	15	6	11	15	11
Canada	Value	-	-	-	21.7	-
	Rank	-	-	-	18	-
Czech Republic	Value	-	-	-	-	-
	Rank	-	-	-	-	-
Denmark	Value	68	-0.3	58.2	32.4	58.0
	Rank	7	2	14	23	14
EU	Value	74	-3.0	49.4	-	46.4
	Rank	-	-	-	-	-
Finland	Value	62	-2.2	56.5	22.5	54.3
	Rank	4	4	13	19	13
France	Value	58	-3.0	53.5	24.5	50.5
	Rank	3	10	12	20	12
Germany	Value	62	-2.9	48.9	16.2	46.0
	Rank	4	6	7	9	7
Greece	Value	109	-6.5	44.9	10.4	38.4
	Rank	13	15	6	3	2
Hungary	Value	-	-	-	-	-
	Rank	-	-	-	-	-
Iceland	Value	-	-	-	18.5	-
	Rank	-	-	-	13	-
Ireland	Value	80*	-1.0*	40.1*	17.7	39.1*
	Rank	12	3	1	11	3
Italy	Value	122	-3.3	51.0	18.6	47.7
	Rank	14	10	9	14	8
Japan	Value	-	-	-	8.3	-
	Rank	-	-	-	1	-
Luxembourg	Value	9	0.5	40.7	-	41.2
	Rank	1	1	2	-	5
Mexico	Value	-	-	-	31.7	-
	Rank	-	-	-	22	-
Netherlands	Value	77	-2.5	50.1	10.8	47.7
	Rank	10	5	8	4	8
New Zealand	Value	-	-	-	14.7	-
	Rank	-	-	-	6	-
Norway	Value	-	-	-	31.1	-
	Rank	-	-	-	21	-
OECD	Value	-	-	-	-	-
	Rank	-	-	-	-	-
Poland	Value	-	-	-	-	-
	Rank	-	-	-	-	-

Portugal	Value	69	-2.9	44.3	18.2	41.3
	Rank	8	6	5	12	6
Russia	Value	-	-	-	-	-
	Rank	-	-	-	-	-
Spain	Value	67	-3.0	43.5	15.0	40.5
	Rank	6	10	4	7	4
Sweden	Value	78	-2.9	64.6	33.1	61.7
	Rank	11	6	15	24	15
Switzerland	Value	-	-	-	11.3	-
	Rank	-	-	-	5	-
Turkey	Value	-	-	-	8.8	-
	Rank	-	-	-	2	-
UK	Value	57	-3.5	41.3	19.6	37.7
	Rank	2	14	3	16	1
US	Value	-	-	-	15.5	-
	Rank	-	-	-	8	-

***** GNP is used in place of GDP for Ireland

Table A19 Socioeconomic Performance

		1	2	3	4	5
	Indicator	**Cumulative employment % change 1995-1997**	**Consumer prices, 12 months to Aug 1997**	**GDP growth**	**GDP * per capita/EU GDP per capita (PPS)**	**Standardised unemployment rate**
	Year	**1995-1997**	**1996-1997**	**1996**	**1996**	**Aug-97**
	Source	OECD, Employment Outlook, July 1997	OECD, News Release, 16 Oct 1997	OECD, Employment Outlook, July 1997, No. 61	European Economy No. 63, 1997	OECD, SG/COM/NEWS(97)10
Country	Observations	28	28	28	17	20
Australia	Value	7.46	0.3	4.0	-	8.7
	Rank	5	2	8	-	11
Austria	Value	-1.20	-	1.1	110.4	4.5
	Rank	26	1	24	6	3
Belgium	Value	0.92	1.9	1.4	112.3	9.6
	Rank	20	14	22	5	13
Canada	Value	4.77	1.8	1.5	-	9.0
	Rank	12	12	20	-	12
Czech Republic	Value	1.10	10.0	4.4	-	-
	Rank	19	24	7	-	-
Denmark	Value	3.95	2.5	2.5	115.5	6.3
	Rank	13	20	15	4	8
EU	Value	1.00	2.1	1.6	100.0	10.6
	Rank	-	-	-	-	-
Finland	Value	5.70	1.6	3.3	94.2	12.6
	Rank	9	11	11	14	17
France	Value	0.90	1.5	1.5	105.9	12.6
	Rank	21	8	20	8	17
Germany	Value	-2.38	2.1	1.4	108.8	9.8
	Rank	27	16	22	7	14
Greece	Value	3.64	5.6	2.6	64.6	-
	Rank	14	23	14	17	-
Hungary	Value	-2.78	18.0	0.8	-	-
	Rank	28	26	26	-	-
Iceland	Value	5.91	1.5	5.7	-	-
	Rank	8	8	4	-	-
Ireland	Value	12.16	1.4	7.3	103.9	10.7
	Rank	1	6	1	10	16
Italy	Value	-0.20	1.5	0.7	103.2	12.8
	Rank	25	8	27	11	19
Japan	Value	1.80	2.1	3.6	117.9	3.4
	Rank	18	16	10	3	1
Luxembourg	Value	2.52	1.4	3.9	163.50	3.8
	Rank	17	6	9	1	2
Mexico	Value	10.20	19.2	5.1	-	-
	Rank	2	27	5	-	-
Netherlands	Value	6.43	2.6	2.7	104.9	5.6
	Rank	7	21	13	9	6
New Zealand	Value	10.10	1.1	2.1	-	6.7
	Rank	3	4	18	-	9
Norway	Value	6.53	2.3	4.8	-	4.5
	Rank	6	19	6	-	4
OECD	Value	3.43	4.3	2.6	-	7.3
	Rank	-	-	-	-	-
Poland	Value	3.03	14.3	6.0	-	-
	Rank	15	25	3	-	-

Portugal	Value	0.39	1.9	3.0	69.4	6.2
	Rank	24	14	12	16	7
Russia	Value	-	-	-	-	-
	Rank	-	-	-	-	-
Spain	Value	4.87	1.8	2.2	76.9	19.8
	Rank	11	12	17	15	20
Sweden	Value	0.58	1.1	1.1	97.3	9.9
	Rank	22	4	24	13	15
Switzerland	Value	0.40	0.5	-0.7	-	-
	Rank	23	3	28	-	-
Turkey	Value	7.68	87.8	7.2	-	-
	Rank	4	28	2	-	-
UK	Value	2.62	3.5	2.1	99.5	6.8
	Rank	16	22	18	12	10
US	Value	5.28	2.2	2.4	140.1	4.9
	Rank	10	18	16	2	5