Annual Competitiveness Report 2008

Volume 1: Benchmarking Ireland's Performance

Forfás

National Competitiveness Council

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Introduction to the NCC

The National Competitiveness Council was established in 1997 as a Social Partnership body. It reports to An Taoiseach on key competitiveness issues facing the Irish economy, together with recommendations on policy actions required to enhance Ireland's competitive position.

Each year the NCC publishes the two-volume Annual Competitiveness Report.

- Volume One, *Benchmarking Ireland's Performance*, is a collection of statistical indicators of Ireland's competitiveness performance in relation to 17 other economies and the OECD or EU-15/Eurozone average.
- Volume Two, *Ireland's Competitiveness Challenge*, uses this information along with the latest research to outline the main challenges to Ireland's competitiveness and the policy responses required to meet them.

As part of its work, the NCC also publishes other papers on specific competitiveness issues.

This report is Volume 1, *Benchmarking Ireland's Performance*. This report analyses Ireland's competitiveness performance using 140 competitiveness indicators. These range from measures of the successes of past competitiveness, such as economic growth and quality of life, to the policy inputs that will drive future competitiveness, such as the education system and public spending on infrastructure. Drawing primarily on data from international sources (e.g. OECD, UN, Eurostat, etc.) this report benchmarks Ireland's performance, comparing and ranking it to that of our economic peer group and tracing its evolution over time.

The National Competitiveness Council hopes that this report will, as a reference document, stimulate further debate and discussion on the competitiveness challenges that face Ireland.

Our next publication, Volume 2: Ireland's Competitiveness Challenge, examines the challenges facing Ireland, and in particular our exporting sectors in more detail. It will highlight policy directions that will sustain Ireland's competitiveness.

Council Members

Dr Don Thornhill	Chairman
Mr Rory Ardagh	Telecom Property Holdings Limited
Mr Brendan Butler	Director of Strategy, Trade, EU and International Affairs, IBEC
Mr Donal Byrne	Chairman, Cadbury Schweppes Ireland Limited
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Mr Martin Cronin	Chief Executive Officer, Forfás
Mr Pat Delaney	Director of Sectors and Regions, IBEC
Ms Clare Dunne	Assistant Secretary, Department of Enterprise, Trade and Employment
Ms Annette Hughes	Director, DKM Economic Consultants
Mr William Prasifka	Chairperson, Competition Authority
Mr William Slattery	Executive Vice President and Head of European Offshore Domiciles, State Street International (Ireland) Limited
Mr Paul Sweeney	Economic Adviser, Irish Congress of Trade Unions
Mr John Travers	Consultant and Founding Chief Executive Officer, Forfás and Science Foundation Ireland
Prof Ferdinand von Prondzynski	President, Dublin City University

Council Advisers

Mr Paul Bates	Department of Arts, Sports and Tourism
Ms Mary Doyle	Department of the Taoiseach
Mr Mark Griffin	Department of Environment, Heritage, and Local Government
Mr Kevin McCarthy	Department of Education and Science
Mr Eamonn Molloy	Department of Communications, Energy and Natural Resources
Mr David Moloney	Department of Finance
Mr John Murphy	Department of Transport
Mr Liam Nellis	InterTrade Ireland

Research and Administration

Mr Adrian Devitt	Forfás
Ms Gráinne Greehy	Wilton Park House
Mr Eoghan O' Briain	Wilton Place
	Dublin 2
	Tel: 01 607 3000 Fax 01 607 3030
	Email: ncc@forfas.ie
	Web: www.competitiveness.ie

Foreword by the Taoiseach

In these difficult and uncertain times, it has never been more important to identify clearly those issues which are key to underpinning national competitiveness, and rebalancing economic activity to support sustainable, export-led growth.

To deal with the sharp deterioration in the public finances, the Government has chosen a direction based not on soft options, quick fixes or political expediency. The choices we make will determine whether we can maintain to the greatest possible extent the economic progress we have achieved in the last decade.

Put simply, the downturn in the economic climate means we have less money to meet growing public expenditure demands. We cannot borrow our way out of trouble or return to the days of punitive tax rates that stifled economic growth and resulted in high unemployment.

The Government will make the right decisions to ensure that we return to growth as soon as possible based on exporting goods and services, building on the many inherent strengths of the Irish economy. That is why we must continue to prioritise investment in our productive capacity, and to secure greater value for money across all areas of public spending, while supporting and protecting those most vulnerable to more difficult circumstances.

One of the clearer lessons of our recent history is the value of a shared assessment of changing challenges and opportunities, supported by a constructive, participatory and problem-solving approach to managing change.

The National Competitiveness Council is well positioned to contribute to our understanding of a rapidly changing global environment. I would like on behalf of my colleagues in Government to thank the Council for its important work at this difficult time, and am pleased to introduce Ireland's Annual Competitiveness Report 2008.

Brian Cowen, T.D.

Taoiseach

Chairman's Preface

Following many years of strong growth, we are now addressing a severe economic crisis. Irish businesses and citizens are facing into a period of economic transition and uncertainty. But this is not a time for pessimism. It is now time for us to get back to focusing on the policies that will enhance our economic competitiveness and provide a foundation for sustainable economic growth. As noted by An Taoiseach, we must implement actions and reforms to support our long term competitiveness. Paradoxically, times of economic difficulty are often times of opportunity — especially for policy reform.

As a small open economy, we have limited independence from global trends or shocks. This places a premium on sound, evidence-informed policies that support the competitiveness of firms based in Ireland. This report sets out priority recommendations for Government, which can restore competitiveness and position Ireland to take advantage of a global upswing in the future.

It is essential that Ireland develops a credible and widely supported programme to restore the sustainability of public finances. Continued investment to address infrastructural deficits is critical to improving the productive capacity and future growth potential of the economy — even in the context of a slow-down in current expenditure. It is vital to achieve balance between unpopular decisions on controlling current expenditure, broadening the tax base and introducing transparent user charges where appropriate, and to meet the challenge of delivering better public services with fewer resources.

This report sets out priorities for Government in order to restore our cost competitiveness — including exposing sheltered sectors of the economy to greater competition, controlling energy costs, balancing our renewables targets with affordability and removing barriers to private investment in waste management infrastructure. The decisions taken now will determine the future ability of Irish firms to compete on world markets. Positioning Ireland for economic recovery will involve meeting difficult challenges in diverse areas: from building on the strengths of our schools and teachers in an environment of fewer resources, to adapting our fuel mix to meet long-term targets of sustainability, to reconciling affordability with security of supply. Moving towards a lower carbon economy will require additional measures to reduce emissions, but also opens many avenues for new growth within the environmental goods and services area.

I would like to thank Council Members and the Advisors from the relevant government departments for their work on this document, and to acknowledge the Forfás Secretariat for the work that they have done in preparing material for consideration by the Council.

Don Thornhill
Chairman, National Competitiveness Council

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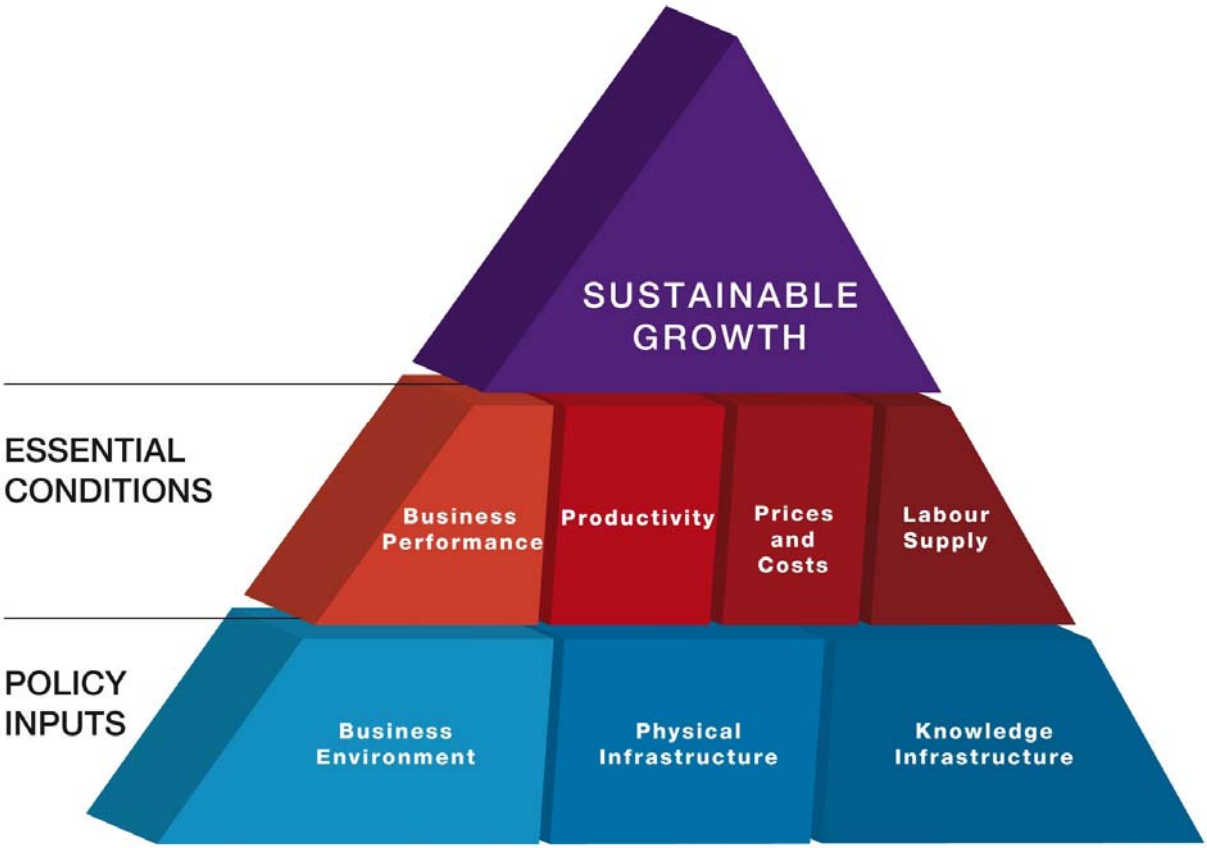
1 Overview of Ireland's Competitiveness



1. Overview of Ireland's Competitiveness

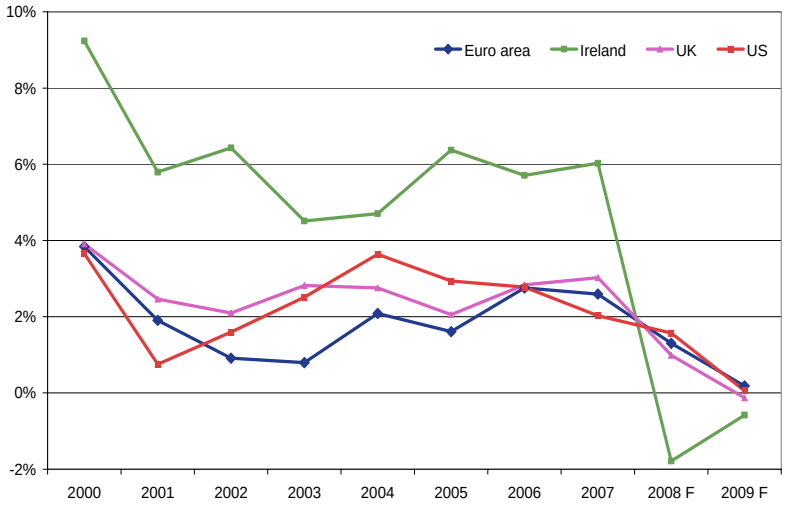
1.1 Introduction

The Irish economy is facing an extremely challenging macroeconomic environment. Following many years of strong growth, we are now in the throes of a severe crisis. The economy is contracting i.e. national income is declining. Difficult decisions are necessary to restore Ireland's international competitiveness and ensure that the economy is positioned for recovery. Sustainable growth must be based on growing Ireland's manufacturing and services export base, and policy must focus on providing a competitive operating environment for our key exporting sectors.

Following more than a decade of strong economic growth, Irish incomes are now above the EU–15 average (Fig. 2.01[1]). Growth in the numbers of people at work and rising productivity levels have driven significant improvements in Irish living standards and in broader measures of quality of life (Figs. 2.09-2.11).

However, the Irish economy is now facing a very challenging environment, both domestically and internationally. Combined with the international credit crunch, the slowdown in domestic sectors of the economy was inevitable as domestic private sector borrowing reached unsustainably high growth levels (Fig 4.40). Construction investment and activity is now falling rapidly. Economic growth in our major trading partners is slowing sharply. The US, UK, and Eurozone economies are now contracting. There are significant risks of a global recession with negative implications for export potential (Fig 1.01). While it is difficult in the current environment to forecast future growth rates, a consensus is emerging that we may be facing an extended period of weak or declining growth.

Figure 1.01 Annual Percentage Change in GDP, Constant Prices (2000-2009F)



Source: IMF World Economic Outlook, October 2008

Despite the sharp deterioration in economic conditions, Ireland retains a range of competitive strengths. Ireland continues to be a leading country in terms of the attraction of overseas investment and Ireland has significant strengths in a small number of internationally trading sectors (Fig. 3.02 and Fig. 3.09). While the construction sector is declining from a cyclical peak, there is

1 The figure numbers in brackets refer to the charts in chapters one, two, three and four.

some evidence that these internationally trading sectors have been performing better (Fig. 1.04). Ireland's trade performance, particularly in terms of services exports, improved in 2007 and remains relatively robust for the first half of 2008 (Fig. 1.05).

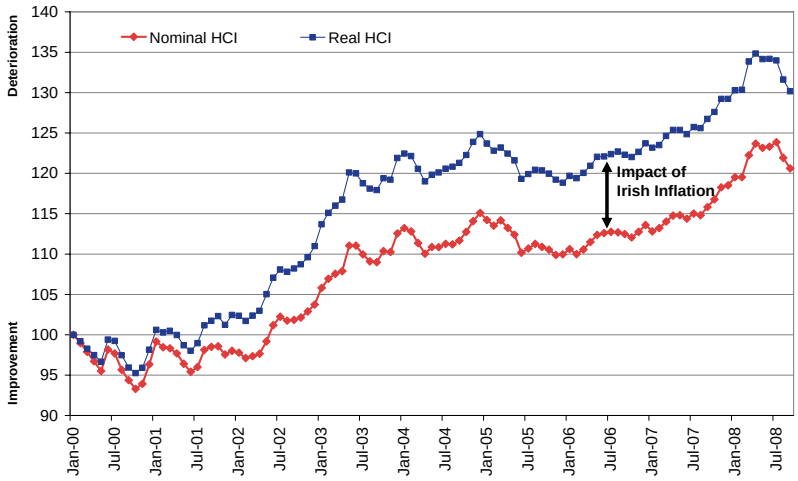
Medium term projections suggest that employment and productivity growth can continue to support further increases in Irish living standards. The current challenge is to ensure that the Irish economy is sufficiently competitive to enable internationally trading sectors to support future increases in Irish living standards. The primary focus of this report is to provide an evidence based assessment of Ireland's current international competitiveness. Section 1.2 outlines some of the messages from the report. Section 1.3 provides a more in-depth assessment of Ireland's competitive performance based on the NCC's competitiveness framework. Section 1.4 provides an overview of the methodology and details how to interpret the charts.

1.2 Key Messages and Challenges

1.2.1 Ireland's Cost Competitiveness Continues to Decline

Between January 2000 and September 2008, Ireland has experienced a 32 percent loss in international price competitiveness (real HCI), reflecting a combination of higher price inflation in Ireland (approximately one third of the loss) and an appreciation of the euro against the currencies of many of our trading partners (nominal HCI).

Figure 1.02 Price Competitiveness Indicator for Ireland (Harmonised Competitiveness Indicator)



Source: Central Bank of Ireland, 2008

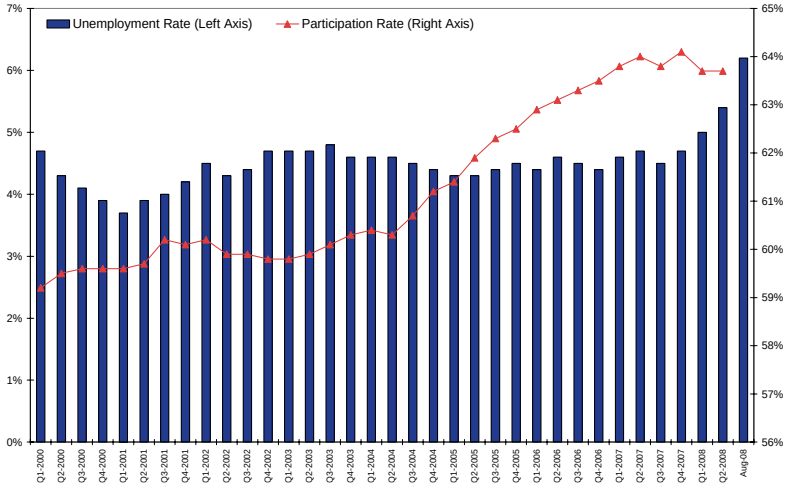
The costs of running a business in Ireland have increased significantly, driven by the high costs of property, utilities and domestically traded services (Figs. 3.35-3.46). In terms of consumer prices, Ireland is now both an expensive country (second highest in the EU) and one where prices have risen faster than in most other EU countries (Fig. 3.22 and Fig. 3.23).

The dramatic slowdown in economic growth should lead to a moderation in inflation in Ireland and internationally. To date, we have seen significant falls in the costs of property and construction in Ireland. However, our high dependence on imported fuels (Fig. 4.34), higher food costs and concerns over the lack of competition in domestic markets (Figs. 4.12-4.15) suggests that inflationary risks remain higher in Ireland than in key trading partners.

1.2.2 Maintaining Strong Employment Growth is becoming More Challenging

Ireland has made significant progress in terms of raising living standards and improving quality of life across the board. Economic growth has reversed trends in net migration and addressed the deeply embedded challenge of long-term unemployment. Although unemployment is still firmly below the Eurozone average, the trends of recent months are of deep concern (Fig. 1.03, Fig. 3.57, and Fig. 3.58).

Figure 1.03 Participation and Unemployment Rate (%), 2000-2008 Q2



Source: CSO, QNHS Q2, 2008, OECD.Stat, Standardised Unemployment Rate

This report highlights slower growth in Irish employment numbers and illustrates that employment growth in recent years has been dependent on the public sector and construction (Fig. 3.52). It is also notable that the unemployment rate is rising quickly with CSO statistics showing a sharp fall of 17,800 in construction employment between the first two quarters of 2008 alone (6.45 percent of total employment in the sector)[2]. The ESRI forecast that Irish unemployment will reach eight percent by the end of 2009 and that net outward migration will resume, driven by foreign nationals leaving Ireland[3]. The ability of the labour market to respond adequately to changing circumstances is dependent on a range of issues including pay determination (Figs. 3.26-3.34), regulations (Figs. 4.16-4.18) and the availability and take-up of suitable (re)training courses (Fig. 4.56).

1.2.3 Maintaining Infrastructure Investment in the face of Declining Government Revenues will be Challenging

Strong economic growth has enabled a rapid increase in Government expenditure and investment (Fig. 4.24 and Fig. 4.26) in a range of areas critical to competitiveness and broader wellbeing, including education and skills, research and development, health and infrastructure. Ireland now faces harsh new fiscal priorities. Public finances are under serious pressure as the sharp slowdown in the economy is being reflected in deteriorating Government revenues and the rapid emergence of a substantial Government deficit which is forecasted to continued (Fig. 2.03). This report highlights that despite improvements (Fig. 4.30, 4.63 and 4.64), a range of areas will require significant ongoing attention (infrastructure, education, R&D, broadband etc.) and investment in the programmes in place to address these areas (e.g. NDP, SSTI, NSS).

2 CSO QNHS.
3 ERSI Quarterly Economic Commentary, Autumn 2008.

Despite progress, Ireland continues to perform poorly with respect to broadband – in particular the development of next generation connectivity (Fig. 4.37). The immediate issue from a competitiveness perspective is the limited range and speed of broadband services available, their higher cost, and limited progress towards the development of next generation networks.

Budget 2009 provides for substantial capital investment of 5.2 percent of GNP in multi-year envelopes across 2008-2012. With respect to investment in infrastructure, difficult decisions remain in terms of balancing taxation with user charges and borrowing, reducing costs through public sector reform and prioritising key projects that will protect our future competitiveness. The prioritisation of key projects (or parts of projects) will inevitably require the postponement of others.

1.2.4 Education and Training as Key Drivers of Future Competitiveness

Ireland's education system has played a key role in our economic transformation by equipping the Irish workforce with skills and qualifications that supported the growth of our internationally trading manufacturing and services sectors. Reforms and increases in investment as far back as the 1960s in second-level education and more recently in third-level institutions have provided a highly skilled pool of human resources that enabled Ireland to take full advantage of globalisation and new business opportunities. Average educational attainment in Ireland has increased steadily in the last two decades, with younger cohorts of the population as well qualified as their OECD counterparts (Fig. 4.52). Despite progress, older cohorts of Ireland's labour force remain less qualified than the OECD average and a relatively large share of the working age population (34%) has no more than lower secondary education (Fig. 4.42). Take up of life long learning remains below the EU average (Fig. 4.56). Ireland has the highest proportion of graduates in the fields of mathematics, science and computing as a percentage of total graduates in the EU-13 (Fig. 4.54). However, in Ireland science and computing graduates dominate this category, which means that Ireland is producing a limited supply of mathematics focused graduates. Expenditure per student is below the OECD average at all levels, and unlike other countries, early childhood education and care in Ireland is predominantly privately funded (Fig. 4.43 and Fig. 4.44).

1.2.5 Maintaining Flexibility

The Irish economy has changed dramatically in recent years in terms of the sectors, activities and skill levels which have enabled Ireland to catch up with more developed countries. This ability to change has been a key strength – supported by responsive Government, social partnership, growing educational attainment, a business-friendly regulatory and taxation environment and a sound fiscal position. The current recession is testing the economy's flexibility and resilience and has particular implications for the construction sector. With long-term demand for between 40,000 and 50,000 houses annually, it was inevitable that the construction boom would eventually end. OECD evidence highlights that Ireland has experienced the sharpest downturn in housing investment (-28%) in the year to quarter two 2008 and experienced the greatest fall in real house prices (-5.4% in

2007 Q4 year on year, Fig. 4.41) [4]. Our relatively young population will ensure a significant construction sector going forward. The moderation in the growth of private household debt and consequently property and house prices is welcome from a competitiveness perspective. This welcome adjustment in house prices will allow the construction sector to resume growth on a more sustainable basis. More generally, lower house and property costs will enhance the cost competitiveness of internationally trading firms.

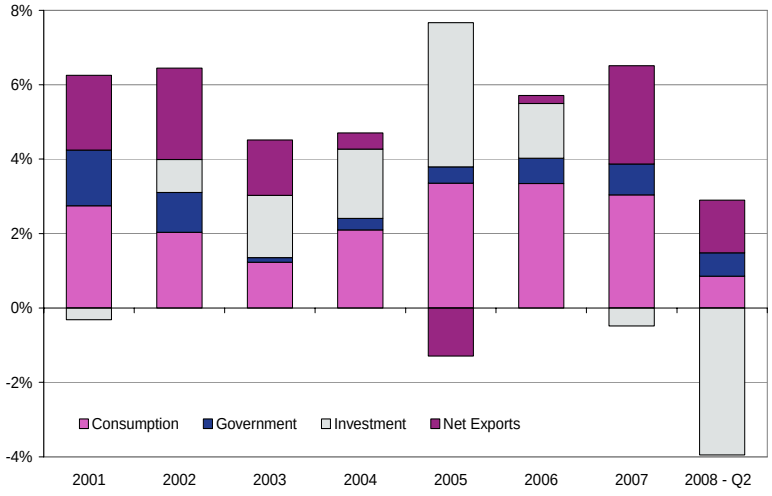
1.2.6 Ireland Faces Acute Energy and Environmental Challenges

This report highlights that Ireland is highly dependent on imported fossil fuels (Fig. 4.34) which presents a range of challenges. Irish business and consumers are exposed to volatile and generally increasing international prices for oil and gas with implications for Irish inflation. Our reliance on imported fossil fuels endangers our security of supply and raises the carbon intensity of the Irish economy. As a society, significant change will be required if we are to meet our Kyoto targets. Achieving our security of supply and environmental objectives in a fashion that does not further weaken our energy cost competitiveness is an acute challenge. With respect to electricity cost competitiveness, Ireland ranks as the second most expensive country in the EU-15 (Fig. 3.37).

1.2.7 Restoring Competitiveness is Critical to Boosting Export Performance

Following a number of years where internationally trading sectors have underperformed, net exports are currently playing a greater role in terms of driving Irish economic growth rates (Fig. 1.04). Despite some high profile closures, employment rates in foreign owned firms and internationally trading Irish firms remain relatively high and stable. Total employment in these firms amounted to 305,121 in 2007, an increase of 1,115 jobs on employment levels in 2006[5].

Figure 1.04 Contribution of Net Exports to Irish Economic Growth, 2001-2008 (First 6 Months)



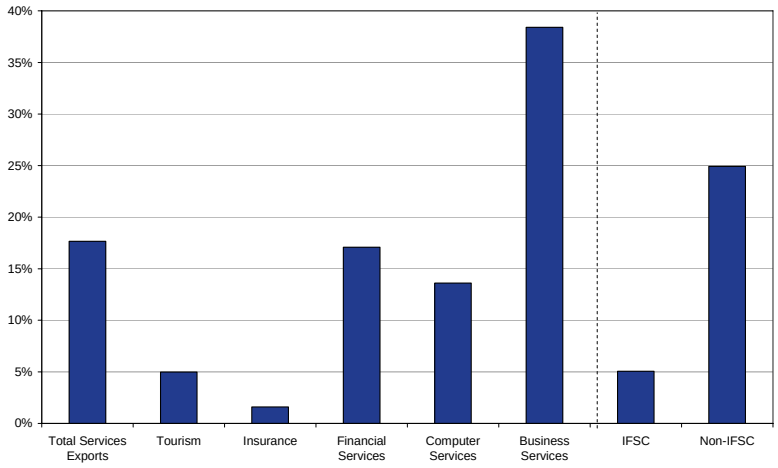
Source: Forfás calculations; CSO, Annual National Accounts

4 OECD Economic Outlook, No 83, June 2008. More recent national figures suggest much steeper price declines.
5 Forfás, Annual Employment Survey 2007.

Boosting Ireland's export performance is dependent on the competitiveness of a small number of sectors. Export statistics highlight that 89 percent of Irish exports are produced by foreign owned firms. Chemicals/pharmaceuticals, electrical and electronic equipment and software account for three-quarters of exports in these foreign owned sectors [6]. Ireland's services sector, which is dominated by software, financial services and business services, is performing particularly well and is expected to overtake merchandise exports in the next two years.

Many medium term predictions of positive economic growth for the Irish economy depend on the success and development of Ireland's export base. Transitioning the Irish economy back towards export-led growth will be challenging. The global financial crisis and the downturn in the global housing cycle are contributing to weak or negative economic growth in key trading partners.

Figure 1.05 Growth Rate in Services Exports by Key Sectors (2006-2007)



Source: CSO, Balance of Payments, March 2008

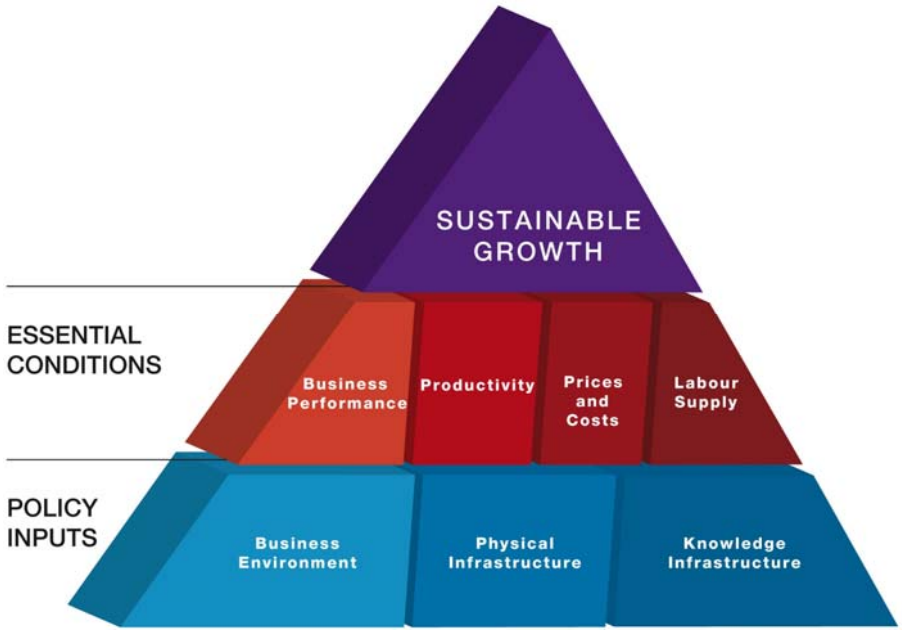
The continuing strength of the euro, increasing business costs and slower productivity growth may hamper economic growth. While perhaps less apparent, the services sector is exposed to many of the same competitiveness pressures as manufacturing. Restoring Ireland's international competitiveness is critical to maintaining and supporting higher living standards.

6 Forfás, Annual Business Survey of Economic Impact 2007.

1.3 Summary of the Report

Competitiveness refers to the ability of firms to compete in markets. Ireland's national competitiveness refers to the ability of the enterprise base in Ireland to compete in international markets. The NCC uses a *competitiveness pyramid* to outline the framework within which it assesses Ireland's competitiveness (Figure 1.06). At the top of the pyramid is sustainable growth in living standards – the fruit of past competitiveness success. Below this are the essential conditions for achieving competitiveness, including business performance (such as trade and investment), productivity, prices and costs and labour supply. These can be seen as the metrics of current competitiveness. Lastly, there are the policy inputs covering three pillars of future competitiveness, namely the business environment (taxation, regulation, finance and social capital), physical infrastructure and knowledge infrastructure. These are addressed in turn.

Figure 1.06 The NCC Competitiveness Pyramid



Source: National Competitiveness Council

1.3.1 Sustainable Growth

Competitiveness is not an end in itself, but is a means of achieving sustainable improvements in living standards and quality of life. This section benchmarks Ireland's performance regarding this desired outcome, under three headings: national income, quality of life and environmental sustainability.

Income

High and rising living standards are a key measure of the success of national competitiveness. Ireland has made significant progress in recent years. Irish output per capita (GDP) is now among the highest in the OECD while income per capita (GNP), a better measure of Irish living standards, is close to the OECD average (Fig. 2.01). However, the incidence of those at-risk-of-poverty after social transfers is greater than the EU-15 average (Fig. 2.07).

Irish economic growth rates in GDP terms have slowed but remained at the OECD average over the period 2004-2007 (Fig. 2.02). There has been a significant deterioration in Ireland's budget balance as a percentage of GDP which is forecasted to continued (Fig. 2.03). The economy is currently in recession and economic growth rate will be negative in 2008. The contribution of Ireland's exporting sectors to economic growth was weak during the 2004-2006 period, although net exports did increase in 2007 and again in the first half of 2008. This modest recovery has been largely driven by growth in services (Fig. 2.04).

Quality of Life

A key objective of competitiveness is to support a high quality of life, which is broader than material living standards. Ireland's recent performance in the *Human Development Index* has been very strong. The index covers indicators of economic, educational and health progress. Ireland ranked fifth in the latest report, an improvement of thirteen places since the 2000 report (Fig. 2.09). This improvement reflects strong economic growth and growing levels of educational attainment. In surveys of subjective happiness and wellbeing, Irish people frequently respond they are happier with their lives than people in many other countries (Fig. 2.11).

Environmental Sustainability

The essence of environmental sustainability is a stable relationship between human activities and the natural world, one that does not diminish the prospects for future generations to enjoy a quality of life at least as good as our own. Ireland's performance in relation to environmental sustainability remains mixed. A composite environmental performance index ranks Ireland 20th in the OECD (Fig. 2.12). Ireland is one of the highest carbon emitters on a per capita basis in the OECD. In addition, Ireland's share of energy coming from renewable sources is less than half that of the OECD average (Fig. 2.13), partially due to a lack of hydro opportunities. However, Ireland is one of the least energy intensive countries in the EU-15 per unit of output, due to the composition of our industrial base (Fig. 2.14). At a sectoral level, while most sectors reduced their share of final energy usage between 1990 and 2006, transport's share increased significantly from 28 percent to 42 percent - an increase of 167 percent (Fig. 2.15). Lastly, none of Ireland's municipal waste is converted into energy, compared to approximately half of the waste in Sweden and Denmark. Despite significant progress in increasing recycling, landfill, the least preferred waste solution from an environmental perspective, dominates in Ireland (Fig. 2.16).

1.3.2 Ireland's Competitiveness Performance (Essential Conditions)

Ireland's national competitiveness relies on certain key conditions to support the economic environment. This section summarises Ireland's performance under four headings:

- Business performance (investment and trade);
- Productivity and innovation;
- Prices and costs structure; and
- Labour supply.

Business Performance (investment and trade)

The performance of the business sector is critical to supporting high living standards and maintaining high employment levels in Ireland. Its strength is also essential to sustaining strong government finances and spending on public services.

- **Business Investment:** Domestic investment levels are among the highest in the EU (Fig. 3.01) and Ireland continues to attract a high number of foreign direct investment projects (Fig. 3.02 and Fig. 3.03) as overseas investors continue to earn a relatively high rate of return in Ireland (Fig. 3.04). Irish firms are also increasingly investing overseas with stocks of outward direct investment among the highest in the OECD (Fig. 3.05).
- **Trade:** Ireland continues to be one of the most open economies in the OECD in terms of our trade performance. However, growth in total exports (goods and services) was relatively weak between 2001 and 2007 while growth elsewhere in the OECD accelerated (Fig. 3.07). Hungary, South Korea and Poland have achieved significant growth in export sales. Ireland's overall share of world trade is falling, driven by a steady fall in share of merchandise trade. Export growth did made a modest recovery during 2007. Ireland's share of services trade continues to increase (Fig. 3.08) driven by the strong performance of the software, financial services and business services sectors.

Productivity and Innovation

In the long run, a country's standard of living depends on its productivity performance. As innovation is a key driver of productivity, it is also assessed.

- **Productivity:** Ireland's productivity levels in terms of GDP are now on a par with some of the highest in the world. However, productivity levels in GNP terms, a more accurate measure, are below the OECD average (Fig. 3.10). Strong productivity growth rates are essential to supporting sustainable wage increases. Irish productivity growth performed poorly between 2004 and 2007 (Fig. 3.11). Productivity growth has lagged behind in a range of sectors across modern manufacturing and traditional manufacturing, as well as in mining and telecommunications (Figs. 3.12-3.16). Although public sector productivity is difficult to measure, it appears that Ireland performs relatively well in relation to the main functions of the public sector by international standards (Fig. 3.17).
- **Innovation:** More Irish firms state they are engaged in innovation (the creation of new products, services, or processes) than the EU-15 average, although this masks a significant gap between manufacturing and services (Fig. 3.18). However, a relatively modest percentage of turnover comes from innovative products, compared to leading countries (Fig. 3.19).

Prices and Costs

The cost environment within the economy is an important determinant of competitiveness. This section examines the overall level and inflation in Ireland's prices and business costs.

- **General Prices:** In terms of general consumer price levels, Ireland is among the most expensive locations benchmarked and has experienced inflation rates that are among the highest in the EU-15 (Fig. 3.22). High Irish inflation is driven by price increases in housing, utilities, education, health and catering (Fig. 3.23). Harmonised competitiveness indicators (which measure price competitiveness and are therefore of greater relevance to Irish exporters) illustrate that Ireland's price competitiveness has deteriorated in both real and nominal terms since 2000 (Fig. 3.25).
- **Pay Costs:** Various unit labour cost ratios (the ratio of changes in productivity to earnings) show little change for the manufacturing sector over the 2000-2007 period (Figs. 3.26 and 3.29). The indicators suggest that wages in internationally trading sectors have grown relatively slowly due to pressures from international competition (Fig. 3.26 and 3.29). However, from 2001-2008 Q2, economy-wide labour costs have increased by 50 percent more than the EU-15 average (Fig. 3.28). In particular, Irish wage inflation, grew by more than double the Eurozone average in construction and communications between Q2 2004 and Q2 2008 (Fig. 3.29).
- **Other Costs:** Key non-pay costs in Ireland compare poorly with other countries. These include property costs (both purchase and rental), utilities costs (electricity, waste, mobile communications costs) and a range of domestic services, such as accountancy, information technology and legal services fees (Figs. 3.35-3.44). Childcare costs in Ireland are also amongst the highest in the comparator group (Fig. 3.46). Within Ireland, Dublin is particularly expensive across most cost types.

Labour Supply

- Growth in labour supply has played a key role in Ireland's economic development over the past decade. Ireland's labour force has grown strongly, driven by both natural increases in the Irish-born population and inward migration (Fig 3.48, 3.54 and 3.55). The stock of foreign labour as a percentage of the total labour force is above the OECD average (Fig. 3.55). Despite these increases, participation rates, particularly for women, remain below leading OECD countries (Fig. 3.56). Women with children have a low participation rate by OECD standards, potentially due to the high cost of childcare (Fig. 3.46). While Ireland's overall demographic position is among the healthiest in the OECD, Ireland will also face an ageing population into the medium term (Fig. 3.59).
- In the past decade, employment growth in Ireland has been exceptionally strong. However the bulk of new jobs between 2000 and 2008 Q2 were created in public and private sector health and education (30 percent) and in construction (22 percent); while manufacturing and agriculture lost jobs over the same period (Fig. 3.51 and Fig. 3.52). Unemployment rates are close to other OECD economies in Q2 2008, and regional variance in the unemployment rate remains relatively small (Fig. 3.57 and Fig. 3.58). Prospects for employment growth are significantly weaker for 2009, with significant negative implications for future unemployment.

1.33 Drivers of Future Competitiveness (Policy Inputs)

Ireland's future competitiveness will depend heavily on decisions made today in key policy areas that affect Ireland's business environment (taxation, regulation, finance and social capital), physical infrastructure and knowledge infrastructure.

Business Environment

The business environment can have a significant impact on a country's economic performance and competitiveness. Key components of the business environment include taxation, regulation and competition, labour market regulations, finance and social capital.

- **Taxation:** Overall, tax revenues in Ireland as a proportion of income (GNP) are above the OECD average (Fig. 4.01). Taxes on both capital (profits) and labour (wages) are relatively low in Ireland (Figs. 4.03-4.05). Indirect taxation rates are amongst the highest in the OECD (Fig. 4.06), which influences consumer prices and the competitiveness of tourism. Tax revenues from property are in line with the OECD average (Fig. 4.07). As these revenues come from taxes on transactions rather than taxes on assets the recent slowdown of activity in the property market is having a dramatic effect on property tax revenues. Unlike some other countries, Ireland does not tax pollution directly (Fig. 4.08).
- **Regulation and Competition:** Both overall regulatory levels and regulatory impediments to product market competition in Ireland are perceived to be lower than the OECD average (Fig. 4.09 and Fig. 4.16). The financial and administrative costs of starting a business in Ireland are low compared to other countries (Fig. 4.10). In contrast, the financial and administrative costs of registering a property in Ireland are relatively high (Fig. 4.11). While legislation on domestic competition is perceived to be relatively efficient, incumbents still dominate in certain markets - particularly in electricity and communications – although the market shares of incumbents have decreased in recent years (Figs. 4.12-4.14).
- **Labour Market:** According to executives' opinions, labour market regulations in Ireland are not believed to have a significant impact upon business activities. Most countries, including Ireland, have experienced increased labour market regulations since 2000 (Fig. 4.16). The employment framework in Ireland is considered less rigid than the OECD average (Fig. 4.17). The minimum wage in Ireland is significantly higher than the majority of OECD countries (Fig. 4.18).
- **Finance:** Overall, access to capital in Ireland was not perceived to be a significant barrier to enterprise (Fig. 4.19). However, the data does not capture the effects of the recent international credit crunch, which is having a detrimental effect on access to and cost of capital for Irish firms. Private equity investment is not as mature in Ireland as it is in other countries (Fig. 4.20).
- **Social Capital:** The public's trust in political and legal institutions, while falling, still compares favourably with other countries (Fig. 4.21 and Fig. 4.22). Membership of civil society organisations increased in Ireland between 1990 and 2000 (Fig. 4.23).

Physical and Economic Infrastructure

The level of infrastructure in a country affects competitiveness in a number of ways. Well developed infrastructure can reduce traffic congestion and costs, and increase productivity and labour mobility.

- **Investment Levels:** Through successive National Development Plans, Ireland's investment rate - the rate at which new public capital stock is formed - is among the highest in the EU (Fig. 4.26). Ireland's public capital stock per person is now growing, reversing a steady decline to 1998 (Fig. 4.24). Despite tangible improvements in Ireland's infrastructure, key bottlenecks remain and quality rankings are relatively poor across a number of infrastructure types (Fig. 4.27).
- **Transport and Energy Infrastructure:** Ireland's road networks rank poorly internationally with peak speeds in Dublin well below most other cities surveyed (Fig. 4.28 and Fig. 4.29). Executive perceptions of the quality of Ireland's water transportation infrastructure also score poorly (Fig. 4.31). Perceptions regarding the quality of Ireland's air transportation have improved in recent years (Fig. 4.30). In energy, the perceptions of enterprise about the efficiency of energy infrastructure have weakened across many countries since 2002, including Ireland (Fig. 4.32). The indicators also highlight that Ireland is particularly dependent on imported and non-renewable forms of energy (Fig. 4.33 and Fig. 4.34).
- **Information and Communication Technology Infrastructure:** Ireland's investment in both information and communications technologies are below the EU-15 average and lags leading countries by some distance (Fig. 4.35). Despite progress, the penetration rate of broadband in both households and firms in Ireland is well below the EU average (Fig. 4.36). Ireland ranks 25th in the OECD in terms of its readiness to support next generation video and web services (Fig. 4.37). The immediate issue from a competitiveness perspective is the limited range and speed of broadband services available and their higher cost. At government level, the proportion of public services available online is below that of the EU-15 average (Fig. 4.38).
- **Housing:** Ireland has fewer houses per capita than the EU-15 average (Fig. 4.39). This gap is narrowing quickly as household completions per capita have been by far the highest in the EU in recent years. Completion rates have fallen from over 92,000 units in 2006 to an estimated 45,000 units in 2008, as investment has fallen sharply Housing completions are expected to fall to 25,000 units in 2009[7]. In relation to costs and debt, house prices have increased dramatically since the mid-1990s (Fig. 4.41). House price increases have subsided in the last 18 months (Fig. 4.41) and are now falling. Household borrowing, approximately four-fifths of which is for house purchases, almost doubled between 2004 and 2008-Q2. The average Irish person was almost €37,000 in debt by 2008-Q2 (Fig. 4.40). While the value of Irish housing stock (over €500 billion in 2007) significantly outweighs mortgage debt (€123.5 billion in 2008-Q2), a disproportionately large part of the debt is borne by recent entrants to the housing market. Growth in residential mortgage lending has halved in the 24 months to August 2008 and currently stands at 9 percent[8].

7 ESRI, Quarterly Economic Commentary, Autumn 2008
8 CBFSAI, 2008, Monthly Statistics, August.

Knowledge Infrastructure

Education, training, and research and development form key parts of a nation's infrastructure for generating knowledge. This section assesses Ireland's performance in this area.

Education: Average educational attainment in Ireland has increased dramatically in the last two decades, with younger cohorts of the population as well qualified as their OECD counterparts. Older cohorts of Ireland's labour force remain less qualified than the OECD average and a relatively large share of the working age population (34%) has no more than lower secondary education (Fig. 4.42). Expenditure per student is below the OECD average at all levels of education (Figs. 4.43 and 4.44).

- Pre-Primary and Primary: Without a developed pre-primary system, participation of three year olds in education in Ireland is low and well below the EU-15 average (Fig. 4.45). At primary level, while the average number of hours of tuition received by 9-11 year olds is among the highest in the OECD, the amount of time spent on the key skills of mathematics and science is 14th and 18th respectively out of 21 countries surveyed (Fig. 4.46).
- Secondary: The proportion of the 20-24 year old population with upper secondary education in Ireland is above the EU-15 average and now exceeds the Lisbon target of 85 percent (Fig. 4.47). In the latest OECD PISA study (2006), Irish 15 year olds ranked well among OECD countries in terms of reading literacy (5th) but less well in terms of scientific literacy (14th) and mathematical literacy (16th) (Fig. 4.50). Ireland's scientific literacy ranking has fallen five places since 2000. The number of computers per student and usage is also relatively low in Ireland compared to other EU countries (Fig. 4.51).
- Tertiary: Ireland's younger population is considerably better qualified than older cohorts, with 42 percent of the 25-34 age group possessing a third-level qualification. This compares very favourably with the OECD average of 34 percent (Fig. 4.52). It is difficult to measure the quality of third level institutions due to a range of issues. Based on available data, the performance of Irish third level institutions ranks behind the leading institutions overseas. Ireland's leading third-level institution ranks 49th in the world (Fig. 4.53). Ireland has the highest proportion of graduates in the fields of mathematics, science and computing as a percentage of total graduates in the EU-13 (Fig. 4.54). However, in Ireland science and computing graduates dominate this category, which means that Ireland is producing a limited supply of mathematics focused graduates.
- Life-Long Learning: Life-long learning is defined as all learning activity undertaken throughout life, with the aim of improving knowledge, skills and competencies. Adult participation in life-long learning remains relatively low in Ireland - below both the EU average and Lisbon target (Fig. 4.56).

Research and Development: Despite a large increase in actual expenditure on R&D, Ireland has made limited progress towards the target set by the Science Strategy (2.5 percent of GNP by 2013). Total R&D spending in Ireland increased from 1.26 percent of GNP in 2000 to 1.53 percent of GNP in 2006 (Fig. 4.57). This compares with an OECD average of 2.36 percent (2006). The number of researchers per 1000 total employment has grown from 5 per 1000 in 2000 to 6 per 1000 in 2006 (Fig. 4.58). Despite strong growth rates in expenditure, business R&D as a percentage of economic activity has remained relatively static over the past decade (Fig. 4.59). Most business expenditure on R&D in Ireland is undertaken by foreign-owned companies (Fig. 4.61). In terms of the outputs from R&D, triadic patents granted per million of population in Ireland remain below the OECD average (Fig. 4.62).

1.4 Methodology and How to Read This Report

Methodology

The rest of this report is divided into three main sections, sustainable growth (chapter 2), essential conditions for competitiveness (chapter 3) and policy inputs (chapter 4), which correspond to the various components of the competitiveness pyramid. This report uses internationally comparable metrics, with the OECD, the EU, the UN and the WTO, as the sources for the majority of indicators. Indicators from specialist international competitiveness bodies (e.g. from the WEF's Global Competitiveness Report and the IMD's World Competitiveness Yearbook) are also used. Where further depth is of benefit, national sources such as the Central Bank, the CSO, the ESRI and Forfás are used.

Ireland's performance is benchmarked against 17 other countries. Countries have been chosen to provide a mix of Eurozone members (Finland, France, Germany, Italy, the Netherlands and Spain), other non-Eurozone European countries (Denmark, Sweden, Switzerland and the UK), and two newer EU member states (Hungary and Poland). Five non-European countries (Japan, South Korea, New Zealand, Singapore and the US), who are global leaders or are of a similar size or pace of development to Ireland, are also included. This allows for a detailed comparison between Ireland and many of its closest trading partners and competitors. Ireland is also compared to a relevant peer group average, the OECD-28, EU-15 or Eurozone average where possible or else compared to as wide a group of countries as possible[9]. Averages are weighted by each country's population or GDP average where relevant.

9 The OECD is the preferred comparator group. However, in some cases depending on data availability, rankings are provided relative to the group of countries shown or to the EU. Where the sample is incomplete for the comparator group due to data availability, the countries omitted are detailed in the footnotes. OECD rankings and averages are based on a maximum of 28 countries. Turkey and Mexico are not included in the analysis, in part due to how their size and income levels affect averages and in part due to data availability. These 28 countries are as follows: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Spain, Sweden, Switzerland, UK and the US.

Benchmarking competitiveness is useful - it informs the policymaking process and raises awareness of the importance of continuing national competitiveness to Ireland's wellbeing. Nonetheless, there are limitations to benchmarking:

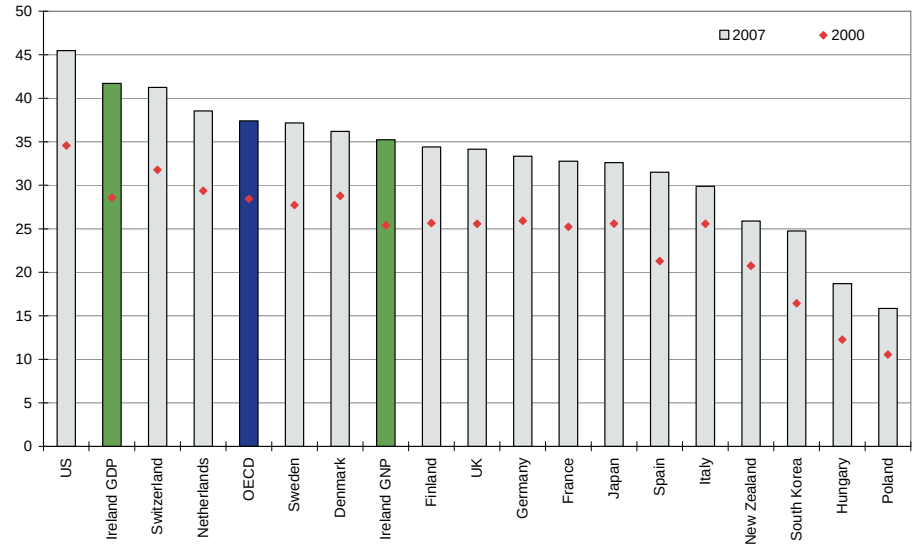
- While every effort is made to ensure timeliness of the data, there is a natural lag in collating comparable official statistics across the selected countries. There are also factors that are difficult to benchmark (e.g. the benefit of being in the GMT time zone or of speaking English fluently).
- Secondly, given the different historical contexts and economic, political and social goals of various countries, and their differing physical geographies and resource endowments, it is not realistic or even desirable for any country to seek to outperform other countries on all measures. There are no generic strategies to achieve national competitiveness.
- Finally, it is important to note that trade and investment between countries is not a zero-sum game; economic advances by other countries can, in aggregate terms, lead to improvements in living standards for the Irish population.

Interpretation of the Charts

We have endeavoured to ensure that all charts are self-explanatory. However, with reference to the sample chart in figure 1.07, the following points may be of value when interpreting the charts:

Figure 1.07: Sample Chart

Figure 2.01 Levels of GDP per capita at Current Prices ($000 PPPs), 2007[10]



In terms of GDP per capita, Ireland ranks as one of the wealthiest countries in the OECD and the EU-27. In terms of GNP per capita, a better measure of national income, Ireland ranks below the OECD average, despite significant growth in recent years.

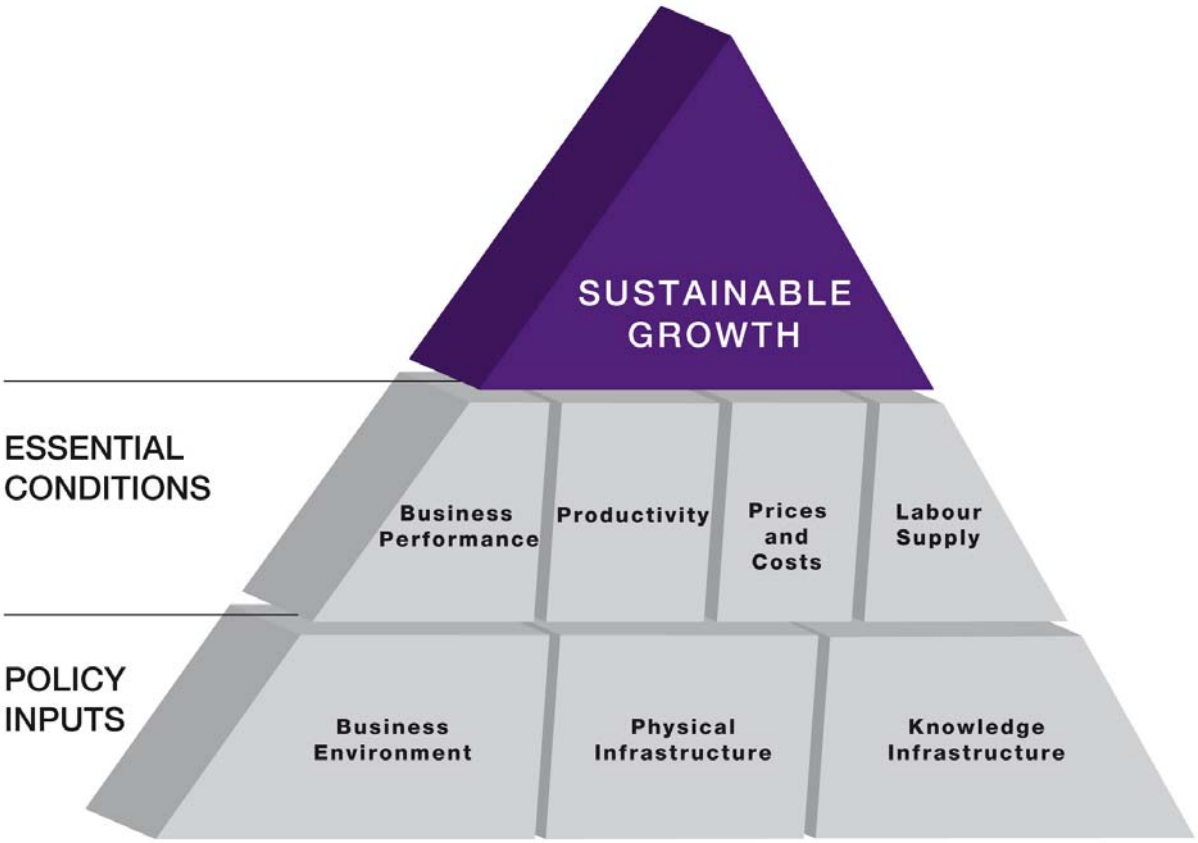
OECD 28 Ranking:
GDP: 4 (↑5)
GNP: 10 (↑8)

Source: OECD.Stat Extracts, National Accounts; IMD World Competitiveness Yearbook, 2008

10 Traffic-light colour determined based on Ireland's GNP ranking in the OECD-28.

- The best performing country is located at the left of the chart (in vertical bar charts) or at the top of the chart (in horizontal charts). In a limited number of charts, it is not possible to designate a best performer.
- In charts that assess output/income or other factors relative to these, Irish figures are provided in GDP and GNP terms. GDP (national output) is significantly greater than GNP (national income) in Ireland due to the repatriation of profits and royalty payments by multinational firms based here. Other countries are assessed in GDP terms.
- The text at the right of the chart provides additional information and commentary on Ireland's performance across each indicator.
- The majority of chart titles are given a traffic light colour, green, orange or red, in order to provide a general indication of Ireland's performance. Green indicates a strong performance (top third of OECD-28, EU-15, or comparator group), orange signals an average performance, while red means that Ireland is ranking within the bottom third of the OECD-28, EU-15, or comparator group. Certain indicators, which are not ranked, are also given a traffic light colour, in which case the colour is determined (somewhat subjectively) based on Ireland's performance over time.
- Rankings are provided where appropriate, but in a limited number of charts, it is not possible to designate a best performer - these chart titles are coloured grey.
  - In interpreting the ranking for each indicator, a low ranking (i.e. close to 1st) implies a healthy competitiveness position, while a high ranking implies an uncompetitive position.
  - Changes in rankings refer to the change in Ireland's position, generally since 2000. Exceptions to this base year, due to data availability, are highlighted in footnotes.
  - (↑) refers to an improvement in Ireland's competitive position, so ↑4 means an improvement of four places in Ireland's ranking. (--) means that there has been no change in Ireland's ranking, while (↓) refers to a fall in ranking.
- Summary charts are also placed at the start of each major section. They follow the same principles as above with respect to rankings and the traffic light system.

2 Sustainable Growth



2. Sustainable Growth

Competitiveness is not an end in itself, but is a means of achieving sustainable improvements in living standards and quality of life. This section benchmarks Ireland's performance regarding this desired outcome, under three headings: national income, quality of life and environmental sustainability. Chart 2.A summarises the indicators that are benchmarked, and where relevant, the key changes in these indicators since 2000 or the nearest available year.

2.1 National Income

High and rising living standards are a key measure of the success of national competitiveness. The indicators in this section cover the level, growth and distribution of Ireland's national income.

Ireland has made significant progress in recent years. Irish output per capita (GDP) is now among the highest in the OECD while income per capita (GNP), a better measure of Irish living standards, is close to the OECD average (Fig. 2.01). However, the at-risk-of-poverty rate after social transfers in Ireland is greater than the EU-15 average (Fig. 2.07). Regional disparities have also increased marginally since 2000 (Fig. 2.08), while regional variance in unemployment rates remains relatively low (Fig. 3.58).

Irish economic growth rates in GDP terms have slowed since 2001-2004 but they remained at the OECD average rate in 2004-2007 (Fig. 2.02). There has been a significant deterioration in Ireland's budget balance as a percentage of GDP which is forecasted to continued (Fig. 2.03). Irish growth rates will be negative in 2008. The contribution of Ireland's exporting sectors to economic growth was weak during the 2004-2006 period, although net exports have increased in 2007 and the first half of 2008, driven mainly by growth in services exports (Fig. 2.04). The contribution of productivity to Irish economic growth has also been relatively strong during the 2001-2006 period (Fig. 2.06).

2.2 Quality of Life

A key objective of competitiveness is to support a high quality of life, which is broader than material living standards. To measure quality of life, the United Nation's Human Development Index is used, along with measures of life-happiness.

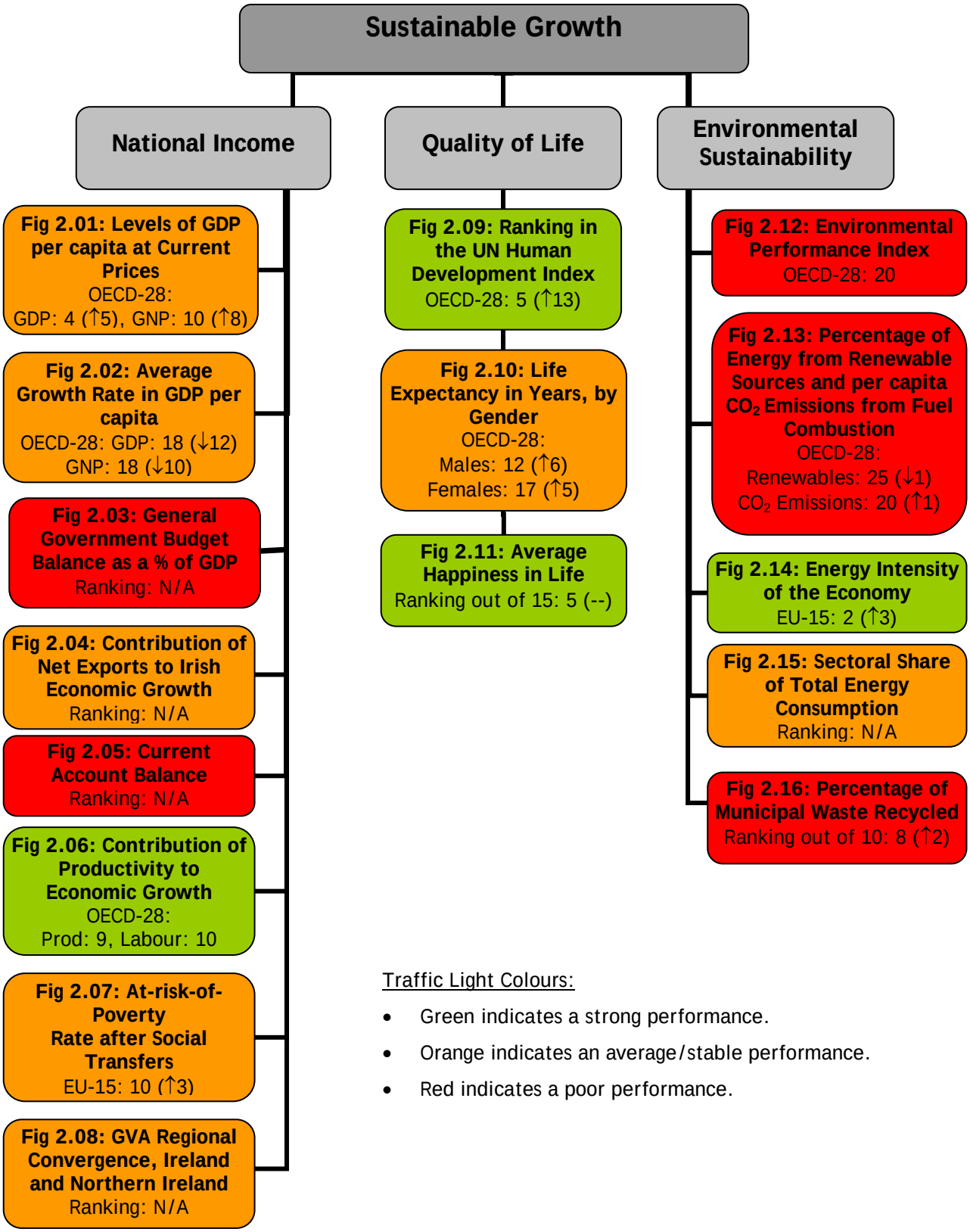
Ireland's recent performance in the Human Development Index has been very strong. The index covers indicators of economic, educational and health performance. Ireland ranked fifth in 2005, an improvement of 13 places since the 2000 report (Fig. 2.09), driven by strong economic growth and improvements in educational attainment. Life expectancy for both men and women in Ireland has also improved since 1990, and is now just above the OECD average (Fig. 2.10). Finally, in response to survey questions, Irish people report that they are generally happier with their lives than people in many other countries (Fig. 2.11).

2.3 Environmental Sustainability

The essence of environmental sustainability is a stable relationship between human activities and the natural world, one that does not diminish the prospects for future generations to enjoy a quality of life at least as good as our own. This section examines Ireland's broad environmental performance and also focuses specifically on energy, carbon emissions and waste management.

Ireland's performance in relation to environmental sustainability remains mixed. The composite environmental performance index ranks Ireland 20th in the OECD (Fig. 2.12). Ireland clearly faces challenges. Ireland is one of the highest carbon emitters on a per capita basis in the OECD. In addition, Ireland's share of energy coming from renewable sources is less than half that of the OECD average (Fig. 2.13). However, Ireland is one of the least energy intensive countries in the EU-15 (Fig. 2.14). At a sectoral level, while most sectors reduced their share of final energy usage between 1990 and 2006, transport's share increased significantly from 28 percent to 42 percent - an increase of 167 percent (Fig. 2.15). Finally, none of Ireland's municipal waste is converted into energy, compared to approximately half of the waste in Sweden and Denmark. While waste recycling rates have increased significantly, landfill, the least preferred waste solution from an environmental perspective, dominates in Ireland (Fig. 2.16).

Chart 2.A

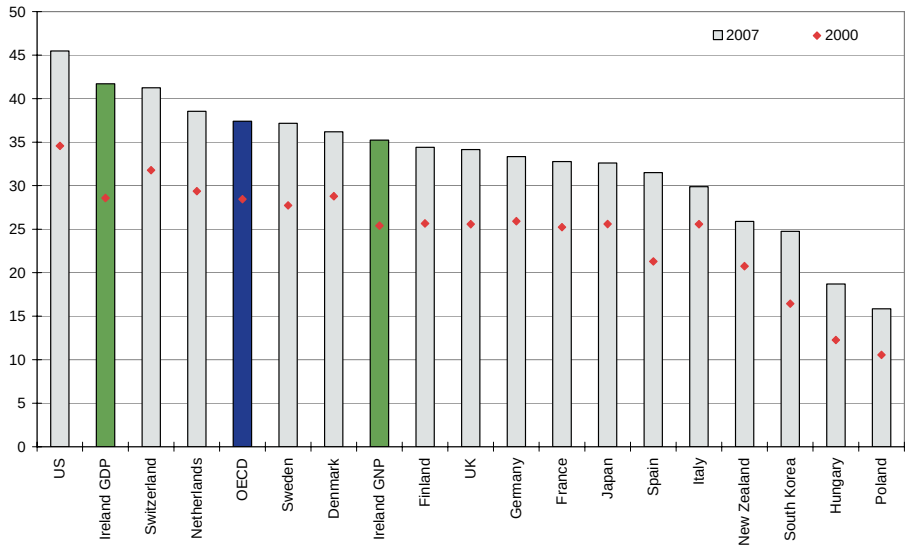


Traffic Light Colours:

- Green indicates a strong performance.
- Orange indicates an average/stable performance.
- Red indicates a poor performance.

2.1 National Income

Figure 2.01 Levels of GDP per capita at Current Prices ($000 PPPs), 2007[11]

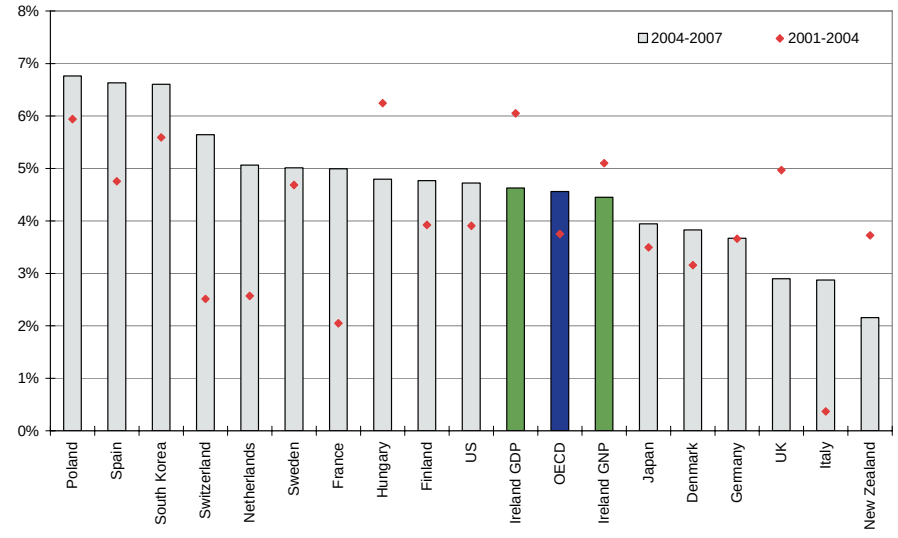


In terms of GDP per capita, Ireland ranks as one of the wealthiest countries in the OECD and the EU-27. In terms of GNP per capita, a better measure of national income, Ireland ranks below the OECD average, despite significant growth in recent years.

OECD 28 Ranking:
GDP: 4 (↑5)
GNP: 10 (↑8)

Source: OECD. Stat Extracts, National Accounts; IMD World Competitiveness Yearbook, 2008

Figure 2.02 Average Growth Rates in GDP per capita, 2001-2007



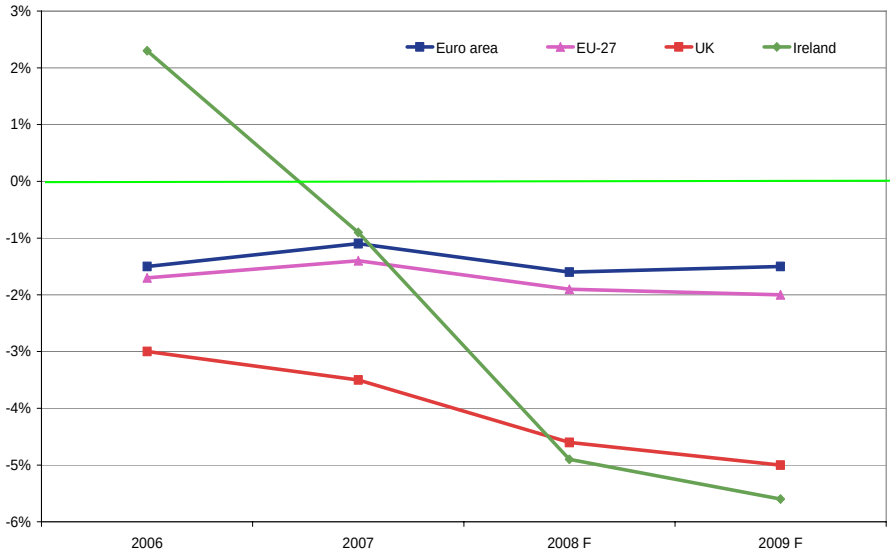
Irish economic growth rates (in both GNP and GDP terms) remained close to the OECD average, although Irish GDP and GNP growth are slowing. Average economic growth remained relatively constant throughout the 2001-2004 and 2004-2007 period. Economic growth in 2008-2009 will be negative.

OECD-28 Ranking[12]:
GDP: 18 (↓12)
GNP: 18 (↓10)

Source: OECD.Stat Extracts, National Accounts; IMD World Competitiveness Yearbook, 2008

11 Traffic-light colour determined based on Ireland's GNP ranking in the OECD-28.
12 Base years for ranking change is 2001-2004 compared to 2004-2007.

Figure 2.03 General Government Budget Balance as a % of GDP, 2006-2009F

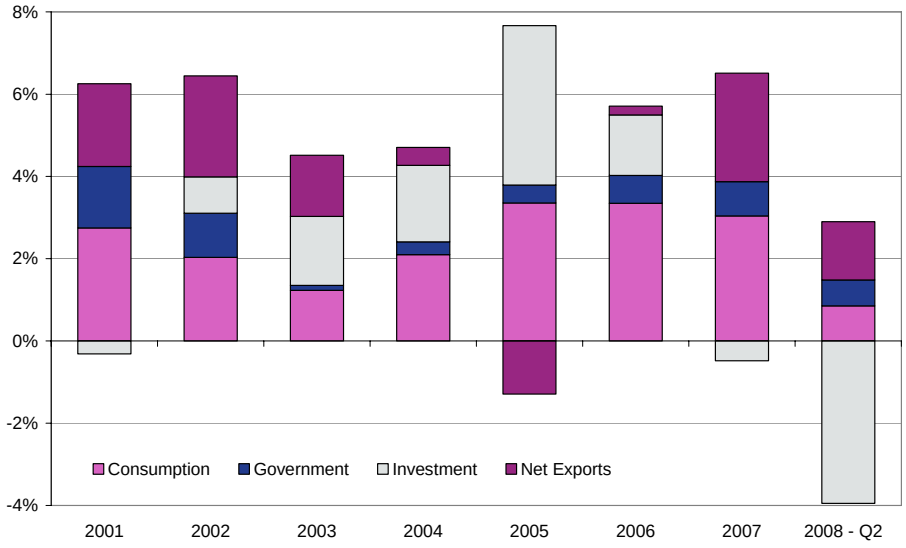


Many EU countries are facing pressure on their public finances. In particular, the chart illustrates a significant deterioration in Ireland's budget balance as a percentage of GDP and forecasts a continued deterioration. The Government has made efforts to curtail spending in the 2009 budget in an effort to maintain the stability of public finances.

Ranking: NA

Source: European Commission, Directorate-General for Economic and Financial Affairs, Economic Forecast Autumn 2008

Figure 2.04 Contribution of Net Exports to Irish Economic Growth, 2001-2008 (First 6 Months)

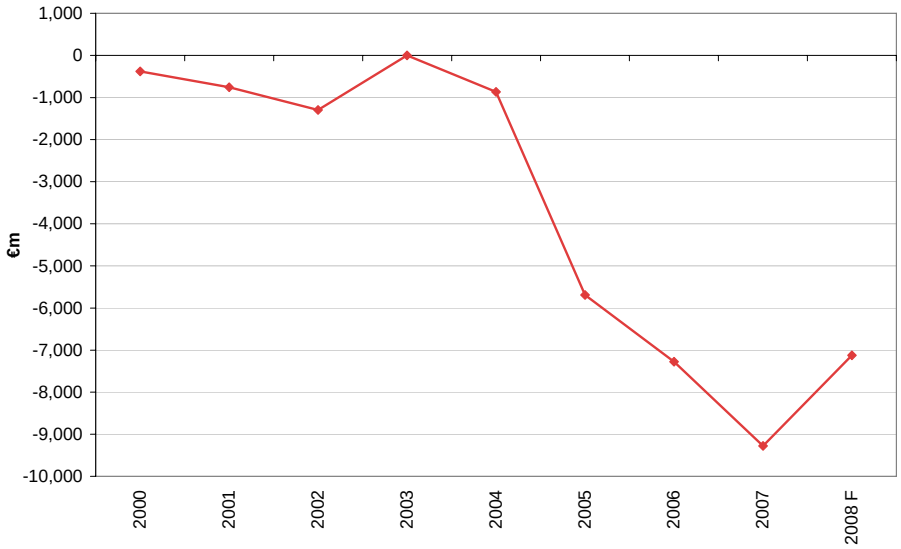


This chart examines the sources of recent Irish economic growth. The contribution of net exports to economic growth on a year-on-year basis was small or negative during the 2004-2006 period. Net exports have however increased in 2007 and the first half of 2008, driven mainly by growth in services. Investment has fallen in 2007 and 2008, due to a dramatic fall in housing and construction volumes.

Ranking: N/A

Source: Forfás Calculations; Central Statistics Office, Annual National Accounts

Figure 2.05 Current Account Balance, (€ Millions), 2000-2008F[13]

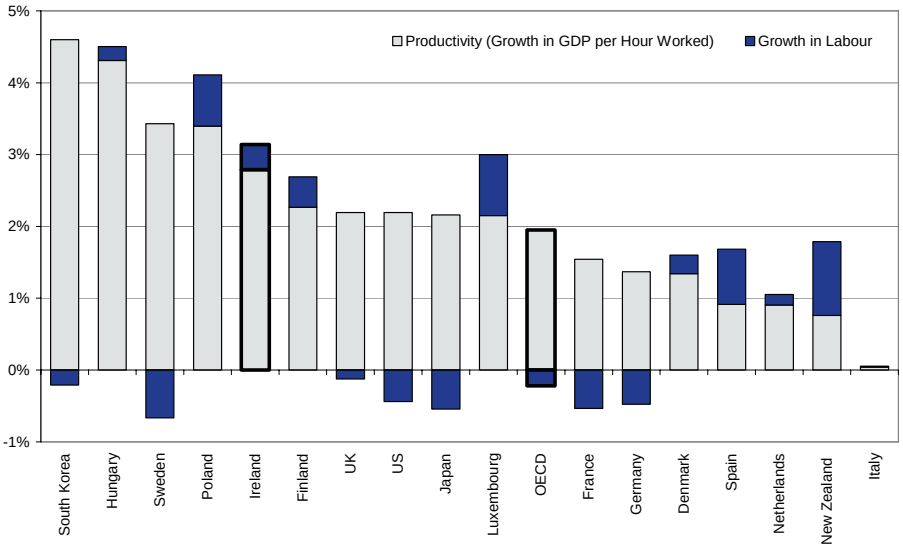


The current account balance measures national income less expenditure. Ireland is borrowing heavily internationally to pay for consumption and investment. Future exports and other (factor) income from abroad must be generated to pay for current borrowings. According to the ESRI, the deterioration in the current account is forecasted to narrow from -6.4% of GNP in 2007 to -4.7% in 2008 and -2.5% in 2009.

Ranking: N/A

Source: Forfás Calculations; Central Statistics Office, National Accounts; Economic & Social Research Institute, Quarterly Economic Commentary, Autumn 2008

Figure 2.06 Contribution of Productivity to Economic Growth, 2001-2006[14]



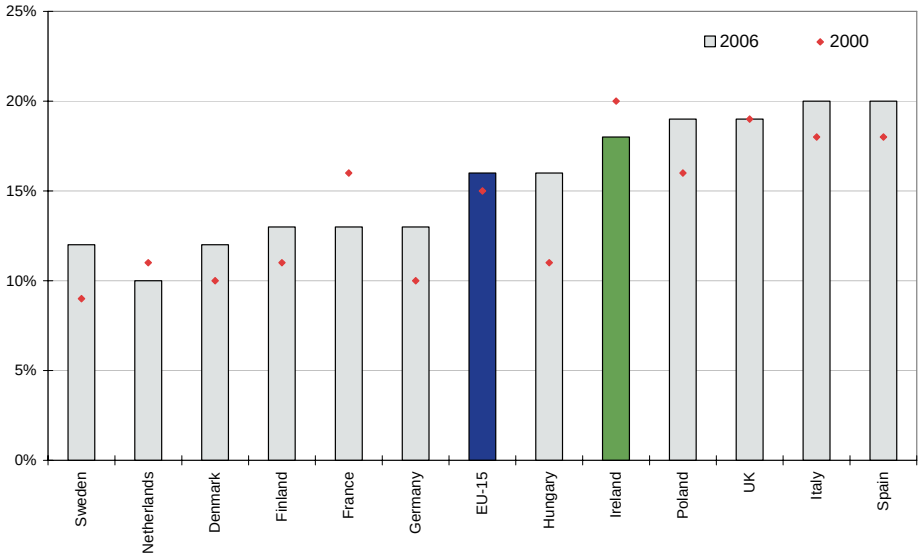
Growth in the economy has two main sources: labour productivity and labour growth (a combination of increased employment /participation and/or hours worked). Ireland's performance on both of these sources has been favourable during the 2001-2006 period.

OECD-28 Ranking:
Productivity: 9
Labour: 10

Source: OECD Factbook 2008: Economic, Environmental and Social Statistics

13 2008 forecast is from ESRI, Quarterly Economic Commentary, Autumn 2008.
14 Traffic-light colour determined based on Ireland's productivity ranking in the OECD-28.

Figure 2.07 At-risk-of-Poverty Rate after Social Transfers (as a % of population), 2006[15]

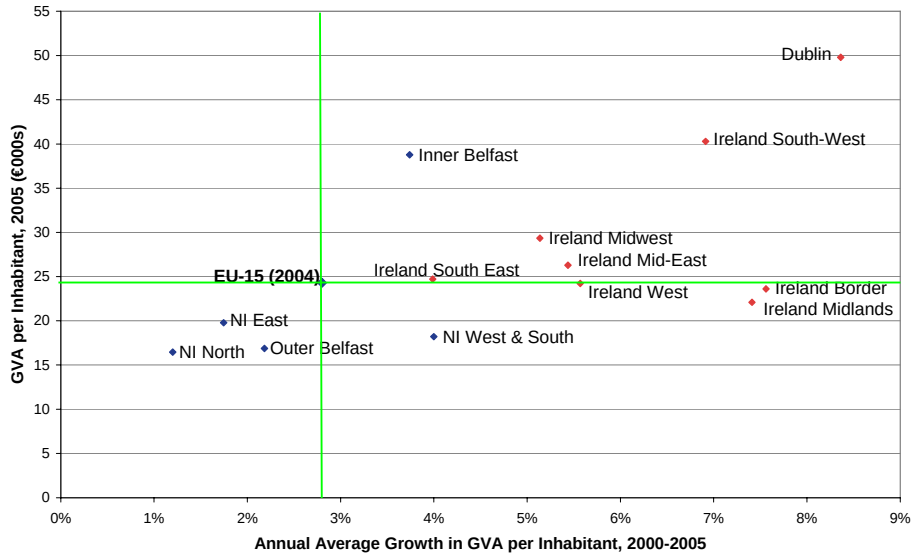


This indicator is a commonly accepted measure of income inequality. It indicates that despite significant improvements since 2000, Ireland's population is marginally more at-risk-of-poverty than the EU-15 average.

EU-15 Ranking[16]:
10 (↑3)

Source: Eurostat, Structural Indicators

Figure 2.08 GVA Regional Convergence, (Growth versus Wealth), Ireland and Northern Ireland 2000-2005



Convergence between regions would be represented in this diagram by a downward sloping trend line. Irish regions do not appear to be converging. However, all regions in the republic have experienced strong growth over the period.

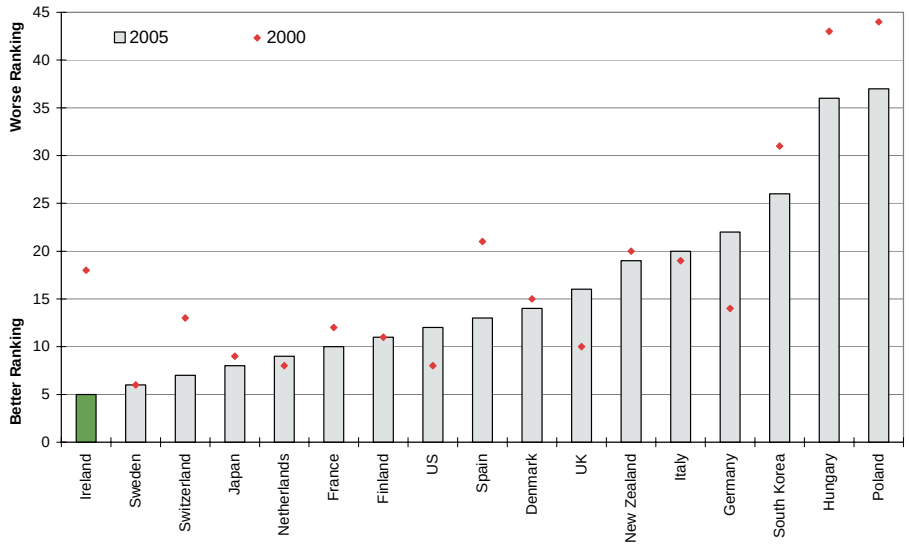
Ranking:
N/A

Source: Forfás calculations; Eurostat, General and Regional Indicators

15 The at-risk-of-poverty rate after social transfers measures the share of persons with an equivalised disposable income below the risk-of-poverty threshold, which is set at 60 percent of the national median equivalised disposable income (after social transfers).
16 EU-15 average for 2000 incorporates 2001 data for Denmark and Sweden.

2.2 Quality of Life

Figure 2.09 Ranking in the United Nation's Human Development Index, 2005

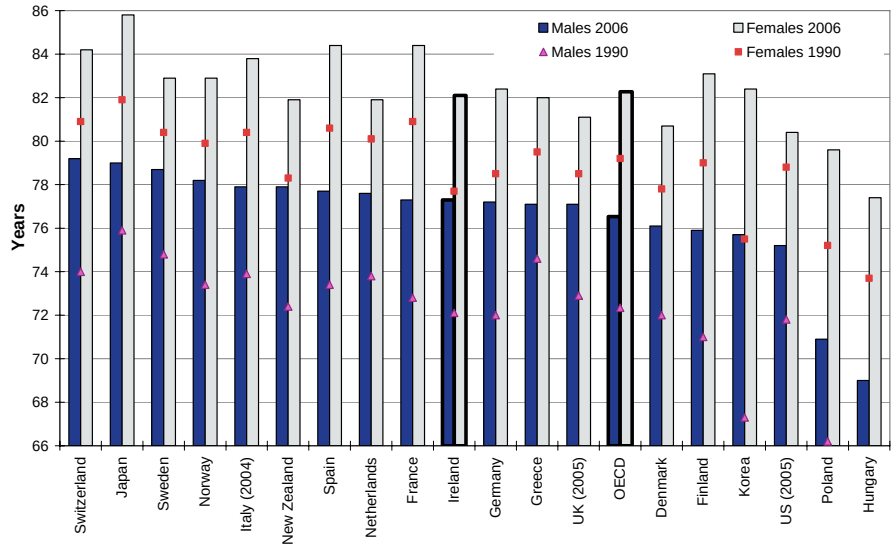


The UN's Human Development Index combines measures of education, health and income. Ireland's ranking has improved strongly since 2000 and is among the highest ranked countries (fifth overall in both the world and the OECD), indicating a high quality of life.

OECD-28 Ranking:
5 (↑13)

Source: UN Human Development Report, 2007/08

Figure 2.10 Life Expectancy in Years, by Gender, 2006 compared to 1990



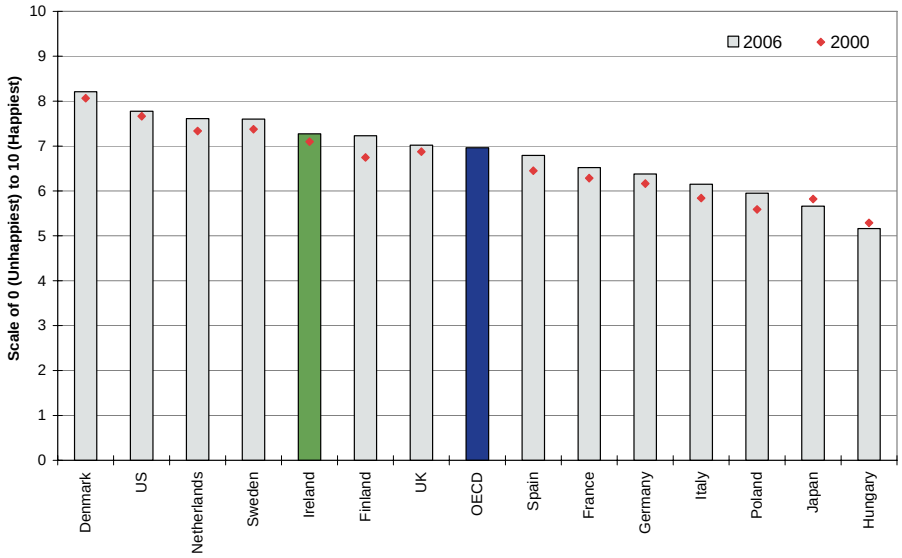
Life expectancy can be used as a simple indicator of health and wellbeing. Average life expectancy for Irish males and females was above 77 and 82 years respectively in 2006, an increase of five years over 1990 levels. Life expectancy in Ireland is now above the OECD average.

OECD-28 Ranking[17]:
Males: 12 (↑6)
Females: 17 (↑5)

Source: OECD.Stat Extracts, Health Data, 2008

17 Base year for ranking change is 1990. Rankings incorporate the latest available data for countries that are unavailable for 2006.

Figure 2.11 Average Happiness in Life, Scale (0-10) 2006



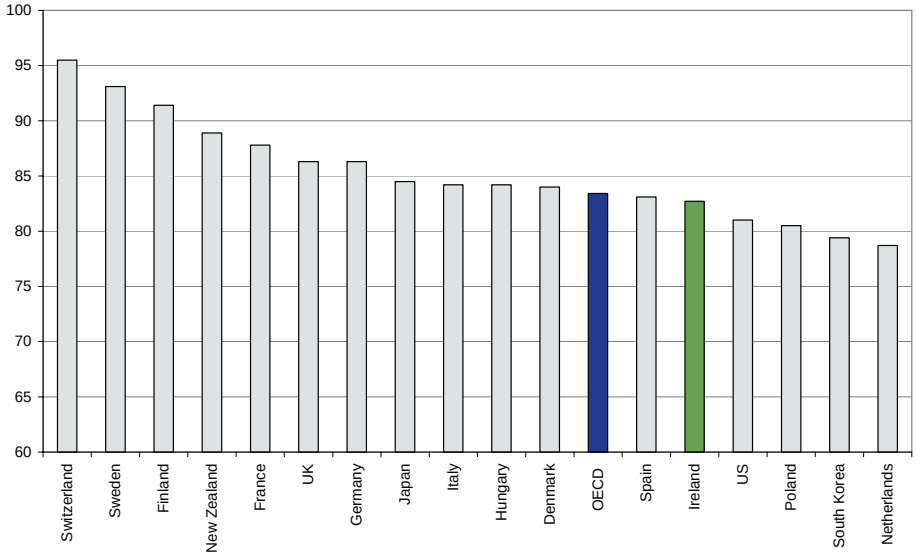
On measures of life happiness and satisfaction, Ireland performs relatively well among comparator countries. While these scores are somewhat subjective, the findings mirror those in other international surveys.

Group Ranking of 15: 5 (--)

Source: World Happiness Database, Erasmus University Rotterdam

2.3 Environmental Sustainability

Figure 2.12 Environmental Performance Index, Scale (0-100) 2008

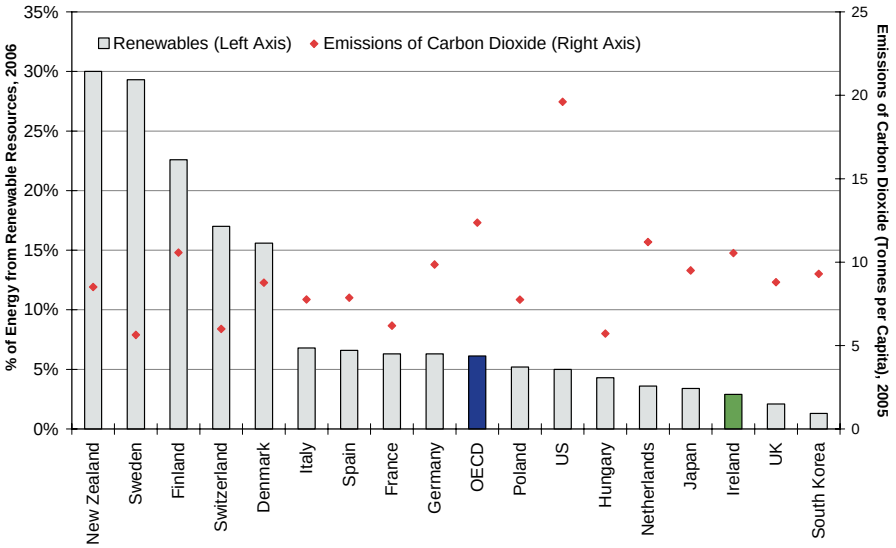


This index aggregates 25 environmental indicators relating to health, air quality, water resources, productive natural resources, biodiversity and habitat, sustainable energy and climate change. Ireland's performance is below the OECD average.

OECD-28 Ranking: 20

Source: Yale Centre for Environmental Law and Policy; Centre for International Earth Science Information Network (CIESIN), Columbia University, with the World Economic Forum, and Joint Research Centre (JRC) of the European Commission (2008)

Figure 2.13 Percentage of Energy from Renewable Sources (2006) and per capita Carbon Dixoide Emissions from Fuel Combustion (2005)

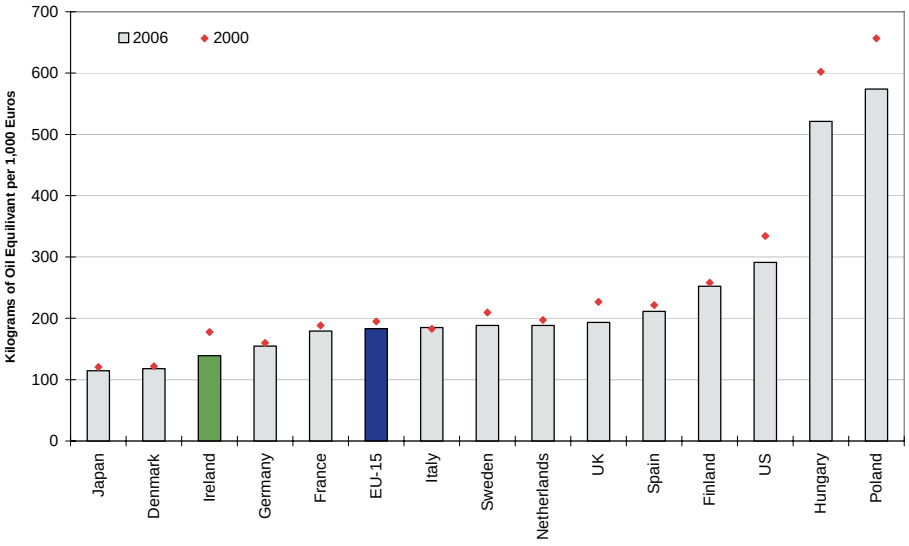


Ireland's share of energy derived from renewable resources (left axis) is less than half that of the OECD average, reflecting our high dependence on imported fossil fuels and lack of hydro opportunities. Ireland is among the highest carbon emitters in the OECD on a per capita basis (right axis).

OECD-28 Ranking:
Renewables (2006): 25 (↓1)
CO_2 Emissions (2005): 20 (↑1)

Source: OECD Factbook 2008, Economic, Environmental and Social Statistics; International Energy Agency, CO_2 Emissions from Fuel Combustion, 1975 -2005

Figure 2.14 Energy Intensity of the Economy, 2006

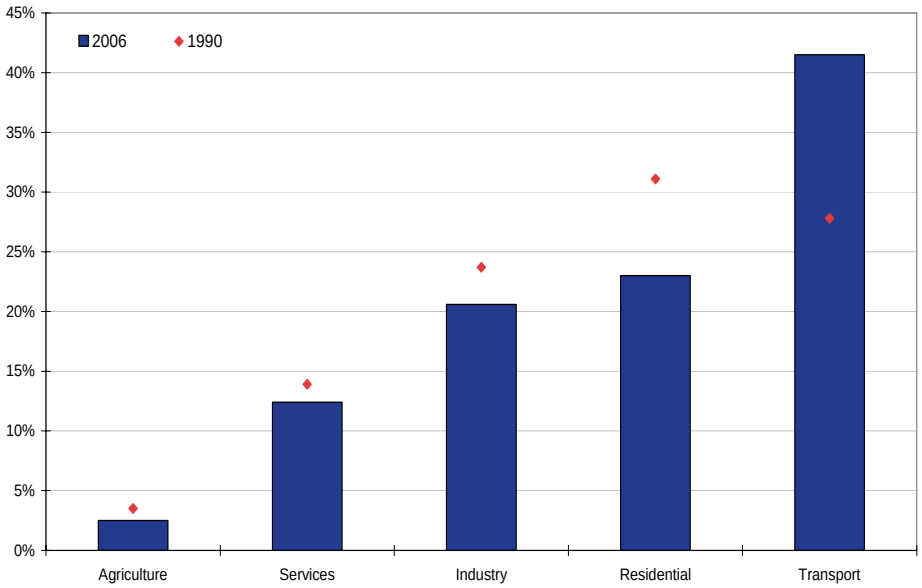


Energy intensity is measured as an economy's consumption of energy divided by GDP. Ireland is one of the least energy intensive countries in the EU-15. Historically, Ireland has not had a large presence of what are generally regarded as energy intensive industries (e.g. iron and steel). Ireland's reduction in energy intensity during 2000-2006 is a result of actual reductions and structural changes.

EU-15 Ranking:
2 (↑3)

Source: Eurostat, Environment and Energy

Figure 2.15 Sectoral Share of Total Energy Consumption, 2006 compared to 1990

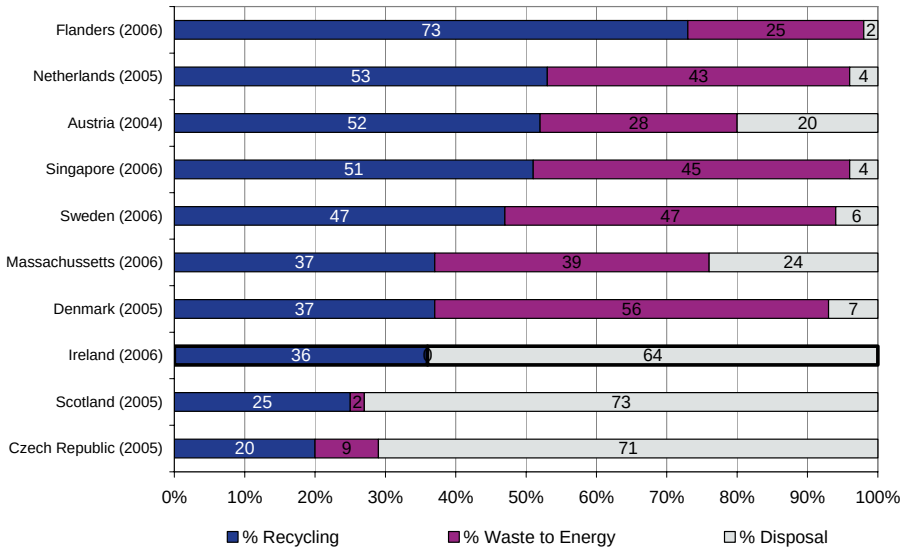


Total final energy consumption increased by 79 percent in volume terms during the 1990-2006 time period, increasing across all sectors. Agriculture, services, industry and residential usage of final energy consumption as a share of total consumption fell. Transport's share of final energy usage increased significantly from 28 percent to 42 percent between 1990 and 2006 (an increase of 167 percent).

Ranking:
N/A

Source: Sustainable Energy Ireland, Energy Policy Statistical Unit, Energy Statistics 1990-2006, 2007 Report

Figure 2.16 Percentage of Municipal Waste Recycled, Various Years



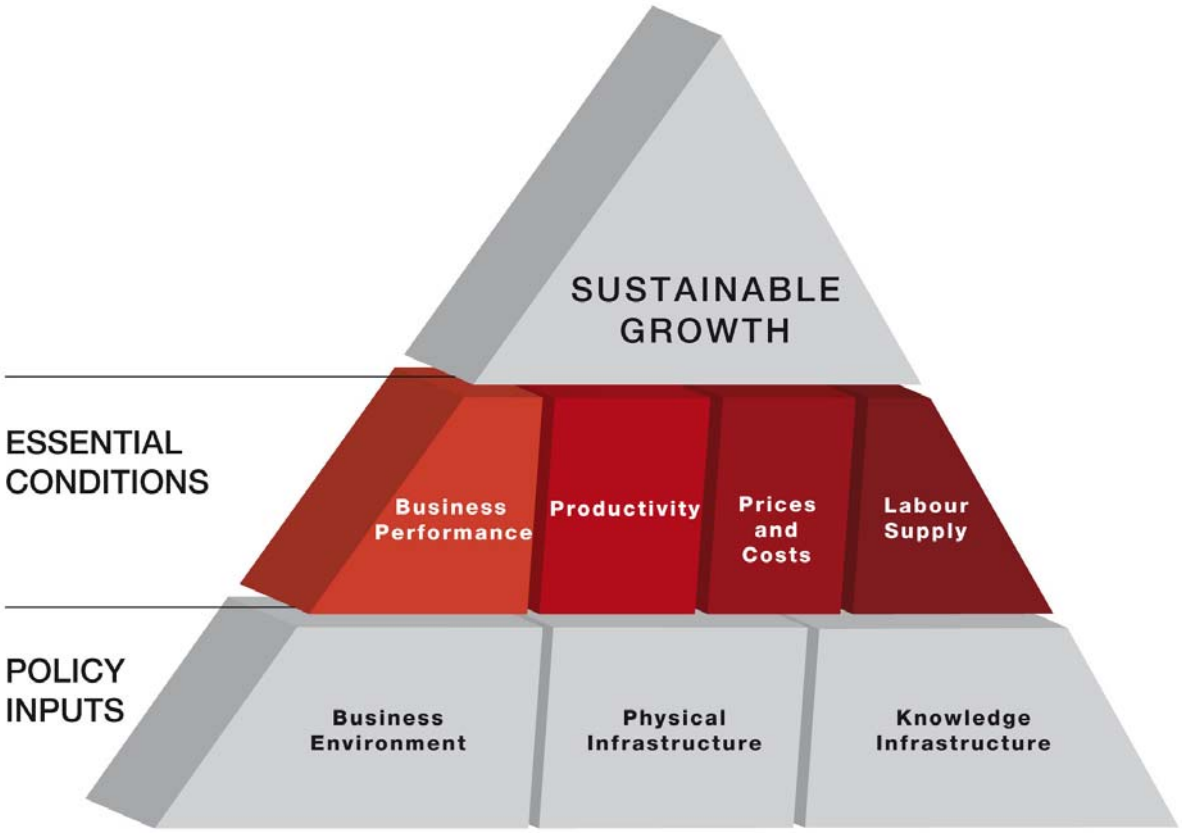
The rate of municipal waste recycling in Ireland continues to improve but Ireland still ranks eighth out of ten locations benchmarked in terms of our dependence on landfill. None of Ireland's municipal waste is converted into energy contrasting with Denmark, where 56 percent is converted to energy.

Ranking of 10[18]:
8 (↑2)

Source: Forfás, Waste Management Benchmarking Analysis and Policy Priorities, June 2008

18 Base year for ranking change is 2004 compared to 2005/06.

3 Essential Conditions



3. Essential Conditions

Ireland's national competitiveness relies on certain key conditions to support a conducive and sustainable economic environment. These intermediate indicators connect the government's policy inputs (indicators in chapter four) with improvements in sustainable growth (indicators in chapter two). This section benchmarks Ireland's performance regarding four essential conditions:

- The performance of Ireland's businesses in terms of investment and trade,
- Ireland's productivity and innovation performance,
- Ireland's prices and costs structure, and
- Labour supply.

3.1 Business Performance

The performance of the business sector is critical to income growth and maintaining high employment levels in Ireland. Its strength is also essential to sustaining strong government finances and spending on public services. This section assesses business performance in Ireland under the headings of investment and trade.

3.1.1 Business Investment in Enterprise

Ireland remains an investment-intensive country. Domestic investment levels are among the highest in the EU (Fig. 3.01). Despite a continued reduction in the levels of FDI relative to GDP and GNP since 2000, Ireland continues to attract high numbers of foreign direct investment projects (Fig. 3.02 and Fig. 3.03). Overseas investors continue to earn a relatively high rate of return in Ireland (Fig. 3.04). Irish firms are also increasingly investing overseas, with Irish stocks of outward direct investment among the highest in the OECD (Fig. 3.05).

3.1.2 Trade

Ireland continues to be one of the most open economies in the OECD in terms of our trade performance. While growth in total exports (goods and services) was relatively weak between 2001 and 2007, growth accelerated in the OECD during this period (Fig. 3.07). Hungary, South Korea and Poland have achieved significant growth in export sales. Ireland's overall share of world trade fell, driven by a steady fall in Ireland's share of merchandise trade. However, Irish growth rates recovered somewhat in 2007. In particular, Ireland's share of services trade continues to increase (Fig. 3.08), driven by computer, business and financial services. Ireland's manufacturing sectors are recording a mixed performance. While Ireland's share of the pharmaceutical and chemicals sectors has remained strong (Fig. 3.09), Ireland's share in office/ telecommunications equipment and machinery/transport equipment has fallen. It is also notable that Irish merchandise exports to non-EU and non-eurozone locations in 2007 were large relative to other EU-15 states (Fig. 3.06). The relevant indicators are detailed in Chart 3.A.

Chart 3.A

Business Performance

Business Investment in Enterprise

Fig 3.01: Gross Fixed Capital Formation by the Private Sector (as a % of GDP)
EU-15: GDP: 3 (↑1), GNP:2 (↑1)

Fig 3.02: Stock of Inward Direct Investment (FDI as % of GDP)
OECD-27:
GDP: 3 (↓1), GNP:3, (↓1)

Fig 3.03: Number of Greenfield Projects by Destination
OECD-28: 2 (↓1)

Fig 3.04: Rate of Return to US-Owned Companies on their Investment in Foreign Countries
EU-15: 2 (↓1)

Fig 3.05: Stock of Outward Direct Investment (ODI as a % of GDP)
OECD-27:
GDP: 7 (↑4), GNP: 6 (↑5),

Trade

Fig 3.06: Exports of Goods, intra-EU and extra-EU (as a % of GDP)
EU-15:
GDP: 4, GNP: 3

Fig 3.07: Annual Average Growth in Exports of Goods and Services
OECD 28: 18 (↓5)

Fig 3.08: Ireland's Share of World Trade: Overall, Merchandise and Services
Ranking: N/A

Fig 3.09: Ireland's Share of World Exports by Sector
Ranking: N/A

Chart 3.B

Productivity and Innovation

Productivity Performance

Fig 3.10: Per Hour Output
OECD 28:
GDP:9 (↑2), GNP:17 (↑1)

Fig 3.11: Annual Average Growth in Output per Hour Worked
OECD 28: GDP: 13 (↓5), GNP: 17 (↓4)

Fig 3.12: Annual Average Productivity Growth in Primary Sectors
Ranking: N/A

Fig 3.13: Annual Average Productivity Growth in Modern Manufacturing
Ranking: N/A

Fig 3.14: Annual Average Productivity Growth in Traditional Manufacturing
Ranking: N/A

Fig 3.15: Annual Average Productivity Growth in Tradable Services
Ranking: N/A

Fig 3.16: Annual Average Productivity Growth in Non-Tradable Services
Ranking: N/A

Fig 3.17: Productivity Performance and Expenditure in the Public Sector
Ranking of 14:
Productivity: 5

Innovation

Fig 3.18: Percentage of Firms Engaged in Innovative Activity
EU-15: 4

Fig 3.19: Percentage Turnover from Innovative Activity
EU-15: 9

Fig 3.20: Percentage of Innovative Firms Engaged in Co-operation
EU-15: 7

Fig 3.21: New Community Trademarks per Million of the Population
EU-15: 6 (↓3)

Traffic Light Colours:

- Green = a strong performance.
- Orange = an average/stable performance.
- Red = a poor performance.

3.2 Productivity and Innovation

In the long run, a country's standard of living depends on its productivity performance. The indicators in this section examine Ireland's overall productivity performance and productivity performance by broad sector of economic activity. As innovation is a key driver of productivity, it is also assessed in this section and detailed in Chart 3.B.

3.2.1 Productivity

Ireland's productivity levels in GDP terms are now on a par with some of the highest in the world. However, Ireland's productivity levels in GNP terms are below the OECD average (Fig. 3.10). Growth rates of productivity, rather than levels, are vital to ensuring wage increases are sustainable and in this regard, Ireland performed poorly between 2004 and 2007 (Fig. 3.11). Productivity growth has been low or negative in a range of sectors including modern manufacturing (e.g. rubber/plastics and chemical/pharma) and traditional manufacturing (e.g. paper, other machinery, wood, transport equipment and metals), as well as mining and telecommunications (Figs. 3.12-3.16). Although public sector productivity is difficult to measure, it appears that Ireland performs relatively well in relation to the main functions of the public sector by international standards (Fig. 3.17). However, productivity levels in the public sector are low relative to those achieved in other sectors.

3.2.2 Innovation

More Irish firms state that they are engaged in innovation (i.e. the creation of new products, services, or processes) than the EU-15 average, although this masks a significant gap between manufacturing and services firms (Fig. 3.18). The percentage of innovative firms that engage in co-operation with other enterprises or non-commercial institutions in innovative activities is also above the EU-15 average (Fig. 3.20). In terms of outputs from innovation, the number of new community trademarks per million of the population in Ireland is above the EU-15 average (Fig. 3.21). However, a relatively modest percentage of firm turnover in Ireland comes from the introduction of innovative products, compared to firms in leading countries (Fig. 3.19).

3.3 Prices and Costs

Cost competitiveness remains critical to ensuring that companies based in Ireland have the ability to compete successfully in international markets. This section examines the overall level and inflation in Ireland's prices and business costs, across both pay and non-pay indicators. The relevant indicators are detailed in Chart 3.C.

3.3.1 Prices

In terms of general consumer price levels, Ireland is among the most expensive locations and has experienced inflation rates that are among the highest in the EU-15 (Fig. 3.22). A breakdown of inflation by sector shows that recreation, communications, furniture and clothing have shown little or no inflation since 2004. Other sectors, however, compare poorly with the Eurozone average throughout the 2004-2008 period. These sectors include housing, utilities, education, health and catering (Fig. 3.23). Of greater relevance to exporting firms, Ireland's trade-weighted exchange rate has worsened considerably since 2000 (Fig. 3.24). Trade-weighted exchange rates (harmonised price competitiveness indicator) illustrate that Ireland's price competitiveness position has continually deteriorated in both real and nominal terms since 2000 (Fig. 3.25). Exchange rate movements account for two thirds of the deterioration, with higher inflation in Ireland accounting for the remaining third.

3.3.2 Pay Costs

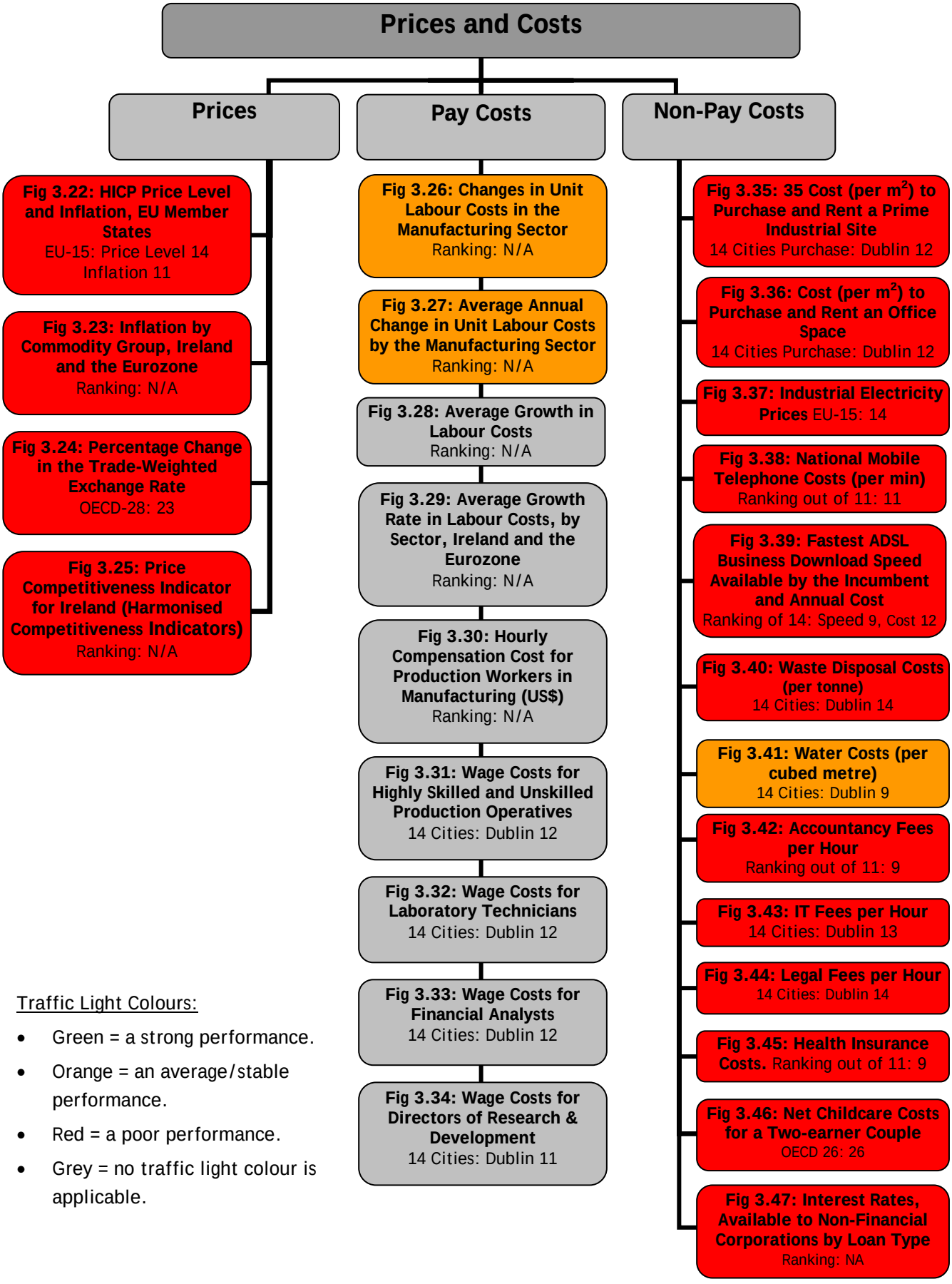
Unit labour costs, the ratio of changes in productivity to earnings, show little change for the manufacturing sector over the 2000-2007 period (Fig. 3.26). However, from 2001-2008 Q2, economy-wide labour costs have increased by 50 percent more than the EU-15 average (Fig. 3.28), In particular, Irish wage inflation, grew by more than double the Eurozone average in construction and communications between Q2 2004 and Q2 2008 (Fig. 3.29).

This report indicates that for basic manufacturing occupations, Ireland remains relatively competitive compared to other high-income locations, but significantly more expensive than locations in the new EU member states, the US and in Asia (Fig. 3.30 and Fig. 3.31). Examining wage costs in science and R&D, Ireland remains one of the most expensive locations (Fig. 3.32 and Fig. 3.34). Comparing wages in financial services, Copenhagen is the only location benchmarked that is more expensive than Irish locations (Fig. 3.33).

3.3.3 Non-Pay Costs

Non-pay costs in Ireland compare poorly with other countries across a range of cost types. These include property costs (both purchase and rental), utilities costs including electricity, waste, and mobile communications costs, and a range of domestic services, such as accountancy, information technology and legal services fees (Figs. 3.35-3.44). Childcare costs in Ireland are amongst the highest in the comparator group (Fig. 3.46). Dublin is particularly expensive across most of these cost measures.

Chart 3.C



Traffic Light Colours:

- Green = a strong performance.
- Orange = an average/stable performance.
- Red = a poor performance.
- Grey = no traffic light colour is applicable.

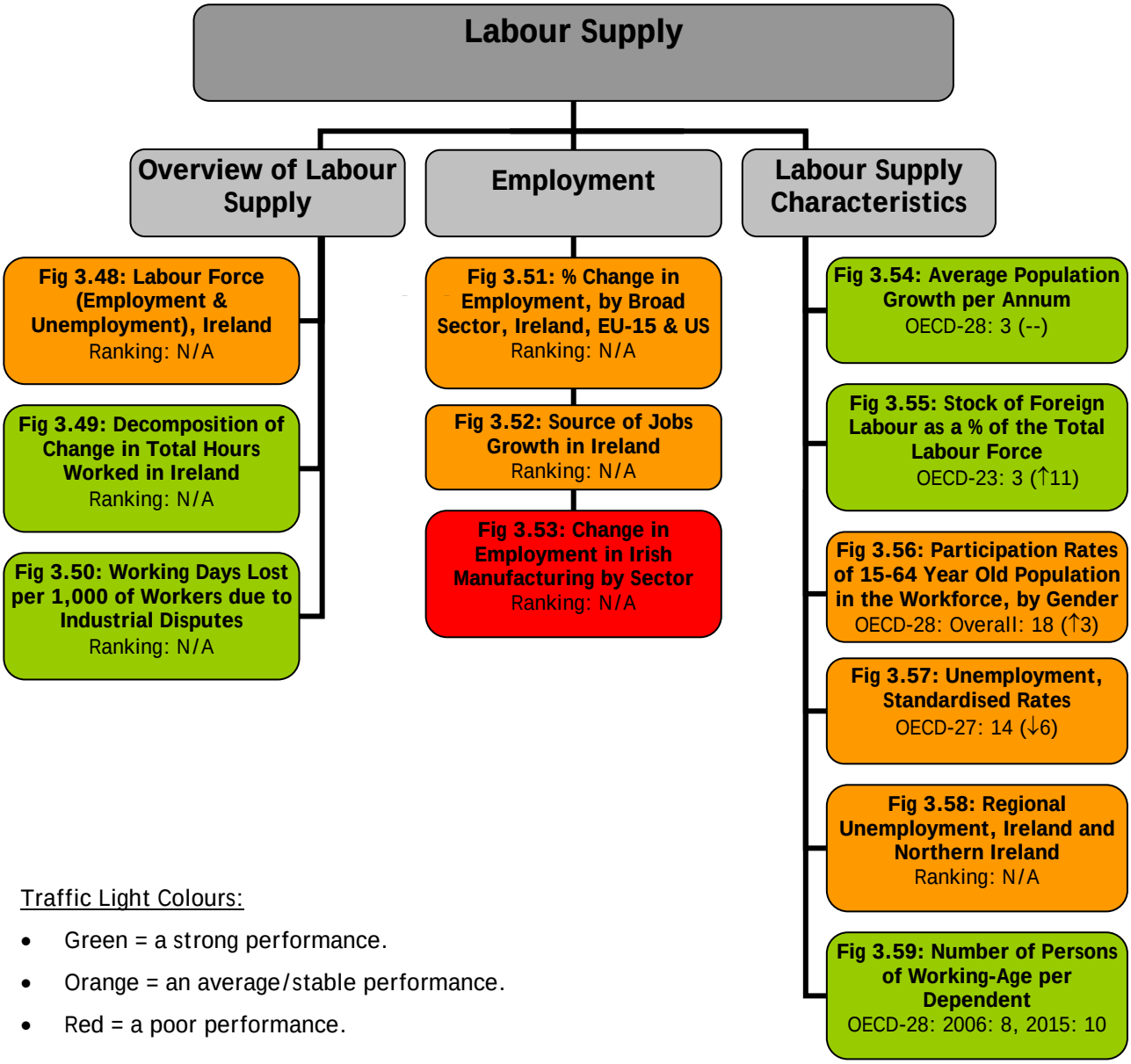
3.4 Labour Supply

Growth in labour supply has played a key role in Ireland's economic development over the past decade. This section looks at the overall trends in Ireland's labour supply and identifies areas of spare capacity, as illustrated in Chart 3.D.

Ireland's labour force has grown strongly, driven by both natural increases in the Irish-born population and inward migration (Fig 3.48, 3.54 and 3.55). The stock of foreign labour as a percentage of the total labour force is above the OECD average (Fig. 3.55). However, participation rates, particularly for women, remain below leading OECD countries (Fig. 3.56). While, Ireland's overall demographic position is among the healthiest in the OECD, Ireland will also face an ageing population into the medium term (Fig. 3.59).

Employment growth in Ireland has been exceptionally strong. The bulk of new jobs between 2000 and 2008 Q2 were created in public and private sector health and education (30 percent) and in construction (22 percent); while manufacturing and agriculture lost jobs over the same period (Fig. 3.51 and Fig. 3.52). Certain manufacturing sectors, including medical/precision devices and chemicals, increased their employment levels between 2000 and 2007, although most, including the largest indigenous sector, food and drink were static or falling (Fig. 3.53). Unemployment rates were close to the OECD average in Q2 2008, and regional variance in the unemployment rate remained relatively small (Fig. 3.57 and Fig. 3.58).

Chart 3.D



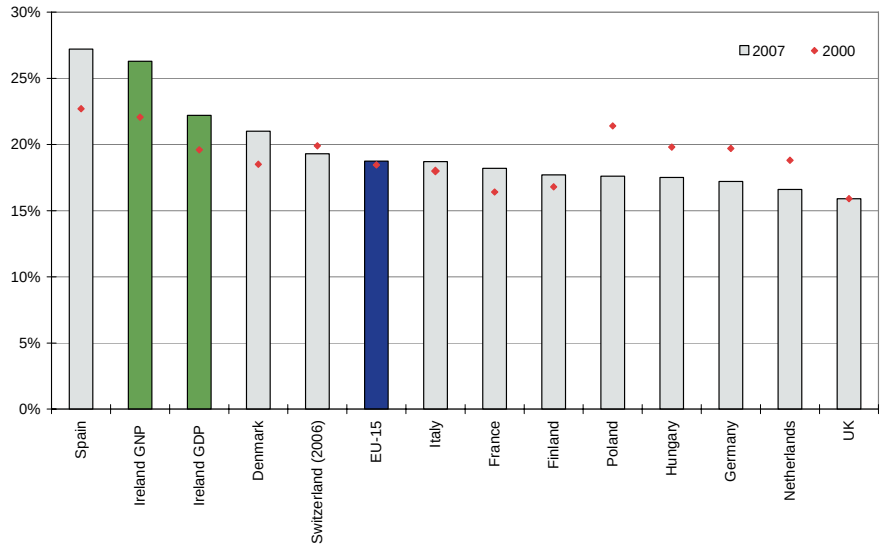
Traffic Light Colours:

- Green = a strong performance.
- Orange = an average/stable performance.
- Red = a poor performance.

3.1 Business Performance

3.1.1 Business Investment in Enterprise

Figure 3.01 Gross Fixed Capital Formation by the Private Sector (as a % of GDP), 2007

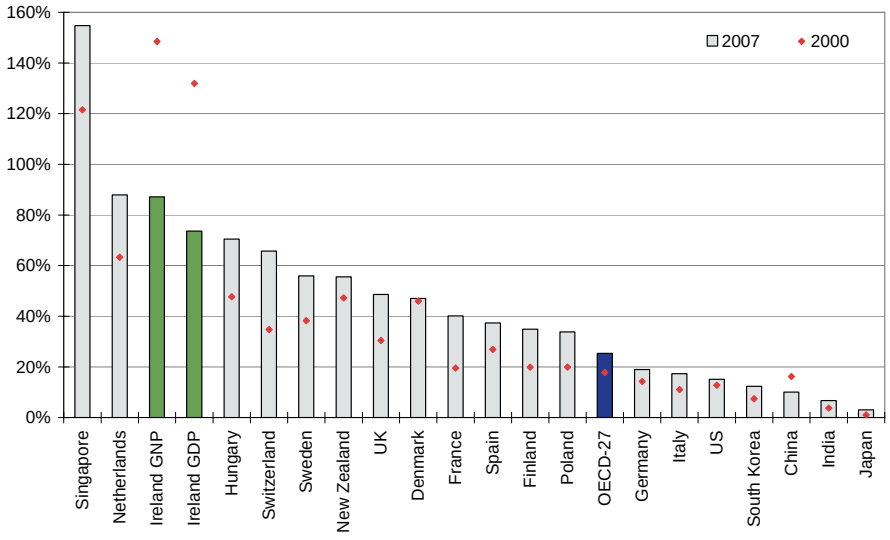


Investment rates in Ireland in both GDP and GDP terms in 2007 were among the highest in the EU-15. CSO data shows that capital investment has declined by 18.8 percent in the first half of 2008 relative to the same period in 2007[19]. The ESRI forecast that investment in residential housing will decline by 38 percent in 2008. 'Other Building' is expected to fall by one percent and 'Machinery and Equipment' by -7.1[20].

EU-15 Ranking:
GDP: 3 (↑1)
GNP: 2 (↑1)

Source: Eurostat, Structural Indicators

Figure 3.02 Stock of Inward Direct Investment (FDI, as a % of GDP), 2007



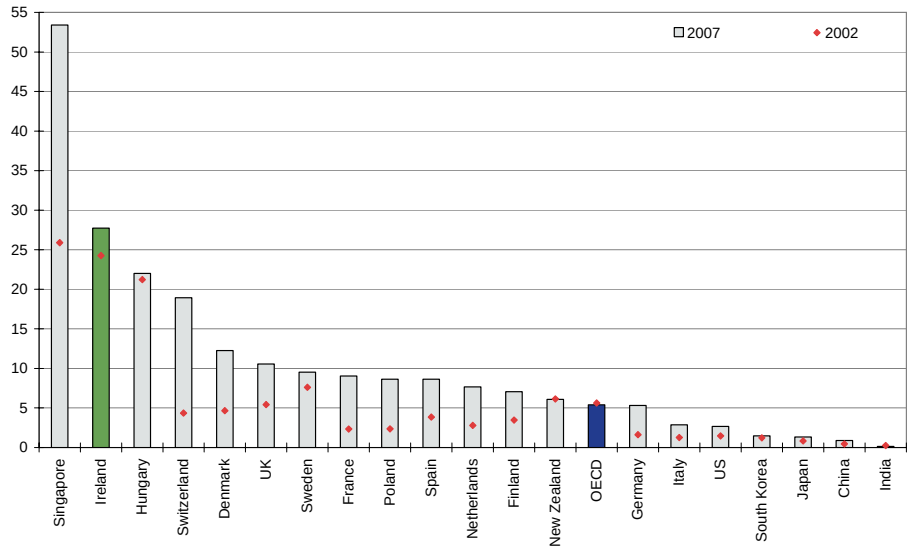
FDI remains critically important to the Irish economy. While the stock of inward investment in Ireland as a percentage of both GDP and GNP has declined since 2000, inward investment levels remain among the highest in the OECD. Employment among foreign-owned agency assisted Irish companies has remained high since 2000, employing 153,508 people in 2007[21].

OECD-27 Ranking[22]:
GDP: 3 (↓1)
GNP: 3 (↓1)

Source: Forfás Calculations; UNCTAD World Investment Report 2008

19 CSO, Quarterly National Accounts, Quarter 2, 2008.
20 ESRI, Quarterly Economic Commentary, Autumn 2008
21 Forfás Annual Employment Survey, 2007
22 OECD-28 average minus Iceland. Nearest available year used if 2000 data is unavailable.

Figure 3.03 Number of Greenfield Projects by Destination (per Million of Population), 2007[23]

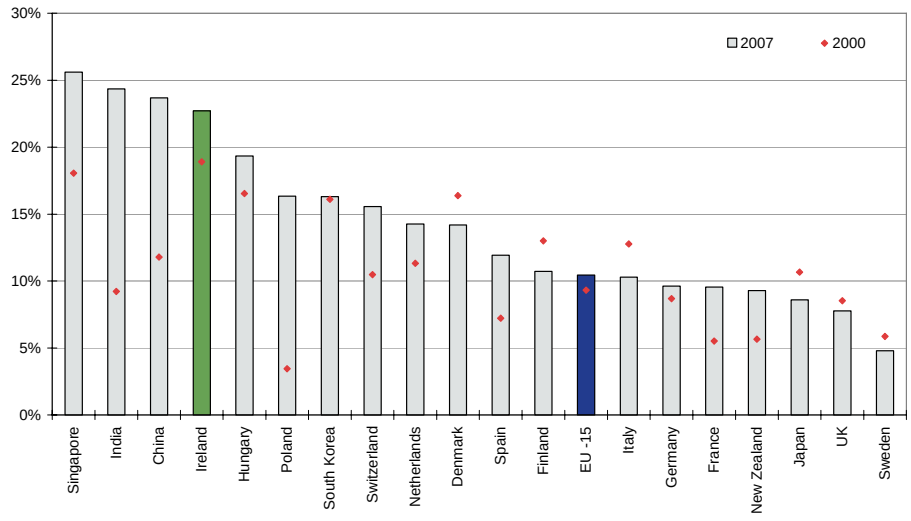


Ireland continues to attract a large number of greenfield investment projects, relative to its size. Only Singapore attracts more greenfield projects per capita. The number of new greenfield projects in Ireland has increased significantly between 2002 and 2006. The pipeline of new projects for 2008/09 is forecast to remain strong.

OECD-28 Ranking[24]:
2 (↓1)

Source: Forfas Calculations; UNCTAD World Investment Report 2008

Figure 3.04 Rate of Return to US-Owned Companies on their Investments in Foreign Countries (%), 2007



This indicator measures income earned by US companies as a proportion of the amount invested in a particular country – a proxy for the rate of return. The rate of return in Ireland is well above the EU-15 average and the fourth highest of the countries benchmarked.

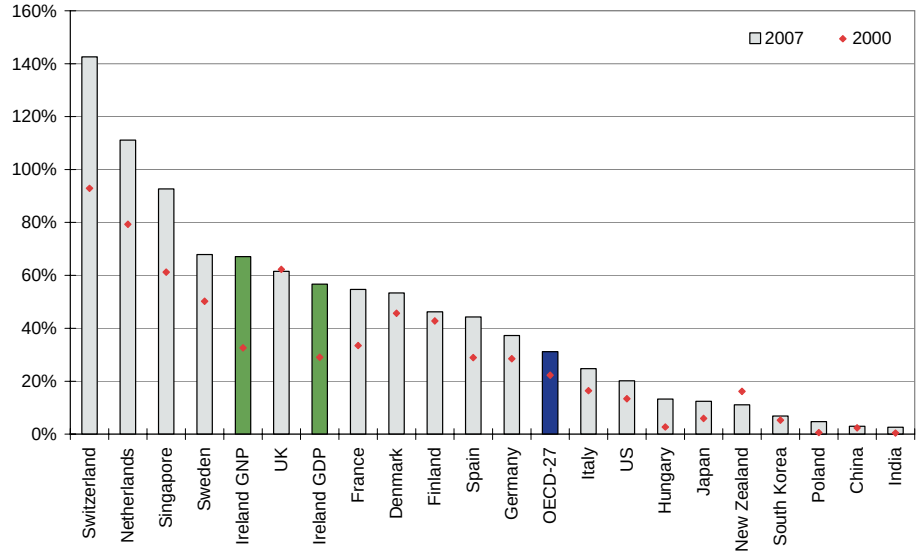
EU-15 Ranking:
2 (↓1)

Source: US Bureau of Economic Analysis

23 According to UNTCAD, greenfield FDI refers to investment projects that entail the establishment of new production as well as the movement of intangible capital. This type of FDI involves capital movements that affect the accounting books of both the direct investor of the home country and the enterprise receiving the investment in the host country.

24 Base year for ranking change is 2002 compared to 2007.

Figure 3.05 Stock of Outward Direct Investment (ODI, as a % of GDP), 2007



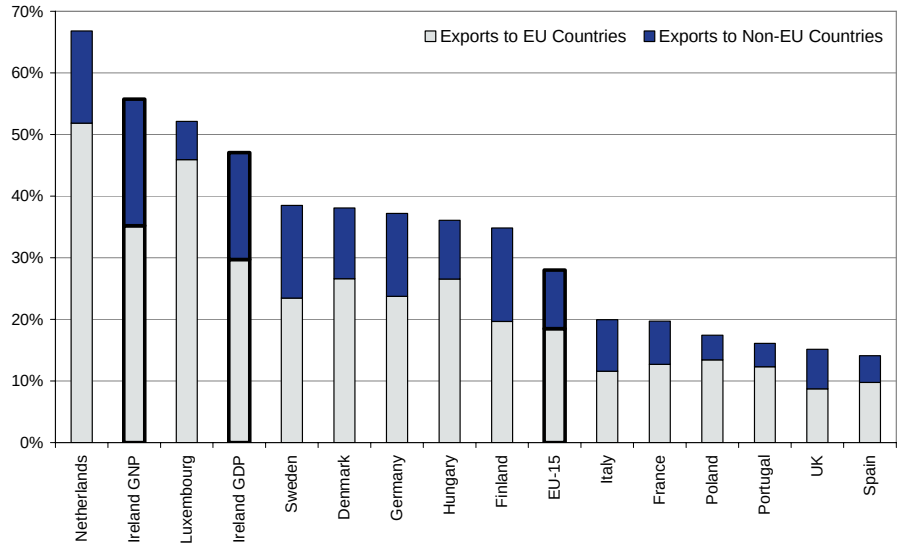
Ireland's levels of outward direct investment increased significantly between 2000 and 2007, meaning that Ireland's stock of investments abroad relative to the size of the economy has grown rapidly.

OECD-27 Ranking[25]:
GDP: 7 (↑4)
GNP: 6 (↑5)

Source: UNCTAD World Investment Report 2008

3.1.2 Trade

Figure 3.06 Exports of Goods, intra-EU and extra-EU (as a % of GDP), 2007



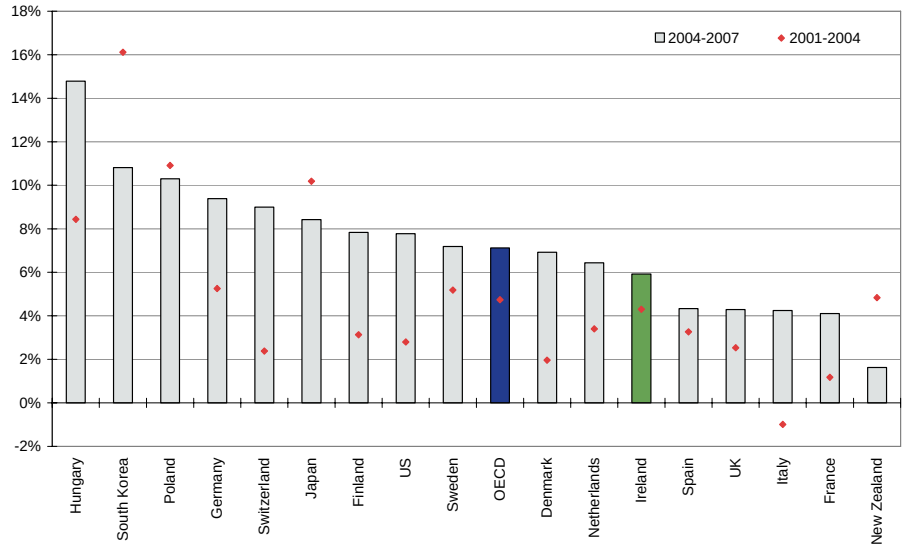
Ireland continues to be one of the most open countries to trade in the EU. Most of Ireland's merchandise exports in 2007 were to other parts of the EU. However, compared to other EU member states, Ireland also has significant trading links with other parts of the world.

EU-15 Ranking:
(Ranked by total exports)
GDP: 4
GNP: 3

Source: Eurostat, External Trade

25 OECD-28 average minus Iceland. Nearest available year used if 2000 data is unavailable.

Figure 3.07 Annual Average Growth in Exports of Goods and Services (%), 2001-2007

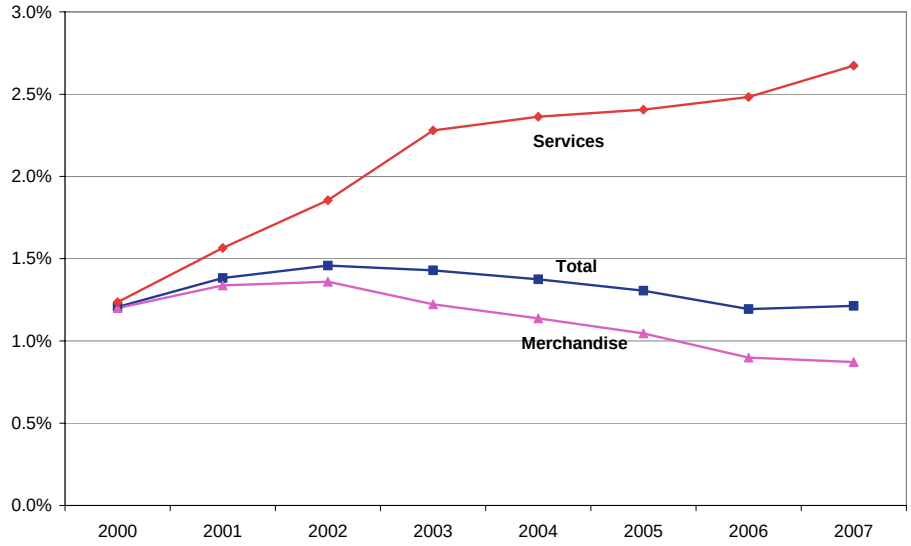


Total growth in Irish exports between 2001 and 2004 was close to the OECD average. However, growth in Irish exports between 2004 and 2007 has been below the OECD average. 2007 saw an improved performance in exports, driven by growth in services exports (+17.65 percent). While services exports have continued to grow in the first half of 2008 (4.65 percent relative to the same period in 2007, the total value of merchandise exports have fallen by 4 percent[26].

OECD-28 Ranking[27]:
18 (↓5)

Source: OECD, Economic Outlook No. 83, June 2008

Figure 3.08 Ireland's Share of World Trade: Overall, Merchandise and Services (%), 2000-2007



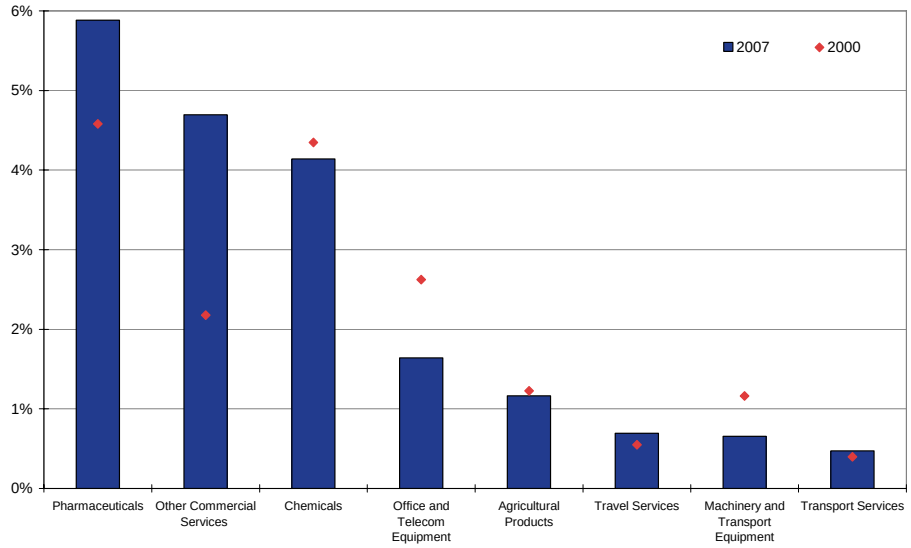
Ireland's share of merchandise trade has fallen gradually, while our share of services trade (a smaller but growing component of world trade) continues to grow. In 2007 services exports accounted for 42.6 percent of total Irish exports compared to 21 percent in 2000.

Ranking:
N/A

Source: World Trade Organisation

26 CSO, External Trade, 25th September 2008.
27 Base years for ranking change is 2001-2004 compared to 2004-2007.

Figure 3.09 Ireland's Share of World Exports by Sector (%), 2007[28]



The period between 2000 and 2007 has seen a change in the structure of Ireland's exports. Strong gains in pharmaceuticals and 'other commercial services' (which includes finance, computers, and business services) have offset losses in office and telecom equipment and machinery and transport equipment.

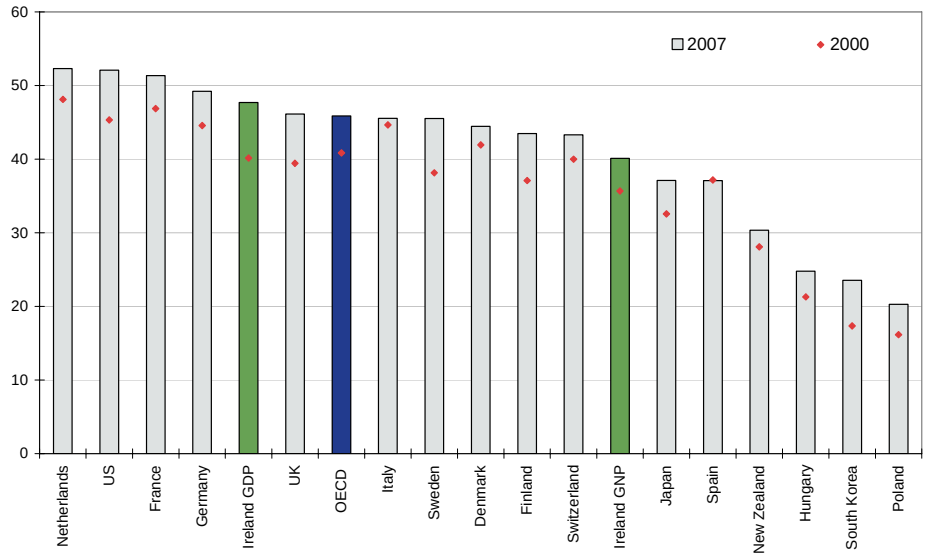
Ranking:
N/A

Source: World Trade Organisation

3.2 Productivity and Innovation

3.2.1 Productivity

Figure 3.10 Per Hour Output, (EKS$) 2007[29]



'GDP per hour worked' productivity figures indicate that Irish productivity has been among the highest in the world since the late 1990s. Using GNP figures, which reduce the effects of MNCs, Irish productivity levels remain below the OECD average.

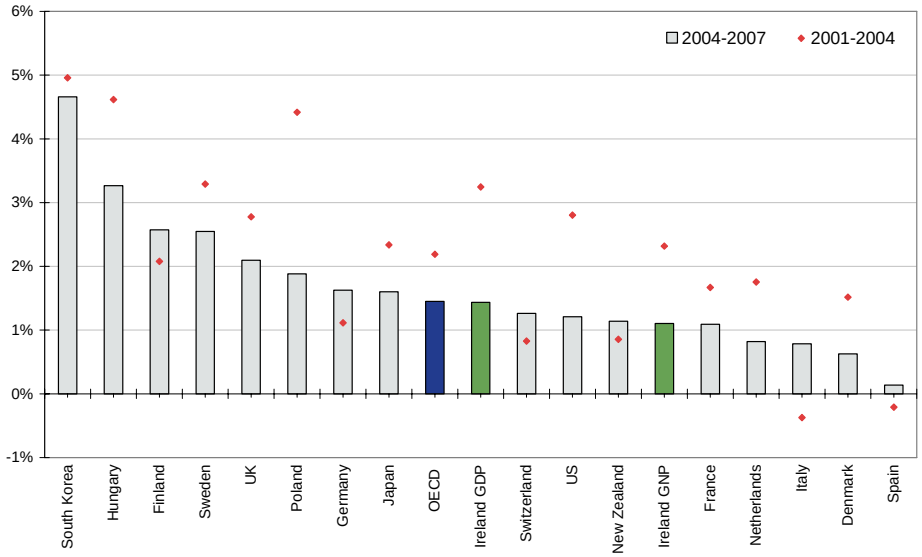
OECD-28 Ranking:
GDP: 9 (↑2)
GNP: 17 (↑1)

Source: Groningen Growth & Development Centre, Total Economy Database, January 2008

28 2006 data used for agricultural products, chemicals, pharmaceuticals, machinery & transport equipment and office and telecom equipment due to data availability.

29 Values are quoted in US$ using EKS purchasing power parities. EKS (Èltetö-Köves-Szulc) is a method for calculating a multilateral per capita quantity index from disaggregated price and quantity data.

Figure 3.11 Annual Average Growth in Output per Hour Worked, 2001-2007

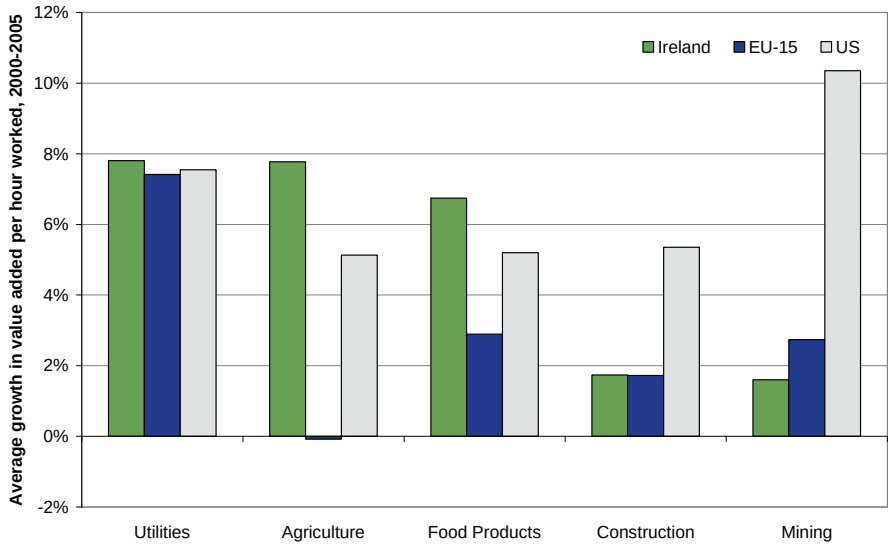


While productivity levels in Ireland are close to the OECD-28 average, Irish productivity growth rates were below the OECD average over the 2004-2007 period and significantly below Ireland's performance in 2001-2004.

OECD-28 Ranking[30]:
GDP: 13 (↓5)
GNP: 17 (↓4)

Source: Groningen Growth & Development Centre, Total Economy Database, January 2008

Figure 3.12 Annual Average Productivity Growth in Primary Sectors, 2000-2005[31]



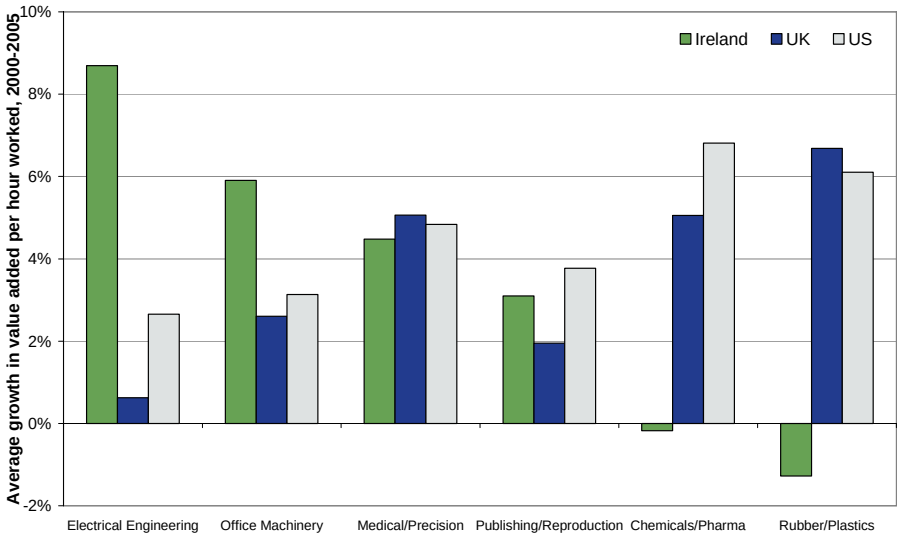
Relative to the US and EU-15, productivity growth in Ireland's agriculture and food sectors has been strong since 2000. Productivity growth in utilities has been marginally above the EU-15 and US averages. Productivity growth in mining and construction is weak compared to the US.

Ranking:
N/A

Source: Forfás calculations; EU KLEMS Database March 2008

30 Base year for ranking change is 2001-2004 compared to 2004-2007.
31 Gross Value Added is a Euro value for Ireland and the EU-15 and a Dollar value for the US.

Figure 3.13 Annual Average Productivity Growth in Modern Manufacturing, 2000-2005[32]

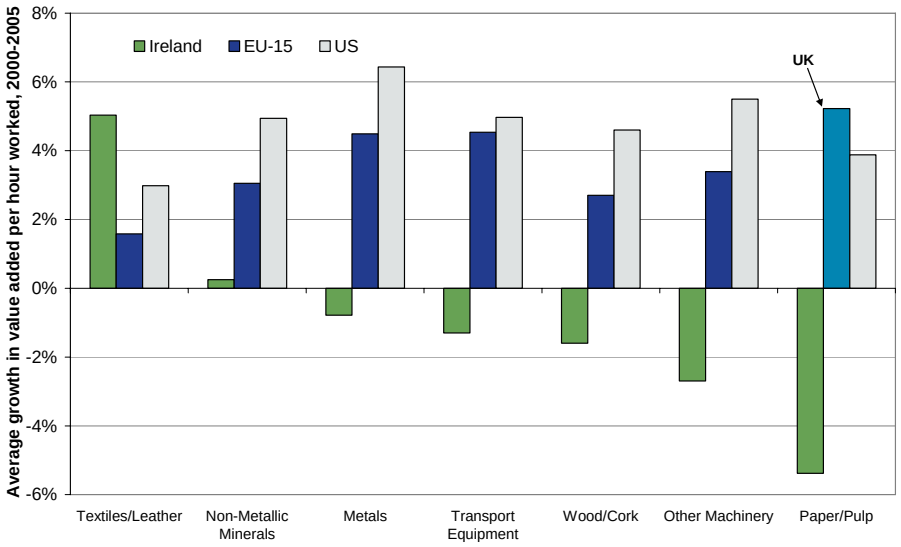


The measurement of productivity in modern manufacturing in Ireland is difficult due to the concentration of foreign-owned multinationals. Although Ireland has had significant productivity growth in electrical engineering, the US has achieved on average the highest productivity growth rates in modern manufacturing over the 2000-2005 period.

Ranking:
N/A

Source: Forfás calculations; EU KLEMS Database March 2008

Figure 3.14 Annual Average Productivity Growth in Traditional Manufacturing, 2000-2005[33]



Between 2000 and 2005, Irish productivity growth rates in non-metallic minerals, metals, transport equipment, wood/cork, other machinery and paper/pulp lagged comparator countries. The Irish textiles sector was the only sector in which Ireland performed better than its counterparts.

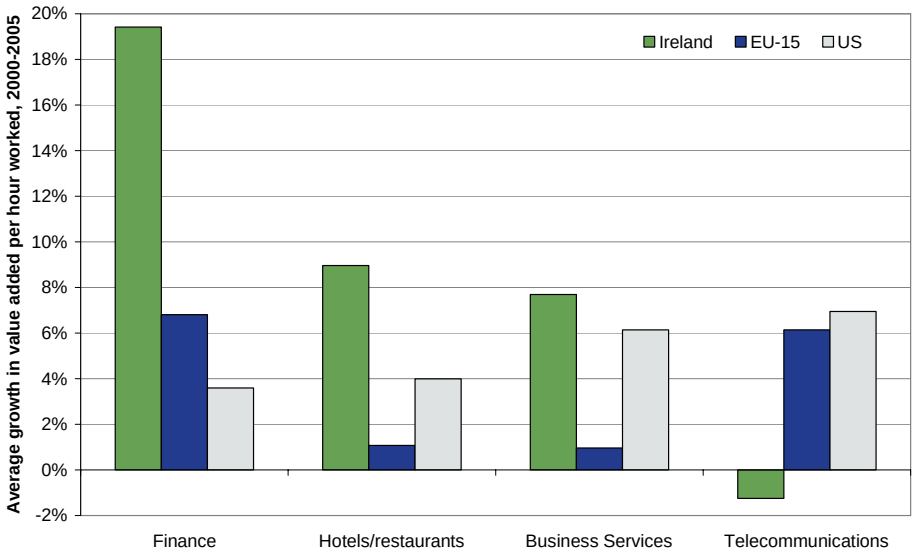
Ranking:
N/A

Source: Forfás calculations; EU KLEMS Database March 2008

32 Gross Value Added is a Euro value for Ireland, a Dollar value for the US and a Sterling value for the UK. UK data is used as EU-15 data is unavailable.

33 Gross Value Added is a Euro value for Ireland and the EU-15, a Dollar value for the US and a Sterling value for the UK. UK data is used for the pulp paper and paper variable, as EU-15 data is unavailable.

Figure 3.15 Annual Average Productivity Growth in Tradable Services, 2000-2005[34]

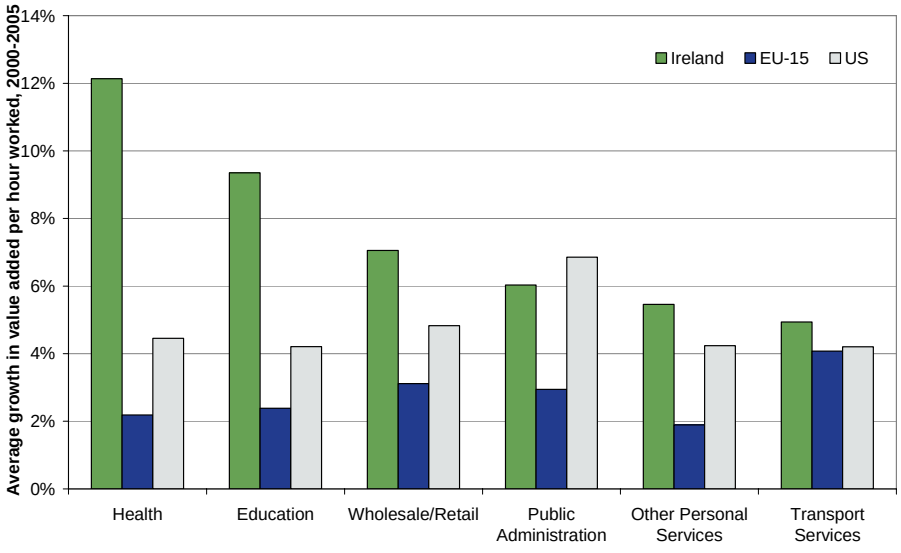


Irish productivity growth in the finance, hotels/ restaurants and business services sectors has been strong during the 2000-2005 period. Telecommunications was the only sector where Irish productivity growth was negative and lagged the EU-15 and US.

Ranking:
N/A

Source: Forfás calculations, EU KLEMS Database March 2008

Figure 3.16 Annual Average Productivity Growth in Non-Tradable Services, 2000-2005[35]



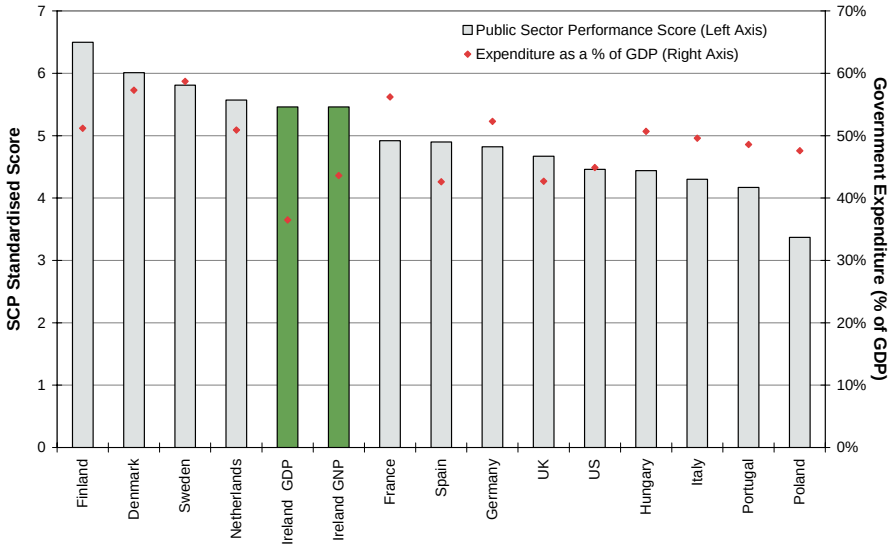
Non-tradable services are critical to Ireland's overall productivity performance as they account for approximately half of total hours worked. Productivity is particularly difficult to measure in non-tradable services. The figures suggest that Irish productivity growth is relatively strong across all of these sectors.

Ranking:
N/A

Source: Forfás calculations, EU KLEMS Database March 2008

34 Gross Value Added is a Euro value for Ireland and the EU-15 and a Dollar value for the US.
35 Gross Value Added is a Euro value for Ireland and the EU-15 and a Dollar value for the US.

Figure 3.17 Productivity Performance and Expenditure in the Public Sector, 2004



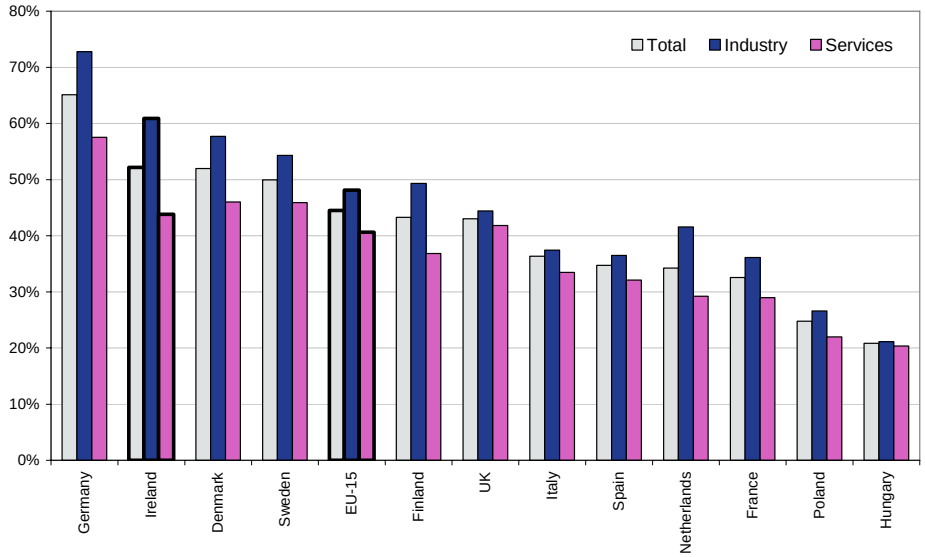
This chart indicates that Ireland performs relatively well in relation to the main functions of the public sector by international standards. However, it should be stressed that the techniques for measuring public sector productivity are at an early stage, and these preliminary findings must be interpreted with caution.

Group Ranking of 14:
Productivity Performance: 5

Source: Social & Cultural Planning Office, Netherlands; OECD Education at a Glance

3.2.2 Innovation

Figure 3.18 Percentage of Firms Engaged in Innovative Activity, 2004

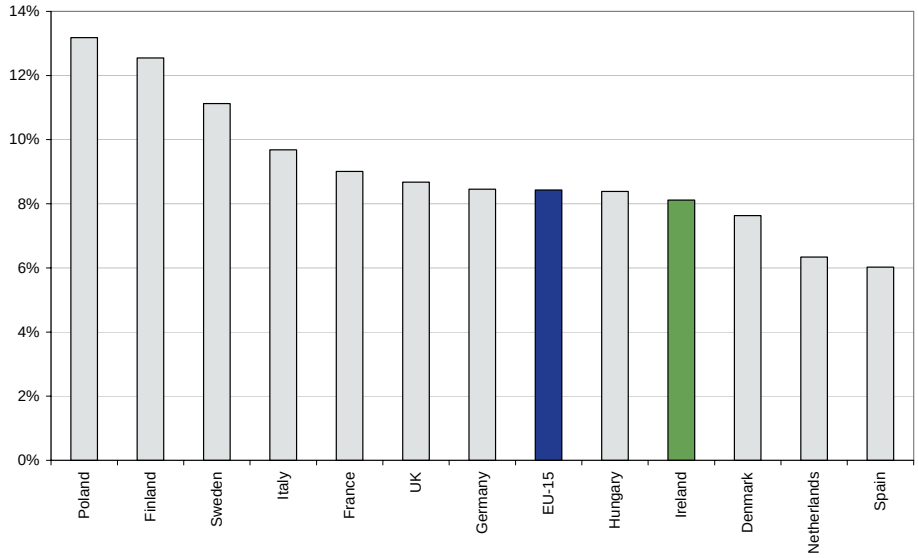


This chart shows the total number of firms which engage in innovative activity, either by changing their products or their processes. Irish firms are more likely to engage in innovative activities than the EU-15 average. The innovation gap between Irish industry and services sectors (at almost 20 percent) is among the widest in the EU.

EU-15 Ranking:
4

Source: Eurostat, Fourth Community Innovation Survey

Figure 3.19 Percentage of Turnover from Innovative Activity 2004

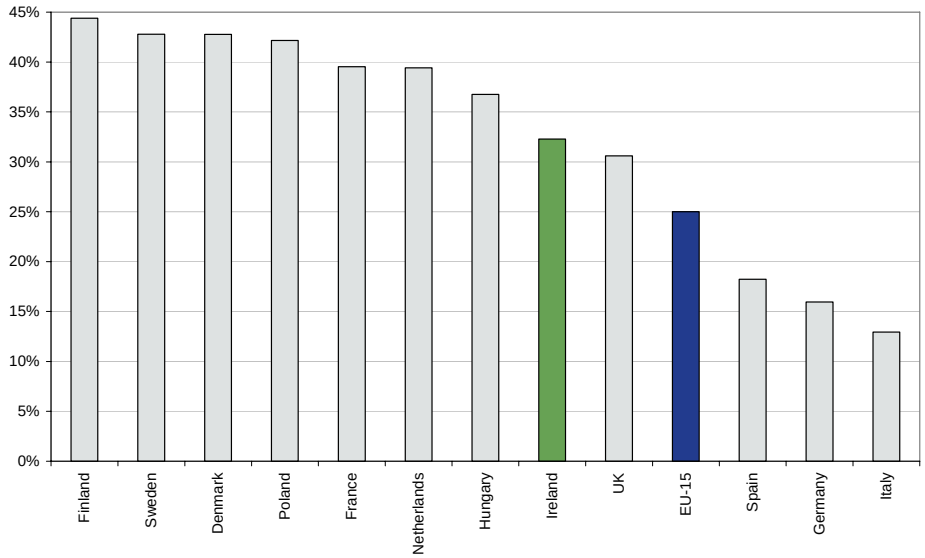


Ultimately, innovation is about turning ideas into revenue. This chart shows the percentage contribution to turnover from the introduction of new/improved products to the market among innovative firms. Ireland's performance is in line with the EU average but lags leading countries.

EU-15 Ranking:
9

Source: Eurostat, Fourth Community Innovation Survey

Figure 3.20 Percentage of Innovative Firms Engaged in Co-operation, 2004

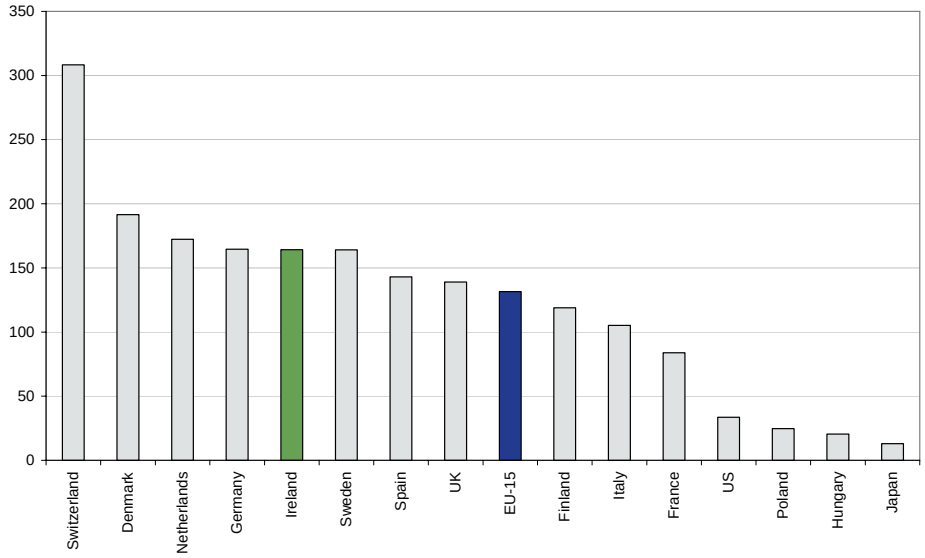


Innovation co-operation is defined as active participation with other enterprises or non-commercial institutions in innovative activities. This chart displays all categories of co-operation (customers, businesses, public institutions, etc.).

EU-15 Ranking:
7

Source: Eurostat, Fourth Community Innovation Survey

Figure 3.21 New Community Trademarks per Million of the Population, 2007



Trademarks identify a product to a specific owner and are important business assets that can play a key role in the marketing of innovative products and services. Irish firms have a relatively high number of community trademarks per million of the population.

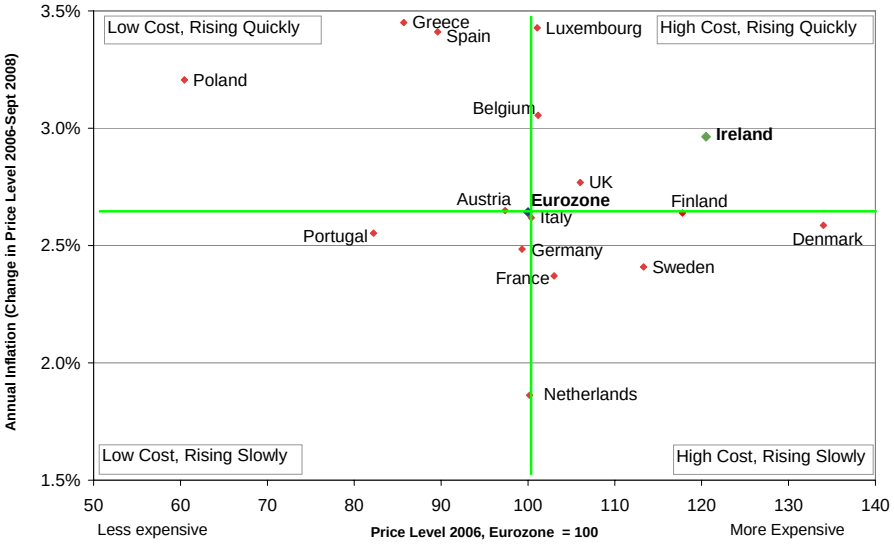
EU-15 Ranking: 6 (↓3)

Source: European Commission, European Innovation Scoreboard, 2007

3.3 Prices and Costs

3.3.1 Prices

Figure 3.22 HICP Price Level (2006) and Inflation (2006- September 2008), EU Member States[36]



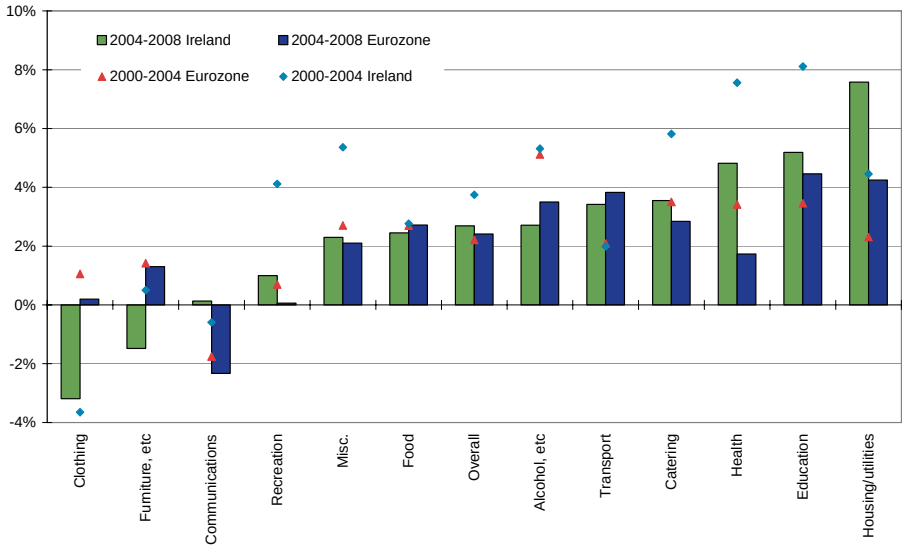
Prices and the rate of change in prices are key indicators of competitiveness. Price levels in Ireland were the second highest in the EU-15 in 2006 and have continued to rise since then at rates above both the Eurozone average and the ECB target rate. However, in recent months inflationary pressures have eased and Irish prices are now rising at a slower rate than the Eurozone average.

EU-15 Ranking:
Price Level (2006): 14
Inflation: 11

Source: Eurostat, Economy and Finance Indicators

36 HICP: Harmonised Index of Consumer Prices.

Figure 3.23 Inflation by Commodity Group, Ireland and the Eurozone, 2000-August 2008

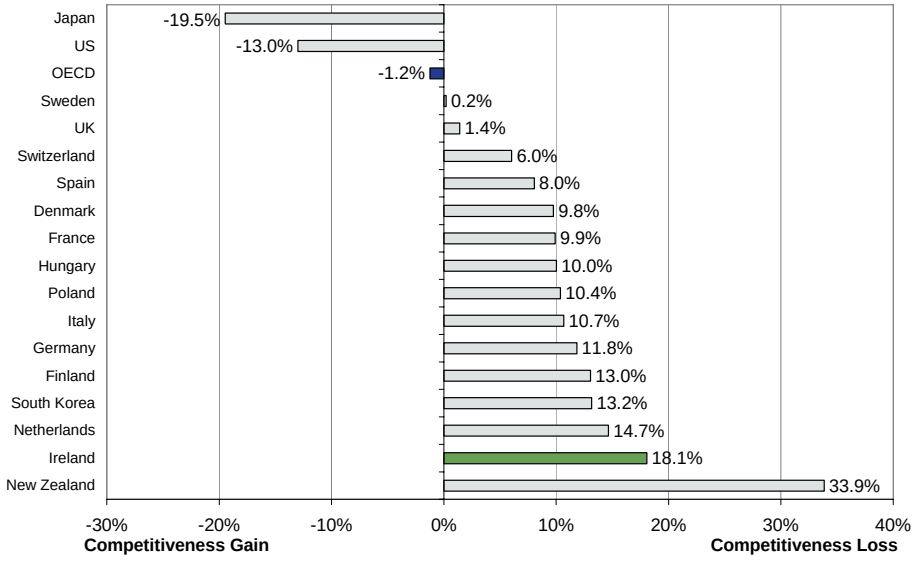


This chart shows inflation in particular sectors of the Irish and EU economy. While Irish inflation rates have fallen relative to the 2000-2004 period, they remain higher than the Eurozone average across several sectors, particularly for housing/ utilities and domestic services such as health and recreation.

Ranking:
N/A

Source: Eurostat, Economy and Finance Indicators

Figure 3.24 Percentage Change in the Trade-Weighted Exchange Rate, 2000-2007

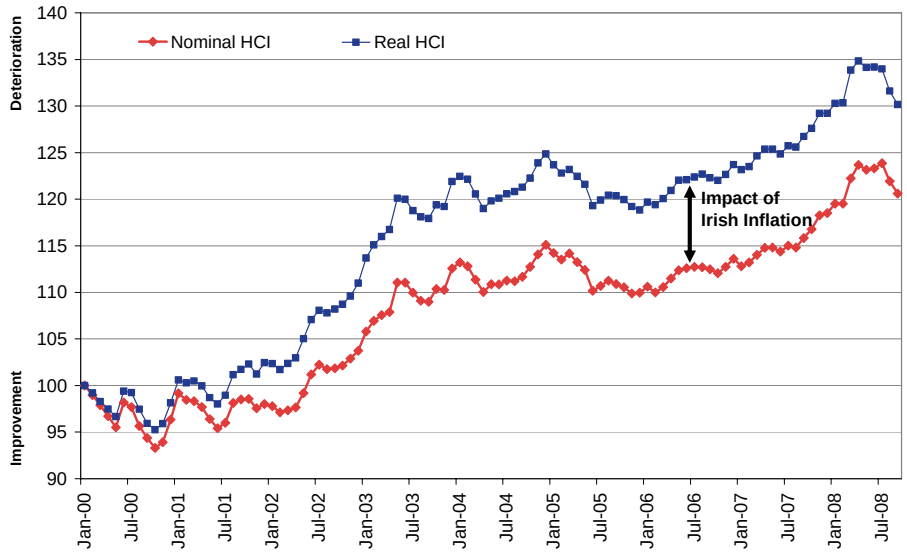


This chart shows the change in a country's exchange rate weighted by the importance of trade with other countries. Ireland's trade-weighted exchange rate has appreciated by 18 percent since 2000, meaning that Irish goods/services are now more expensive in international markets. However, this should also result in imports being cheaper.

OECD-28 Ranking: 23

Source: Forfás calculations; OECD, Economic Outlook, No. 83, June 2008

Figure 3.25 Price Competitiveness Indicator for Ireland (Harmonised Competitiveness Indicators), 2000-September 2008 (January 2000 =100)



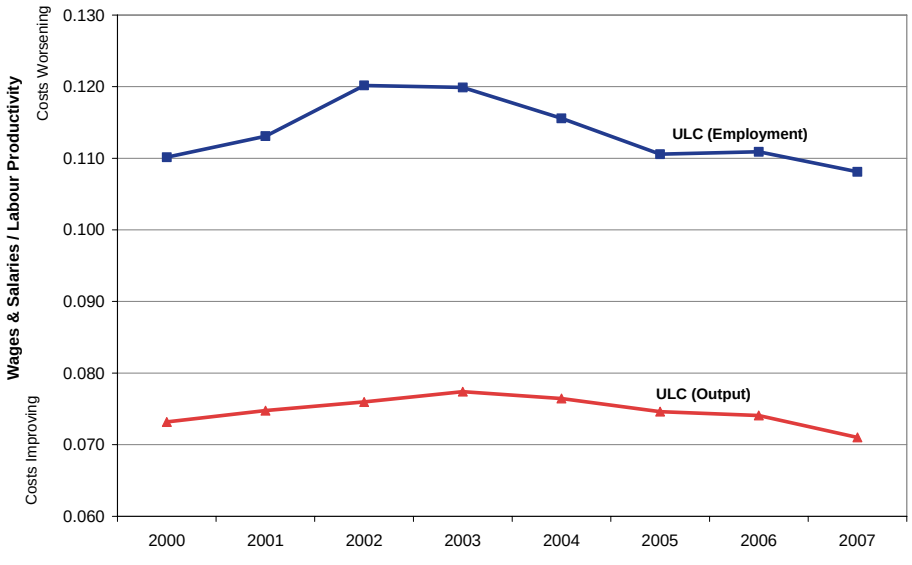
Ireland has experienced a 32 percent loss in international price competitiveness (real HCI), between January 2000 and September 2008, reflecting a combination of an appreciation of the euro against the currencies of many of our trading partners (nominal HCI) and higher price inflation in Ireland.

Ranking:
N/A

Source: Central Bank of Ireland, 2008

3.3.2 Pay Costs

Figure 3.26 Changes in Unit Labour Costs in the Manufacturing Sector, 2000-2007 Q2[37]



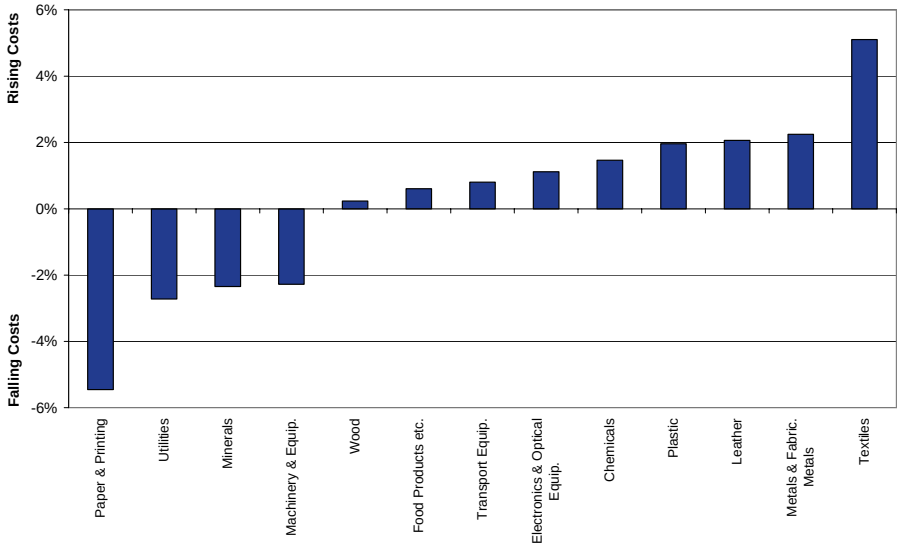
Unit labour costs reflect relative changes in productivity and earnings. A downward trend indicates that productivity rose faster than wages, which is good for competitiveness. ULCs weighted by output and employment both suggest that manufacturing unit labour costs have not changed significantly since 2000.

Ranking:
N/A

Source: Forfás calculations; Central Statistics Office, Census of Industrial Production, Industrial Earnings, Employment (by 2 digit NACE codes)

37 Gross Output in Food Products and Beverages data was unavailable for 2007 and therefore 2006 data was used in the calculation.

Figure 3.27 Average Annual Change in Unit Labour Costs by the Manufacturing Sector, 2000-2007 Q2

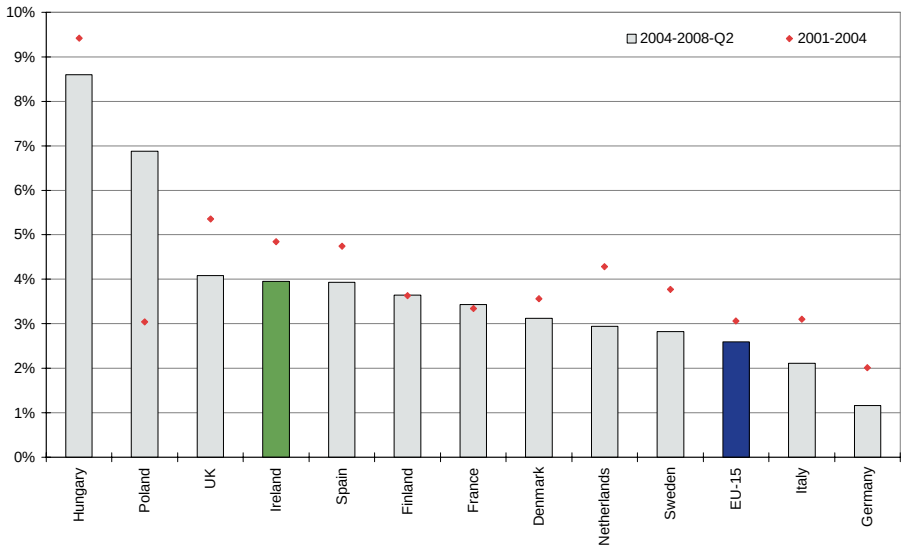


While average unit labour costs in manufacturing have not changed significantly, sectoral differences are apparent. Some Irish manufacturing sectors (e.g. paper and printing and utilities) have seen their ULCs fall since 2000. However, labour costs have risen faster than output in 9 of the 13 sectors.

Ranking:
N/A

Source: Forfás calculations; Central Statistics Office, Census of Industrial Production, Industrial Earnings, Employment (by 2 digit NACE codes)

Figure 3.28 Average Growth Rate in Labour Costs, 2001-2008 Q2

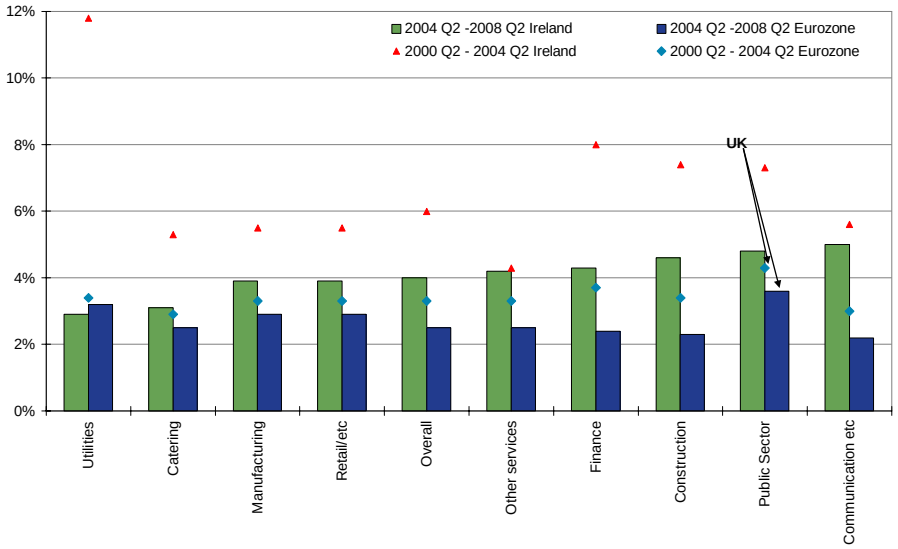


Labour cost growth rates show the change in the cost of employing workers over time. Ireland's growth rates have exceeded the EU-15 average over both periods. The average rate of wage inflation in Ireland between 2004 and 2008 Q2 was 50 percent above the EU-15 average.

Ranking:
N/A

Source: Eurostat, General and Regional Indicators

Figure 3.29 Average Growth Rate in Labour Costs, by Sector, Ireland and the Eurozone, 2000 Q2 - 2008 Q2[38]

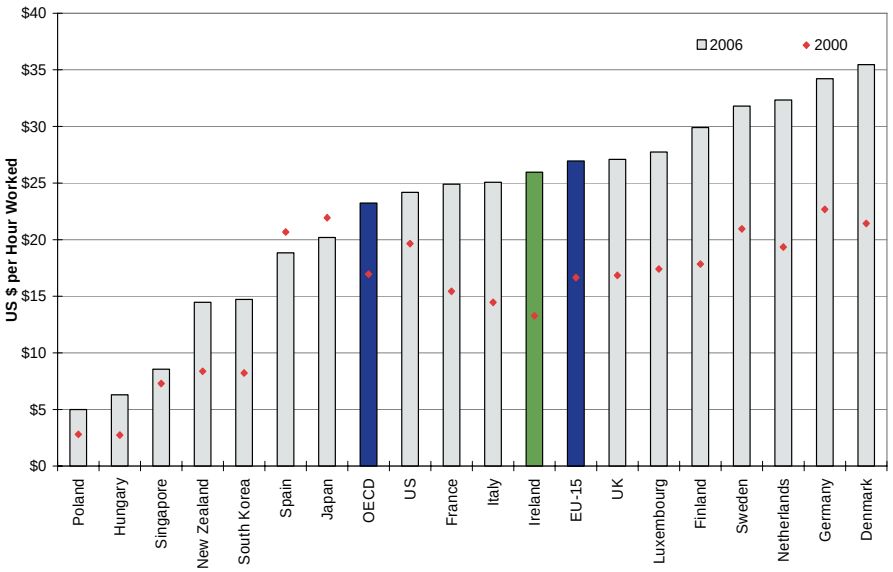


Since the second quarter of 2000, labour costs in all sectors of the Irish economy have increased by more than the Eurozone average. Irish wage inflation grew by more than double the Eurozone average in construction and communications between Q2 2004 and Q2 2008.

Ranking:
N/A

Source: Eurostat, Population and Social Conditions; Central Statistics Office, Labour Market Statistics; UK Office of National Statistics, Labour Market Statistics

Figure 3.30 Hourly Compensation Cost for Production Workers in Manufacturing (US$), 2006



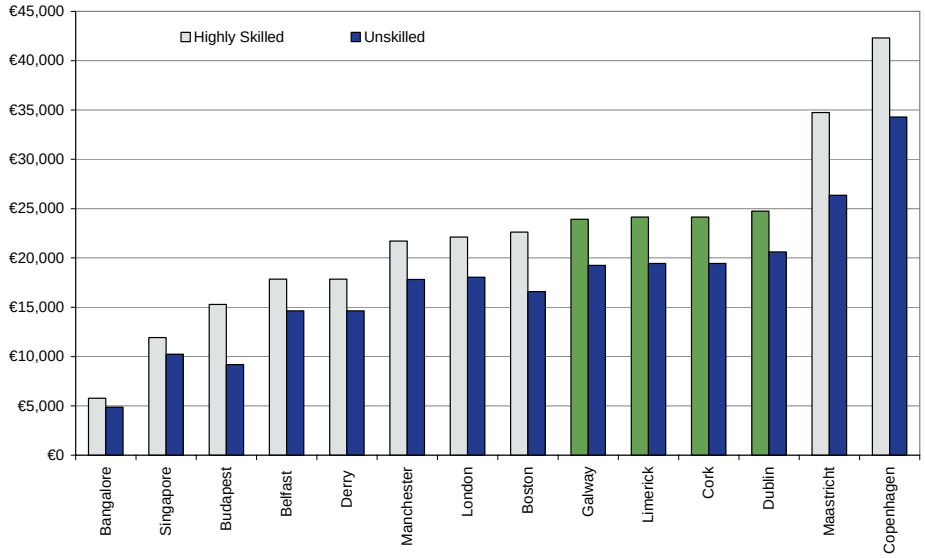
This indicator measures employee pay, employer's social insurance and other labour taxes per hour worked. Ireland is now more expensive than the OECD average and the US on this measure. However, Irish manufacturing wages are marginally below the EU-15 average and significantly below wages in Germany and Denmark.

Ranking:
N/A

Source: US Bureau of Labour Statistics, September 2008

38 Public sector comparison is made to UK growth in public sector wages due to data availability. Data for Ireland refers to Q1 2008 when Q2 2008 data is unavailable.

Figure 3.31 Wage Costs for Highly Skilled and Unskilled Production Operatives, 2008

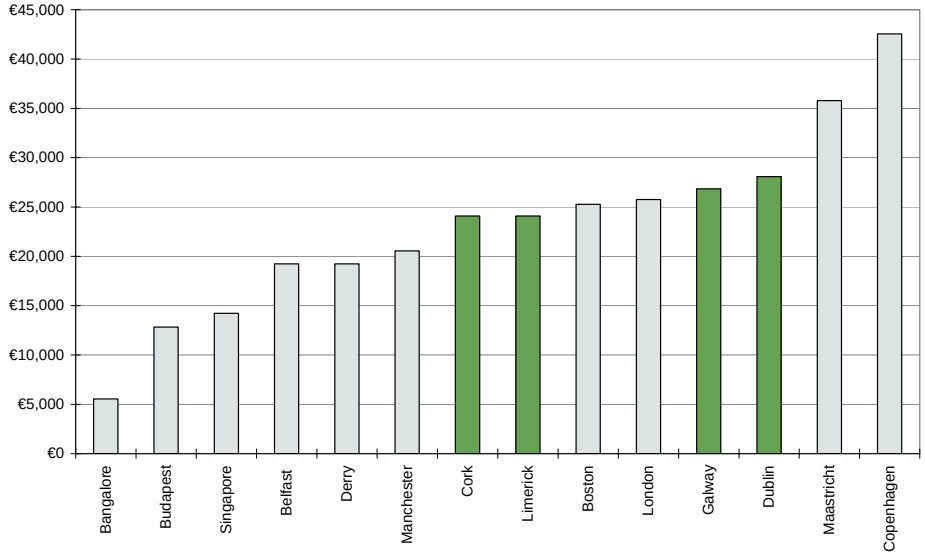


The wage cost differential between highly skilled and unskilled production operatives is similar across the benchmarked countries. While wages are lower in Ireland than in some European cities, they are considerably more expensive than Budapest, Singapore and Bangalore.

Ranking of 14:
Highly skilled: Galway 9, Limerick 10, Cork 10, Dublin 12

Source: NCC, Costs of Doing Business in Ireland, 2008

Figure 3.32 Wage Costs for Laboratory Technicians, 2008

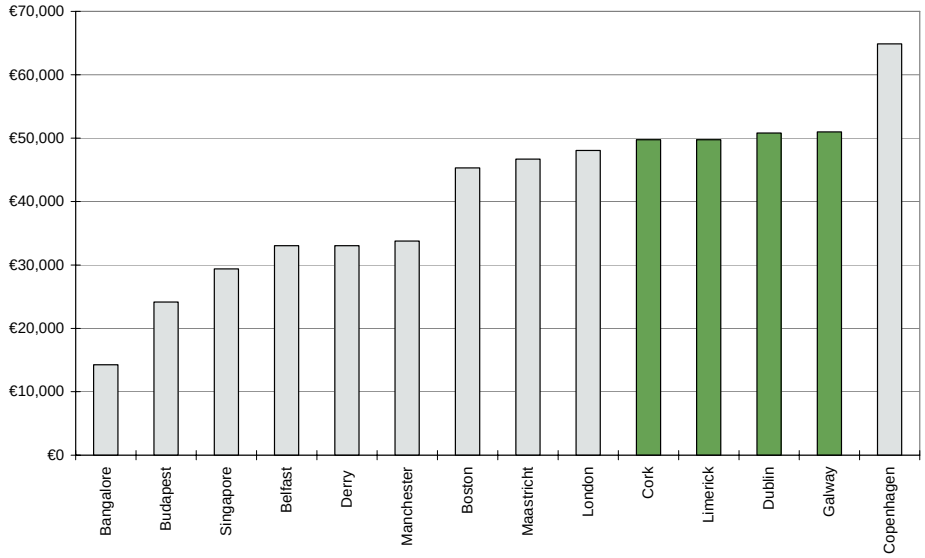


A laboratory technician undertakes routine research tasks at the final stage of research and development. Although wage costs are almost four times higher in Ireland than the cheapest location, Bangalore, Ireland's highest cost location, Dublin is still 33 percent lower than Copenhagen.

Ranking of 14:
Cork 7, Limerick 7, Galway 11, Dublin 12

Source: NCC, Costs of Doing Business in Ireland, 2008

Figure 3.33 Wage Costs for Financial Analysts, 2008

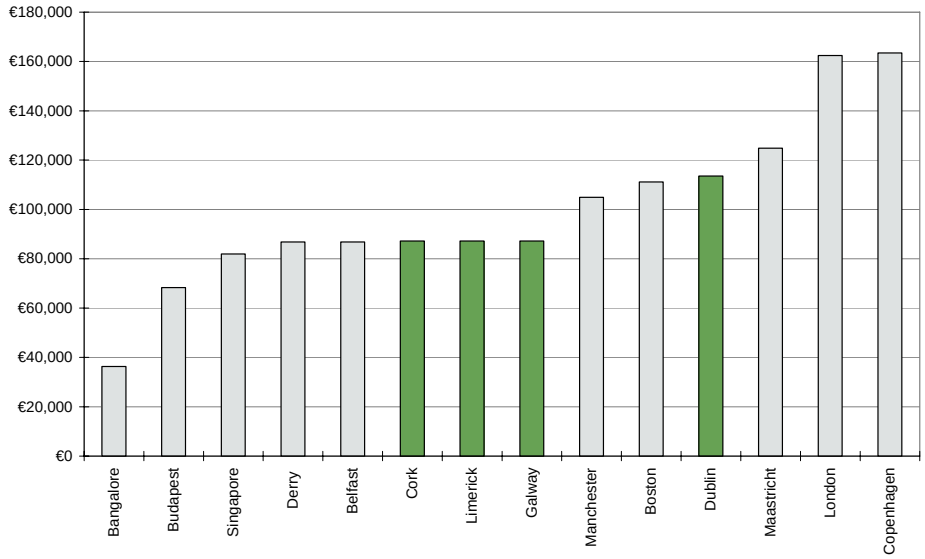


Financial analysts (who assess economic trends and risk) account for a large part of the labour cost base of a fund administration company. Irish locations rank among the highest countries benchmarked. The appreciation of the euro over the past year has eroded Irish cities' competitiveness, notably against Boston and London.

Ranking of 14:
Cork 10, Limerick 10, Dublin 12, Galway 13

Source: NCC, Costs of Doing Business in Ireland, 2008

Figure 3.34 Wage Costs for Directors of Research & Development, 2008



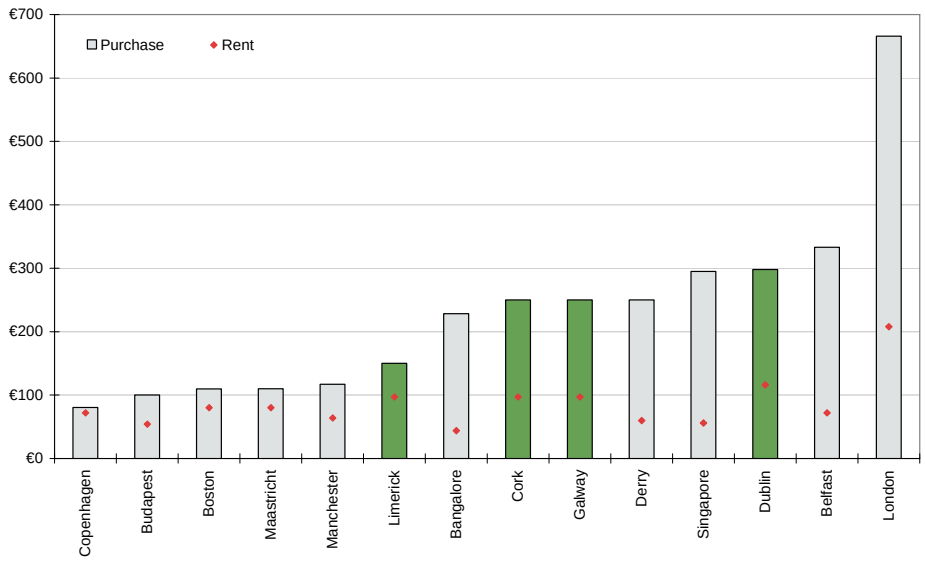
A director of R&D, with at least 15 years of experience, has control of the R&D function of a company exporting to international markets. There is a gap between Dublin and the other Irish cities. However, all Irish cities compare favourably in comparison to other high-income cities.

Ranking of 14:
Cork 6, Limerick 6, Galway 6, Dublin 11

Source: NCC, Costs of Doing Business in Ireland, 2008

3.3.3 Non-Pay Costs

Figure 3.35 Cost (per m^2) to Purchase and Rent a Prime Industrial Site, 2008



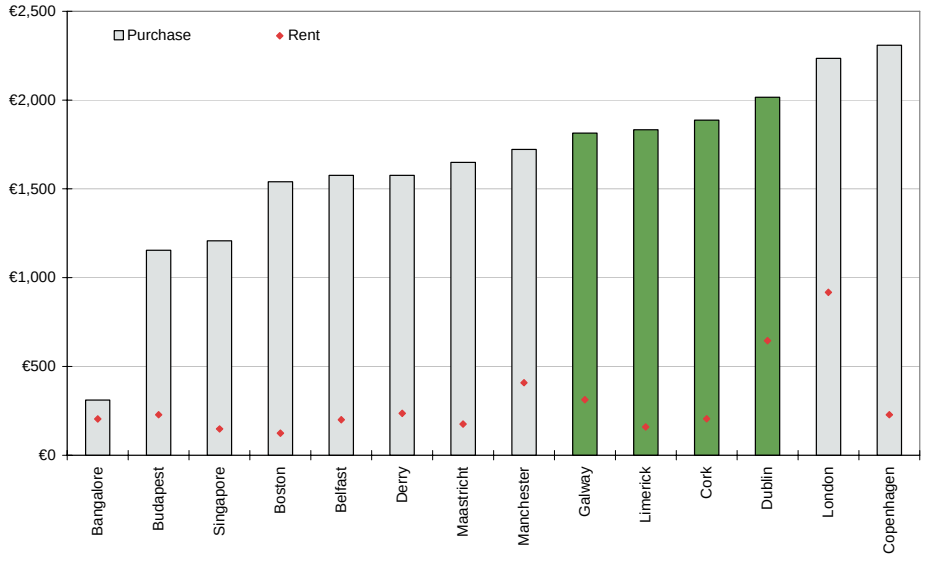
All firms face property costs, either to rent or to purchase a property. This chart shows purchase and rental costs for industrial sites. Industrial site rental costs are particularly expensive in Irish cities.

Ranking of 14[39]:
Purchase cost: Limerick 6, Cork 8, Galway 8, Dublin 12.

Rental cost: Limerick 10, Cork 10, Galway 10, Dublin 13

Source: NCC, Costs of Doing Business in Ireland, 2008

Figure 3.36 Cost (per m^2) to Purchase and Rent an Office Space, 2008



The cost to purchase an office site in Ireland is among the highest of the cities benchmarked. While office rents in most Irish cities are on a par with those in other high-income cities, rents in Dublin are particularly expensive and only exceeded by London.

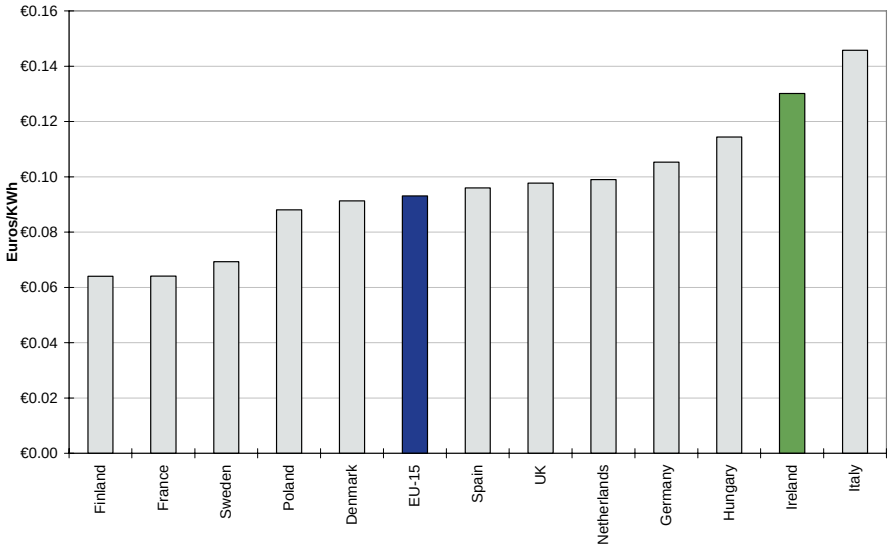
Ranking of 14[40]:
Purchase Cost: Galway 9, Limerick 10, Cork 11, Dublin 12

Rental Cost: Limerick 3, Galway 11, Cork 7, Dublin 13

Source: NCC, Costs of Doing Business in Ireland, 2008

39 Traffic Light determined on ranking of Dublin.
40 Traffic Light determined on ranking of Dublin.

Figure 3.37 Industrial Electricity Prices (excluding VAT but including all other taxes), 2008[41]

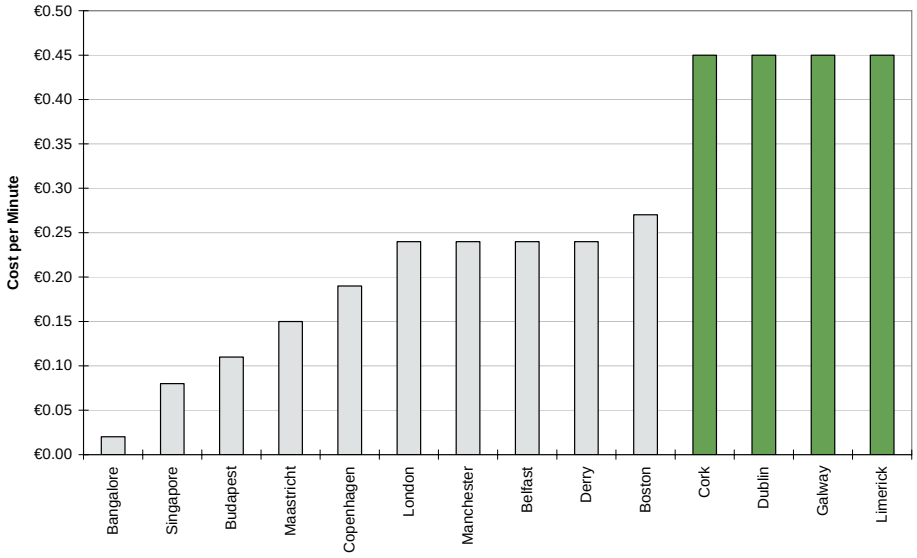


On this measure Ireland ranks as the second most expensive of the EU-15. High industrial electricity prices are being driven by a number of factors including our reliance on imported fossil fuels, exposure to global fuel price increases, low levels of spare generation capacity, poor availability performance and the relatively small scale of Irish generation plants and limited competition in generation and supply.

EU-15 Ranking: 14

Source: Eurostat, Environment and Energy

Figure 3.38 National Mobile Telephone Costs (per min), 2008



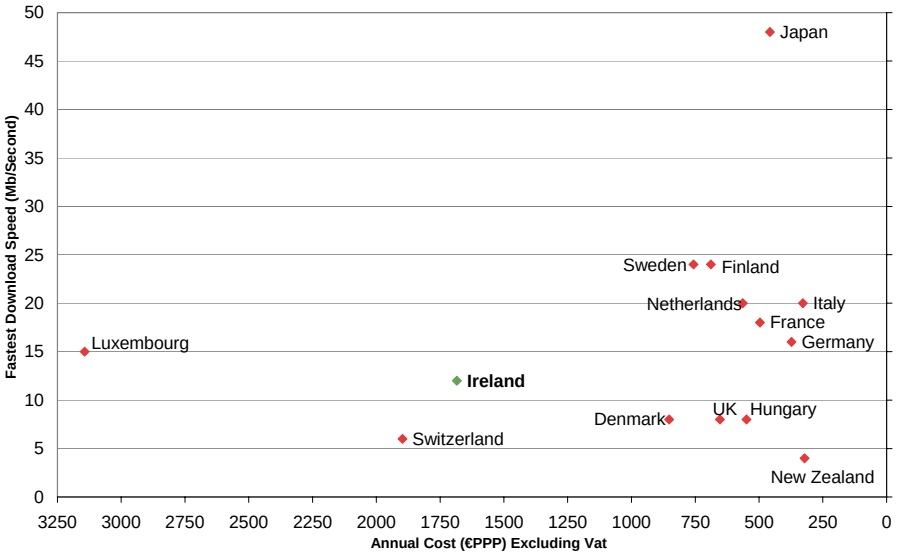
Mobile telephony has become an integral part of enterprise. The four Irish cities are the most expensive locations for national mobile calls. National mobile costs in Ireland are 67 percent higher than the next most expensive location, Boston. Bangalore and Singapore are significantly more cost competitive.

Ranking of 11:
Irish cities 11

Source: NCC, Costs of Doing Business in Ireland, 2008

41 Data for Italy refers to 2007 due to data availability.

Figure 3.39 Fastest ADSL Business Download Speed Available by the Incumbent and Annual Cost (excl. VAT, €PPP), October 2008

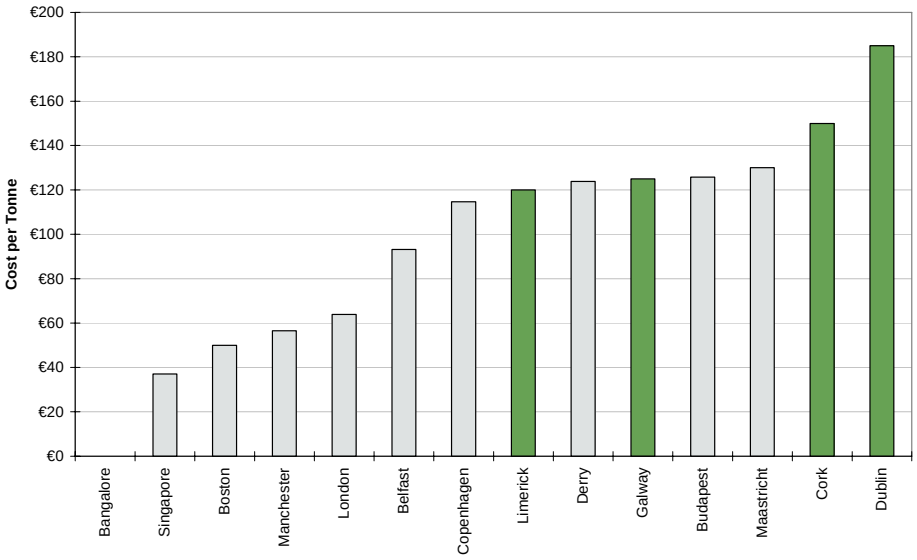


The fastest ADSL speed offered by the incumbent that is broadly available, and the associated cost, varies significantly across the benchmarked countries. The incumbent in Ireland offers a relatively low speed (12 Mbps) at a relatively high cost in comparison to the benchmarked countries.

Group Ranking of 14:
Speed: 9
Cost: 12

Source: Forfás Statement on Infrastructure; Issues and Policy Priorities, Report due to be published in December 2008

Figure 3.40 Waste Disposal Costs (per tonne), 2008



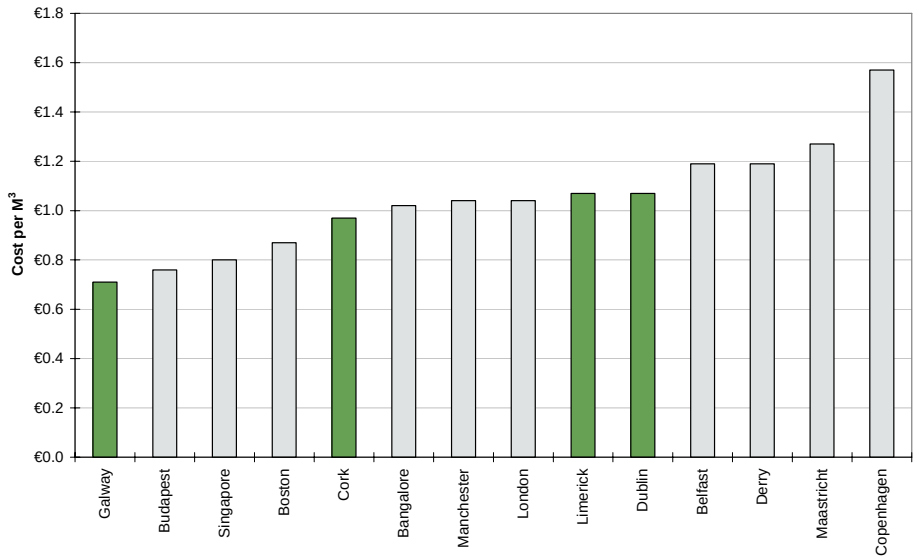
Waste disposal costs measure the cost of disposing of a tonne of non-hazardous waste into landfill. While waste costs in Ireland have moderated in recent years, Cork and Dublin remain the most expensive locations benchmarked.

Ranking of 14[42]:
Limerick 8, Galway 10,
Cork 13,
Dublin 14

Source: NCC, Costs of Doing Business in Ireland, 2008

42 Traffic Light determined on ranking of Dublin.

Figure 3.41 Water Costs (per cubed metre), 2008

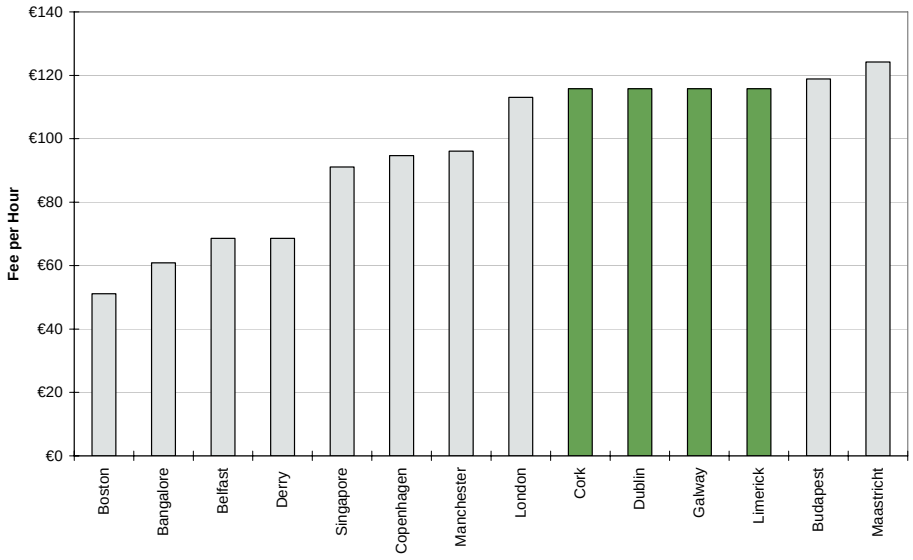


Water costs measure the cost for industrial users per metre cubed. Water costs across Irish locations vary considerably. Galway is the least expensive location benchmarked. It is expected that water costs in Ireland will increase as the Government's Water Pricing Framework is fully implemented.

Ranking of 14[43]:
Galway 1, Cork 5, Limerick 9, Dublin 9

Source: NCC, Costs of Doing Business in Ireland, 2008

Figure 3.42 Accountancy Fees per Hour, 2008



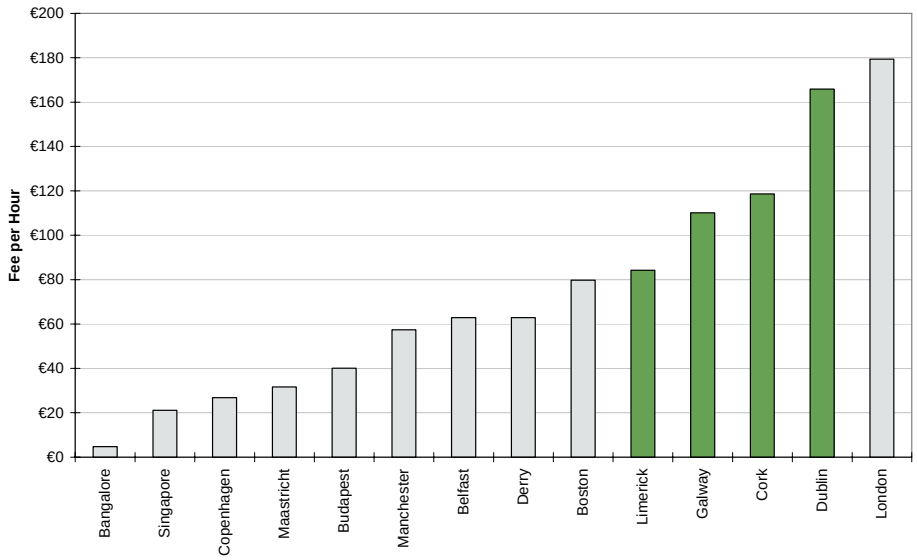
Accountancy fee costs measure the hourly fee charged by a major international accounting firm for a junior accountant. Irish locations are marginally less expensive than the most expensive locations, Maastricht and Budapest. Accountancy fees are over 40 percent cheaper in Belfast and Derry than the four cities in the Republic of Ireland in 2008.

Ranking of 11:
Irish cities 9

Source: NCC, Costs of Doing Business in Ireland, 2008

43 Traffic Light determined on ranking of Dublin.

Figure 3.43 IT Fees per Hour, 2008

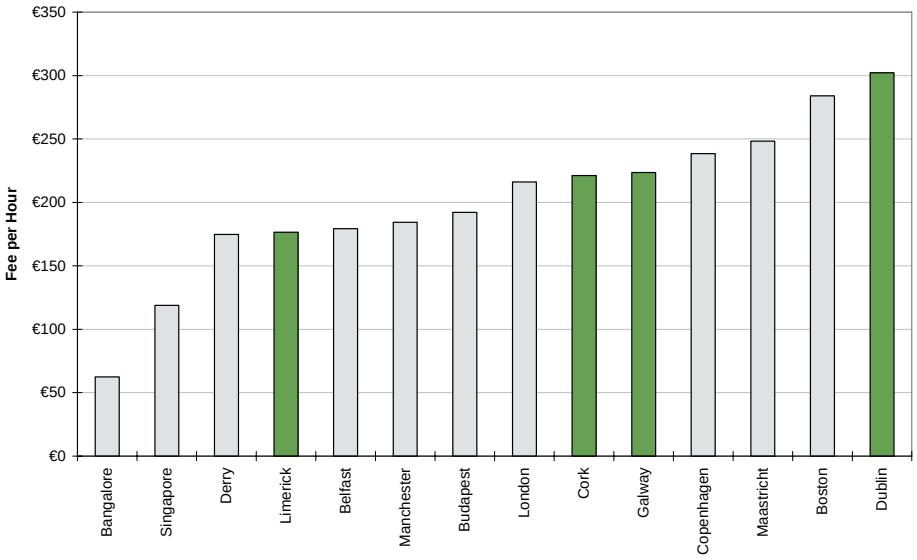


This chart measures the cost of ad-hoc on-site IT services per hour. IT service costs in the two lowest ranking locations, Bangalore and Singapore are significantly cheaper than costs in the more expensive locations. Overall, Irish locations are expensive compared with key competing locations.

Ranking of 14:
Limerick 10, Galway 11, Cork 12,
Dublin 13

Source: NCC, Costs of Doing Business in Ireland, 2008

Figure 3.44 Legal Fees per Hour, 2008



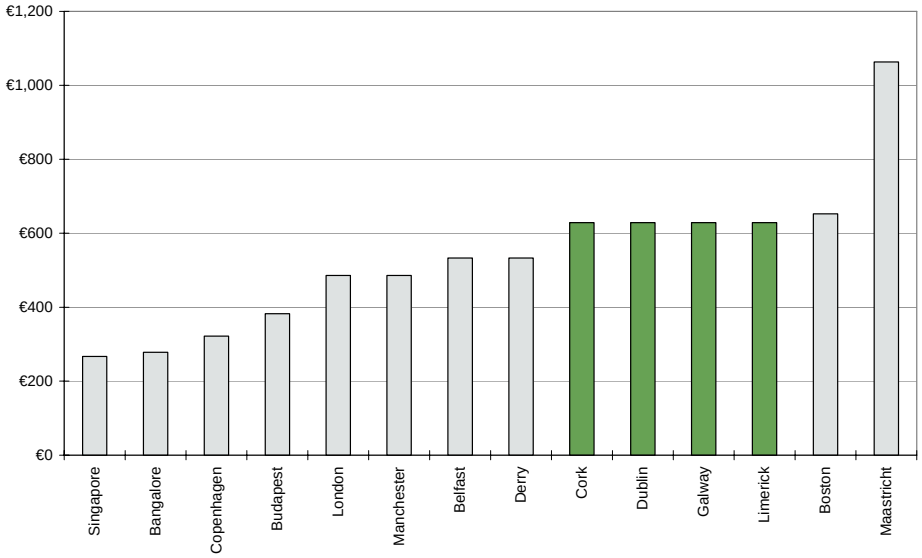
This chart measures the cost charged by a major legal company for a junior legal assistant per hour excluding VAT. There is considerable variation between Irish cities. While Galway, Cork and in particular Limerick appear cost competitive relative to other cities surveyed, Dublin is the most expensive city.

Ranking of 14[44]:
Limerick 4, Cork 9, Galway 10, Dublin 14

Source: NCC, Costs of Doing Business in Ireland, 2008

44 Traffic Light determined on ranking of Dublin.

Figure 3.45 Health Insurance Costs, 2008

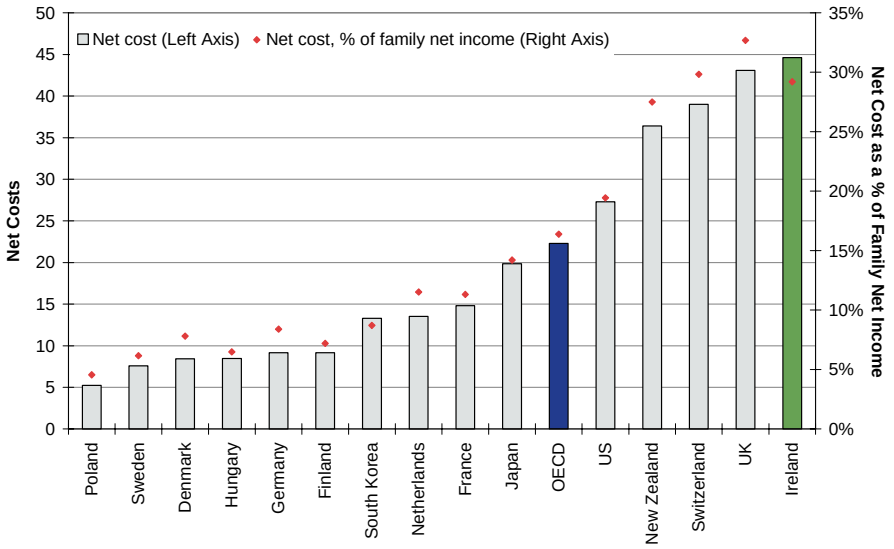


Health insurance costs are relatively expensive in Ireland when compared internationally. Of the other locations benchmarked, Maastricht is particularly expensive.

Ranking of 11:
Irish cities 9

Source: NCC, Costs of Doing Business in Ireland, 2008

Figure 3.46 Net Childcare Costs for a Two-earner Couple, 2004[45]



As illustrated on the left axis, Ireland ranks as the most expensive country in the OECD-26 for net childcare costs (childcare fees minus childcare benefits, rebates, tax reductions and other benefits) and the third most expensive for childcare costs as a percentage of family net income (right axis).

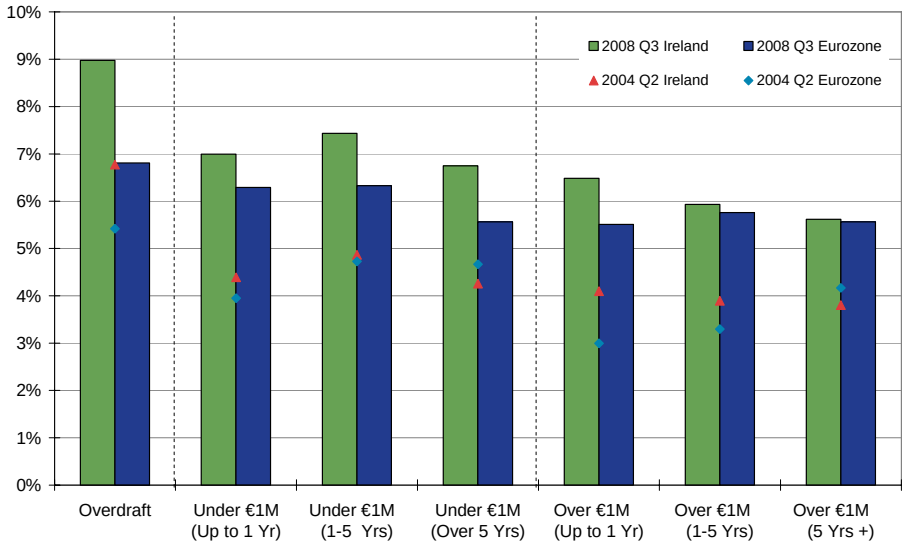
OECD 26 Ranking:
Net Childcare Costs: 26

Net Childcare Costs as a % of Family Net Income: 24

Source: OECD, Benefits and Wages, 2007

45 OECD-28 average minus Italy and Spain. Results are based on a family with two children aged two and three in full-time childcare at a typical childcare centre. Results based on the income of two earners with full-time earnings of 167% (100%+67%) of average earnings. "Family net income" is the sum of gross earnings plus cash benefits minus taxes and social contributions. All fee reductions, including free pre-school or childcare for certain age groups, are included in the calculation as rebates. Ireland has a similar ranking for a couple on 200% of the average net wage.

Figure 3.47 Interest Rates Available to Non-Financial Corporations by Loan Type (i.e. loan size and duration), Ireland and the Eurozone 2004 Q2 and 2008 Q3



This chart shows average interest rates available in Ireland and the Eurozone to non-financial corporations, by loan type. All loan types in Ireland are more expensive than the Eurozone average in 2008. While interest rates have increased in Ireland and the Eurozone since 2004, the gap between Ireland and the Eurozone has widened for most loan types.

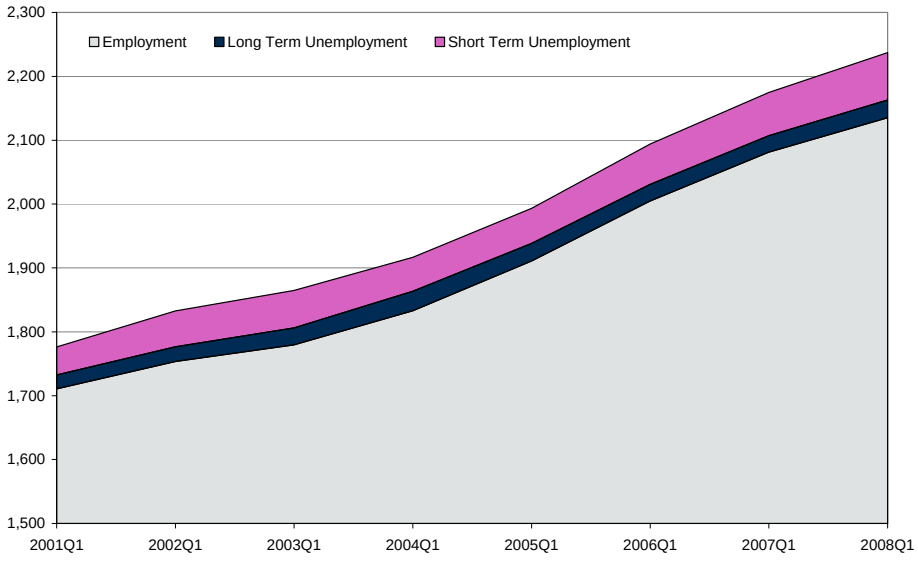
Ranking:
N/A

Source: European Central Bank; Central Bank of Ireland

3.4. Labour Supply

3.4.1 Overview

Figure 3.48 Labour Force (Employment & Unemployment in 000s), Ireland 2001-2008 Q1

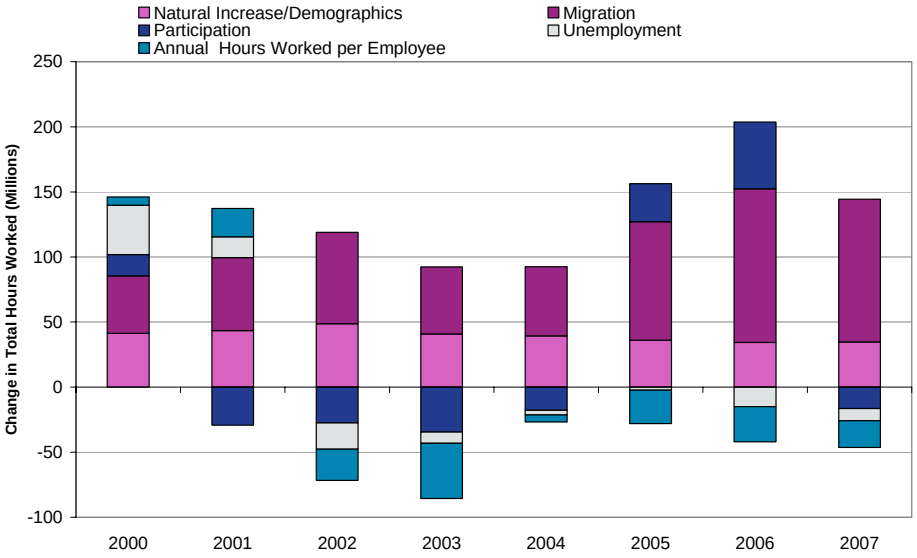


Ireland's economic growth has been facilitated by an increase in labour supply. Labour force growth continued in 2007, with most unemployment taking the form of short term unemployment. Long term unemployment accounted for 28 percent of total unemployment in 2007 and 2008 Q1. Unemployment is forecast to increase significantly in 2009.

Ranking:
N/A

Source: Forfás calculations; Central Statistics Office, QNHS

Figure 3.49 Decomposition of Change in Total Hours Worked in Ireland, 2000-2007

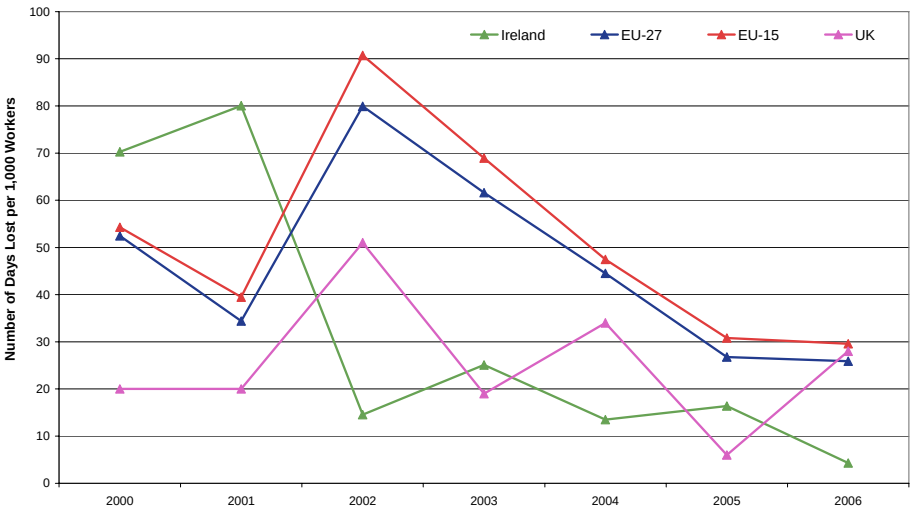


Changes in total hours worked in the Irish economy depend on a wide variety of factors. Natural population growth and migration induced increases in population drove employment growth in 2007. Average hours worked have fallen. Given the weakening of the economy, migration is unlikely to contribute significantly to growth in the number of hours worked going forward.

Ranking:
N/A

Source: Forfás calculations; Central Statistics Office, Quarterly National Household Survey Data; OECD Employment Outlook, 2005-2008 Reports

Figure 3.50 Working Days Lost per 1,000 of Workers due to Industrial Disputes, 2000-2006



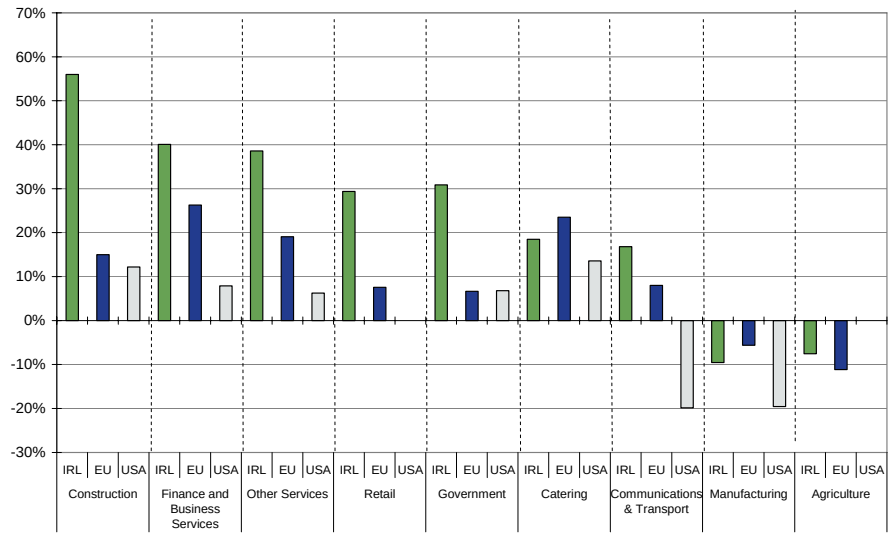
Industrial disputes within Ireland, the US and the EU have varied significantly over the 2000-2006 time period. In 2006 Irish organisations lost fewer working days per 1,000 workers as a result of industrial disputes than in the comparator countries.

Ranking:
N/A

Source: Eurostat, Population and Social Conditions

3.4.2 Employment

Figure 3.51 Percentage Change in Employment by Broad Sector, Ireland, EU-15 and US, 2000-2008 Q2[46]

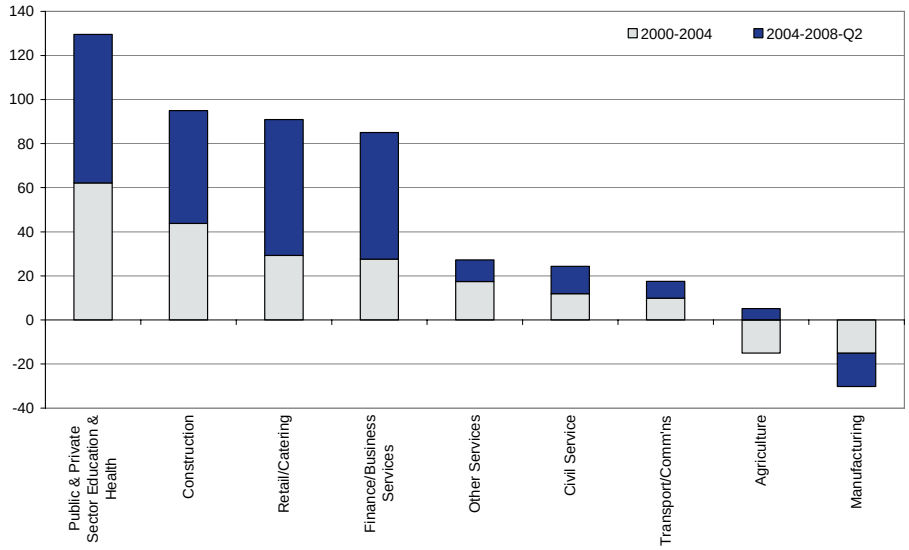


Overall, employment in Ireland increased faster than either the EU or US averages between 2000 and 2007/08. At a sectoral level, employment growth in construction, finance and business services, 'other services', retail and government in Ireland has outstripped the EU-15 and US.

Ranking: N/A

Source: Central Statistics Office, Eurostat Population and Social Conditions, US Bureau of Labour Statistics

Figure 3.52 Source of Jobs Growth in Ireland (000s), 2000-2008 Q2



This chart shows the number of jobs created by sector in Ireland between 2000 and 2008 Q2. Manufacturing and agriculture have contracted, while education/health, construction, retailing/catering and finance have expanded strongly, particularly since 2004[47]. However, given the current downturn in the economy, 17,800 jobs have been lost in the construction sector between the first two quarters of 2008.

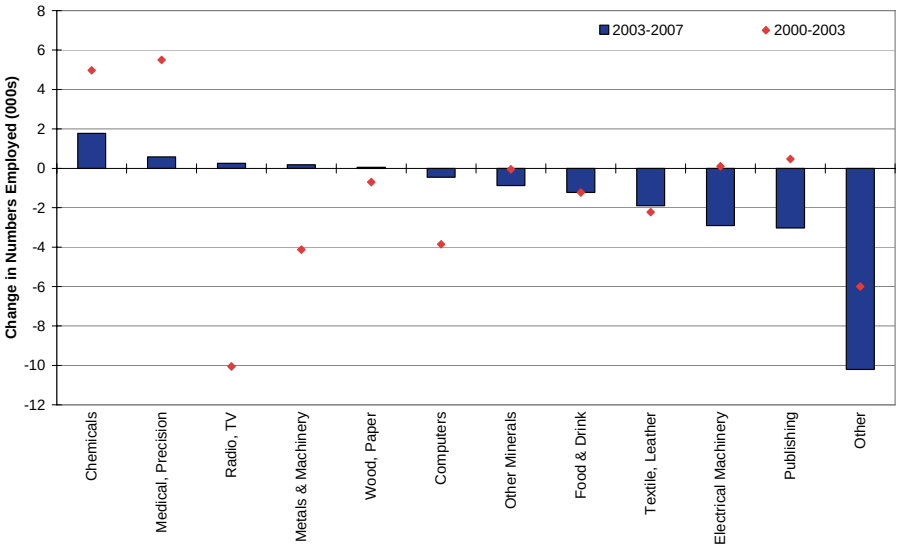
Ranking: N/A

Source: Forfás calculations; Central Statistics Office, QNHS Data, 2001-2007

46 NAICS codes used in the US differ from the NACE codes used in European Countries and therefore data has been adjusted accordingly. 2007 data is used for the US and US data is unavailable for certain sectors.

47 Of the 62,200 jobs created in the health and education sectors in 2000-2004, 32,850 were created in the public sector. Of the 67,400 jobs created in the health and education sectors in 2004-2008 Q2, 27,300 were created in the public sector. Due to data availability issues, it remains unclear how many private sector jobs in health and education receive public funding.

Figure 3.53 Change in Employment in Irish Manufacturing by Sector (000s), 2000-2007



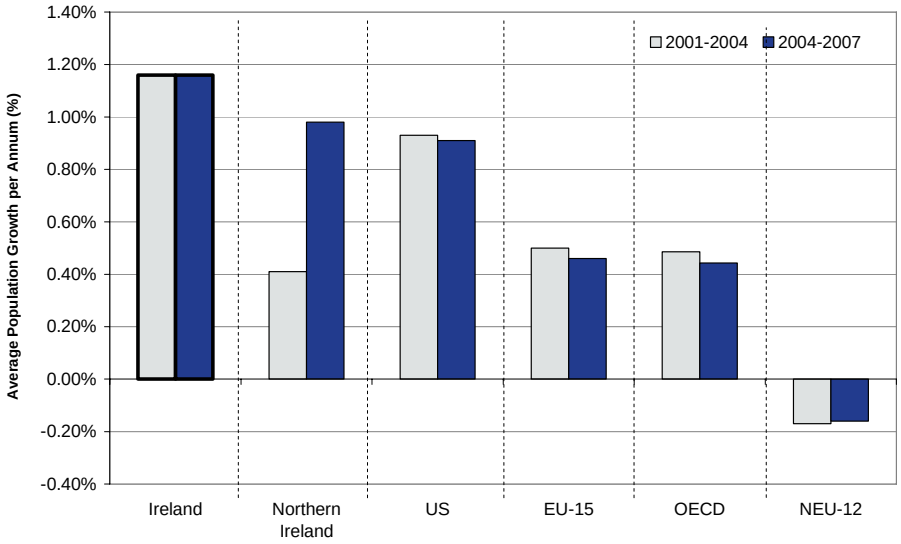
Over 34,000 jobs were lost in manufacturing during the 2000-2007 time period. The majority of sectors experienced job losses during this period. However, the chemicals and medical/precision devices sectors expanded, although this growth has slowed over recent years.

Ranking:
N/A

Source: Central Statistics Office (by 2 digit NACE codes)

3.4.3 Labour Supply Characteristics

Figure 3.54 Average Population Growth per Annum, 2001-2007



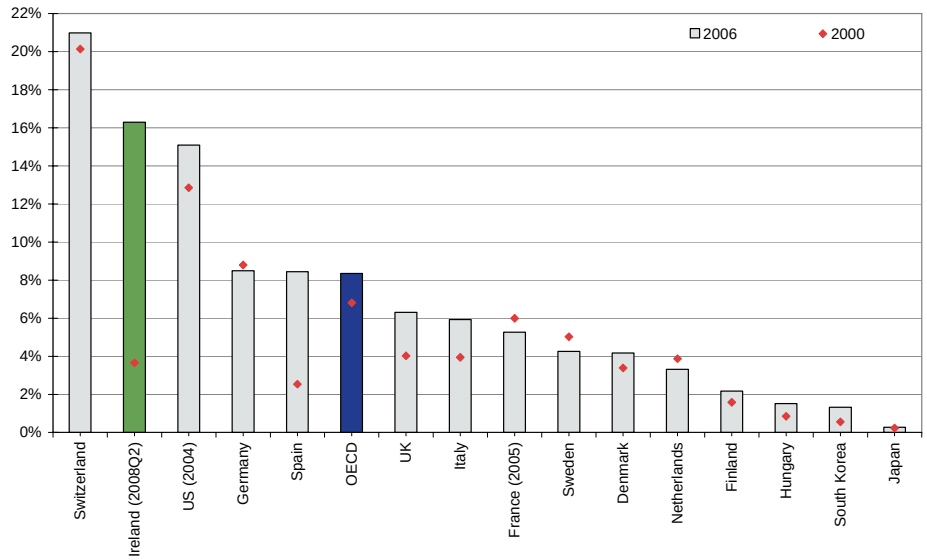
Ireland's population continues to grow at a fast rate. Overall, the EU-15 population is growing at a slower pace, while the population in the 12 new EU member states is falling.

OECD-28 Ranking[48]:
3 (--)

Source: Forfás calculations; Groningen Growth & Development Centre, Total Economy Database, January 2008; Northern Ireland Statistics and Research Agency

48 Base years for ranking change is 2001-2004 compared to 2004-2007.

Figure 3.55 Stock of Foreign Labour (as a % of the Total Labour Force), 2006[49]

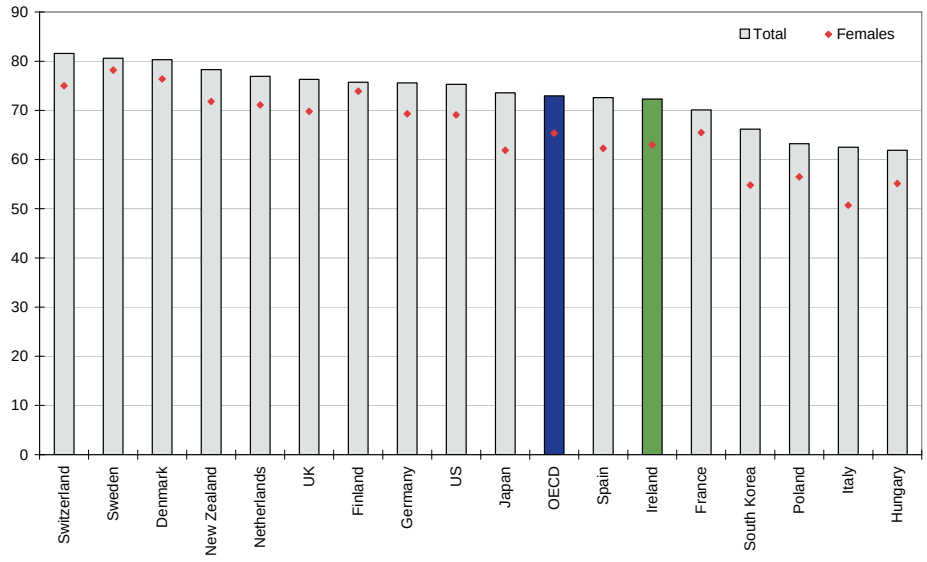


Foreign workers comprise 16.3 percent of the Irish labour force in Q2 2008 compared to 3.7 percent in 2000. A more detailed breakdown of Irish statistics reveals that 49 percent of these foreign workers are from the 12 new EU member states. The rest of this cohort comprise of EU-15 (9 percent), UK (16 percent) and non-EU nationals (25 percent).

OECD-23 Ranking:
3 (↑11)

Source: Central Statistics Office, QNHS; OECD, International Migration Outlook, 2008

Figure 3.56 Participation Rates of 15-64 Year Old Population in the Workforce, by Gender, 2007



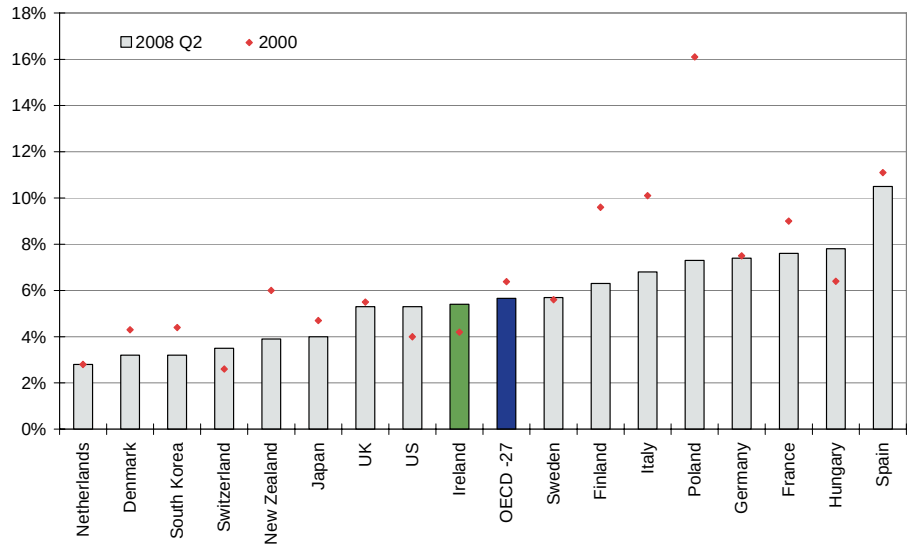
Participation rates in Ireland have increased steadily in recent years. Irish rates are converging on the OECD average, but the gap between female participation in Ireland and leading countries such as Sweden and Denmark remains considerable, particularly for older female workers.

OECD-28 Ranking[50]:
Overall: 18 (↑3)
Males: 16 (--)
Females: 17 (↑4)

Source: Forfás calculations; OECD, Employment Outlook 2008

49 OECD-28 average minus Australia, Canada, Iceland, New Zealand, and Poland.
50 Base year for ranking change is 2003 compared to 2007.

Figure 3.57 Unemployment, Standardised Rates, 2008 Q2[51]

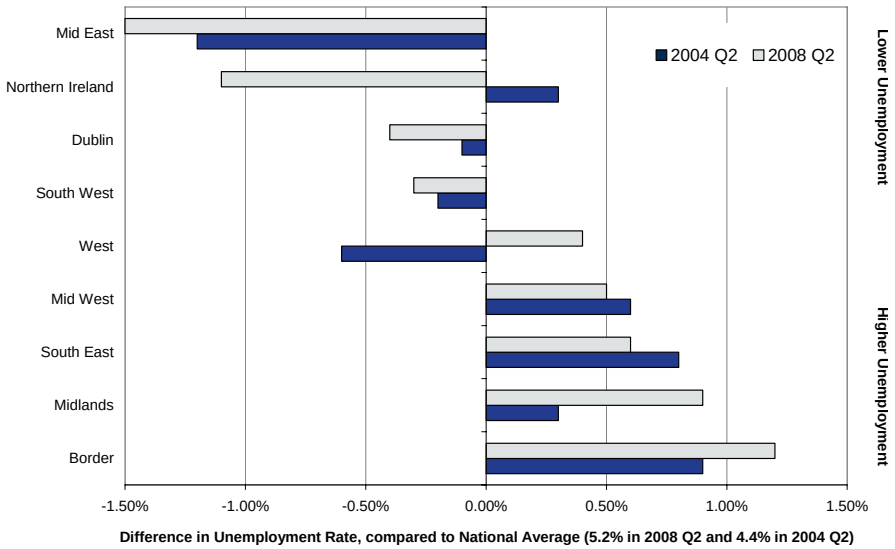


Source: *OECD Stat.Extracts, Labour*

Unemployment remains below the OECD average and that in many larger EU economies. However, the ESRI forecast that Irish unemployment will increase to eight percent in 2009[52].

OECD-27 Ranking:
14 (↓6)

Figure 3.58 Regional Unemployment, Ireland and Northern Ireland, 2008 Q2



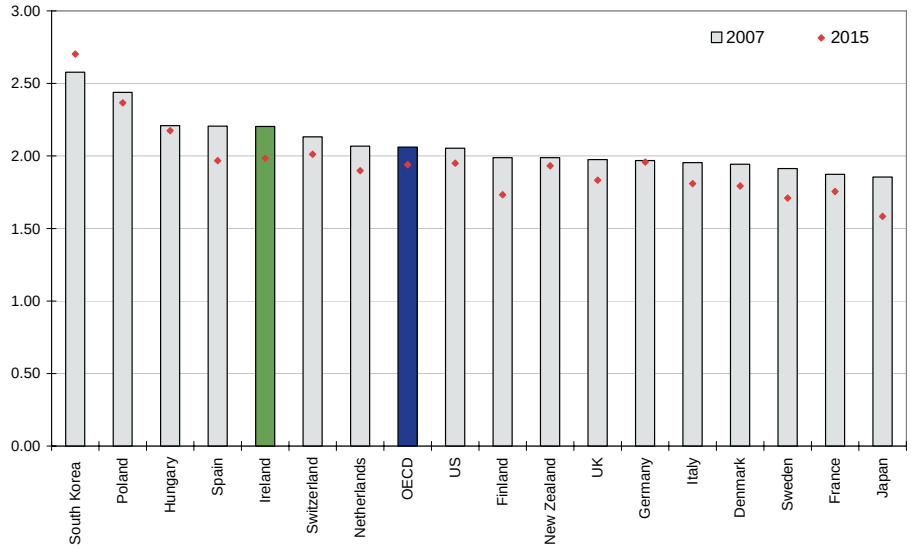
In the second quarter of 2008, unemployment was lowest in the Mid East, Dublin and also in Northern Ireland. Unemployment rates in the South West region are now close to the national average. The Midlands and Border regions still have the highest regional unemployment rates.

Ranking:
N/A

Source: Forfás calculations; Central Statistics Office, Quarterly National Household Survey, 2008 Quarter 2; Northern Ireland Department of Enterprise, Trade & Investment, Monthly Labour Market Report, October 2008

51 OECD-28 average minus Iceland.
52 ESRI Quarterly Economic Commentary, Autumn 2008.

Figure 3.59 Number of Persons of Working-Age per Dependent, 2007

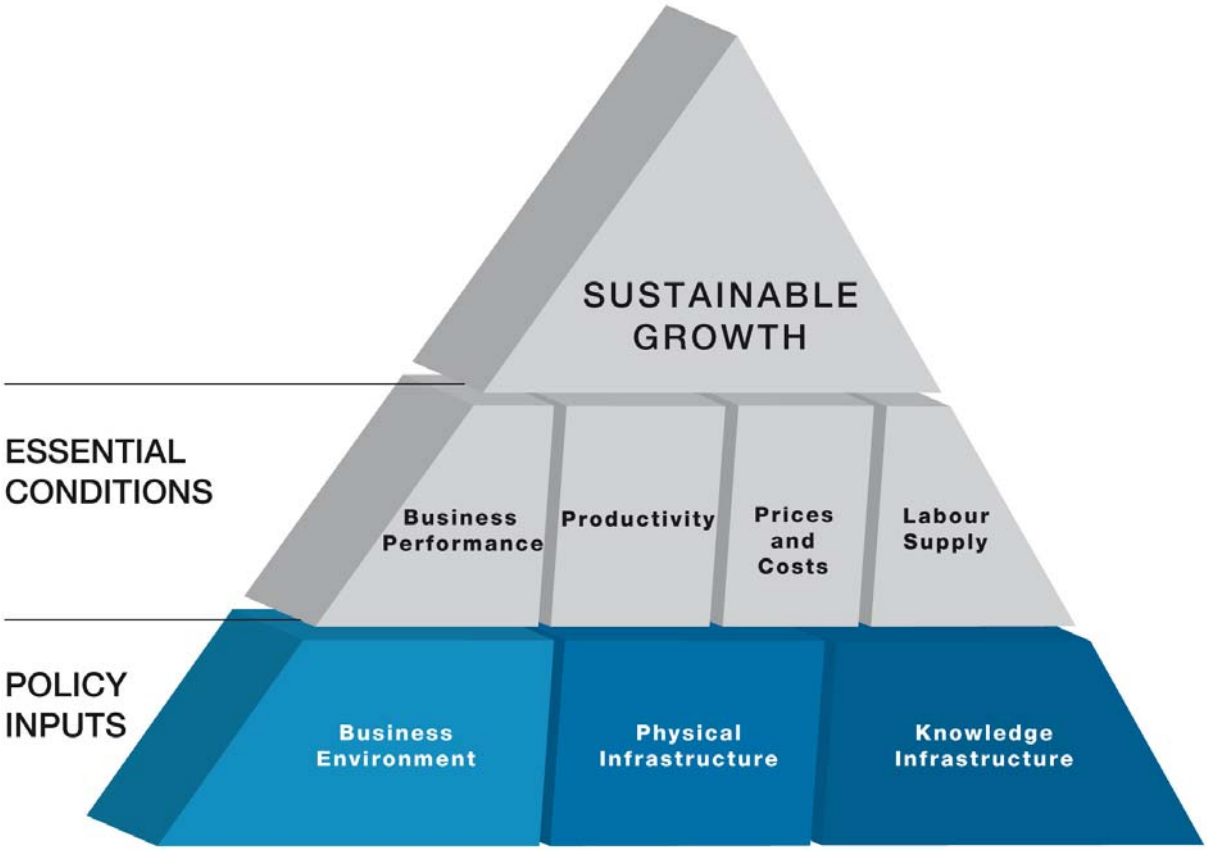


Economies with higher ratios of workers to dependents (children and retirees) are able to fund their social services more easily. Ireland's population is favourably structured, due to a peak in births in 1980. Projections for 2015 suggest there may be a slight decline in the ratio.

OECD-28 Ranking:
2007: 8
2015: 10

Source: *Forfás calculations; OECD Stat. Extracts, Labour; UN, Human Development Report 2007/08*

4 Policy Inputs



4. Policy Inputs

4.1 Business Environment

The business environment can have a significant impact on a country's economic performance and competitiveness. In this section, indicators that illustrate Ireland's relative performance on taxation, regulation and competition, labour market regulations, finance and social capital are assessed. Chart 4.A provides an overview of Ireland's recent performance in terms of key business environment indicators.

4.1.1 Taxation

Overall, tax revenue in Ireland as a proportion of income (GNP) is above the OECD average (Fig. 4.01). Ireland's tax structure is much less dependent on social security contributions than elsewhere in Europe, raising Government revenues instead from direct and indirect taxation (Fig. 4.02). Nonetheless, taxes on both capital (profits) and labour (wages) are low relative to other countries, while the tax take from corporations is above the OECD average (Figs. 4.03-4.05). Indirect taxation rates are amongst the highest in the OECD (Fig. 4.06), which influences consumer prices and tourism. Tax revenues from property are in line with the OECD average. As these revenues come from taxes on transactions rather than taxes on assets (Fig. 4.07), the recent slowdown of activity in the property market is having a dramatic effect on property tax revenues. Lastly, Ireland does not tax pollution directly, unlike some other countries (Fig. 4.08).

4.1.2 Regulation and Competition

The general regulatory environment in Ireland is perceived to be strong. Many of Ireland's major internationally trading sectors (e.g. pharmaceuticals, medical devices, fund administration, software, etc.) depend on a strong regulatory environment. The regulatory environment also supports entrepreneurship as the financial and administrative costs of starting a business in Ireland are low compared to other countries (Fig. 4.10). In contrast, the financial and administrative costs of registering a property in Ireland are high (Fig 4.11). In relation to domestic competition, while competition legislation is perceived to be relatively efficient, incumbents still dominate the market in certain utilities - in particular, the electricity and communications markets (Figs. 4.12-4.14).

4.1.3 Labour Market Regulation

According to executives' opinions, labour market regulations in Ireland are not believed to have a significant impact upon business activities. Most countries, including Ireland, have experienced increased labour market regulations since 2000 (Fig. 4.16). The employment framework in Ireland is considered less rigid than the OECD average (Fig. 4.17). The minimum wage in Ireland, while only relevant to 3.3 percent of full time employees, is significantly higher than the majority of OECD countries (Fig. 4.18).

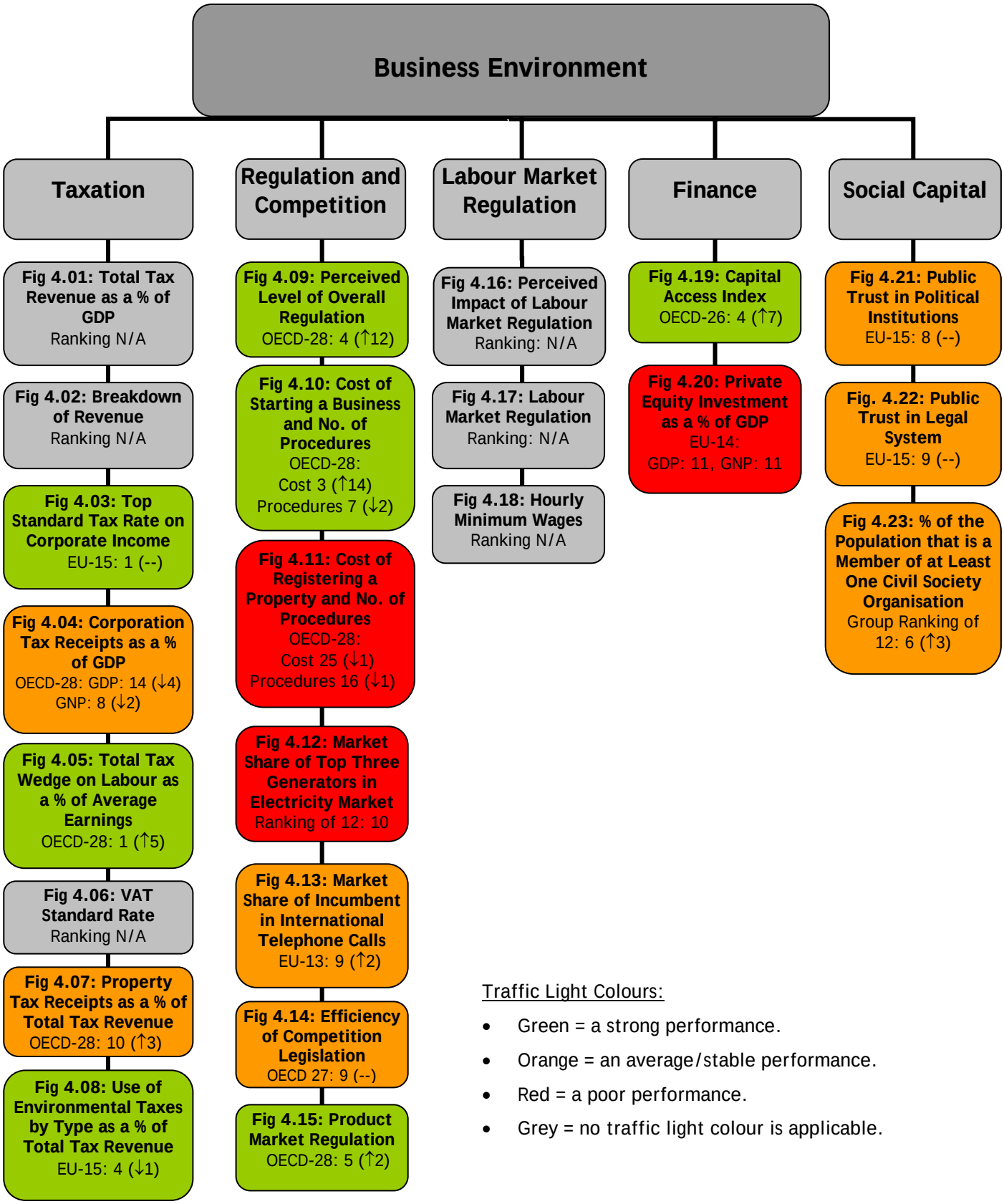
4.1.4 Finance

Overall, access to capital in Ireland is not perceived to be a significant barrier to enterprise (Fig. 4.19). In the Milken Institute's Capital Access Index, Ireland ranked 4th in the OECD in 2007, an improvement of 7 places since 2000. However, the international credit crunch is currently having a detrimental effect on access to and cost of capital for Irish firms. Private equity investment is not as well developed in Ireland as it is in other countries (Fig. 4.20).

4.1.5 Social Capital

The public's trust in political and legal institutions compares relatively favourably with other EU countries (Fig. 4.21 and Fig. 4.22). Membership of civil society organisations increased in Ireland between 1990 and 2000 (Fig. 4.23).

Chart 4.A



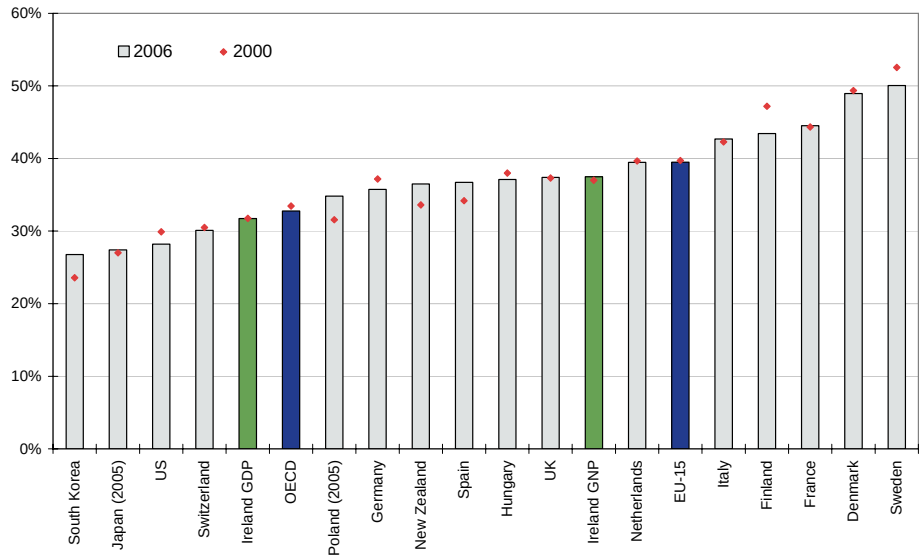
Traffic Light Colours:

- Green = a strong performance.
- Orange = an average/stable performance.
- Red = a poor performance.
- Grey = no traffic light colour is applicable.

4.1 Business Environment

4.1.1 Taxation

Figure 4.01 Total Tax Revenue (as a % of GDP), 2006[53]

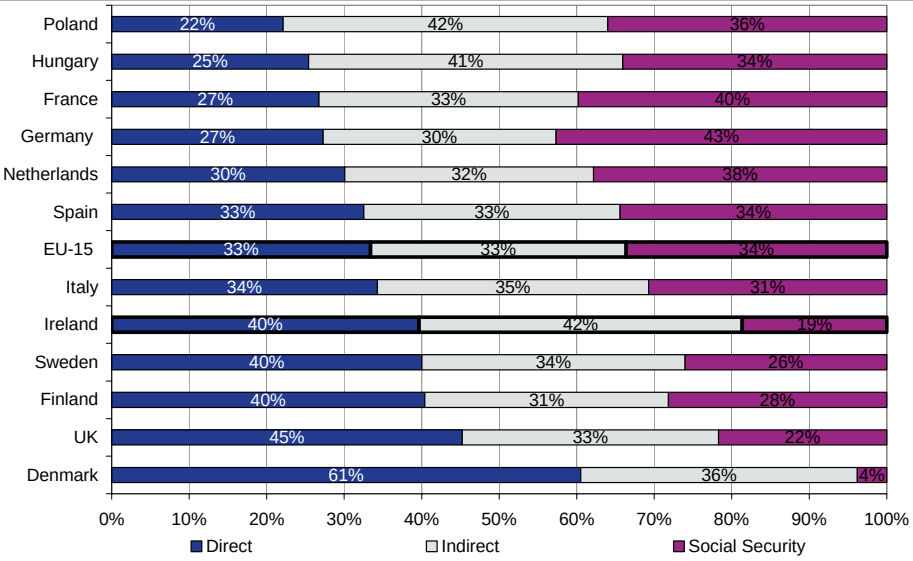


Ireland's tax take, as a proportion of its income (GNP) is significantly above the OECD average but below the EU-15 average. Total tax revenue taken as a proportion of GDP has remained relatively stable across the OECD and the EU-15 since 2000.

Ranking:
N/A

Source: OECD, Revenue Statistics 1965-2006

Figure 4.02 Breakdown of Revenue, 2006



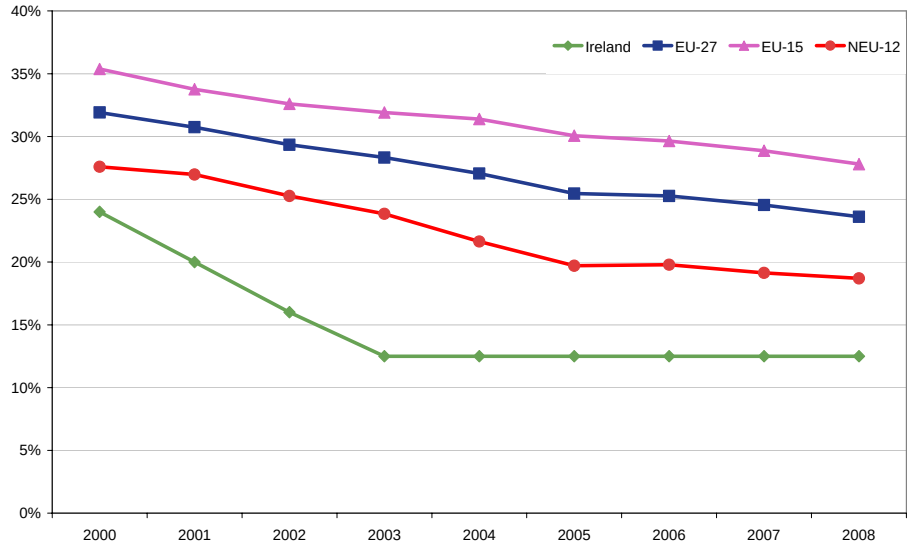
Ireland's tax structure is less dependent on social security contributions than other economies. There is a relatively even split between direct and indirect taxes, reflecting a policy to reduce taxes on factors of production – i.e. workers and firms.

Ranking:
N/A

Source: Eurostat, Economy and Finance Indicators

53 2006 figures are provisional figures. Rankings incorporate the latest available data for countries that are unavailable for 2006.

Figure 4.03 Top Standard Tax Rate on Corporate Income (%), 2000-2008[54]

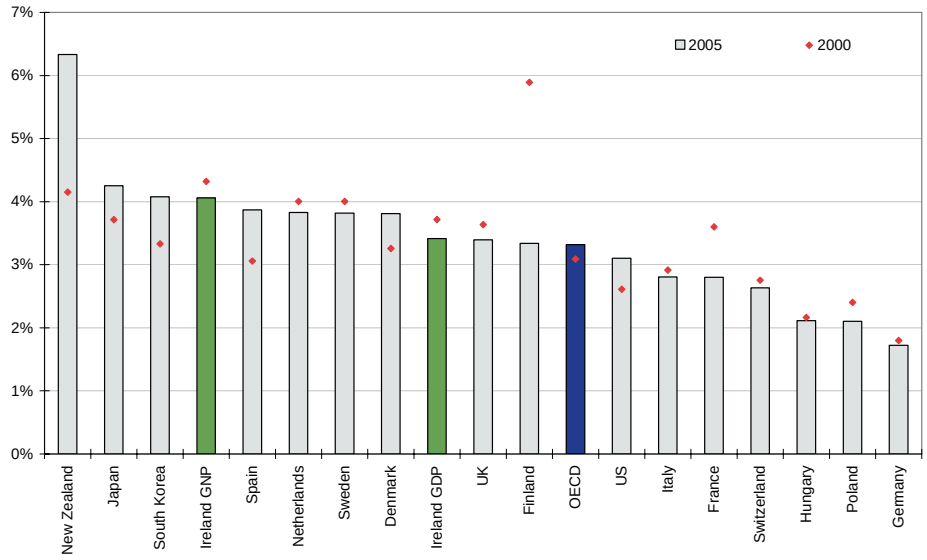


The average top rate of corporation tax in the EU-15 and EU-27 has continued its declining trend as economies seek to create attractive investment environments. At 12.5 percent, Ireland has the third lowest rate in the EU-27.

EU-15 Ranking:
1 (--)

Source: Eurostat, Taxation Trends in the European Union, 2008

Figure 4.04 Corporation Tax Receipts (as a % of GDP), 2005



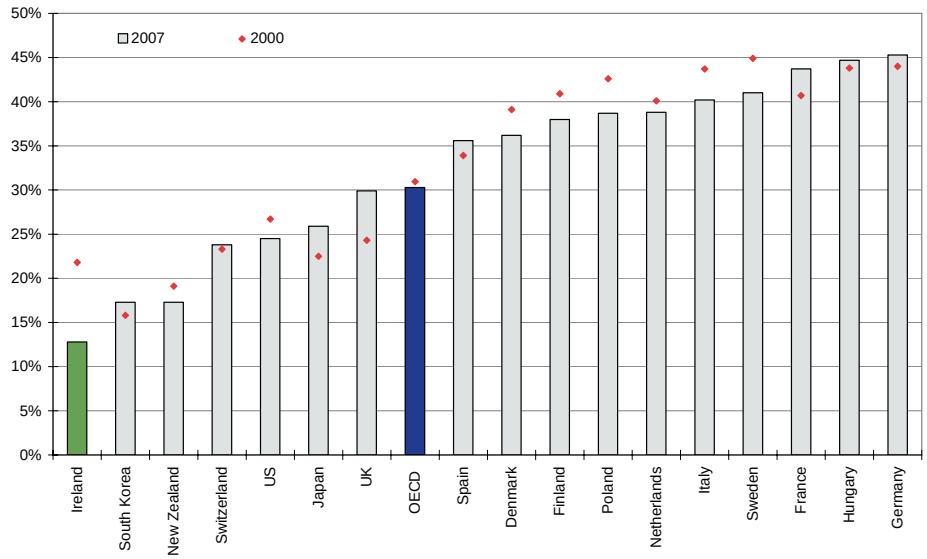
While Ireland's corporation tax rate is low, Ireland earns more in corporation tax payments as a percentage of GDP and GNP than most other OECD countries. In addition, corporation tax receipts as a share of total taxes have also grown strongly in recent years from 10% in 1995 to 14% in 2007 and are forecasted to maintain this share in 2008[55].

OECD-28 Ranking[56]:
GDP: 14 (↓4)
GNP: 8 (↓2)

Source: OECD, Revenue Statistics 1965-2006

54 In Ireland, companies in the manufacturing industry had a rate of 10% until the rate changed to 12.5% in 2003. In making international comparisons of corporate tax rates, it is important to take account of the impact of exemptions in the tax base.
55 Source: Department of Finance
56 Traffic light determined based on GDP ranking.

Figure 4.05 Total Tax Wedge on Labour (as a % of Average Earnings), 2007[57]

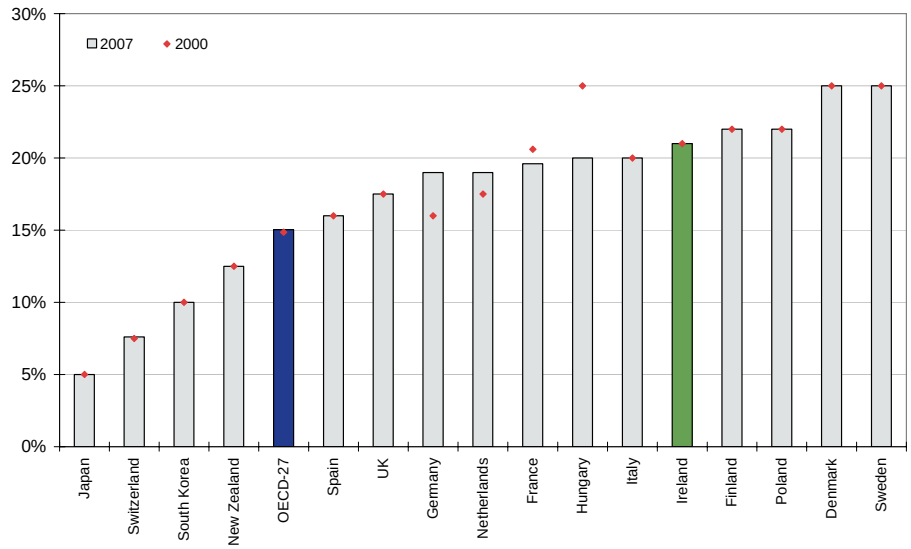


Ireland's tax wedge on labour, i.e. the gap between what the employer pays and what the employee receives has fallen since 2000. Ireland's tax wedge is now the smallest in the OECD and is less than half the OECD average. The tax wedge is higher for higher income earners – a potential disincentive for highly skilled internationally mobile workers.

OECD-28 Ranking:
1 (↑5)

Source: OECD Taxing Wages 2006/2007

Figure 4.06 Value Added Tax, Standard Rate, 2007[58]



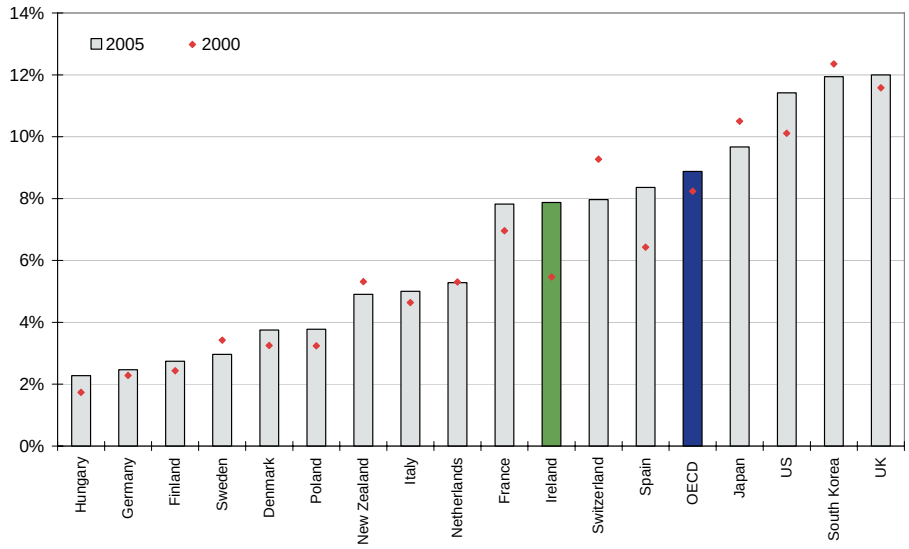
The main source of indirect tax revenues for all countries is a sales or value added tax on consumption. While these taxes are less likely to affect incentives to work or invest, they can be regressive. Irish VAT rates are amongst the highest in the benchmarked countries. Budget 2009 announced an increase in the top rate of VAT to 21.5 percent.

Ranking:
N/A

Source: OECD, Tax Database, 2008

57 Data based on a two-earner family with a wage level of 100-67% of the average wage.
58 OECD-28 average minus US.

Figure 4.07 Property Tax Receipts (as a % of Total Tax Revenue), 2005

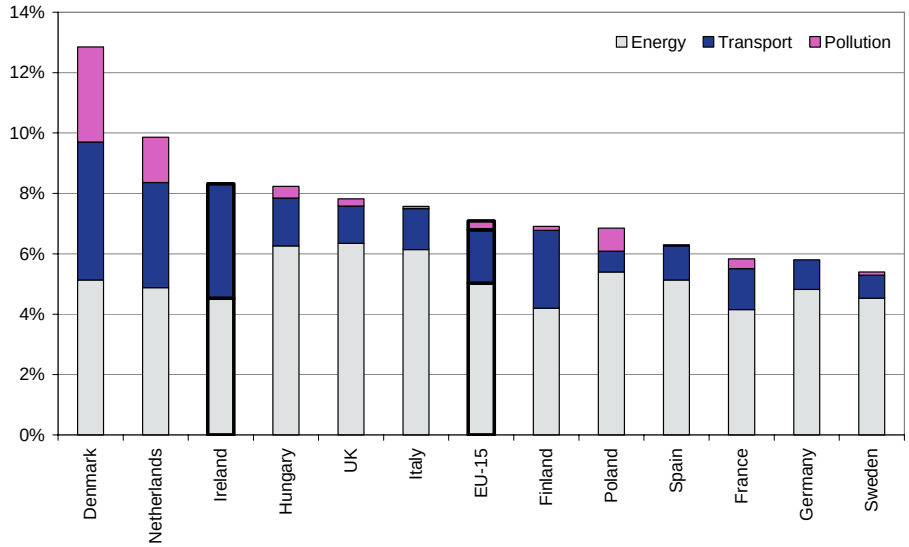


Ireland's tax take from property is close to the OECD average. The major component of property tax revenue in Ireland is stamp duty, which is dependent on property transactions. Other components include capital gains tax and capital acquisitions tax. Recent revenues from property tax have fallen significantly in line with the slowdown in the property market.

OECD-28 Ranking:
10 (↑3)

Source: OECD, Revenue Statistics 1965-2006

Figure 4.08 Use of Environmental Taxes by Type (as a % of Total Tax Revenue), 2006



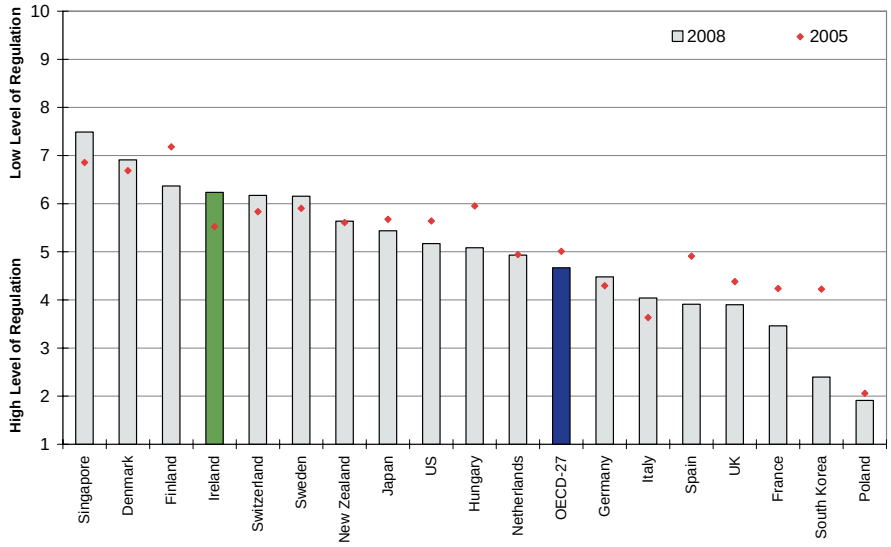
Overall, Ireland collects a relatively large proportion of its tax revenue from environmental sources, but Ireland does not tax pollution, as some other countries do. Ireland's share of revenues from energy is also below the EU average.

EU-15 Overall Ranking:
4 (↓1)

Source: Eurostat, Environment and Energy Indicators

4.1.2 Regulation and Competition

Figure 4.09 Perceived Level of Overall Regulation, (Scale 1-10) 2008

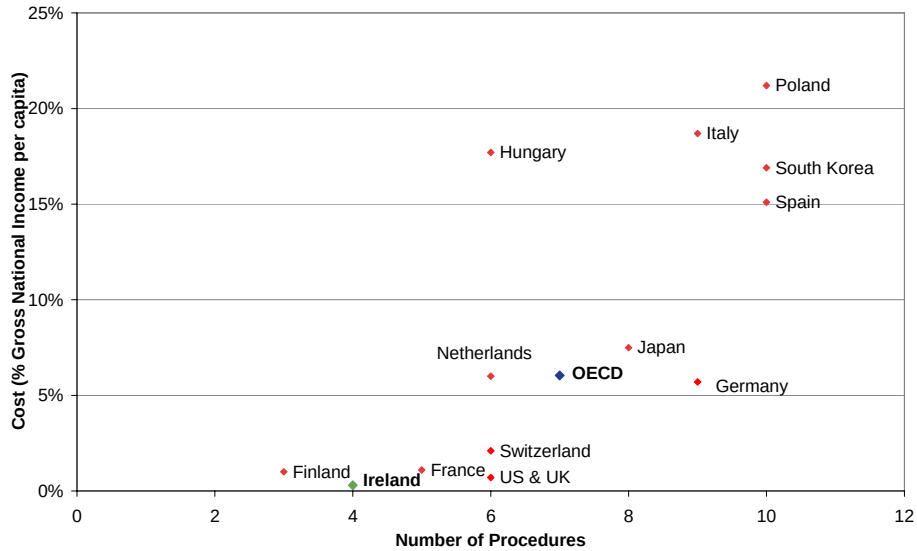


Well-designed and efficiently enforced regulation helps achieve policy goals (social, health and safety, environmental and economic policy) without imposing unnecessary administrative and hidden costs on firms. The overall level of regulation in Ireland is among the lowest in the OECD. Regulation levels are perceived to be decreasing in Ireland but increasing in most other benchmarked countries.

OECD-27 Ranking[59]:
4 (↑12)

Source: IMD World Competitiveness Yearbook, 2008

Figure 4.10 Cost of Starting a Business and the Number of Procedures Involved, 2008



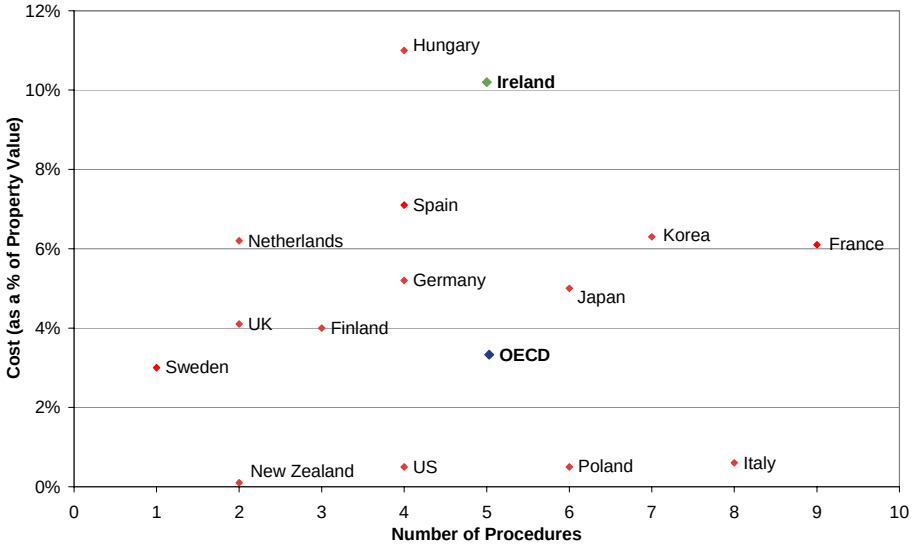
This chart shows both the financial costs of establishing a business and the number of procedures involved. Ireland ranks well on both measures, particularly in terms of the costs of establishing a new business.

OECD-28 Ranking[60]:
Cost: 3 (↑14)
Procedures: 7 (↓2)

Source: World Bank, Doing Business, 2008

59 Base year for ranking change is 2005 compared to 2008. OECD-28 average minus Iceland.
60 Base year for ranking change is 2005 compared to 2008. Rankings incorporate 2006 data for countries that are unavailable for 2005.

Figure 4.11 Cost of Registering a Property and the Number of Procedures Involved, 2008[61]

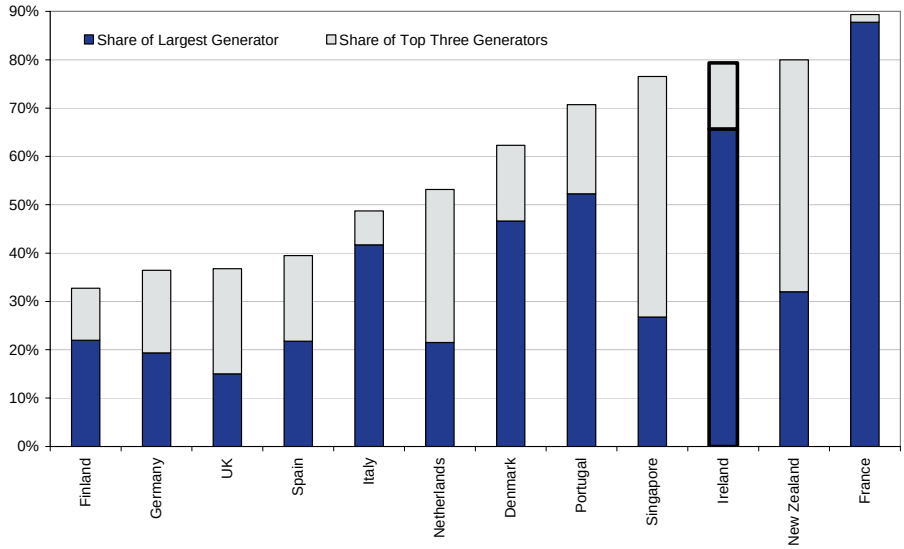


This chart shows both the financial costs of registering a property and the number of procedures involved. Property costs are recorded as a percentage of the property value and official costs required by law, including fees, transfer taxes, stamp duties and any other payments[62]. Ireland ranks poorly on the cost measure, but has the same number of procedures as the OECD average.

OECD-28 Ranking[63]:
Cost: 25 (↓1)
Procedures: 16 (↓1)

Source: World Bank, Doing Business, 2008

Figure 4.12 Market Share of Top Three Generators in the Electricity Market, 2007



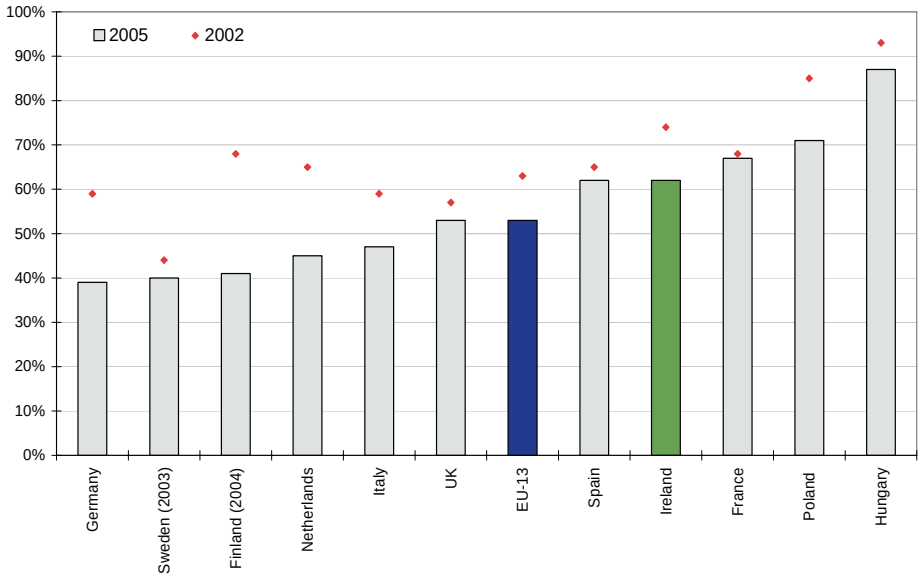
The Irish electricity market is relatively concentrated, with the three largest generators accounting for 79 percent of the market. This large share may be partially explained by Ireland's small market size and limited interconnection to other energy markets.

Ranking of 12:
10

Source: Forfás, Energy Policy and Competitiveness, Report due to be published in January 2009

61 Traffic light colour determined based on Ireland's cost performance of starting a new business.
62 Other payments are payments to the property registry, notaries, public agencies or lawyers. Other taxes, such as capital gains tax or value added tax, are excluded from the cost measure. Both costs borne by the buyer and those borne by the seller are included.
63 Base year for ranking change is 2005 compared to 2008.

Figure 4.13 Market Share of Incumbent in International Telephone Calls, 2005

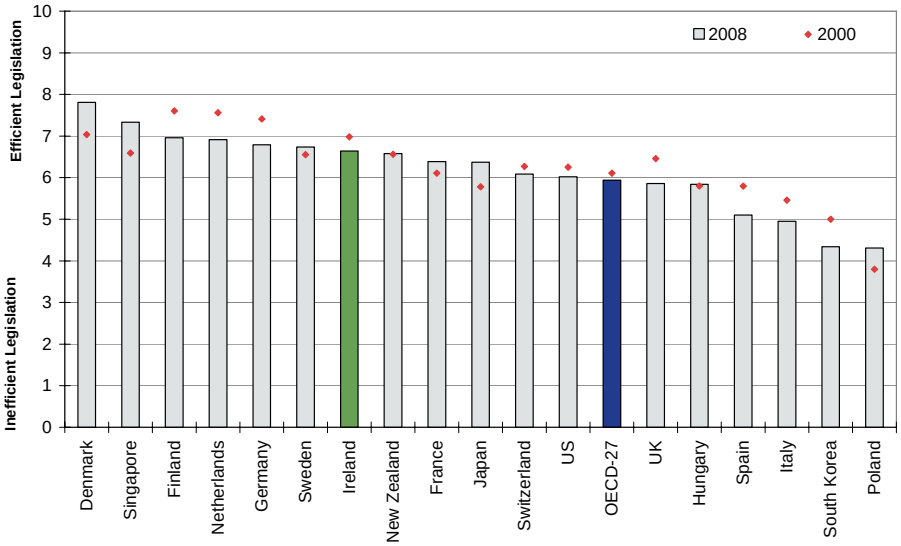


This chart shows the market share of the incumbent in the market for international phone calls. While, the Irish telecommunications market is open to competition, the largest player in the market still dominates, with over 60 percent of the market.

EU-13 Ranking[64]:
9 (↑2)

Source: Eurostat, Science and Technology Indicators

Figure 4.14 Efficiency of Competition Legislation, (Scale 0-10) 2008



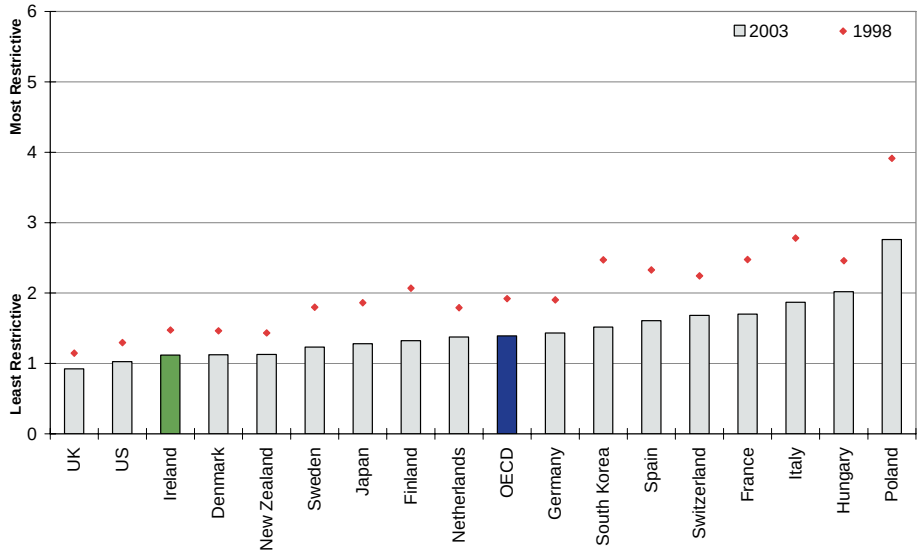
Competition can boost productivity and reduce prices for consumers and other businesses. According to executives' opinions, Ireland's competition legislation is more efficient than the average OECD economy.

OECD-27 Ranking[65]:
9 (--)

Source: IMD World Competitiveness Yearbook, 2008

64 Base year for ranking change is 2002 compared to 2005. EU-15 average minus Luxembourg and Denmark.
65 OECD-28 average minus Iceland.

Figure 4.15 Product Market Regulation, (Scale 0-6) 2003



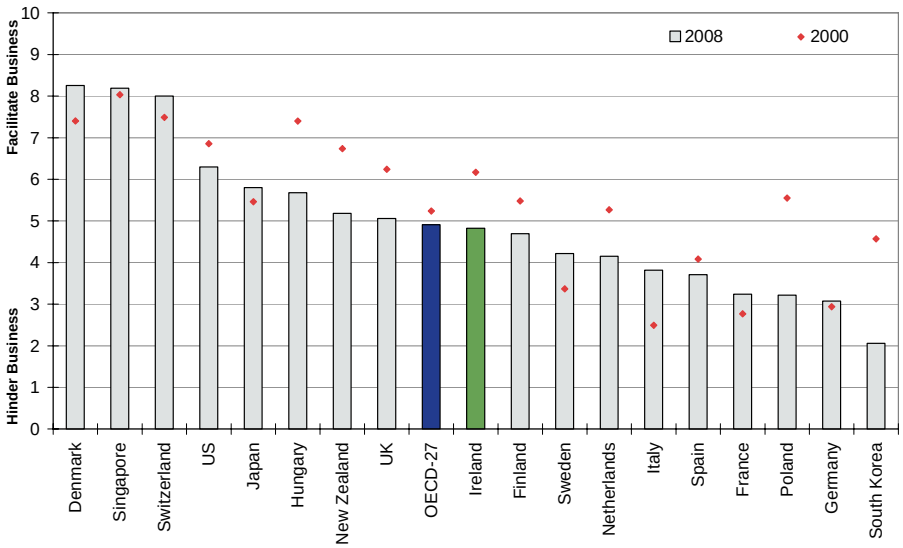
This measure captures the degree to which policies promote or inhibit competition in product markets. Regulatory impediments to product market competition declined throughout the OECD between 1998 and 2003.

OECD-28 Ranking[66]:
5 (↑2)

Source: OECD, Going for Growth, 2006

4.1.3 Labour Market Regulation

Figure 4.16 Perceived Impact of Labour Market Regulations, (Scale 0-10) 2008[67]



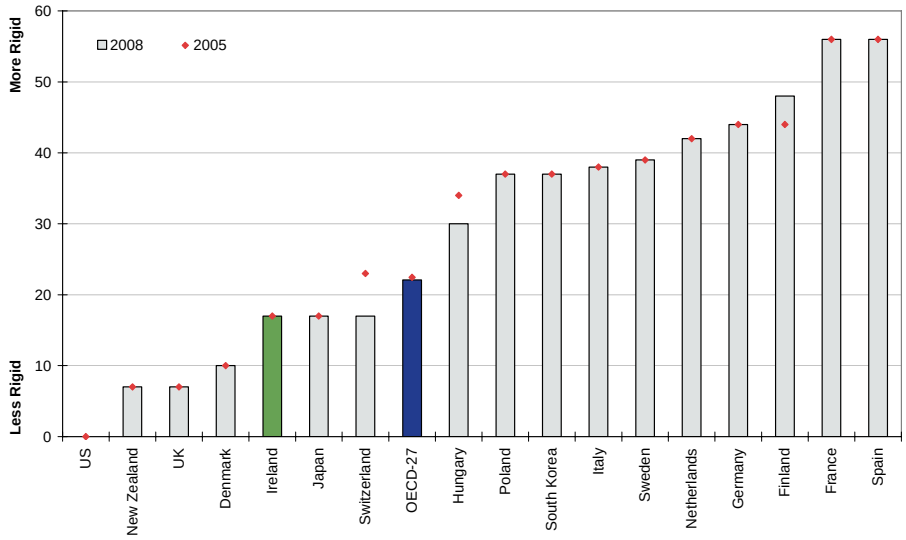
According to executives' opinions, labour market regulations in Ireland are not believed to have a significant impact upon business activities. Most countries, including Ireland, have experienced increased labour market regulations since 2000.

Ranking:
N/A

Source: IMD World Competitiveness Yearbook, 2008

66 Base year for ranking change is 1998 compared to 2003.
67 OECD-28 average minus Iceland.

Figure 4.17 Labour Market Regulation, (Scale 0-100) 2006[68]

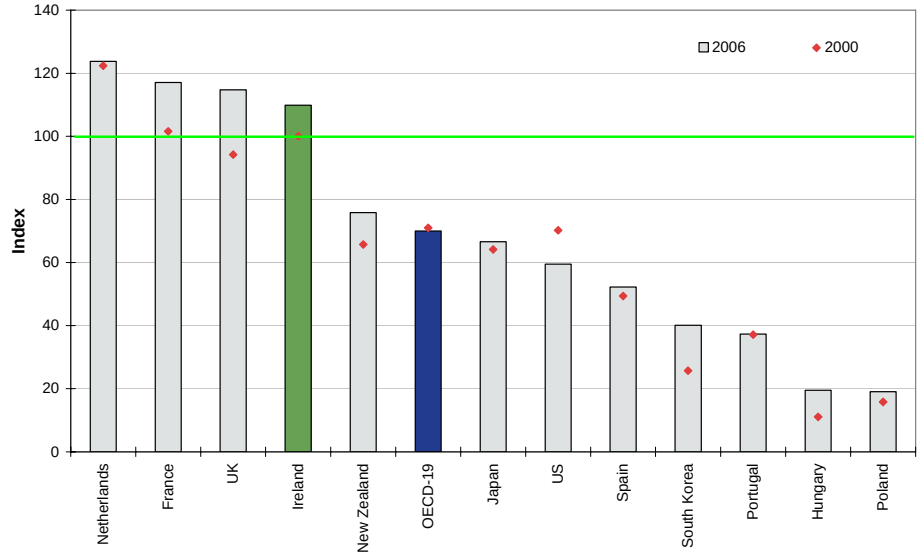


This index measures the flexibility of employment regulation. Higher values indicate more rigid regulation. Ireland's employment framework is less rigid than the OECD average and significantly less rigid than economies such as France and Spain.

Ranking:
N/A

Source: World Bank, Doing Business, 2008

Figure 4.18 Hourly Minimum Wages, (Ireland 2000 = 100) 2006[69]



Ireland's minimum wage is relatively high compared to eighteen other OECD countries. However, in 2006 only 3.3 percent of full time employees were on the minimum wage in Ireland[70].

Ranking:
N/A

Source: OECD, Taxing Wages, Special Feature: The Tax Treatment of Minimum Wages 2005/2006, 2006 Edition

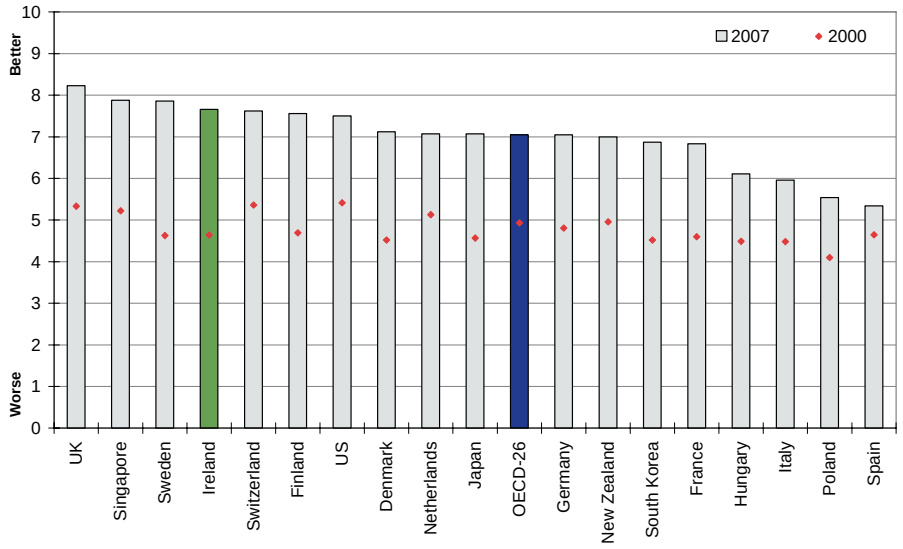
68 Assessment of the levels of labour market regulation is based on the Work Bank's 'Rigidity of Employment Index'. OECD-28 average minus Luxembourg.

69 OECD-28 average is composed of 19 countries.

70 Eurostat, Population and Social Conditions

4.1.4 Finance

Figure 4.19 Capital Access Index, (Scale 0-10) 2007[71]

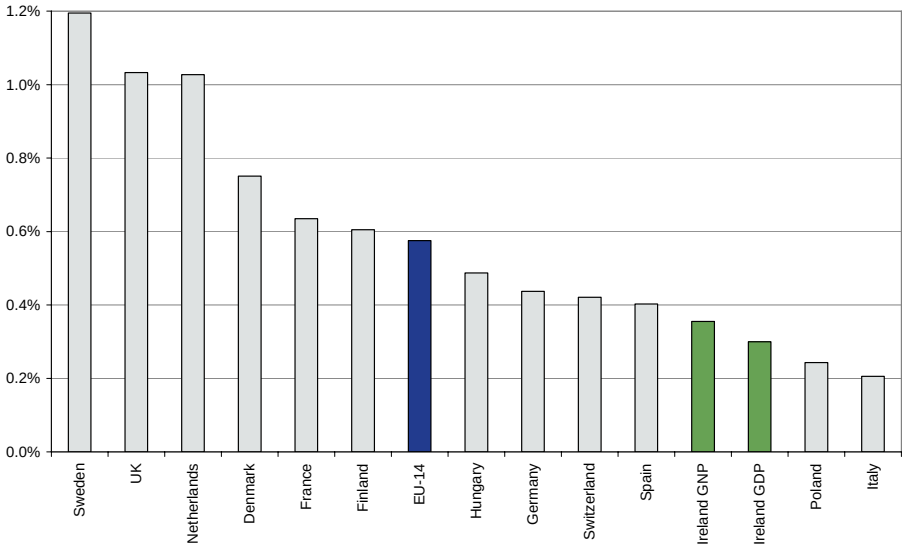


This index measures the breadth, depth and vitality of capital markets. Efficient financial markets, by making capital accessible to entrepreneurs, are key to long-term growth. Ireland ranks in 4th place in the OECD, an improvement of 7 places since 2000. However, the credit crunch in international markets is having a detrimental effect on access to and the cost of capital for Irish firms.

OECD-26 Ranking:
4 (↑7)

Source: Milken Institute's Capital Access Index, 2007

Figure 4.20 Private Equity Investment (as a % of GDP), 2007[72]



Private equity investment is formal investment outside of public capital markets and represents total start-up, expansion, turnaround and buyout investment activity undertaken by private equity and venture capital companies. Ireland is lagging the EU average in both GDP and GNP measures of private equity investment.

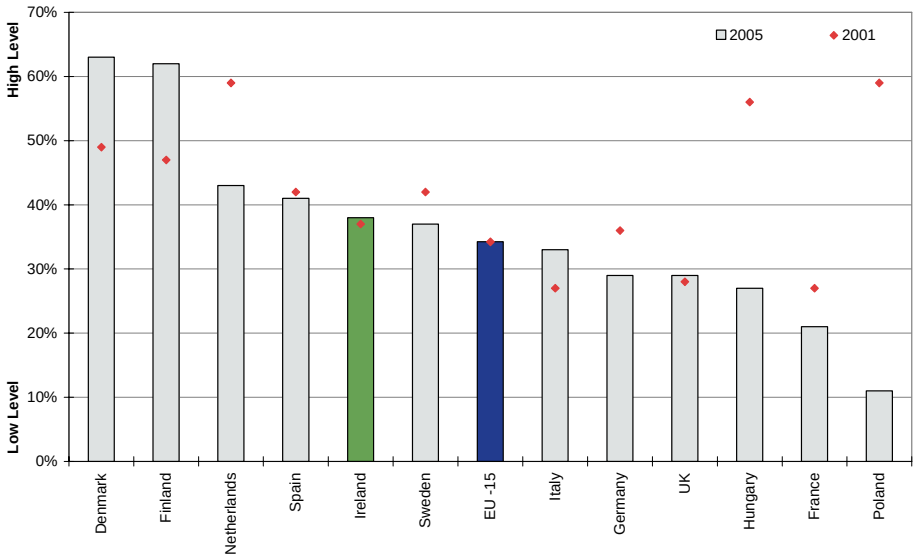
EU-14 Ranking:
GDP: 11
GNP: 11

Source: European Venture Capital Association (EVCA) Annual Survey of Pan-European Private Equity & Venture Capital Activity 2007

71 OECD average minus Luxembourg and Iceland.
72 EU-15 average minus Luxembourg.

4.1.5 Social Capital

Figure 4.21 Public Trust in Political Institutions, 2005

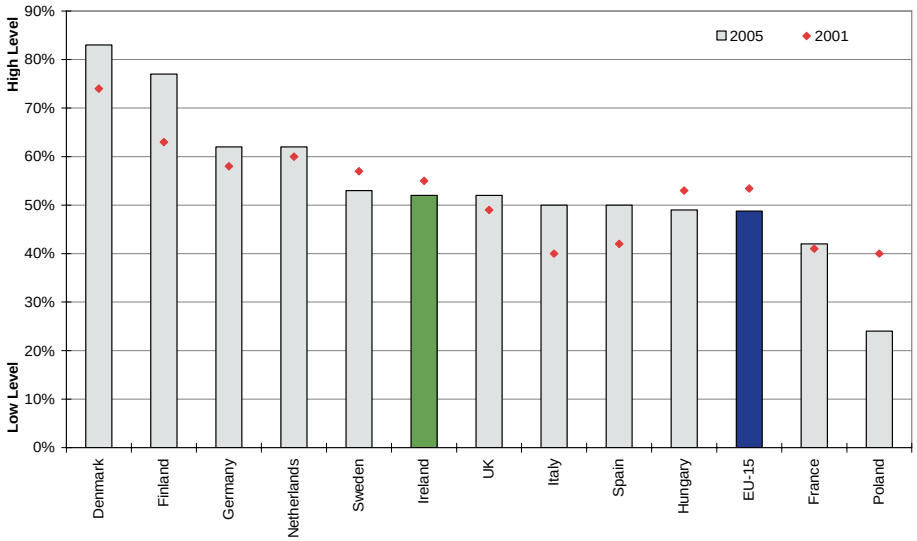


This indicator measures the percentage of people aged 15 and over who trust at least two of the following three national institutions: political parties, national government, and/or the national parliament. Trust levels in Ireland are above the EU-15 average and have remained relatively static over the 2001-2005 time period.

EU-15 Ranking[73]:
8 (--)

Source: European Foundation for the Improvement of Living and Working Conditions, EurLIFE Database, 2008

Figure 4.22 Public Trust in Legal System, 2005



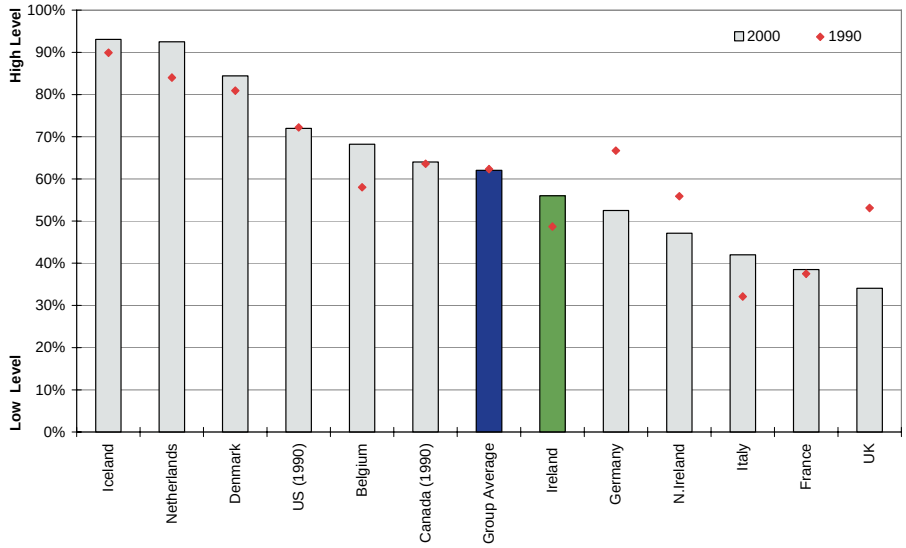
This indicator measures the percentage of people aged 15 and over who trust in the justice and/or the legal system. Trust levels in Ireland are above the EU-15 average.

EU-15 Ranking[74]:
9 (--)

Source: European Foundation for the Improvement of Living and Working Conditions, EurLIFE Database, 2008

73 Base year for ranking change is 2001 compared to 2005. 2002 data used for Hungary and Poland as 2001 data is unavailable.
74 Base year for ranking change is 2001 compared to 2005. 2002 data used for Hungary and Poland as 2001 data is unavailable.

Figure 4.23 Percentage of the Population that is a Member of at Least One Civil Society Organisation, 2000



Source: World Values Survey, 1980- 2000

Social capital refers to trust between actors in society. One summary measure of this is the proportion of the population that is a member of at least one civil society organisation (e.g. youth work and human rights). The proportion increased slightly in Ireland between 1990 and 2000, but lies well below countries such as Iceland and the Netherlands.

Group Ranking of 12[75]: 6 (↑3)

75 Base year for ranking change is 1990 compared to 2000. 1999 data is used for countries where 2000 data is unavailable.

4.2 Physical and Economic Infrastructure

The level of infrastructure in a country affects competitiveness in a number of ways. Well developed infrastructure can increase mobility of workers and goods, reduce traffic congestion and increase productivity. This not only affects existing firms, but also affects a country's attractiveness as an investment location and general quality of life. In this section, indicators that illustrate Ireland's relative performance are grouped under four headings;

- Investment in Physical Infrastructure,
- Transport and Energy Infrastructure,
- Information and Communications Technology Infrastructure, and
- Housing.

Chart 4.B provides an overview of Ireland's recent performance in terms of key infrastructure indicators.

4.2.1 Investment in Physical Infrastructure

Public capital stock per person is now growing, reversing a steady decline to 1998 (Fig. 4.24). Overall, perceptions of infrastructure quality remain low (Fig. 4.27), and despite real improvements to date, quality rankings are relatively poor across a number of categories. Through successive National Development Plans, Ireland's investment rates - the rate at which new public capital stock is formed - are among the highest in the EU (Fig. 4.26). Budget 2009 commits to maintaining high rates of capital investment.

4.2.2 Transport and Energy Infrastructure

Ireland's distribution networks rank poorly internationally (Fig. 4.28). Peak speeds in Dublin are below most other cities surveyed (Fig. 4.29). The quality of Ireland's air transportation has improved in recent years (Fig. 4.30). However, the quality of water transportation infrastructure scores poorly, highlighting the need for ongoing investment and reform to improve Ireland's performance (Fig. 4.31). Executives' perceptions about the efficiency of Ireland's energy infrastructure are also poor (Fig. 4.32). Ireland is particularly dependent on imported and non-renewable forms of energy (Fig. 4.33 and Fig. 4.34).

4.2.3 Information and Communication Technology Infrastructure

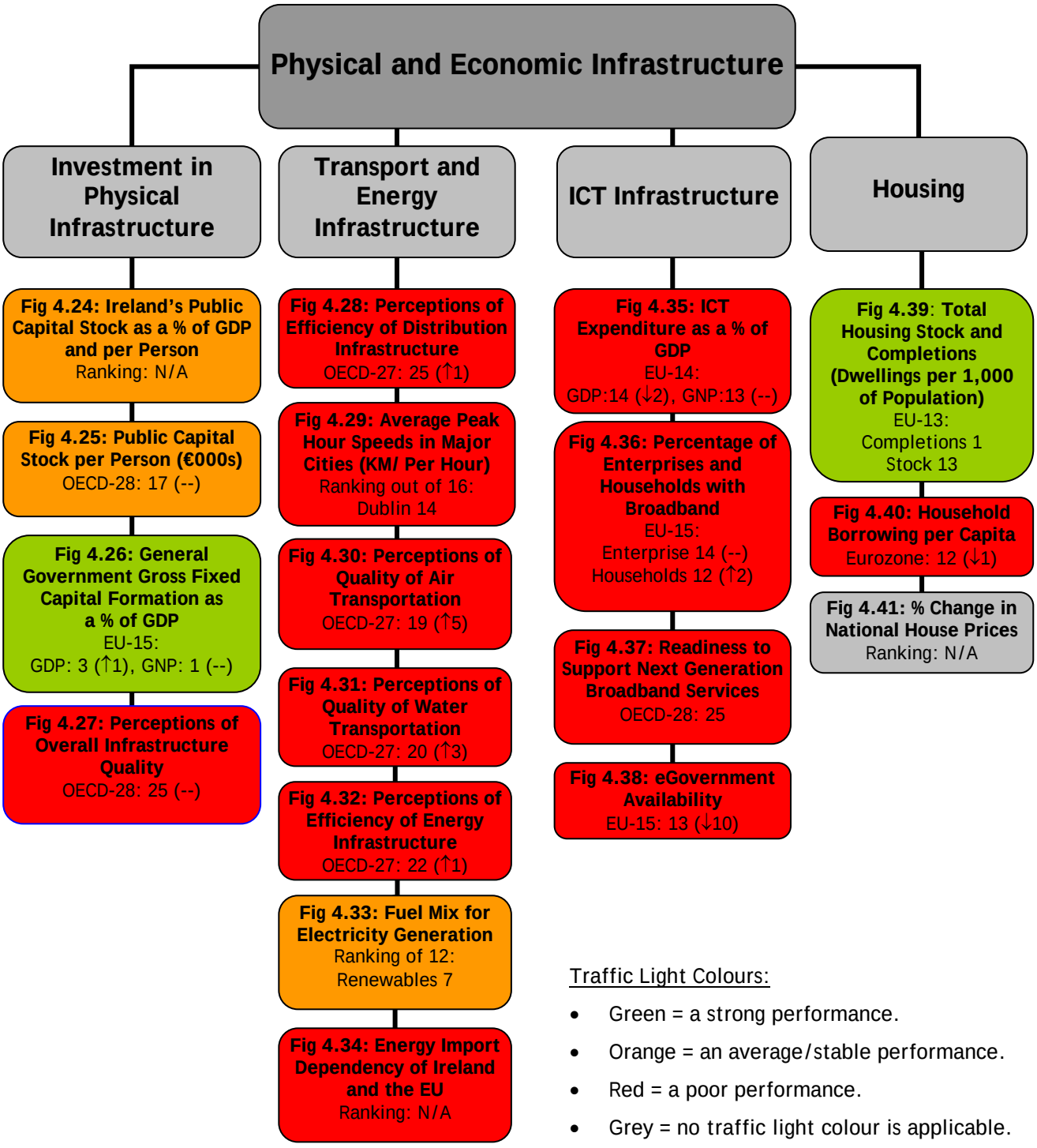
Ireland's investment in both information and communications technologies are below the EU-15 average, and lag leading countries by some distance (Fig. 4.35). Despite strong growth, the penetration rate of broadband in both households and firms in Ireland is below the EU average (Fig. 4.36)[76]. Ireland ranks 25th in the OECD in terms of its readiness to support next generation video and web services (Fig. 4.37). In terms of eGovernment, the proportion of public services available online is also below that of the EU-15 average (Fig. 4.38).

4.2.4 Housing

There are two aspects to housing that are relevant to competitiveness: infrastructure/activity and costs/debt. In relation to relative levels of housing, Ireland has fewer houses per capita than the EU-15 average (Fig. 4.39). This gap was narrowing as household completions per capita were by far the highest in the EU in recent years. However, completion rates have fallen from over 92,000 units in 2006 to an estimated 45,000 units in 2008, as investment has fallen sharply. In relation to costs and debt, house prices have increased dramatically since the mid-1990s (Fig. 4.41). House price increases have, however, subsided in the last 18 months (Fig. 4.41) and are now falling. Household borrowing (approximately four-fifths of which is for house purchases) nearly doubled between 2004 and 2008-Q2. The average Irish person was almost €37,000 in debt by 2008-Q2, the highest level in the Eurozone (Fig. 4.40). The value of Irish housing stock (over €500 billion in 2007) significantly outweighs mortgage debt (€123.5 billion in 2008-Q2). However, a disproportionately large part of the debt is borne by recent entrants to the housing market. Growth in residential mortgage lending has halved in the 24 months to August 2008 and currently stands at 9 percent[77].

76 Large and medium firms are, however, at or converging on the EU-15 average.
77 CBFSAI, 2008, Monthly Statistics, August.

Chart 4.B



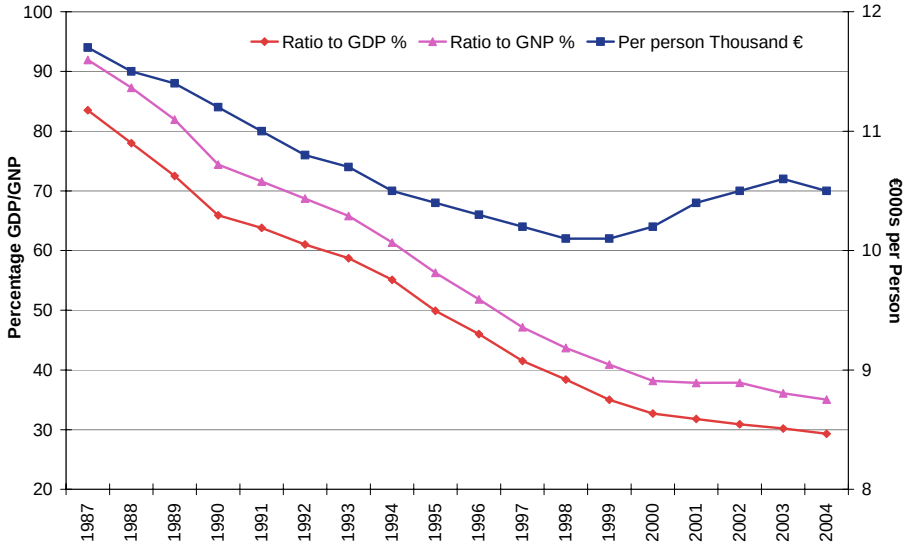
Traffic Light Colours:

- Green = a strong performance.
- Orange = an average/stable performance.
- Red = a poor performance.
- Grey = no traffic light colour is applicable.

4.2 Physical and Economic Infrastructure

4.2.1 Investment in Physical Infrastructure

Figure 4.24 Ireland's Public Capital Stock as a % of GDP and per Person (2003 prices) 2004

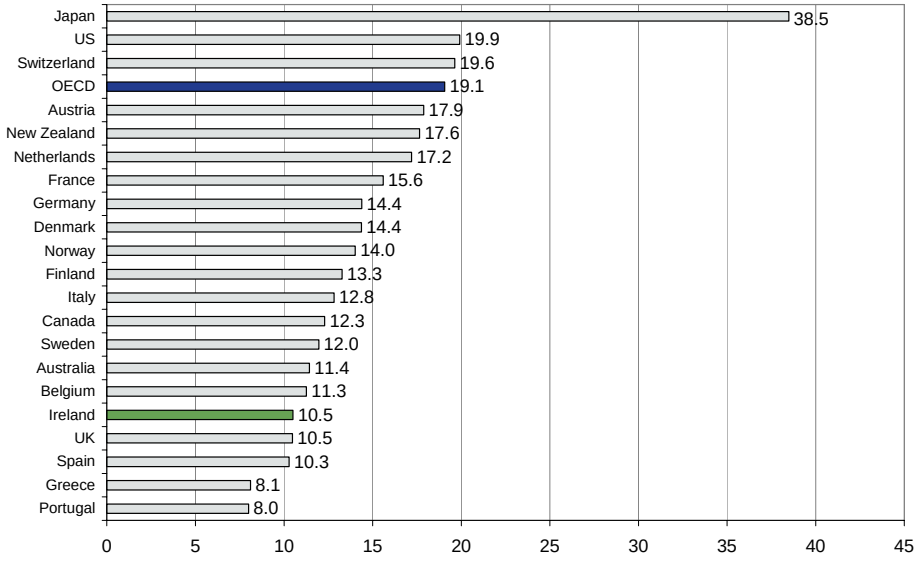


This indicator measures the level of public capital stock (e.g. roads, railways, airports, schools, etc.) relative to national income (left axis) and per person (right axis). Since 2000, the level of public capital stock per person has grown due to high rates of investment in infrastructure.

Ranking:
N/A

Source: Kamps, C., 2006, "New estimates of government net capital stocks for 22 OECD countries: 1960-2001," in IMF Staff Papers (53)1, pp120-150.

Figure 4.25 Public Capital Stock per Person (€000s), 2004

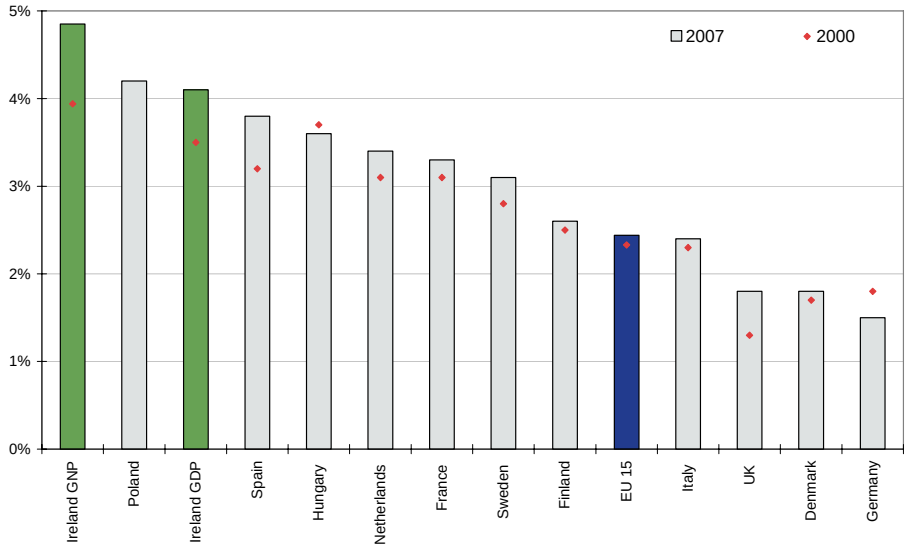


Levels of public capital stock per person in Ireland compare poorly with other countries, with the estimated amount just over half the OECD average. Ireland's poor ranking reflects underinvestment in the past and strong population growth in recent years.

OECD-28 Ranking:
17

Source: Kamps, C., 2006, "New estimates of government net capital stocks for 22 OECD countries: 1960-2001," in IMF Staff Papers (53)1, pp120-150.

Figure 4.26 General Government Gross Fixed Capital Formation (as a % of GDP), 2007

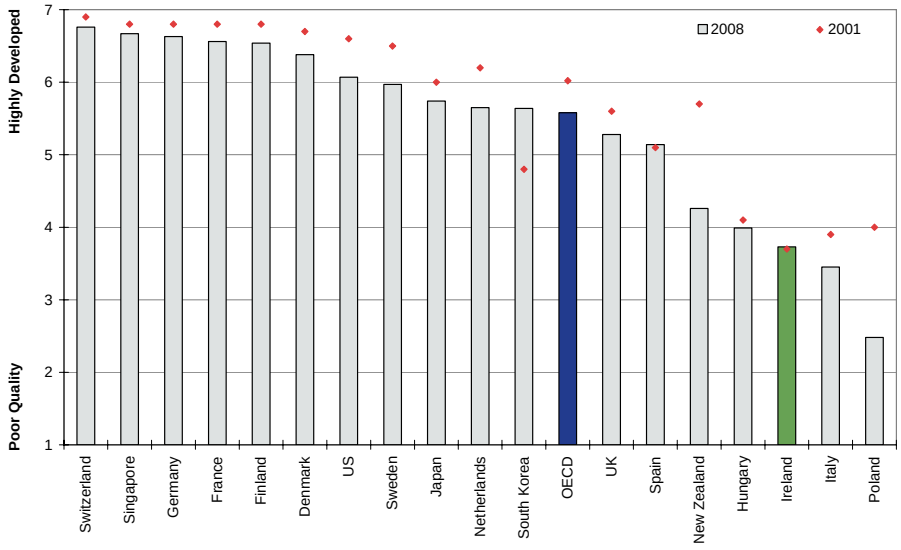


Source: Eurostat, Economy and Finance Indicators

The current National Development Plan (2007-2013) commits to sustained levels of investment in gross fixed capital formation (as a percentage of GNP). Ireland's ranks well above the EU-15 average in both GDP and GNP terms on this measure. Budget 2009 committed the Government to maintain capital spending at 5.2 percent of GNP over the period 2008-2012.

EU-15 Ranking:
GDP: 3 (↑1)
GNP: 1 (--)

Figure 4.27 Perceptions of Overall Infrastructure Quality, (Scale 1-7) 2008



Source: WEF Global Competitiveness Report 2008/09

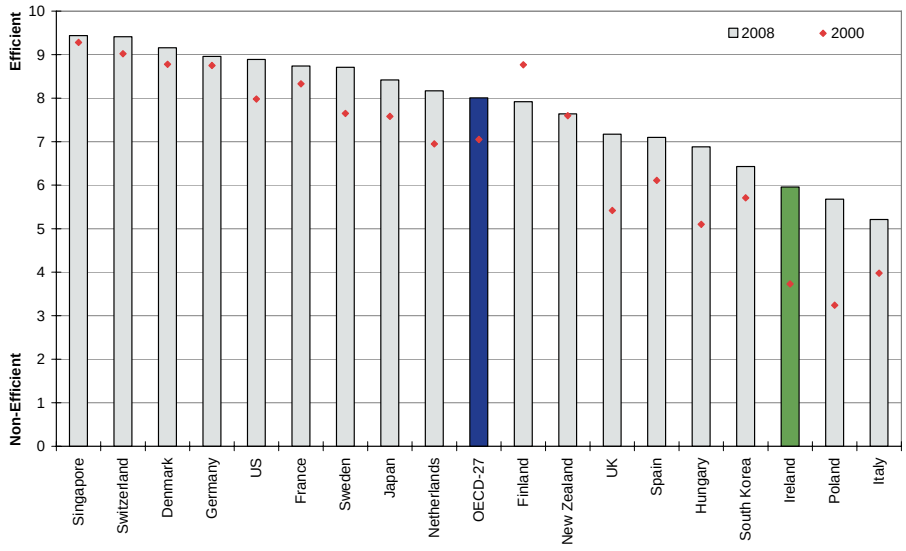
Measuring the quality of infrastructure across countries is difficult. This chart shows executives' perceptions regarding the overall quality of infrastructure in an economy. Ireland's score remains significantly below the OECD average despite investments in infrastructure.

OECD-28 Ranking[78]:
25 (--)

78 Base year for ranking change is 2001 compared to 2008.

4.2.2 Transport and Energy Infrastructure

Figure 4.28 Perceptions of Efficiency of Distribution Infrastructure, (Scale 0-10) 2008[79]

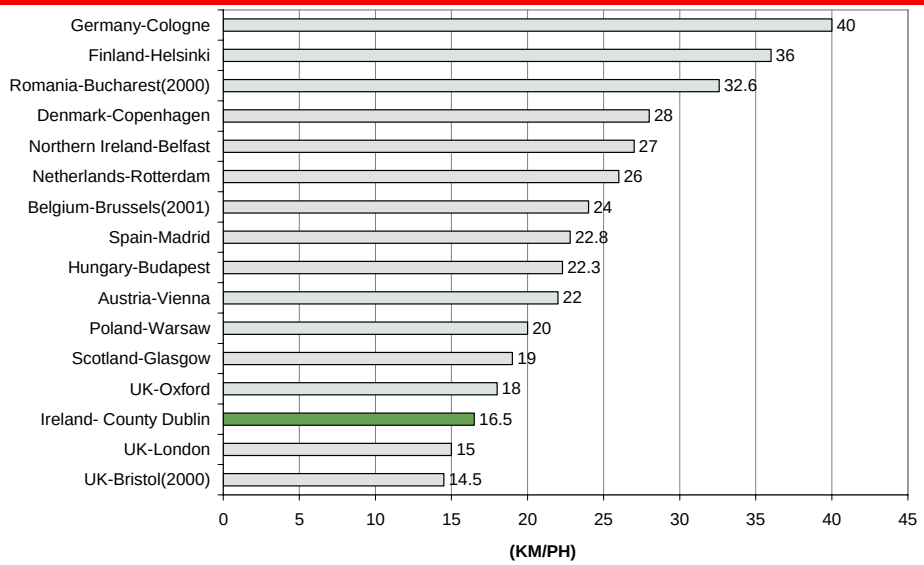


This chart shows executives' perceptions of Ireland's distribution infrastructure, including road, rail, air and sea transport. While Ireland continues to rank poorly – among the weakest in the OECD - there has been a significant improvement since 2000.

OECD-27 Ranking:
25 (↑1)

Source: IMD World Competitiveness Yearbook, 2008

Figure 4.29 Average Peak Hour Speeds in Major Cities (KM/ Per Hour), 2002/3[80]



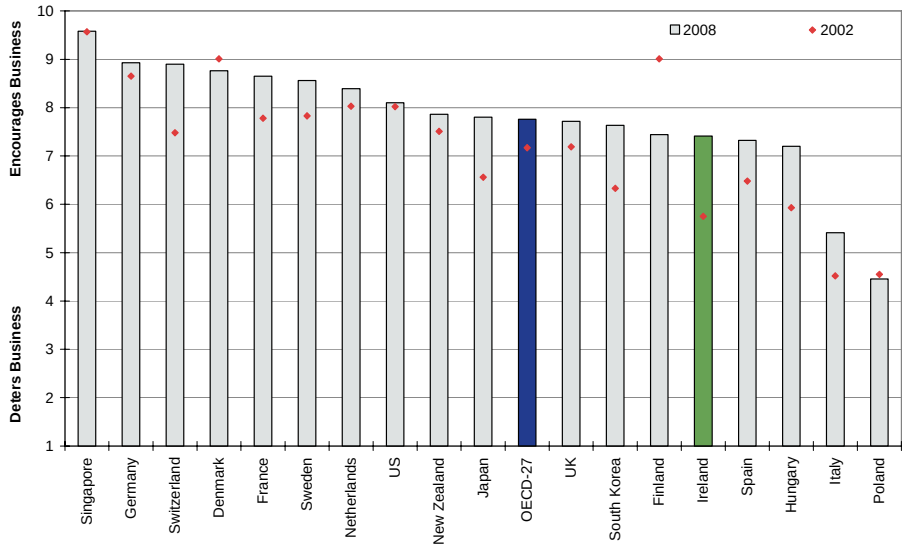
A possible measure of transport congestion in our main cities and regions is the average peak-hour speeds of cars and motorcycles in these cities. According to the Dublin Transportation Office the average speed on radial roads into Dublin city in the morning peak hour could fall to 8kph by 2016 due to increased cars on the road[81].

Ranking of 16:
14

Source: Urban Transport Benchmarking Initiative/ Dublin Transportation Office

79 OECD-28 average minus Iceland.
80 The Irish car speed data is taken from the Dublin Transport Office. It should be noted that Dublin refers to car speeds only.
81 Department of Transport, 2020 Vision – Sustainable Travel and Transport: Public Consultation Document. February 2008.

Figure 4.30 Perceptions of Quality of Air Transportation, (Scale 0-10) 2008

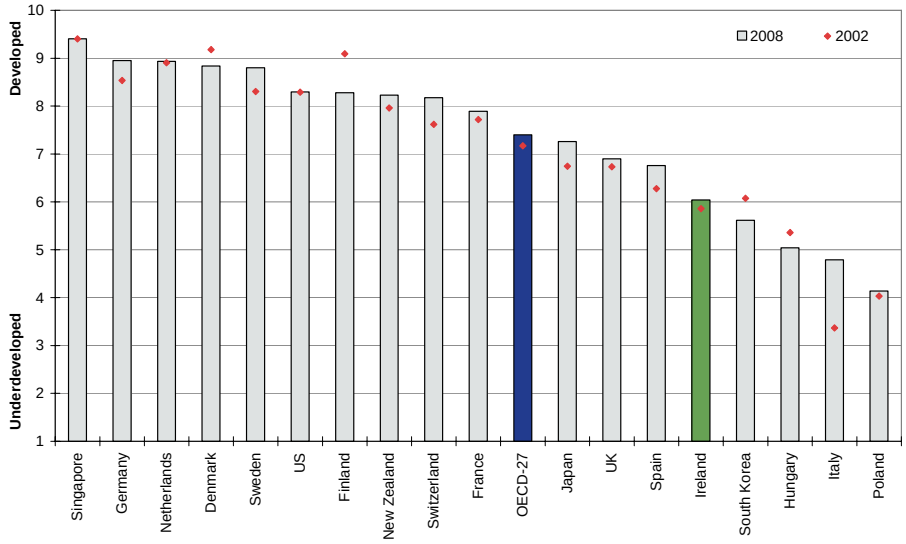


Source: IMD World Competitiveness Yearbook, 2008

This chart measures executives' perceptions of the quality of Ireland's air transportation infrastructure. Ireland's score has improved significantly. A second terminal at Dublin airport, due to open in 2009, should further improve Ireland's score.

OECD-27 Ranking[82]: 19 (↑5)

Figure 4.31 Perceptions of Quality of Water Transportation, (Scale 1-10) 2008



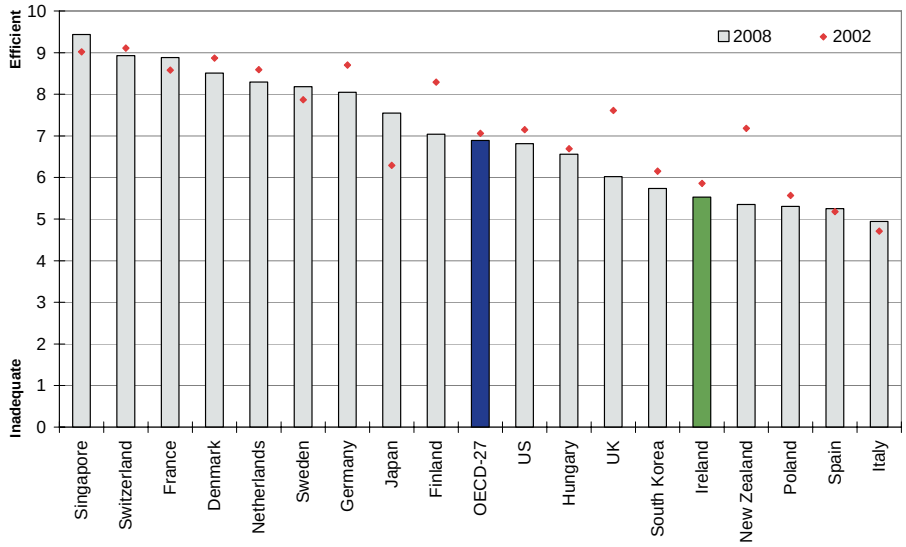
Source: IMD World Competitiveness Yearbook, 2008

This chart measures executives' perceptions of the quality of Ireland's water transportation infrastructure. Ireland's seaport infrastructure, while improving, lags our economic peer group.

OECD-27 Ranking[83]: 20 (↑3)

82 Base year for ranking change is 2002 compared to 2008. OECD-28 average minus Iceland.
83 Base year for ranking change is 2002 compared to 2008. OECD-28 average minus Iceland.

Figure 4.32 Perceptions of Efficiency of Energy Infrastructure, (Scale 0-10) 2008

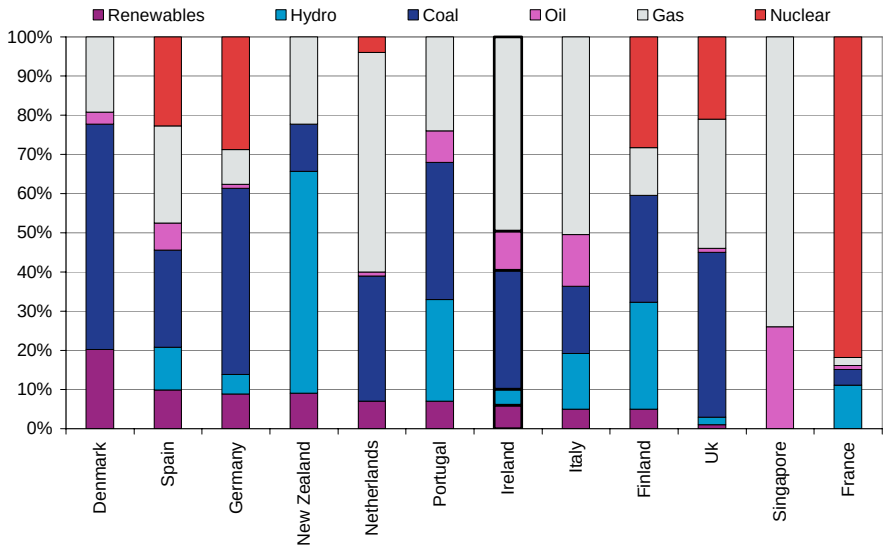


This chart measures executives' perceptions of the quality of Ireland's energy infrastructure. Ireland's performance is weak in comparison to the OECD average. Performance has weakened across a range of countries, including Ireland since 2002.

OECD-27 Ranking[84]: 22 (↑1)

Source: IMD World Competitiveness Yearbook, 2008

Figure 4.33 Fuel Mix for Electricity Generation, 2006



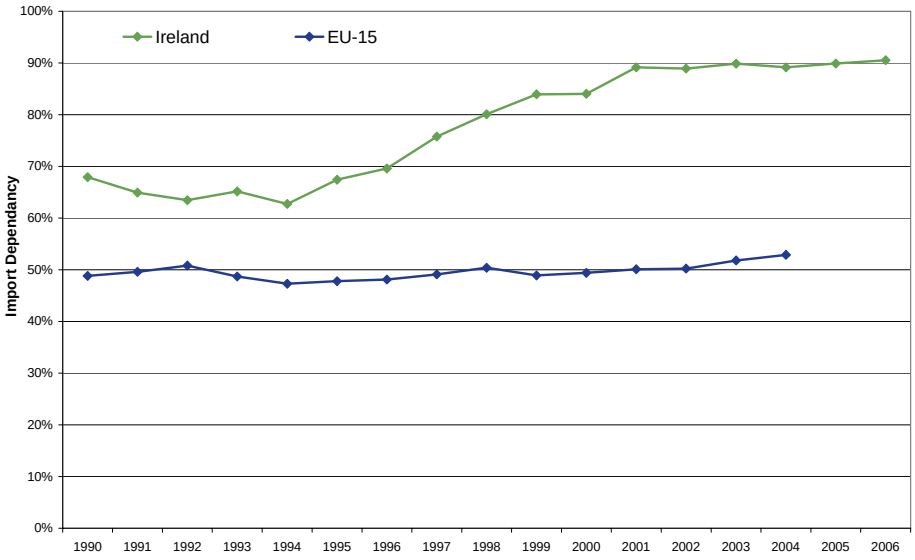
Ireland's energy comes predominantly from imported non-renewable resources, in particular coal and gas. Ireland generated significantly less energy from renewable resources in 2006 in comparison to Denmark. Ireland's share has, however, increased from 4.8 percent in 2005 to 6 percent in 2006. In 2007, the share of renewables (excluding hydro) was 7.1 percent, up from 2.0 percent in 2003.

Ranking of 12: (ranked by renewables) 7

Source: Forfás, Energy Policy and Competitiveness, Report due to be published in January 2009

84 Base year for ranking change is 2002 compared to 2008. OECD-28 average minus Iceland.

Figure 4.34 Energy Import Dependency of Ireland and the EU, 1990-2006[85]



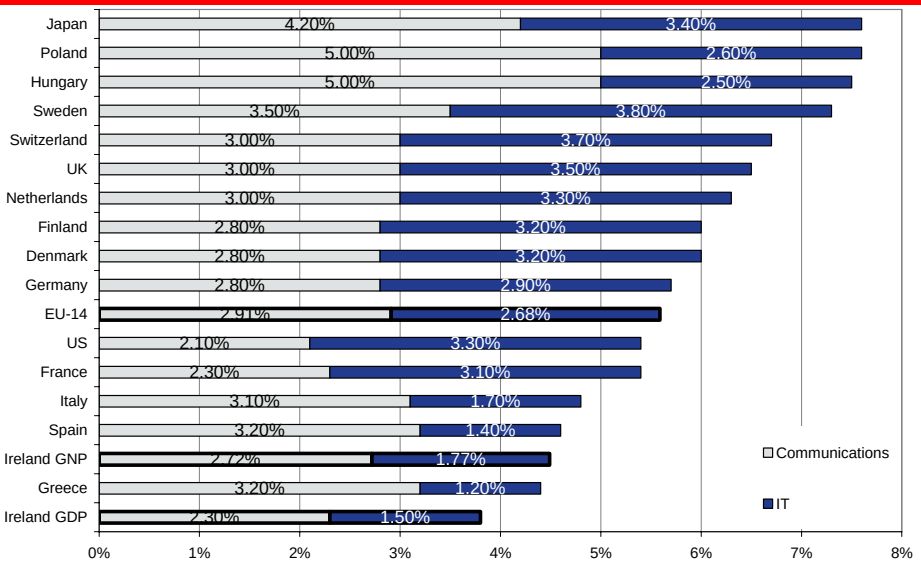
Since the mid 1990s import dependency has grown significantly in Ireland due to an increase in energy use, a decline in indigenous natural gas production and a decrease in peat production. Ireland's overall import dependency reached 91 percent in 2006.

Ranking:
N/A

Source: Sustainable Energy Ireland, Energy in Ireland 1990-2006; Eurostat, Environment and Energy

4.2.3 Information and Communication Technology (ICT) Infrastructure

Figure 4.35 ICT Expenditure as a % of GDP, 2006



Information and communication technology (ICT) is essential to modern enterprise. Ireland's investment in both forms of technology, particularly IT, ranks among the lowest in the EU-14.

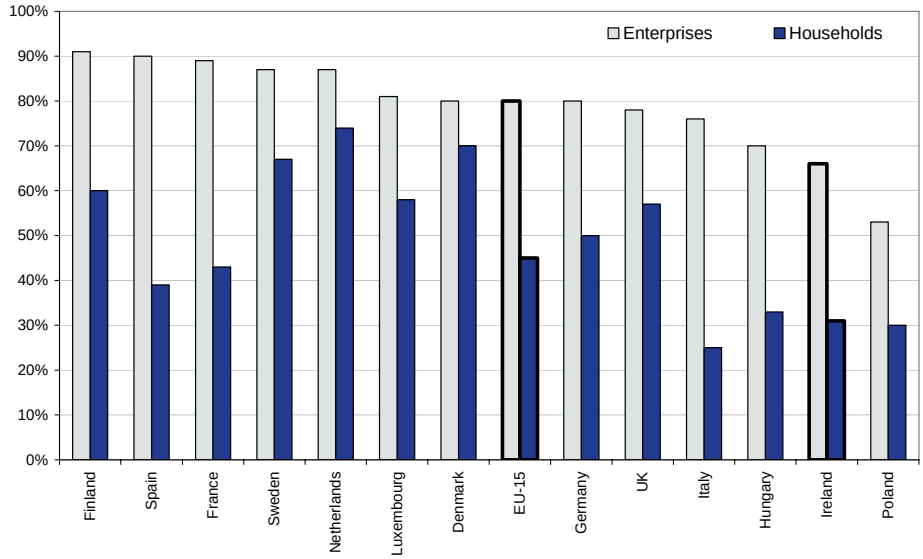
EU-14 Ranking[86]:
GDP: 14 (↓2)
GNP: 13 (--)

Source: Eurostat, Structural Indicators

85 Import Dependency is calculated as follows: (Imports – Exports – Non Energy Consumption)/ (Primary Energy Supply – Non Energy Consumption + Marine Bunkers).

86 EU-15 minus Luxembourg.

Figure 4.36 Percentage of Enterprises and Households with Broadband, 2007

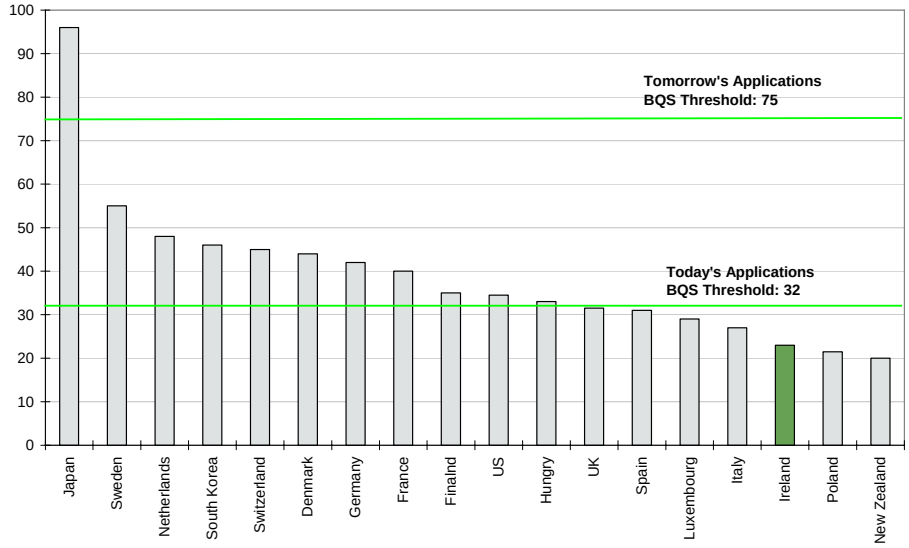


Broadband penetration across firms in Ireland is among the lowest in the EU-15, particularly among smaller firms. Despite broadband penetration growth in Ireland, our ranking has not improved significantly since 2003.

EU-15 Ranking[87]:
Enterprise 14 (--)
Households 12 (↑2)

Source: Eurostat, Information Society Indicators

Figure 4.37 Readiness to Support Next Generation Broadband Services, 2008



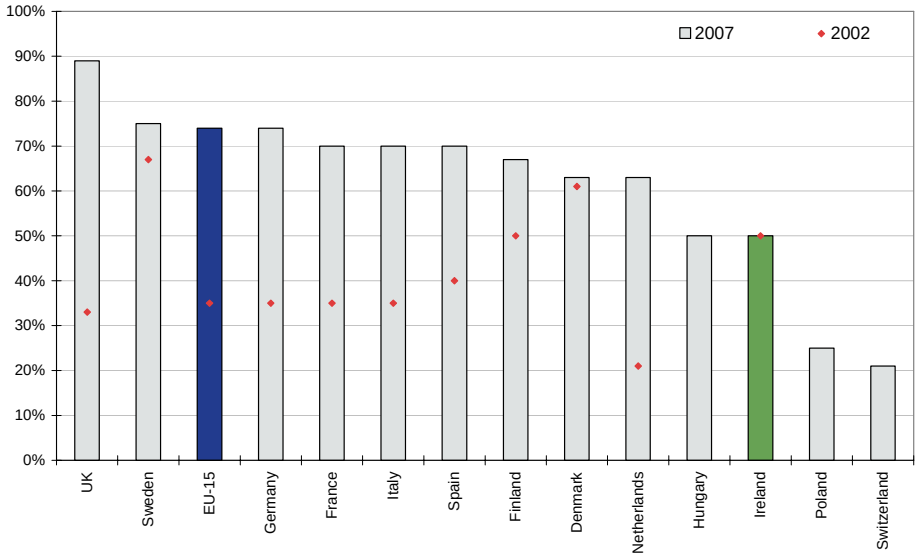
The Broadband Quality Score (BQS) is an indication of each country's readiness to support next generation video and web services. Ireland ranks 25th in the OECD in terms of its readiness to support next generation video and web services and below today's required standard. As software applications require more bandwidth in the future, many countries will need to up-grade their capabilities.

OECD-28 Ranking:
25

Source: Saïd Business School, University of Oxford, September 2008

87 Base year for ranking change is 2003 compared to 2007. EU-15 average minus Greece for enterprise average.

Figure 4.38 eGovernment Availability, 2007



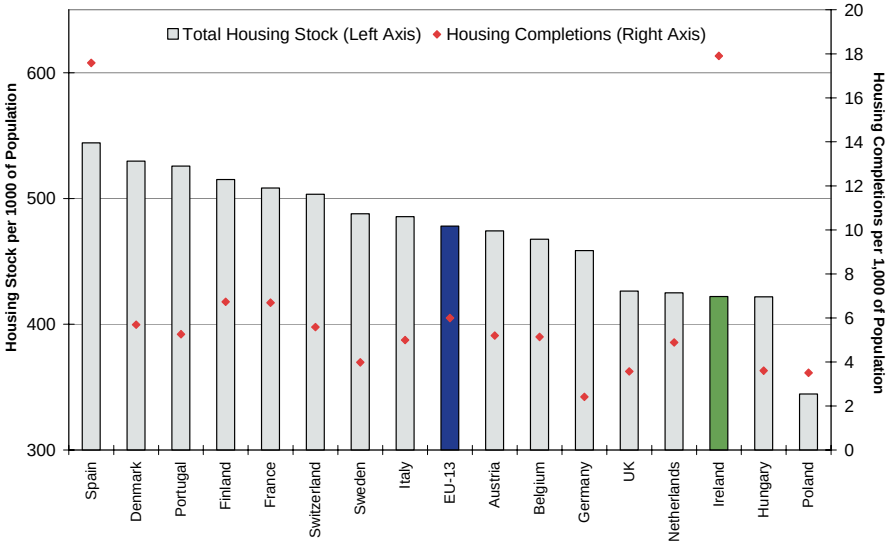
This indicator shows online availability of 20 basic public services for which it is possible to carry out full electronic case handling. There has been a significant decline in Ireland's ranking as other countries have progressed new eGovernment initiatives.

EU-15 Ranking[88]:
13 (↓10)

Source: Eurostat, Information Society Indicators

4.2.4 Housing

Figure 4.39 Total Housing Stock and Completions (Dwellings per 1,000 of Population), 2007



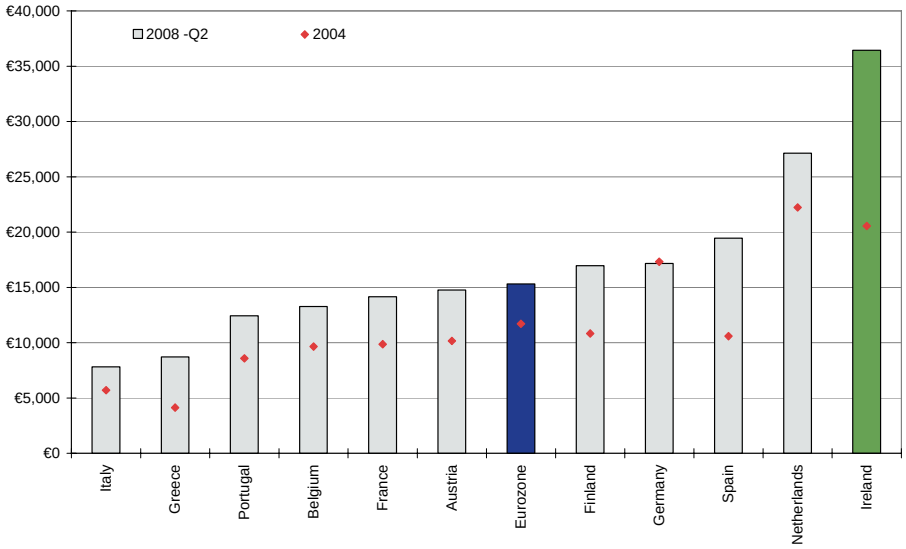
Compared to the EU-13, Ireland is under-housed, relative to its population size (left axis). Ireland is adding to its housing stock at a rate far above any other European country (right axis). However, it is estimated that housing completions in Ireland will drop to circa 11 units per 1,000 of population in 2008 and even further in 2009.

EU-13 Ranking[89]:
Completions: 1
Stock: 13

Source: Euroconstruct June 2007

88 Base year for ranking change is 2002 compared to 2007.
89 EU-15 average minus Greece and Luxembourg. Traffic-light determined based on Ireland's performance in completion rates.

Figure 4.40 Household Borrowing per Capita, 2008-Q2

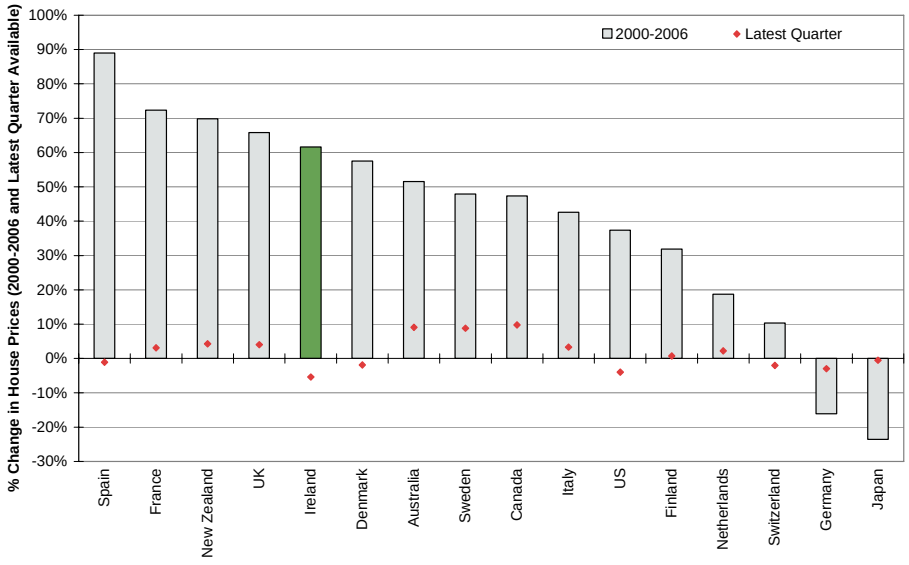


Ireland's debt per capita has increased very rapidly and Ireland is now one of the most indebted Eurozone members. However, growth rates have fallen significantly in 2008. Approximately 80 percent of household debt in Ireland is mortgage debt, followed by consumer credit (14 percent).

Eurozone Ranking:
12 (↓1)

Source: European Central Bank, Aggregated Balance Sheet of Euro Area Monetary Financial Institutions

Figure 4.41 Percentage Change in National House Prices, 2000-2006 and Latest Quarter Available[90]



Between 2000 and 2006, Irish house prices increased by 62 percent percent. However, house prices have fallen by 5.4 percent during the Q4 2006 – Q4 2007 time period. According to the Permanent TSB/ESRI House Price Index, average national house prices have fallen by 14 percent between their peak in February 2007 and September 2008.

Ranking:
N/A

Source: OECD Economic Outlook, No 83, June 2008.

90 Latest quarter available refers to either Q3 2007, Q4 2007 or Q1 2008 depending on data availability.

4.3 Knowledge Infrastructure

Education, training, skills and research and development form key parts of a nation's infrastructure for generating knowledge. This section assesses Ireland's performance in this area. Chart 4.C provides an overview of Ireland's recent performance in terms of key knowledge infrastructure indicators.

4.3.1 Education: Overview

Average educational attainment in Ireland has increased steadily in the last two decades, with younger cohorts of the population as well qualified as their OECD counterparts. Older cohorts of Ireland's labour force remain less qualified than the OECD average, and a relatively large share of the working age population (34 percent) has no more than lower secondary education (Fig. 4.42). Expenditure per student is below the OECD average at all levels while the pre-primary education system is predominantly privately funded, unlike that in other countries (Fig. 4.43 and Fig. 4.44).

4.3.2 Pre-Primary and Primary Education

Participation of three year olds in education in Ireland is low and well below the EU-15 average (Fig. 4.45). At primary level, while the average number of hours of tuition received by 9-11 year olds is among the highest in the OECD, the amount of time spent on the key skills of mathematics and science is 14th and 18th respectively out of 21 countries surveyed (Fig. 4.46).

4.3.3 Secondary Education

Ireland has made significant progress over time and relative to other countries in terms of increasing secondary school participation rates (Fig. 4.47 and Fig. 4.48). The proportion of the 20-24 year old population with upper secondary education in Ireland is above the EU-15 average and now exceeds the Lisbon target of 85 percent (Fig. 4.47). The average number of hours of tuition received by 12-14 year olds is among the lowest in the OECD. Of the 22 countries surveyed, students in Ireland receive the third lowest amount of tuition time in science (Fig 4.49). In the latest OECD PISA (Programme for International Student Assessment) study, Irish 15 year olds ranked well among OECD countries in terms of reading literacy (5th) but less well in terms of scientific literacy (14th) and mathematical literacy (16th) (Fig. 4.50). Ireland's scientific literacy ranking has fallen five places since 2000. The number of computers per student is also relatively low in Ireland compared to other EU countries (Fig. 4.51).

4.3.4 Tertiary Education and Life-Long Learning

Ireland's younger population is considerably better qualified than older cohorts, with 42 percent of the 25-34 age group possessing a third-level qualification. This compares very favourably with the OECD average of 34 percent (Fig. 4.52). It is difficult to measure the quality of third level institutions due to a range of issues. Based on the Times Higher University Index the overall performance of Irish third level institutions ranks behind that of leading institutions overseas despite recent improvements (Fig. 4.53). Ireland has the highest proportion of graduates in the fields of mathematics, science and computing as a percentage of total graduates in the EU-13 (Fig. 4.54). However, in Ireland science and computing graduates dominate this category, which means that Ireland is producing a limited supply of mathematics focused graduates.

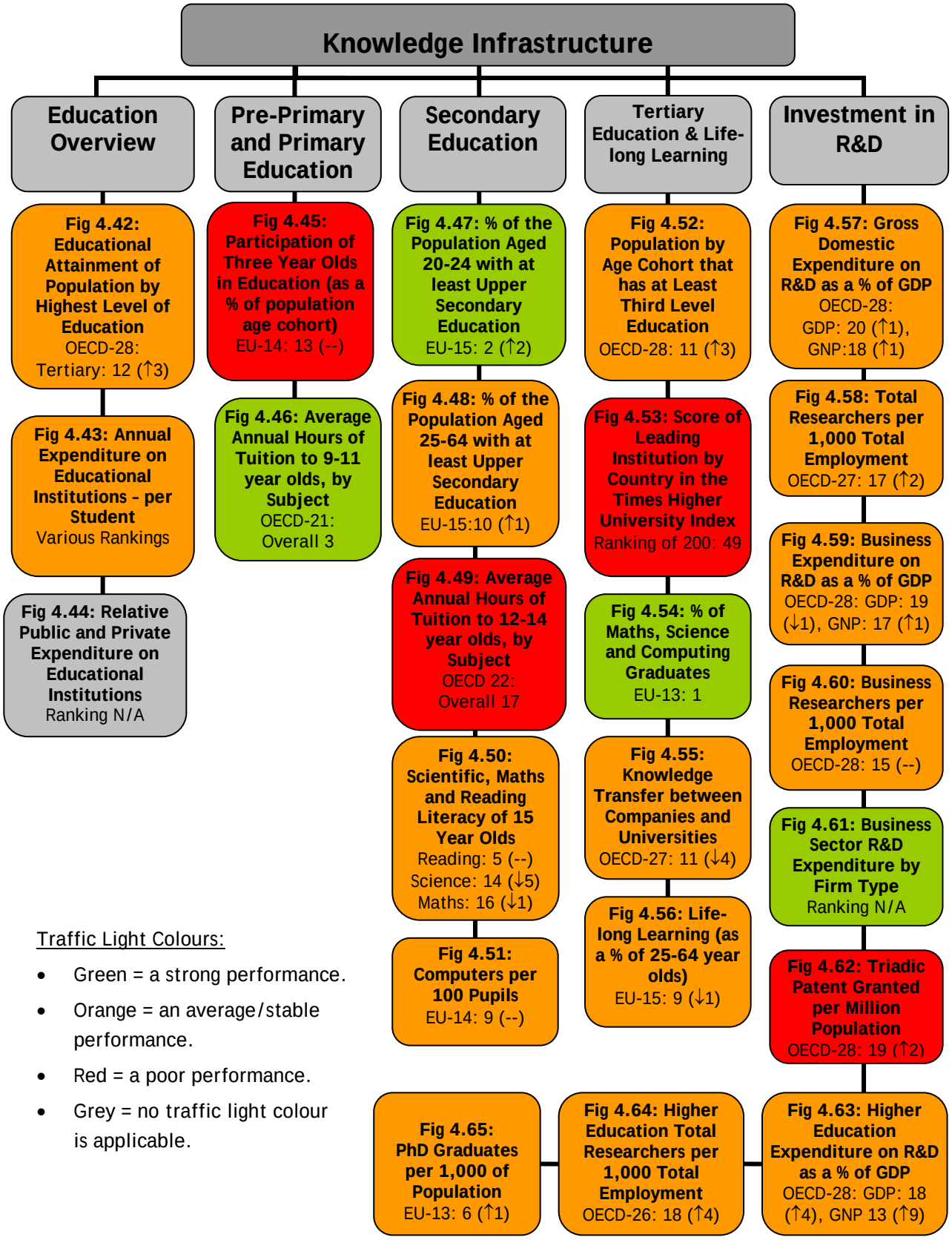
Life-long learning is defined as all learning activity undertaken throughout life, with the aim of improving knowledge, skills and competencies. Adult participation in life-long learning remains relatively low in Ireland - below both the EU average and Lisbon target (Fig. 4.56).

4.3.5 Research and Development

The transition to a knowledge economy requires higher levels of expenditure in research and development, both in terms of capital infrastructure and development programmes. This section examines various measures of expenditure in research and development and the outputs achieved.

Despite a large increase in actual expenditure on R&D, Ireland has so far made limited progress towards the Irish target (2.5 percent of GNP by 2013) set by the Science Strategy. Total R&D spending in Ireland increased from 1.26 percent of GNP in 2000 to 1.53 percent of GNP in 2006 (Fig. 4.57). This compares with an OECD average of 2.36 percent (2006). The number of researchers in Ireland is also growing. The number of researchers per 1,000 total employment has grown from 5 per 1,000 in 2000 to 6 per 1,000 in 2006 (Fig. 4.58). Despite strong growth rates in expenditure, business R&D as a percentage of economic activity has remained relatively static over the past decade (Fig. 4.59). Most business expenditure on R&D in Ireland is undertaken by foreign-owned companies (Fig. 4.61). Triadic patents granted per million of population in Ireland remain below the OECD average (Fig. 4.62). Higher education expenditure on R&D and the number of higher education researchers have increased significantly since 2000 (Fig. 4.63 and Fig. 4.64). Finally, the number of PhD graduates per 1,000 of population in 2006 was greater than the EU-13 average (Fig 4.65).

Chart 4.C



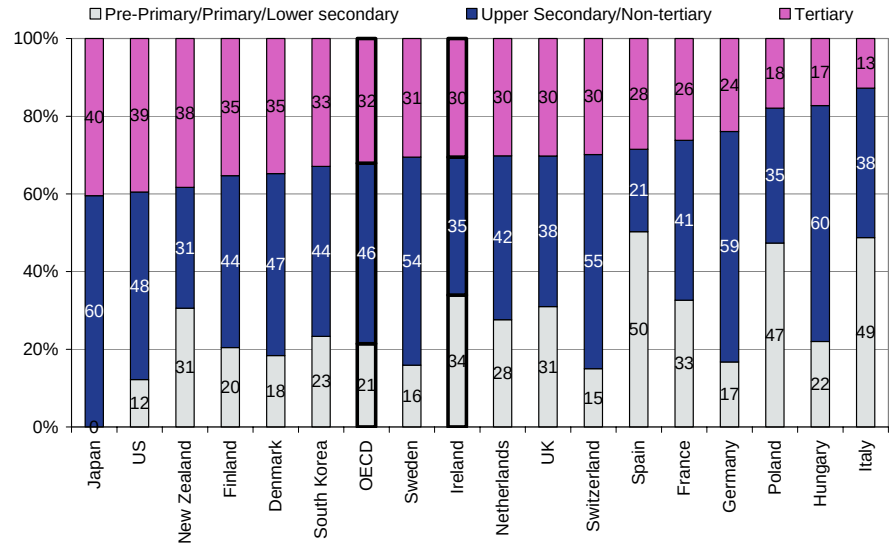
Traffic Light Colours:

- Green = a strong performance.
- Orange = an average/stable performance.
- Red = a poor performance.
- Grey = no traffic light colour is applicable.

4.3 Knowledge Infrastructure

4.3.1 Education: Overview

Figure 4.42 Educational Attainment of Population Aged 25-64 by Highest Level of Education, 2006

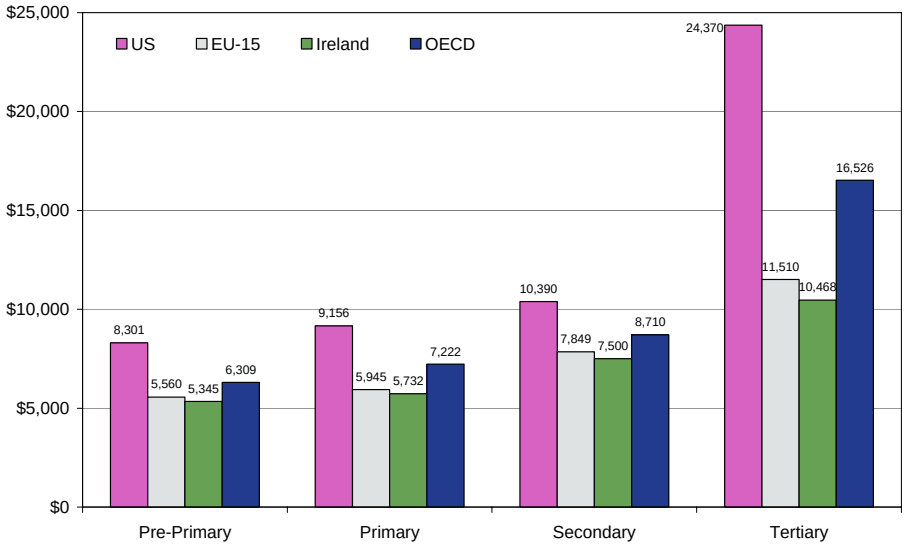


Average educational attainment in Ireland has increased dramatically in the last two decades. However, older cohorts of Ireland's labour force remain less qualified than the OECD average, and a relatively large share of the working age population (34%) has no more than lower secondary education.

OECD-28 Ranking[91]:
Ranked by third level:
12 (↑3)

Source: OECD, Education at a Glance, 2008

Figure 4.43 Annual Expenditure on Educational Institutions - per Student (US$ PPP), 2005[92]



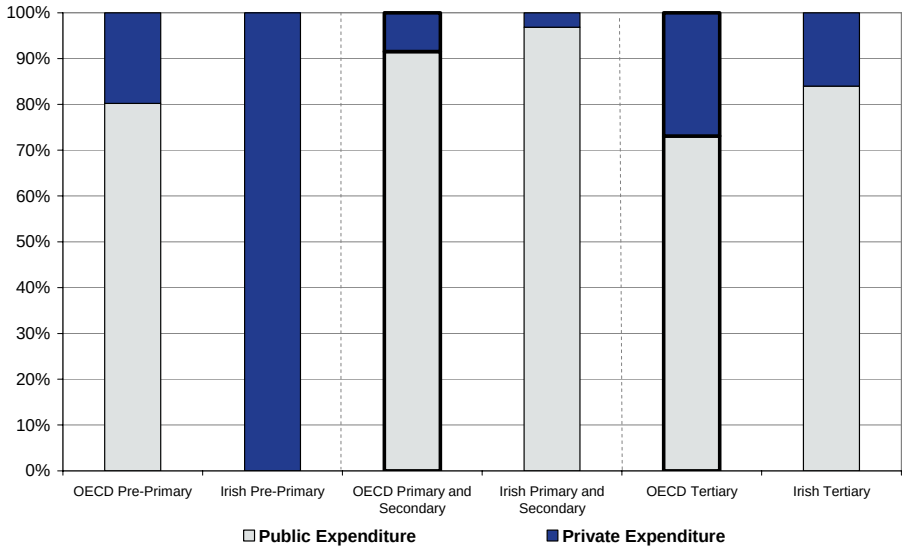
At all levels of education, Ireland invests less public and private resources per student than the EU-15 and OECD averages. While higher spending does not necessarily equate with higher quality service, it is notable that the gap between the EU-15 and the US is considerable at all levels, particularly at third level.

OECD-28 Ranking:
Pre-Primary: 8 (↑9)
Primary: 15 (↑4)
Secondary: 18 (↓↑4)
Tertiary: 15 (--)

Source: OECD, Education at a Glance, 2008

91 Base year for ranking change is 2003 compared to 2006.
92 Traffic light determined based on average ranking of education levels. OECD-28 Average: pre-primary minus Australia, Canada, Greece and Luxembourg; primary minus Canada; and tertiary minus Canada and Luxembourg. EU-15 pre-primary average minus Greece and Luxembourg.

Figure 4.44 Relative Public and Private Expenditure on Educational Institutions (%), 2005[93]



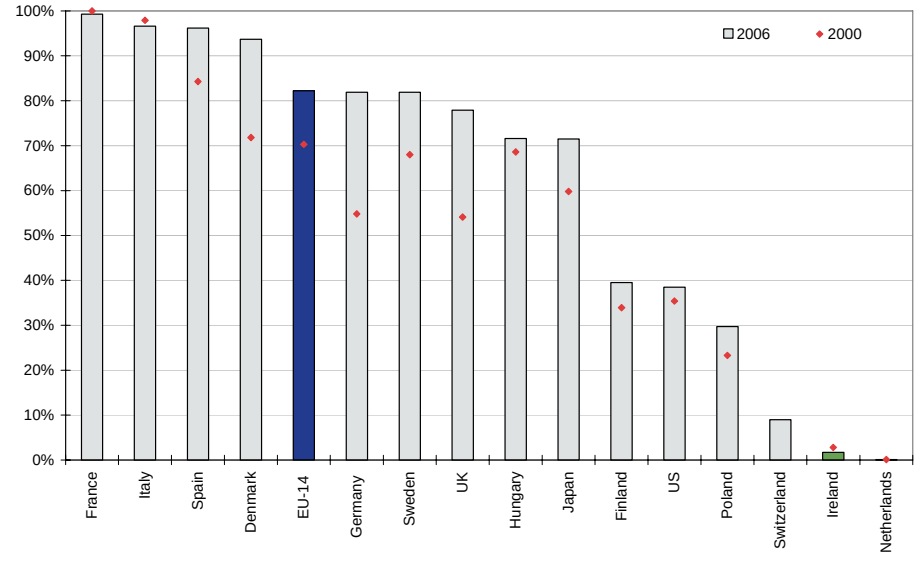
Pre-primary education in Ireland is almost entirely privately funded, unlike the typical OECD system which is predominantly publicly funded. Public funding is relatively more important in Ireland at all other levels of the education system.

Ranking:
N/A

Source: OECD, Education at a Glance, 2008

4.3.2 Pre-Primary and Primary Education

Figure 4.45 Participation of Three Year Olds in Education (as a % of population age cohort), 2006[94]



Pre-primary education includes programmes designed for children at least three years old and not older than 6 years. Ireland lags the EU-14 average by a considerable amount on this indicator. Pre-primary education, rather than childcare, is found to have significant individual and social returns.

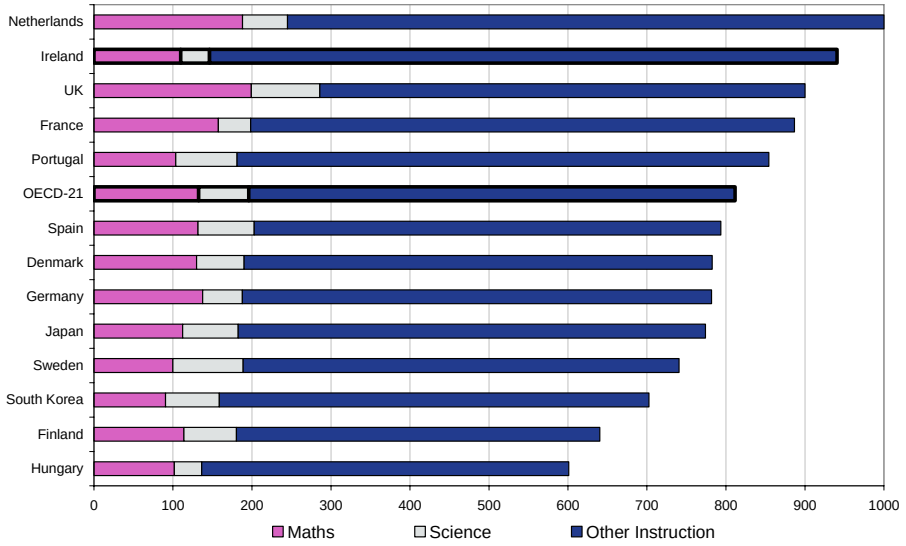
EU-14 Ranking:
13 (--)

Source: Eurostat, Population and Social Conditions

93 OECD average as calculated in OECD Education at a Glance, 2008. The OECD does not provide data on the relative public and private expenditure on pre-primary educational institutions in Ireland. However, pre-primary education is almost entirely privately funded – with the exception of public funding for the Early Start pilot program which offers half-day places to 1,700 pupils in disadvantaged areas.

94 EU-15 average minus Greece.

Figure 4.46 Average Annual Hours of Tuition to 9-11 year olds, by Subject, 2006



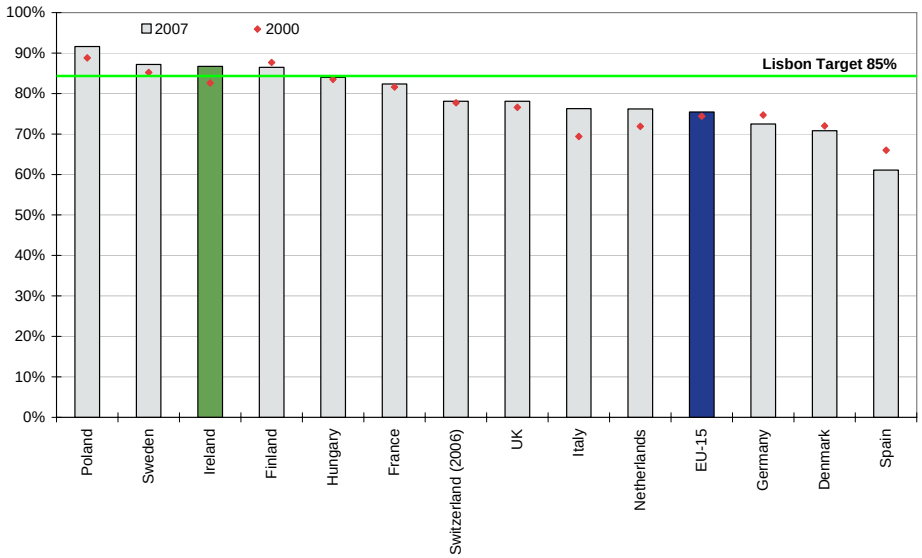
Source: OECD, Education at a Glance, 2008

Overall, 9 to 11 year old students at primary level in Ireland receive more hours of tuition per year than in most other OECD countries. However, of 21 countries surveyed, only three countries allocated less time to teaching science. Less time is also allocated to teaching maths in Ireland than the OECD-21 average.

OECD-21 Ranking[95]:
Overall: 3
Maths Ranking: 14
Science Ranking: 18

4.3.3 Secondary Education

Figure 4.47 Percentage of the Population Aged 20 to 24 with at Least Upper Secondary Education, 2007



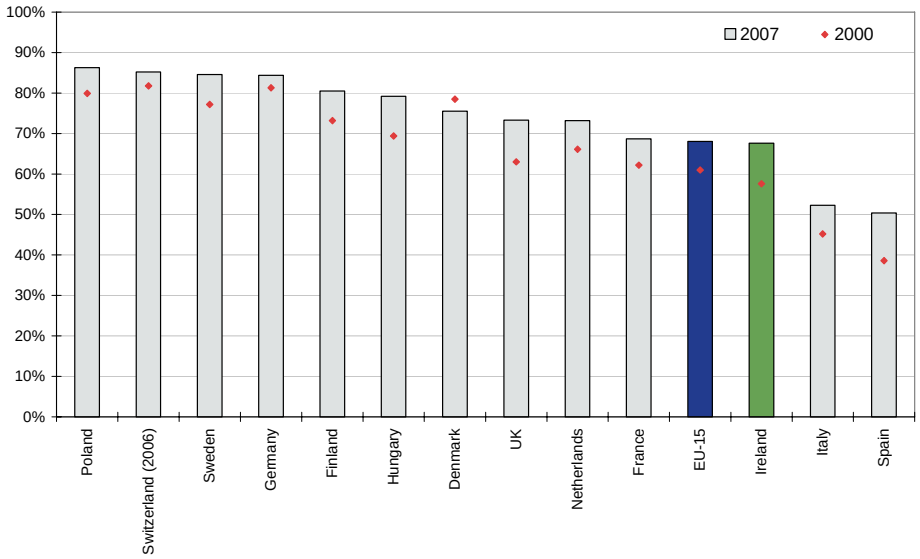
Source: Eurostat, Structural Indicators

This indicator forms a key metric in the Lisbon Agenda. It is defined as the percentage of young people aged 20-24 years having achieved at least an upper secondary education attainment level. Data for 2007 highlights that Ireland (86.7 percent) exceeds the EU Lisbon target of 85 percent.

EU-15 Ranking:
2 (↑2)

95 OECD average minus Belgium, Canada, New Zealand, Poland, Switzerland, Slovakia and US. Traffic-light determined based on overall ranking.

Figure 4.48 Percentage of the Population Aged 25-64 with at least Upper Secondary Level Education, 2007

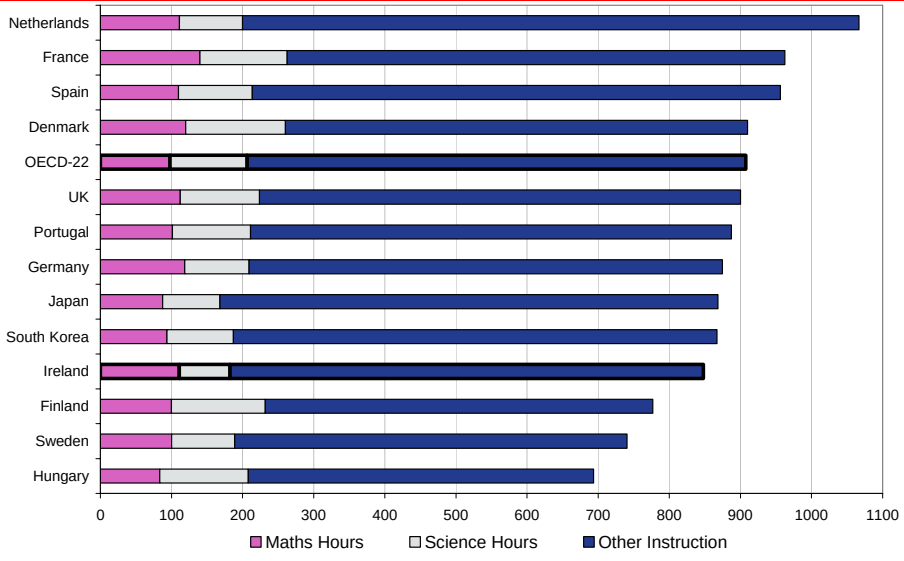


Current secondary level completion rates will take a long time to raise the overall level of qualifications. 67.6 percent of the 25-64 age group in Ireland have attained at least upper secondary education, which is in line with the EU-15 average. Nevertheless this figure is below several leading EU countries.

EU-15 Ranking:
10 (↑1)

Source: Eurostat, Population and Social Conditions

Figure 4.49 Average Annual Hours of Tuition to 12-14 year olds, by Subject, 2006[96]



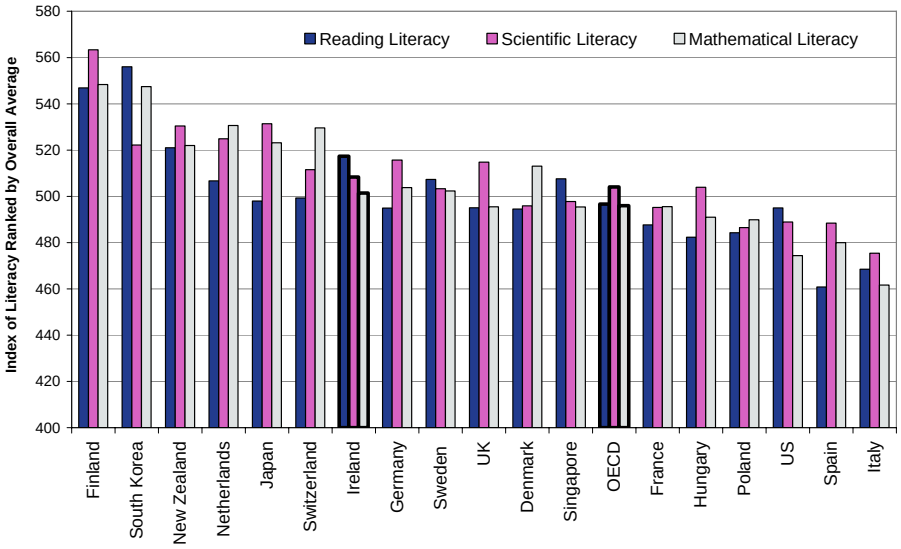
Overall, 12 to 14 year old students in Ireland receive less hours of tuition per year than in most other OECD countries. Of the 22 countries surveyed, students in Ireland receive the third lowest amount of tuition time in science.

OECD-22 Ranking:
Overall: 17
Maths Ranking: 12
Science Ranking: 20

Source: OECD, Education at a Glance, 2008

96 OECD average minus Canada, New Zealand, Poland, Switzerland, Slovakia and US. Traffic-light determined based on overall ranking.

Figure 4.50 Scientific, Mathematical and Reading literacy of 15 Year Olds, 2006[97]

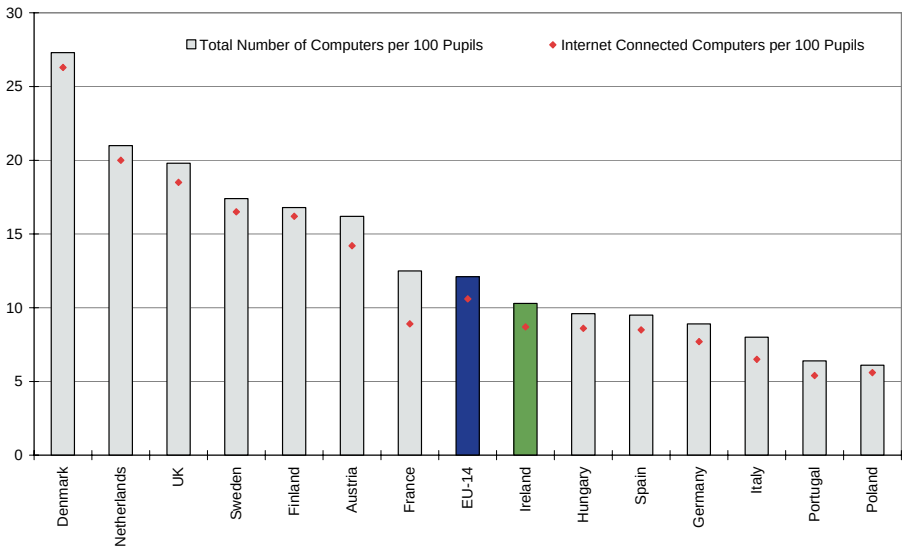


In the OECD 2006 PISA (Programme for International Student Assessment) study, Irish 15 year olds ranked comparatively well in terms of reading literacy but ranked less well for scientific and mathematical literacy. Small differences between countries should be interpreted with caution.

OECD-28 Ranking:
Reading 5 (--)
Science 14 (↓5)
Maths 16 (↓1)

Source: OECD, PISA Database, 2006

Figure 4.51 Computers and Number of Internet Connected Computers per 100 Pupils, 2006



ICT has profound implications for education, as it can facilitate new forms of learning and is now a necessary skill for adult life. Among the benchmarked countries, Ireland has fewer computers per student than the EU-15 average.

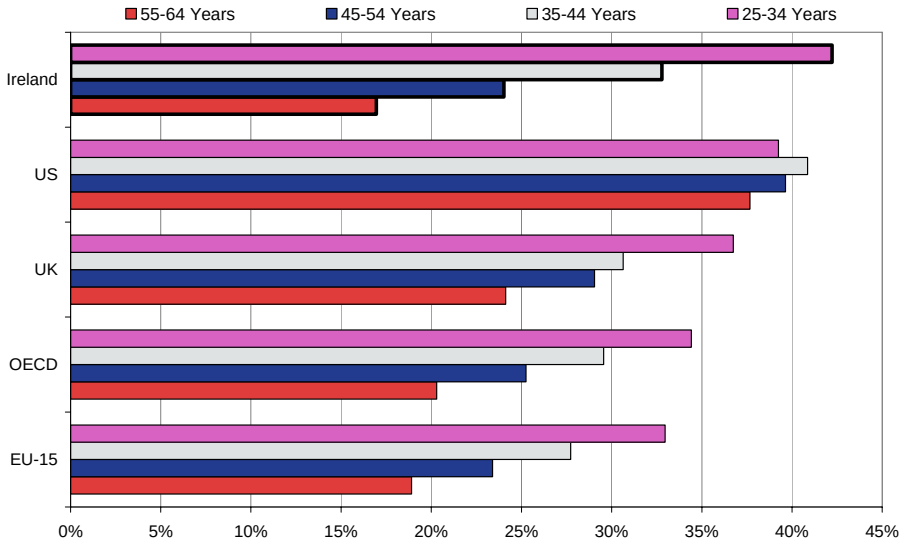
EU-14 Ranking[98]:
Ranked by Total:
9 (--)

Source: Benchmarking Access and Use of ICT in European Schools, 2006

97 2003 data used for US reading literacy due to data availability.
98 EU-15 average minus Greece.

4.3.4 Tertiary Education and Life-long Learning

Figure 4.52 Population by Age Cohort that has at Least Third Level Education, 2006

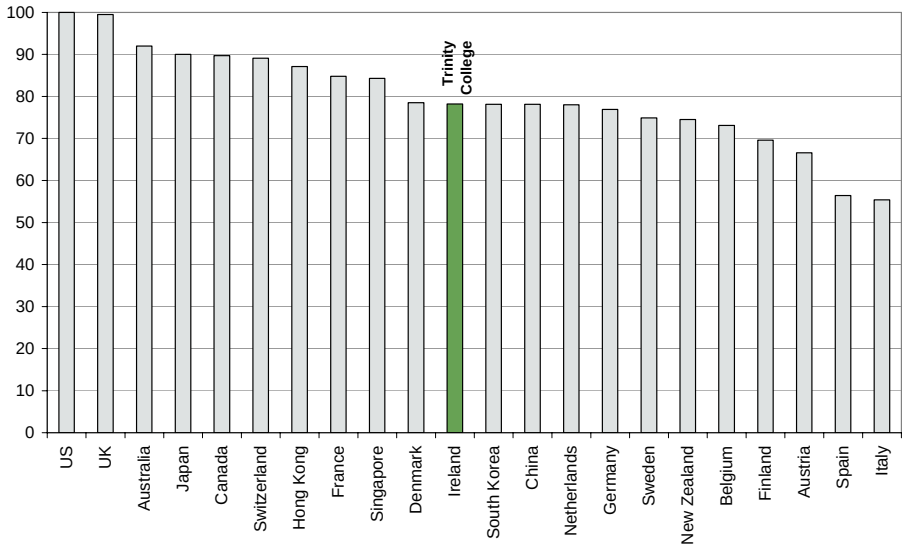


Source: OECD, Education at a Glance, 2008

A breakdown of third-level graduates by age reveals that Ireland's educational attainment varies much more by age than in other countries. While cohorts over 45 years old (in particular the 55-64 age group) have lower attainment rates than the OECD average, Ireland's 25-34 year olds are more qualified than most of their OECD counterparts.

OECD-28 Ranking[99]: (ranked by total 25-64 year olds) 11 (↑3)

Figure 4.53 Score of Leading Institution by Country in the Times Higher University Index (Scale 0-100), 2008



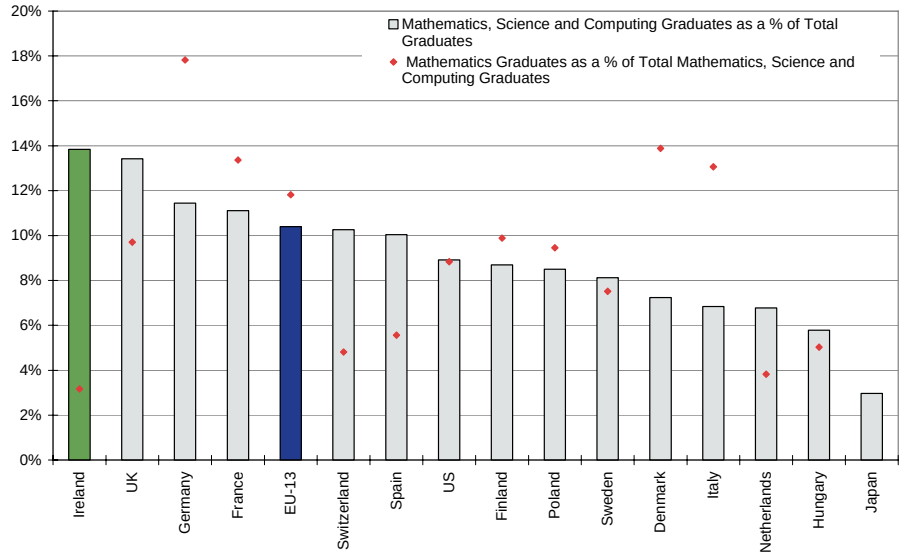
Source: The Times Higher Education Supplement, 2008

Ranking third-level institutions is an exercise fraught with difficulties. The scores are based on peer review and recruiter review assessments, number of citations, ratio of faculty to student numbers and success in attracting foreign students. This index identified Trinity College as Ireland's leading institution ranking it 49th out of 200 institutions.

Ranking of Institution: 49 (out of 200)

99 Base year for ranking change is 2001 compared to 2006.

Figure 4.54 Percentage of Mathematics, Science and Computing Graduates (as a % of the Total Graduates), 2006[100]

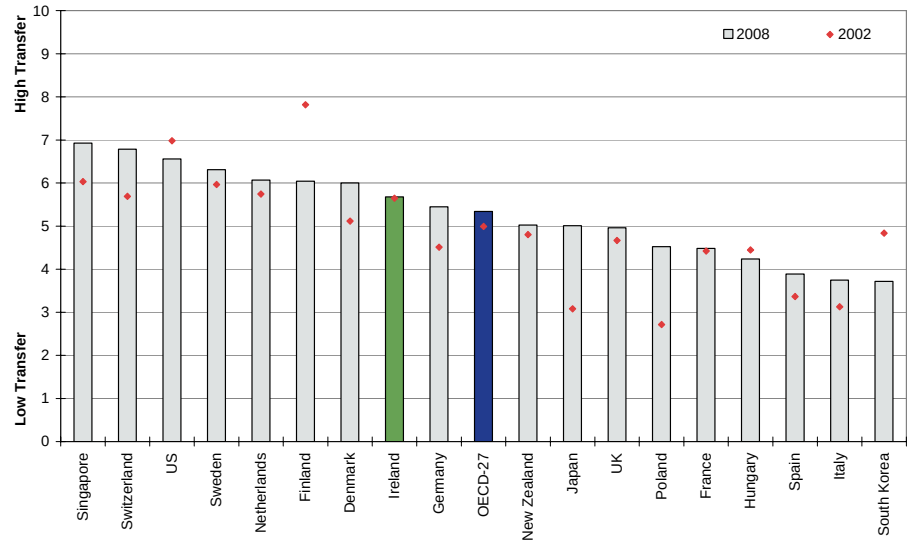


Ireland has the highest proportion of graduates in the fields of mathematics, science and computing as a percentage of total graduates. However, in Ireland science and computing graduates dominate this category, which means that Ireland is producing a limited supply of mathematics focused graduates.

EU-13 Ranking:
Maths, Science & Computing: 1
Mathematics: 13

Source: Eurostat, Population and Social Conditions

Figure 4.55 Knowledge Transfer Between Companies and Universities, (Scale 0-10) 2008



Executive opinions regarding the level of development of knowledge transfer between academia and enterprise in Ireland are slightly above the OECD average. Barriers to more effective knowledge transfer include lack of knowledge of third level research projects and difficulties with intellectual property contracts.

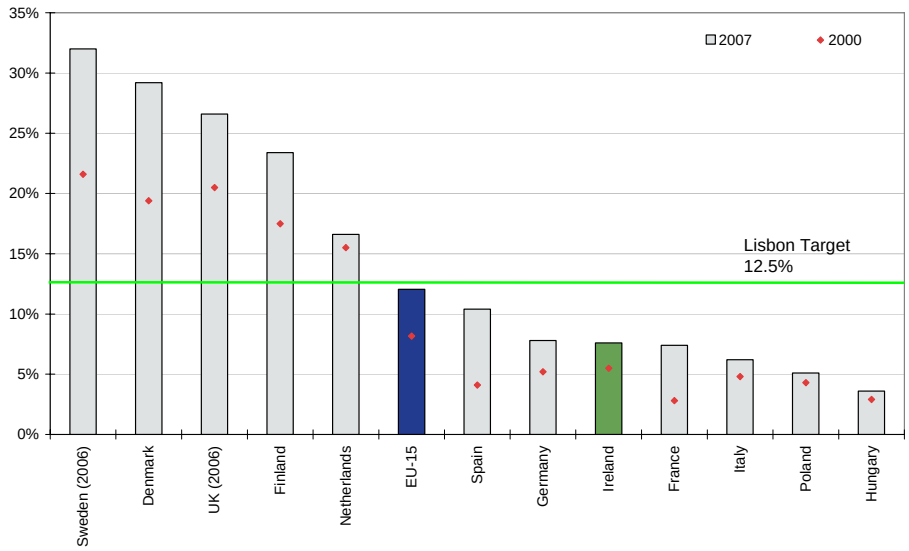
OECD-27 Ranking[101]:
11 (↓4)

Source: IMD World Competitiveness Yearbook, 2008

100 2005 data used for Irish mathematics graduates as a percentage of total mathematics, science and computing graduates due to data availability. EU-15 average minus Luxembourg and Greece.

101 OECD-28 average minus Iceland. Base year for ranking change is 2002 compared to 2008.

Figure 4.56 Life-long Learning (as a % of 25 to 64 year olds), 2007[102]



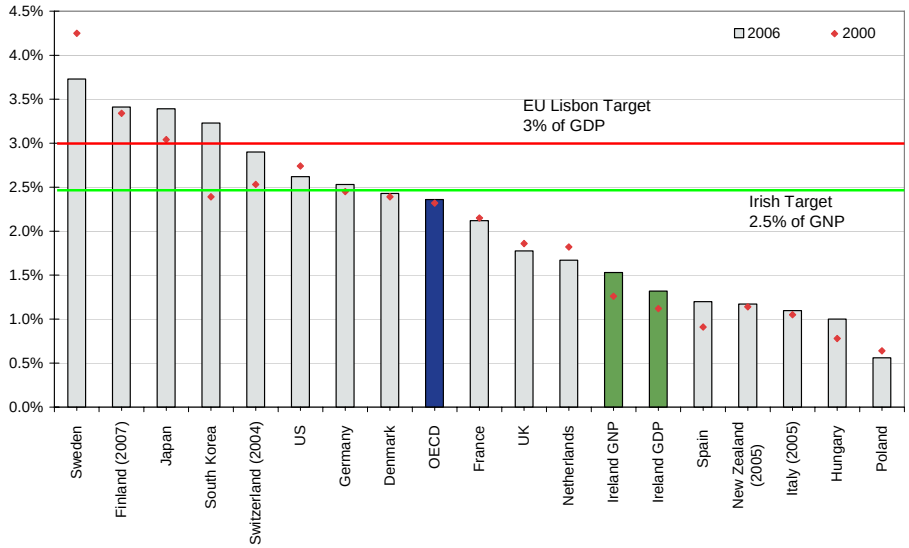
Life-long learning is defined as all learning activity undertaken throughout life, with the aim of improving knowledge skills and competencies. This indicator measures the percentage of persons aged 25 to 64 years old in receipt of education in the four weeks prior to the survey and includes both formal and non-formal education. Ireland's score, while improving, is still below both the EU-15 average and the Lisbon target.

EU-15 Ranking:
9 (↓1)

Source: Eurostat, Structural Indicators

4.3.5 Investment in Research and Development

Figure 4.57 Gross Domestic Expenditure on R&D (GERD), as a % of GDP, 2006[103]



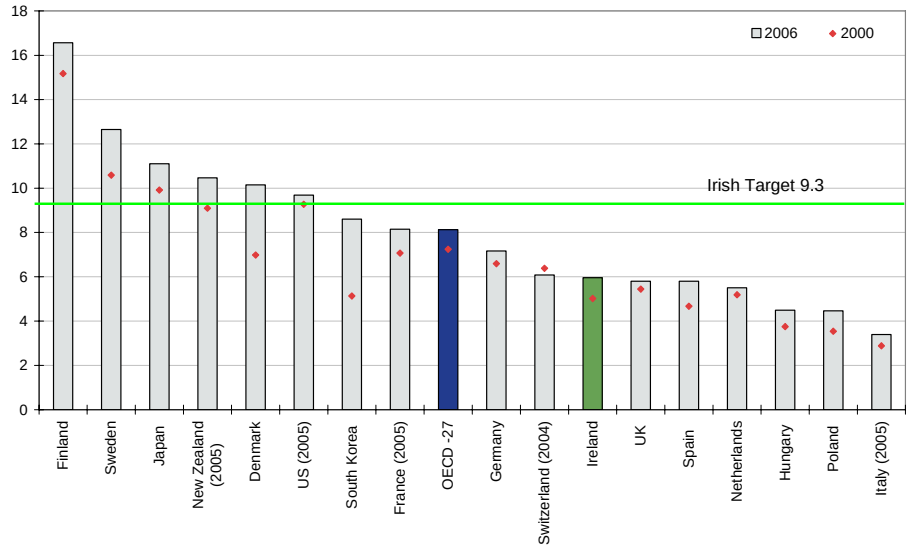
As part of the Lisbon Strategy, the European Council set a target that three percent of EU GDP would be spent on R&D in the EU by 2010. The Irish Strategy for Science, Technology and Innovation 2006-2013 foresees Ireland reaching 2.5 percent of GNP by 2013.

OECD-28 Ranking[104]:
GDP: 20 (↑1)
GNP: 18 (↑1)

Source: OECD, Main Science and Technology Indicators, 2008/ Issue 1

102 2002 data is used for Ireland and 2001 data for Poland as 2000 data is unavailable.
103 Traffic-light determined based on Ireland's GNP ranking.
104 Rankings incorporate the latest available data for countries that are unavailable for 2006.

Figure 4.58 Total Researchers per 1,000 Total Employment, 2006

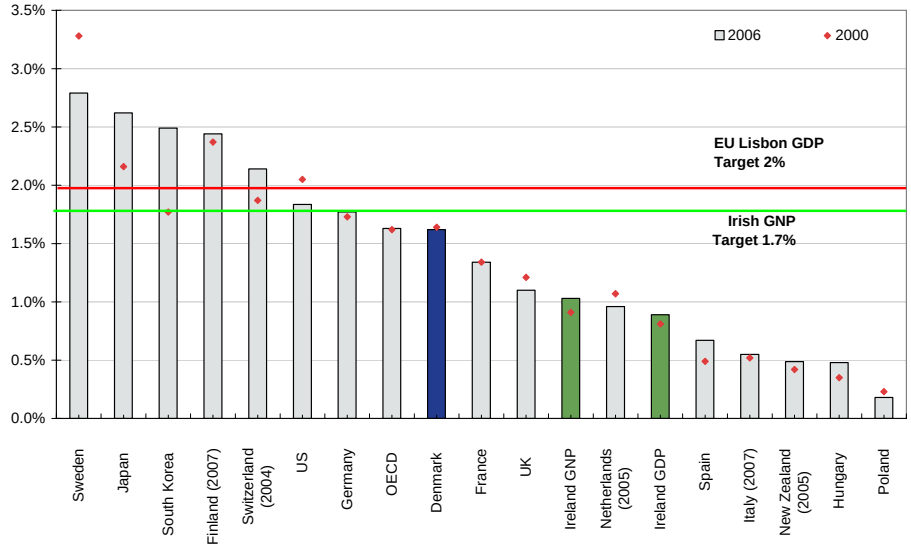


Source: OECD, Main Science and Technology Indicators, 2008/ Issue 1

The R&D Action Plan for promoting investment in R&D has set a target of 9.3 researchers per 1,000 of total employment by 2010. The number of researchers has grown from 5 per 1,000 total employment in 2000 to 6 per 1,000 in 2006.

OECD-27 Ranking[105]:
17 (↑2)

Figure 4.59 Business Expenditure on R&D (BERD) as a % of GDP, 2006



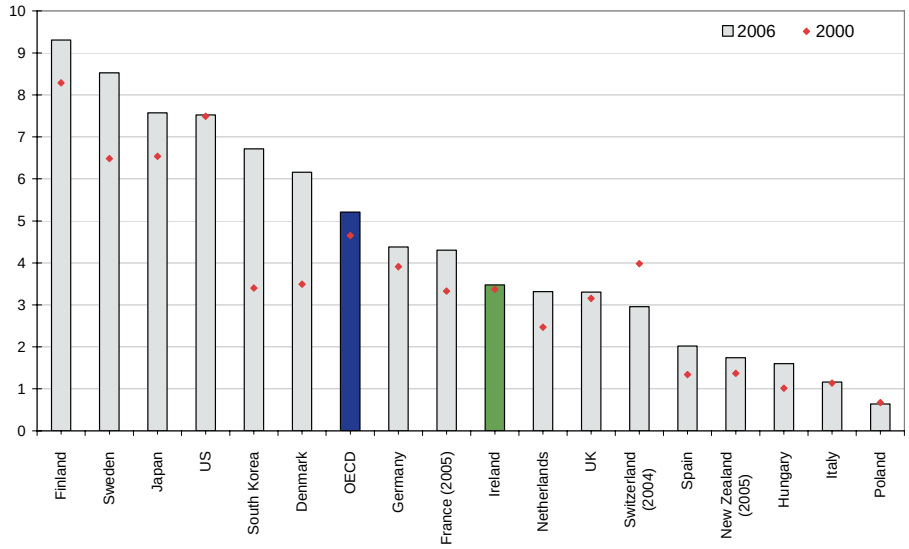
Source: OECD, Main Science and Technology Indicators, 2008/ Issue 1

The Irish Strategy for Science, Technology and Innovation has set a target of €3 billion for business expenditure on R&D by 2013. In 2006, business expenditure on R&D in Ireland stood at €1,560 million.

OECD-28 Ranking[106]:
GDP: 19 (↓1)
GNP: 17 (↑1)

105 Rankings incorporate the latest available data for countries that are unavailable for 2006. OECD average minus Iceland.
106 Rankings incorporate the latest available data for countries that are unavailable for 2006. Traffic light colour determined based on GNP ranking

Figure 4.60 Business Researchers per 1,000 Total Employment, 2006

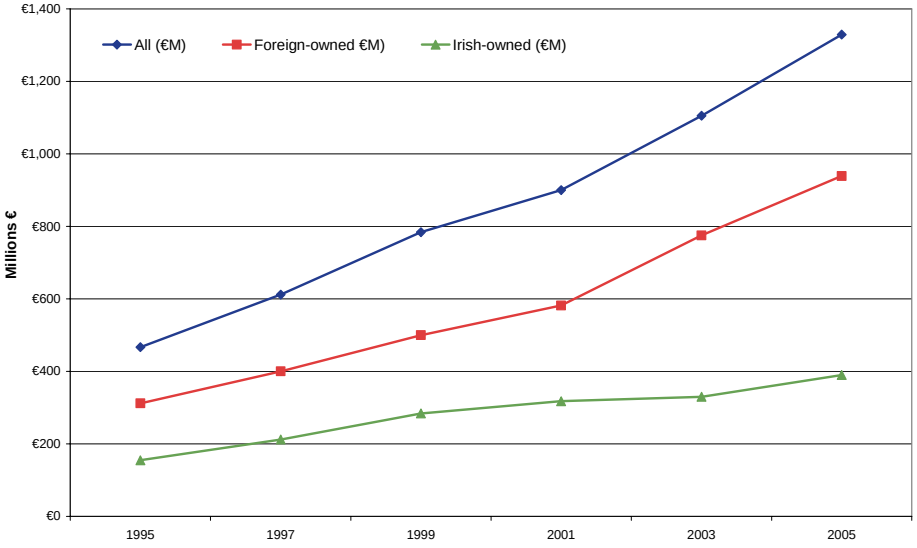


Research staff can play an important part in helping a company increase its scientific and technological capabilities.
Ireland had a lower number of business researchers per 1,000 total employment than the OECD average in 2006.

OECD-28 Ranking[107]: 15 (--)

Source: Forfás Calculations; OECD, Main Science and Technology Indicators, 2008/ Issue 1

Figure 4.61 Business Sector R&D Expenditure by Firm Type, 1995-2005



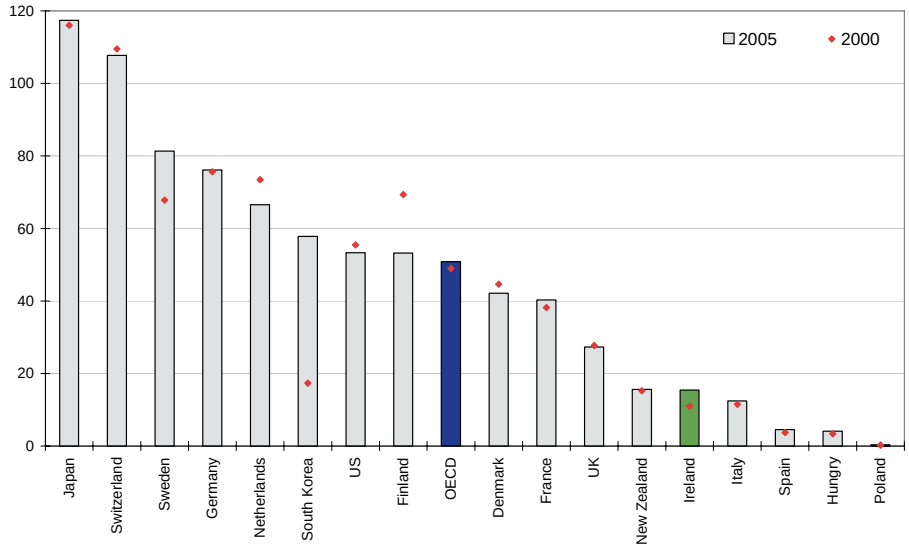
Foreign-owned companies undertake most business expenditure on R&D in Ireland. The Irish Strategy for Science, Technology and Innovation 2006-2013 has set a target for business expenditure on R&D in indigenous firms to grow to €825 million by 2013. This is more than double the amount spent by Irish firms in 2005.

Ranking: N/A

Source: Forfás, Research and Development Performance in the Business Sector Ireland, 2005/06

107 Rankings incorporate the latest available data for countries that are unavailable for 2006.

Figure 4.62 Triadic Patents Granted per Million Population, 2005

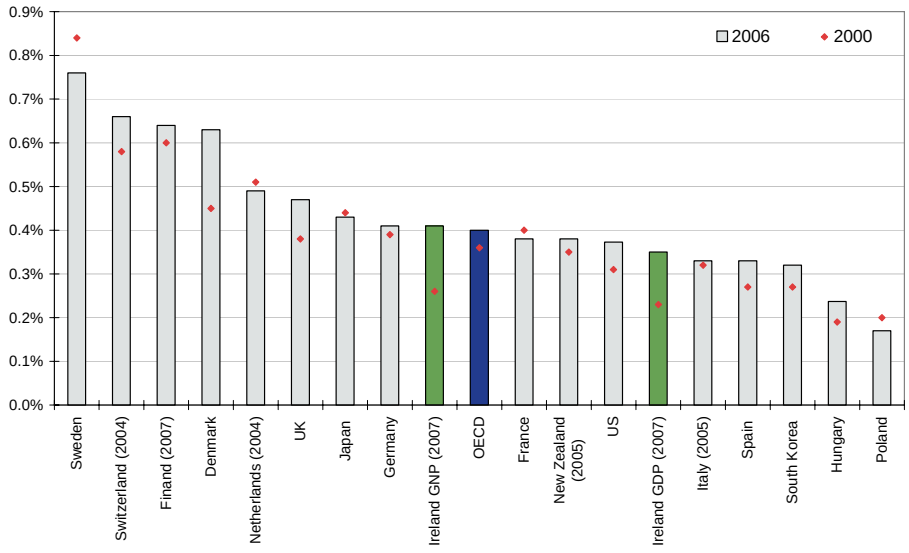


Patents can be taken as a reflection of a country's inventive activity. Triadic patents are patents granted at the European, Japanese and the US patent offices. On this measure, Ireland continues to perform well below the OECD average.

OECD-28 Ranking: 19 (↑2)

Source: OECD, Main Science and Technology Indicators, 2008/ Issue 1

Figure 4.63 Higher Education Expenditure on R&D (HERD) as a % of GDP, 2006



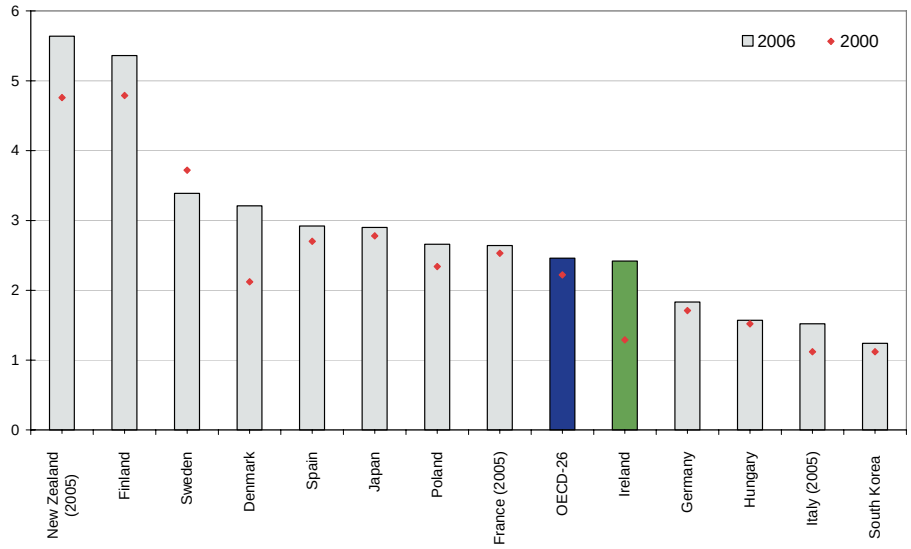
Higher education expenditure has more than doubled over the last eight years rising from €238 million in 2000 to €600 million in 2006. As a percentage of GNP, Ireland has converged with the OECD average, but remains far behind the leading countries.

OECD-28 Ranking[108]:
GDP: 18 (↑4)
GNP: 13 (↑9)

Source: Forfás Calculations; OECD, Main Science and Technology Indicators, 2008/ Issue 1

108 Rankings incorporate the latest available data for countries that are unavailable for 2006.

Figure 4.64 Higher Education Total Researchers per 1,000 Total Employment, 2006

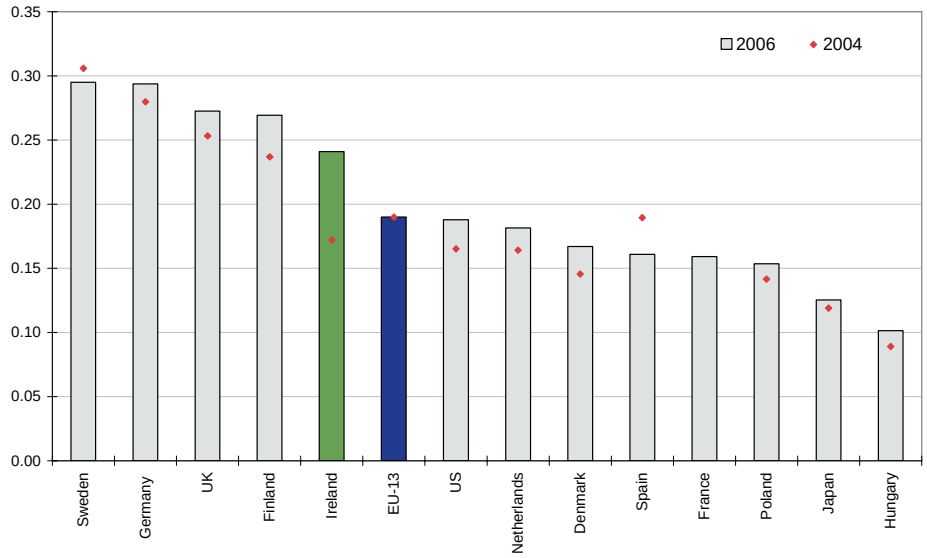


The number of researchers in the higher education sector in Ireland is growing rapidly. This is reflected in Ireland's convergence towards the OECD average.

OECD-26 Ranking[109]: 18 (↑4)

Source: Forfás Calculations; OECD, Main Science and Technology Indicators, 2008/ Issue 1

Figure 4.65 PhD Graduates per 1,000 of Population, 2006[110]



PhD graduates are central to the delivery of Ireland's Strategy for Science, Technology and Innovation. In 2006, Ireland produced 26 percent more PhD graduates per 1,000 of population than the EU-13 average. In 2006, 54 percent of PhD graduates in Ireland were males and 46 percent were female. This gender gap is not as large as that in other EU countries.

EU-13 Ranking: 6 (↑1)

Source: Forfas Calculations; Eurostat, Population and Social Conditions

109 Rankings incorporate the latest available data for countries that are unavailable for 2006. OECD average minus UK and US.
110 EU-15 minus Luxembourg and Italy. 2003 data used for Finland as 2004 data is unavailable.

Wilton Park House, Wilton Place,
Dublin 2, Ireland

Tel +353 1 607 3000
Fax +353 1 607 3030

www.forfas.ie

Forfás

National Competitiveness Council