

# Annual Competitiveness Report 2009

Volume 1: Benchmarking Ireland's  
Performance

August 2009



# Annual Competitiveness Report 2009

Volume 1:  
Benchmarking Ireland's  
Performance

## 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 compared 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 150 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) 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 restore 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
Mr Shay Cody	Deputy General Secretary, IMPACT
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
Ms Mary Twomey	Dublin 2
	Tel: 01 607 3000 Fax 01 607 3030
	Email: <a href="mailto:ncc@forfas.ie">ncc@forfas.ie</a>
	Web: <a href="http://www.competitiveness.ie">www.competitiveness.ie</a>

## Foreword by the Taoiseach



As a small, open economy which earns its living by trading on world markets, Ireland is particularly exposed to the current international crisis. It exacerbates the impact of the difficult adjustment already underway in our construction sector, and the significant fall in the value of Sterling against the Euro. It is no exaggeration to state that responding to this crisis is one of the greatest challenges the country has faced since independence.

That is why it has never been more important to identify clearly the key drivers of national competitiveness, supporting the rebalancing of economic activity that is necessary to support a return to sustainable, export-led growth.

The Government's Smart Economy Framework sets out a clear vision for sustainable economic renewal. Our goal is to develop a critical mass of companies - both Irish and international - at the forefront of innovation, creating the products and services of tomorrow, and providing well paid jobs for this and future generations.

Consistent with this strategic direction, we will continue to act decisively around the four cornerstones of:

- Tackling the banking situation in order to restore credibility and confidence, and get credit flowing;
- Attacking the gap in our public finances by increasing revenue and cutting spending, in a planned way, over five years;
- Protecting jobs and restoring competitiveness to the way we do business; and
- Investing in those who are out of work so that they can return to employment as soon as possible.

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 continues to make an important contribution 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 Benchmarking Ireland's Performance 2009.

Brian Cowen, TD  
**Taoiseach**

## Chairman's Preface



Our economic circumstances are serious and challenging. National income has declined rapidly, living standards are falling and unemployment has risen sharply. Given the severity of our current economic position, it is now time for Ireland to achieve a swift improvement in competitiveness.

Targeting export-led growth is the only sustainable strategy to maintain living standards and to secure long term prosperity. This will not be easy in a time of falling global demand for goods and services and contracting world trade. But there is no alternative. The Irish economy needs to respond to the current crises and position itself to benefit from a global recovery.

As a small open export dependent economy, Ireland is sensitive to the world economy. But if we are competitive we can outpace others with a strong recovery when the world economy picks up again. This places a premium on sound, evidence-informed policies that support the competitiveness of firms based in Ireland. This report provides an assessment of Ireland's competitiveness performance against 17 other countries across a range of competitiveness factors, using 150 indicators.

Difficult decisions are necessary to restore our international competitiveness. Without appropriate action, it is entirely possible for the Irish economy to enter a prolonged period of depressed economic activity and for the convergence of Irish living standards on other high-income countries to unwind. The challenge now is to mobilise broadly-based public support for the policy actions that will ensure Ireland emerges from this serious recession with a vibrant enterprise base capable of sustaining high living standards. In particular, Ireland needs to focus its attention on improving cost competitiveness, sustaining employment, fostering innovation at all levels of economic activity and enhancing training and education opportunities. Continuing action to restore the sustainability of the public finances and tackle the banking crisis is also essential.

I would like to thank Council members and the advisors from the relevant Government departments for their work on this document. I would also like 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**

# Table of Contents

<b>1. Overview of Ireland’s Competitiveness</b>	<b>8</b>
1.1 Introduction	8
1.2 Key Competitiveness Messages	9
1.3 Summary of the Report	19
1.4 Methodology and How to Read This Report	27
<b>2. Sustainable Growth</b>	<b>31</b>
2.1 National Income	35
2.2 Quality of Life	42
2.3 Environmental Sustainability	44
<b>3. Essential Conditions</b>	<b>48</b>
3.1 Business Performance	50
3.1.1 Business Investment in Enterprise	50
3.1.2 Trade	52
3.2 Productivity and Innovation	55
3.2.1 Productivity	57
3.2.2 Innovation	61
3.3 Prices and Costs	63
3.3.1 Prices	66
3.3.2 Pay Costs	68
3.3.3 Non-Pay Costs	72
3.4 Labour Supply	81
<b>4. Policy Inputs</b>	<b>89</b>
4.1 Business Environment	92
4.1.1 Taxation	92
4.1.2 Finance	97
4.1.3 Regulation and Competition	99
4.1.4 Labour market Regulation	103
4.1.5 Social Capital	104
4.2 Physical and Economic Infrastructure	106
4.2.1 Investment in Physical Infrastructure	109
4.2.2 Transport and Energy Infrastructure	110
4.2.3 Information and Communication Technology Infrastructure	113
4.2.4 Housing	115
4.3 Knowledge Infrastructure	118
4.3.1 Education: Overview	121
4.3.2 Pre-Primary and Primary Education	122
4.3.3 Secondary Education	123
4.3.4 Tertiary Education and Life Long Learning	126
4.3.5 Research and Development Infrastructure	129



# **1** Overview of Ireland's Competitiveness

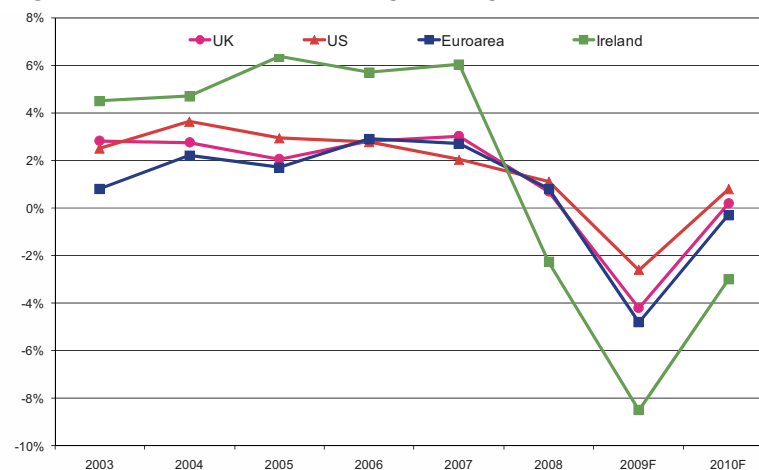


# 1. Overview of Ireland's Competitiveness

## 1.1 Introduction

The Irish economy is currently facing enormous challenges. Since the middle of 2008, national income has been declining rapidly. While the economic crisis is global in scope and unprecedented in terms of the scale and synchronisation of the downturn, the recession in Ireland has been the most severe of the developed economies to date. The Economic and Social Research Institute (ESRI) is forecasting a 7.9 percent decline in GDP and an 8.9 percent decline in GNP in 2009<sup>1</sup>. This compares poorly with forecasts by the International Monetary Fund (IMF) for the US (-2.6 percent), the UK (-4.2 percent) and the eurozone (-4.8 percent)<sup>2</sup>. These figures highlight that citizens of many developed countries, including Ireland, are facing significant falls in real incomes and living standards.

Figure 1.1: Real GDP Percentage Change over Previous Year



Source: IMF, World Economic Outlook, July 2009

The Irish economy is experiencing a rapid and painful adjustment to the bursting of the property bubble, the international financial crises and the downturn in world trade. As a small, open and competitive economy, Ireland prospered from an export boom driven by globalisation and investment in the 1990s and early 2000s. In recent years, strong growth in the domestic economy, driven by investment in housing and consumption, replaced exports as the key driver of growth. Though economic growth rates remained strong, our international competitiveness weakened as the domestic boom increased the costs of doing business here and as reforms to improve competitiveness were delayed - particularly in relation to the non-traded services sector where prices increased at over twice the eurozone average for many years.

Growth derived from asset price inflation, fuelled by a combination of low interest rates, reckless lending and speculation, has now been proven a poor basis for sustainable growth both in Ireland and internationally. The falling value of property and other assets has eroded the capital base of lenders, reversed trends in private sector credit (including mortgages) and led to a sharp reduction in the domestic money supply. The confluence of a domestic banking crisis and property market crash with a severe slowdown in global trade is presenting unprecedented challenges for the Irish economy. The recent IMF report commended Ireland for the policy measures being taken to address

<sup>1</sup> ESRI, Quarterly Economic Commentary, Summer 2009.

<sup>2</sup> IMF, World Economic Outlook, July 2009.

these challenges but stressed the need for determined execution over a sustained period to position Ireland for recovery<sup>3</sup>.

The primary focus of this report is to provide an evidence based assessment of Ireland’s current international competitiveness. Section 1.2 outlines key messages from the report. Section 1.3 provides a more in-depth assessment of Ireland’s competitiveness 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 Competitiveness Messages

This section summarises the key messages from *Benchmarking Ireland’s Performance, 2009*.

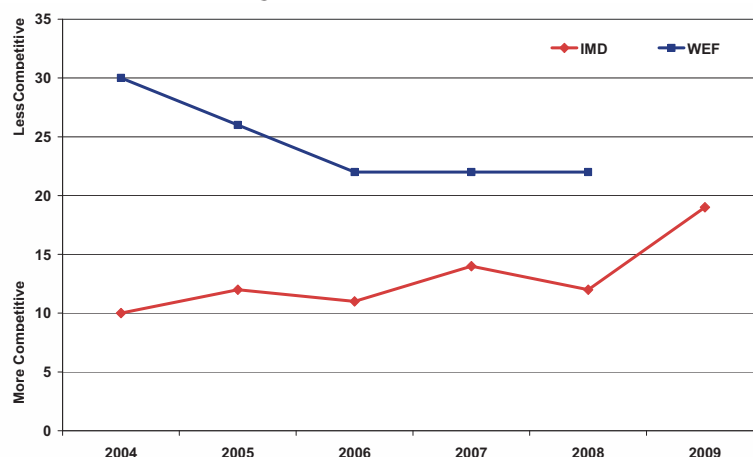
### 1.2.1 Ireland Retains a Wide Range of Competitive Strengths

While Ireland’s competitiveness position has deteriorated in recent years, we retain a wide range of competitive strengths. These include a young and comparatively well educated workforce (Fig. 4.56), growing levels of research and development activity (Fig. 4.63 and 4.64), a modern internationally trading enterprise base and a long track record as a successful location for overseas investors (Fig. 3.02 and Fig. 3.03).

These strengths have been supported by increased investment and improvements in infrastructure (Fig 4.28, Fig. 4.30 and Fig. 4.32), education (Fig 4.47), research and development (Fig. 4.62 and Fig. 4.64) and the creation of a supportive business environment (Fig. 4.15 and Fig. 4.16). The recent rapid decline in national income is primarily a reflection of the collapse of the property market. Ireland’s

competitiveness position, while weakening over a number of years, has not changed dramatically in the past year. We retain a range of important competitive strengths. Ireland continues to perform relatively well on international competitiveness rankings including those of the World Economic Forum and the Institute of Management Development (Fig 1.2).

**Figure 1.2: Ireland’s Competitiveness Position in International Rankings**



*Source: Institute of Management Development, World Competitiveness Yearbook 2009; World Economic Forum, The Global Competitiveness Report 2008-2009*

<sup>3</sup> IMF, Country Report on Ireland, June 2005

### 1.2.2 Irish Exporters are Performing Relatively Well in an Adverse Environment

The ability of Ireland to protect the gains in living standards of recent decades and to secure future increases rests on our ability to succeed as competitive exporters of high quality goods and services on international markets. However, the collapse in domestic demand in Ireland has coincided with the most severe global economic recession in decades. The global economy will decline for the first time in over sixty years. Recent IMF projections forecast a contraction of 1.4 percent in global economic activity during 2009 and a fall of 12.2 percent in the volume of goods and services traded globally. This decline in real GDP will be sharpest in developed economies - our key markets. However, the IMF forecasts that global economic activity will expand by 2.5 percent in 2010, which is 0.6 percentage points higher than envisaged in the IMF's April 2009 projections<sup>4</sup>.

Ireland's export performance has weakened because of the global downturn. Merchandise exports weakened considerably during the second half of 2008, resulting in a decline of 0.6 percent in volume terms and three percent in value terms for 2008. The performance of some key sectors such as chemicals remains robust while weak food and beverage exports reflect the sustained appreciation of the euro relative to sterling. Overall Irish exports have held up in recent months as firms reduce their costs, but sustaining this performance will be dependent on improving the overall cost environment. Given the negative outlook for global demand, the decline in world trade volumes and the planned closure of some manufacturing plant, the ESRI expects merchandise exports to decline by three percent in 2009 and one percent in 2010 in volume terms<sup>5</sup>.

While services exports have performed exceptionally well in recent years, their performance also weakened in 2008 with a decline in volume terms of 0.1 percent. However, exports of services grew by three percent in value terms in 2008, with growth in computer services (8.9 percent), business services (5.1 percent)<sup>6</sup> and royalties (17.6 percent) offsetting declines in other services and tourism and travel (-2.3 percent)<sup>7</sup>. Unsurprisingly, the performance of the financial services (-7.2 percent) and insurance services (-4.3 percent) sectors was particularly weak in 2008.

The outlook for global trade remains very poor for 2009, as turmoil in international financial markets has triggered a sharp fall in consumer and business confidence globally. In the year to May 2009, world trade fell by almost 20 percent<sup>8</sup>. To date, exporters from Ireland have performed relatively well. While Irish exports of goods and services are expected to decline by 3.9 percent in volume terms in 2009, this must be set in the context of the severe difficulties facing exporters globally<sup>9</sup>. The OECD forecasts that the volume of exports of goods and services for the OECD will fall by 16.5 percent in 2009 with significant falls in Japan (-32.3 percent), Germany (-18.9 percent), and

<sup>4</sup> IMF, *World Economic Outlook*, July 2009.

<sup>5</sup> ESRI, *Quarterly Economic Commentary*, Summer 2009.

<sup>6</sup> Business services includes merchanting; other trade-related services; operational leasing; legal, accounting and other professional services; advertising and market research; research and development; architectural, engineering and other technical services; management services between affiliates; and other services.

<sup>7</sup> CSO, *Balance of International Payments*, March 2009.

<sup>8</sup> Netherlands Bureau for Economic Policy Analysis, *World Trade Monitor*, July 2009

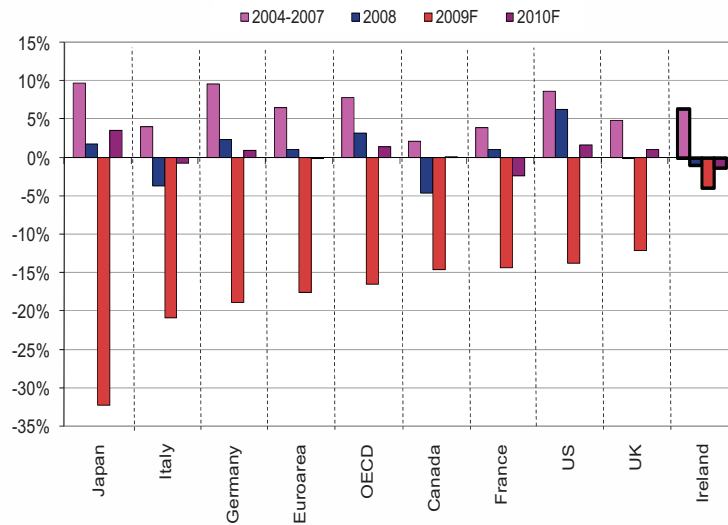
<http://www.cpb.nl/eng/research/sector2/data/trademonitor.html>

<sup>9</sup> ESRI, *Quarterly Economic Commentary*, Summer 2009.

the US (-13.8 percent). Non-OECD countries such as Singapore and China are also experiencing significant falls in exports. In 2008, Ireland's share of global trade increased marginally (Fig. 3.08).

Globally, aggressive expansionary monetary and fiscal policy responses have sought to counteract the severe decline in confidence, industrial production and world trade. While it is difficult to predict when these policies will halt the decline in global economic activity, the policy imperative for Ireland is to restore the competitiveness of our exporting sectors and our attractiveness for inward investment and to ensure that Ireland can take advantage of global recovery.

**Figure 1.3: Percentage Change in Volume of Exports of Goods and Services, 2004-2010F**



Source; OECD Economic Outlook 85, June 2009. ESRI, Quarterly Economic Commentary, Summer 2009.

The fall in the value of sterling is a significant challenge, particularly for indigenous exporters who are focused on the UK market and compete against UK firms in other markets, which adds urgency to restoring competitiveness. Despite the harsh operating environment for Irish exporters at present, targeting export-led growth is the correct and only sustainable longer term strategy to maintain living standards and secure long-term prosperity.

### 1.2.3 Ireland's Cost Competitiveness is Beginning to Improve

Strong domestic growth in recent years led to significant increases in the costs of doing business in Ireland. Key business inputs such as rents, pay and incomes, utilities and business services had been rising for a sustained period. The fall in demand for goods and services and the strength of the euro (as imports become cheaper) are resulting in a fall in the price level in Ireland. According to the CSO, the annual rate of inflation declined by 5.4 percent in June 2009 - the sharpest fall in Ireland since 1933. The annual rate of Irish inflation fell significantly across most goods and services groups in 2009. Housing and utilities inflation experienced the most dramatic fall from 6.9 percent in 2005-2008 to -4.5 percent in 2009 Q1 (Fig. 3.23). We are also witnessing significant falls in house prices (Fig. 4.44 and Fig. 4.45) and a decline in wage growth (Fig. 3.28 and Fig. 3.29).

While the available evidence suggests the economic downturn is leading to price moderation / falls in Ireland, the challenge is whether this moderation is improving our relative cost competitiveness. Achieving this requires the cost of doing business in Ireland to fall relative to that of our trading partners. Initial signs are positive but the cost base in Ireland remains high. Irish inflation, as measured by the HICP (which excludes mortgage interest payments), declined by 1.7 percent in the

year to May 2009, compared to no change in the Eurozone and a decline of 0.7 percent in the EU<sup>10</sup>. Between January 2000 and April 2008, Ireland experienced a 35 percent loss in its trade-weighted international price competitiveness (Fig. 3.25). Exchange rate movements account for approximately two thirds of the deterioration in price competitiveness since 2000, while higher inflation in Ireland accounts for the remaining third. Ireland's current price competitiveness, although weak, has improved; the loss in price competitiveness between January 2000 and June 2009 has fallen to 30 percent. This was supported by both falls in relative prices and favourable exchange rate movement vis-à-vis our key trading partners. However, the collapse in the value of sterling means that many indigenous exporters are under pressure to reduce their costs as they remain dependent on the UK market.

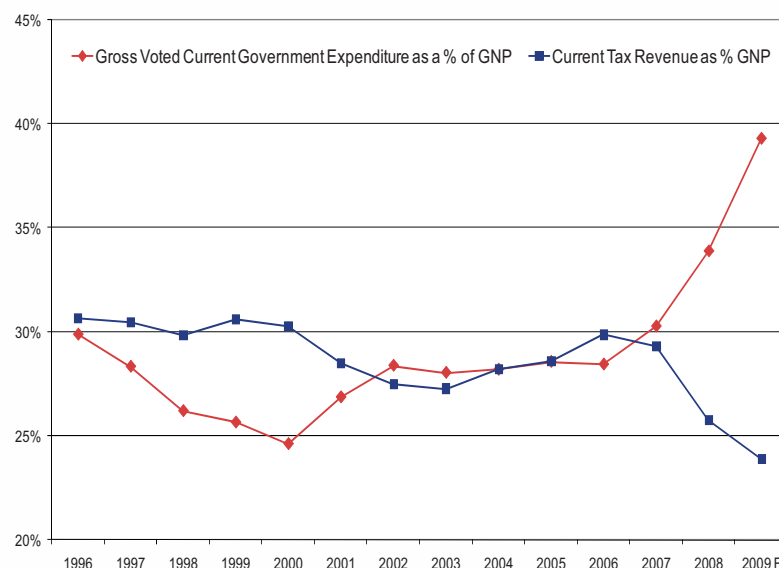
Recent price falls in Ireland are a cyclical response to the downturn nationally and internationally (e.g. falling interest rates, international fuel and food prices) rather than structural changes in the Irish economy or changes in the provision of State provided goods and services. For example, administered services inflation (e.g. public transport, health insurance, education) is projected to average 13.2 percent this year<sup>11</sup>. In order for the economy to make the necessary transition from a reliance on domestic demand to sustainable export-led growth in the medium term, policies need to facilitate the convergence of Irish costs, charges, professional fees, rents and incomes/wages towards the levels of our trading partners. Ultimately, a quick adjustment in the price level is preferable to a gradual decline over several years. While painful and deflationary in the short term, the alternative is a prolonged period of weak or negative growth, high unemployment and emigration of many highly educated young Irish people.

### 1.2.4 Restoring the Credibility of the Public Finances is a Major Challenge

The severe contraction in the housing market (Fig. 4.44 and Fig. 4.45) and the associated negative impact on the labour market (Fig. 3.48 and Fig. 3.57) and consumer and business confidence has led to a sharp deterioration in the health of the public finances.

In 2008, Irish tax revenues fell sharply. Revenues comprised just 26 percent of GNP in 2008 compared to gross voted current

**Figure 1.4: Gross Voted Current Government Expenditure and Exchequer Revenue as a Percentage of GNP in Constant 2006 Prices, 1996-2009F**



Source: Department of Finance, Budgetary Statistics, September 2008, , Macroeconomic and Fiscal Framework, April 2009; CSO, National Accounts

<sup>10</sup> The items included in the Harmonised Index of Consumer Prices are a subset of those that make up the CPI. Source: Eurostat.

<sup>11</sup> Central Bank of Ireland, Quarterly Bulletin, April 2009.

government expenditure of 34 percent of GNP (Fig. 1.4). In recent years, Ireland relied heavily on transaction-based property taxes (including stamp duties and value added tax). The collapse of the property bubble has resulted in a sharp decline in revenue from direct property taxes (Fig 4.09) which has recently spread to other taxes. The collapse in revenue and the exposure of the State to the property-related loans of Irish banks is having a detrimental impact on Ireland's ability to borrow funds at competitive rates.

While Ireland's net debt remains low at present relative to other developed countries (Fig. 2.06), there are significant concerns about the scale of the Exchequer's financing requirements at a time when governments around the world are seeking to finance substantial stimulus packages and unprecedented fiscal deficits. While interest payments on Irish Government debt were 3.8 percent of tax revenue in 2008, this is forecasted to rise to 9.4 percent in 2009 reflecting higher borrowing costs, larger debt and lower tax revenues (Fig. 2.09). Although the interest burden will increase substantially over the period 2009-13, it is not expected to exceed the levels experienced in the mid-1990s<sup>12</sup>.

### 1.2.5 Evidence of the Impact of the Credit Crises is Mixed

The turmoil in global financial markets and the exposure of Irish banks to bad loans in the declining property sector is affecting Irish firms in terms of their ease of access to finance and its cost. The Government has taken significant steps to restore the credibility of the Irish banking sector and ensure that businesses have access to credit at competitive rates.

While it is not possible to benchmark this phenomenon relative to other countries due to a lack of data, survey evidence suggests that access to finance is a significant competitiveness threat to Irish enterprises. The available evidence on the impact of the banking crisis on access to (and cost of) credit is mixed.

- The Mazars review of lending examined both the demand for credit by SMEs and the supply of credit by five banks<sup>13</sup>. The survey of over 1,000 SMEs found that 24 percent of those who applied for credit were refused credit by a bank. The examination of the supply of credit by the five banks found that 14 percent of applications for credit were declined. The difference in the decline rates results largely from a difference in the perceptions between banks and SMEs as to what represents an application for credit. According to the survey of SMEs, decline rates vary significantly by sector, size of firm and individual bank; the highest levels of decline were in the real estate, construction and low end manufacturing sectors and for micro enterprises<sup>14</sup>.
- Data from the Central Bank indicates that excluding property related lending and financial intermediation, overall lending declined by 1.4 percent in the year to March 2009, compared to an annual increase of 12.5 percent in the year to March 2008.

---

12 The equivalent figure was 26.7 per cent when the NTMA was established in 1990. Source: National Treasury Management Agency, Annual Report 2008, July 2009.

13 Mazars, Review of Lending to SMEs, June 2009. The examination of demand for credit was conducted in June 2009 and the examination of the supply of credit focused on the period June 2008 to February 2009.

14 Due to limitations in bank systems, it was not possible to distinguish between SMEs by size and sector when examining the supply of credit.



According to the Mazars review, a range of factors have contributed to reduced borrowing:

- While formal bank credit policy has remained largely unchanged, the application of credit policy has changed and has resulted in a much more cautious approach to lending, with an increased level of emphasis on both personal guarantees and levels of security apparent in the majority of banks;
- There were some changes to credit pricing over the period, primarily driven by increases in the cost of funds to banks and a reduction in competition for new business in certain cases. The overall cost of new credit facilities (as distinct from existing credit) to SMEs in February 2009 had decreased, compared to June 2008; and
- The quality of the SME loan book as measured by bank credit grading systems deteriorated significantly in the period under review. Approximately 22 percent of loans to SMEs were either “on watch” or “impaired” at the end of February 2009, representing an eight percentage point deterioration compared to June 2008. If this trend were to continue, the ability of SMEs to secure credit would be further impacted.

It is critical that measures are progressed without delay to ensure that the success of viable businesses is not hindered by tightening credit standards or very high costs of capital.

### 1.2.6 Growing Unemployment Presents a New Long-term Challenge

The number of people in employment fell below two million in 2009 Q1 to 1,965,600, representing an annual decrease in employment of 158,500 or 7.5 percent. This represents the largest annual decrease in employment since the labour force survey was first undertaken in 1975. In detail, there were 86,700 fewer jobs in construction in 2009 Q1 compared to the peak in 2007 Q1 (Fig. 3.52). Related sectors such as architecture, solicitors and real estate have also been affected by the construction job losses. Annual decreases in employment were also recorded in 2009 Q1 in agriculture, forestry and fishing (-14,200, -12.1 percent), hotels and restaurants (-12,800, -9.8 percent), wholesale and retail trade (-18,200, -9.6 percent) and manufacturing industry (-19,500, -6.8 percent). Sectors showing an increase in employment include education (+11,800, +8.5 percent) and health (+2,200, +1.0 percent).

Exporters are also experiencing job losses. Total permanent full-time employment in development agency-assisted companies amounted to 297,098 in 2008. This is a decrease of 8,938 jobs (-2.9 percent) on employment levels in 2007<sup>15</sup>. Consolidation and reviews of global operations by multinational corporations in response to reduced global demand may result in further employment losses in 2009/2010 across a range of sectors and occupations.

The deterioration in economic activity has led to record levels of unemployment. The numbers of people unemployed has increased sharply from the start of 2008. Unemployment in Ireland is now significantly above the OECD average and above the average of many larger EU economies (Fig. 3.57). The standardised unemployment rate (derived from the CSO Live Register) estimates

---

<sup>15</sup> Forfás, *Annual Business Survey of Economic Impact, 2008*.

unemployment at 11.9 percent for June 2009<sup>16</sup>. This compares with 10.2 percent in 2009 Q1 (QNHS). A downward trend in full-time employment and increase in part-time employment may also indicate a shift in working arrangements for many people such as reduced hours or working days. Part-time employment increased by 17,700 in the year to 2009 Q1 while the number in full-time employment fell by 176,200 on an annual basis. This situation looks likely to deteriorate further as 2009 progresses. The ESRI forecasts that the unemployment rate will increase to 12.6 percent in 2009 and 16.1 percent in 2010<sup>17</sup>.

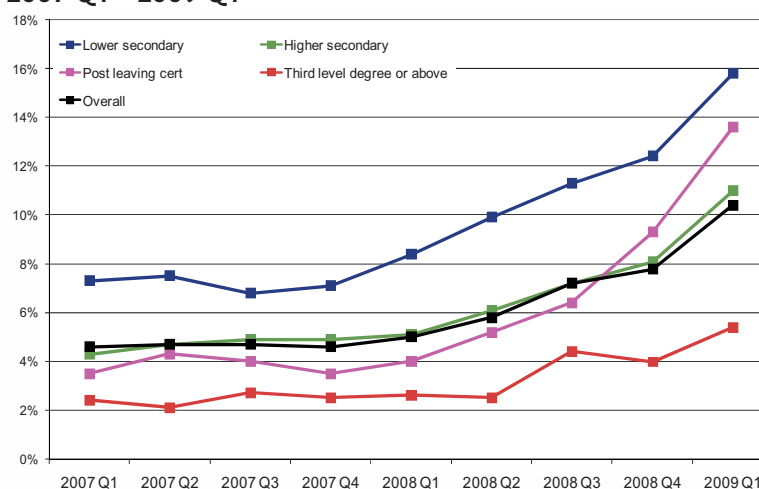
While the downturn is affecting people across all of society, certain groups are particularly exposed. These include:

- Younger workers: In 2009 Q1, the unemployment rate for 15-19 year olds was 25.6 percent, and for 20-24 year olds it was 17.8 percent, compared to 10.2 percent for the total population<sup>18</sup>.
- Lower skilled workers: The available evidence suggests unemployment and educational attainment are closely linked.

During 2007 Q1 - 2009 Q1, unemployment increased from 7.3 percent to 15.8 percent for those with lower secondary education in comparison to an increase from 2.4 percent to 5.4 percent over the same period for those with a third level degree (Fig 1.5).

High levels of unemployment, particularly among younger and lower skilled workers highlight the importance of ensuring that the unemployed remain as close to the labour market as possible. This link between employment prospects and skill levels also points to the urgency of re-training the newly unemployed/workers who lack basic qualifications with new skill sets where there are likely to be employment opportunities in the future. Developing long-term policies (education and training, social welfare, new business start-ups, etc.) to address Ireland's growing unemployment problem is a major challenge.

**Figure 1.5 Unemployment (%) by Educational Attainment, 2007 Q1 - 2009 Q1**



Source: CSO, QNHS

<sup>16</sup> The Live Register includes part-time workers (those who work up to three days a week), seasonal and casual workers entitled to Jobseekers Benefit or Allowance. It is not designed to measure unemployment. Unemployment is measured by the Quarterly National Household Survey. The Live Register has established itself as a "headline" measure of unemployment though its short-comings are numerous. For instance, persons working a three-day week and lawfully claiming unemployment support for the remaining two days are counted on the register. Those engaged in home-duties or care for the elderly may appear on the register, while conversely a person who is effectively unemployed may be excluded on the grounds of eligibility/administrative requirements.

<sup>17</sup> ESRI, Quarterly Economic Commentary, Summer 2009.

<sup>18</sup> CSO, QNHS, June 2009.



### 1.2.6 A Return to High Levels of Outward Migration is a Key Risk

Ireland's labour force has grown significantly in recent years, driven by both natural increases in the Irish-born population and inward migration (Fig 3.48, 3.54 and 3.55). However, net migration has been falling since 2007 (Fig 3.54). The ESRI has forecast net outward migration of 30,000 people in 2009<sup>19</sup>. The discretionary repatriation of unemployed migrants reflects the flexibility of Ireland's labour market, i.e. inflows of workers in times of skills deficits and outflows in times of increasing unemployment.

The quality of our workforce remains a key competitiveness strength of Ireland so it is important that migration outflows do not result in a loss of the skills that are critical for future economic growth. Ireland has made significant progress over time and relative to other countries in terms of increasing educational attainment (Fig. 4.56). Ireland's increasing supply of highly skilled graduates can enable firms to take advantage of new business opportunities in internationally trading manufacturing and services sectors in the future.

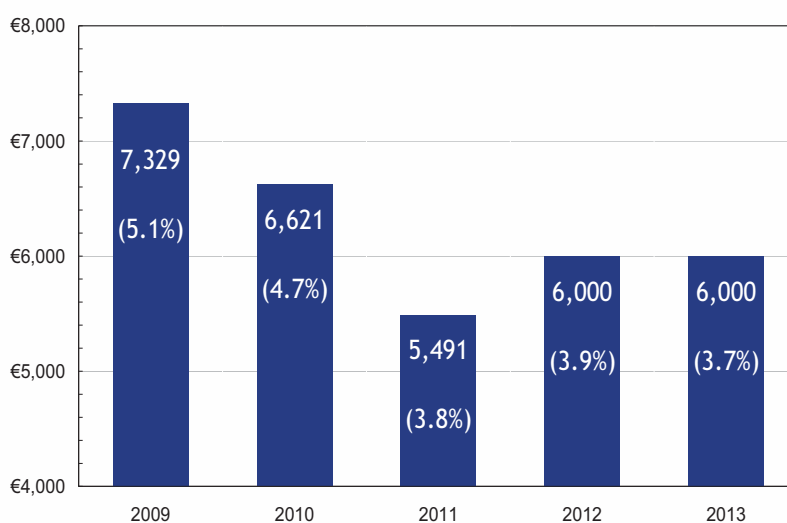
Labour markets in most developed economies are deteriorating and traditional emigration destinations for Irish talent may be unattractive at present. Nonetheless, it remains imperative for Ireland's medium-term economic potential to keep the best-educated generation of Irish young people at home and available to take advantage of the inevitable global recovery. Policies designed to restore competitiveness swiftly and sustain employment are the best means of ensuring that Ireland retains the competitive advantage embedded within its highly educated and relatively young population.

### 1.2.8 Prioritising Infrastructure Investment is Becoming More Critical

In recent years, Ireland has invested substantially to address a range of infrastructural deficits (Fig. 4.28) and has made some progress in addressing these (Fig. 4.30 and Fig. 4.32).

The deterioration in the public finances and the need for fiscal consolidation will negatively affect the State's ability to invest in critical infrastructure at the same level over the coming years. There is also a risk that the stock of skills and

**Figure 1.6: Direct Exchequer Capital Expenditure, All Votes, (€millions and percentage of forecast GNP)**



Source: *Macroeconomic & Fiscal Framework, Supplementary Budget, April 2009*

<sup>19</sup> ESRI, *Quarterly Economic Commentary, Summer 2009*.

capabilities accumulated under the NDP in terms of designing and building infrastructure will be weakened or lost. However, the downturn also provides opportunities to deliver infrastructure on schedule and at a lower cost, and the time to plan and deliver our infrastructure needs in a more coordinated fashion.

Given the sharp reductions in capital expenditure until 2013 announced in the April 2009 supplementary budget (Fig. 1.6), a rapid review of the investment priorities identified in the NDP is needed. The prioritisation of key projects (or parts of projects) inevitably requires the postponement of other projects.

Enhanced infrastructure capacity and quality is crucial to long-term economic prosperity - priority areas include transport (Fig. 4.30), energy infrastructure (Figs. 4.34 - Fig. 4.36) environmental infrastructure such as water and waste (Fig. 3.40 and Fig. 3.41) and advanced broadband access (Fig. 4.38 and Fig. 4.39).

### 1.2.9 While Painful, the Irish Economy is Adjusting to New Realities

Following the bursting of the property bubble, economic activity in Ireland is weakening from historic highs. Construction and related activity is falling with severe implications for economic growth, unemployment, investment, consumer confidence and demand and government revenues.

While Ireland's exporting sectors are performing relatively well in terms of exports and employment retention, it is unlikely that the Irish economy will return to growth in the near future.

However, the economy is adjusting to the current crises. Measures are being taken to address our fiscal and banking challenges. From a competitiveness perspective, Ireland's cost competitiveness is showing signs of improvement after many years of deterioration. Growing employment and reducing unemployment now present a major and long term policy challenge for Ireland.

**Figure 1.7: Balance of Payments, Current Account Balance, (€ Millions), 2000-2010F**



Source: Forfás Calculations; Central Statistics Office, Balance of Payments; ESRI, Quarterly Economic Commentary, Summer 2009

The balance on the current account of the balance of payments is a useful summary indicator on Ireland's adjustment process. In simple terms, the current account measures national income less

expenditure<sup>20</sup>. Between 2003 and 2007, a significant current account deficit emerged (Fig. 1.7), meaning that Ireland was borrowing heavily internationally to pay for domestic consumption and investment. The significant improvement in Ireland's trade balance has improved Ireland's current account balance, which is forecast to move into surplus in 2010.

While the Government is increasing its liabilities to foreign lenders, the available evidence suggests Irish households and private companies are repairing their balance sheets and reducing their debts (for precautionary reasons). While this is currently reducing demand and investment in the economy, a rapid reduction in the current account deficit indicates that Irish firms and households are adjusting quickly to more sustainable funding structures with reduced imports, borrowing and liabilities to foreign lenders. In the longer term, it suggests, should current trends continue, that the Irish economy will be in a better position for sustainable export-led growth than in the previous period of the construction and debt-fuelled property bubble.

### **1.2.10 Restoring Ireland's Reputation as an Attractive Location for Enterprise**

The Irish economy has undergone dramatic changes in the last 18 months. Many of these changes are the result of unanticipated global shocks. However, some of these changes have been specific to the Irish economy; our over reliance on the construction sector and consumer spending has left us particularly vulnerable. It is essential that Ireland implements a credible and widely supported programme to restore the sustainability of the public finances, ensure that banks are channelling credit to viable businesses, address the unemployment crisis which has emerged and to achieve a swift and widespread decline in the cost of doing business in Ireland relative to our trading partners.

As a small open economy, that is highly dependent on trade and investment, rebuilding our international reputation will be an important element of economic recovery. While the decline in economic activity is worrying and has painful consequences in terms of individual living standards, Ireland should focus on building upon the strengths of our economy, which remain considerable despite the ongoing recession.

---

<sup>20</sup> In 2008 Q4 the current account was effectively balanced meaning that domestic savings and investment were in balance. If the current account moves into surplus in 2010, this will require an outflow on the capital account as Ireland reduces its net foreign liabilities. This means that Ireland is paying back borrowings from abroad by reducing investment and consumption and growing net exports.

## 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 1.08). 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 1.08 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.

#### 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. Although GNP per capita declined rapidly in the second half of 2008 and will continue to do so in 2009, GDP levels remain relatively high. Irish output per capita (GDP) is now among the highest in the EU. Irish income per capita (GNP), a better measure of Irish living standards, is marginally above the EU-15 average (Fig. 2.01).

Irish economic growth rates (in both GNP and GDP terms) were higher than the EU-15 average over the period 2004-2008 (Fig 2.02). However, GDP fell by 2.3 percent and GNP by 3.1 percent in 2008<sup>21</sup>. The ESRI is forecasting a 7.9 percent decline in GDP and an 8.9 percent decline in GNP in 2009. This compares poorly with the US (-2.6 percent) the UK (-4.2 percent) and the eurozone (-4.8 percent)<sup>22</sup>.

The contribution of Ireland's exporting sectors to economic growth was weak during the 2004-2006 period but net exports increased in 2007 and 2008, driven mainly by growth in services exports (Fig. 2.03). Given the negative outlook for global demand, the decline in world trade volumes and the planned closure of some manufacturing plants, the ESRI expects exports to decline by 3.9 percent in 2009 and 1.4 percent in 2010<sup>23</sup>.

There has been a significant deterioration in Ireland's general government balance (budget balance) as a percentage of GDP which is forecasted to remain in deficit until at least 2013 (Fig. 2.05). Ireland's general government consolidated debt as a percentage of GDP has risen sharply since the end of 2007. However, Irish government debt as a percentage of GDP is significantly lower than the EU-15 average (Fig. 2.06).

Irish government debt is now considered more risky than that of countries such as Spain, Italy and Portugal by international investors (Fig. 2.07 and 2.08). The Irish government is paying a significant premium in terms of interest on its debt. Irish payments on national debt will rise substantially in the coming years. In 2008, interest payments accounted for 3.8 percent of tax revenue but are forecast to rise to 9.4 percent in 2009 (Fig 2.09).

The current account of the Balance of Payments is forecast to improve significantly in 2009 following the lowest deficit in four years in 2008 Q4. The ESRI forecasts a narrowing of the current account deficit from 6.1 percent of GNP in 2008 to 0.9 percent in 2009 and a surplus of 1.7 percent in 2010 (Fig. 2.10).

While the savings ratio of Irish households remained relatively constant over the 2000-2007 period, it increased rapidly in 2008 to 10.6 percent which is double the 2007 ratio (Fig. 2.14). The increase in the Irish savings ratio has been more dramatic in comparison to other countries. In the short term, this consolidation of Irish household balance sheets is having a negative impact on consumption (a component of GDP) and business confidence.

## 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 performance in the Human Development Index, which measures economic, educational and health outcomes, is very strong. Ireland ranked fifth in 2006, an improvement of 13 places since the 2000 report (Fig. 2.15), driven by strong economic growth and improvements in educational attainment. Life expectancy for both men and women in Ireland has

---

<sup>21</sup> CSO, Quarterly National Accounts, March 2009.

<sup>22</sup> IMF, World Economic Outlook, July 2009.

<sup>23</sup> ESRI, Quarterly Economic Commentary, Summer 2009.

also improved since 1990, and is now just above the OECD average (Fig. 2.16). In 2007, the average national house price peaked at €311,078 or just over 10 times average industrial earnings. Housing affordability improved during 2008 and is forecast to improve further during 2009 as house prices continue to fall (Fig. 2.18).

## 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. The composite environmental performance index ranks Ireland 20<sup>th</sup> in the OECD (Fig. 2.19). 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. 2.20). However, Ireland is the least energy intensive country in the EU-15 (Fig. 2.22).

At a sectoral level, while most sectors reduced their share of final energy use between 1990 and 2007, transport's share increased significantly from 28 percent to 43 percent (Fig. 2.21). The current economic slowdown is leading to a fall in emissions across all sectors, which is expected to result in Ireland achieving its Kyoto targets. While waste recycling rates have increased significantly, Ireland remains highly reliant on landfill, the least preferred waste treatment option from an environmental perspective (Fig. 2.23).

### 1.3.2 Ireland's Competitiveness Performance (Essential Conditions)

Ireland's national competitiveness is founded on certain key conditions to support a conducive and sustainable economic environment. 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.

## Business Performance

The performance of the business sector is critical to maintaining incomes and employment levels in Ireland. Its strength is also essential to rebuilding government finances and maintaining spending on public services.

- **Business Investment in Enterprise:** Domestic investment levels in Ireland were among the lowest in the EU in 2008, as capital investment has declined significantly since early 2007 (Fig. 3.01). Although the stock of foreign direct investment (FDI) projects in Ireland as a percentage of GDP/GNP has declined since 2000, our inward investment levels remain among the highest in the OECD in 2007 (Fig. 3.02 and Fig. 3.03). The current investment



pipeline remains relatively strong. Irish firms have also been increasingly investing overseas in recent years, with Irish stocks of outward direct investment among the highest in the OECD in 2007 (Fig. 3.05).

- **Trade:** Ireland continues to be one of the most open economies in the OECD. Growth in total Irish exports (goods and services) slowed during the 2004-2008 period. Ireland's share of merchandise trade has fallen gradually, while our share of services trade grew in 2008 - driven by computer services, business services and royalties (Fig. 3.07-3.09). Ireland's manufacturing sectors have had a mixed performance. While Ireland's share of the pharmaceutical and chemicals sectors has remained strong (Fig. 3.09), Ireland's share of office/ telecommunications equipment and machinery/transport equipment has fallen.

## 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 GDP terms are now on a par with the OECD average. However, Ireland's productivity levels in GNP terms - a more realistic measure - are below the OECD average (Fig. 3.10). Growth rates of productivity, rather than levels, are vital to ensuring wage levels are sustainable and in this regard, Ireland performed poorly between 2004 and 2008 (Fig. 3.11).
- **Innovation:** Ireland's innovation performance continues to improve and its score on the summary innovation index is above the 15-EU average (Fig. 3.18). Irish firms are marginally less likely to be engaged in innovation (i.e. the creation of new products, services, or processes) than the EU average. The innovation gap between Irish industry and services sectors (at over 15 percent) is significant (Fig. 3.19). In terms of outputs, Ireland's performance is below the EU average in terms of 'new to firm' innovation contributing to turnover but above the EU average in terms of the contribution of 'new to market' innovation (Fig. 3.20).

## Prices and Costs

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

- **Prices:** Price competitiveness will only improve if prices fall faster here than in competitor countries. Irish inflation rates increased steadily up until September 2008 but since then, inflationary pressures have eased and Irish prices, although still at a high level, have fallen (Fig. 3.22). More recent data for 2008 to 2009 Q1 suggests that consumer prices overall are falling slightly faster in Ireland than in the Eurozone. Some commodity categories such as

clothing, transport, housing and utilities are seeing considerably larger declines in Ireland than in the Eurozone (Fig. 3.23). However, administered prices continue to grow quickly. Between January 2000 and April 2008, Ireland experienced a 35 percent loss in international price competitiveness (real HCI) (Fig. 3.25). Exchange rate movements account for approximately two thirds of the deterioration in price competitiveness since 2000, with higher inflation in Ireland accounting for the remaining third. Ireland's price competitiveness, although weak has improved. The loss in price competitiveness between January 2000 and June 2009 has narrowed marginally to 30 percent (real HCI). This was supported by both falls in relative prices and favourable exchange rate movement vis-à-vis our key trading partners. However, the collapse in the value of sterling means that many indigenous exporters are under pressure to reduce their costs as they remain dependent on the UK market.

- **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). Labour cost growth rates show the change in the cost of employing workers over time. Ireland's growth rates exceeded the EU-15 average between 2004 and 2007. However, growth rates in Irish labour costs slowed significantly in 2008 and were lower than the EU-15 average (Fig. 3.28).
- **Non-Pay Costs:** Non-pay costs in Ireland compare poorly with other countries across a range of business inputs. These include utilities (electricity, mobile communications and waste) and a range of services, such as accountancy, information technology and legal services fees (Figs. 3.35-3.44). Certain categories of non-pay costs have fallen in 2008/09, in particular the cost of purchasing and renting retail and industrial property.

## 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 in recent years, driven by both natural increases in the Irish-born population and inward migration (Fig 3.48, 3.54 and 3.55). However, the numbers unemployed have been rising rapidly since 2008 Q1 (Fig. 3.48) while net migration into Ireland has been falling since 2007 (Fig. 3.54).

Numbers unemployed remained relatively constant until 2008 Q1, at which point, they began to increase (Fig. 3.48). While unemployment is increasing in many countries, Ireland's unemployment rate is now significantly above the OECD average (Fig. 3.57). According to the CSO Live Register, unemployment reached 11.9 percent in June 2009<sup>24</sup>. Employment levels across all sectors of the Irish economy have fallen dramatically in 2008, particularly in the construction, industry and accommodation and food sectors (Fig. 3.51 and Fig. 3.52). The ESRI forecast that the unemployment rate will increase to 12.6 percent in 2009 and 16.1 percent in 2010<sup>25</sup>.

---

<sup>24</sup> The CSO Live Register provides an estimate of unemployment. The CSO QNHS is the true measure of unemployment.  
<sup>25</sup> ESRI, Quarterly Economic Commentary, Summer 2009.



The rate of unemployment has increased more rapidly for workers with lower educational attainment (Fig. 3.58). In addition, younger workers have experienced more dramatic increases in unemployment compared to older, more experienced workers (Fig. 3.59). The regional variance in the unemployment rate ranges from 6.3 percent in Northern Ireland to 11.7 percent in the Midlands region (Fig. 3.60).

There has been a dramatic fall in net migration since 2007, driven by rising unemployment (Fig. 3.54). The ESRI has forecast net outward migration of 30,000 for 2009. 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. 3.61).

### 1.3.3 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, physical and knowledge infrastructures.

#### Business Environment

The business environment has a significant impact on a country's economic performance and competitiveness. This section illustrates Ireland's relative performance on taxation, regulation and competition, labour market regulations, finance and social capital are assessed.

- **Taxation:** There has been a sharp drop in tax revenues in Ireland in 2008 and 2009. Tax revenues comprised just 26 percent of GNP in 2008 compared to gross voted current government expenditure of 34 percent of GNP (Fig. 4.01 and Fig. 4.02). Ireland's tax structure is much less dependent on social security contributions than elsewhere in Europe, raising over 80 percent of revenue instead from direct and indirect taxation (Fig. 4.03). 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. 4.05-4.07).
- Ireland's total Exchequer revenue has become less reliant on income tax receipts over the period 1998-2007, though this will change following the increases in income and health levies introduced in the supplementary budget in April (Fig. 4.04). In recent years Ireland has relied heavily on transactions-based property taxes (including stamp duties and value added tax). The collapse of the property boom has resulted in a sharp decline in revenue from property related taxes from €6.8 billion in 2006 to €3 billion in 2008 (Fig 4.09). Ireland does not tax pollution directly, unlike some other countries (Fig. 4.10).
- **Finance:** Survey evidence suggests that access to finance is a significant competitiveness threat to Irish businesses. The global recession has resulted in sharp falls in the value of stock markets worldwide. However, the 68 percent fall in the value of the Irish stock exchange in 2008 was significantly more dramatic than in other developed economies (Fig 4.12). Confidence in the sustainability of the Irish banking sector has also declined (Fig. 4.13).

- **Regulation and Competition:** The general regulatory environment in Ireland is perceived to be relatively strong (Fig. 4.15). Many of Ireland's most important internationally trading sectors (e.g. pharmaceuticals, medical devices, fund administration, software) depend on a strong regulatory environment in terms of IP protection, production and health quality standards. 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. 4.16). In relation to domestic competition, while competition legislation is perceived to be relatively efficient, incumbents still dominate the market in certain utilities - particularly in electricity and communications (Figs. 4.18 - 4.20). Ireland's protection of intellectual property has improved significantly in recent years, and is now above the OECD average (Fig. 4.22).
  
- **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. 4.23). The employment framework in Ireland is considered less rigid than the OECD average (Fig. 4.24). The minimum wage in Ireland is significantly higher than the majority of comparator countries (Fig. 4.25).

## 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.
- 
- **Investment in Physical Infrastructure:** Under successive National Development Plans, Ireland's investment rates in the public capital stock have been among the highest in the EU (Fig. 4.28). However, perceptions of infrastructure quality remain low (Fig. 4.29). Due to the severity of the collapse in the public finances, NDP investment projects will have to be reprioritised. The supplementary budget set out a multi-annual framework for capital expenditure which forecasts gross voted capital expenditure would be 5.1 percent of GNP in 2009 - this will decline to 3.7 percent in 2013.
  
  - **Transport and Energy Infrastructure:** Ireland's distribution networks rank poorly internationally (Fig. 4.30). The quality of Ireland's air transportation has improved in recent years (Fig. 4.32). Executives' perceptions about the efficiency of Ireland's energy

infrastructure are poor (Fig. 4.34). Ireland is particularly dependent on imported and non-renewable forms of energy (Fig. 4.35 and Fig. 4.36).

- **Information and Communication Technology Infrastructure:** Ireland's investment in both information and communications technologies is below the EU-15 average, and lags leading countries by some distance (Fig. 4.37). Despite strong growth, the penetration rate of broadband across both households and small firms in Ireland is below the EU average (Fig. 4.38). Ireland ranks 25<sup>th</sup> in the OECD in terms of its readiness to support next generation services (Fig. 4.39). In terms of eGovernment, the proportion of public services available online is also below that of the EU-15 average (Fig. 4.40).
- **Housing:** There are two aspects to housing that are relevant to competitiveness: infrastructure/construction activity and costs/debt. In relation to relative levels of housing, Ireland has fewer houses per capita than the EU-15 average (Fig. 4.41). This gap was narrowing as household completions per capita in Ireland were far higher than the EU average in recent years. Several developed economies have experienced substantial housing booms in recent years, which is a key contributing factor to the global economic crisis (Fig. 4.44 and Fig. 4.45). Irish house prices increased dramatically during the early 2000s (Fig. 4.44). However, Irish house prices have fallen by 21 percent between the peak of the boom in February 2007 and May 2009. The value of Irish housing stock, which was valued at €500 billion in 2007, has fallen significantly since house prices peaked in February 2007. Household borrowing (approximately three-quarters of which is for house purchases) nearly doubled between 2004 and 2008. The average Irish person was €36,662 in debt in 2009 Q2, the second highest level in the Eurozone (Fig. 4.43).

## Knowledge Infrastructure

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

### Education

Average educational attainment in Ireland has increased steadily in the last two decades, with younger workers better qualified than their OECD counterparts. Older workers in Ireland 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. 4.46). Expenditure per student is below the OECD average at all levels while pre-primary education is predominantly privately funded, unlike that in other countries (Fig. 4.47 and Fig. 4.48).

- **Pre-Primary and Primary Education:** Participation of three year olds in education in Ireland is low and well below the EU-15 average (Fig. 4.49). 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 14<sup>th</sup> and 18<sup>th</sup> respectively out of 21 countries surveyed (Fig. 4.50).

- **Secondary Education:** Ireland has made significant progress over time and relative to other countries in terms of increasing secondary school participation rates (Fig. 4.51 and Fig. 4.52). 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. 4.53). 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 (5<sup>th</sup>) but less well in terms of scientific literacy (14<sup>th</sup>) and mathematical literacy (16<sup>th</sup>) (Fig. 4.54). 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. 4.55).
- **Tertiary Education and Life-Long Learning:** Ireland's younger population is considerably better qualified than older workers, with 42 percent of the 25-34 year age group possessing a third-level qualification. This compares very favourably with the OECD average of 34 percent (Fig. 4.56). Ireland performs well in terms of producing graduates in the fields of mathematics, science and computing per 1,000 of population aged 20-29 (Fig. 4.58). However, in Ireland science and computing graduates dominate this category, which means that Ireland is producing a limited supply of mathematics focused graduates. Irish institutions are not as successful as their counterparts in other English-speaking countries in terms of attracting international students (Fig. 4.60). Life-long learning comprises 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. 4.61).

**Research and Development Infrastructure:** Despite a large increase in R&D expenditure, Ireland has so far made limited progress towards its target of 2.5 percent of GNP by 2013. Total R&D spending in Ireland increased from 1.26 percent of GNP in 2000 to 1.68 percent of GNP in 2008 (Fig. 4.62). This compares with an OECD average of 2.38 percent (2007). The number of researchers in Ireland is also growing, up from five researchers per 1,000 total employment in 2000 to six per 1,000 in 2006 (Fig. 4.63). Despite strong growth rates in expenditure, business R&D as a percentage of economic activity has remained relatively static over the past decade. Most business expenditure on R&D in Ireland is undertaken by foreign-owned companies (Fig. 4.64). Finally, the number of PhD graduates per 1,000 of population in 2006 was greater than the EU-13 average in 2007 due to an increased domestic output and inward migration (Fig. 4.66).

## 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<sup>26</sup>. Averages are weighted by each country's population or GDP average where relevant.

Benchmarking competitiveness is useful - it informs the policymaking process and raises awareness of the importance of 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; and
- 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

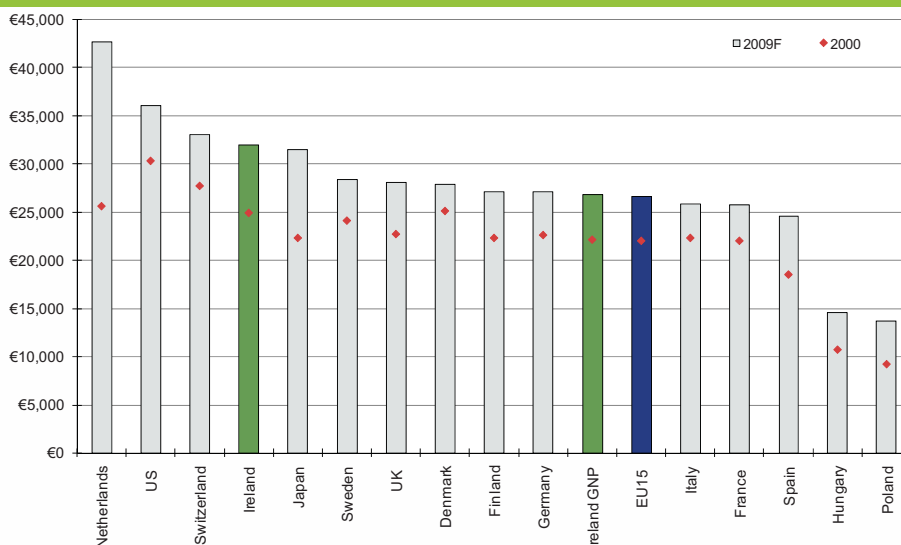
We have endeavoured to ensure that all charts are self-explanatory. However, with reference to the sample chart in figure 1.08, the following points may be of value when interpreting the charts:

---

<sup>26</sup> 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.

Figure 1.08: Sample Chart

Figure 2.01 Levels of GDP per capita at Current Prices (€000 PPPs), 2009F



In terms of GDP per capita, Ireland ranks as one of the wealthiest countries in the EU. In terms of GNP per capita, a better measure of national income, Ireland ranks slightly above the EU-15 average. However, GNP per capita declined rapidly in the second half of 2008 and this is expected to continue in 2009.

**EU-15 Ranking:**  
 GDP: 2 (↑3)  
 GNP: 10 (↑1)

Source: Eurostat, *Economy and Finance*

- 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 1<sup>st</sup>) 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 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.

### 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.

Although GNP per capita declined rapidly in the second half of 2008 and will continue to do so in 2009, GDP levels remain relatively high. Irish output per capita (GDP) is now among the highest in the EU. Irish income per capita (GNP), a better measure of Irish living standards, is marginally above the EU-15 average (Fig. 2.01).

Irish economic growth rates (in both GNP and GDP terms) were higher than the EU-15 average over the period 2004-2008 (Fig 2.02). However, according to the latest CSO figures, GDP fell by 2.3 percent and GNP by 3.1 percent in 2008<sup>27</sup>. The ESRI is forecasting a 7.9 percent decline in GDP and an 8.9 percent decline in GNP in 2009. This compares poorly with the US (-2.6 percent) the UK (-4.2 percent) and the eurozone (-4.8 percent)<sup>28</sup>.

The contribution of Ireland's exporting sectors to economic growth was weak during the 2004-2006 period but net exports increased in 2007 and 2008, driven mainly by growth in services exports (Fig. 2.03). Given the negative outlook for global demand, the decline in world trade volumes and the planned closure of some manufacturing plants, the ESRI expects exports to decline by 3.9 percent in 2009 and 1.4 percent in 2010.

There has been a significant deterioration in Ireland's general government balance (budget balance) as a percentage of GDP which is forecasted to remain in deficit until at least 2013 (Fig. 2.05). Ireland's general government consolidated debt as a percentage of GDP has risen sharply since the end of 2007. However, Irish government debt as a percentage of GDP is significantly lower than the EU-15 average (Fig. 2.06).

Irish government debt is now considered more risky than that of countries such as Spain, Italy and Portugal by international investors (Fig. 2.07 and 2.08). The Irish government is paying a significant premium in terms of interest on its debt. As a result, Irish payments on national debt will rise substantially in the coming years. In 2008, interest payments accounted for 3.8 percent of tax revenue and one percent of GNP but are forecast to rise sharply to 18.7 percent of tax revenue and five percent of GNP by 2013 (Fig 2.09).

---

<sup>27</sup> CSO, Quarterly National Accounts, March 2009.

<sup>28</sup> IMF, World Economic Outlook, July 2009.



The current account of the Balance of Payments is forecast to improve significantly in 2009 following the lowest deficit in four years in 2008 Q4. The ESRI forecasts a narrowing of the current account deficit from 6.1 percent of GNP in 2008 to 0.9 percent in 2009 and a surplus of 1.7 percent in 2010 (Fig. 2.10).

While savings ratio of Irish households remained relatively constant over the 2000-2007 period, it increased rapidly in 2008 to 10.6 percent which is double the 2007 ratio (Fig. 2.14). While the savings ratio in many OECD countries increased in 2008, the increase in the Irish savings ratio has been more dramatic in comparison to other countries. This consolidation of Irish household balance sheets is having a negative impact on consumption (a component of GDP) and business confidence.

The at-risk-of-poverty rate after social transfers in Ireland is greater than the EU-15 average (Fig. 2.11). Regional disparities have also increased between 2000 and 2006 (Fig. 2.12). The collapse in the value of global assets during the economic crisis has had a very negative impact on Irish private pension funds which have experienced a 37.5 percent fall in their value in 2008 compared to the OECD average of 20.5 percent (Fig. 2.13).

## 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 capture multifaceted quality of life, the United Nation's Human Development Index measures economic, educational and health outcomes globally.


Ireland's performance in the Human Development Index has been very strong. Ireland ranked fifth in 2006, an improvement of 13 places since the 2000 report (Fig. 2.15), 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. 2.16).

In 2007 the average national house price peaked at €311,078 or just over 10 times average industrial earnings. Housing affordability improved during 2008 and is forecast to improve further during 2009 as house prices continue to fall (Fig. 2.18).

## 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 20<sup>th</sup> in the OECD (Fig. 2.19). Ireland clearly faces challenges. Ireland is one of the highest carbon emitters on a per capita basis in the OECD. In

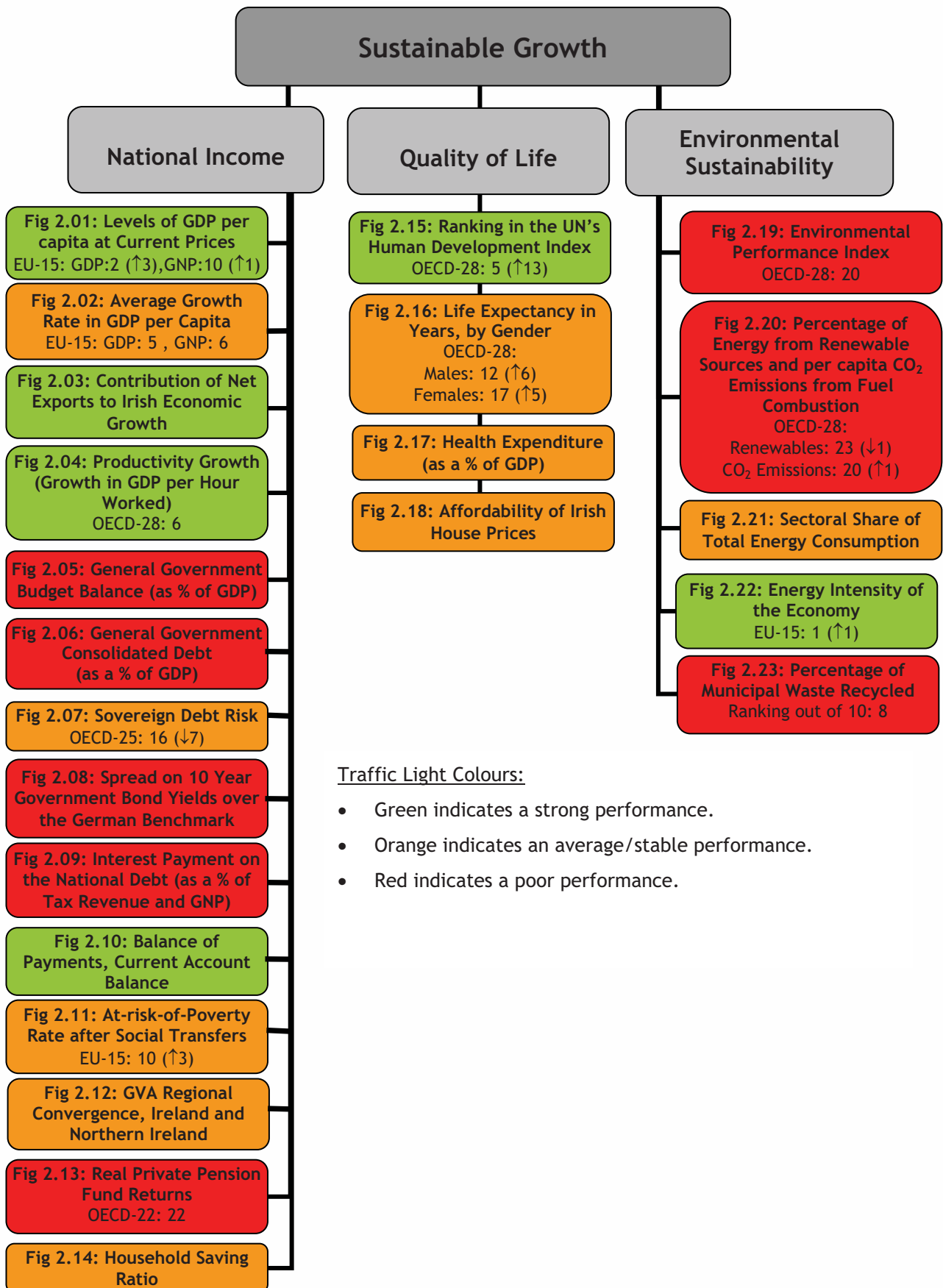


addition, Ireland's share of energy coming from renewable sources is less than half that of the OECD average (Fig. 2.20). However, Ireland is the least energy intensive country in the EU-15 (Fig. 2.22).

At a sectoral level, while most sectors reduced their share of final energy use between 1990 and 2007, transport's share increased significantly from 28 percent to 43 percent (Fig. 2.21). The current economic slowdown is leading to a fall in emissions across all sectors, which is expected to result in Ireland achieving its Kyoto targets.

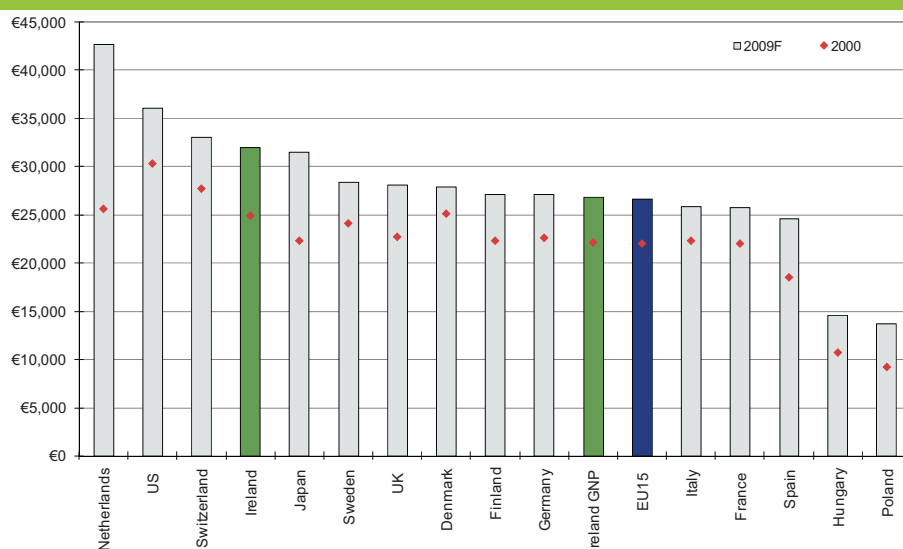
While waste recycling rates have increased significantly, Ireland remains highly reliant on landfill, the least preferred waste treatment option from an environmental perspective (Fig. 2.23).

Chart 2.A



## 2.1 National Income

**Figure 2.01 Levels of GDP per capita at Current Prices (€000 PPPs), 2009F**

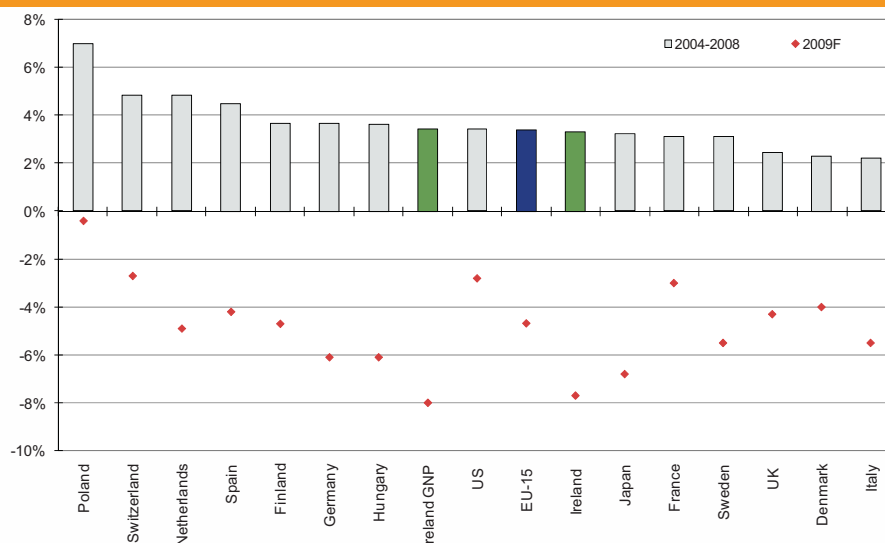


In terms of GDP per capita, Ireland ranks as one of the wealthiest countries in the EU. In terms of GNP per capita, a better measure of national income, Ireland ranks slightly above the EU-15 average. However, GNP per capita declined rapidly in the second half of 2008 and this is expected to continue in 2009.

**EU-15 Ranking:**  
 GDP: 2 (↑3)  
 GNP: 10 (↑1)

Source: Eurostat, Economy and Finance Indicators

**Figure 2.02 Average Growth Rates in GDP per capita, 2004-2009F<sup>29</sup>**



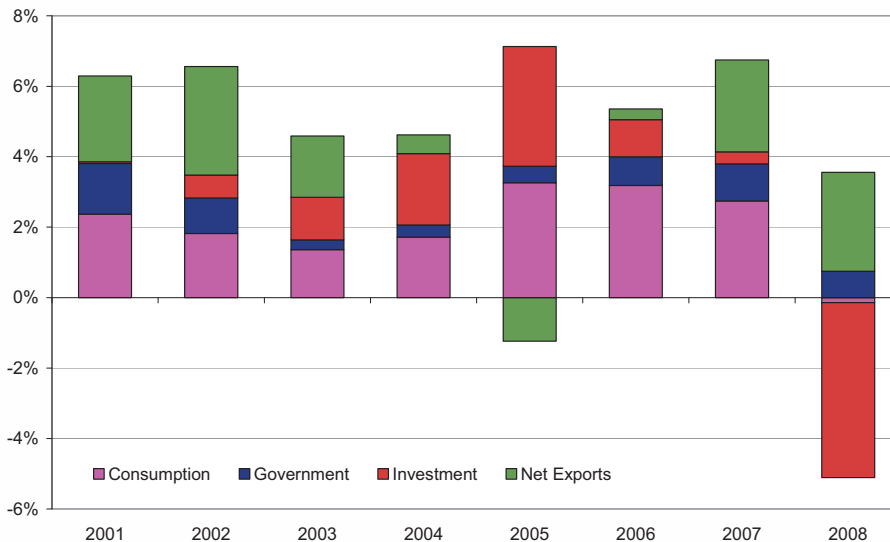
Irish economic growth rates (in both GNP and GDP terms) were close to the EU-15 average over the period 2004-2008. However, GDP fell by 2.3% and GNP by 3.1% in 2008 according to the latest CSO figures. Economic activity is expected to deteriorate further in 2009 with the Department of Finance forecasting a decline in GDP of 7.7%.

**EU-15 Ranking:**  
 GDP 2004-2008: 5  
 GNP 2004-2008: 6

Source: Eurostat, Economy and Finance; OECD Economic Outlook, June 2009; Department of Finance, Supplementary Budget April 2009.

<sup>29</sup> Traffic-light colour determined based on Ireland's GNP ranking in the EU-15.

**Figure 2.03 Contribution of Net Exports to Irish Economic Growth, 2001-2008**

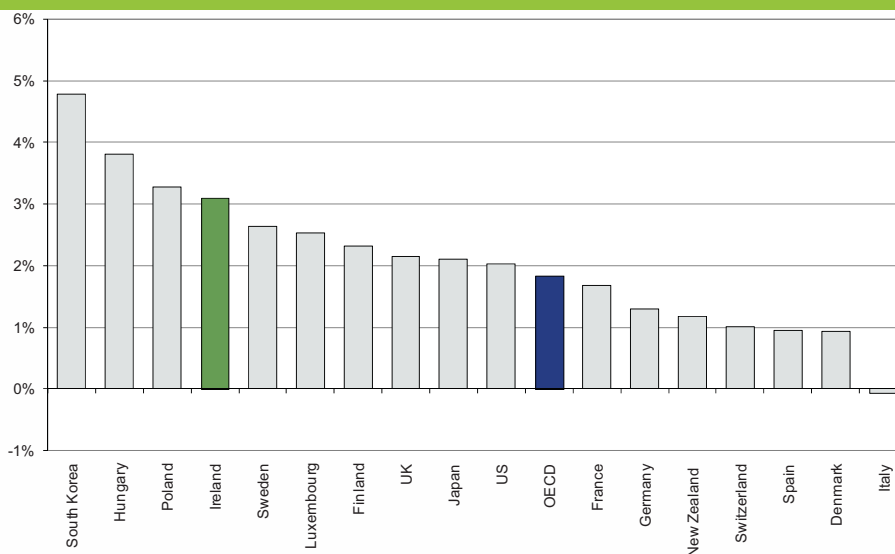


This chart examines the sources of recent Irish economic growth. The contribution of net exports to economic growth on a year-on-year basis was small or negative during the 2004-2006 period. Net exports however increased in 2007 and 2008, driven mainly by growth in services. Investment collapsed in 2008. Given the negative outlook for global demand and the decline in world trade volumes, the ESRI expects exports to decline by 3.9% in 2009 and 1.4% in 2010 in volume terms.

Ranking: N/A

Source: Forfás Calculations; European Commission, AMECO Database

**Figure 2.04 Productivity Growth (Growth in GDP per hour worked), 2001-2007<sup>30</sup>**



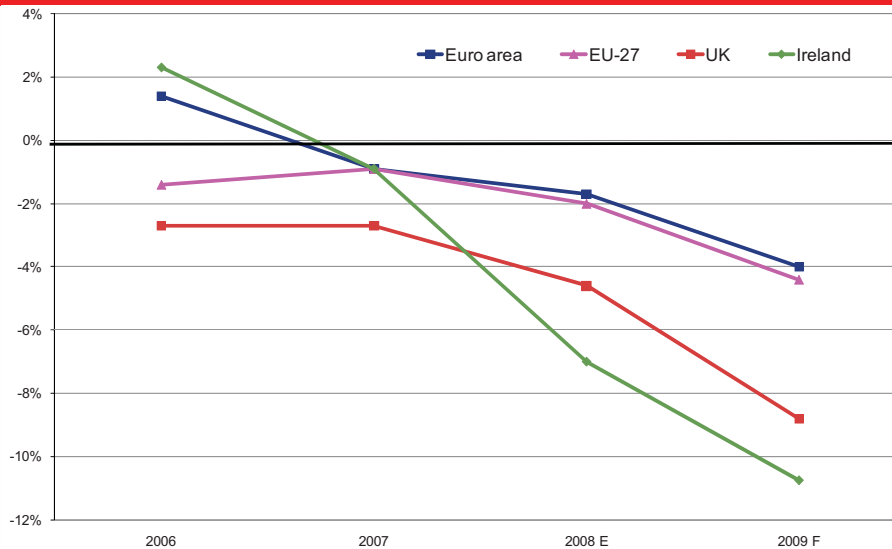
Among the main sources of growth in the economy are labour productivity and labour growth (a combination of increased employment /participation and/or hours worked). Productivity growth in Ireland compares favourably relative to other countries during the 2001-2007 period.

OECD-28 Ranking: 6

Source: OECD Factbook 2009: Economic, Environmental and Social Statistics

<sup>30</sup> Traffic-light colour determined based on Ireland's productivity ranking in the OECD-28.

**Figure 2.05 General Government Budget Balance (as a % of GDP), 2006-2009F**

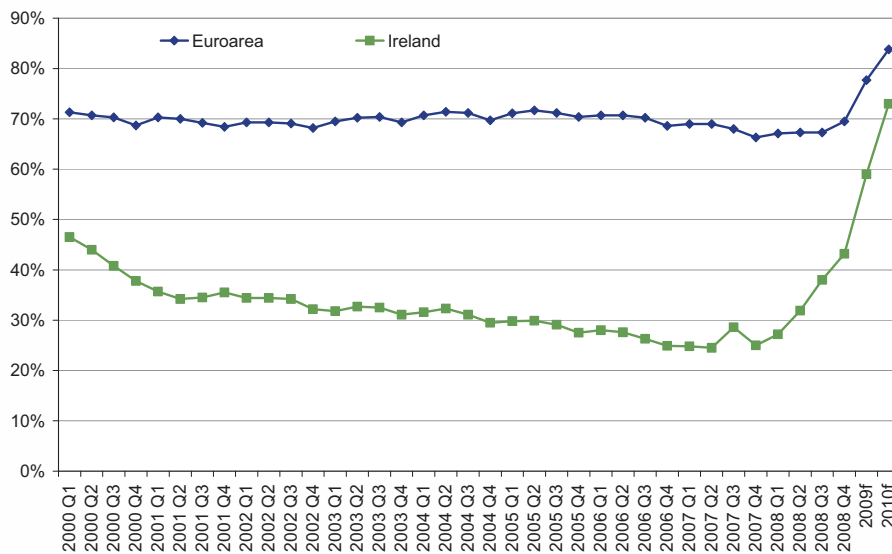


Many EU countries are facing pressure on their public finances. In particular, the chart illustrates a significant deterioration in Ireland's budget balance as a percentage of GDP and forecasts a continued deterioration. The Government has taken measures to curtail spending in the 2009 budgets in an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

Ranking: NA

Source: European Commission, Directorate-General for Economic and Financial Affairs, Economic Forecast January 2009; Department of Finance, Macroeconomic & Fiscal Framework, Supplementary Budget, April 2009

**Figure 2.06 General Government Consolidated Debt (as a % of GDP), 2000-2010F**



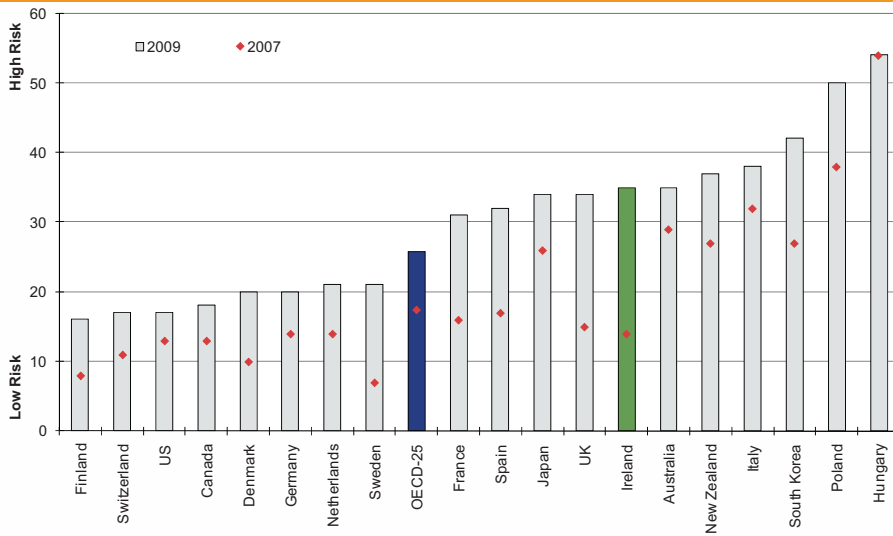
Ireland's general government consolidated debt as a percentage of GDP has risen sharply since the end of 2007 and stood at 43% at the end of 2008. While Irish government debt as a percentage of GDP has been considerably lower than the Euroarea average, it is forecast to converge rapidly on it in the short term. Deducting the value of the National Pensions Reserve Fund and Exchequer cash balances from the gross debt gives a net Debt/GDP ratio of 23% at the end of 2008<sup>31</sup>.

Ranking: N/A

Source: Eurostat, Economy and Finance; European Commission Spring Economic Forecast, 2009; Department of Finance, Macroeconomic & Fiscal Framework, Supplementary Budget, April 2009

31 National Treasury Management Agency, Quarter 1 Update, April 2009.

**Figure 2.07: Sovereign Debt Risk, 2009**

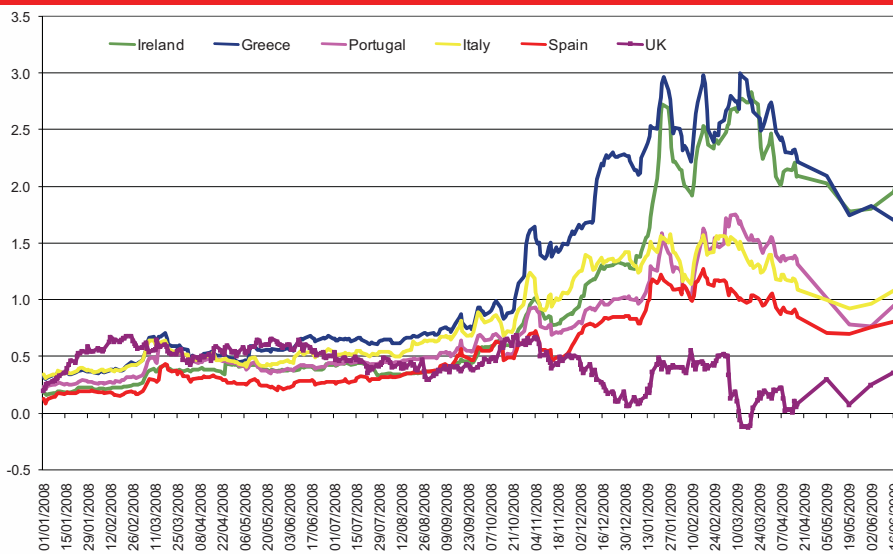


This indicator measures the extent to which investors perceive governments to be at risk of defaulting on their sovereign debt. The higher the index score the more risky a government is perceived to be as a borrower. In 2007, Ireland's debt was regarded as less risky than the OECD average. In the first half of 2009, Irish government debt was perceived as more risky than debt in many other developed countries.

**OECD-25 Ranking<sup>32</sup>:**  
16 (↓7)

Source: Economist Intelligence Unit, July 2009

**Figure 2.08 Spread on 10 Year Government Bond Yields over the German Benchmark, January 2008- June 2009**



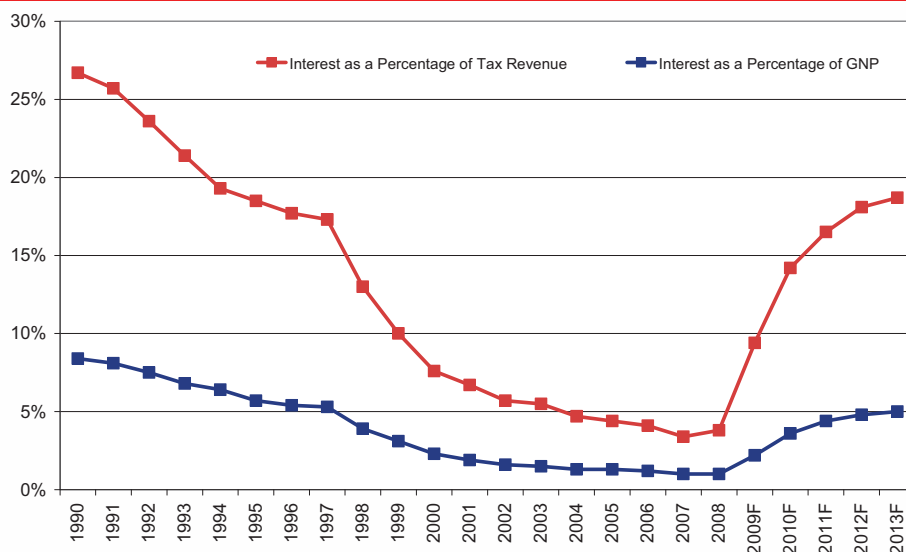
Bond markets require greater yields (effective interest rates for Government debt) on assets perceived to be risky. This indicator is a measure of the cost of borrowing for governments relative to the German benchmark level. 10-year Irish government debt is now regarded by investors as more risky than countries such as Spain, Italy and Portugal. The Irish Government is paying a significant premium in terms of interest on this debt.

**Ranking:** N/A

Source: Bloomberg

32 OECD-28 average minus Iceland, Luxembourg and the Slovak Republic.

**Figure 2.09 Interest Payments on the National Debt as a Percentage of Tax Revenue and GNP, 1990-2013F**

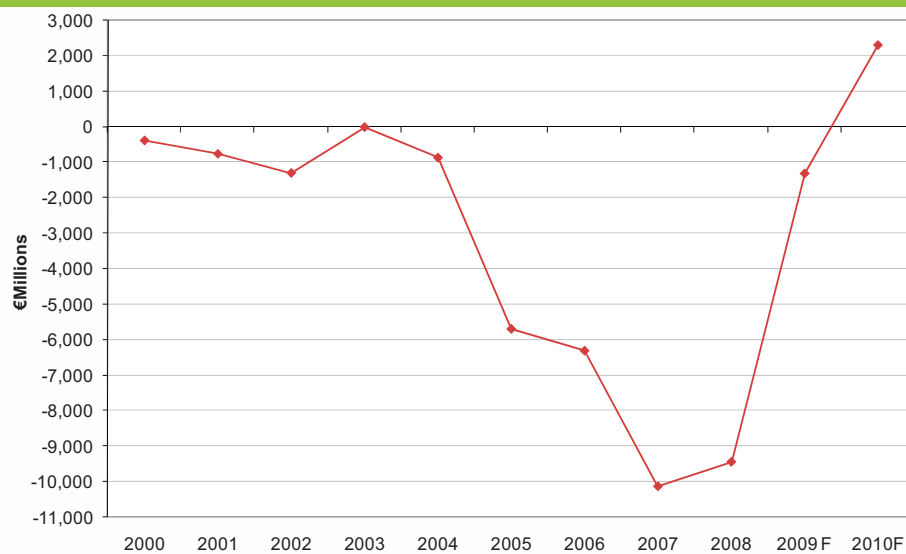


Interest payments on the national debt will rise substantially in coming years. In 2008 interest payments accounted for 3.8% of tax revenue and 1% of GNP. These ratios are forecast to rise sharply from 2009, reaching 18.7% of tax revenue and 5% of GNP by 2013. These levels should remain below the levels seen in the late 1980s and early 1990s

Ranking: N/A

Source: National Treasury Management Agency, Annual Report 2008.

**Figure 2.10 Balance of Payments, Current Account Balance, (€ Millions), 2000-2010F<sup>33</sup>**



The current account balance measures national income less expenditure. Ireland's current account performance is forecast to improve significantly in 2009 and 2010. The sharp reduction in the current account balance suggests that Ireland is paying back borrowings by reducing investment and consumption and growing net exports. The ESRI is forecasting a narrowing of the current account deficit from 6.1% of GNP in 2008 to 0.9% in 2009 and a surplus of 1.7% in 2010.

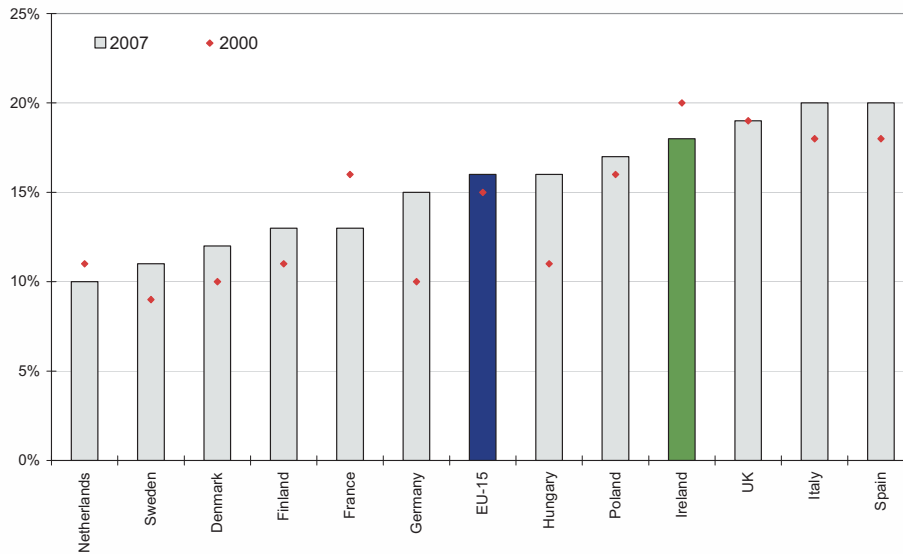
Ranking: N/A

Source: Forfás Calculations; Central Statistics Office, Balance of Payments; Economic & Social Research Institute, Quarterly Economic Commentary, Summer 2009

33 2009 and 2010 forecasts are from the ESRI, Quarterly Economic Commentary, Summer 2009.



**Figure 2.11 At-risk-of-Poverty Rate after Social Transfers (as a % of population), 2007<sup>34</sup>**

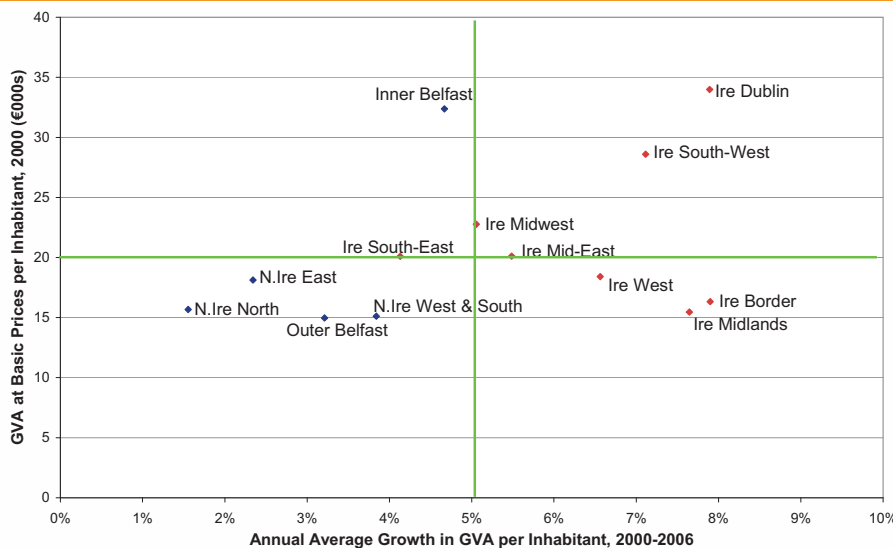


This indicator is a commonly accepted measure of income inequality. It indicates that despite significant improvements since 2000, Ireland's population is more at-risk-of-poverty than the EU-15 average.

**EU-15 Ranking<sup>35</sup>:**  
10 (↑3)

Source: Eurostat, Structural Indicators

**Figure 2.12 GVA Regional Convergence, (Growth versus Wealth), Ireland and Northern Ireland 2000-2006**



Convergence between regions would be represented in this diagram by a downward sloping trend line. Irish regions do not appear to have converged over the 2000-2006 period. However, all regions in the Republic have experienced strong growth over the 2000-2006 period. Growth rates across all regions will have fallen since 2006.

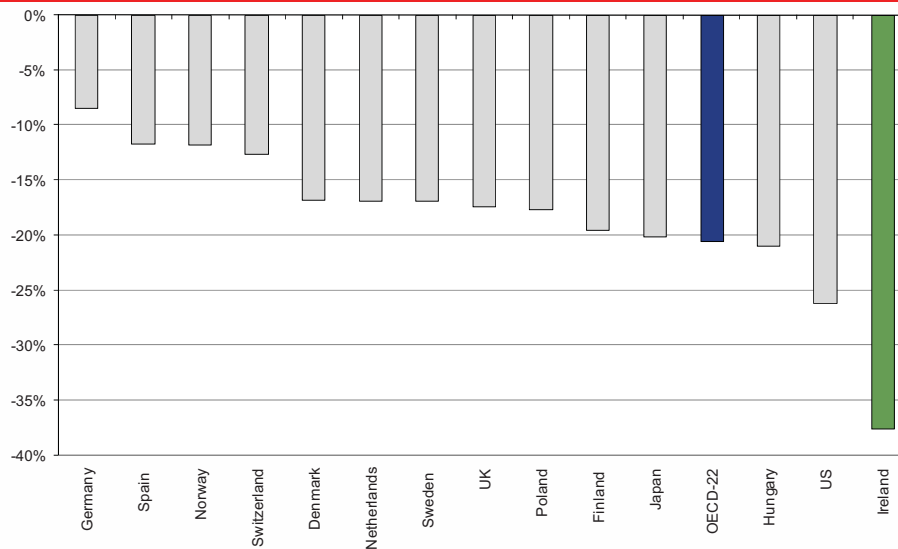
Ranking: N/A

Source: Forfás calculations; Eurostat, General and Regional Indicators

<sup>34</sup> 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).

<sup>35</sup> EU-15 average for 2000 incorporates 2001 data for Denmark and Sweden.

**Figure. 2.13 Real Private Pension Fund Returns, 2008<sup>36</sup>**

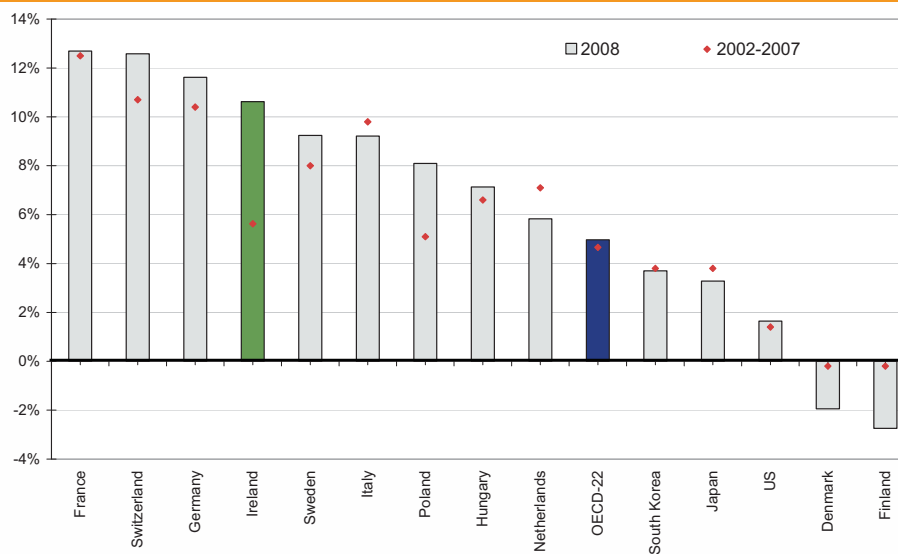


The collapse in the value of global assets during the economic crisis has had a very negative impact on Irish private pension funds. There are serious concerns about the sustainability of companies funding their commitments to defined benefit pensioners in future. Irish private pension funds have experienced a 37.5% fall in their value in 2008. This compares to the OECD-22 average of a fall of 20.5%.

OECD-22 Ranking: 22

Source: OECD, *Pensions at a Glance 2009*

**Figure. 2.14 Household Saving Ratio, 2008<sup>37&38</sup>**



The savings ratio is measured as a percentage of household net disposable income. Savings rates remained relatively constant over the 2002-2007 period during which time the annual average savings ratio in Ireland was 5.6%. In 2008 the savings ratio increased rapidly to 10.6%. This consolidation of Irish household balance sheets is necessary given unsustainable levels of borrowing but is having a negative impact on consumption, GDP and business confidence.  
Ranking: N/A

Source: OECD, *Economic Outlook No. 84, December 2008*

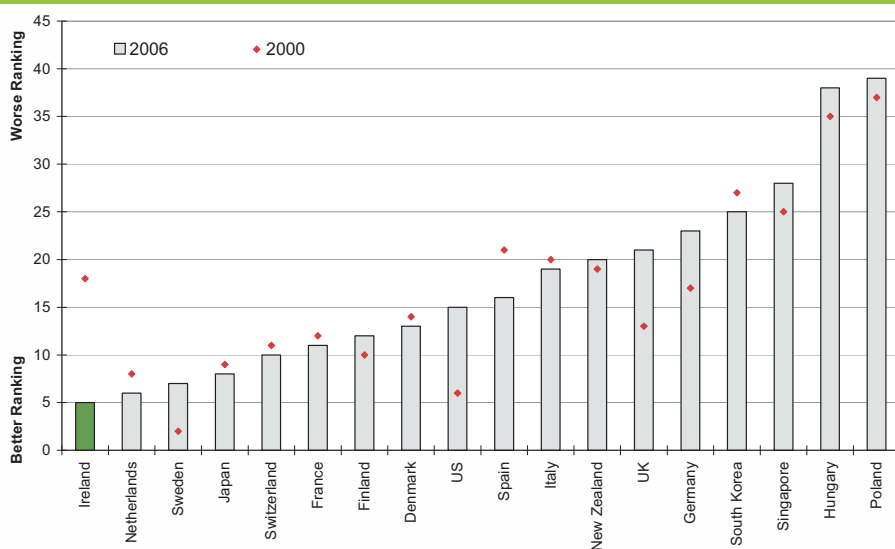
<sup>36</sup> OECD-28 average minus Greece, France, Italy, Korea Luxembourg and New Zealand.

<sup>37</sup> The household saving rate is calculated as the ratio of household saving to household disposable income. Saving rates may be measured on either a net or a gross basis. Net saving rates are measured after deducting consumption of fixed capital (depreciation) in respect of assets used in enterprises operated by households and in respect of owner-occupied dwellings from saving and from the disposable income of households, so that both saving and disposable income are shown on a net basis.

<sup>38</sup> OECD-28 average minus Greece, Iceland, Luxembourg, New Zealand, Spain and the UK.

## 2.2 Quality of Life

Figure 2.15 Ranking in the United Nation's Human Development Index, 2006

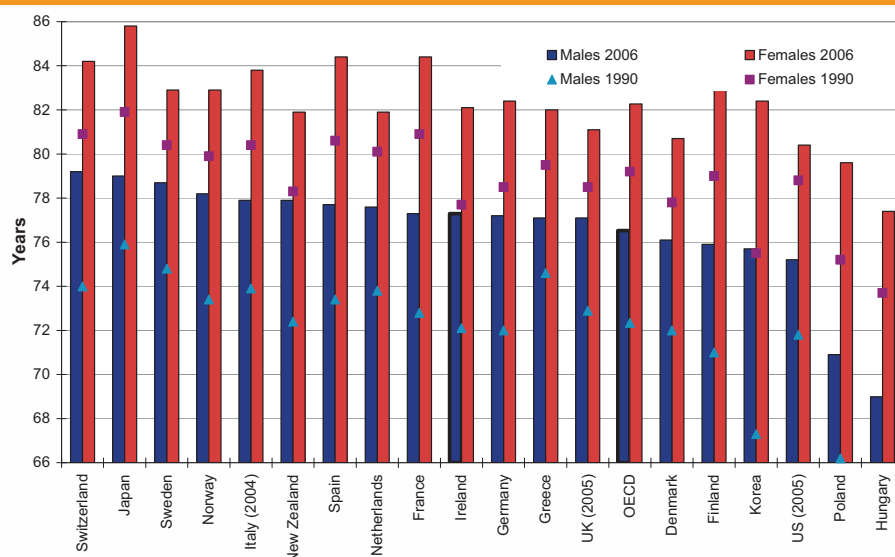


The UN's Human Development Index combines measures of education, health and income. Ireland's ranking has improved strongly since 2000. Ireland is ranked among the highest countries (fifth overall in both the world and the OECD), indicating a high quality of life.

OECD-28 Ranking:  
5 (↑13)

Source: UN Human Development Indices, A Statistical Update, 2008

Figure 2.16 Life Expectancy in Years, by Gender, 2006 compared to 1990



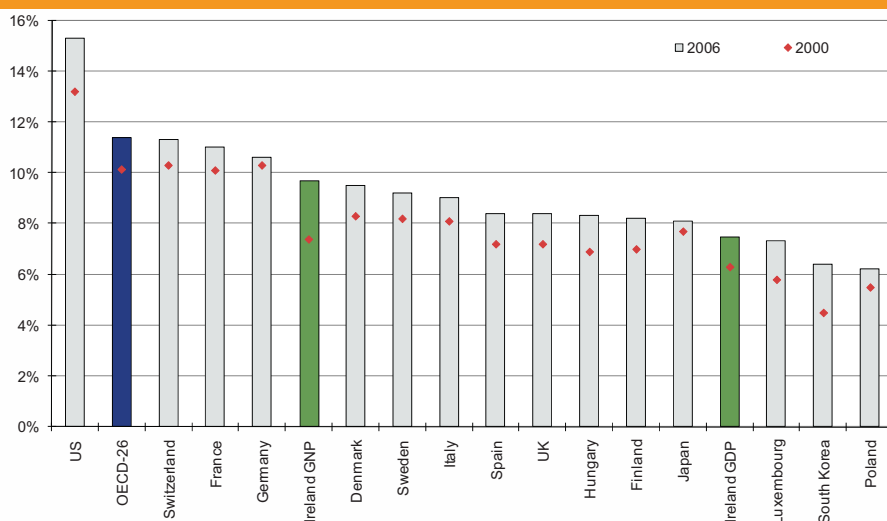
Life expectancy can be used as a simple indicator of health and wellbeing. Average life expectancy for Irish males and females was above 77 and 82 years respectively in 2006, an increase of five years over 1990 levels. Life expectancy in Ireland is now above the OECD average.

OECD-28 Ranking<sup>39</sup>:  
Males: 12 (↑6)  
Females: 17 (↑5)

Source: OECD.Stat Extracts, Health Data, 2008

<sup>39</sup> Base year for ranking change is 1990. Rankings incorporate the latest available data for countries that are unavailable for 2006.

**Figure 2.17 Total Health Expenditure (as a % of GDP), 2006<sup>40</sup>**

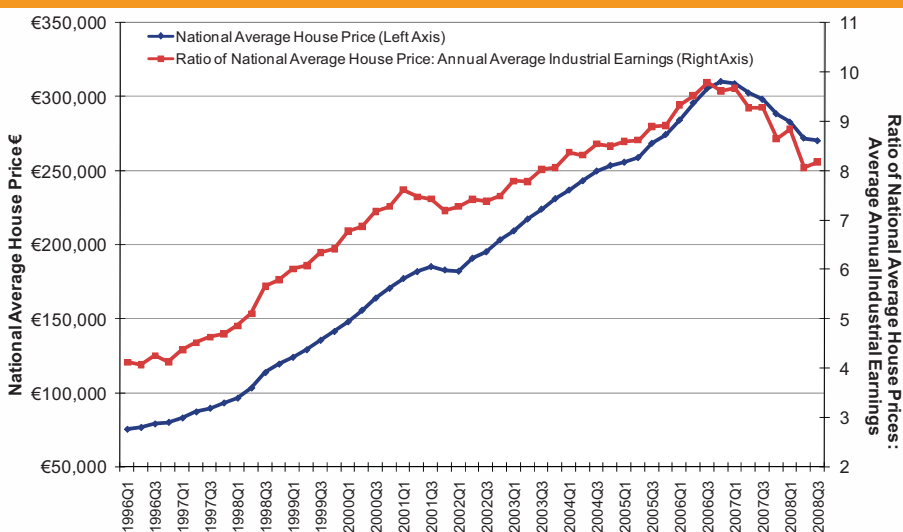


According to this measure, Ireland spent 9.7% of GNP on health services in 2006 (public and private). Total health expenditure has increased significantly over the period 2000-2006 and is now on a par with many other OECD economies - despite our relatively young population. In 2006 public expenditure on healthcare accounted for 78.3% of the total. The proportion of public and private health expenditure varies significantly between countries.

Ranking: N/A

Source: OECD.Stat, Health Statistics

**Figure 2.18 Affordability of Irish House Prices, 1996-2008 Q3**



Ireland experienced a sustained boom in housing and construction activity in recent years. In 2007 the average nationwide price for a house peaked at €311,087 or nearly 10 times average industrial earnings<sup>41</sup>. House prices have fallen by 21% between their peak in February 2007 and May 2009. As a result affordability has improved.

Ranking: N/A

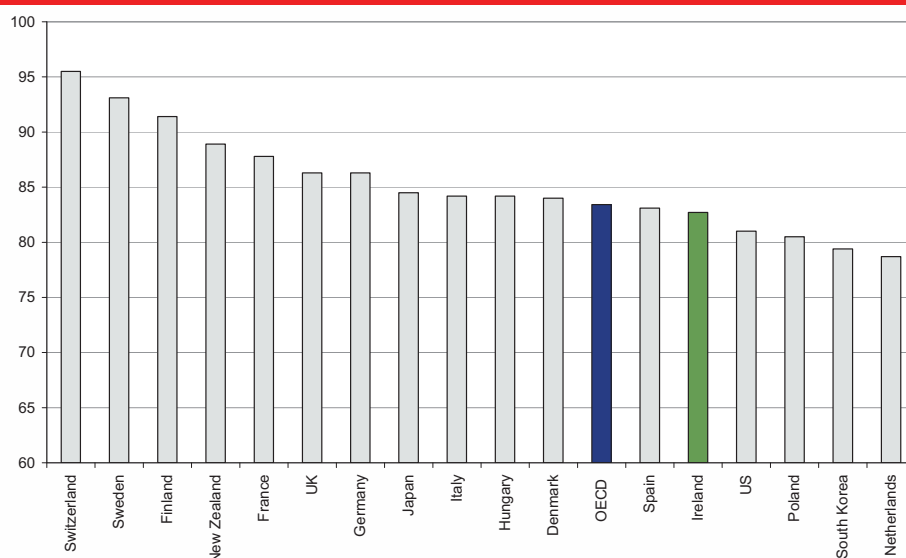
Source: ESRI Permanent TSB House Price Index; CSO, Labour Market Earnings Statistics

<sup>40</sup> OECD-28 average minus Netherlands and New Zealand.

<sup>41</sup> Average Industrial Earnings are based on all industries (NACE categories 1-4). The figure for 2007 is an average of the final three quarters of 2007 due to data availability.

## 2.3 Environmental Sustainability

**Figure 2.19 Environmental Performance Index, Scale (0-100) 2008**

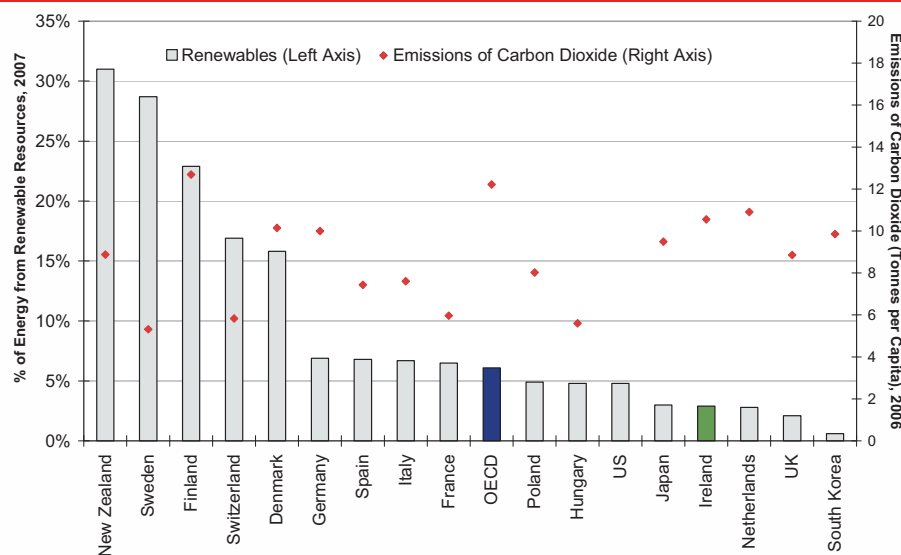


This index aggregates 25 environmental indicators relating to health, air quality, water resources, productive natural resources, biodiversity and habitat, sustainable energy and climate change. Ireland's performance is below the OECD average.

**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 2.20 Percentage of Energy from Renewable Sources (2007) and per capita Carbon Dioxide Emissions from Fuel Combustion (2006)**

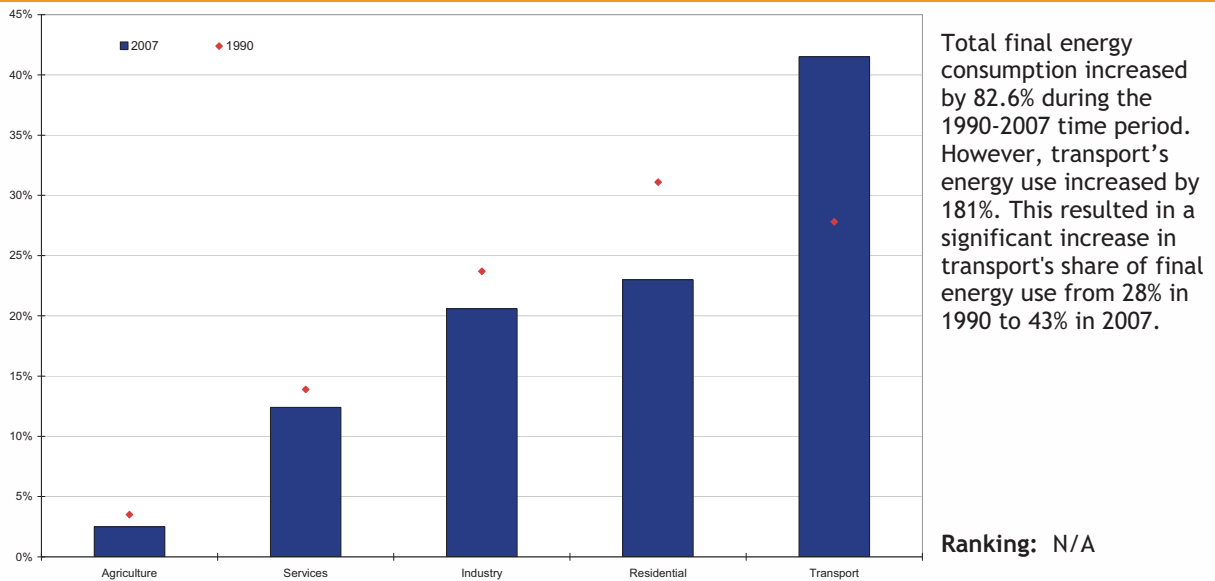


Despite significant progress, Ireland's share of energy derived from renewable resources (left axis) is less than half that of the OECD average, reflecting our high dependence on imported fossil fuels and limited hydro potential. Ireland is among the highest carbon emitters in the OECD on a per capita basis (right axis). This has been driven by significant increases in transport emissions.

**OECD-28 Ranking:**  
Renewables (2007):  
23 (↓1)  
CO<sub>2</sub> Emissions (2006): 20  
(↑1)

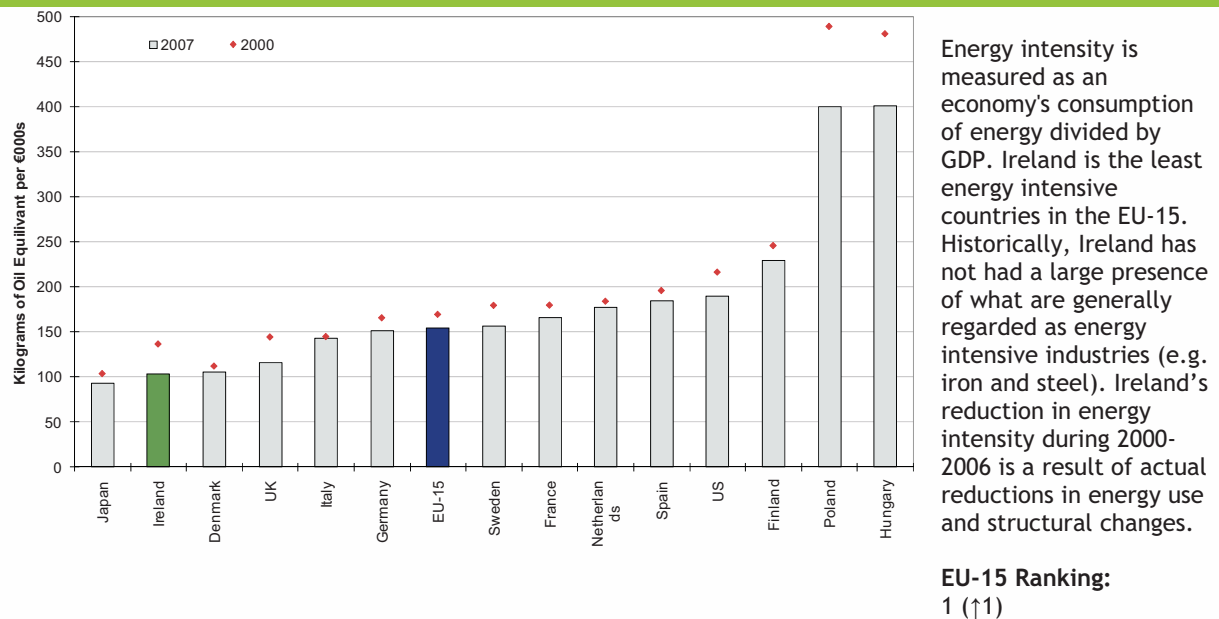
Source: International Energy Agency, Co2 Emissions from Fuel Combustion, 2008 Edition; International Energy Agency, Renewables Information, 2008

**Figure 2.21 Sectoral Share of Total Energy Consumption, 2007 compared to 1990**



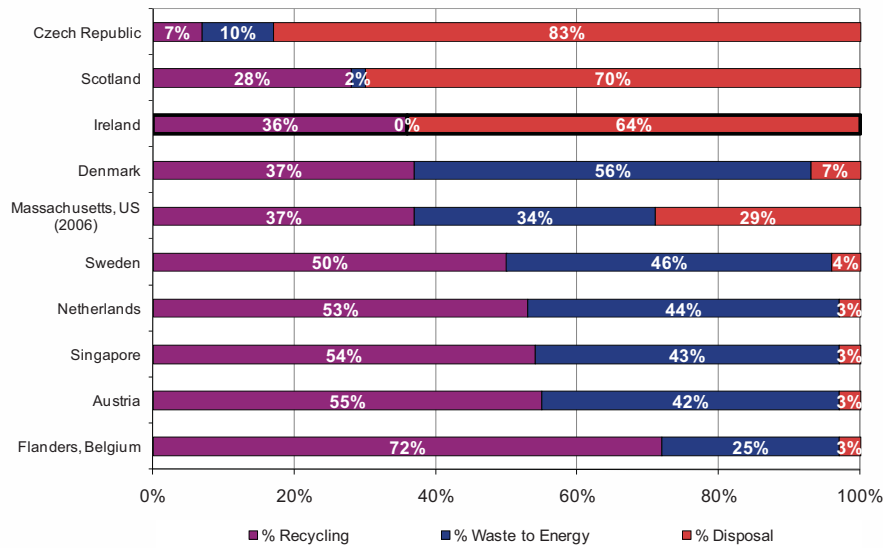
Source: Sustainable Energy Ireland, Energy Policy Statistical Unit, Energy Statistics 1990-2007, 2008 Report

**Figure 2.22 Energy Intensity of the Economy, 2007**



Source: Eurostat, Environment and Energy Indicators

**Figure 2.23 Percentage of Municipal Waste Recycled, 2007**



The rate of municipal waste recycling in Ireland continues to improve but Ireland still lags most of the locations benchmarked in terms of our recycling performance. Ireland remains highly dependent on landfill to treat municipal waste, landfilling 64% of its municipal waste in 2007.

**Ranking of 10:**  
8

Source: Forfás, *Waste Management Benchmarking Analysis and Policy Priorities, 2009*



# 3 Essential Conditions



## 3. Essential Conditions

Ireland's national competitiveness is founded 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 maintaining incomes and employment levels in Ireland. Its strength is also essential to rebuilding government finances and maintaining spending on public services. This section assesses business performance in Ireland under the headings of investment and trade.

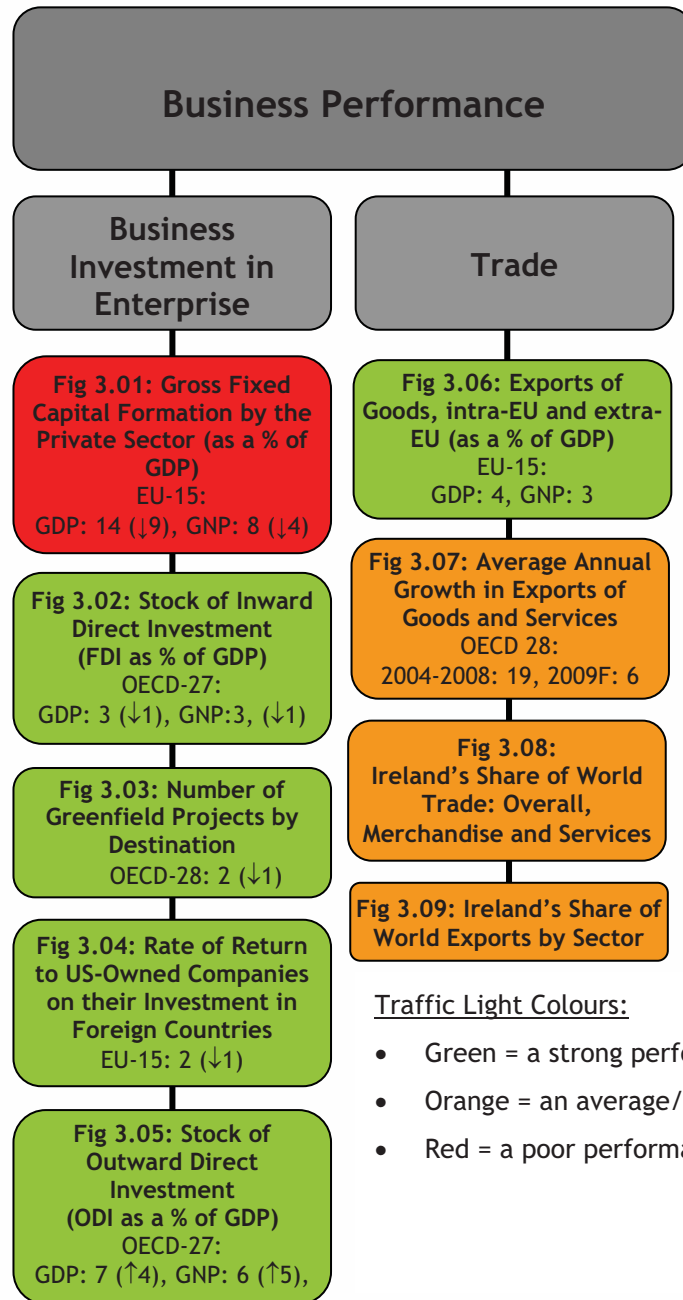
#### 3.1.1 Business Investment in Enterprise

Private sector investment in Ireland was among the highest in the EU in 2007, but has declined since early 2007 (Fig. 3.01). Foreign direct investment (FDI) remains critically important for Ireland. Although the stock of investment projects in Ireland as a percentage of GDP/GNP has declined since 2000, it remains among the highest in the OECD in 2007 (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 have also been increasingly investing overseas in recent years, with Irish stocks of outward direct investment among the highest in the OECD in 2007 (Fig. 3.05). Ireland is now the 10th largest investor in the United States in absolute terms.

#### 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 Irish exports (goods and services) slowed during the 2004-2008 period, Hungary, South Korea and Poland achieved significant growth in export sales (Fig. 3.07). Ireland's share of merchandise trade has fallen gradually, while our share of services trade grew in 2008 - driven by computer services, business services and royalties (Fig. 3.07-3.09). Ireland's manufacturing sectors have had a mixed performance; while our share of the pharmaceutical and chemicals sectors has remained strong (Fig. 3.09), Ireland's share of office/ telecommunications equipment and machinery/transport equipment has fallen. The relevant indicators are detailed in Chart 3.A.

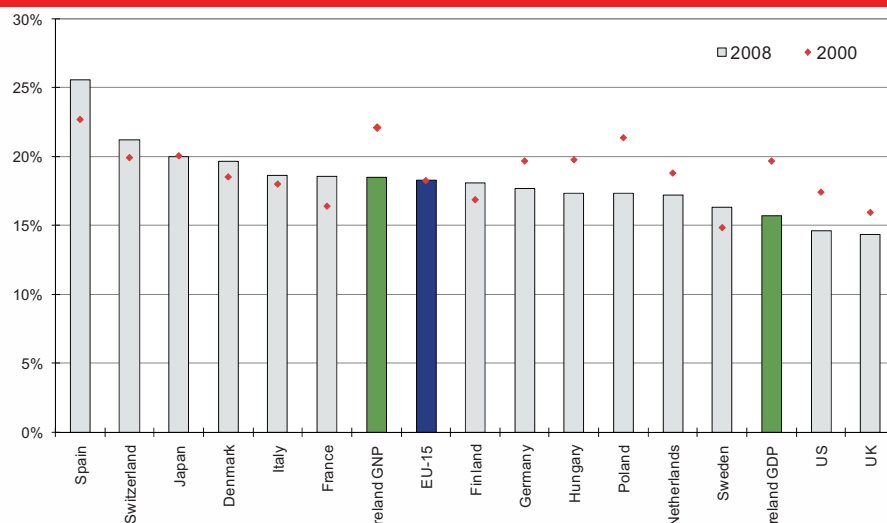
Chart 3.A



## 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), 2008**

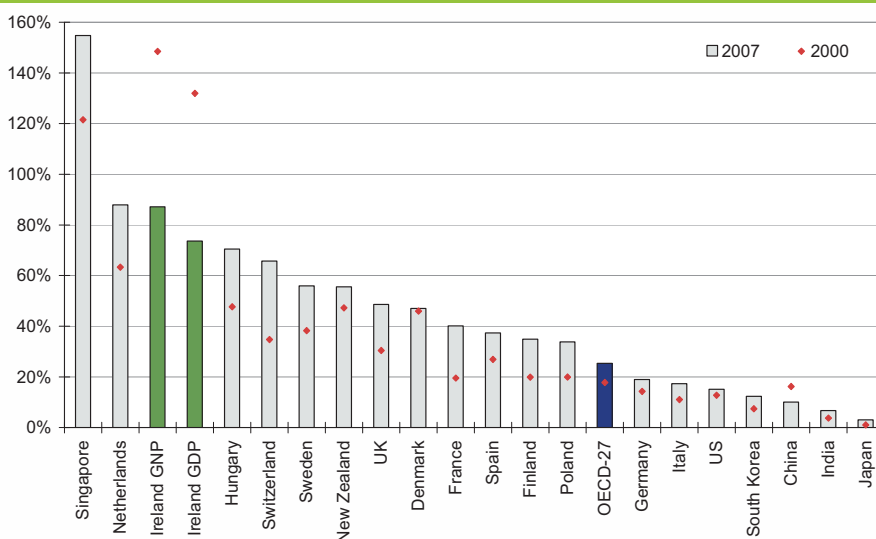


Irish investment rates in 2008 were among the lowest in the EU-15. Investment as a share of GDP peaked at 23.2% in 2006 but has fallen to 15.7% in 2008. CSO data shows that capital investment has declined by 20% in 2008 compared to 2007<sup>42</sup>. The ESRI forecasts that investment in residential housing will decline by 50% in 2009 in value terms. Investment in 'Building and Construction' is expected to fall by 40% in 2009<sup>43</sup>.

**EU-15 Ranking:**  
 GDP: 14 (↓9)  
 GNP: 8 (↓4)

Source: European Commission, AMECO Database

**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 in foreign-owned agency assisted Irish companies was just over 150,000 in 2008<sup>44</sup>.

**OECD-27 Ranking<sup>45</sup>:**  
 GDP: 3 (↓1)  
 GNP: 3 (↓1)

Source: Forfás Calculations; UNCTAD World Investment Report 2008

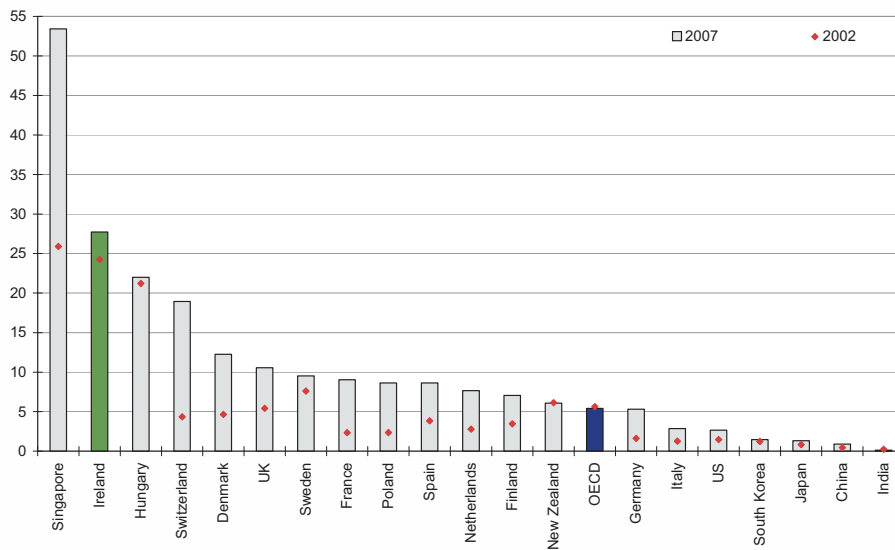
42 CSO, Quarterly National Accounts, Quarter 4 2008.

43 ESRI, Quarterly Economic Commentary, Summer 2009.

44 Forfás, Annual Employment Survey, 2008.

45 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<sup>46</sup>**

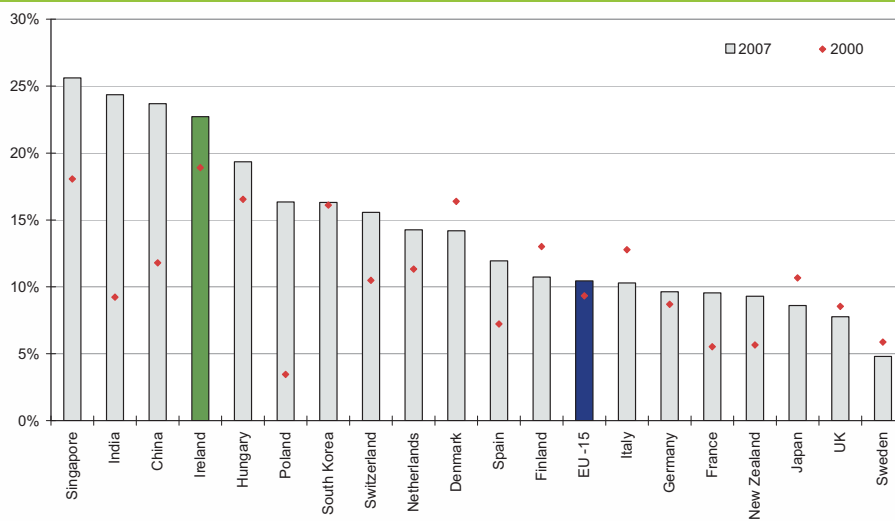


Ireland continues to attract a large number of greenfield investment projects, relative to its size. Only Singapore attracted more greenfield projects per capita in 2007. The number of new greenfield projects in Ireland has increased significantly during 2002-2007. The pipeline of new projects for 2009 is forecast to remain relatively strong.

**OECD-28 Ranking<sup>47</sup>:**  
2 (↓1)

Source: Forfás Calculations; UNCTAD World Investment Report 2008

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



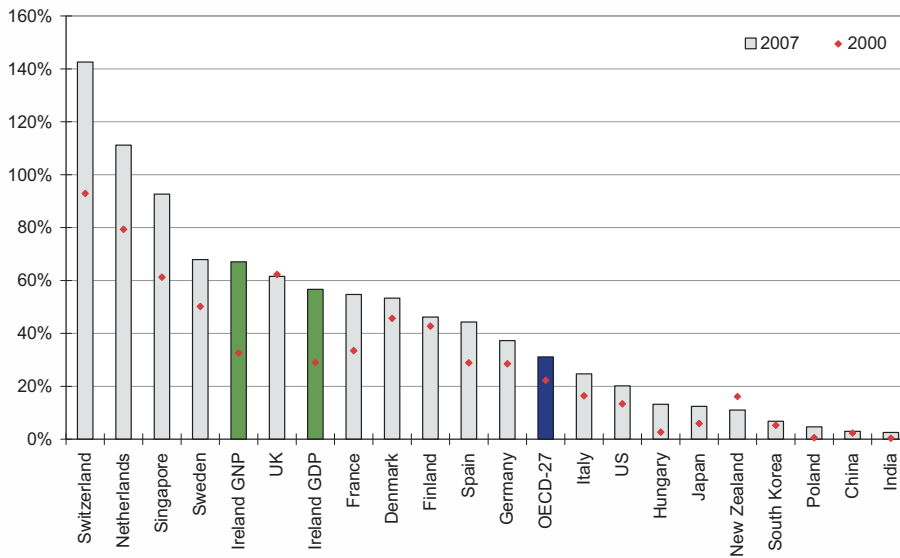
This indicator measures income earned by US companies as a proportion of the amount invested in a particular country - a proxy for the rate of return. The rate of return in Ireland is close to that in the leading countries and is well above the EU-15 average.

**EU-15 Ranking:**  
2 (↓1)

Source: US Bureau of Economic Analysis

<sup>46</sup> According to UNCTAD, 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.  
<sup>47</sup> Base year for ranking change is 2002 compared to 2007.

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



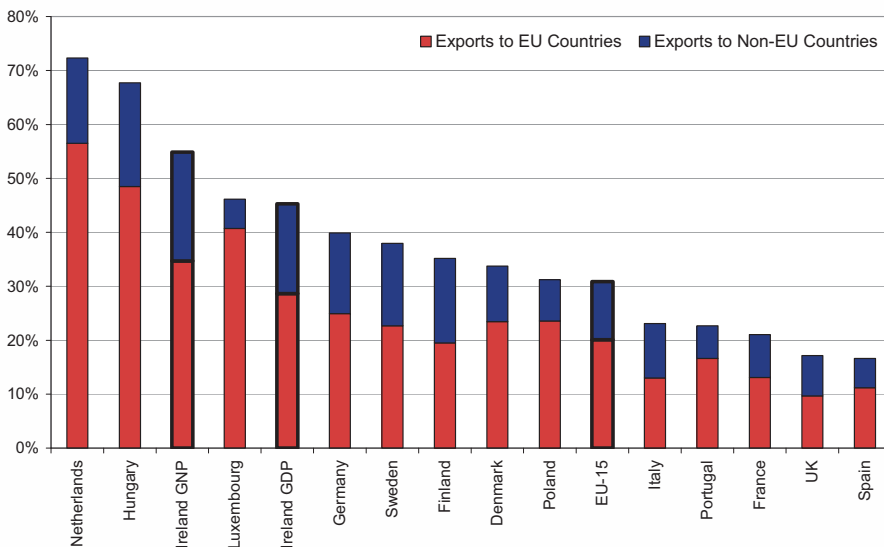
Ireland's levels of outward direct investment increased significantly during 2000-2007, meaning that Ireland's stock of investments abroad relative to the size of the economy has grown rapidly. Ireland is now the 10th largest investor in the United States in absolute terms<sup>48</sup>.

**OECD-27 Ranking<sup>49</sup>:**  
 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), 2008**



Ireland continues to be one of the most open countries to trade in the EU. The majority of Ireland's merchandise exports in 2008 were destined for EU countries. However, compared to other EU member states, Ireland has significant trading links with non-eurozone countries - a particular challenge given the current strength of the euro.

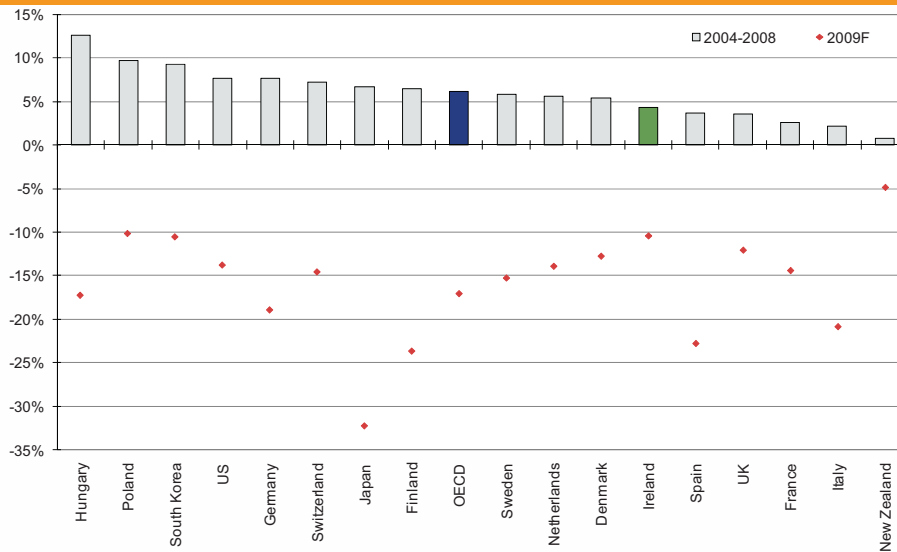
**EU-15 Ranking:**  
 (Ranked by total exports)  
 GDP: 4  
 GNP: 3

Source: Eurostat, External Trade

<sup>48</sup> Department of the Taoiseach, 2009.

<sup>49</sup> OECD-28 average minus Iceland. Nearest available year used if 2000 data is unavailable.

**Figure 3.07 Average Annual Growth in Exports of Goods and Services (%), 2004-2008 and 2009F<sup>50</sup>**

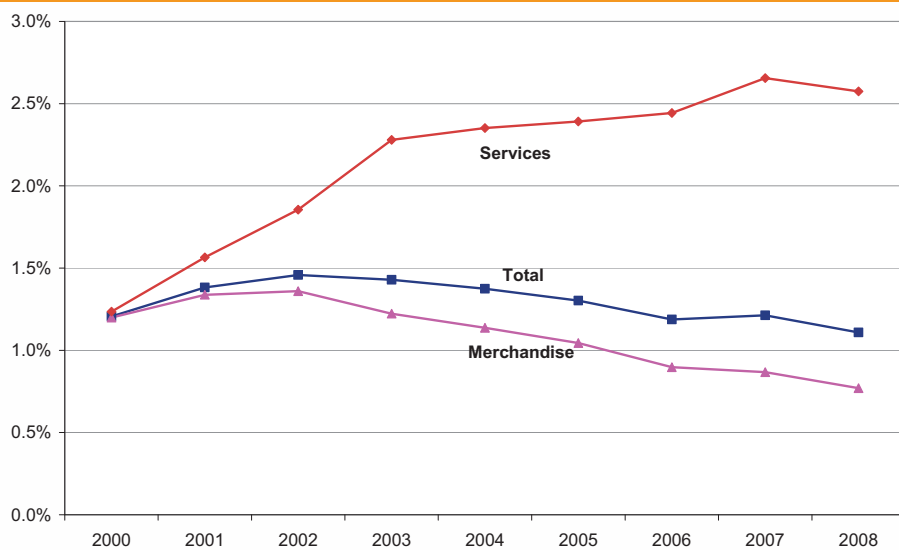


Total growth in Irish exports was below the OECD average during 2004-2008. Exports of merchandise trade fell by 3% in value terms in 2008<sup>51</sup>. Exports of services grew by 3% in value terms in 2008, with growth in computer services (8.9%), business services (5.1%) and royalties (17.6%) offsetting declines in other services sectors<sup>52</sup>. Irish exports are forecast to decline in 2009, but not to the same extent as other OECD countries.

**OECD-28 Ranking<sup>53</sup>:**  
 2004-2008: 19  
 2009F: 6

Source: OECD, *Economic Outlook 85*, June 2009

**Figure 3.08 Ireland's Share of World Trade: Overall, Merchandise and Services (%), 2000-2008**



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 2008 services exports accounted for 45.4% of total Irish exports compared to 21% in 2000<sup>54</sup>.

Ranking: N/A

Source: World Trade Organisation

<sup>50</sup> Traffic light determined based on Ireland's ranking in 2004-2008.

<sup>51</sup> CSO, External Trade, March 2009.

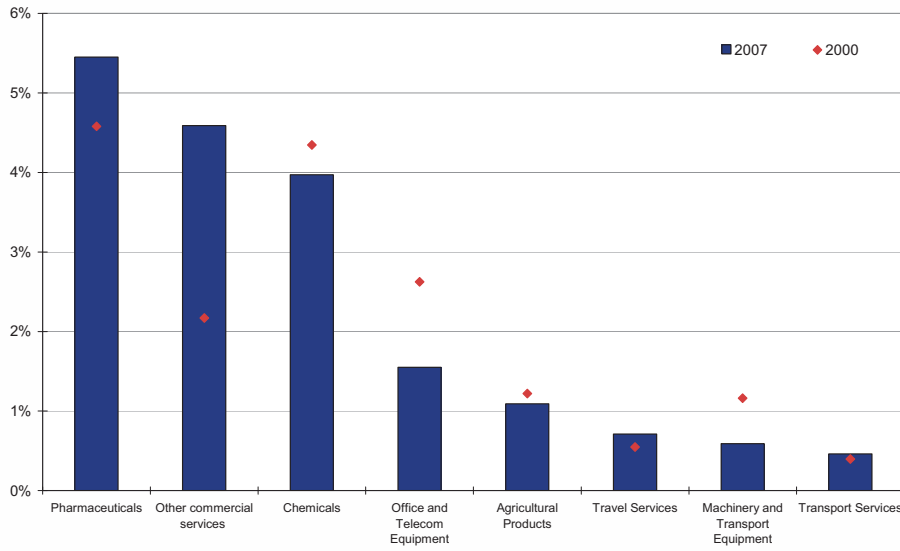
<sup>52</sup> CSO, Balance of International Payments, March 2009.

<sup>53</sup> Base years for ranking change is 2004-2008 compared to 2008.

<sup>54</sup> Measured using the figures for merchandise and services exports in the CSO, Balance of International Payments, March 2009.



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



The period 2000-2007 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 telecommunications equipment and machinery and transport equipment.

**Ranking: N/A**

Source: World Trade Organisation

## 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 its 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

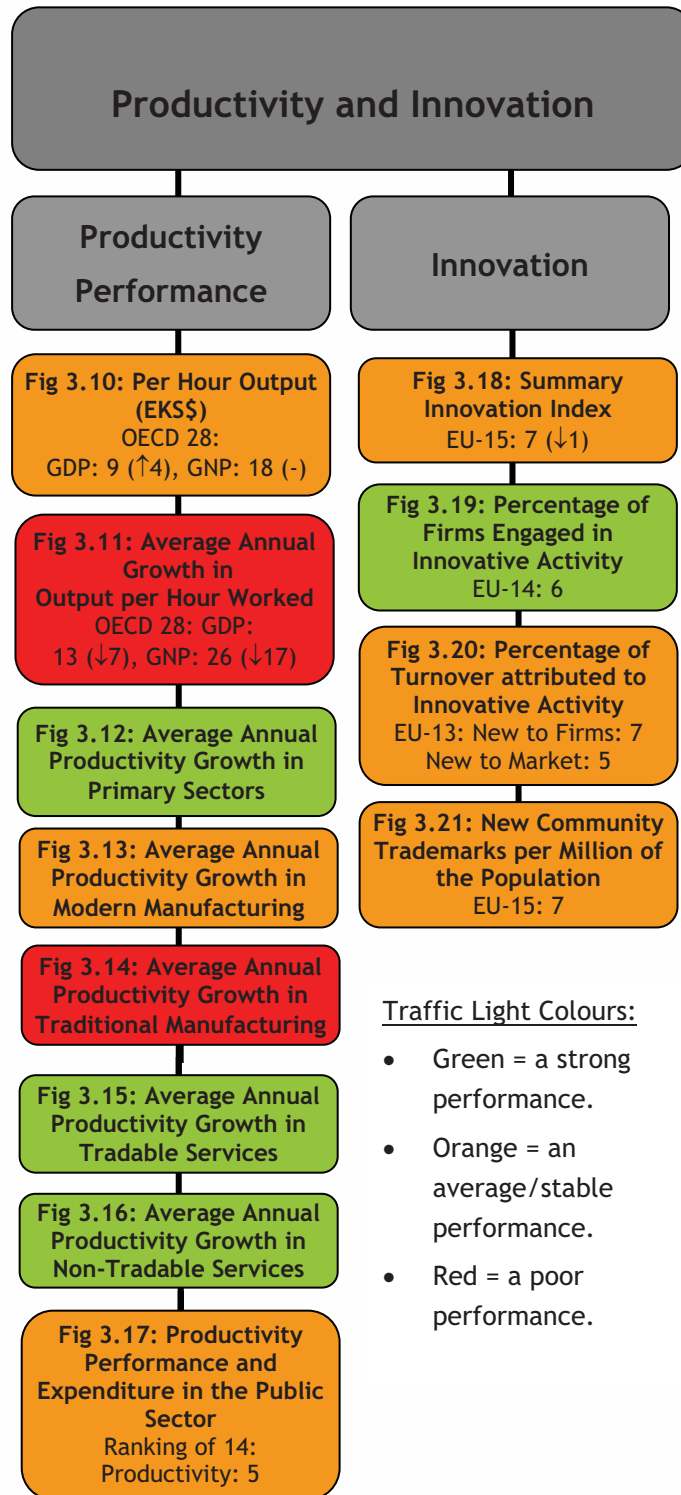
Ireland's productivity levels in GDP terms are now on a par with the OECD average. However, Ireland's productivity levels in GNP terms are below the OECD average (Fig. 3.10). Growth rates of productivity, rather than levels, are vital to ensuring wage levels are sustainable and in this regard, Ireland performed poorly between 2004 and 2008 (Fig. 3.11).

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

Ireland's score on the summary innovation index is above the EU-15 average (Fig. 3.18). This index is a composite of 29 European Innovation Scoreboard indicators including knowledge-intensive services exports as a percentage of total exports and business R&D and IT expenditure. Irish firms are marginally less likely to be engaged in innovation (i.e. the creation of new products, services, or processes) than the EU average. The innovation gap between Irish industry and services sectors (at over 15 percent) is significant (Fig. 3.19). In terms of outputs, Ireland's performance is below the EU average in terms of 'new to firm' innovation contributing to turnover but above the EU average in terms of the contribution of 'new to market' innovation (Fig. 3.20). In addition, the number of new community trademarks per million of the population in Ireland is above the EU-15 average (Fig. 3.21).

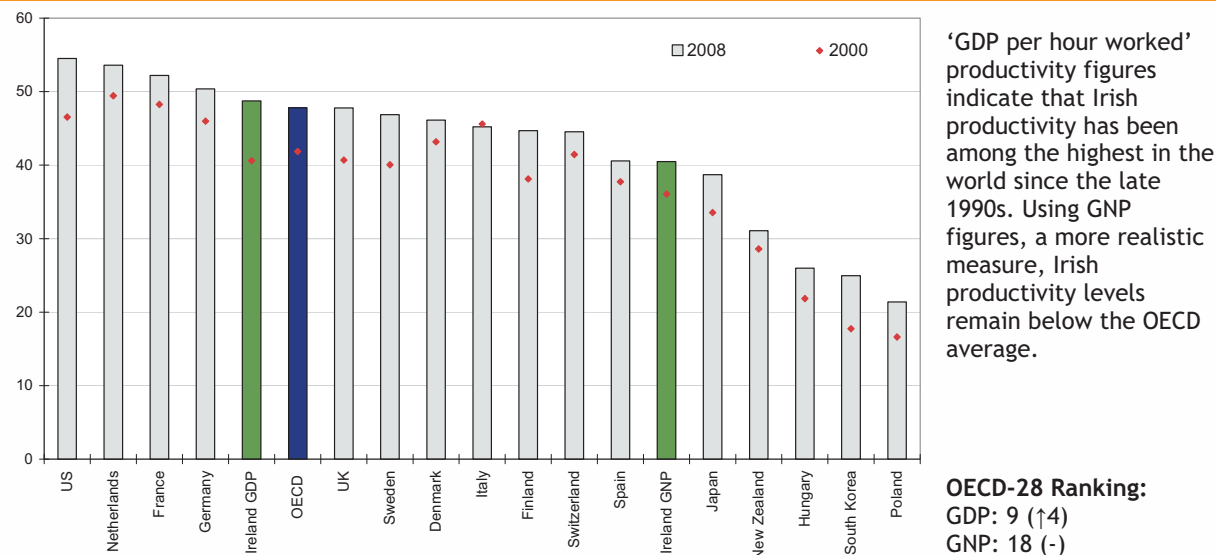
Chart 3.B



## 3.2 Productivity and Innovation

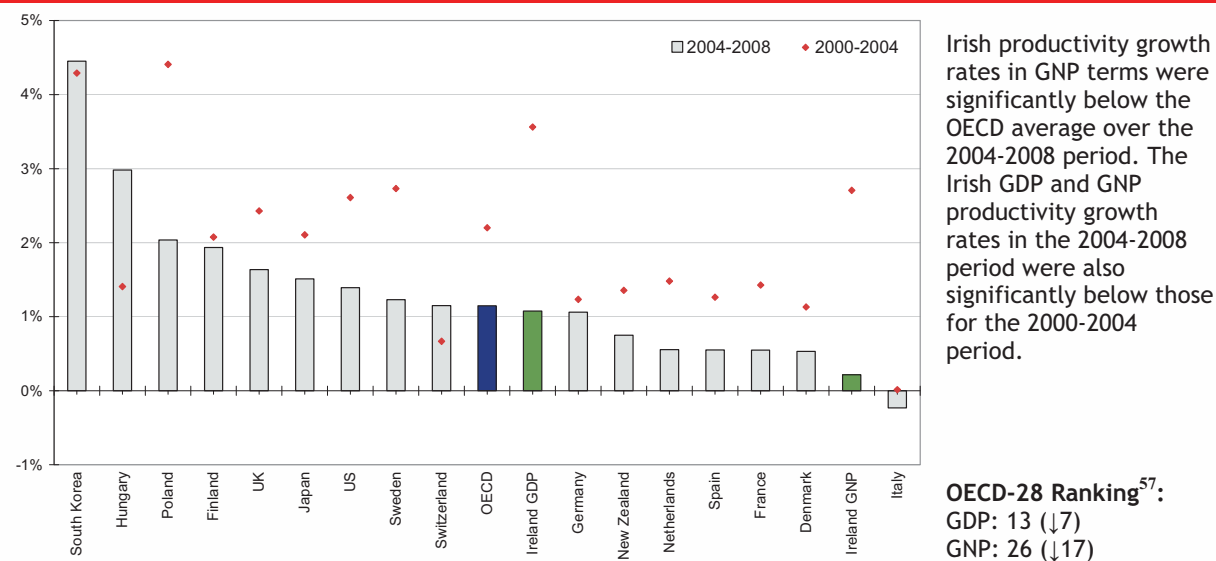
### 3.2.1 Productivity

**Figure 3.10 Per Hour Output, (EKS\$) 2008<sup>55</sup>**



Source: Groningen Growth & Development Centre, Total Economy Database, January 2009

**Figure 3.11 Average Annual Growth in Output per Hour Worked, 2000-2008<sup>56</sup>**



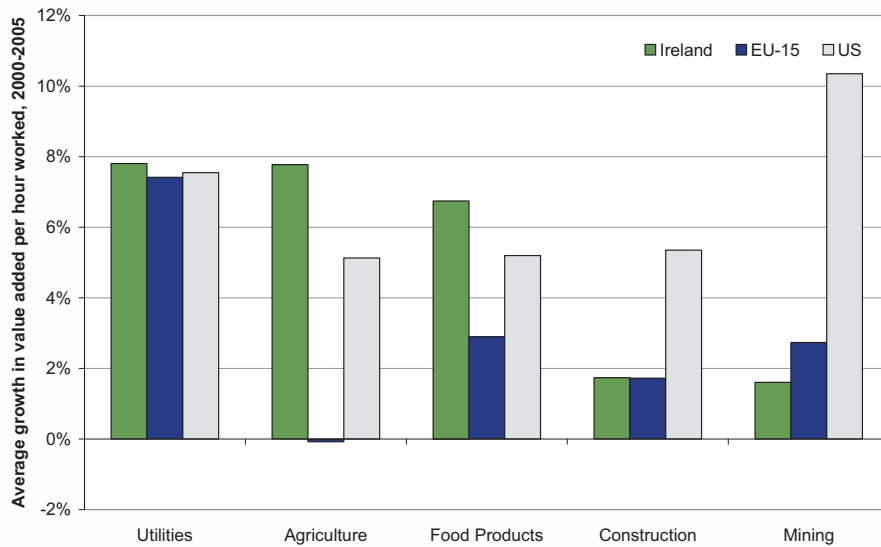
Source: Groningen Growth & Development Centre, Total Economy Database, January 2009

55 Values are quoted in US\$ using EKS purchasing power parities. EKS (Éltető-Köves-Szulc) is a method for calculating a multilateral per capita quantity index from disaggregated price and quantity data. Traffic-light colour determined based on Ireland's GNP ranking in the OECD-28.

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

57 Base year for ranking change is 2000-2004 compared to 2004-2008.

**Figure 3.12 Average Annual Productivity Growth in Primary Sectors, 2000-2005<sup>58</sup>**

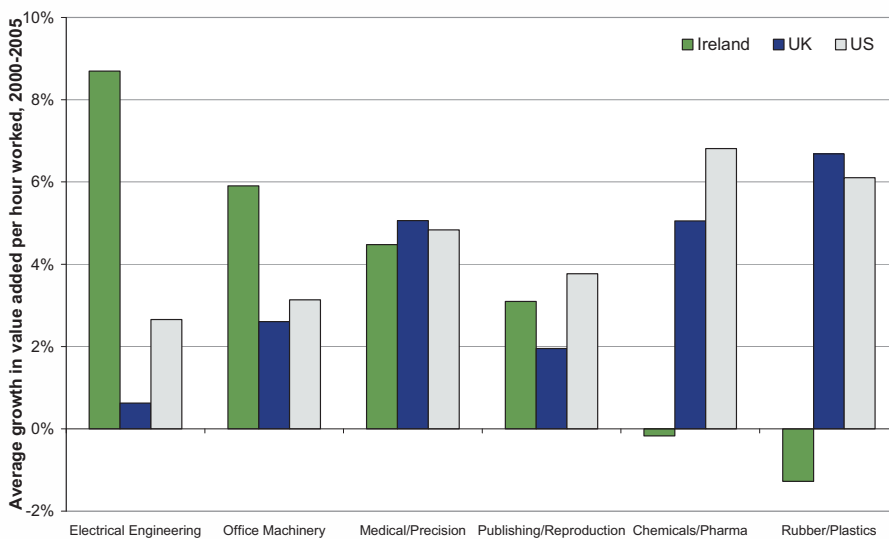


Relative to the US and EU-15, productivity growth in Ireland's agriculture and food sectors has been strong since 2000. Productivity growth in utilities has been marginally above the EU-15 and US averages. Productivity growth in mining and construction is weak compared to the US.

**Ranking:** N/A

Source: Forfás calculations; EU KLEMS Database March 2008

**Figure 3.13 Average Annual Productivity Growth in Modern Manufacturing, 2000-2005<sup>59</sup>**



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.

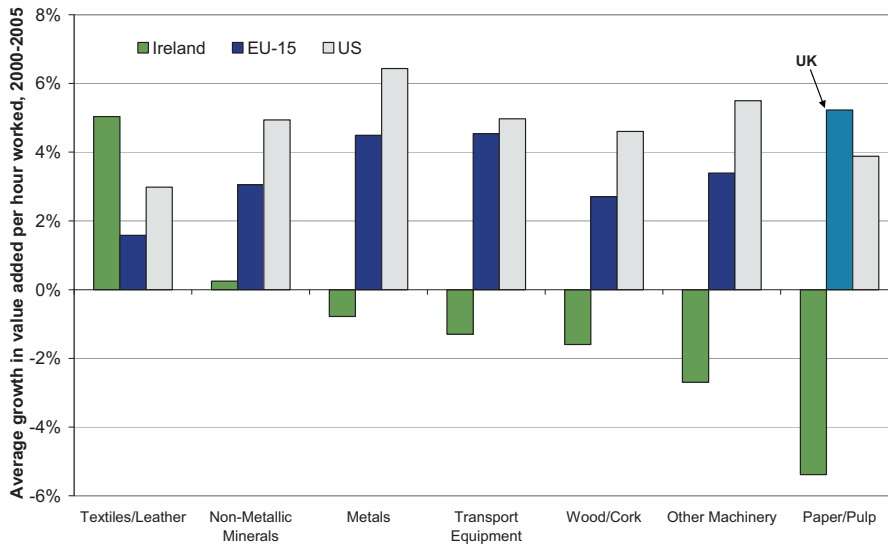
**Ranking:** N/A

Source: Forfás calculations; EU KLEMS Database March 2008

<sup>58</sup> Gross Value Added is a Euro value for Ireland and the EU-15 and a Dollar value for the US.

<sup>59</sup> 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.

**Figure 3.14 Average Annual Productivity Growth in Traditional Manufacturing, 2000-2005<sup>60</sup>**

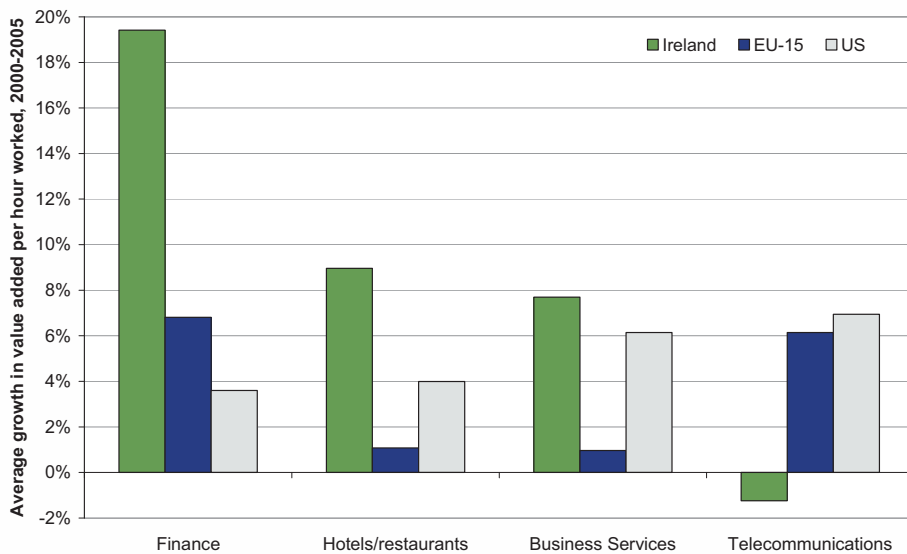


During 2000-2005, Irish productivity growth rates in non-metallic minerals, metals, transport equipment, wood/cork, other machinery and paper/pulp lagged comparator countries. The Irish textiles sector was the only sector in which Ireland performed better than its counterparts.

Ranking: N/A

Source: Forfás calculations; EU KLEMS Database March 2008

**Figure 3.15 Average Annual Productivity Growth in Tradable Services, 2000-2005<sup>61</sup>**



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.

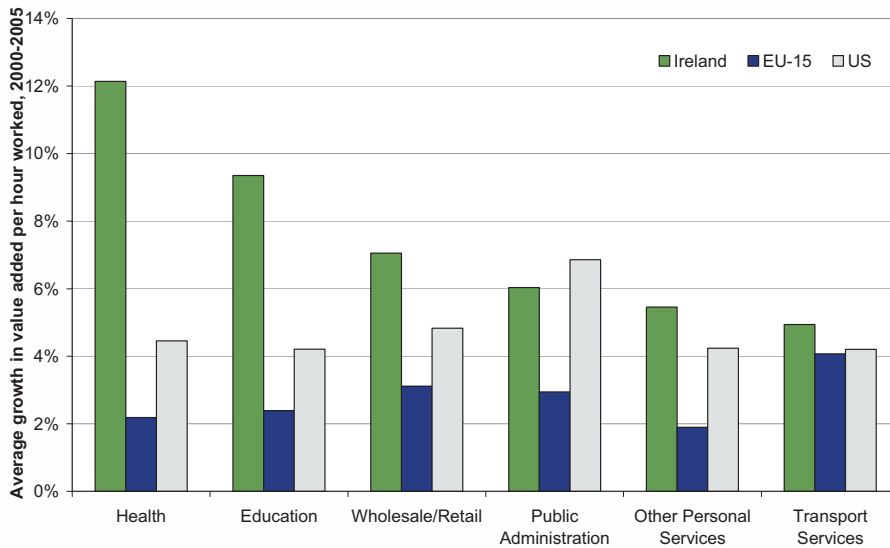
Ranking: N/A

Source: Forfás calculations, EU KLEMS Database March 2008

<sup>60</sup> 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.

<sup>61</sup> Gross Value Added is a Euro value for Ireland and the EU-15 and a Dollar value for the US.

**Figure 3.16 Average Annual Productivity Growth in Non-Tradable Services, 2000-2005<sup>62</sup>**

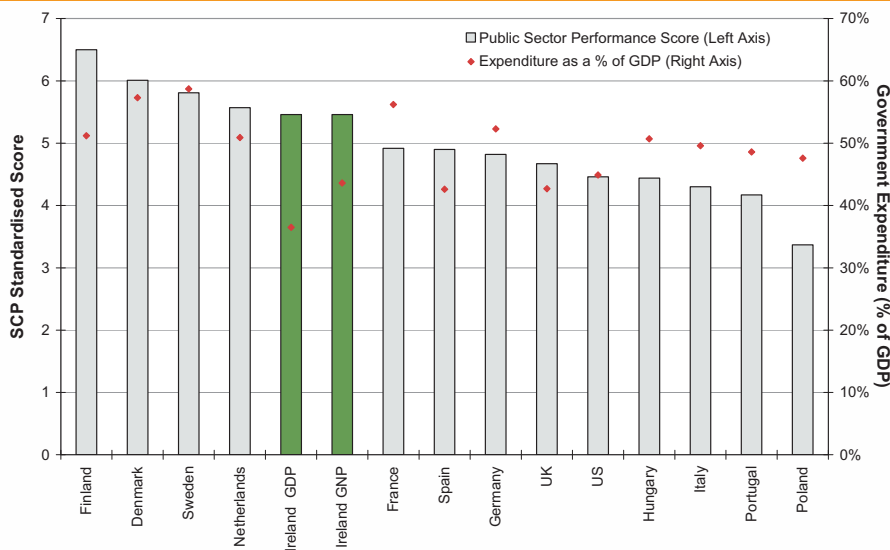


Non-tradable services are critical to Ireland's overall productivity performance as they account for approximately half of total hours worked. Productivity is particularly difficult to measure in non-tradable services. The figures suggest that Irish productivity growth is relatively strong across all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

Ranking: N/A

Source: Forfás calculations, EU KLEMS Database March 2008

**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

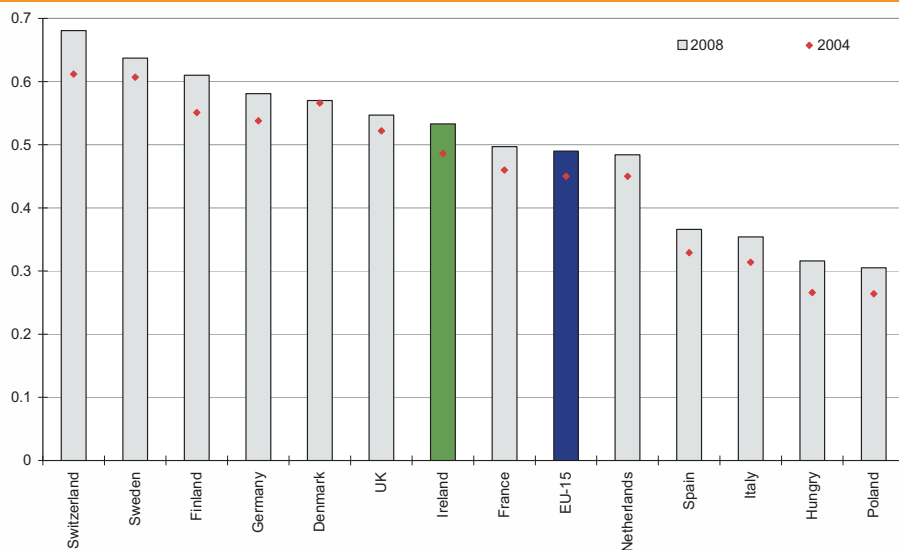
Source: Social & Cultural Planning Office, Netherlands; OECD Education at a Glance

<sup>62</sup> Gross Value Added is a Euro value for Ireland and the EU-15 and a Dollar value for the US.



### 3.2.2 Innovation

**Figure 3.18 Summary Innovation Index, 2008<sup>63</sup>**

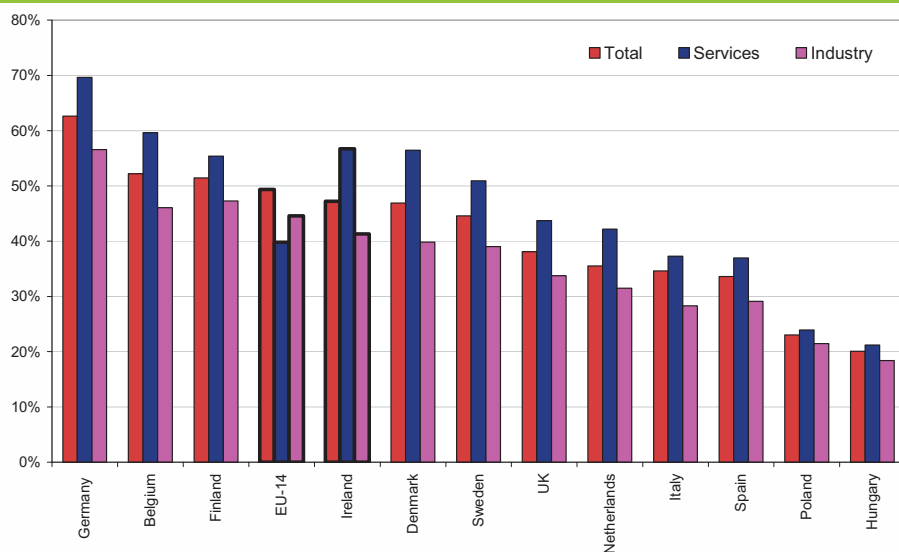


The Summary Innovation Index gives an “at a glance” overview of aggregate national innovation performance. The index is a composite of 29 European Innovation Scoreboard indicators including knowledge-intensive services exports as a percentage of total exports and business R&D and IT expenditure. Ireland performs above the EU-15 average on this index.

**EU-15 Ranking:**  
7 (↓)

Source: European Commission, *European Innovation Scoreboard, 2008, Comparative Analysis of Innovation Performance, January 2009*

**Figure 3.19 Percentage of Firms Engaged in Innovative Activity, 2006**



This chart shows the percentage of firms which engage in innovative activity, either by changing their products or their processes. Overall, Irish firms are marginally less likely to be engaged in innovative activities than the EU-14 average. The innovation gap between Irish industry and services sectors (at over 15%) is the second highest in the EU-14.

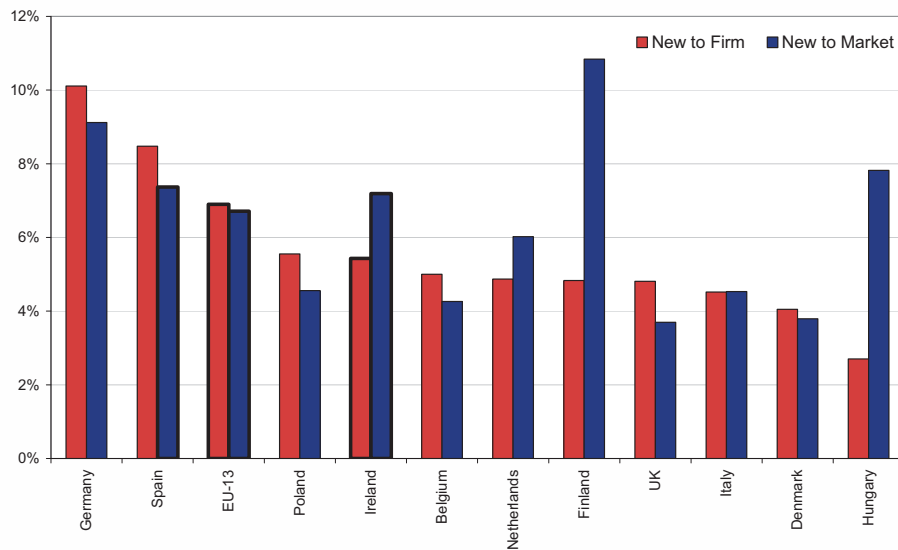
**EU-14 Ranking<sup>64</sup>:**  
Total: 6  
Services: 8  
Industry: 3

Source: Eurostat, *Community Innovation Survey 2006*

<sup>63</sup> Reference data for most of the underlying indicators are for 2006 and 2007.

<sup>64</sup> EU-15 average minus France. Traffic light determined based on overall ranking.

**Figure 3.20 Percentage of Turnover attributed to Innovative Activity, 2006**

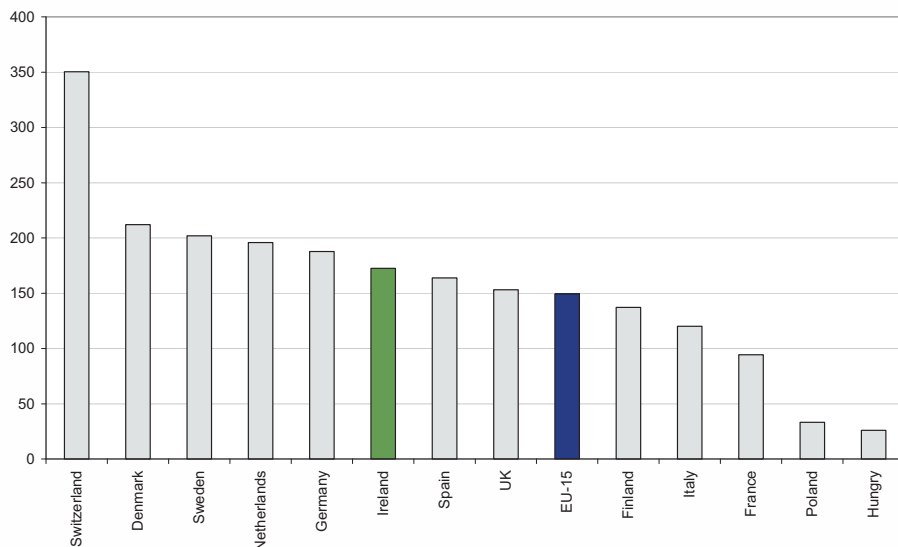


Ultimately, innovation is about turning ideas into revenue. This chart shows how the introduction of new/improved products both to firms and to the market contributes to turnover. Ireland's performance is below the EU-13 average in terms of 'new to firm' innovation's contribution to turnover but above the EU-13 average in terms of the contribution of 'new to market' innovation.

**EU-13 Ranking<sup>65</sup>:**  
 New to Firms: 7  
 New to Market: 5

Source: Eurostat, Community Innovation Survey 2006

**Figure 3.21 New Community Trademarks per Million of the Population, 2008**



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: 7**

European Commission, European Innovation Scoreboard, 2008, Comparative Analysis of Innovation Performance, January 2009

<sup>65</sup> EU-15 average minus France and Sweden. Traffic light determined based on 'new to firm' ranking.

## 3.3 Prices and Costs

Cost competitiveness is critical to ensuring that companies based in Ireland have the ability to compete successfully in international markets. This section examines the overall level and rate of change 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

Price competitiveness will only improve if prices fall faster here than in competitor countries as the adjustment must be made from a higher base. Irish inflation rates increased steadily up until September 2008 but since then, inflationary pressures have eased and Irish prices, although still at a high level, have fallen (Fig. 3.22). More recent data for 2009 Q1 suggests that consumer prices overall are falling slightly faster in Ireland than in the Eurozone. Some commodity categories such as clothing, transport, housing and utilities are seeing considerably larger declines in Ireland than in the Eurozone (Fig. 3.23).

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). Between January 2000 and April 2008, Ireland experienced a 35 percent loss in international price competitiveness (real HCI). Exchange rate movements account for approximately two thirds of the deterioration in price competitiveness since 2000, with higher inflation in Ireland accounting for the remaining third. Ireland's price competitiveness, although weak has improved. The loss in price competitiveness between January 2000 and June 2009 has narrowed marginally to 30 percent (real HCI). This was supported by both falls in relative prices and favourable exchange rate movement vis-à-vis our key trading partners. However, the collapse in the value of sterling is putting significant cost pressures on many indigenous exporters who remain dependent on the UK market.

### 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). Labour cost growth rates show the change in the cost of employing workers over time. Ireland's growth rates exceeded the EU-15 average between 2004 and 2007. However, growth rates in Irish labour costs slowed significantly in 2008 and were lower than the EU-15 average (Fig. 3.28).

This report indicates that for basic manufacturing occupations, Ireland remains relatively expensive compared to other locations, particularly the new EU member states, but less expensive than other high-income locations such as Germany and Denmark (Fig. 3.30 and Fig. 3.31). In terms of wage costs for engineers, Ireland remains one of the most expensive locations (Fig. 3.32). With regard to the wage costs for an ICT systems analyst, Ireland is the fourth most expensive location benchmarked (Fig. 3.34).

### 3.3.3 Non-Pay Costs

Non-pay costs in Ireland compare poorly with other countries across a range of business inputs. These include utilities (electricity, mobile communications, waste and water) and a range of services, such as accountancy, information technology and legal services fees (Figs. 3.35-3.44). Certain categories of non-pay costs have fallen in 2008/09, in particular the cost of purchasing and renting retail and industrial property.

With regard to average interest rates available in Ireland and the Eurozone to non-financial corporations, the majority of loan types in Ireland were more expensive than the Eurozone average in 2008 (Fig. 3.47).

Chart 3.C

Prices and Costs



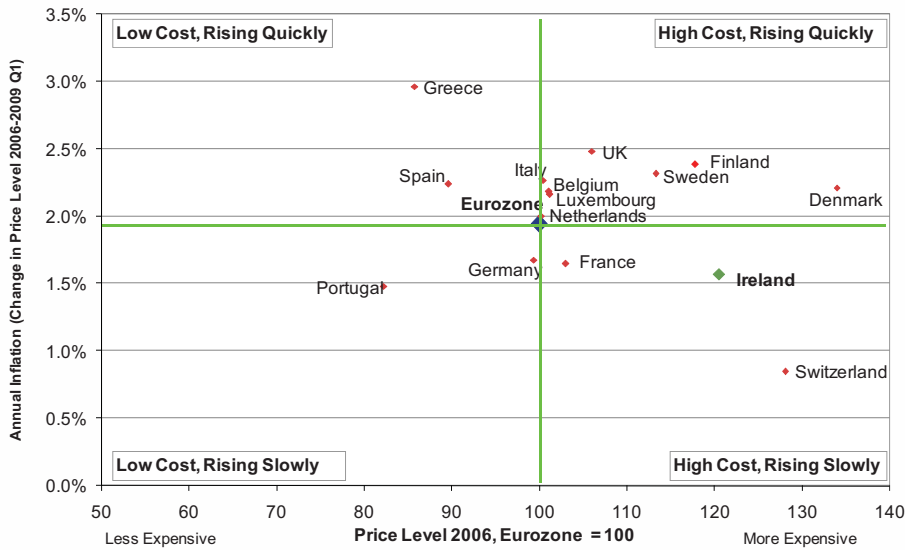
Traffic Light Colours:

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

### 3.3 Prices and Costs

#### 3.3.1 Prices

Figure 3.22 HICP Price Level (2006) and Inflation (2006- 2009), EU Member States<sup>66</sup>

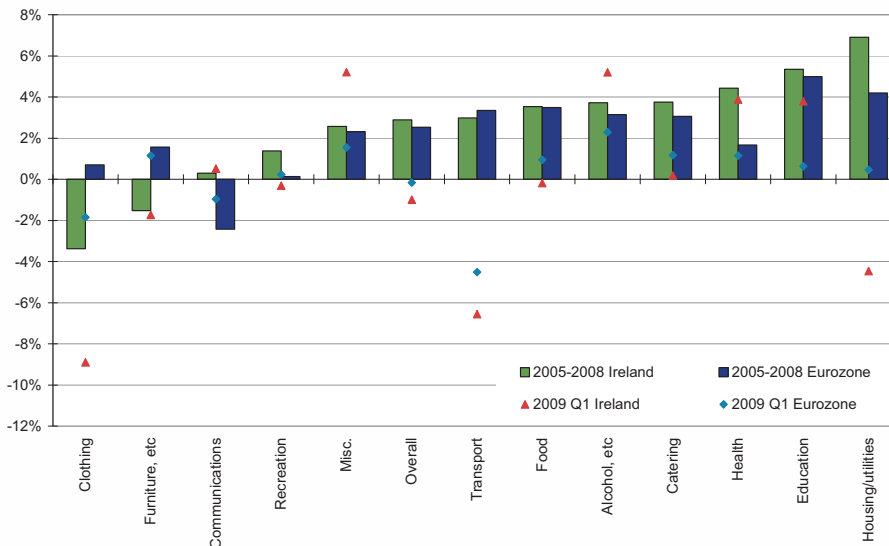


Prices and the rate of change in prices are key indicators of competitiveness. Price levels in Ireland were the second highest in the EU-15 in 2006. Inflation continued to rise from 2006 until September 2008. Since then, inflationary pressures have eased and Irish prices have fallen in recent months. According to the CSO, the annual rate of inflation was - 5.4% in June 2009.

**EU-15 Ranking<sup>67</sup>:**  
 Price Level (2006): 14  
 Inflation: 2

Source: Eurostat, Economy and Finance Indicators

Figure 3.23 Average Annual Inflation Rate by Commodity Group, Ireland and the Eurozone, 2005 - 2009 Q1



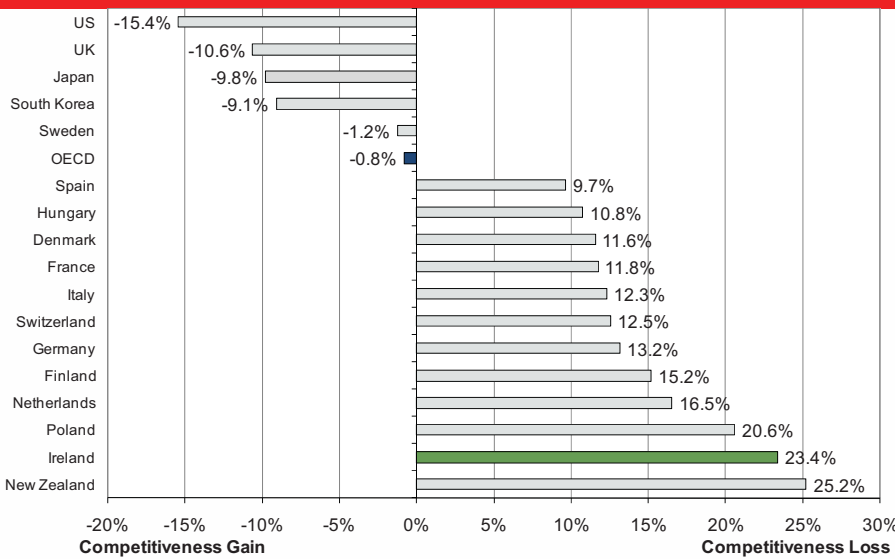
This chart shows inflation in key sectors of the Irish and Eurozone economies. Overall, prices fell slightly faster in Ireland than in the Eurozone between 2008 and 2009 Q1. The annual rate of inflation was significantly lower in the EU and Ireland in 2009 compared to the average for the, 2005-2008 period in most commodity groups. Some categories (clothing, transport, housing and utilities) have fallen by significantly more in Ireland than in the Eurozone in 2008/2009. **Ranking: N/A**

Source: Eurostat, Economy and Finance Indicators

<sup>66</sup> HICP: Harmonised Index of Consumer Prices.

<sup>67</sup> Traffic light determined based on Ireland's inflation ranking.

**Figure 3.24 Percentage Change in the Trade-Weighted Exchange Rate, 2000-2008**

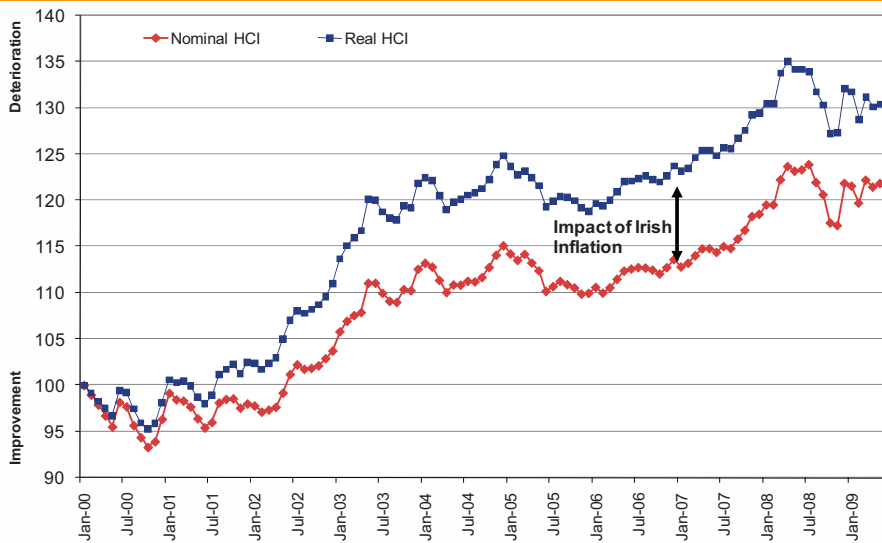


This chart shows the change in a country's exchange rate weighted by the importance of trade with other countries. By this measure, Ireland's trade-weighted exchange rate has appreciated by 23.4% since 2000, meaning that Irish goods/services are now more expensive in international markets. However, this should also result in imports being cheaper.

OECD-28 Ranking<sup>68</sup>:  
24 (↓7)

Source: Forfás calculations; OECD, Economic Outlook, No. 84, December 2008

**Figure 3.25 Price Competitiveness Indicator for Ireland (Harmonised Competitiveness Indicators), 2000 - May 2009 (January 2000 = 100)**



Ireland experienced a 35% loss in international price competitiveness (real HCI) between January 2000 and April 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. Ireland price competitiveness, although still weak has improved; the loss in price competitiveness between January 2000 and June 2009 has fallen marginally to 30% as a result of falls in relative prices and favourable exchange rate movement vis-à-vis key trading partners.  
Ranking: N/A

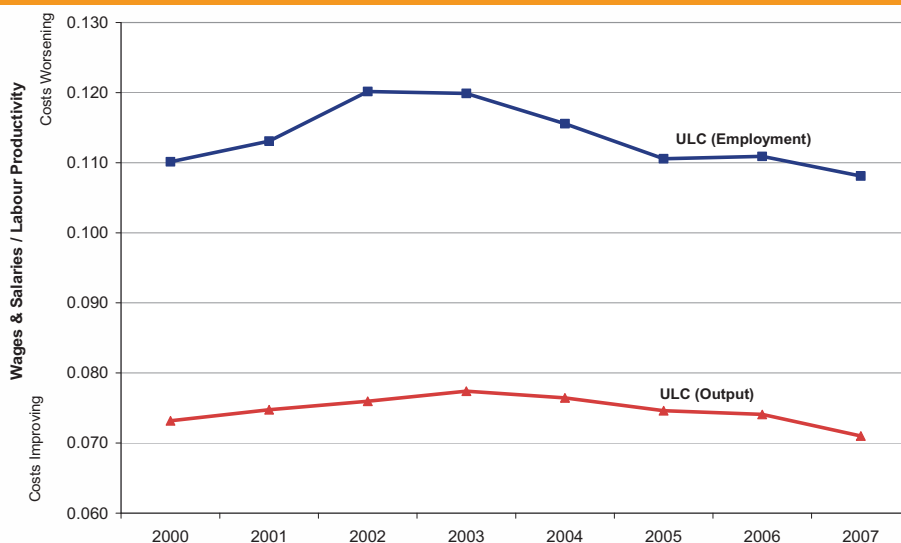
Source: Central Bank of Ireland

<sup>68</sup> Base year for ranking change is 2001.



### 3.3.2 Pay Costs

**Figure 3.26 Unit Labour Costs in the Manufacturing Sector, 2000-2007 Q2<sup>69</sup>**

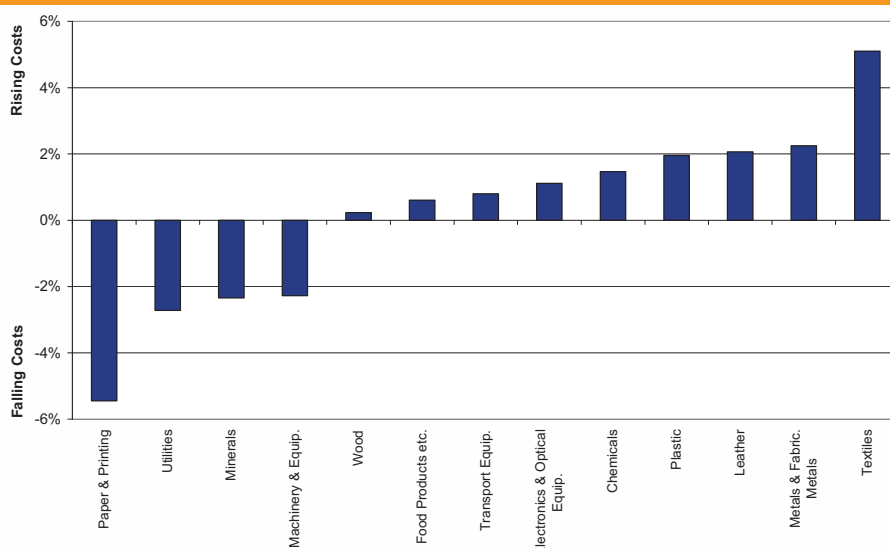


Unit labour costs (ULC) reflect relative changes in productivity and earnings. A downward trend indicates that productivity rose faster than wages, which is good for competitiveness. ULCs weighted by output and employment both suggest that manufacturing unit labour costs have not changed significantly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

Ranking: N/A

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

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



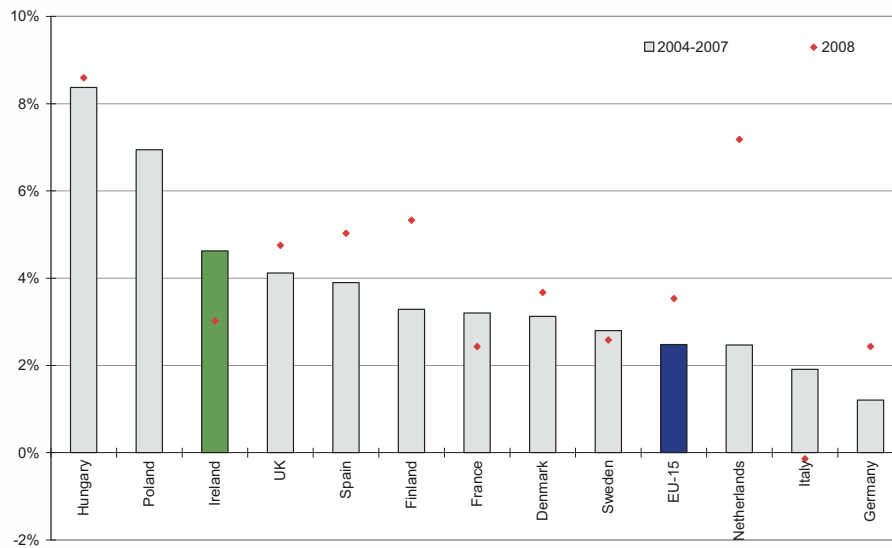
While average unit labour costs in manufacturing have not changed significantly, sectoral differences are apparent. Some Irish manufacturing sectors (e.g. paper and printing and utilities) have seen their ULCs fall since 2000. However, labour costs have risen faster than output in nine of the 13 sectors.

Ranking: N/A

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

<sup>69</sup> Gross Output in Food Products and Beverages data was unavailable for 2007 and therefore 2006 data was used in the calculation.

**Figure 3.28 Average Growth Rate in Labour Costs, 2004-2008**

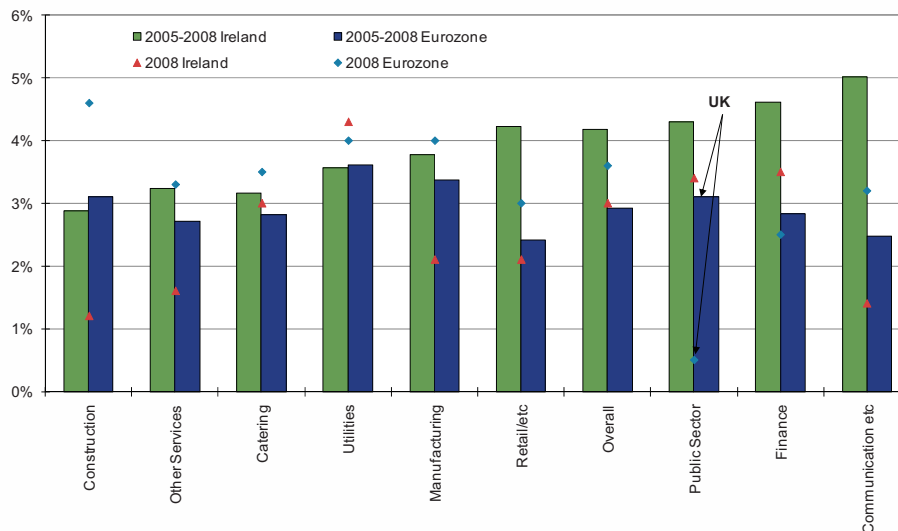


Labour cost growth rates show the change in the cost of employing workers over time. Ireland's growth rates exceeded the EU-15 average during 2004-2007. However, growth rates in Irish labour costs slowed significantly in 2008 and were lower than the EU average.

Ranking: N/A

Source: Eurostat, General and Regional Indicators

**Figure 3.29 Average Growth Rate in Labour Costs, by Sector, Ireland and the Eurozone, 2005-2008<sup>70</sup>**



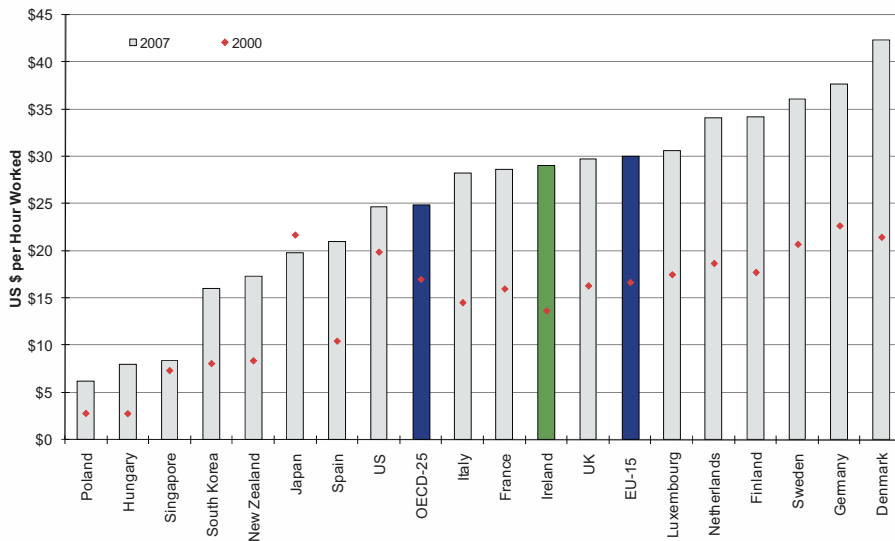
Irish wage growth was higher than the eurozone average in the majority of sectors during the 2005-2008 period overall. However, annual wage growth in Ireland fell significantly across all sectors excluding utilities in 2008.

Ranking: N/A

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

<sup>70</sup> Public sector comparison is made to UK growth in public sector wages due to data availability.

**Figure 3.30 Hourly Compensation Cost for Production Workers in Manufacturing (US\$), 2007<sup>71</sup>**

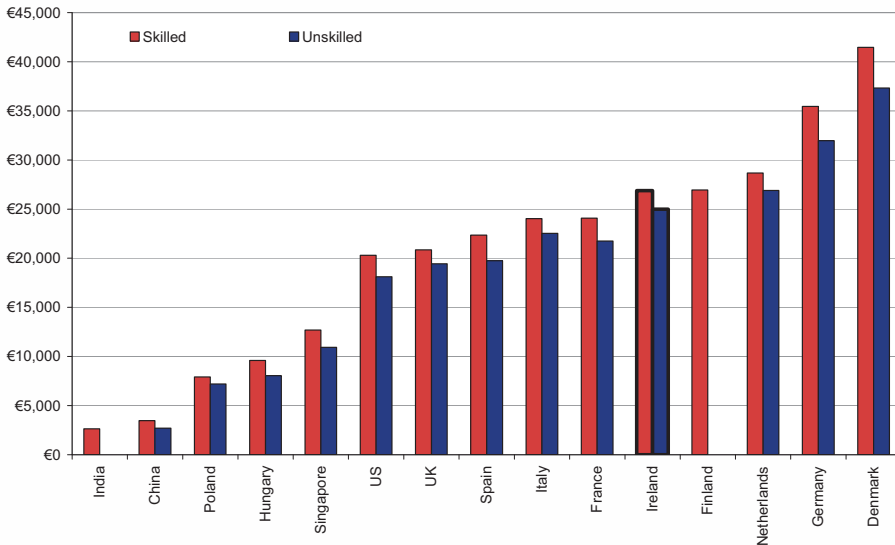


This indicator measures employee pay, employer's social insurance and other labour taxes per hour worked. In 2007 Ireland was more expensive than the OECD average and the US on this measure. However, the cost of employing a manufacturing worker in Ireland was marginally below the EU-15 average and significantly below that in Germany and Denmark.

**Ranking:** N/A

Source: US Bureau of Labour Statistics

**Figure 3.31 Wage Costs for Skilled and Unskilled Production Operatives, 2009**



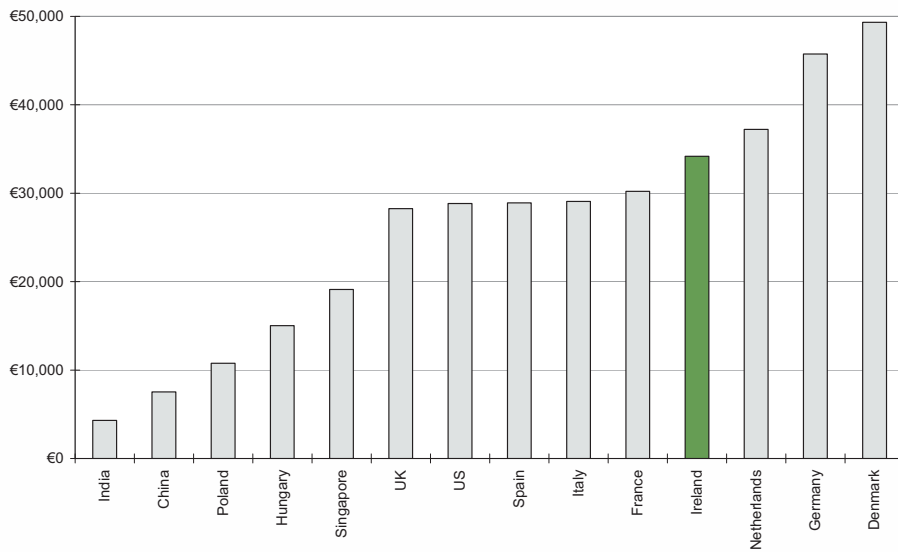
The wage cost differential between skilled and unskilled production operatives is 8% in Ireland, compared to 11% in Denmark and Germany. At both the skilled and unskilled level, wage rates in Ireland are among the most expensive of the countries benchmarked.

**Ranking:**  
 Skilled: 11 of 14  
 Unskilled: 10 of 13

Source: Watson Wyatt, Global 50 Remuneration Report 2008/2009

<sup>71</sup> OECD-28 average minus Canada, Iceland and Slovakia.

**Figure 3.32 Wage Costs for Engineering Technicians, 2009**

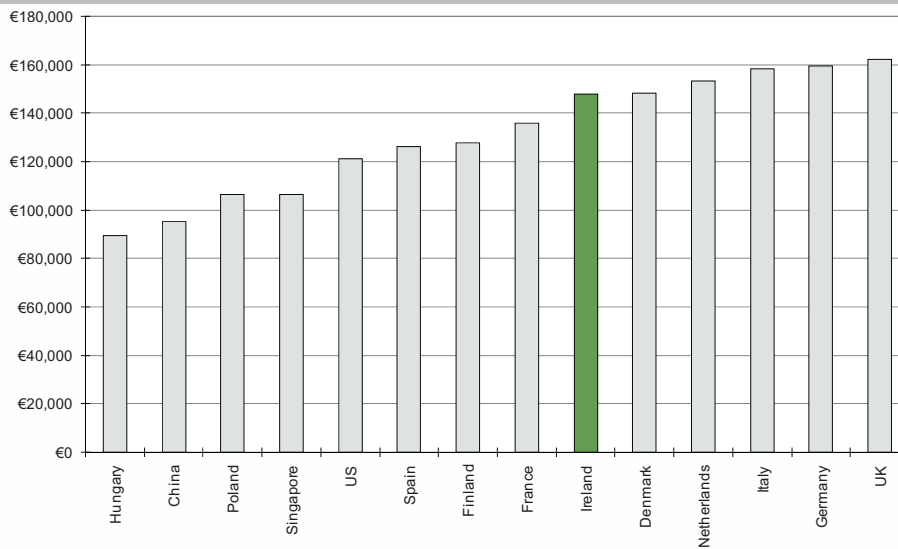


This indicator reflects the wage costs for an entry level engineering technician. Wages for this position are eight times higher in Ireland than in India. Irish wages for an engineering technician are, however, 44% lower than the most expensive country, Denmark.

**Ranking of 14:**  
11

Source: Watson Wyatt, Global 50 Remuneration Report 2008/2009

**Figure 3.33 Wage Costs for Head of Finance, 2009**

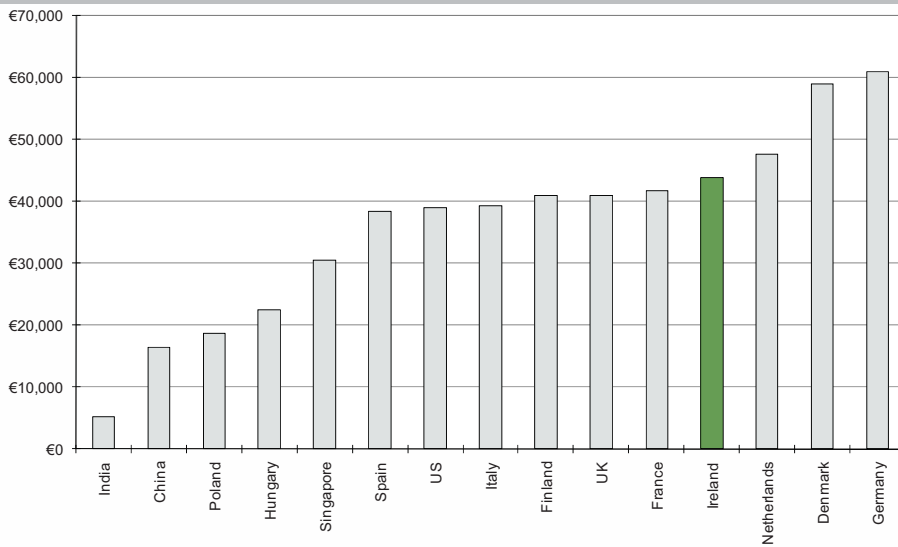


This indicator reflects the wage costs for a head of finance that controls the financial function in small-to-medium sized firms. Ireland ranks as the sixth most expensive for wage costs for this occupation. However, Ireland remains 9% cheaper than the UK, the most expensive location.

**Ranking of 15:**  
10

Source: Watson Wyatt, Global 50 Remuneration Report 2008/2009

**Figure 3.34 Wage Costs for ICT System Analyst / Programmer, 2009**



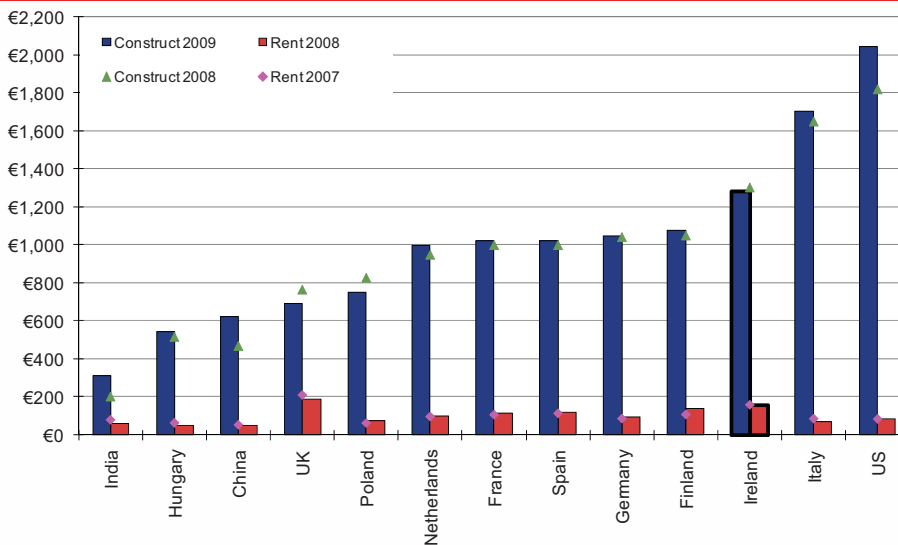
This indicator reflects the wage costs for a systems analyst/ programmer with three to five years experience and works under the guidance of a senior analyst. Ireland is the fourth most expensive location benchmarked for employing systems analysts. However, Ireland is 23% cheaper than Germany, the most expensive location.

**Ranking of 15:**  
12

Source: Watson Wyatt, Global 50 Remuneration Report 2008/2009

### 3.3.3 Non-Pay Costs

**Figure 3.35 Cost (per m<sup>2</sup>) to Construct and Rent a Prime Industrial Site, 2007-2009<sup>72</sup>**



Ireland is the third most expensive location to build a prime industrial site, which is relatively unchanged from 2008 levels.

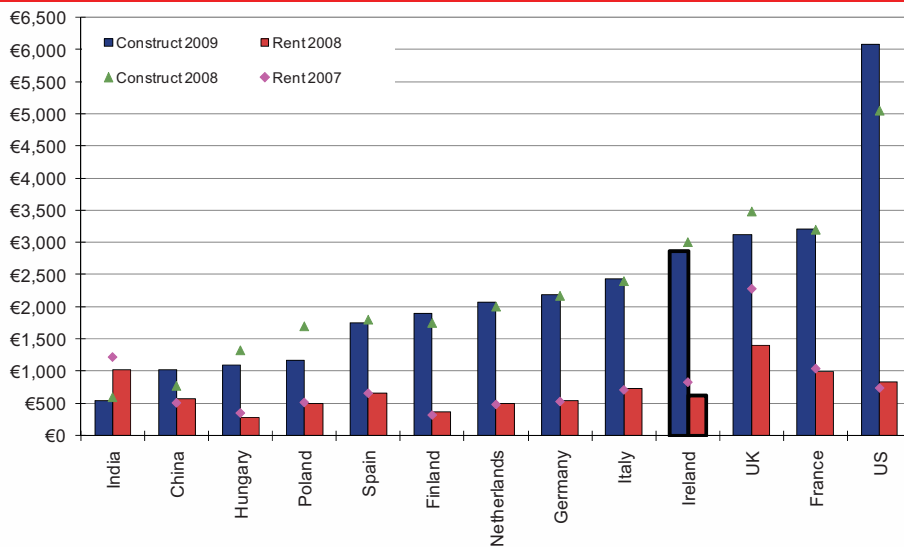
Ireland is the second most expensive location for renting a prime industrial site. While rental costs in Ireland fell by 1.3% in 2008, costs in the UK, the most expensive, location fell by 12.5%.

**Ranking:** Construction cost (2009): 11 of 13  
Rental cost (2008): 13 of 14

Source: Gardner and Theobald International Construction Costs Survey 2009; Cushman and Wakefield, Industrial Rents Around the World 2009

<sup>72</sup> Prime sites refer to those in the most expensive location within the country. Irish figures refer to prime location sites in Dublin.

**Figure 3.36 Cost (per m<sup>2</sup>) to Construct and Rent an Office Space, 2007-2009<sup>73</sup>**



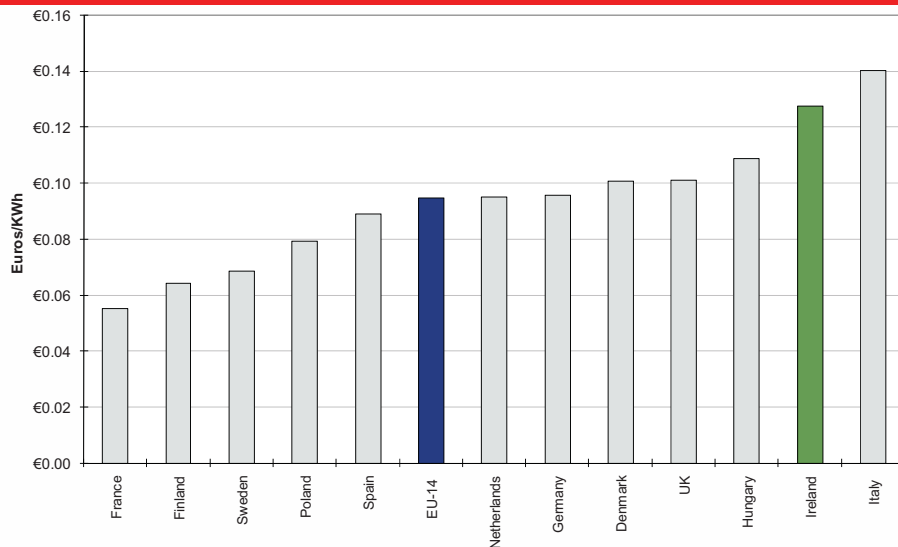
Ireland is the fourth most expensive location to construct a prime office site. The cost of construction in Ireland fell by 5% between 2008 and 2009, while costs in the UK fell by 11%.

Prime office site rental rates improved significantly between 2007 and 2008. The Irish rental cost per metre squared declined by 25% in 2008.

**Ranking<sup>74</sup>:** Construction Cost (2009): 10 of 13  
Rental Cost (2008): 8 of 14

Source: Gardner and Theobald International Construction Costs Survey 2009; Cushman and Wakefield, Industrial Rents Around the World 2009

**Figure 3.37 Industrial Electricity Prices (excluding VAT but including all other taxes), 2008<sup>75</sup>**



Ireland has the second most expensive industrial electricity prices of the EU-14. High industrial electricity prices are being driven by a number of factors including our reliance on imported fossil fuels, and the relatively small scale of Irish generation plants. Prices have fallen by at least 10% in Ireland in 2009 as international fuel price reductions are passed through to customers.

**EU-14 Ranking: 13**

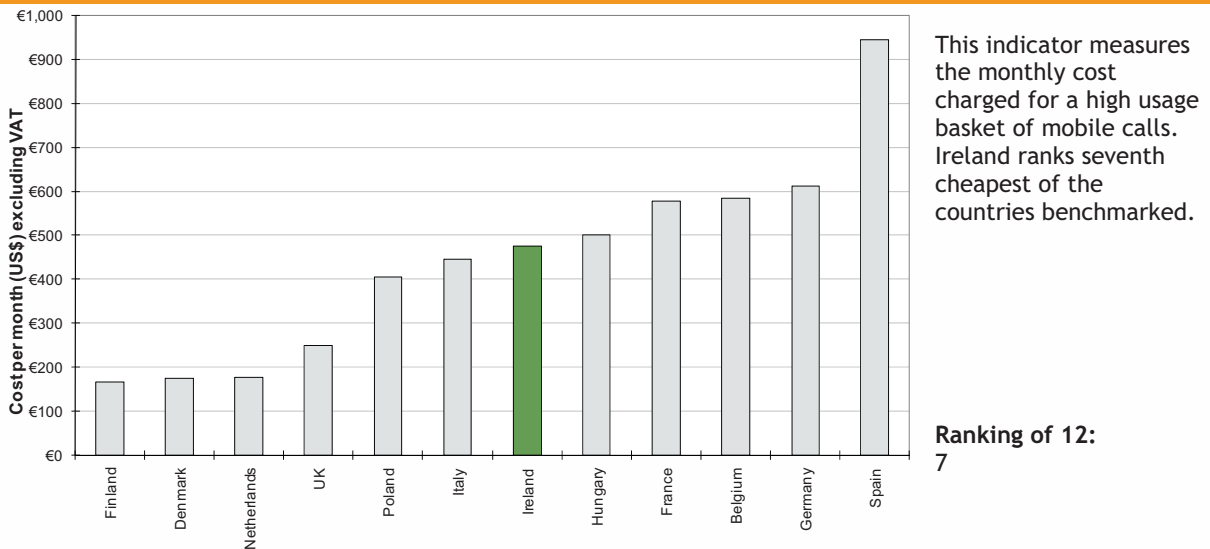
Source: Eurostat, Environment and Energy

<sup>73</sup> Prime sites refer to those in the most expensive location within the country. Irish figures refer to prime location sites in Dublin.

<sup>74</sup> Traffic Light determined based on construction cost ranking.

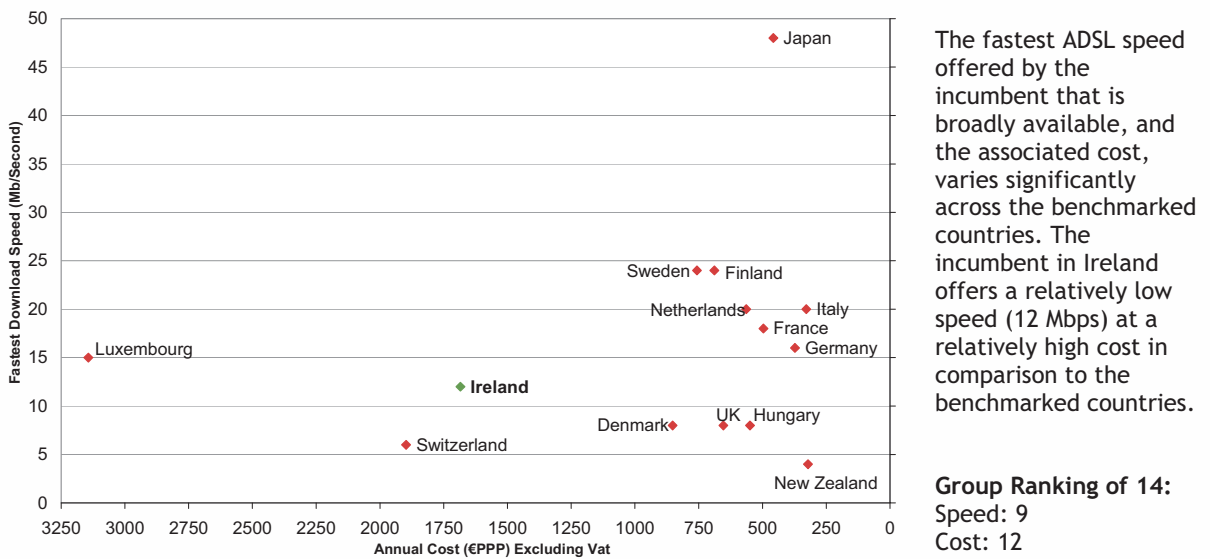
<sup>75</sup> Data is for the second half of 2008 except for Italy which refers to the second half of 2007 due to data availability. EU-14 average is EU-15 minus Luxembourg.

**Figure 3.38 Mobile Telephone Costs, High Usage Basket (US\$), excluding VAT, 2009<sup>76</sup>**



Source: Teligen

**Figure 3.39 Fastest ADSL Business Download Speed Available by the Incumbent and Annual Cost (excl. VAT, €PPP), October 2008<sup>77</sup>**

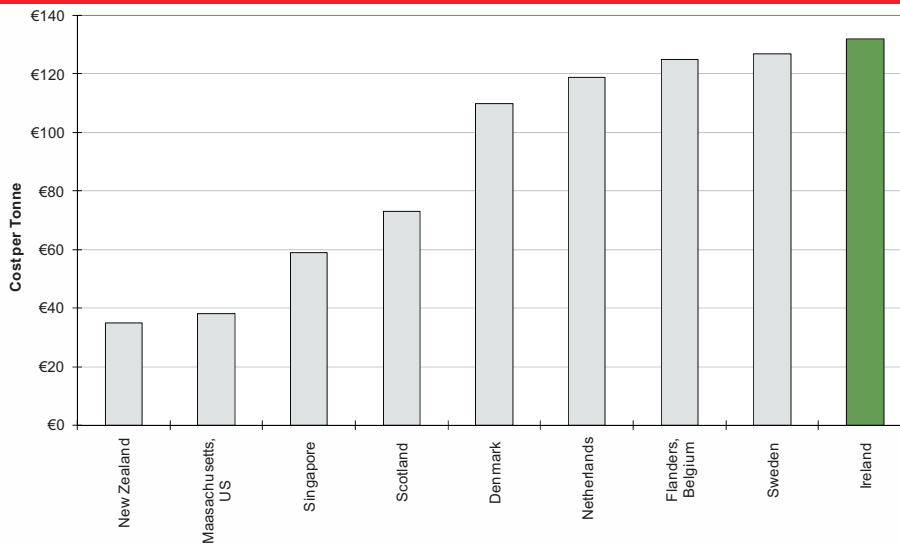


Source: Teligen

<sup>76</sup> The OECD high usage mobile monthly basket is comprised of 1680 outgoing calls, 660 SMS and 12 MMS per month.  
<sup>77</sup> Traffic light determined based on the 'cost' ranking.



**Figure 3.40 Waste Disposal Costs (per tonne), 2008**

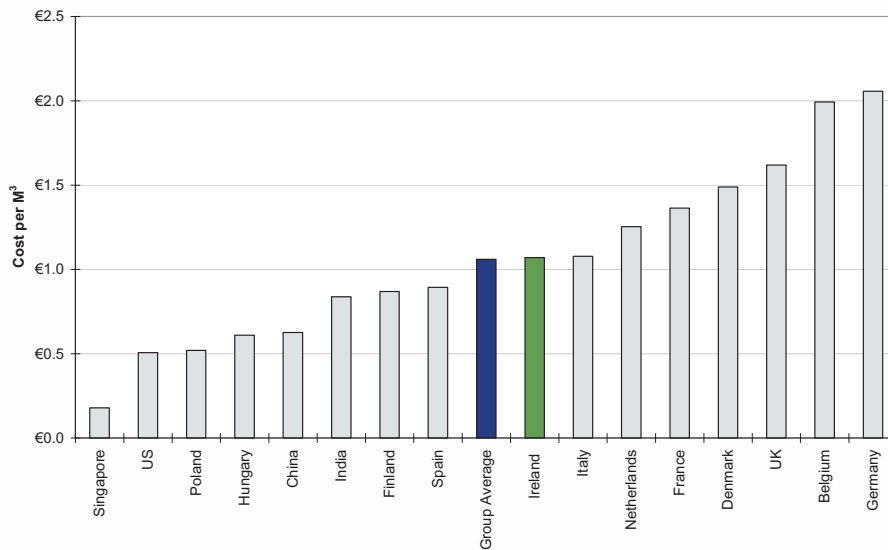


Waste disposal costs measure the cost of disposing of a tonne of non-hazardous waste into landfill. The costs shown include taxes. Ireland is the most expensive of the locations benchmarked. It should be noted that costs in Ireland vary significantly by local authority and that the market prices have fallen recently due to the recession.

**Ranking of 9:**  
9

Source: Forfás Waste Study, 2009

**Figure 3.41 Water Costs (per metre cubed), 2008**

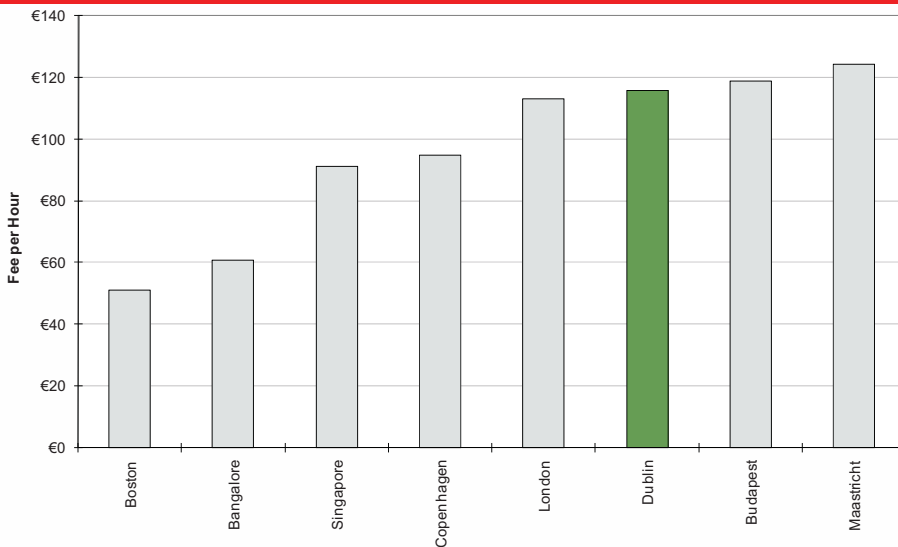


Water costs measure the cost for industrial users per metre cubed. It does not include the cost of waste water services. Ireland ranks as the eight most expensive of the locations benchmarked. It should be noted that costs in Ireland vary significantly by local authority.

**Ranking of 16:**  
9

Source: EIU World Investment Services; Department of Environment, Heritage and Local Government

**Figure 3.42 Accountancy Fees per Hour, 2008**

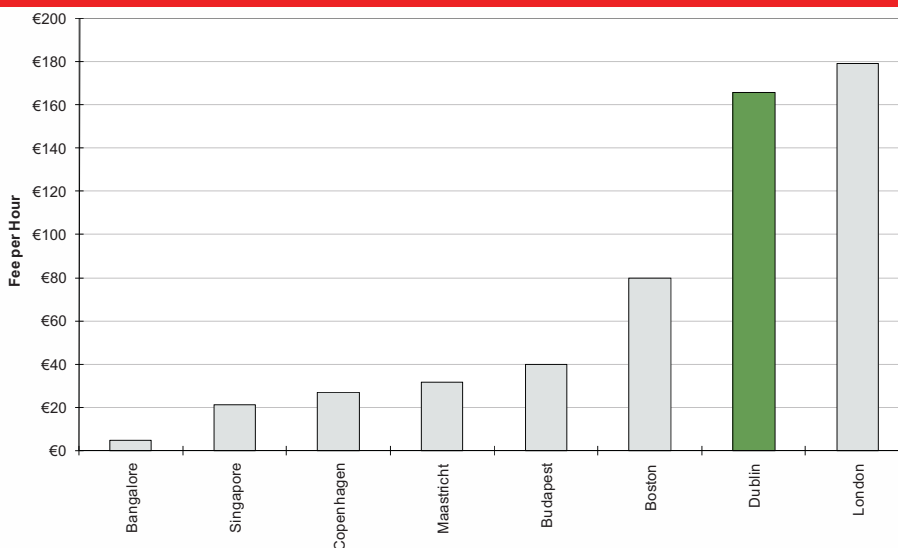


Accountancy fees measure the hourly fee charged by a major international accounting firm for a junior accountant. In 2008, Dublin was marginally less expensive than the most expensive locations, Maastricht and Budapest.

**Ranking of 8: 6**

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

**Figure 3.43 IT Fees per Hour, 2008**

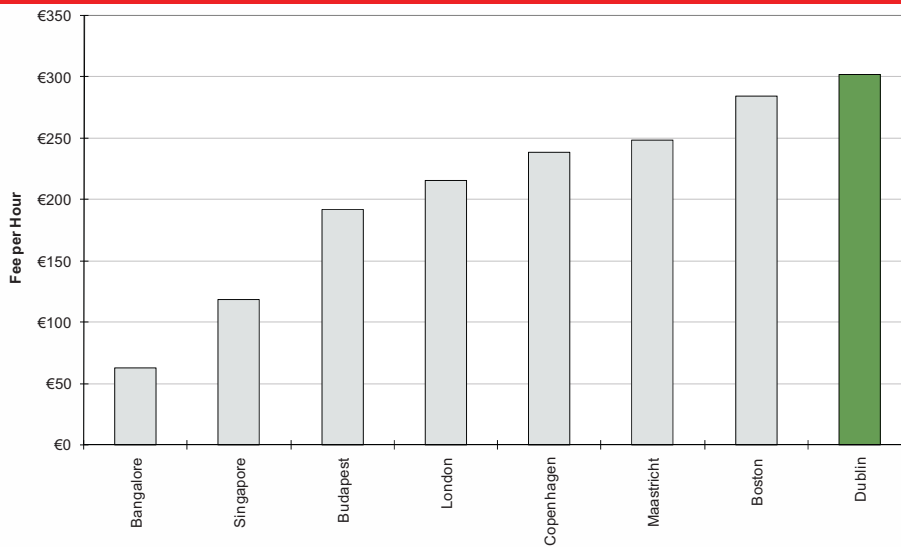


This chart measures the cost of ad-hoc on-site IT services per hour. Dublin was the second most expensive of the locations benchmarked. In 2008, Dublin was the second most expensive of the locations benchmarked. Only London was more expensive.

**Ranking of 8: 7**

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

**Figure 3.44 Legal Fees per Hour, 2008**

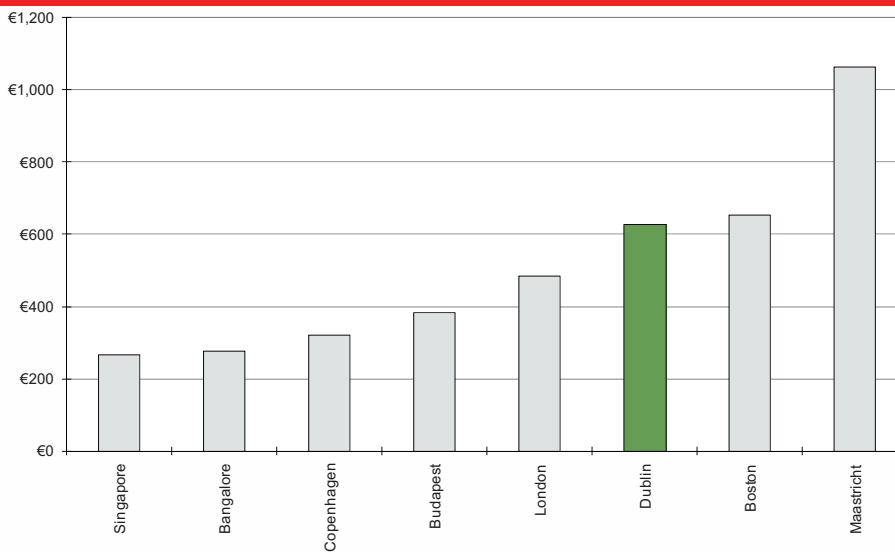


This chart measures the cost charged by a major legal company for a junior legal assistant per hour excluding VAT. In 2008, Dublin was the most expensive city benchmarked.

**Ranking of 8: 8**

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

**Figure 3.45 Health Insurance Costs, 2008**

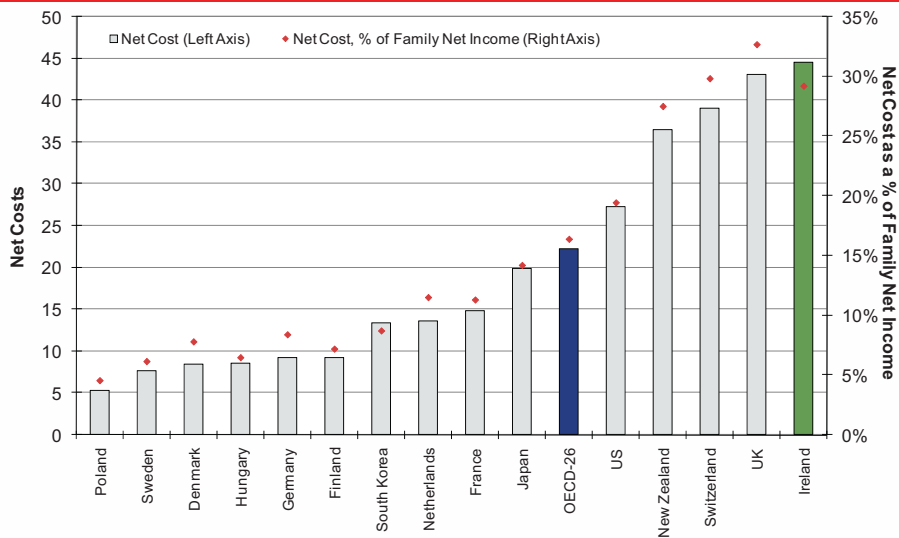


Health insurance costs are relatively expensive in Ireland when compared internationally. Of the locations benchmarked in 2008, Dublin was the third most expensive.

**Ranking of 8: 6**

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

**Figure 3.46 Net Childcare Costs for a Two-earner Couple, 2004<sup>78</sup>**



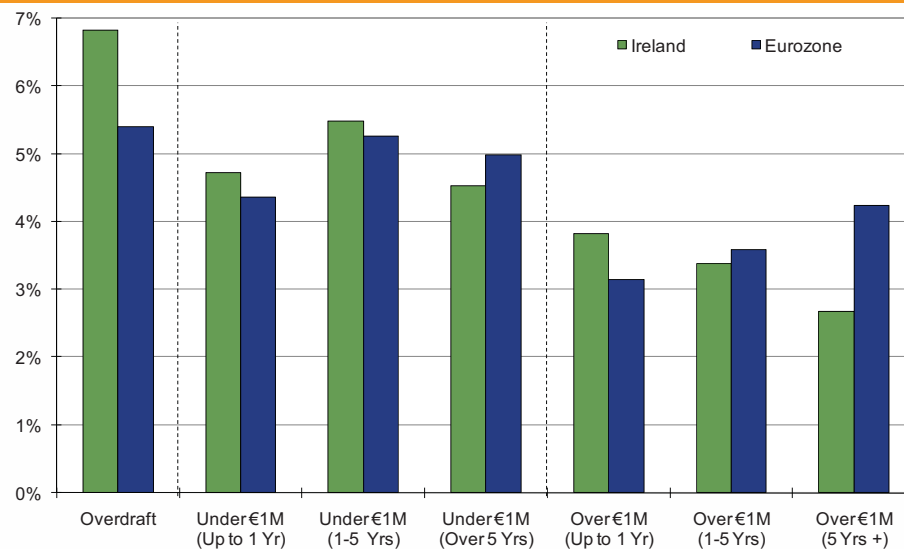
As illustrated on the left axis, Ireland ranks as the most expensive country in the OECD-26 for net childcare costs (childcare fees minus childcare benefits, rebates, tax reductions and other benefits) and the third most expensive for childcare costs as a percentage of family net income (right axis).

**OECD 26 Ranking:**  
Net Childcare Costs: 26

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

Source: OECD, *Benefits and Wages*, 2007

**Figure 3.47 Interest Rates Available to Non-Financial Corporations by Loan Type (i.e. loan size and duration), Ireland and the Eurozone, 2009 Q1**



This chart shows average interest rates available in Ireland and the Eurozone to non-financial corporations, by loan type. The majority of loan types in Ireland were more expensive than the Eurozone average in 2009 Q1. Although interest rates have fallen in Ireland and the Eurozone in recent months, the gap between Irish and Eurozone interest rates has not narrowed.

Ranking: N/A

Source: European Central Bank; Central Bank of Ireland

<sup>78</sup> 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.

## 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 important trends in Ireland's labour supply, as illustrated in Chart 3.D.

Ireland's labour force has grown in recent years, driven by both natural increases in the Irish-born population and inward migration (Fig 3.48, 3.54 and 3.55). In line with the slowdown in economic activity, the numbers unemployed have been rising rapidly since Q1 2008 (Fig. 3.48) while net migration into Ireland has been falling since 2007 (Fig. 3.54).

Numbers unemployed remained relatively constant until 2008 Q1, at which point, they began to increase (Fig. 3.48). While unemployment is increasing in many countries, Ireland's unemployment rate is now significantly above the OECD average (Fig. 3.57). According to the CSO Live Register, unemployment reached 11.9 percent in June 2009<sup>79</sup>. Employment levels across all sectors of the Irish economy have fallen dramatically in 2008, particularly in the construction, industry and accommodation and food sectors (Fig. 3.51 and Fig. 3.52). The ESRI forecast that the unemployment rate will increase to 12.6 percent in 2009 and 16.1 percent in 2010<sup>80</sup>.

Unemployment has increased more rapidly for workers with lower educational attainment (Fig. 3.58). In addition, younger workers have experienced more dramatic increases in unemployment compared to older, more experienced workers (Fig. 3.59). The regional variance in the unemployment rate ranges from 6.3 percent in Northern Ireland to 11.7 percent in the Midlands region (Fig. 3.60).

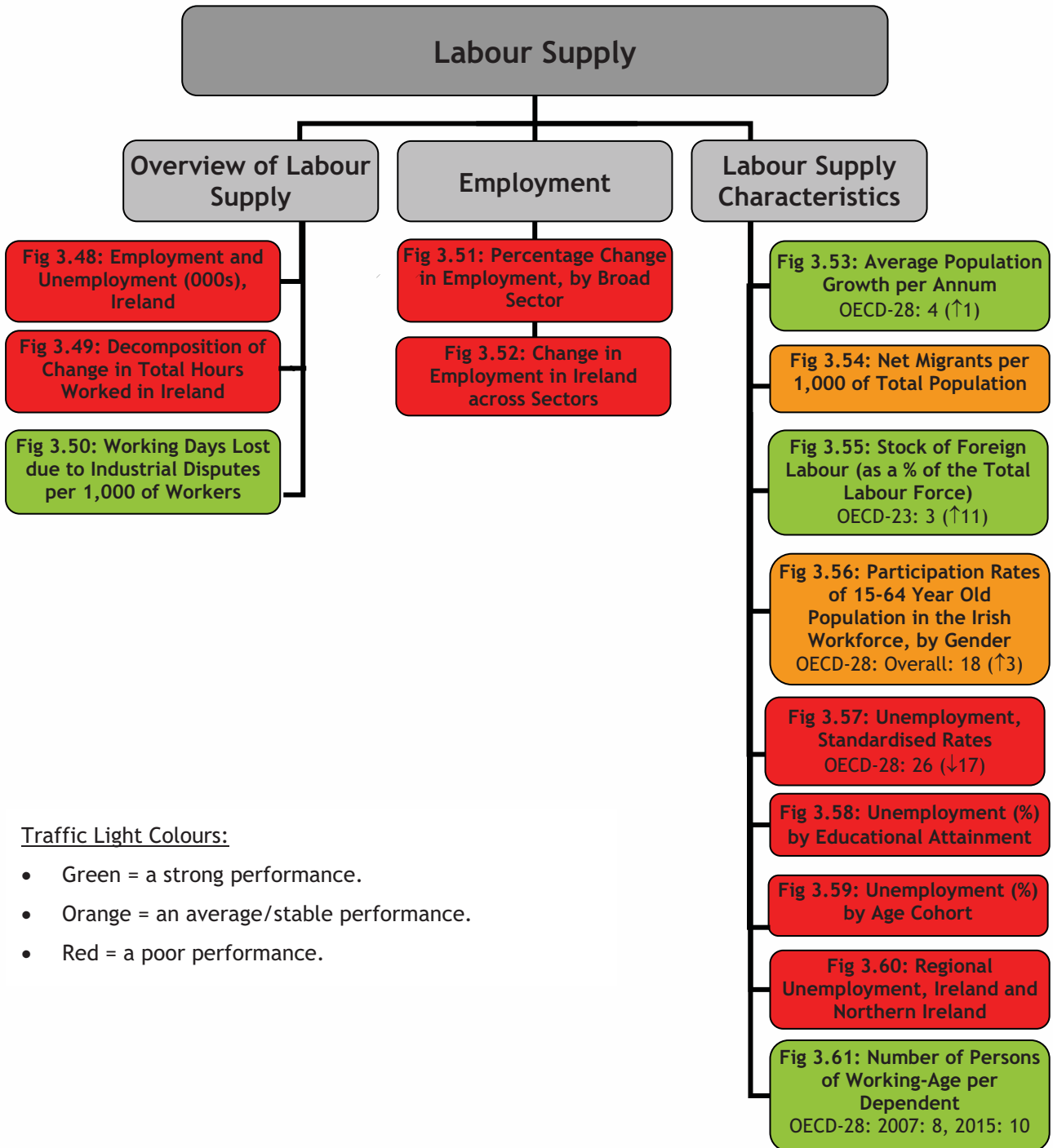
Increased net migration has resulted in foreign workers comprising a greater share of the Irish labour force in recent years (Fig. 3.55). However, since 2007 there has been a dramatic fall in net migration, driven by rising unemployment (Fig. 3.54). The ESRI has forecast net outward migration of 30,000 for 2009. 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. 3.61).

---

<sup>79</sup> The CSO Live Register provides an estimate of unemployment. The CSO QNHS is the official measure of unemployment.

<sup>80</sup> ESRI, Quarterly Economic Commentary, Summer 2009.

Chart 3.D



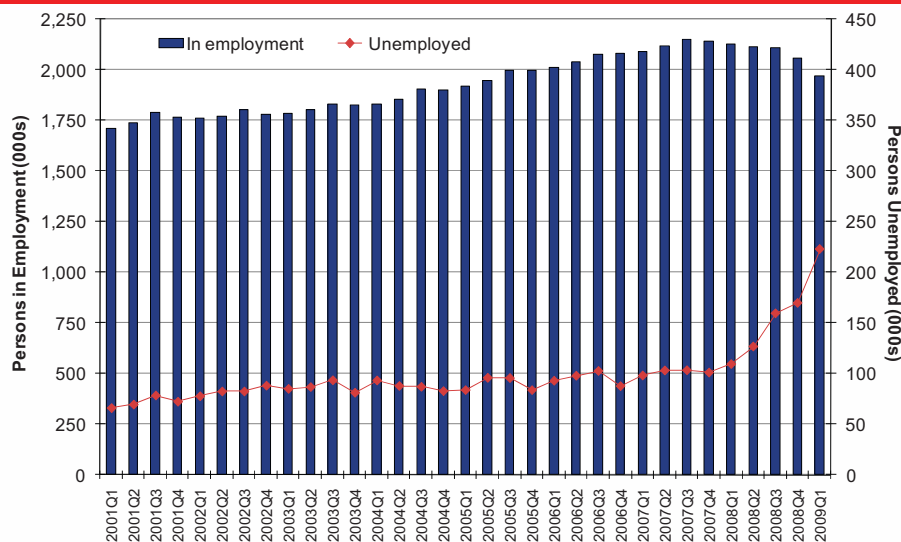
Traffic Light Colours:

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

## 3.4. Labour Supply

### 3.4.1 Overview

**Figure 3.48 Employment and Unemployment (000s), Ireland 2001 Q1-2009 Q1**



The numbers in employment increased steadily between 2001 and 2008 Q1. Numbers unemployed also remained relatively constant until 2008 Q1, at which point, they began to increase rapidly. This situation looks likely to deteriorate further in 2009. The ESRI has forecast an increase in unemployment to 12.6% in 2009 and 16.1% (347,800 people) by the end of 2010<sup>81</sup>.

Ranking: N/A

Source: Forfás calculations; CSO, QNHS

**Figure 3.49 Decomposition of Change in Total Hours Worked in Ireland, 2000-2008**



Changes in total hours worked depend on a wide variety of factors. Natural population growth and migration-induced increases in population contributed positively to the change in total hours worked in 2008. However, this effect was outweighed by the negative contribution of unemployment and participation and a reduction in average hours worked.

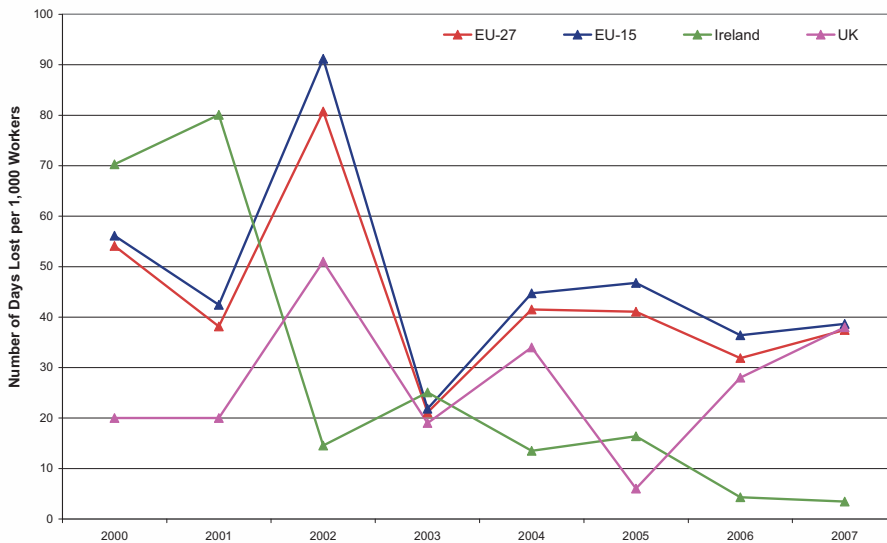
Ranking: N/A

Source: Forfás calculations; CSO, QNHS; OECD.Stat Labour

81 ESRI, Quarterly Economic Commentary, Summer 2009.



**Figure 3.50 Working Days Lost due to Industrial Disputes per 1,000 of Workers, 2000-2007**



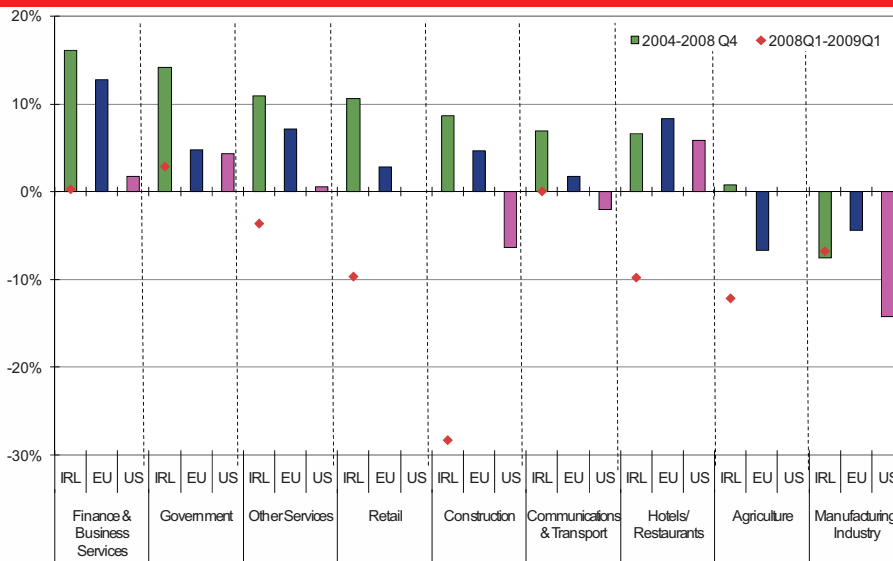
Industrial disputes in Ireland, the US and the EU have varied significantly over the 2000-2007 time period. In 2007, Irish organisations lost fewer working days per 1,000 workers as a result of industrial disputes than in the comparator countries.

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, 2004-2008 Q4<sup>82</sup>**



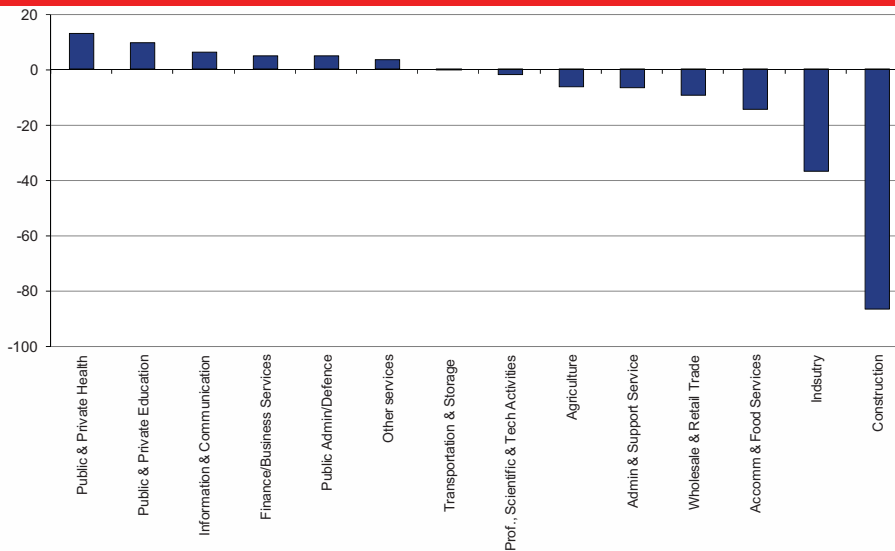
Overall, employment in Ireland increased faster than either the EU or US during 2004-2008 Q4. At a sectoral level, employment growth in finance and business services, government, 'other services' and retail in Ireland outstripped the EU-15 and US during 2004-2008 Q4. However, employment levels across all sectors of the Irish economy have fallen dramatically during 2008, particularly in the construction, agriculture, catering and retail sectors.

Ranking: N/A

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

<sup>82</sup> NAICS codes used in the US differ from the NACE codes used in European countries and therefore data has been adjusted accordingly. Data for the US refers to 2009 Q1. 2008 Q1-2009 Q1 data for Ireland is based on NACE Revision 2 Methodology.

**Figure 3.52 Change in Employment in Ireland across Sectors (000s), 2007 Q1-2009 Q1<sup>83</sup>**



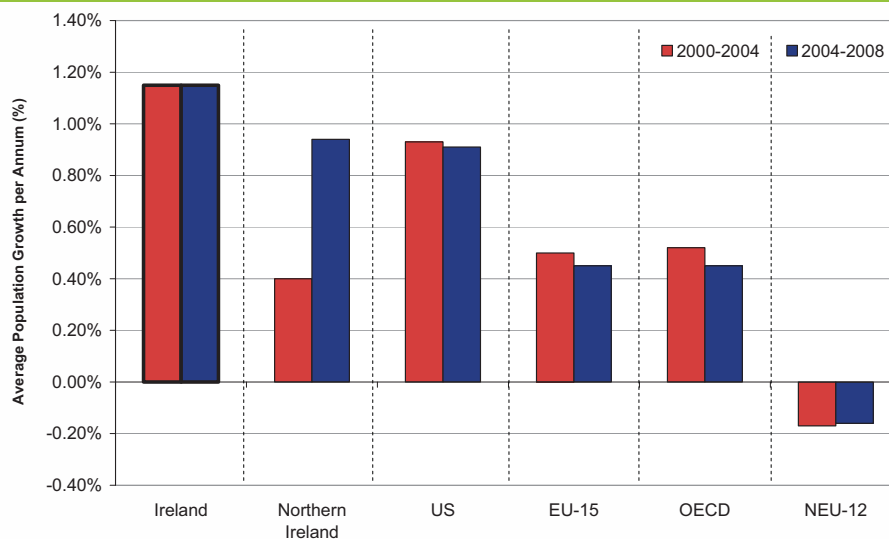
This chart shows the number of jobs created across sector in Ireland during 2007 Q1-2009 Q1. Employment grew in the education and health sectors, while the construction and industry sectors declined dramatically. In particular, there were 86,700 fewer jobs in construction in 2009 Q1 compared to the employment peak in 2007 Q1 when 270,700 people were employed in construction.

Ranking: N/A

Source: Forfás calculations; CSO, QNHS

### 3.4.3 Labour Supply Characteristics

**Figure 3.53 Average Population Growth per Annum, 2001-2008**



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<sup>84</sup>:  
4 (↑1)

Source: Forfás calculations; Groningen Growth & Development Centre, Total Economy Database, January 2009; Northern Ireland Statistics and Research Agency

<sup>83</sup> Of the 22,700 jobs created in the health and social work and education sectors in 2007 Q1-2009 Q1, 7,800 were created in the public sector. Due to data availability issues, it remains unclear how many private sector jobs in health and social work and education receive public funding.

<sup>84</sup> Base years for ranking change is 2000-2004 compared to 2004-2008. The growth rate for Northern Ireland refers to 2004-2007 due to data availability.

**Figure 3.54 Net Migrants per 1,000 of Total Population, 2002-2008**

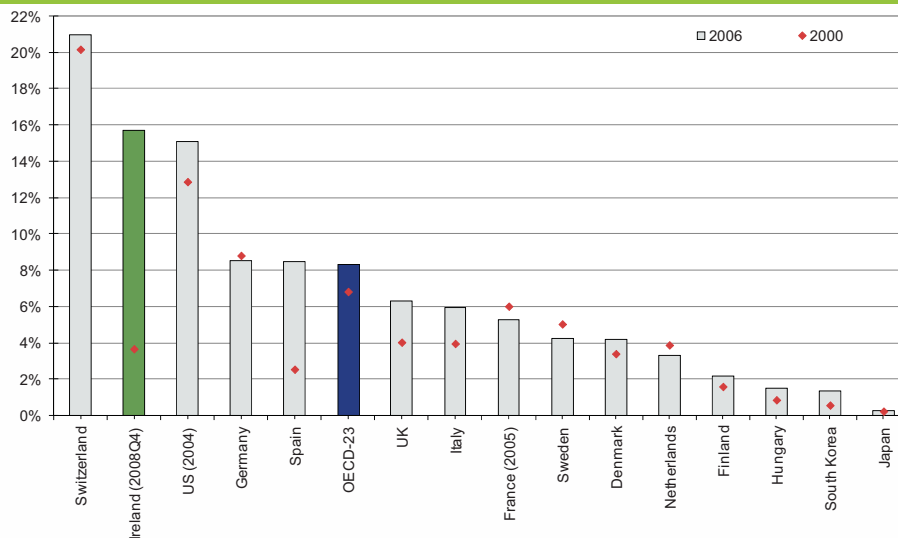


Between 2004 and 2006 net migrants per 1,000 of the Irish population increased significantly. However since 2007 there has been a dramatic fall in net migration, driven by increasing unemployment. There was a significant decrease in the number of PPS numbers issued to non-Irish nationals during 2008, in particular those from EU accession countries. The ESRI has forecast net outward migration of 30,000 for 2009<sup>85</sup>.

**Ranking:** N/A

Source: CSO, Population Estimates and Census Data

**Figure 3.55 Stock of Foreign Labour (as a % of the Total Labour Force), 2006<sup>86</sup>**



Foreign workers comprise 15.4% of the Irish labour force in 2009 Q1 compared to 3.6% in 2000. A more detailed breakdown of Irish statistics reveals that 46% of these foreign workers are from the 12 new EU member states. The rest of this cohort comprise of EU-15 (11%), UK (17%) and non-EU nationals (26%).

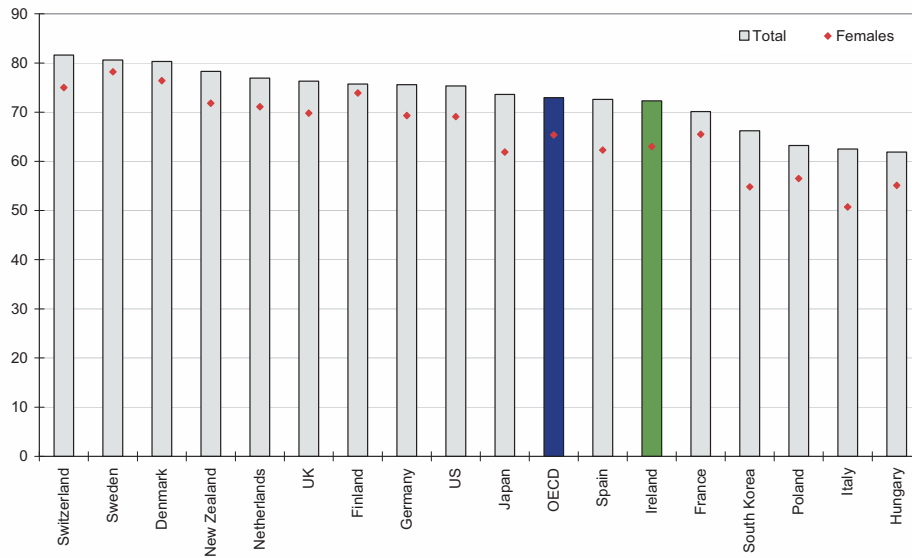
**OECD-23 Ranking:** 3 (↑11)

Source: CSO, QNHS; OECD, International Migration Outlook, 2008

<sup>85</sup> ESRI, Quarterly Economic Commentary, Summer 2009.

<sup>86</sup> OECD-28 average minus Australia, Canada, Iceland, New Zealand, and Poland.

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

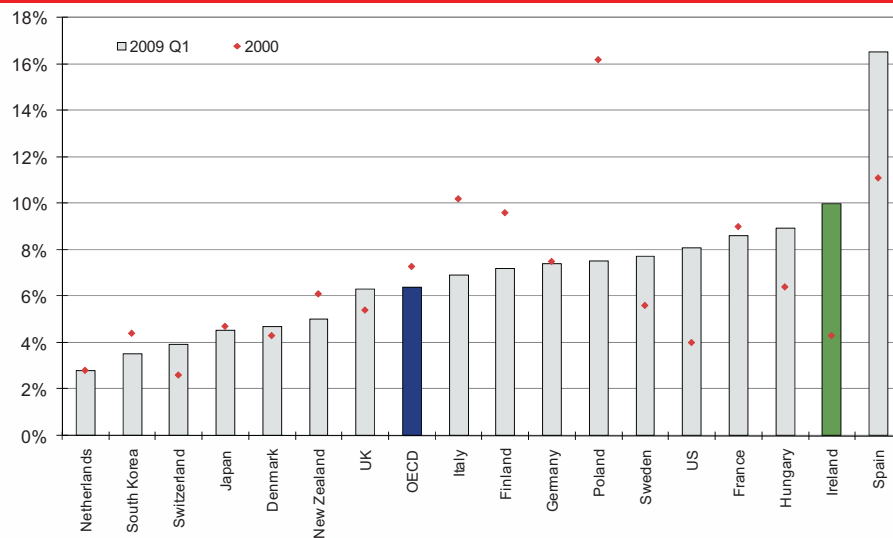


Irish participating rates were converging on the OECD average in 2007, but the gap between female participation in Ireland and leading countries such as Sweden and Denmark remains considerable, particularly for older female workers. Increasing number of people unemployed in 2009 may lead to a fall in participation rates.

**OECD-28 Ranking<sup>87</sup>:**  
 Overall: 18 (↑3)  
 Males: 16 (--)  
 Females: 17 (↑4)

Source: Forfás calculations; OECD, Employment Outlook 2008

**Figure 3.57 Unemployment, Standardised Rates, 2009 Q1<sup>88</sup>**



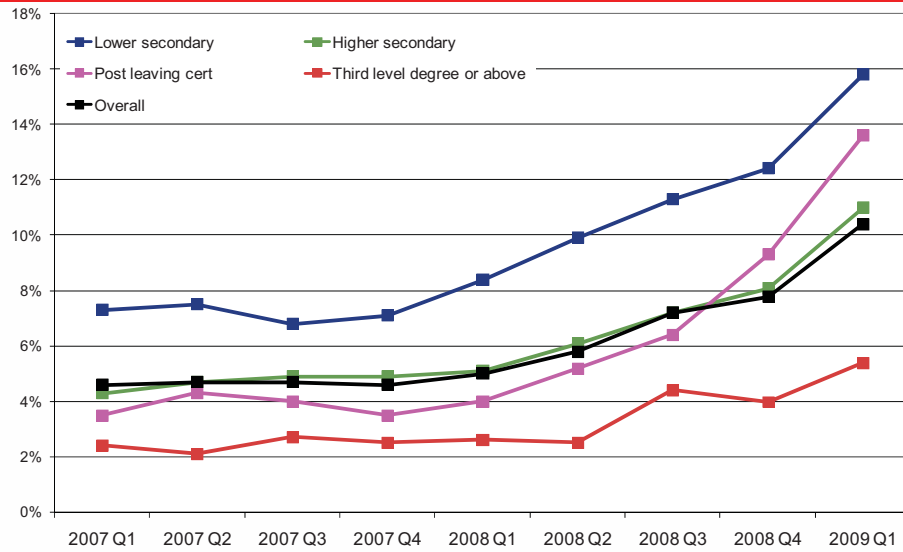
While unemployment is increasing in many countries, Ireland's unemployment rate is rising faster and is now significantly above the OECD average. The ESRI is forecasting that the unemployment rate will increase to 12.6% in 2009 and 16.1% in 2010<sup>89</sup>.

**OECD-28 Ranking:**  
 26 (↓17)

Source: OECD Stat.Extracts, Labour; CSO QNHS

<sup>87</sup> Base year for ranking change is 2003 compared to 2007.  
<sup>88</sup> 2008 Q4 data is used where 2009 Q1 data is unavailable.  
<sup>89</sup> ESRI, Quarterly Economic Commentary, Summer 2009.

**Figure 3.58 Unemployment (%) by Educational Attainment, 2007 Q1 - 2009 Q1**

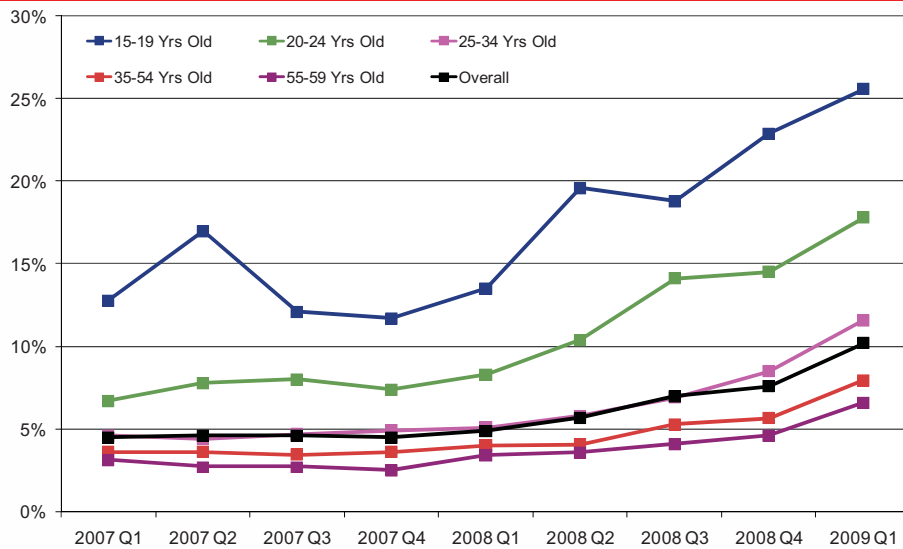


This chart illustrates that the rate of unemployment has increased more rapidly for workers with lower educational attainment. During 2007 Q1-2009 Q1, unemployment increased from 7.3% to 15.8% for those with lower secondary education in comparison to an increase from 2.4% to 5.4% over the same period for those with a third level degree

Ranking: N/A

Source: CSO, QNHS

**Figure 3.59 Unemployment (%) by Age Cohort 2007 Q1 - 2009 Q1**

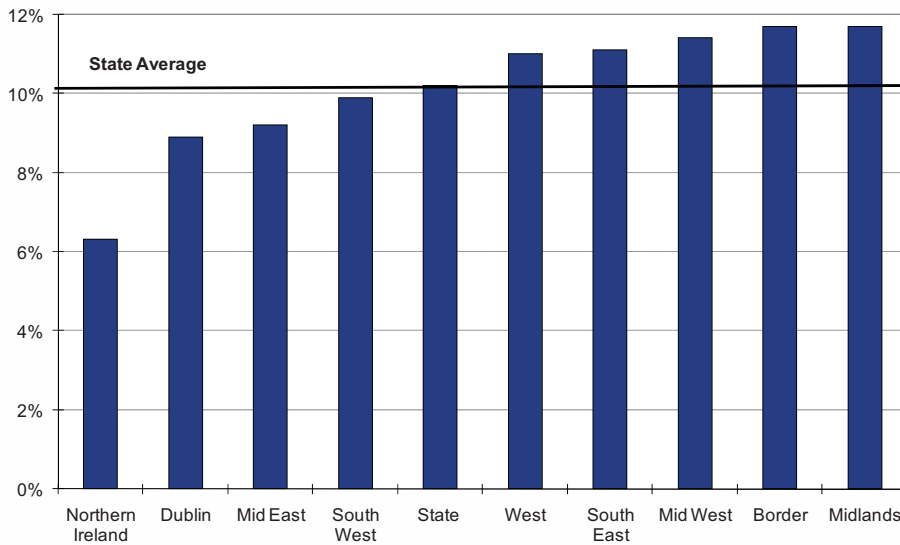


Younger workers of the Irish labour force have experienced more rapid increases in unemployment compared to older, more experienced workers since 2008 Q1. The unemployment rate more than doubled across all age categories between 2007 Q1 and 2009 Q1.

Ranking: N/A

Source: CSO, QNHS

**Figure 3.60 Regional Unemployment, Ireland and Northern Ireland, 2009 Q1**

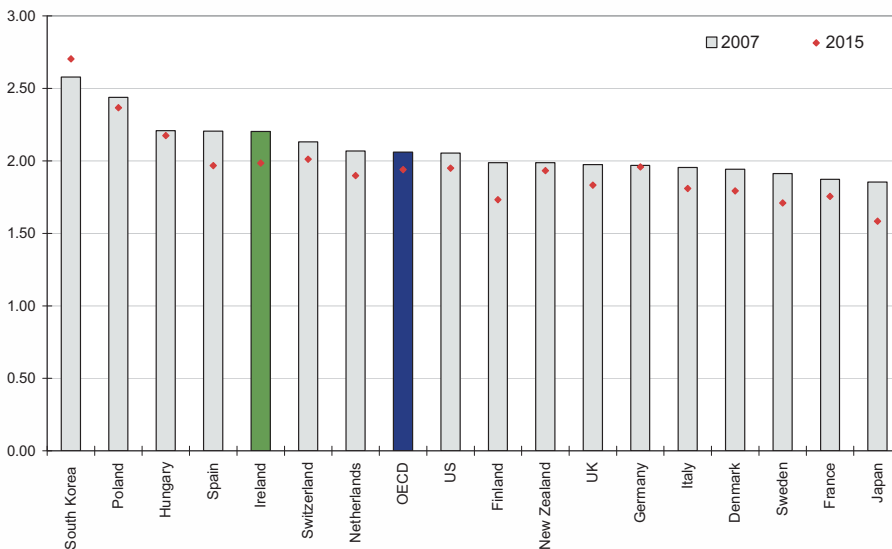


In 2009 Q1, unemployment was lowest in the Northern Ireland, Dublin and the Mid East. Unemployment rates in the South West are now close to the national average. The Midlands and the Border regions have the highest regional unemployment rate.

Ranking: N/A

Source: Forfás calculations; CSO, QNHS; Northern Ireland Department of Enterprise, Trade & Investment, Labour Force Survey January - March 2009

**Figure 3.61 Number of Persons of Working-Age per Dependent, 2007**

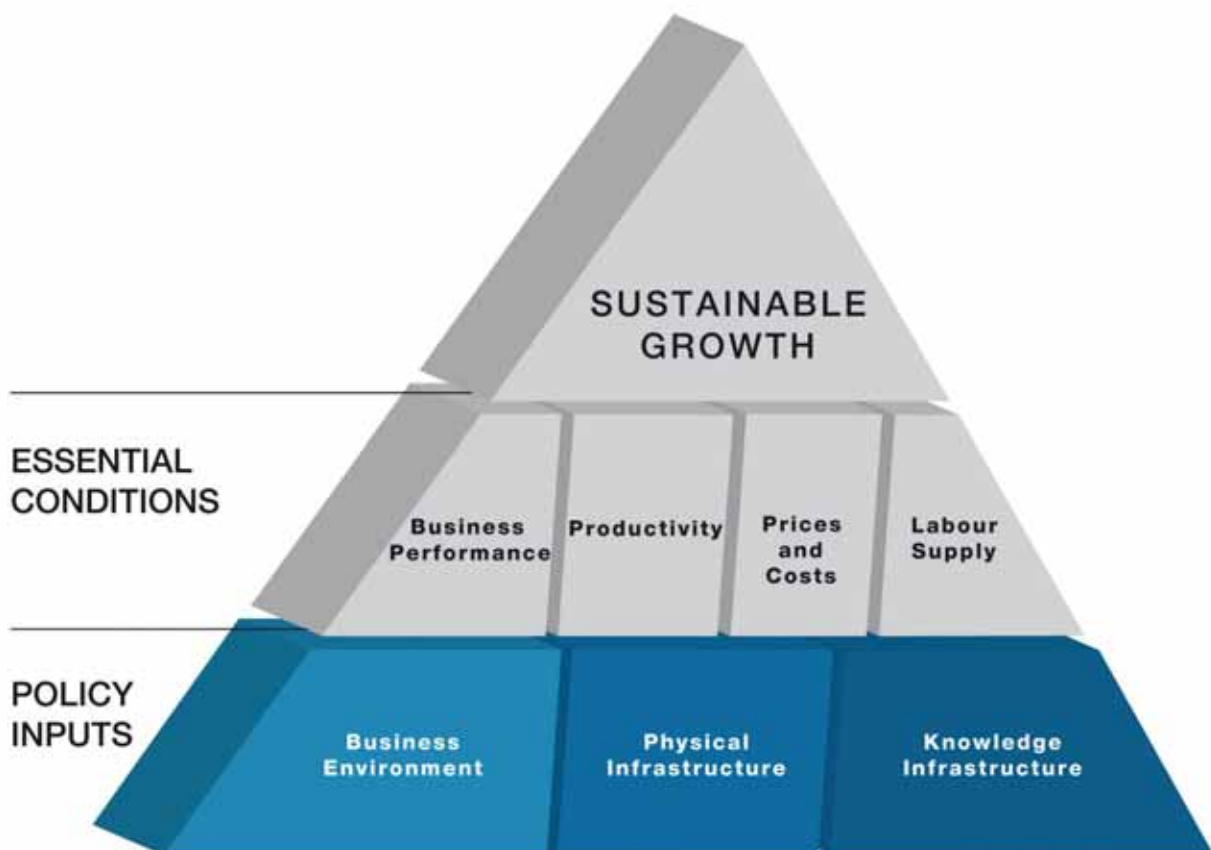


Economies with higher ratios of workers to dependents (children and retirees) are able to fund their social services more easily. Ireland's population is favourably structured, due to a peak in births in 1980. Projections for 2015 suggest there may be a slight decline in the ratio.

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 has 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

There has been a sharp drop in tax revenues in Ireland in 2008 and the first half of 2009. Tax revenues comprised just 26 percent of GNP in 2008 compared to gross voted current government expenditure of 34 percent of GNP (Fig. 4.01 and Fig. 4.02). Ireland's tax structure is much less dependent on social security contributions than elsewhere in Europe, raising over 80 percent of revenue instead from direct and indirect taxation (Fig. 4.03). 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. 4.05-4.07).

Ireland's total Exchequer revenue has become less reliant on income tax receipts over the period 1998-2007, though this will change following the increases in income and health levies introduced in the supplementary budget in April (Fig. 4.04). Indirect taxation rates are amongst the highest in the OECD, which affects consumer prices and tourism (Fig. 4.08). In recent years Ireland has relied heavily on transactions-based property taxes (including stamp duties and value added tax). The collapse of the property market has resulted in a sharp decline in revenue yields from property related taxes from €6.8 billion in 2006 to €3 billion in 2008 (Fig 4.09).

Ireland does not tax pollution directly, unlike some other countries (Fig. 4.10). Examining Government expenditure as a percentage of total expenditure for 2007, Ireland spent 12 percent of total expenditure on gross fixed capital formation, which compares very favourably to the EU-15 average of 5 percent (Fig. 4.11).

#### 4.1.2 Finance

Survey evidence suggests that access to finance is a significant competitiveness threat to Irish businesses. The global recession has resulted in sharp falls in the value of stock markets worldwide. However, the 68 percent fall in the value of the Irish stock exchange in 2008 was significantly more dramatic than in other developed economies (Fig 4.12). Confidence in the sustainability of the Irish banking sector has also declined (Fig. 4.13). Private equity investment is not as well developed in Ireland as it is in other countries (Fig. 4.14).

### 4.1.3 Regulation and Competition

The general regulatory environment in Ireland is perceived to be relatively strong (Fig. 4.15). Many of Ireland's most important internationally trading sectors (e.g. pharmaceuticals, medical devices, fund administration, software) 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. 4.16). In contrast, the financial and administrative costs of registering a property in Ireland are high (Fig 4.17). In relation to domestic competition, while competition legislation is perceived to be relatively efficient, incumbents still dominate the market in certain utilities - particularly in electricity and communications (Figs. 4.18 - 4.20). Ireland's protection of intellectual property has improved significantly in recent years, and is now at the OECD average (Fig. 4.22).

### 4.1.4 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. 4.23). The employment framework in Ireland is considered less rigid than the OECD average (Fig. 4.24). The minimum wage in Ireland is significantly higher than the majority of comparator countries (Fig. 4.25).

### 4.1.5 Social Capital

The public's trust in political and legal institutions compares relatively favourably with other EU countries (Fig. 4.26). Voter turnout in national parliamentary elections was slightly lower in Ireland than the EU-15 average in the period 2002-2007 (Fig. 4.27).

Chart 4.A

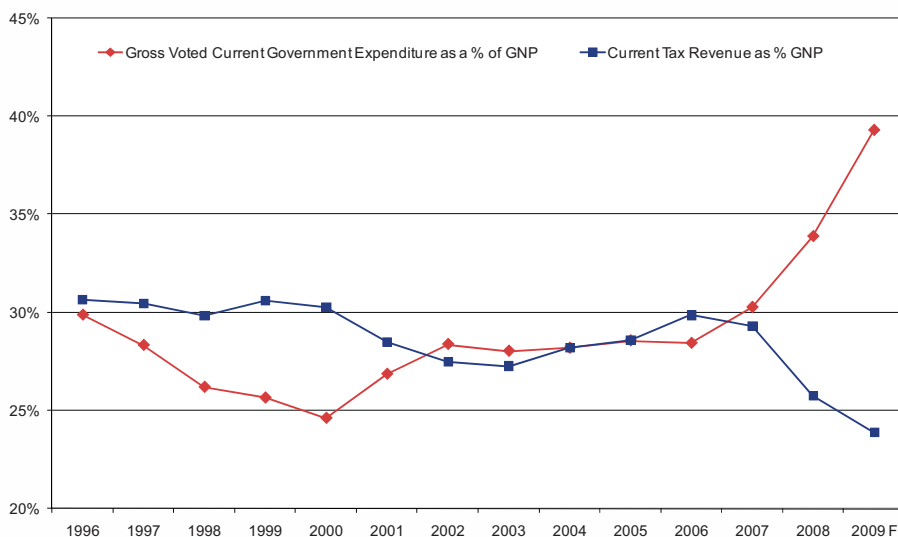
Business Environment



## 4.1 Business Environment

### 4.1.1 Taxation

**Figure 4.01: Gross Voted Current Government Expenditure and Exchequer Revenue (as a % of GNP) in Constant 2006 Prices, 1996-2009F**

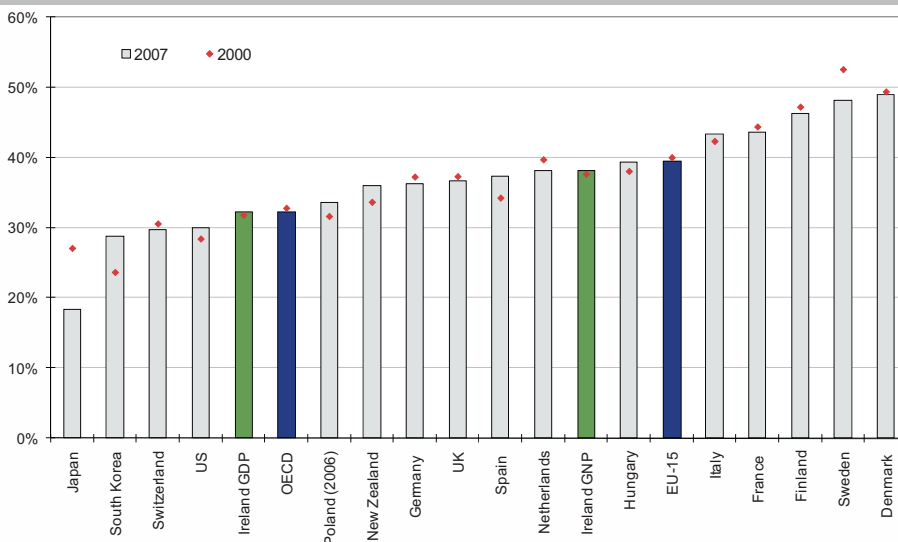


Gross voted current government expenditure is the part of government spending that government can control directly (excluding interest payments on the national debt). In 2008 this accounted for 34% of GNP (the highest share since 1987). Exchequer tax revenue (excluding PRSI and the health levy) declined sharply in 2008 and was only 26% of GNP.

Ranking: N/A

Source: Department of Finance, Budgetary Statistics, September 2008; Department of Finance, Macroeconomic & Fiscal Framework, Supplementary Budget, April 2009; CSO, National Accounts

**Figure 4.02 Total Tax Revenue (as a % of GDP), 2007<sup>90</sup>**



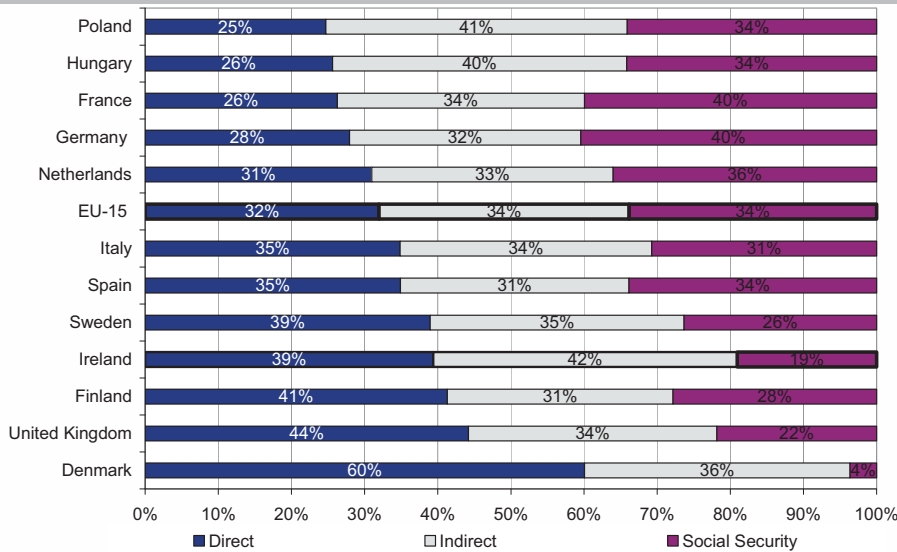
Ireland's tax take, as a proportion of its income (GNP) was above the OECD average in 2007 but below the EU-15 average. Total tax revenue taken as a proportion of GDP has remained relatively stable across the OECD and the EU-15 since 2000.

Ranking: N/A

Source: OECD, Revenue Statistics 1965-2007

<sup>90</sup> 2007 figures are provisional figures. Rankings incorporate the latest available data for countries that are unavailable for 2007.

**Figure 4.03 Breakdown of Government Revenue, 2007**

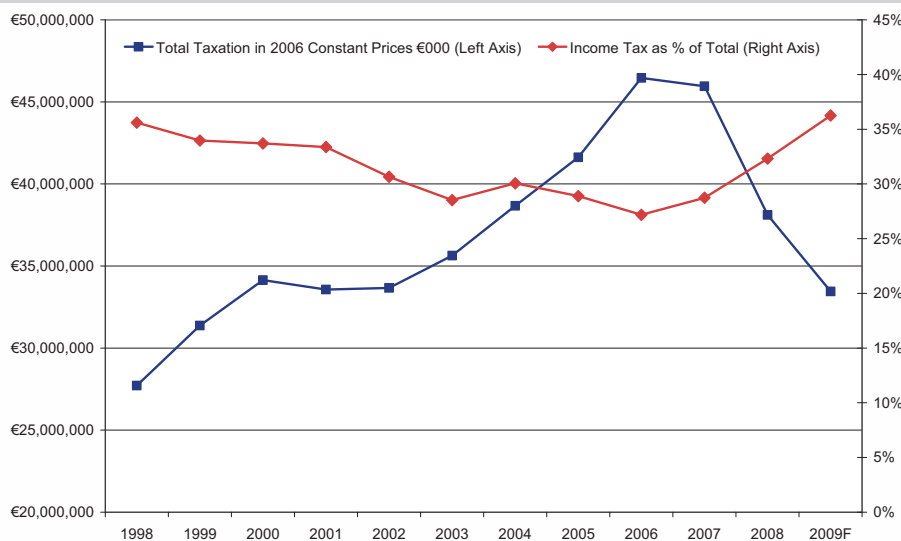


Ireland's tax structure is less dependent on social security contributions than other economies. There is a relatively even split between direct and indirect taxes, reflecting a policy to reduce taxes on factors of production - i.e. workers and firms.

Ranking: N/A

Source: Eurostat, Economy and Finance Indicators

**Figure 4.04: Total Taxation in 2006 Constant Prices and Net Income Tax Receipts (as a % of Total Exchequer Revenue), 1998-2009F**



Tax revenues fell sharply in 2008 to €38.1 billion and are forecast to decline further to €33.5 billion (in 2006 constant prices)<sup>91</sup>.

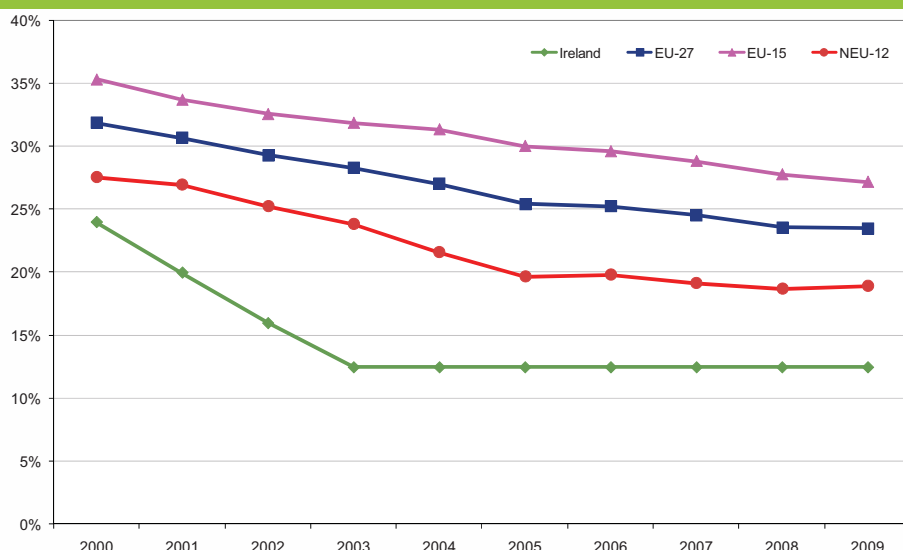
Income tax receipts as a percentage of total Exchequer revenue declined steadily earlier this decade and reached a low of 27% in 2006. Income tax's contribution will continue to rise following the increases in income and health levies introduced in the 2009 budgets.

Ranking: N/A

Source: Department of Finance, Exchequer Statements; Macroeconomic and Fiscal Framework, Supplementary Budget, April 2009; Revenue Commissioners, Annual Statistical Reports

<sup>91</sup> Department of Finance forecasts are for Exchequer revenue of €34.4 billion for 2009. The forecast in the chart for 2009 is based on their projection of a 3.9 percent fall in the Consumer Price Index. Macroeconomic and Fiscal Framework, 2009-2013.

**Figure 4.05 Top Standard Tax Rate on Corporate Income (%), 2000-2009<sup>92</sup>**

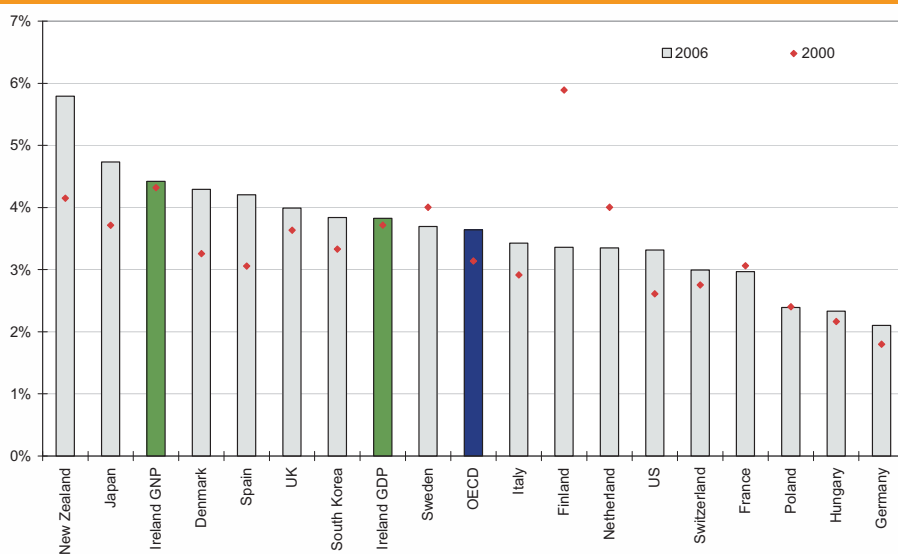


The average top rate of corporation tax in the EU-15 and EU-27 has continued its declining trend as economies seek to create attractive investment environments. At 12.5%, Ireland has the third lowest rate in the EU-27.

**EU-15 Ranking:**  
1 (--)

Source: Eurostat, *Taxation Trends in the European Union, 2009*

**Figure 4.06 Corporation Tax Receipts (as a % of GDP), 2006**



While Ireland's corporation tax rate is low, Ireland earned more in corporation tax payments as a percentage of GDP and GNP than most other OECD countries in 2006. In addition, corporation tax receipts as a share of total taxes have grown strongly in recent years from 10% in 1995 to 12.4% in 2007. However, corporation tax receipts fell from €6.3 billion in 2007 to €5 billion in 2008, a decline of 21%<sup>93</sup>.

**OECD-28 Ranking<sup>94</sup>:**  
GDP: 11 (↓1)  
GNP: 7 (↓1)

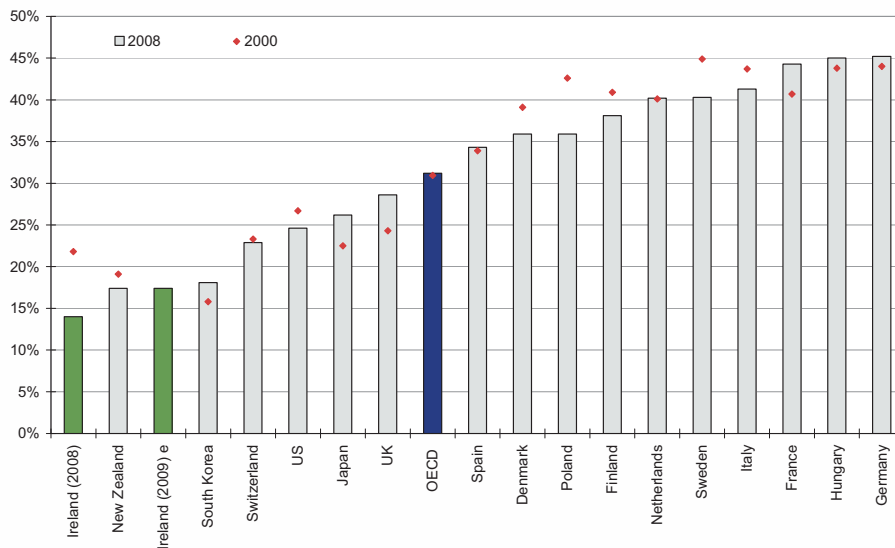
Source: OECD, *Revenue Statistics 1965-2007*

<sup>92</sup> 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.

<sup>93</sup> Department of Finance, 2009, Exchequer Statement, December 2008.

<sup>94</sup> Traffic light determined based on GDP ranking.

**Figure 4.07 Total Tax Wedge on Labour (as a % of Average Earnings), 2008<sup>95</sup>**

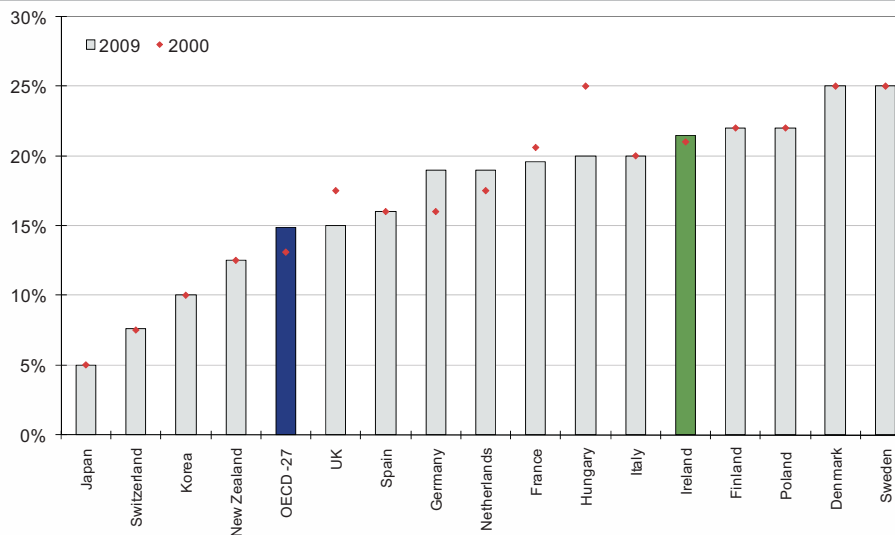


Ireland's tax wedge on labour, i.e. the gap between what the employer pays and what the employee receives fell between 2000 and 2008. Ireland's tax wedge was one of the smallest in the OECD in 2008. However, in light of recent increases in income and health levies, it is estimated that the tax wedge will rise from 14% in 2008 to 17.4% in 2009. The tax wedge is higher for higher income earners - a potential disincentive for highly skilled internationally mobile workers.

**OECD-28 Ranking 2008:**  
1 (↑)

Source: OECD Taxing Wages 2007/2008; Forfás calculations

**Figure 4.08 Value Added Tax, Standard Rate, 2009<sup>96</sup>**



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 OECD. Budget 2009 increased the top rate of VAT to 21.5%.

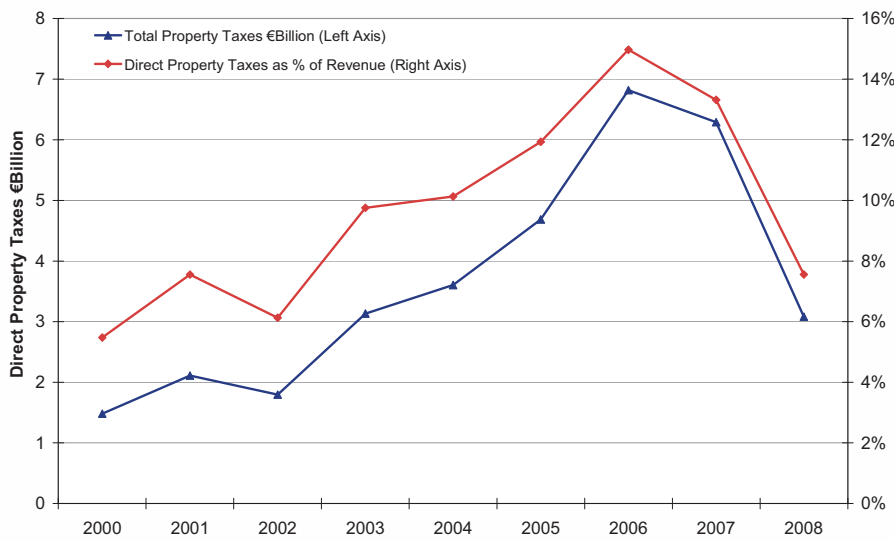
**Ranking:**  
N/A

Source: OECD, Tax Database, 2009

<sup>95</sup> Data based on a two-earner family with a wage level of 167% of the average wage.  
<sup>96</sup> OECD-28 average minus US.



**Figure 4.09: Direct Property Tax Receipts (€000) and as a % of Exchequer Revenue, 2000-2008.**

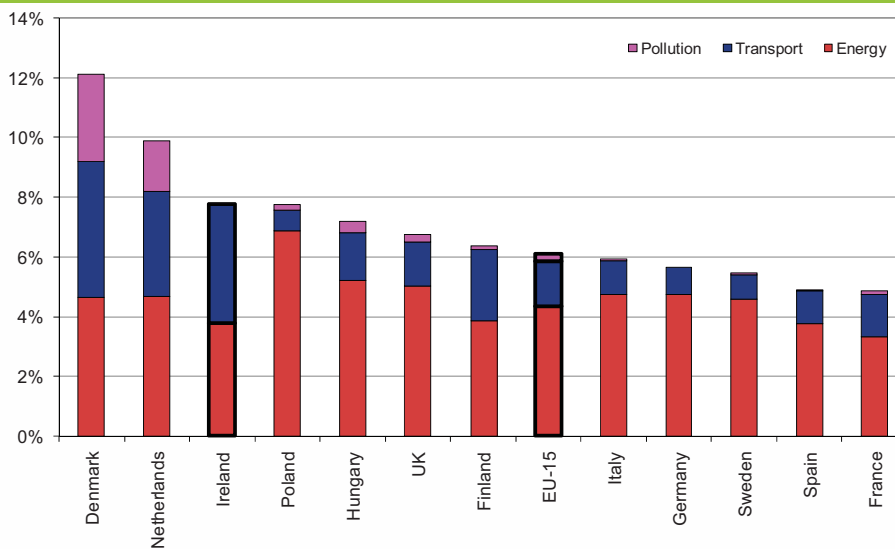


The major component of property tax revenue in Ireland is stamp duty, a tax on transactions. In 2006 at the peak of the property bubble, direct property taxes of €6.8 billion accounted for 15% of Exchequer revenue. In 2008 the fall-off in these transactions-based taxes led to the collapse in the public finances. The collapse in the property market has also led to reduced revenue from other taxes such as VAT and income tax.

**Ranking:** N/A

Source: Department of Finance, Exchequer Statements

**Figure 4.10 Use of Environmental Taxes by Type (as a % of Total Tax Revenue), 2007**

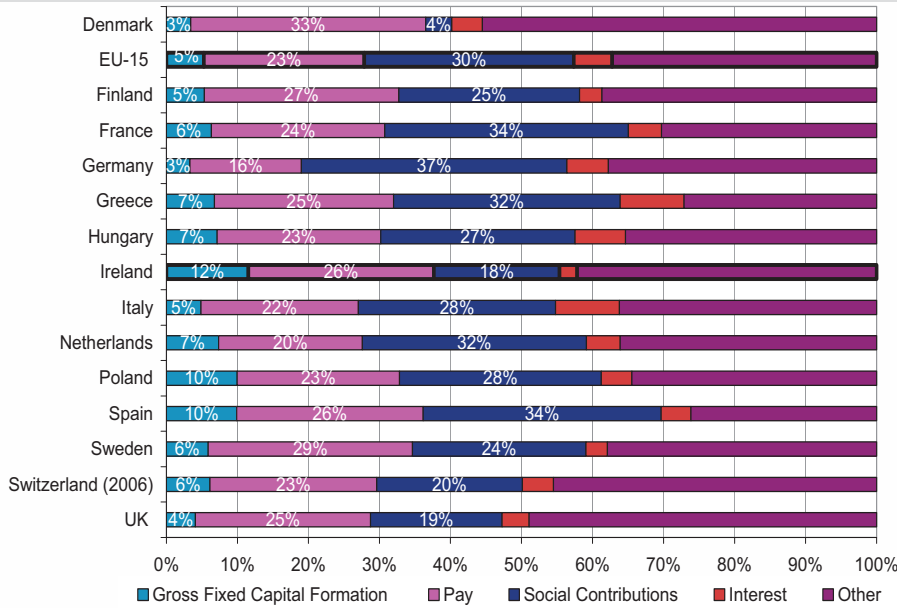


Overall, Ireland collects a relatively large proportion of its tax revenue from environmental sources, but Ireland does not tax pollution, as some other countries do. Ireland's share of revenues from energy is also below the EU-15 average. Ireland is likely to introduce some form of carbon tax in Budget 2010.

**EU-15 Overall Ranking:**  
4 (↑2)

Source: Eurostat, Taxation Trends in the EU, 2009

**Figure 4.11 Expenditure by Function (as a % of Total Government Expenditure), 2007**



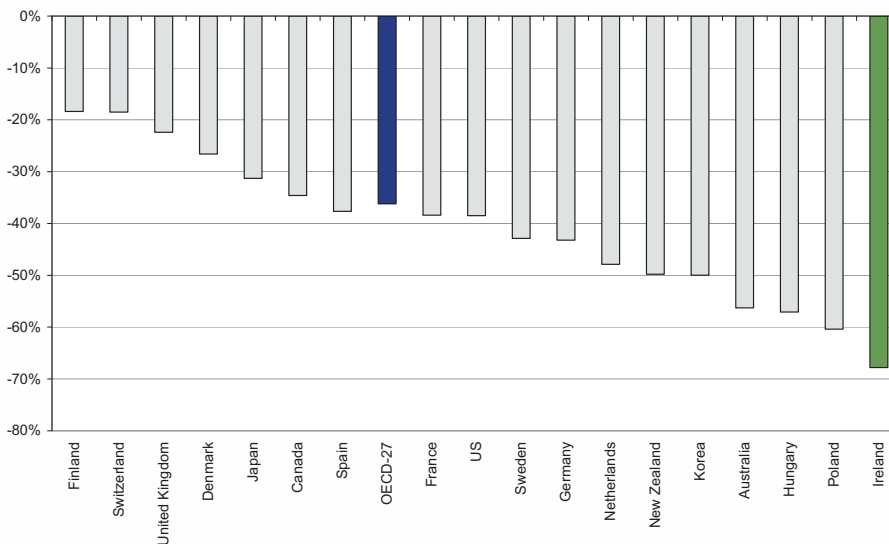
This chart shows the breakdown of Government expenditure as a percentage of total expenditure for 2007. Ireland spent 12% of total expenditure on gross fixed capital formation, which compares very favourably to the EU-15 average of 5%. Ireland spent 26% of total expenditure on pay, 18% on social contributions and 2.5% on interest payments.

Ranking: N/A

Source: Eurostat, Economy and Finance Indicators

### 4.1.2 Finance

**Figure 4.12: Change in Value of Stock Market Index, 2008**



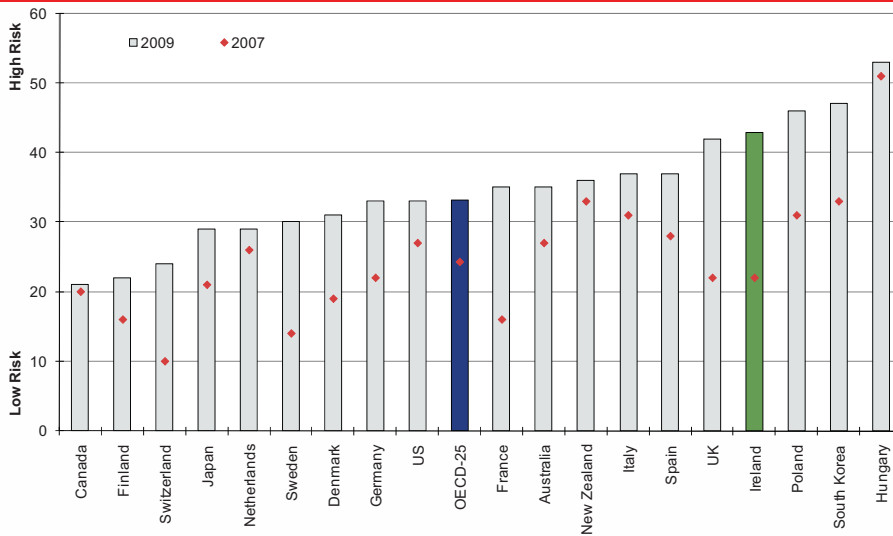
The downturn in the global economy has resulted in sharp falls in the value of stock markets worldwide. The fall in the Irish ISEQ index has been more dramatic than the declines in stock markets in other developed economies. The Irish stock market value declined by 68% in 2008 compared to an OECD-27 average of 36.2%.

OECD-27<sup>97</sup> Ranking: 27

Source: Economist Intelligence Unit, Market Forecasts and Indicators

<sup>97</sup> OECD-28 average minus Iceland.

**Figure 4.13: Perceived Banking Sector Risk, 2009**

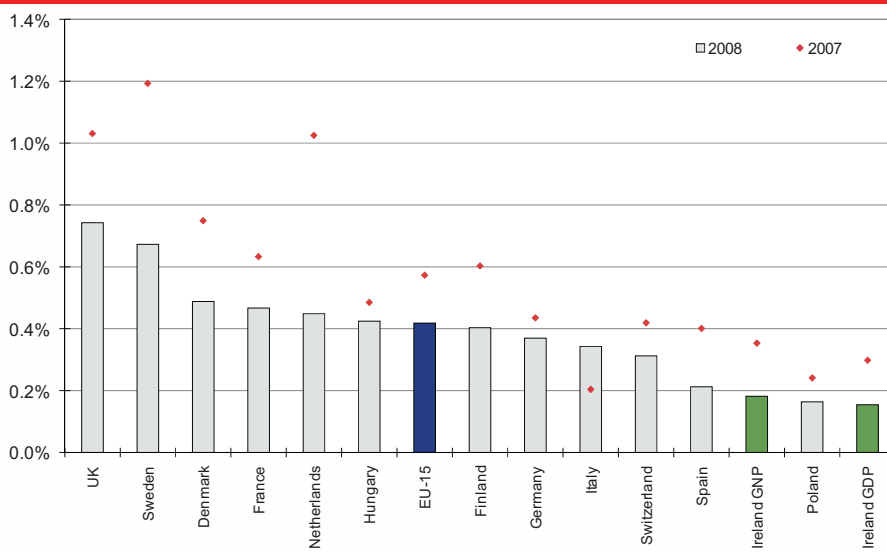


This indicator measures the extent to which international investors have confidence in the sustainability of nations' banking sectors. In 2007, the Irish banking sector was perceived to be healthier than the OECD average<sup>98</sup>. In 2009, the Irish banking sector is perceived as being riskier than banking sectors in other developed economies.

**OECD-25 Ranking<sup>99</sup>:**  
22 (↓10)

Source: Economist Intelligence Unit, July 2009

**Figure 4.14 Private Equity Investment (as a % of GDP), 2008<sup>100</sup>**



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. Private equity investment declined sharply across the EU in 2008 relative to 2007. Ireland is lagging the EU average in both GDP and GNP measures of private equity investment.

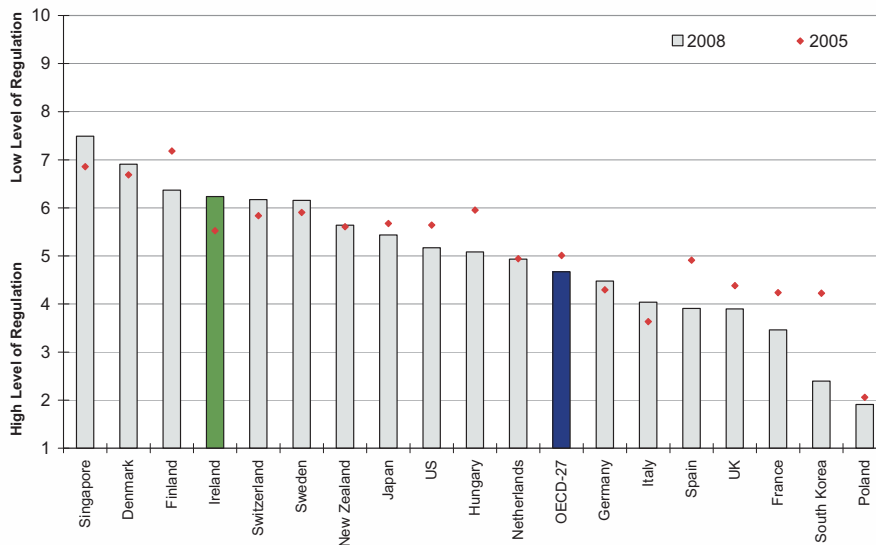
**EU-14 Ranking:**  
GDP: 12 (↓1)  
GNP: 12 (↓1)

Source: European Venture Capital Association (EVCA) Annual Survey of Pan-European Private Equity & Venture Capital Activity 2008

<sup>98</sup> OECD-28 average minus Iceland, Luxembourg and the Slovak Republic.  
<sup>99</sup> Base year for ranking change is 2007 relative to 2009.  
<sup>100</sup> EU-15 average minus Luxembourg.

### 4.1.3 Regulation and Competition

**Figure 4.15 Perceived Level of Overall Regulation, (Scale 1-10) 2008**

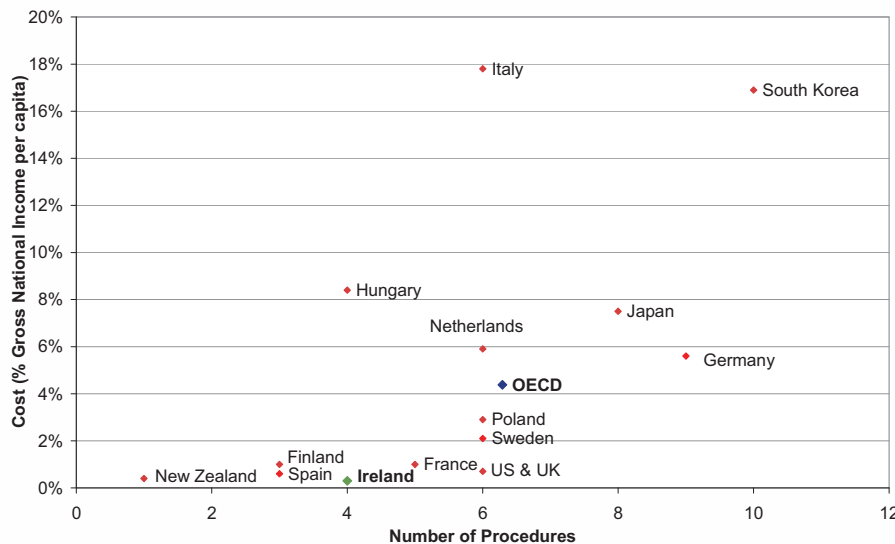


Well-designed and efficiently enforced regulation helps achieve policy goals (social, health and safety, environmental and economic policy) without imposing unnecessary administrative and hidden costs on firms. The overall level of regulation in Ireland is among the lowest in the OECD. Regulation levels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

**OECD-27 Ranking<sup>101</sup>:**  
4 (↑12)

Source: IMD World Competitiveness Yearbook, 2008

**Figure 4.16 Cost of Starting a Business and Number of Procedures Involved, 2009**



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

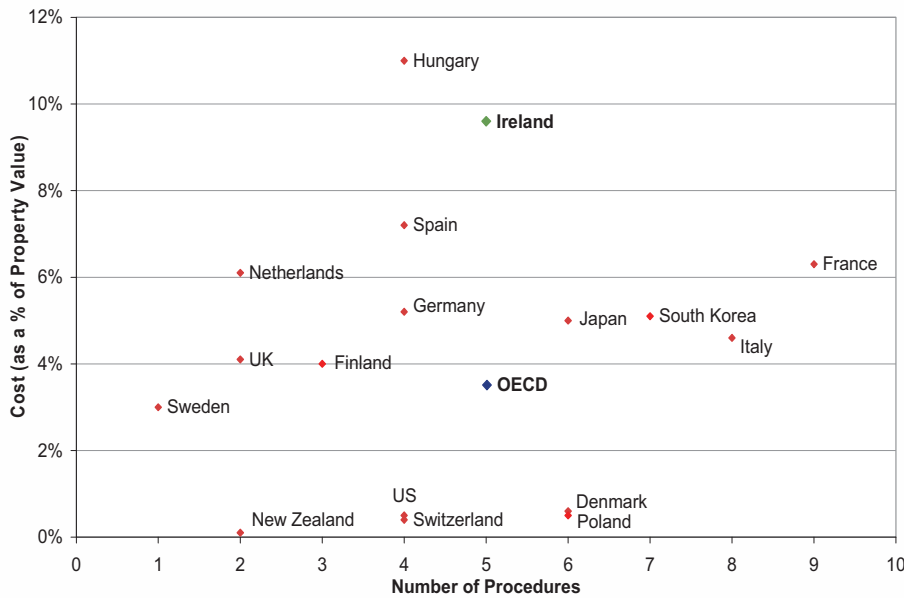
**OECD-28 Ranking<sup>102</sup>:**  
Cost: 2 (↑14)  
Procedures: 7 (↓1)

Source: World Bank, Doing Business, 2009

<sup>101</sup> Base year for ranking change is 2005 compared to 2008. OECD-28 average minus Iceland.

<sup>102</sup> Base year for ranking change is 2005 compared to 2009. Rankings incorporate 2006 data for countries that are unavailable for 2005.

**Figure 4.17 Cost of Registering a Property and Number of Procedures Involved, 2009<sup>103</sup>**

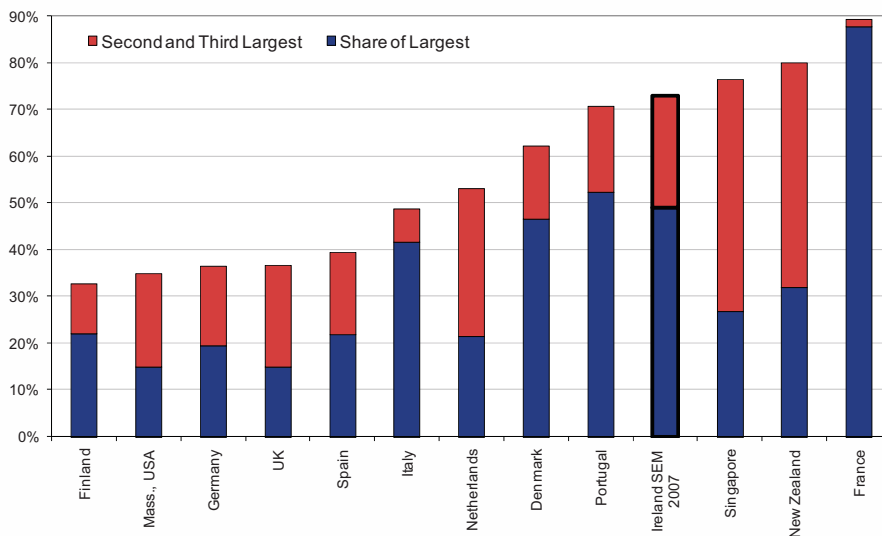


This chart shows both the financial costs of registering a property and the number of procedures involved. Property costs are recorded as a percentage of the property value and official costs required by law, including fees, transfer taxes, stamp duties and any other payments<sup>104</sup>. Ireland ranks poorly on the cost measure, but has the same number of procedures as the OECD average.

**OECD-28 Ranking<sup>105</sup>:**  
 Cost: 25 (↓1)  
 Procedures: 16 (↓1)

Source: World Bank, *Doing Business*, 2009

**Figure 4.18 Market Share of Top Three Generators in the Electricity Market, 2006**



The Irish electricity market is relatively concentrated, with the three largest generators accounting for 73% of the all-island Single Electricity Market (SEM) in 2007<sup>106</sup>. This large share may be partially explained by Ireland's small market size and limited interconnection to other energy markets.

**Ranking of 13 (Share of Top Three):**  
 10

Source: Forfás, *Energy Policy and Competitiveness Report*; Department of Communications, Energy and Natural Resources.

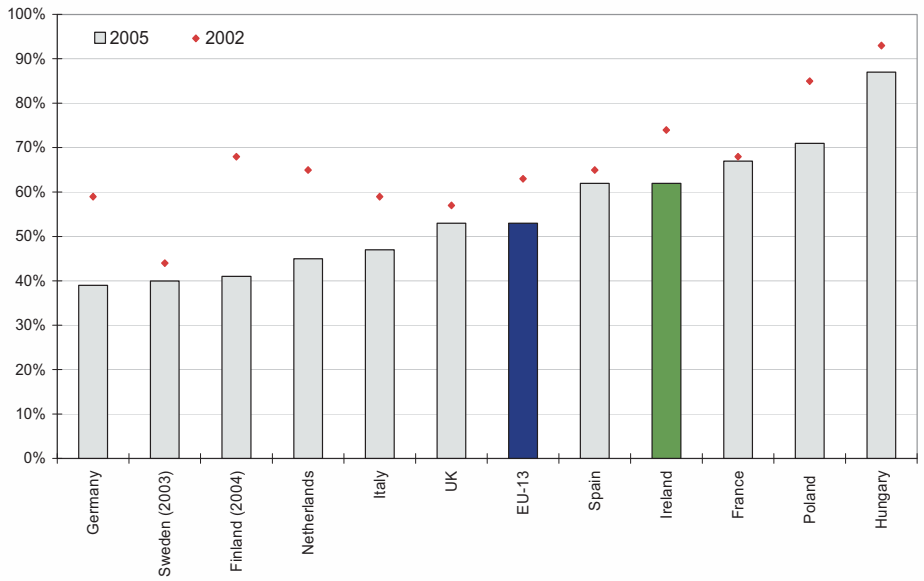
<sup>103</sup> Traffic light colour determined based on Ireland's cost performance of starting a new business.

<sup>104</sup> 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.

<sup>105</sup> Base year for ranking change is 2005 compared to 2009.

<sup>106</sup> In 2008 Endesa purchased 1000MW of conventional generation plant from ESB Power Generation. Forfás calculations indicate that the share of ESB Power Generation, the largest generator in the SEM, now accounts for approximately 42 percent of conventional generation capacity.

**Figure 4.19 Market Share of Incumbent in International Telephone Calls, 2005**

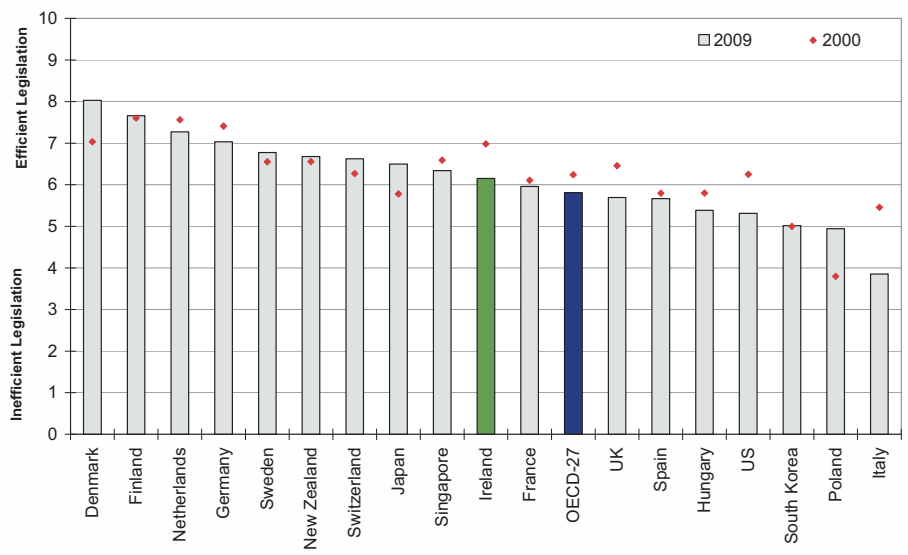


This chart shows the market share of the incumbent in the market for international phone calls. While, the Irish telecommunications market is open to competition, the largest player in the market still dominates, with over 60% of the market.

**EU-13 Ranking<sup>107</sup>:**  
9 (↑2)

Source: Eurostat, Science and Technology Indicators

**Figure 4.20 Perceived Efficiency of Competition Legislation, (Scale 0-10) 2009**



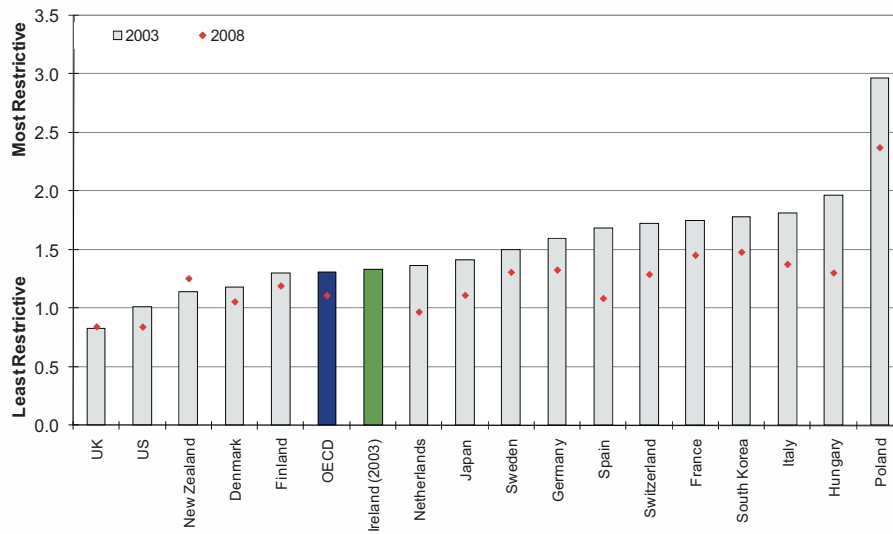
Competition can boost productivity and reduce prices for consumers and other businesses. According to executives' opinions, Ireland's competition legislation is more efficient than the average OECD economy.

**OECD-27 Ranking<sup>108</sup>:**  
14 (↓5)

Source: IMD World Competitiveness Yearbook, 2009

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

**Figure 4.21 Product Market Regulation, (Scale 0-6) 2008**

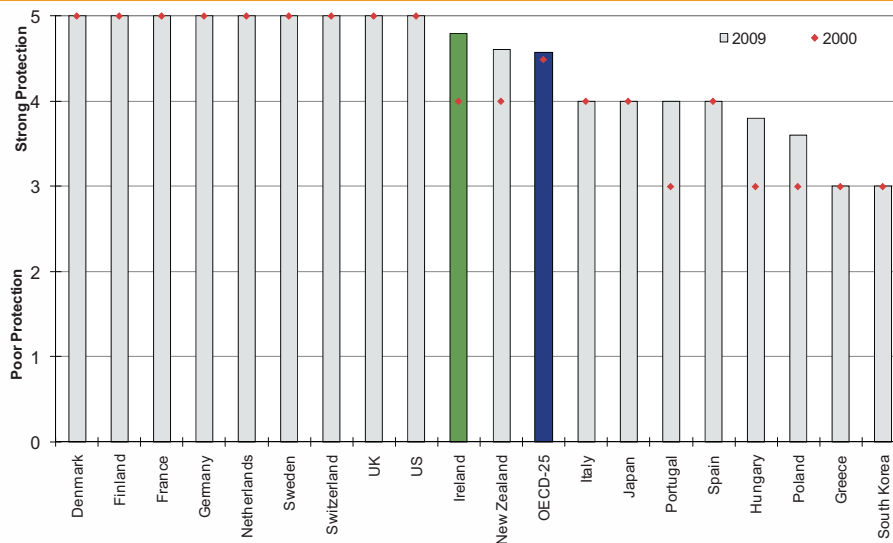


This measure captures the degree to which policies promote or inhibit competition in product markets. In 2003 Ireland's regulatory environment was less restrictive than the OECD average. Regulatory impediments to product market competition declined throughout the OECD between 2003 and 2008. However 2008 data for Ireland is unavailable.

**OECD-28 Ranking:**  
2003: 5

Source: OECD, *Going for Growth*, 2009

**Figure 4.22 Protection of Intellectual Property, (Scale 0-5) 2009<sup>109</sup>**



This indicator measures the protection of intellectual property. Higher values indicate better protection. Ireland's protection of intellectual property has improved significantly in recent years and is now at the OECD average.

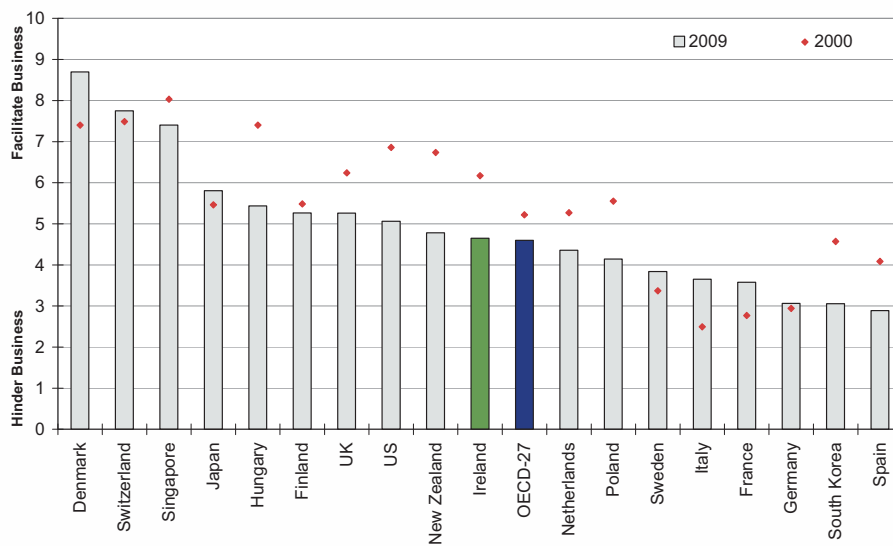
**Ranking:** N/A

Source: Economist Intelligence Unit, *Market Indicators and Forecasts*

<sup>109</sup> OECD-28 average minus Iceland, Luxembourg and the Slovak Republic

#### 4.1.4 Labour Market Regulation

Figure 4.23 Perceived Impact of Labour Market Regulations, (Scale 0-10) 2009<sup>110</sup>

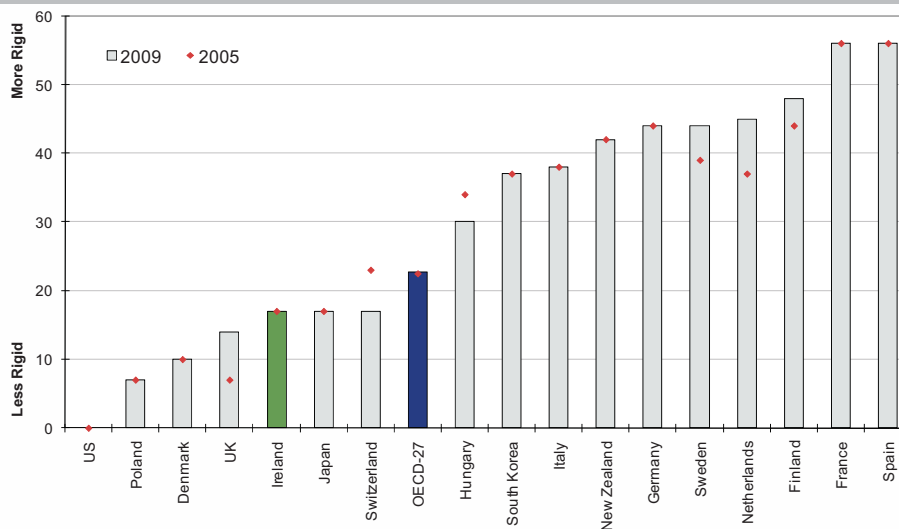


According to executives' opinions, labour market regulations in Ireland are not believed to have a significant impact upon business activities. Most countries, including Ireland, have experienced increased labour market regulations since 2000.

Ranking: N/A

Source: IMD World Competitiveness Yearbook, 2009

Figure 4.24 Labour Market Regulation, (Scale 0-100) 2009<sup>111</sup>



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

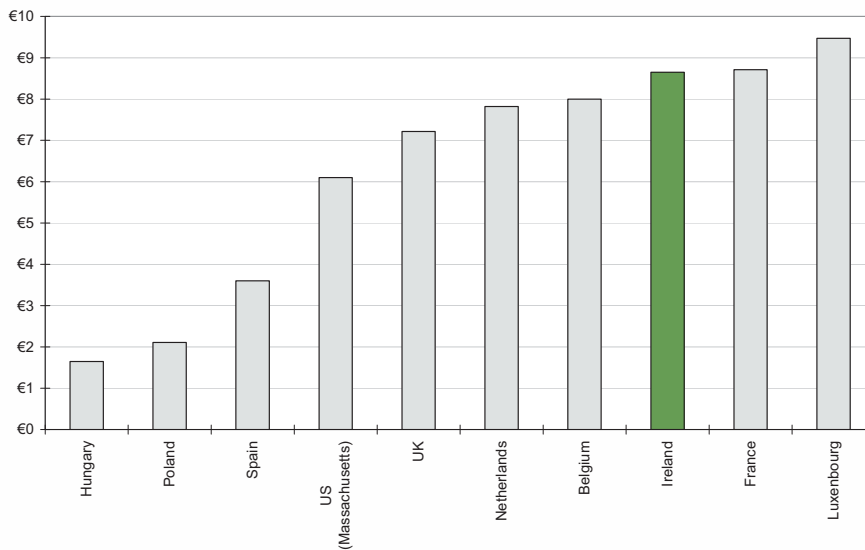
Source: World Bank, Doing Business, 2009

<sup>110</sup> OECD-28 average minus Iceland.

<sup>111</sup> Assessment of the levels of labour market regulation is based on the World Bank's 'Rigidity of Employment Index'. OECD-28 average minus Luxembourg.



**Figure 4.25 Hourly Minimum Wages, 2009<sup>112</sup>**



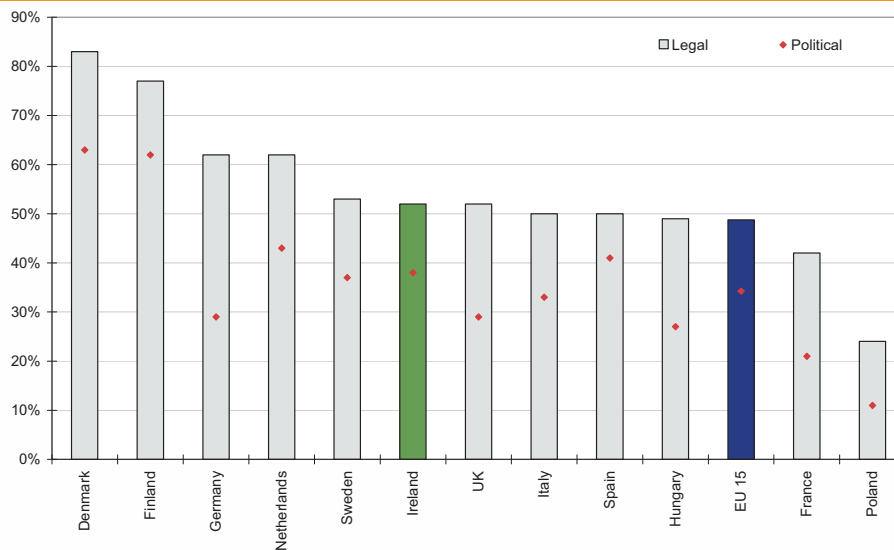
The current minimum wage in Ireland is €8.65. Ireland's minimum wage is relatively high compared to comparator countries.

Ranking: N/A

Source: Federation of European Employers; US Bureau of Labour Statistics

### 4.1.5 Social Capital

**Figure 4.26 Public Trust in Legal and Political Institutions, 2005<sup>113</sup>**



Public trust levels in Ireland's legal system and political institutions were above the EU-15 average in 2005. Trust levels have remained relatively static over the 2001-2005 time period.

EU-15 Ranking<sup>114</sup>:  
 Legal System 9 (--)  
 Political System 8 (--)

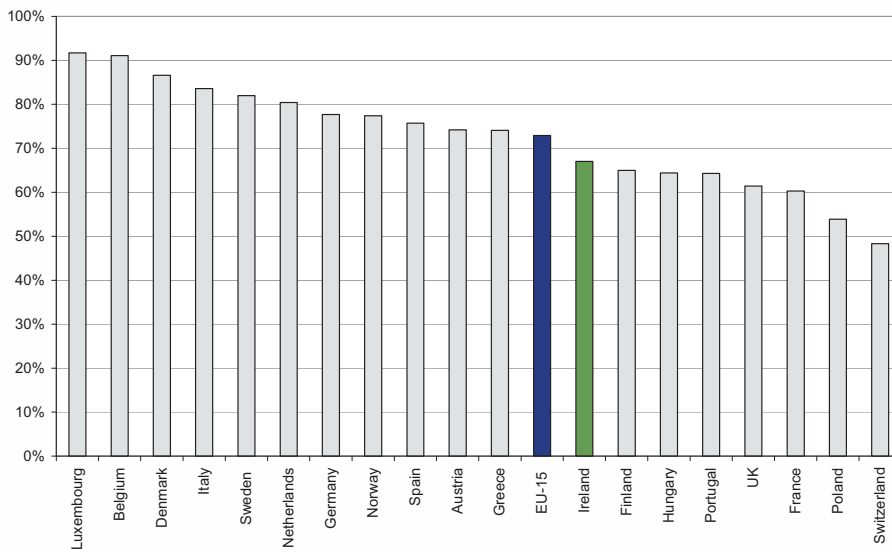
Source: European Foundation for the Improvement of Living and Working Conditions, EurLIFE Database, 2008

<sup>112</sup> For countries that are not Eurozone members the national minimum wage is converted into Euro using an annualised average exchange rate for 2009. For example the minimum wage in the UK is GBP€5.73. The hourly figure for France is based on a 35 hour working week.

<sup>113</sup> Trust in the legal system refers to the percentage of people aged 15 and over who trust in the justice and/or the legal system. Trust in the political system refers to 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.

<sup>114</sup> Base year for ranking change is 2001 compared to 2005. 2002 data is used for Hungary and Poland as 2001 data is unavailable.

**Figure 4.27: Voter Turnout (as a % of Registered Voters), 2002-2007**



Voter turnout is a measure of social cohesion and the health of a political system. In the 2007 general election voter turnout in Ireland was 67%, which is lower than for many other national parliamentary elections across the EU in the period 2002-2007. The EU-15 average was 73%. Voting is compulsory by law in Belgium, Cyprus, Greece, Italy, Luxembourg, the Netherlands and parts of Austria and Switzerland.

**EU-15 Ranking: 11**

Source: International Institute for Democracy and Electoral Assistance, CSO Measuring Ireland's Progress, 2007

## 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
- 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

Under successive National Development Plans, Ireland's investment rates in the public capital stock have been among the highest in the EU (Fig. 4.28). However, perceptions of infrastructure quality remain low (Fig. 4.29). Due to the severity of the collapse in the public finances, NDP investment projects will have to be reprioritised. The supplementary budget set out a multi-annual framework for capital expenditure which forecasts gross voted capital expenditure would be 5.1 percent of GNP in 2009 - this will decline to 4.7 percent of forecasted GNP in 2010, 3.8 percent in 2011, 3.9 percent in 2012 and 3.7 percent in 2013<sup>115</sup>.

### 4.2.2 Transport and Energy Infrastructure

Ireland's distribution networks rank poorly internationally (Fig. 4.30). The quality of Ireland's air transportation has improved in recent years (Fig. 4.32). However, the quality of water transportation infrastructure scores poorly (Fig. 4.33). Executives' perceptions of the efficiency of Ireland's energy infrastructure are also poor (Fig. 4.34). Ireland is particularly dependent on imported and non-renewable forms of energy (Fig. 4.35 and Fig. 4.36).

### 4.2.3 Information and Communication Technology Infrastructure

Ireland's investment in both information and communications technologies is below the EU-15 average, and lags leading countries by some distance (Fig. 4.37). Despite strong growth, the penetration rate of broadband across both households and firms in Ireland is below the EU average (Fig. 4.38)<sup>116</sup>. Ireland ranks 25<sup>th</sup> in the OECD in terms of its readiness to support next generation services (Fig. 4.39). In terms of eGovernment, the proportion of public services available online is also below that of the EU-15 average (Fig. 4.40).

---

<sup>115</sup> Department of Finance, *Macroeconomic and Fiscal Framework, Supplementary Budget, April 2009*

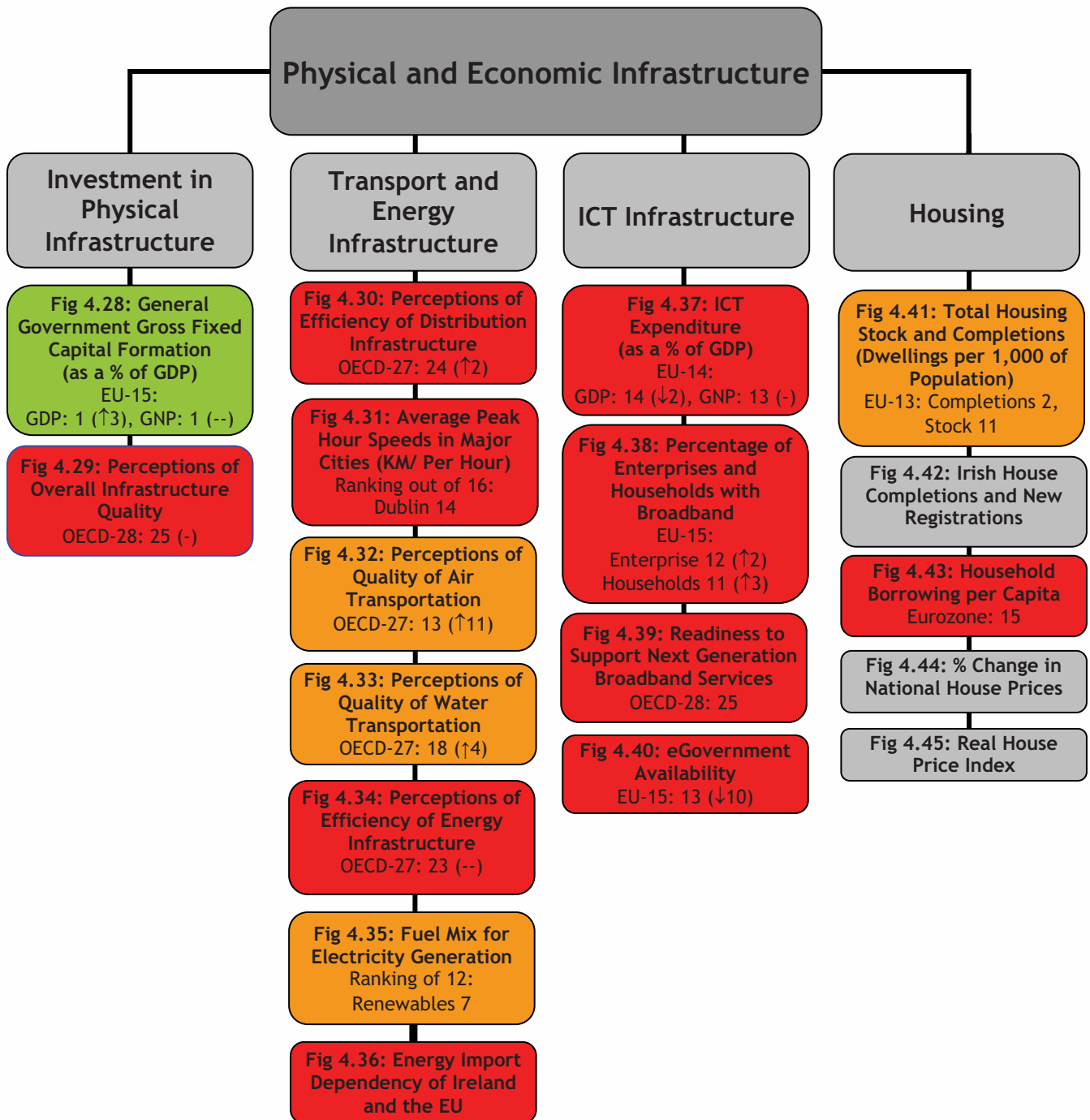
<sup>116</sup> Large and medium firms are, however, at or converging on the EU-15 average.

#### 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. 4.41). This gap was narrowing as household completions per capita in Ireland were far higher than the EU average in recent years. However, completion rates have fallen from over 93,000 units in 2006 to an anticipated 17,500 units in 2009 (Fig. 4.42). Several developed economies have experienced substantial housing booms in recent years, which is a key contributing factor to the global economic crisis (Fig. 4.44 and Fig. 4.45).

Household borrowing (approximately three-quarters of which is for house purchases) nearly doubled between 2004 and 2008. The average Irish person was €36,662 in debt in 2009 Q2, the second highest level in the eurozone (Fig. 4.43). Irish house prices increased dramatically during the early 2000s (Fig. 4.44). However, Irish house prices have fallen by 21 percent between the peak of the boom in February 2007 and May 2009. The value of Irish housing stock, which was valued at €500 billion in 2007, has fallen significantly since house prices peaked in February 2007.

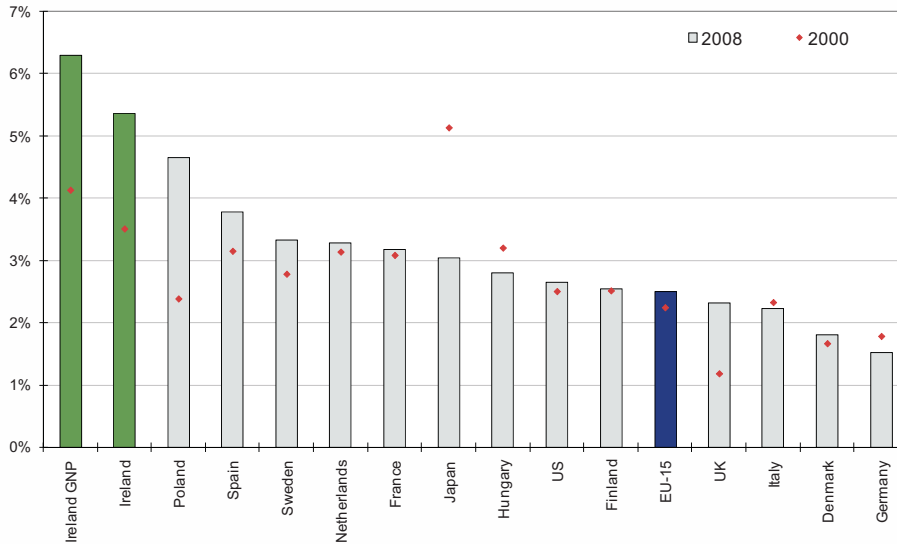
Chart 4.B



## 4.2 Physical and Economic Infrastructure

### 4.2.1 Investment in Physical Infrastructure

**Figure 4.28 General Government Gross Fixed Capital Formation (as a % of GDP), 2008**

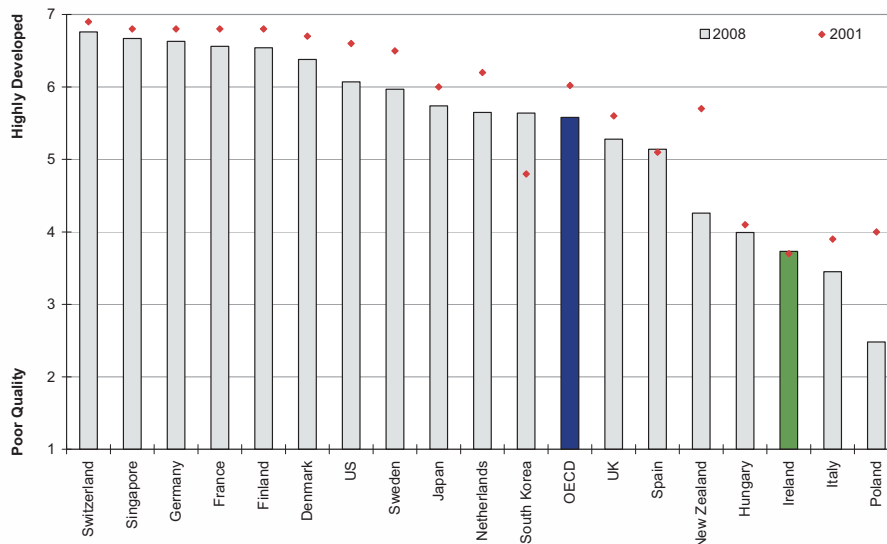


Ireland ranks well above the EU-15 average in both GDP and GNP terms on this indicator. Due to the severity of the public finances, NDP investment projects will have to be reprioritised. The supplementary budget set out a multi-annual framework for capital expenditure which forecasts gross voted capital expenditure would be 5.1 % of forecasted GNP in 2009, and decline to 3.7% by 2013<sup>117</sup>.

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

Source: European Commission, AMECO Database

**Figure 4.29 Perceptions of Overall Infrastructure Quality, (Scale 1-7) 2008**



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 significant investments in infrastructure in the past decade.

**OECD-28 Ranking<sup>118</sup>:**  
25 (--)

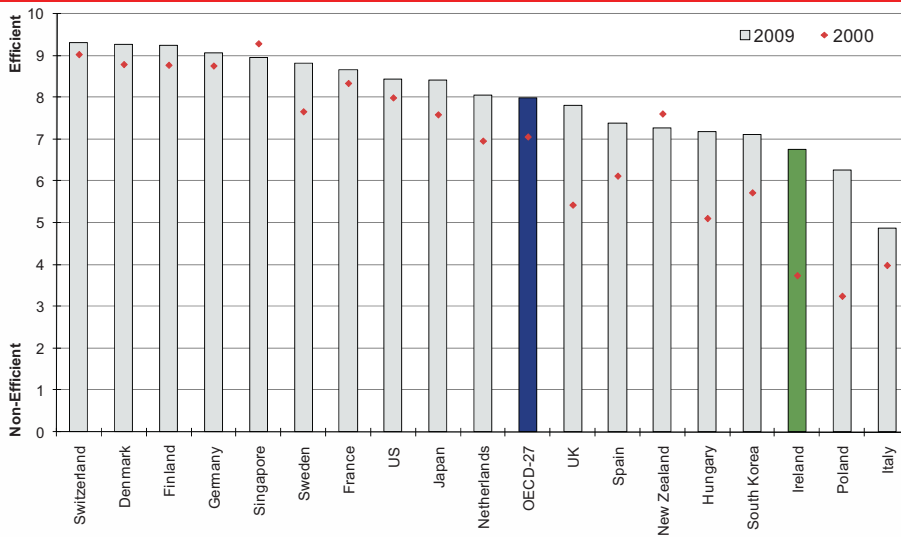
Source: WEF Global Competitiveness Report 2008/09

<sup>117</sup> Department of Finance, Macroeconomic and Fiscal Framework 2009-2013, Supplementary Budget, April 2009.

<sup>118</sup> Base year for ranking change is 2001 compared to 2008.

## 4.2.2 Transport and Energy Infrastructure

Figure 4.30 Perceptions of Efficiency of Distribution Infrastructure, (Scale 0-10) 2009<sup>119</sup>

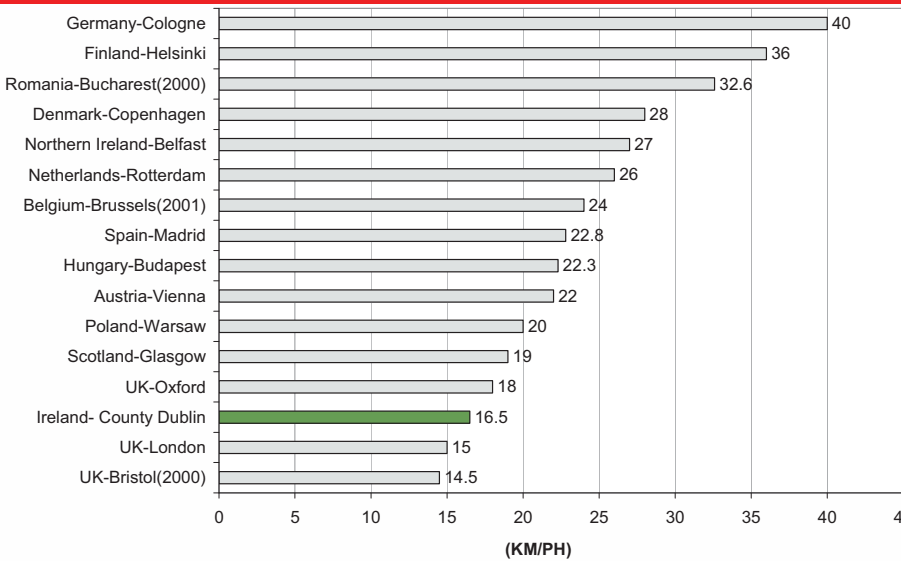


This chart shows executives' perceptions of Ireland's distribution infrastructure, including road, rail, air and sea transport. While Ireland continues to rank poorly - among the weakest in the OECD - there has been a significant improvement since 2000.

OECD-27 Ranking:  
24 (↑2)

Source: IMD World Competitiveness Yearbook, 2009

Figure 4.31 Average Peak Hour Speeds in Major Cities (KM/ Per Hour), 2002/3<sup>120</sup>



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<sup>121</sup>.

Ranking of 16:  
14

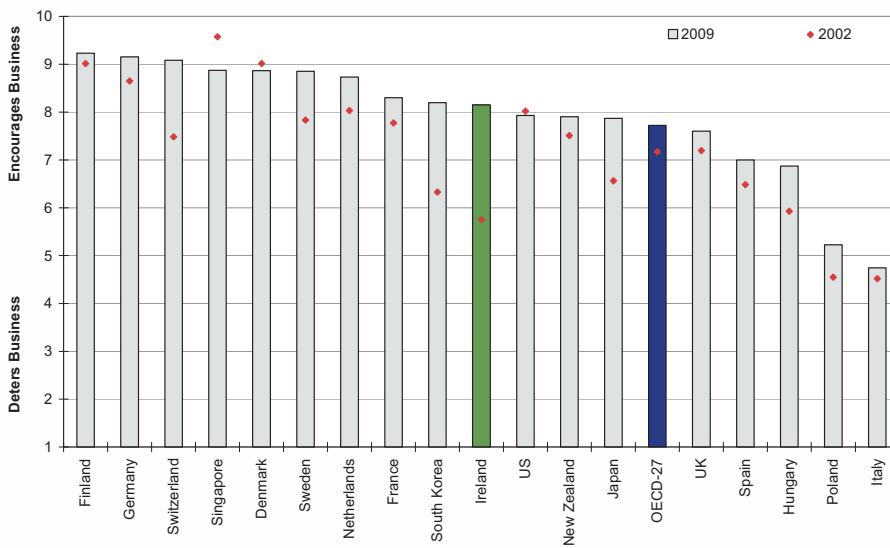
Source: Urban Transport Benchmarking Initiative/Dublin Transportation Office

119 OECD-28 average minus Iceland.

120 The Irish car speed data is taken from the Dublin Transport Office. It should be noted that Dublin refers to car speeds only.

121 Department of Transport, 2020 Vision - Sustainable Travel and Transport: Public Consultation Document. February 2008.

**Figure 4.32 Perceptions of Quality of Air Transportation, (Scale 0-10) 2009**

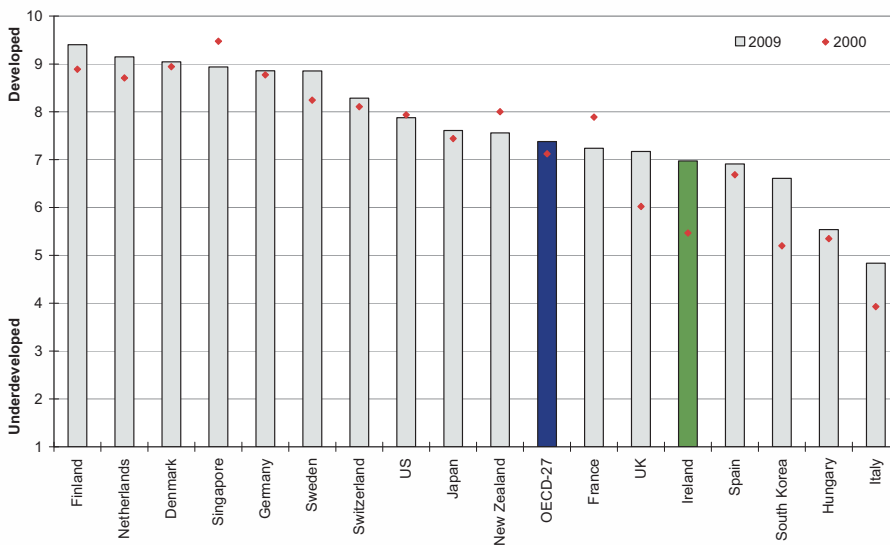


This chart measures executives' perceptions of the quality of Ireland's air transportation infrastructure. Ireland's score has improved significantly in recent years. A second terminal at Dublin airport, due to open in 2009, should further improve Ireland's score.

**OECD-27 Ranking<sup>122</sup>:**  
13 (↑11)

Source: IMD World Competitiveness Yearbook, 2009

**Figure 4.33 Perceptions of Quality of Water Transportation, (Scale 1-10) 2009**



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.

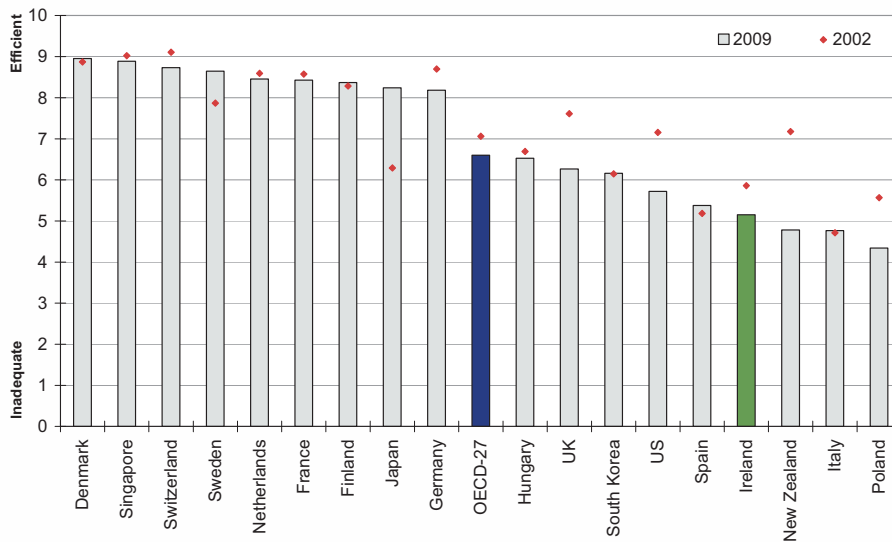
**OECD-27 Ranking<sup>123</sup>:**  
18 (↑4)

Source: IMD World Competitiveness Yearbook, 2009

122 Base year for ranking change is 2002 compared to 2009. OECD-28 average minus Iceland.  
123 Base year for ranking change is 2000 compared to 2009. OECD-28 average minus Iceland.



**Figure 4.34 Perceptions of Efficiency of Energy Infrastructure, (Scale 0-10) 2009**

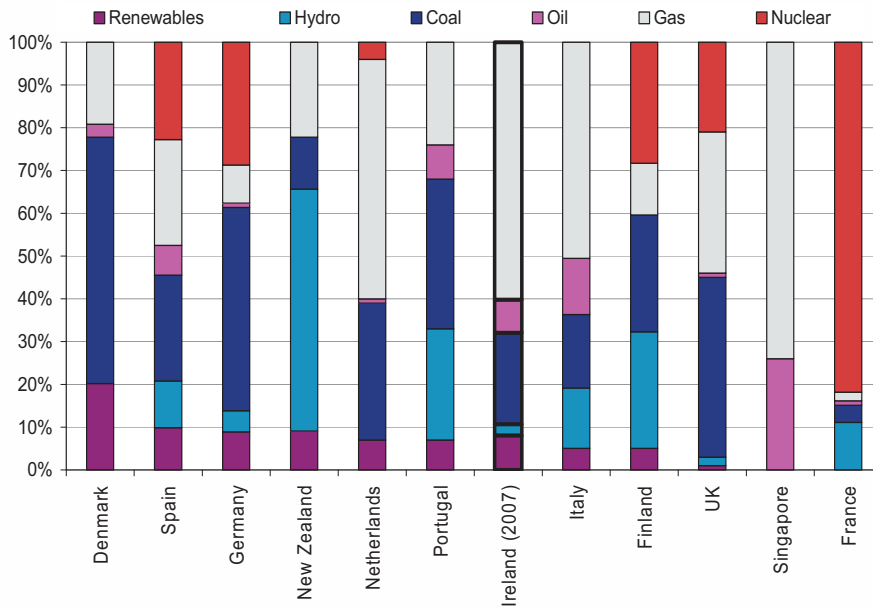


This chart measures executives' perceptions of the quality of Ireland's energy infrastructure. Ireland's performance is weak in comparison to the OECD average. Performance has weakened across a range of countries, including Ireland since 2002.

**OECD-27 Ranking<sup>124</sup>:**  
23 (--)

Source: IMD World Competitiveness Yearbook, 2009

**Figure 4.35 Fuel Mix for Electricity Generation, 2006**



Ireland's electricity comes predominantly from imported non-renewable resources, in particular coal and gas. Ireland generated significantly less electricity from renewable resources in 2007 than the leading country, Denmark.

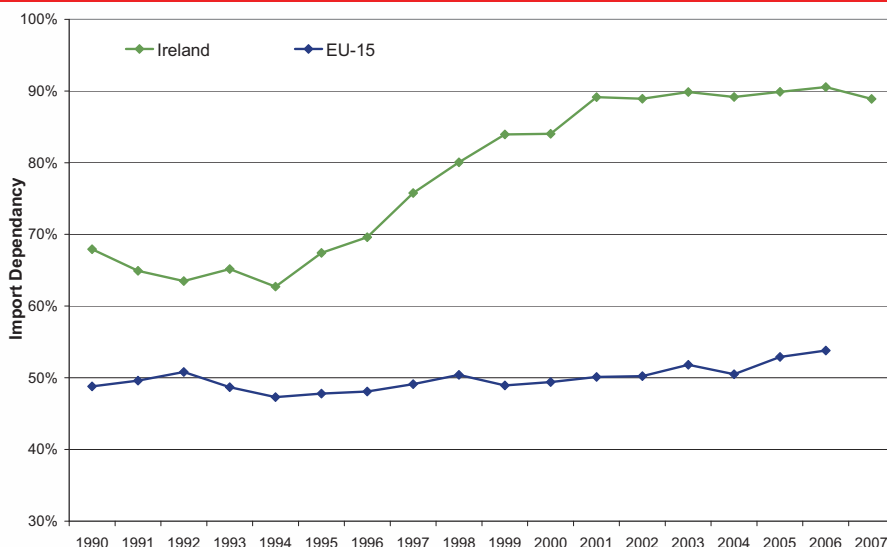
However, Ireland's performance is improving. Electricity generation capacity from renewable sources (including hydro) has increased from 4.8% in 2005 to 9.4% in 2007.

**Ranking of 12:** (ranked by renewables) 7

Source: Forfás, Energy Policy and Competitiveness Report; Sustainable Energy Ireland, Energy in Ireland 2007.

124 Base year for ranking change is 2002 compared to 2009. OECD-28 average minus Iceland.

**Figure 4.36 Energy Import Dependency of Ireland and the EU, 1990-2007<sup>125</sup>**



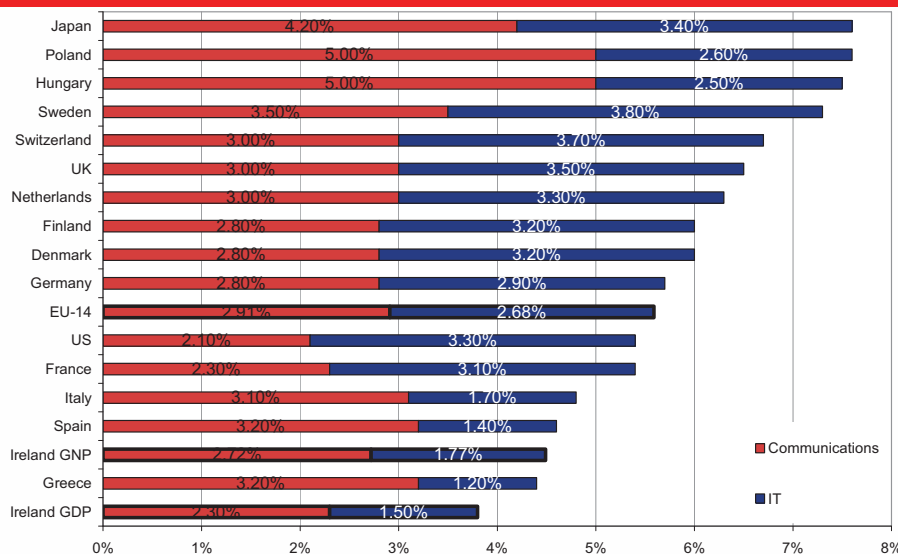
Since the mid 1990s import dependency has grown significantly in Ireland due to an increase in energy use, a decline in indigenous natural gas production and a decrease in peat production. Ireland's overall import dependency reached 91% in 2006, however it has since fallen back slightly to 89% in 2007. This compares unfavourably with the EU-15 average of 54%.

Ranking: N/A

Source: Sustainable Energy Ireland, *Energy in Ireland 1990-2007*; Eurostat, *Environment and Energy Indicators*

### 4.2.3 Information and Communication Technology (ICT) Infrastructure

**Figure 4.37 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.

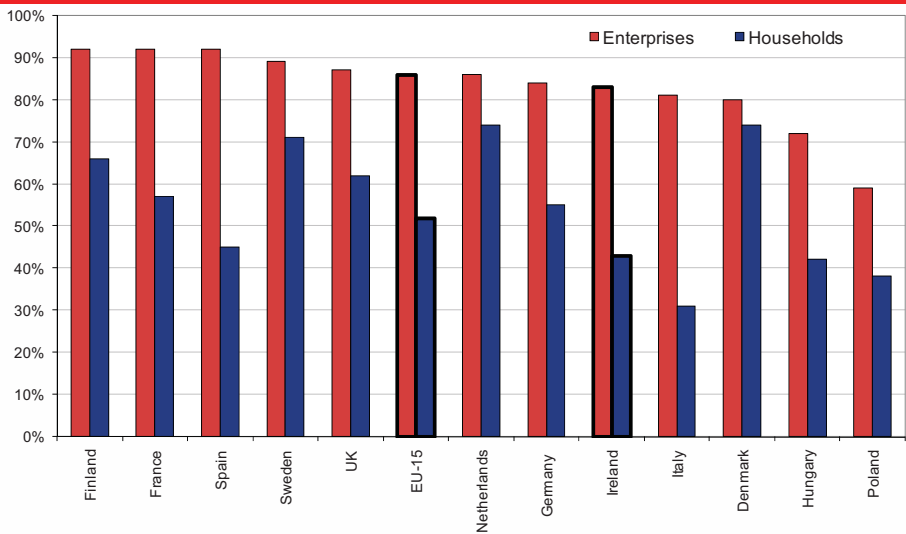
EU-14 Ranking<sup>126</sup>:  
GDP: 14 (↓2)  
GNP: 13 (--)

Source: Eurostat, *Structural Indicators*

<sup>125</sup> Import Dependency is calculated as follows: (Imports - Exports - Non Energy Consumption) / (Primary Energy Supply - Non Energy Consumption + Marine Bunkers).

<sup>126</sup> EU-15 minus Luxembourg.

**Figure 4.38 Percentage of Enterprises and Households with Broadband, 2008**

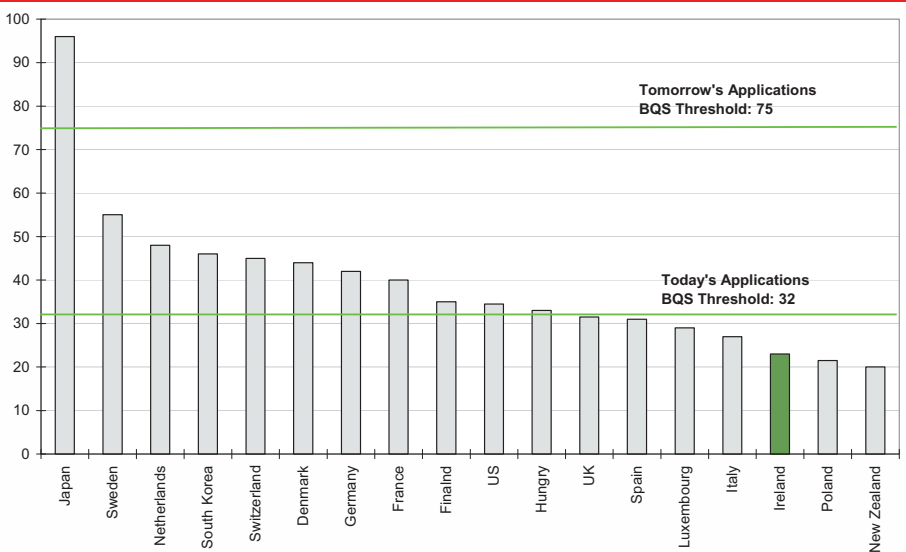


Broadband penetration across firms in Ireland is lower than the EU-15 average, particularly among smaller firms. Despite broadband penetration growth, Ireland remains significantly behind leading countries in terms of households with broadband access.

**EU-15 Ranking<sup>127</sup>:**  
 Enterprise 12 (↑2)  
 Households 11 (↑3)

Source: Eurostat, Information Society Indicators

**Figure 4.39 Readiness to Support Next Generation Broadband Services, 2008**



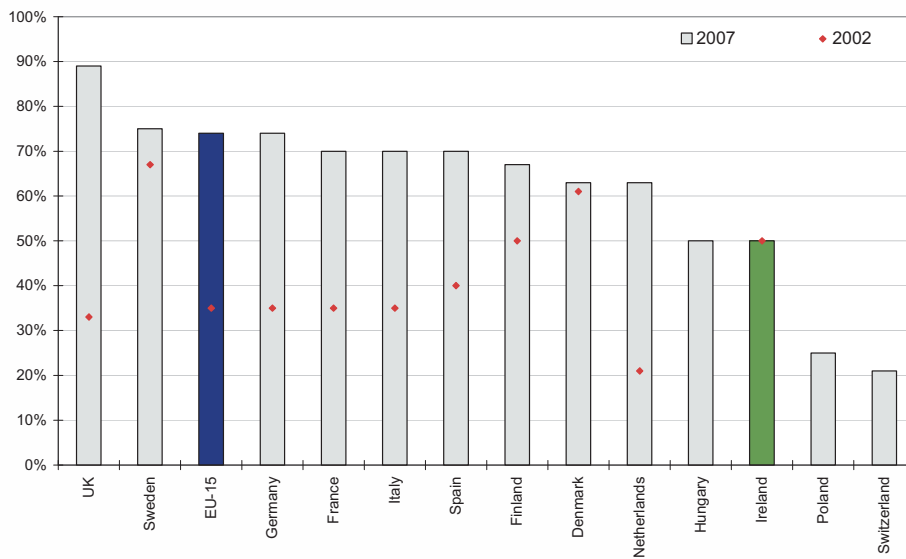
The Broadband Quality Score is an indication of each country's readiness to support next generation video and web services. Ireland ranks 25<sup>th</sup> in the OECD in terms of its readiness to support next generation video and web services and below today's required standard. As software applications 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

<sup>127</sup> Base year for ranking change is 2003 compared to 2008.

**Figure 4.40 eGovernment Availability, 2007**



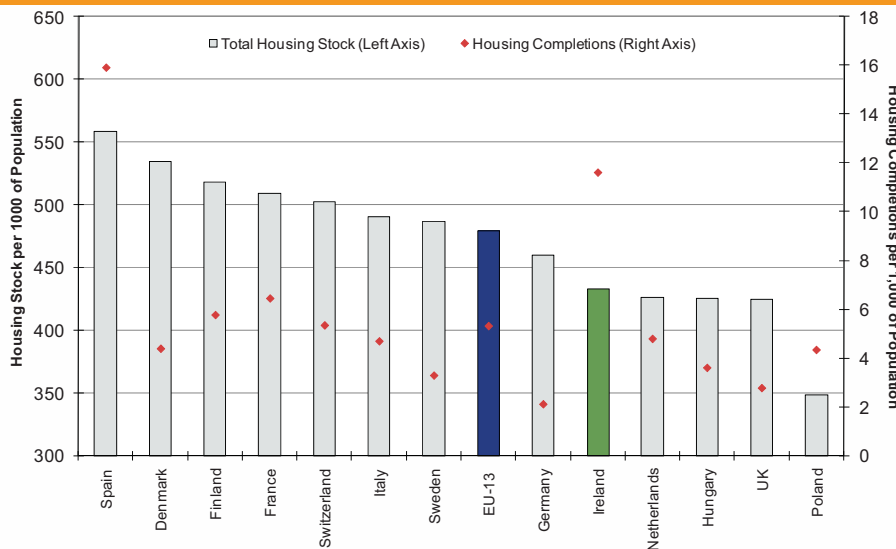
This indicator shows online availability of 20 basic public services for which it is possible to carry out full electronic case handling. There has been a significant decline in Ireland's ranking as other countries have progressed new eGovernment initiatives.

**EU-15 Ranking<sup>128</sup>:**  
13 (↓10)

Source: Eurostat, Information Society Indicators

## 4.2.4 Housing

**Figure 4.41 Total Housing Stock and Completions (Dwellings per 1,000 of Population), 2008**



Compared to the EU-13, Ireland is under-housed, relative to its population size (left axis). In 2008, Ireland was adding to its housing stock at a rate far above the EU average (right axis). However, it is estimated that housing completions in Ireland will drop to circa four units per 1,000 of population in 2009.

**EU-13 Ranking<sup>129</sup>:**  
Completions: 2  
Stock: 11

Source: Euroconstruct June 2009

<sup>128</sup> Base year for ranking change is 2002 compared to 2007.

<sup>129</sup> EU-15 average minus Greece and Luxembourg. Traffic-light determined based on Ireland's performance in completion rates.

**Figure 4.42: Irish House Completions and New Registrations, 2000-2009F**

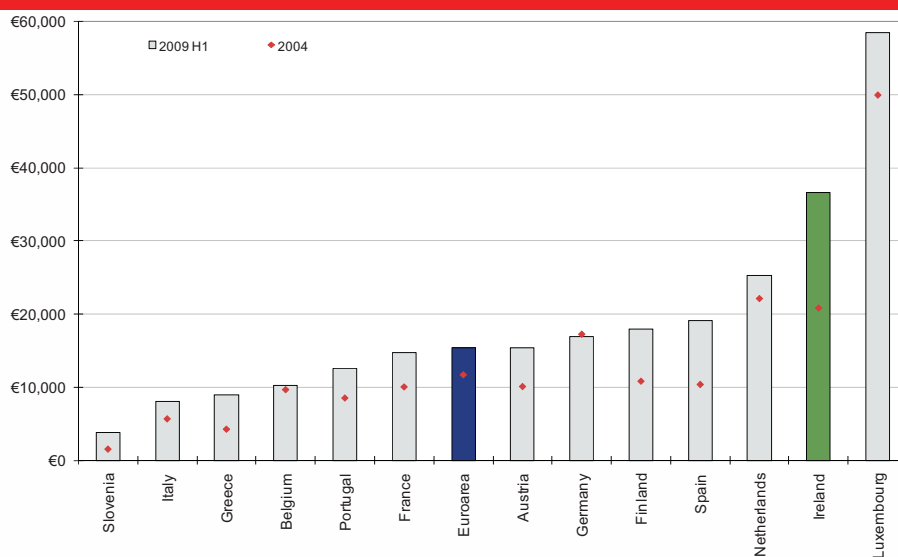


Between 2000 and 2007 Irish house completions were very high relative to the size of our population. There were 93,419 completions in 2006 however this has fallen dramatically since then. The latest ESRI forecast is for 20,000 completions in 2009<sup>130</sup>. New house registrations give an indication of activity and future completions. Registrations have fallen sharply to 1,736 in the first 5 months of 2009

**Ranking:** N/A

Source: Department of Environment, Heritage and Local Government, Housing Statistics. ESRI Quarterly Economic Commentary, Summer 2009.

**Figure 4.43 Household Borrowing per Capita, 2009 Q2<sup>131</sup>**



Ireland's debt per capita has increased very rapidly and Ireland is now one of the most indebted eurozone countries. Increases in personal indebtedness began to moderate in 2008 and has fallen in the first half of 2009. Approximately 75% of household debt in Ireland is mortgage debt, followed by consumer credit (18%).

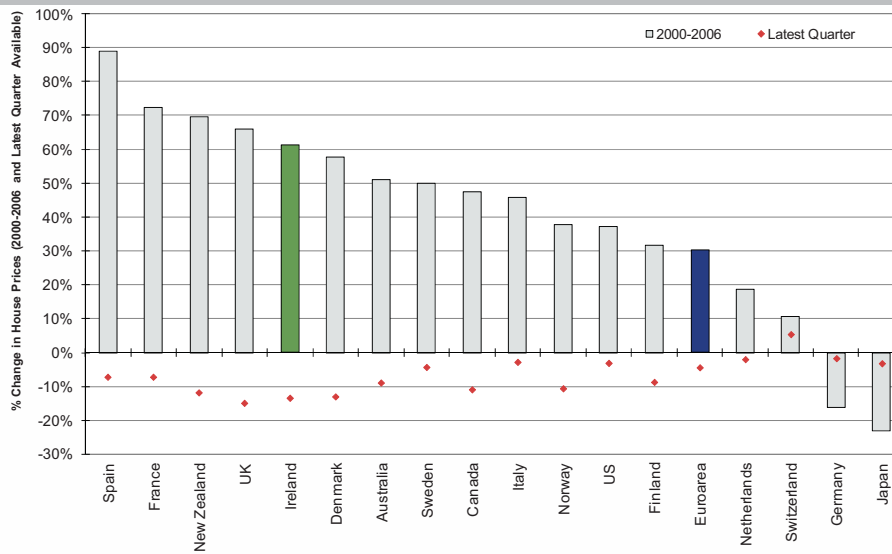
**Eurozone Ranking:** 15 (out of 16)

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

<sup>130</sup> ESRI, Quarterly Economic Commentary, Summer 2009.

<sup>131</sup> Data for the first half of 2009 refers to the first five months of the year due to data availability.

**Figure 4.44 Percentage Change in National House Prices, 2000-2006 and Latest Quarter Available**<sup>132</sup>

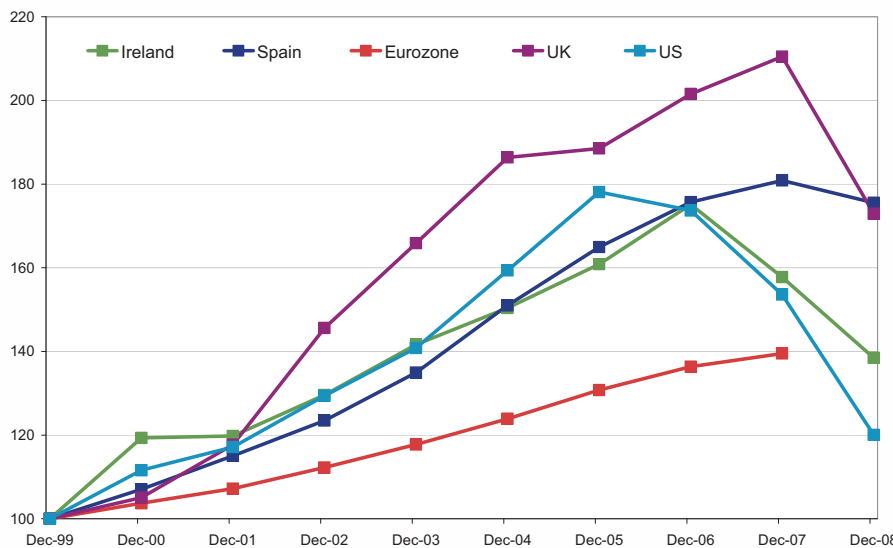


Between 2000 and 2006, Irish house prices increased by 61% in real terms as measured by the OECD. According to the Permanent TSB/ESRI House Price Index, average national house prices have fallen by 21% between their peak in February 2007 and May 2009.

Ranking: N/A

Source: OECD Economic Outlook 85, June 2009.

**Figure 4.45: Real House Price Index (Base Year=January 2000), 2000-2008**



Several developed economies experienced sustained housing market booms between 2000 and 2007. This chart compares the increase in an index of real house prices over the period 2000-2008. By this measure Irish house prices increased by 75% in real terms and have fallen by 21% between the peak in February 2007 and May 2009. US house prices rose by nearly 80% in real terms and have been falling since the peak in late 2006.

Ranking: N/A

Source: Eurozone and Spain: Financial Times, European House Price Index; US: Case-Shiller Composite 20 National House Price Index, Ireland: ESRI Permanent TSB House Price Index, UK: Nationwide House Price Index.

<sup>132</sup> Latest quarter available refers to either Q4 2008 or Q1 2009 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 and high value economic activity. 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 workers better qualified than their OECD counterparts. Older workers in Ireland 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. 4.46). Expenditure per student is below the OECD average at all levels while pre-primary education is predominantly privately funded, unlike that in other countries (Fig. 4.47 and Fig. 4.48).

### 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. 4.49). 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 14<sup>th</sup> and 18<sup>th</sup> respectively out of 21 countries surveyed (Fig. 4.50).

### 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. 4.51). Ireland has significantly fewer early school leavers than the EU-15 average (Fig. 4.52). 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 4.53). 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 (5<sup>th</sup>) but less well in terms of scientific literacy (14<sup>th</sup>) and mathematical literacy (16<sup>th</sup>) (Fig. 4.54). 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. 4.55).

### 4.3.4 Tertiary Education and Life-Long Learning

Ireland's younger population is considerably better qualified than older workers, with 42 percent of the 25-34 year age group possessing a third-level qualification. This compares very favourably with the OECD average of 34 percent (Fig. 4.56). 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. 4.57). Ireland performs well in terms of producing graduates in the fields of mathematics, science and computing per 1,000 of population aged 20-29 (Fig. 4.58).

However, in Ireland science and computing graduates dominate this category, which means that Ireland is producing a limited supply of mathematics focused graduates.

Irish institutions are not as successful as their counterparts in other English-speaking countries in terms of attracting international students (Fig. 4.60). Life-long learning comprises 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. 4.61).

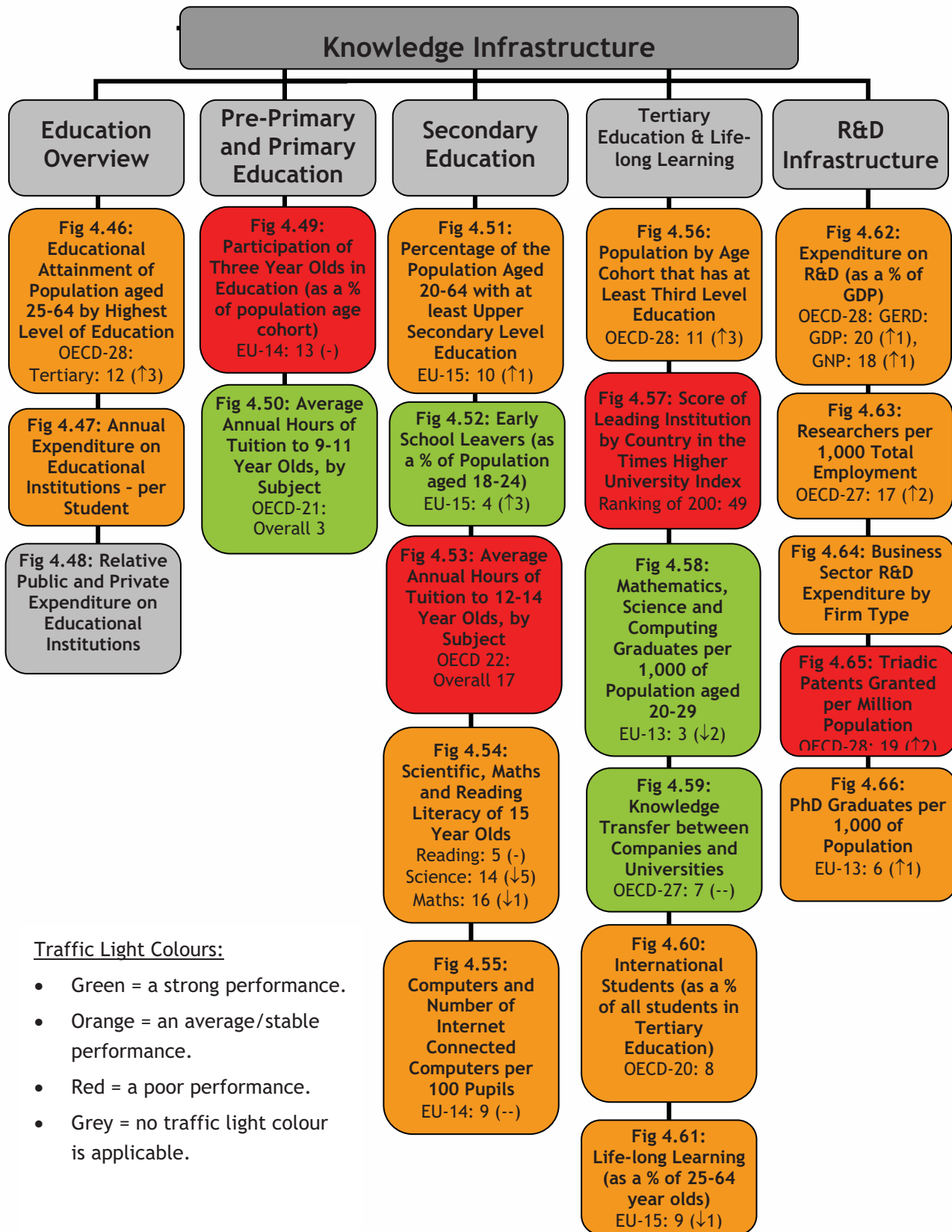
#### **4.3.5 Research and Development Infrastructure**

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 R&D expenditure, Ireland has so far made limited progress towards its target of 2.5 percent of GNP by 2013. Total R&D spending in Ireland increased from 1.26 percent of GNP in 2000 to 1.68 percent of GNP in 2008 (Fig. 4.62). This compares with an OECD average of 2.38 percent (2007). The number of researchers in Ireland is also growing, up from five researchers per 1,000 of total employment in 2000 to six per 1,000 in 2006 (Fig. 4.63). Despite strong growth rates in expenditure, business R&D as a percentage of economic activity has remained relatively static over the past decade. Most business expenditure on R&D in Ireland is undertaken by foreign-owned companies (Fig. 4.64). Triadic patents granted per million of population in Ireland remain below the OECD average (Fig. 4.65). Finally, the number of PhD graduates per 1,000 of population in 2007 was greater than the EU-13 average (Fig 4.66).



Chart 4.C



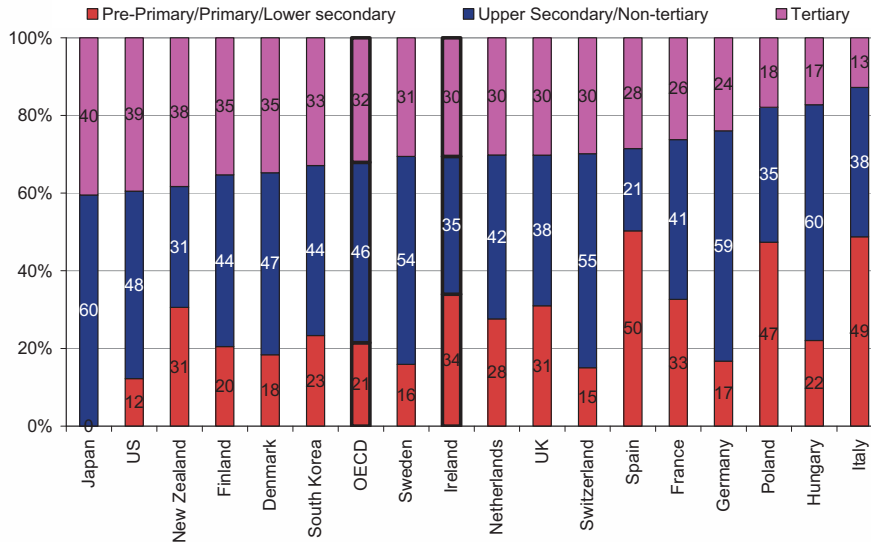
Traffic Light Colours:

- 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 4.46 Educational Attainment of Population Aged 25-64 by Highest Level of Education, 2006**

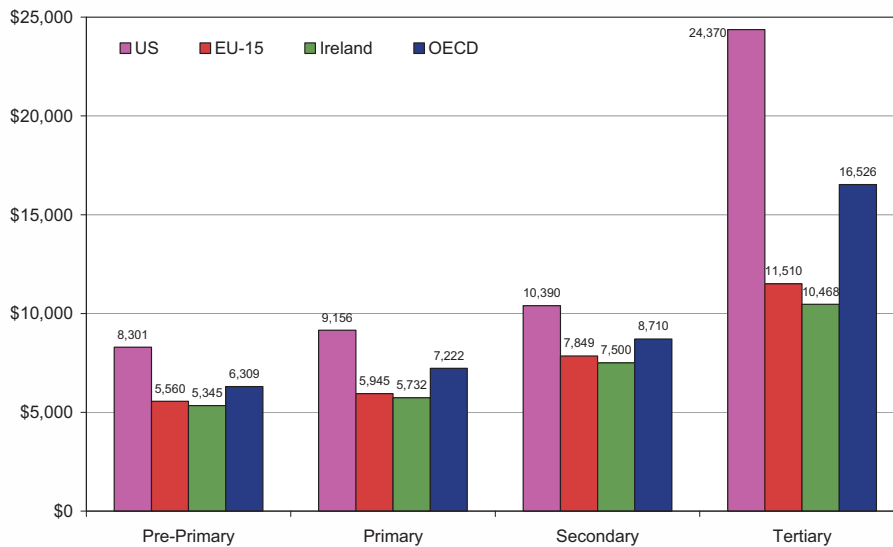


Average educational attainment in Ireland has increased dramatically in the last two decades. However, older cohorts of Ireland's labour force remain less qualified than the OECD average, and a relatively large share of the working age population (34%) has no more than lower secondary education.

**OECD-28 Ranking<sup>133</sup>:**  
Ranked by third level:  
12 (↑3)

Source: OECD, *Education at a Glance*, 2008

**Figure 4.47 Annual Expenditure on Educational Institutions - per Student (US\$ PPP), 2005<sup>134</sup>**



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.

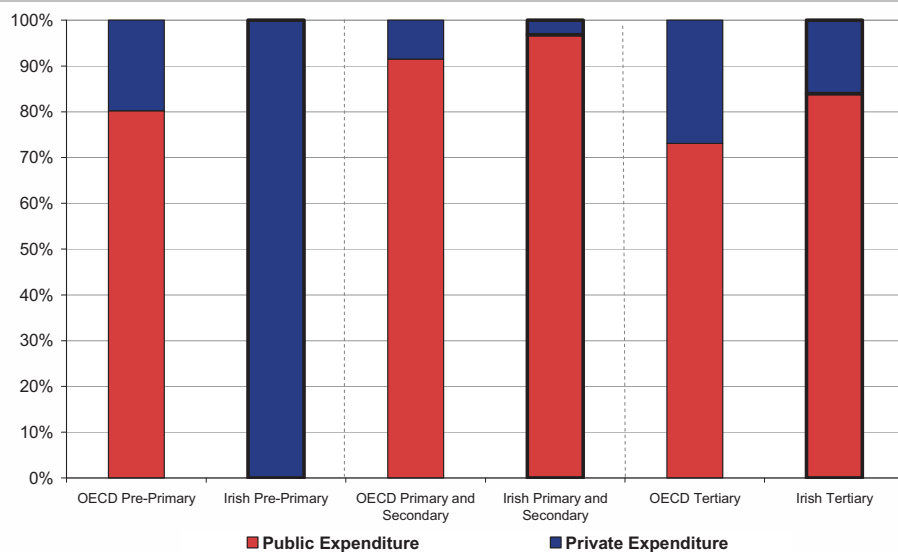
**OECD-28 Ranking:**  
Pre-Primary: 8 (↑9)  
Primary: 15 (↑4)  
Secondary: 18 (↓14)  
Tertiary: 15 (--)

Source: OECD, *Education at a Glance*, 2008

<sup>133</sup> Base year for ranking change is 2003 compared to 2006.

<sup>134</sup> 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 4.48 Relative Public and Private Expenditure on Educational Institutions (%), 2005<sup>135</sup>**



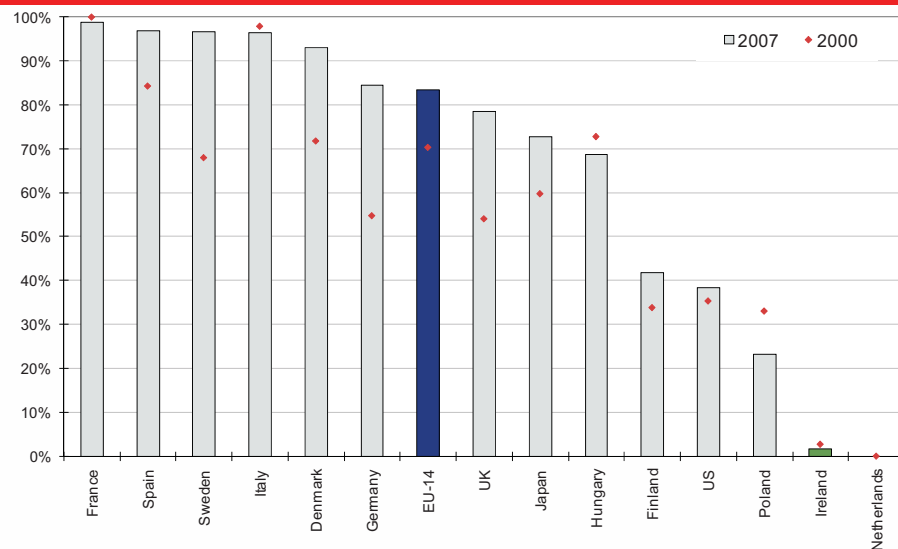
Pre-primary education in Ireland is almost entirely privately funded, unlike the typical OECD system which is predominantly publicly funded. Public funding is relatively more important in Ireland at all other levels of the education system.

Ranking: N/A

Source: OECD, *Education at a Glance*, 2008

### 4.3.2 Pre-Primary and Primary Education

**Figure 4.49 Participation of Three Year Olds in Education (as a % of population age cohort), 2007<sup>136</sup>**



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<sup>137</sup>. In 2009 the Government announced plans to introduce a free year of pre-school education.

EU-14 Ranking:  
13 (--)

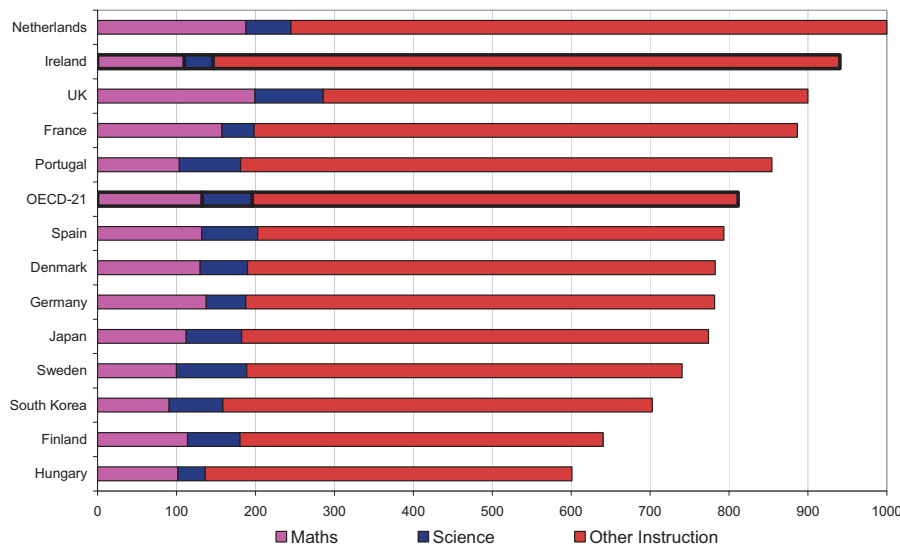
Source: Eurostat, *Population and Social Conditions*

<sup>135</sup> 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.

<sup>136</sup> EU-15 average minus Greece.

<sup>137</sup> NCC, *Statement on Education and Training*, 2009.

**Figure 4.50 Average Annual Hours of Tuition to 9-11 Year Olds, by Subject, 2006**



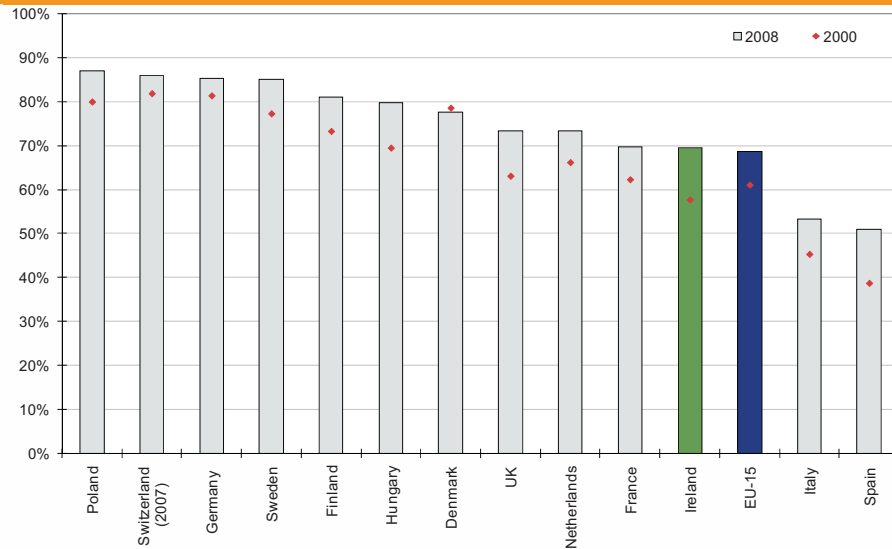
Overall, 9-11 year old students at primary level in Ireland receive more hours of tuition per year than in most other OECD countries. However, of 21 countries surveyed, only three countries allocated less time to teaching science. Less time is also allocated to teaching maths in Ireland than the OECD-21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

**OECD-21 Ranking<sup>138</sup>:**  
 Overall: 3  
 Maths Ranking: 14  
 Science Ranking: 18

Source: OECD, *Education at a Glance*, 2008

### 4.3.3 Secondary Education

**Figure 4.51 Percentage of the Population Aged 25-64 with at least Upper Secondary Level Education, 2008**



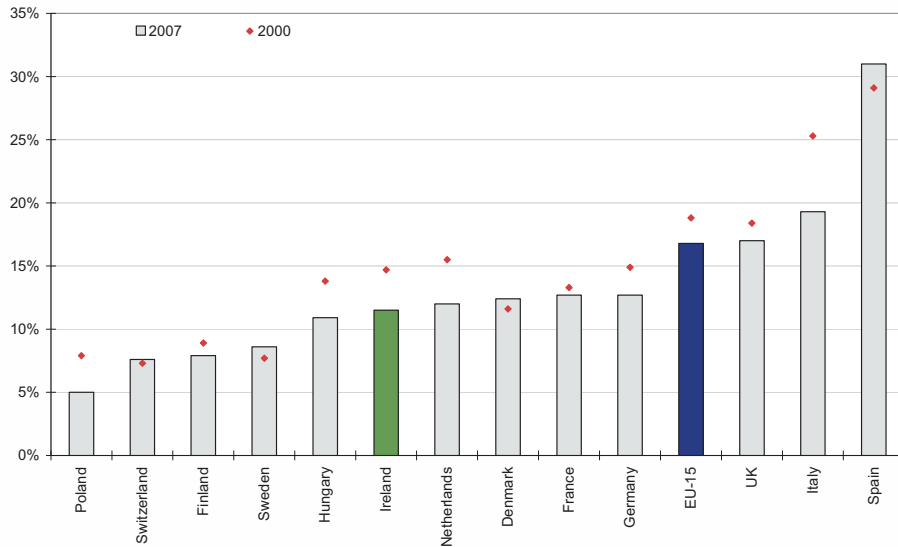
Current secondary level completion rates will take a long time to raise the overall level of qualifications. 69.4% of the 25-64 age group in Ireland have attained at least upper secondary education, which slightly above the EU-15 average. Nevertheless this figure is below several leading EU countries.

**EU-15 Ranking:**  
 10 (↑1)

Source: Eurostat, *Population and Social Conditions*

<sup>138</sup> OECD average minus Belgium, Canada, New Zealand, Poland, Switzerland, Slovakia and US. Traffic-light determined based on overall ranking.

**Figure 4.52: Early School Leavers (as % of population aged 18-24), 2007**

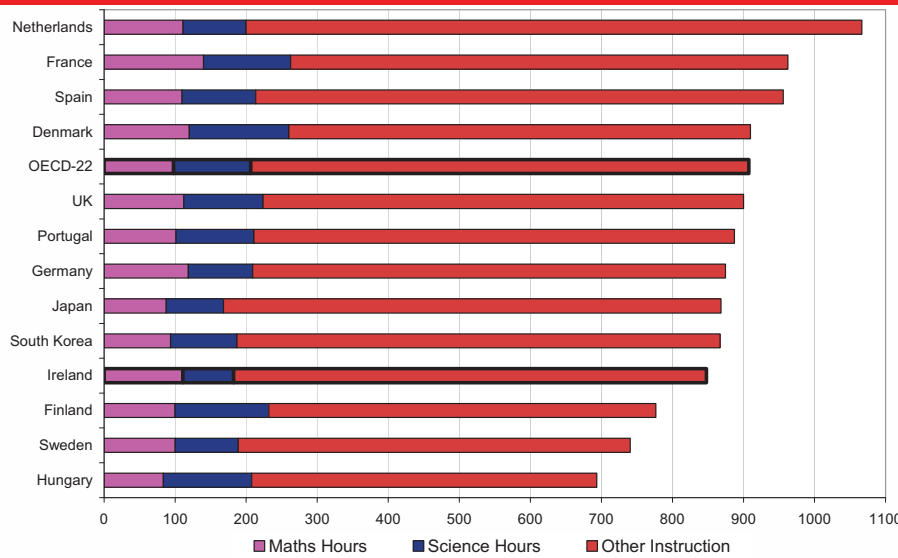


This indicator forms a key metric in the Lisbon Agenda. It is defined as the percentage of the population aged 18-24 with at most lower secondary education who are not in further education or training. In Ireland 11.5% of this age cohort were early school leavers in 2007 compared to the EU-15 average of 16.9%.

**EU-15 Ranking:**  
4 (↑3)

Source: Eurostat, Structural Indicators

**Figure 4.53 Average Annual Hours of Tuition to 12-14 Year Olds, by Subject, 2006<sup>139</sup>**



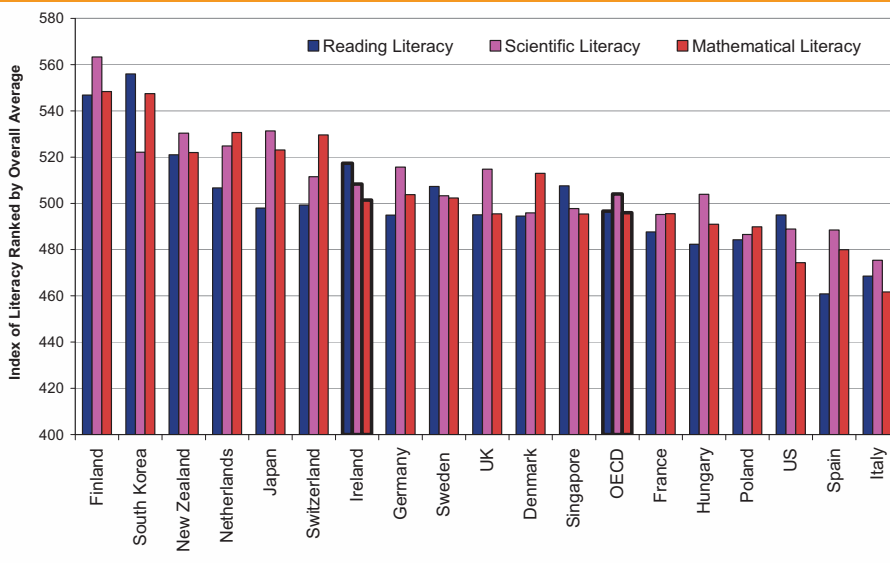
Overall, 12-14 year old students in Ireland receive less hours of tuition per year than in most other OECD countries. Of the 22 countries surveyed, students in Ireland receive the third lowest amount of tuition time in science.

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

Source: OECD, Education at a Glance, 2008

<sup>139</sup> OECD average minus Canada, New Zealand, Poland, Switzerland, Slovakia and US. Traffic-light determined based on overall ranking.

**Figure 4.54 Scientific, Mathematical and Reading Literacy of 15 Year Olds, 2006<sup>140</sup>**

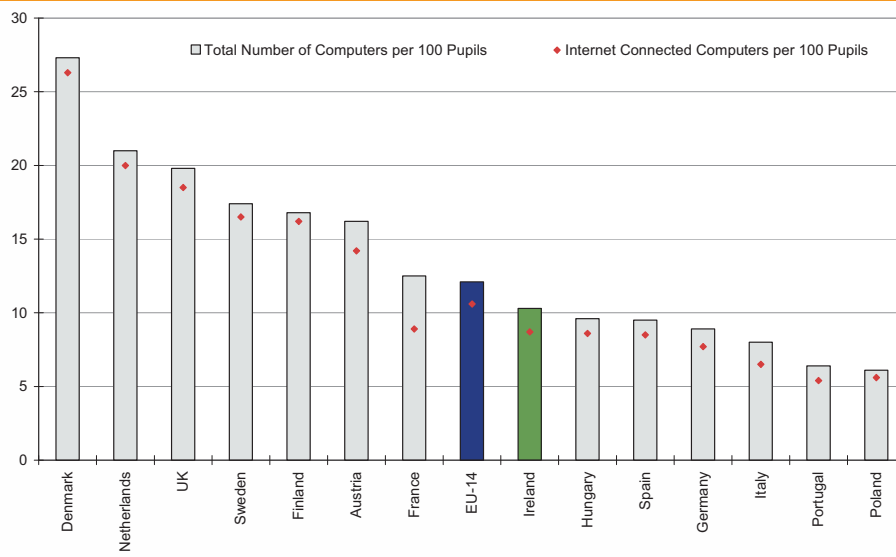


In the OECD 2006 PISA (Programme for International Student Assessment) study, Irish 15 year olds ranked comparatively well in terms of reading literacy but ranked less well for scientific and mathematical literacy. Small differences between countries should be interpreted with caution.

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

Source: OECD, PISA Database, 2006

**Figure 4.55 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.

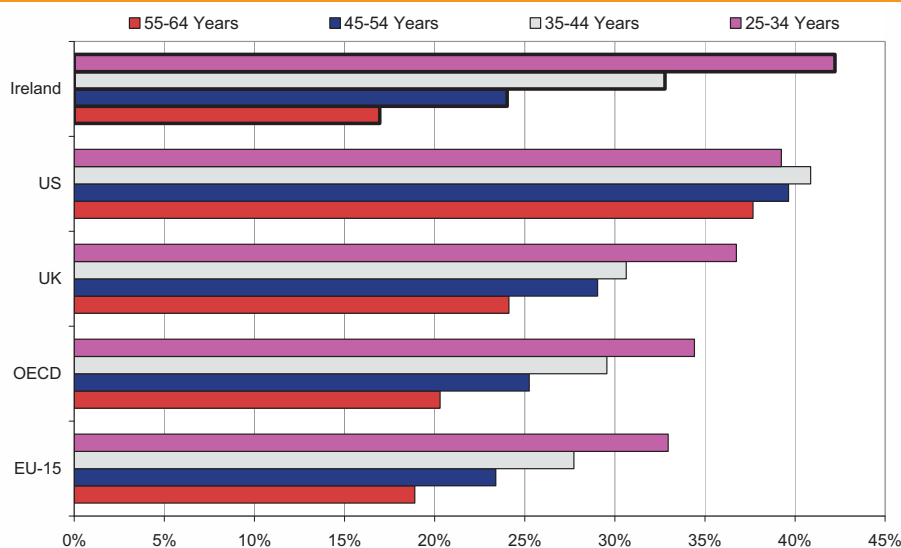
**EU-14 Ranking<sup>141</sup>:**  
 Ranked by Total:  
 9 (--)

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

<sup>140</sup> 2003 data used for US reading literacy due to data availability.  
<sup>141</sup> EU-15 average minus Greece.

### 4.3.4 Tertiary Education and Life-long Learning

**Figure 4.56 Population by Age Cohort that has at Least Third Level Education, 2006**

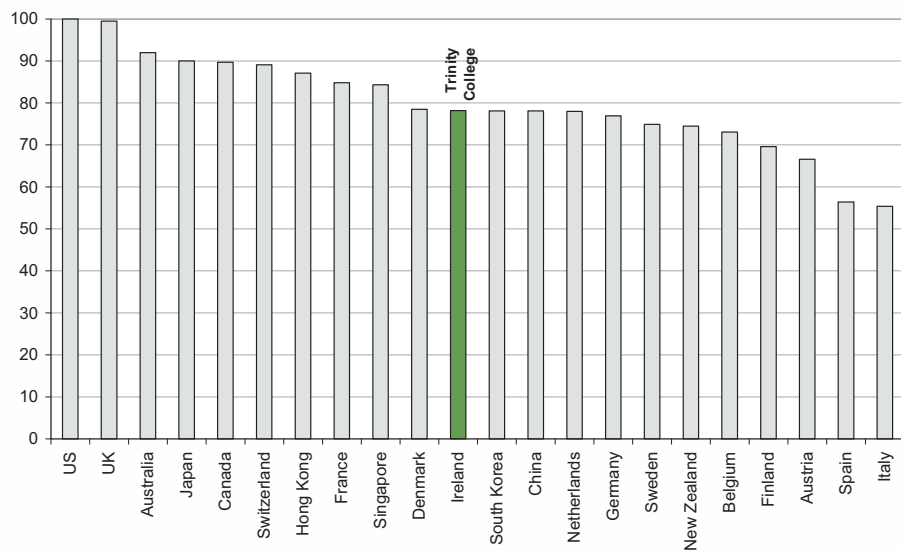


A breakdown of third-level graduates by age reveals that Ireland's educational attainment varies much more by age than in other countries. While cohorts over 45 years old (in particular the 55-64 age group) have lower attainment rates than the OECD average, Ireland's 25-34 year olds are more qualified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

**OECD-28 Ranking<sup>142</sup>:**  
(ranked by total 25-64 year olds) 11 (↑3)

Source: OECD, *Education at a Glance*, 2008

**Figure 4.57 Score of Leading Institution by Country in the Times Higher University Index (Scale 0-100), 2008**



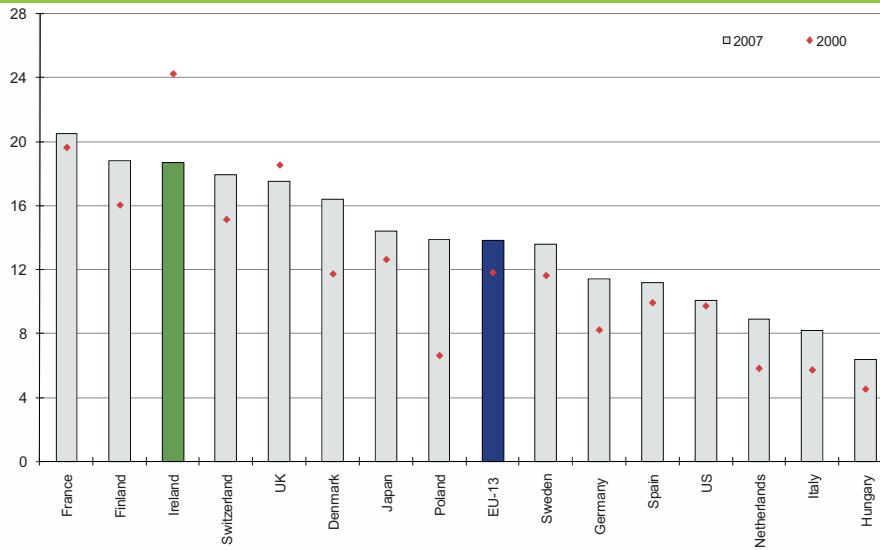
Ranking third-level institutions is an exercise fraught with difficulties. The scores are based on peer review assessments, number of citations, ratio of faculty to student numbers and success in attracting foreign students. This index identified Trinity College as Ireland's leading institution ranking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

**Ranking of Institution:**  
49 (out of 200)

Source: *The Times Higher Education Supplement*, 2008

<sup>142</sup> Base year for ranking change is 2001 compared to 2006.

**Figure 4.58 Mathematics, Science and Computing Graduates per 1,000 of Population aged 20-29, 2007<sup>143</sup>**

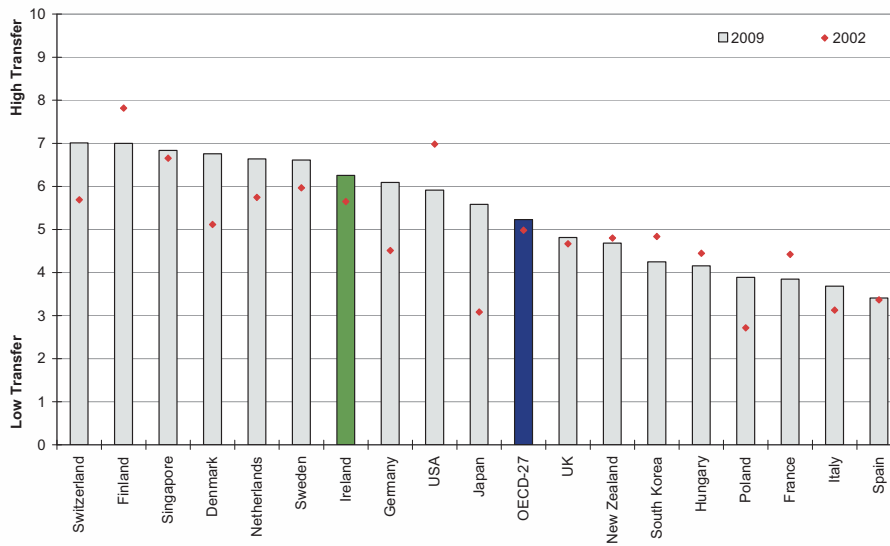


Ireland has a high number of graduates in the fields of mathematics, science and computing per 1,000 of population aged 20-29. However, in Ireland science and computing graduates dominate this category, which means that Ireland is producing a limited supply of mathematics focused graduates. It is also notable that Ireland's performance has weakened in recent years.

**EU-13 Ranking:**  
3 (↓2)

Source: Eurostat, Population and Social Conditions

**Figure 4.59 Knowledge Transfer Between Companies and Universities, (Scale 0-10) 2009**



Executive opinions regarding the level of development of knowledge transfer between academia and enterprise in Ireland are 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<sup>144</sup>:**  
7 (--)

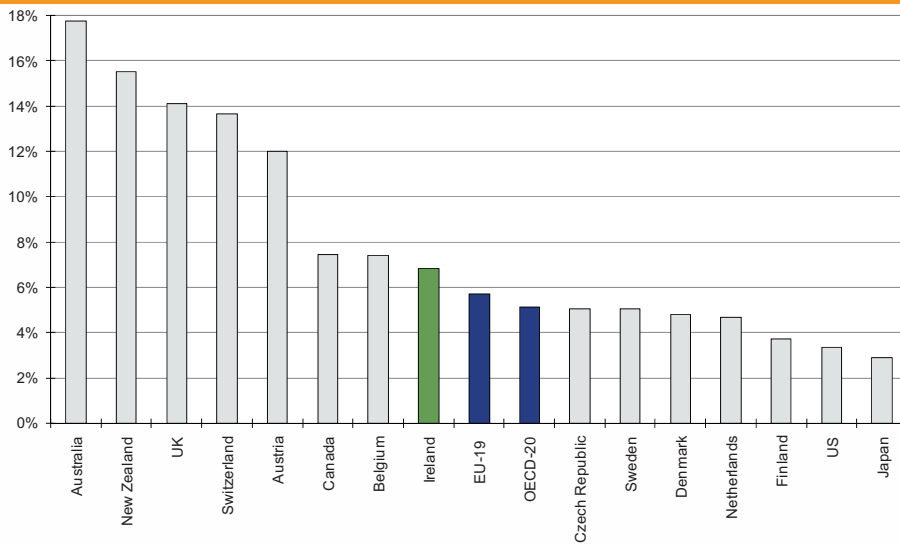
Source: IMD World Competitiveness Yearbook, 2009

143 EU-15 average minus Luxembourg and Greece.

144 OECD-28 average minus Iceland. Base year for ranking change is 2002 compared to 2009.



**Figure 4.60: International Students (as a % of all Students in Tertiary Education), 2006**

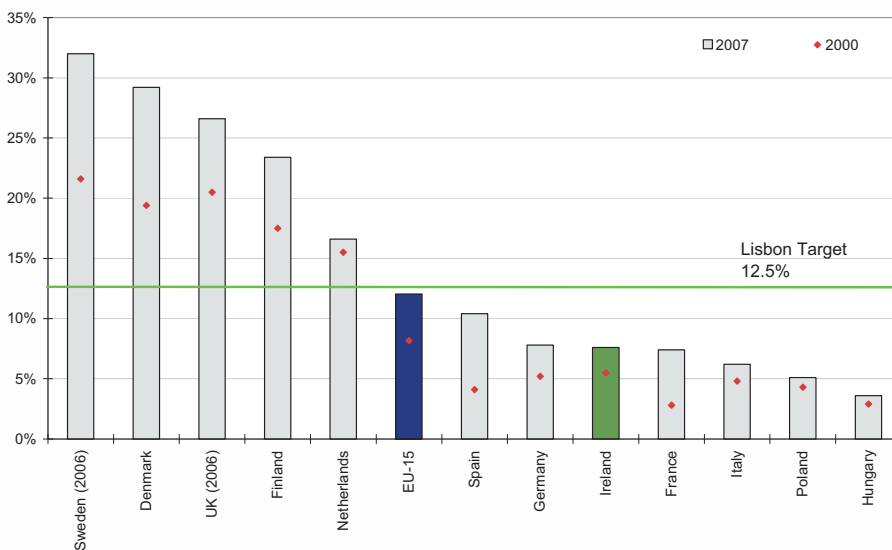


In 2006, foreign students comprised 6.9% of total tertiary students in Ireland. This is similar to the OECD average of 5.1% and the EU-19 average of 5.7%<sup>145</sup>. Nonetheless Irish institutions are not as successful as their counterparts in English-speaking countries such as Australia, New Zealand and the UK in attracting international students.

**OECD-20 Ranking:**  
8

Source: OECD, *Education at a Glance*, 2008

**Figure 4.61 Life-long Learning (as a % of 25 to 64 year olds), 2007<sup>146</sup>**



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 25-64 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.

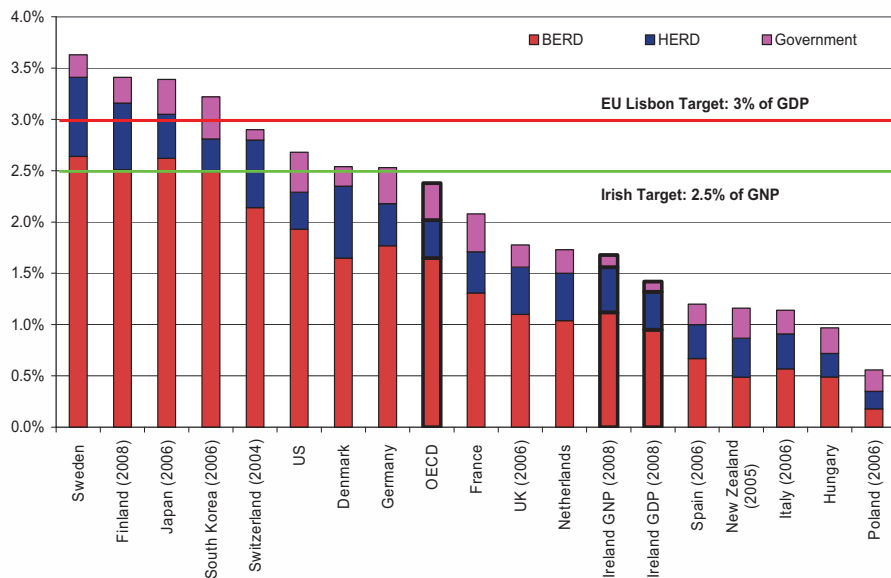
**EU-15 Ranking:**  
9 (↓1)

Source: Eurostat, *Structural Indicators*

<sup>145</sup> EU-19 is the EU-15 member states plus Czech Republic, Hungary, Poland and the Slovak Republic.  
<sup>146</sup> 2002 data is used for Ireland and 2001 data for Poland as 2000 data is unavailable.

### 4.3.5 Research and Development Infrastructure

**Figure 4.62: Expenditure on R&D as a percentage of GDP (Business, Higher Education and Government), 2007**

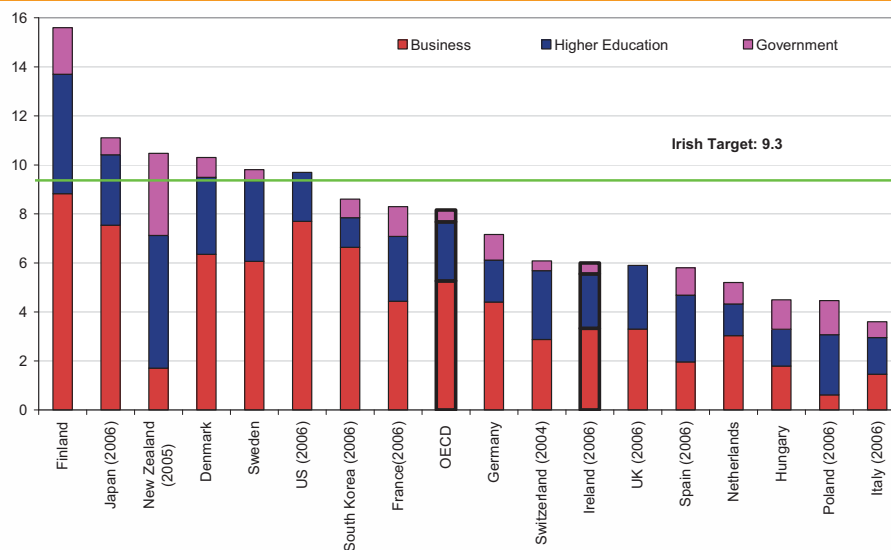


The Irish Strategy for Science, Technology and Innovation 2006-2013 foresees Ireland reaching 2.5% of GNP by 2013. In 2008 expenditure on R&D was estimated to be 1.68% of GNP. In 2006 business expenditure on R&D in Ireland was €1,560 million.

**OECD-28 Ranking<sup>147</sup>:**  
 GERD: GDP: 20 (↑1)  
           GNP: 18 (↑1)  
 BERD: GDP: 19 (↓1)  
           GNP: 15 (↑3)  
 HERD: GDP: 18 (↑4)  
           GNP: 13 (↑9)

Source: OECD, Main Science and Technology Indicators, 2008/ Issue 2

**Figure 4.63: Researchers per 1,000 Total Employment, 2007**



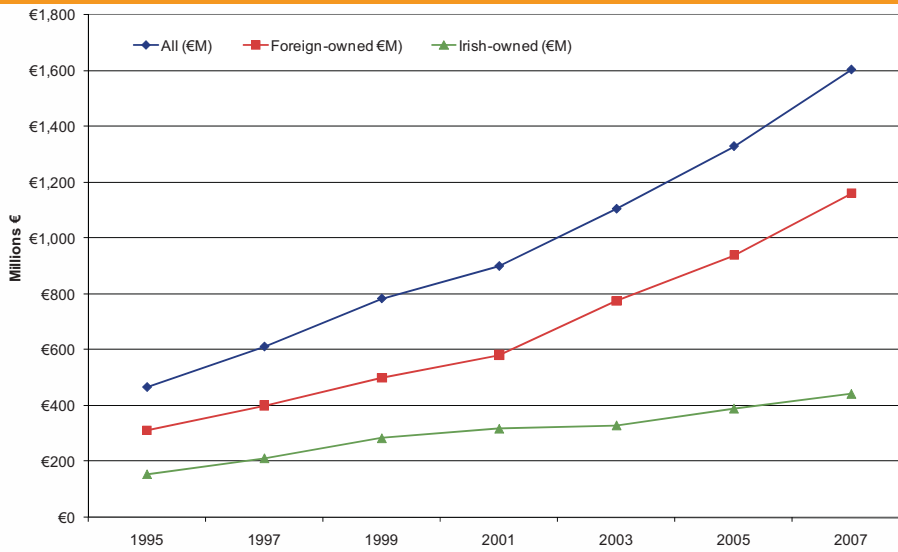
The R&D Action Plan for promoting investment in R&D set a target of 9.3 researchers per 1,000 of total employment by 2010. The number of researchers has grown from 5 per 1,000 total employment in 2000 to 6 per 1,000 in 2006. The number of business researchers in Ireland is significantly lower than the OECD average. However the number of higher education researchers has grown strongly in recent years.

**OECD-27 Ranking<sup>148</sup>:**  
 Total: 17 (↑2)  
 Business: 15 (--)  
 Higher Education: 19 (↑4)

Source: OECD, Main Science and Technology Indicators, 2008/ Issue 2

147 Rankings incorporate the latest available data for countries that are unavailable for 2007. GERD refers to Gross Expenditure on Research and Development, comprising business, higher education and government spending. 148 Rankings incorporate the latest available data for countries that are unavailable for 2007. OECD-28 average minus Ireland. Traffic light determined based on 'total' ranking.

**Figure 4.64 Business Sector R&D Expenditure by Firm Type, 1995-2007**

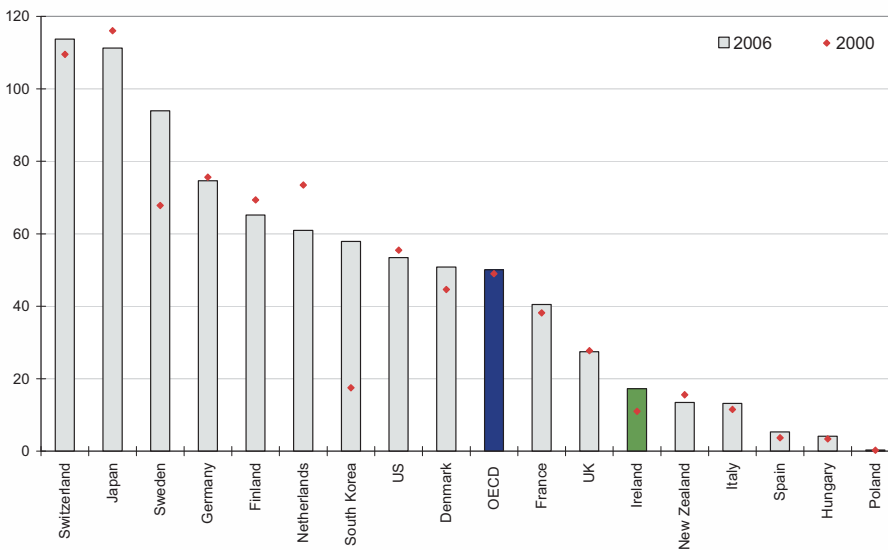


Foreign-owned companies undertake most business expenditure on R&D in Ireland. The Irish Strategy for Science, Technology and Innovation 2006-2013 has set a target for business expenditure on R&D in indigenous firms to grow to €825 million by 2013. This is almost double the amount spent by Irish firms in 2007.

Ranking: N/A

Source: Forfás, *Research and Development Performance in the Business Sector, 2005/06*; CSO, *Business Expenditure on Research and Development, 2007/2008*

**Figure 4.65 Triadic Patents Granted per Million Population, 2006**

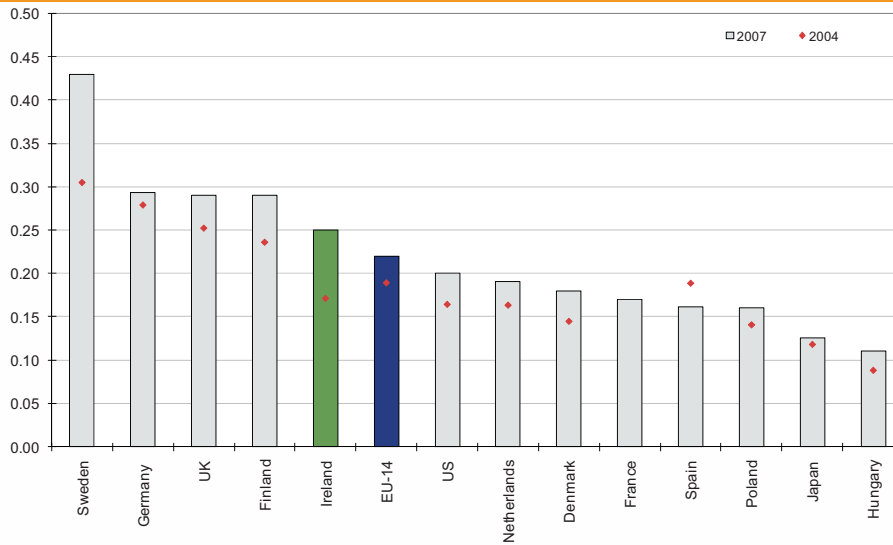


Patents can be taken as a reflection of a country's inventive activity. Triadic patents are patents granted at the European, Japanese and the US patent offices. On this measure, Ireland continues to perform well below the OECD average.

OECD-28 Ranking: 19 (↑2)

Source: OECD, *Main Science and Technology Indicators, 2008/ Issue 2*

**Figure 4.66 PhD Graduates per 1,000 of Population, 2007<sup>149</sup>**



Researchers including PhD graduates are central to the delivery of Ireland's Strategy for Science, Technology and Innovation. In 2007, Ireland had 14% more PhD graduates per 1,000 of population than the EU-13 average. In 2007, 54% of PhD graduates in Ireland were males and 46% were female. This gender gap is not as large as that in other EU countries.

**EU-14 Ranking:**  
6 (↑1)

Source: Forfás Calculations; Eurostat, Population and Social Conditions

<sup>149</sup> EU-15 minus Luxembourg. 2003 data is 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](http://www.forfas.ie)

[www.competitiveness.ie](http://www.competitiveness.ie)

