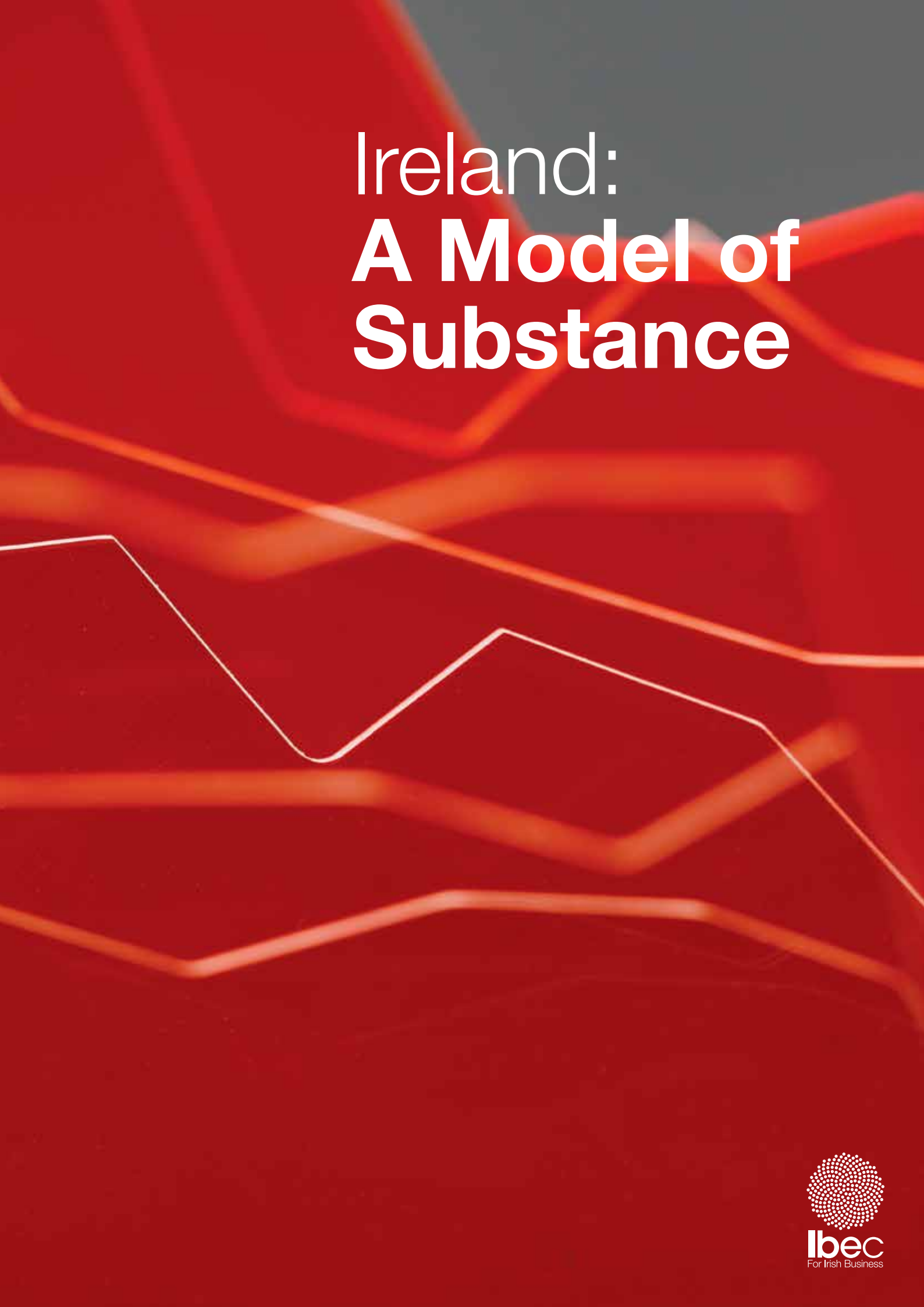
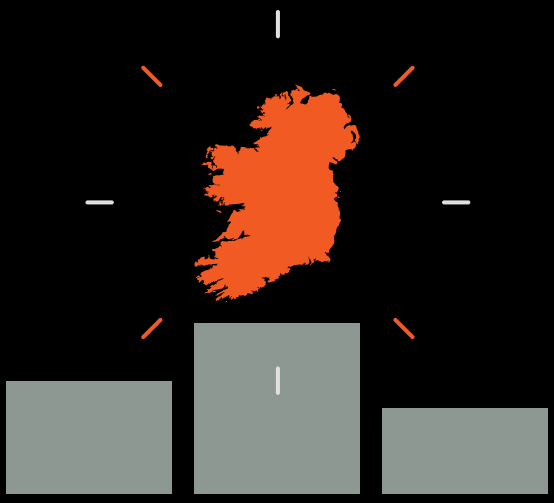

Ireland:
A Model of
Substance
Ibec
For Irish Business

Ireland is rated:

1st	for availability of skilled workers
1st	for flexibility/adaptability of workplace
1st	for investment incentives
1st	for attitude towards globalisation
2nd	for business legislation & openness to foreign investors
2nd	for large corporations, efficient by international standards
2nd	for adaptability of companies
2nd	for real corporation taxes



Ireland:
A Model of Substance

Ibec
For Irish Business

Foreword

The Irish economy has been making headlines around the world for over two decades now. It's not hard to see why: the Celtic Tiger story is utterly compelling – transforming from one of the poorest countries in western Europe to one of the richest – and the recovery from the recent global recession has been similarly impressive, most dramatically captured by the one-third growth in measured economic activity in one year, 2015. Today Ireland is once again Europe's fastest growing economy and commentators who dismissed the Tiger years as Icarus flying too high have had to revise their understanding, and acknowledge the depth and substance of the Irish business model.

Other countries might envy Ireland the oxygen of publicity – the headlines, the glowing mentions in financial papers and economic journals, the top ranking in international competitiveness reports. All this cements the country's deserved reputation as an excellent business location. However, coverage has also come with misconceptions about the structure and nature of the Irish economic model.

The low corporate tax rate is central to this model, and it's certainly one of the engines driving growth. But we don't run on one engine. As this report demonstrates, our corporate tax rate is part of a multifaceted package of measures that are attractive to globalised businesses. This includes a highly educated and flexible workforce, ease of access to both the US and the EU, and an ecosystem of collaborative research.

Some commentators, both Irish and international, have seen the proposals of the US and UK governments to slash their corporation tax rates (to 15% and 17% respectively) as a threat to Ireland. This perception is wrong and arises from a fundamental misunderstanding about the strength and substance of the Irish business model.

> Tax havens are insubstantial and what this report shows is that the Irish business model is built on what the OECD terms **substance**.

Edel Creely, Ibec President (right) with Danny McCoy, Ibec CEO

Ibec welcomes the global trend towards lower corporate taxes wholeheartedly. We are proud that Ireland has been to the forefront of stimulating business through competitive corporate taxation to increase investment, trade, employment and tax revenues. We believe that Ireland is in a position of strength to continue this momentum.

It is vital to get this message across now as Ireland faces the unique, generational challenge of Brexit. Ultimately Brexit may represent an opportunity as Ireland becomes the only English-speaking economy in the EU, and one with abiding historic links to the US, but that is not to underestimate the potential risks and instabilities in the short-term.

This phase of our business development will not be without its challenges, but the first challenge this report addresses is our international reputation as an aggressive corporate taxation jurisdiction. We are. And as businesses we know this competitive spirit is the lifeblood of how every nation succeeds. We want Ireland to be the best in the world as a business location, and while we play hard, we also play fair. Tax havens are insubstantial and what this report shows is that the Irish business model is built on what the OECD terms substance. Our best days are ahead: 'substance' will trump perception.

Contents

> “Ireland has been in the global corporate substance game for seven decades. The cascade of capital is matched by growth in skilled labour.”

Substance

In its recent Action Plan on Base Erosion and Profit Shifting (BEPS), the OECD specifies that to fight against harmful tax practices and improve transparency, it requires 'substantial activity' and in the same paper it attacks shell companies that have little or no substance in terms of office space, tangible assets and employees. In short, the OECD is seeking to align profit to where substantial activity occurs. So, what is meant by substance or substantial activity?

Economies of substance have depth, diversity, and years of tactical policy planning and implementation behind them.

In contrast, insubstantial economies don't encourage a diversity of industries; they don't do R&D or high-value manufacturing and don't generate indigenous firms of scale or outward investment.

Six qualities may be said to characterise substance: Evolution; Global Footprint; Full Business Lifecycle; World Class; Global Hub; and Clusters.

Evolution refers to the history and evolution of a country's economic policies. An economy of substance is decades in the making and develops out of targeted policies that take into account best international practise and specific regional strengths. Central to the evolution of a pro-business economy are: a transparent and competitive tax regime, a skilled and flexible workforce, and the right political and regulatory institutions.

A Global Footprint is what an economy develops when it serves worldwide markets and when investment circulates. It is about matching foreign direct investment and the influx of multinationals with strong outward direct investment and the establishment of export markets abroad.

The Full Business Lifecycle is when all activities related to product development, distribution and ultimately sales (e.g. R&D, manufacturing, process development, finance and marketing), are carried out within the territory.

A World Class economy is globally competitive in terms of people, research and activities, and performance is driven from a strong and collaborative business culture, with principles of operational excellence deeply embedded in the thinking of leaders and employees. A world class economy attracts people at the top of their game and invests in R&D to create a culture of excellence.

A Global Hub is what's created when top international companies converge to locate their headquarters in a particular territory.

Clusters are what happens when there's range and diversity in the economy. Instead of relying on one type of activity, e.g. Foreign Direct Investment, or one sector, e.g. biopharma, a dynamic ecosystem evolves with multinationals in different sectors generating local SMEs and partnering with indigenous enterprise, along with higher education and health institutions.

Typically, economies of substance will evidence a number of these qualities. Ireland evidences all six, making it an economy of exceptional substance.

Key Messages

1. Evolution

In the late 1980s, Ireland was still classified as a cohesion country in need of structural funds. A generation on, Ireland is a net contributor to the EU budget, a hub of global business and Europe's fastest growing economy. Exports of goods and services as a proportion of GDP rose from 24% in 1965 to 124% in 2015, making Ireland the fifth most intensive exporter of its goods and services in the world.

2. Global Footprint

Ireland's outward investment matches Foreign Direct Investment and Irish companies employ almost as many people in the USA as US companies employ in Ireland. Ireland is now the largest net exporter of dairy ingredients, beef and lamb in Europe and the largest exporter in Europe of powdered infant formula, while over half of the world's fleet of leased aircraft is managed through Irish companies (rising from a base of just 2% in 1998).

3. Full Business Lifecycle

Ireland specialises in the full lifecycle of business – from R&D to production, on to sales, marketing, logistics and finance. Ireland manufactures a third of the world's contact lenses, three quarters of global orthopaedic knees and 80% of stents globally, while over 30 million diabetes sufferers rely on injectable devices manufactured in Ireland.

A tactical, transparent and multifaceted approach to economic planning over many decades has seen Ireland develop into an economy of depth and diversity, one resilient enough to emerge strongly from the recent global recession.

Key factors in the creation of Ireland's pro-business environment include: a skilled flexible workforce; membership of the Single Market; a stable industrial relations regime; a reliable business culture favourable to commerce; and a stable; transparent and competitive tax regime built on the 12.5% corporate tax rate; a best in class R&D tax credit and the world's first Base Erosion and Profit Shifting compliant patent box.

4. World Class

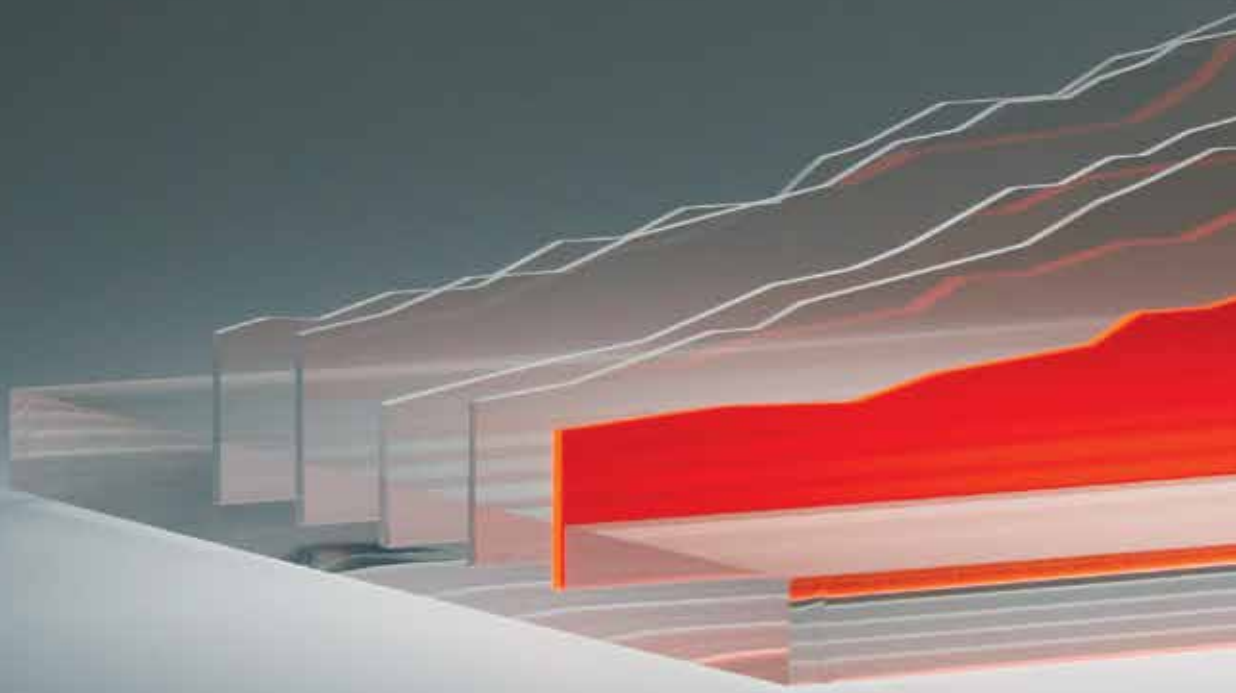
Ireland's world class economy is globally competitive in terms of human capital and research. Our non-Irish national workforce is double the EU average and twice as likely to be educated to third-level. Ireland has the EU's highest proportion of workers in high-tech manufacturing, with twice the level of Germany in second place: 7.5% of Ireland's workforce is in high technology sectors, far outstripping the EU average of 4%.

5. Global Hub

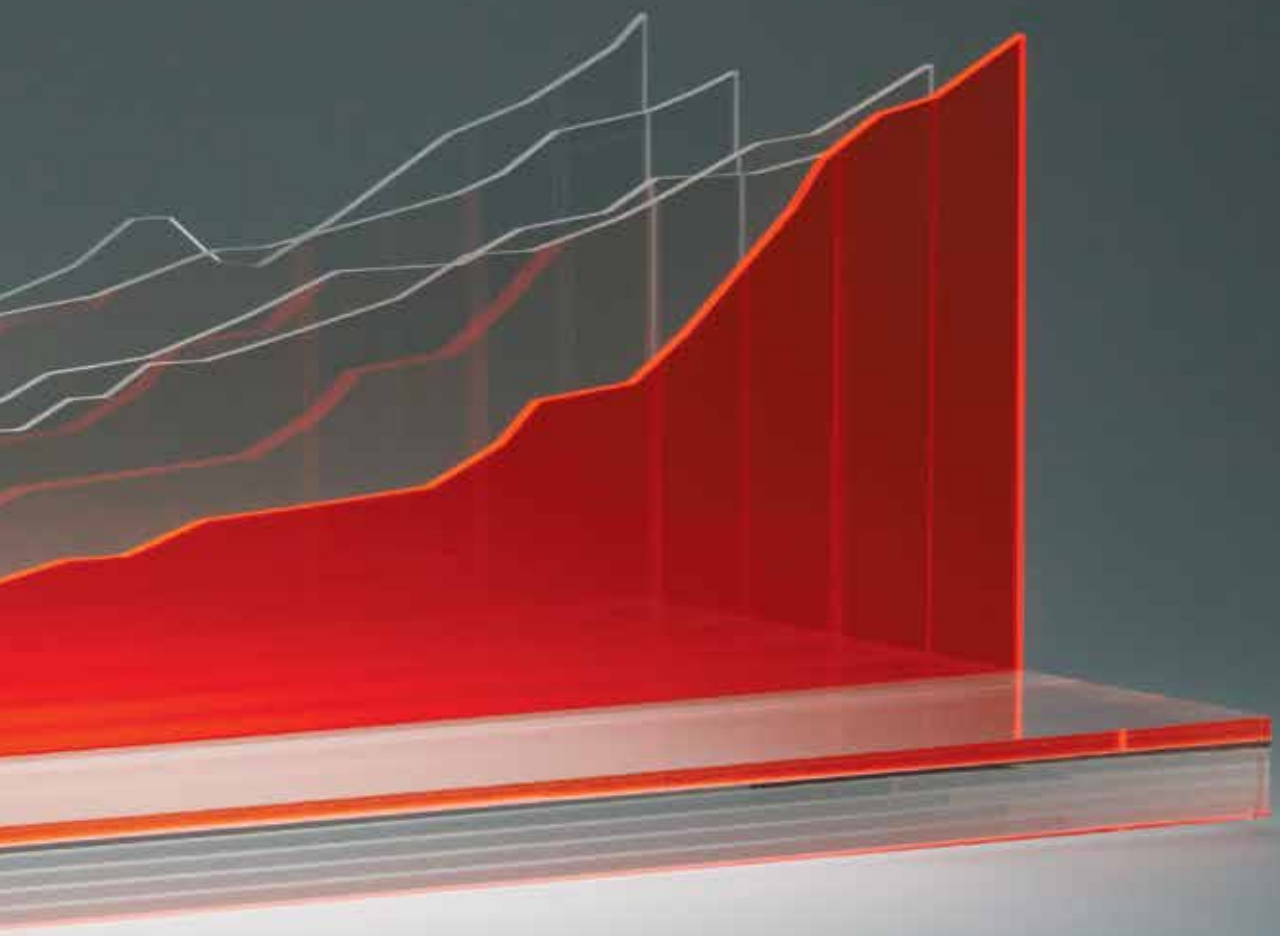
Since 1990, changes in Irish GDP growth have mirrored world GDP growth, with ease of access to global markets proving crucially important to companies operating in Ireland. Ireland is now home to all of the top ten global technology companies, 18 of the top 20 pharmaceutical companies and 18 of the top 25 medical technology companies.

6. Clusters

In an increasingly networked global business community seeking collaborative innovation, the proximity of leading edge sectors and talent in Ireland gives huge comparative advantage. On average in Ireland a life sciences and tech company are an hour and a half drive apart.



Today's strong and successful Irish business model did not appear overnight: it evolved over the course of 70 years.



Model representing Ireland's GDP per capita
1950 to 2016

See Figure **1, Page 15**

1. Evolution

In the late 1980s, Ireland was still classified as a cohesion country in need of structural funds. A generation on, Ireland is a net contributor to the EU budget, a hub of global business and Europe's fastest growing economy. Exports of goods and services as a proportion of GDP rose from 24% in 1965 to 124% in 2015, making Ireland the fifth most intensive exporter of its goods and services in the world.

Today's strong and successful Irish business model did not appear overnight: it evolved over the course of 70 years. We have inspirational policy-makers, implementing deep structural change, to thank for the transformational story of a poor and insular country accelerating from delayed convergence within the European core to one of the world's richest and most globalised economies.

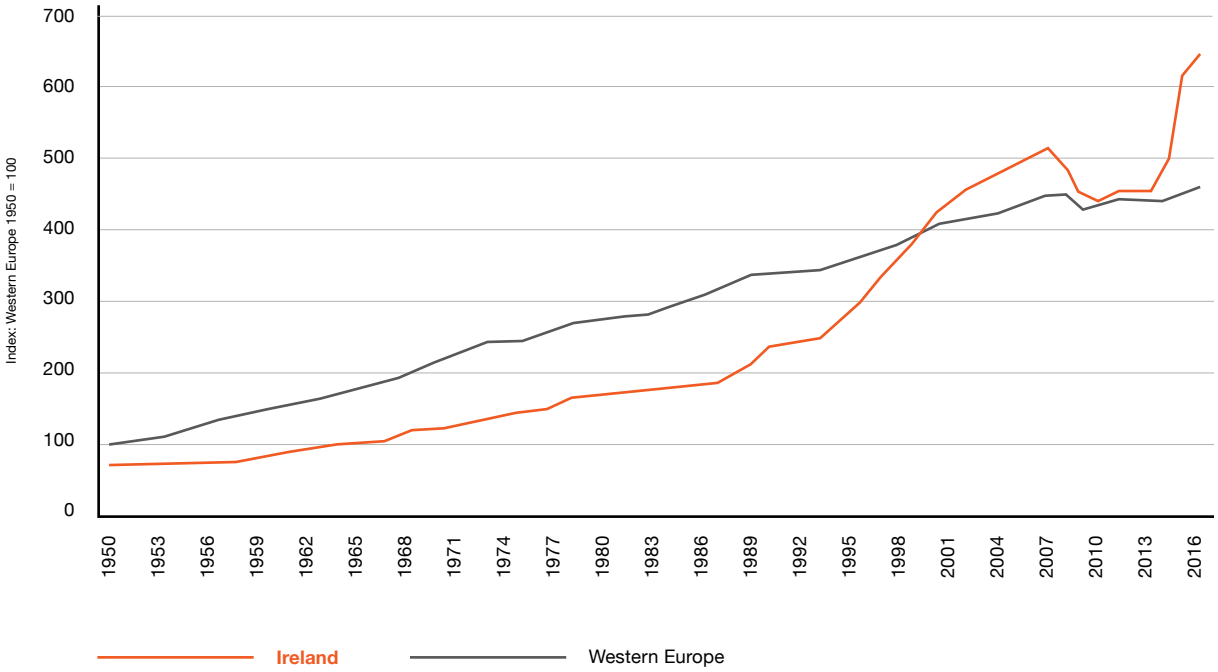
From the formation of the Industrial Development Agency (IDA) in 1949, through to European Union membership in 1973, and onward to the OECD corporation tax process today, Ireland has opened up its economy and embraced the trend towards global integration.

In 1950 Irish GDP per capita was less than 70% of the average of Western Europe, even though Europe had just emerged from the ravages of the Second World War. Thanks to Marshall Aid (which Ireland did not benefit from), Europe experienced post war rebuild and boom, while Ireland continued to lag in convergence terms.

Contd. →

Figure 1: Ireland's GDP per capita 1950 to 2016

Source: Maddison, Eurostat and Ibec calculations



In 1958 the visionary public servant and economist TK Whitaker published the *First Programme for Economic Expansion,* a blueprint to move from a protectionist economy to an open one, and to attract inward investment. This led to Ireland developing the pro-business environment which has been key to its international reputation as a great place to do business.

The key factors in creating this environment are: a skilled, flexible workforce (including access to a global skills pool attracted by Ireland's high standard of living); a stable, transparent and competitive tax regime; membership of the EU Single Market with a regulatory regime conducive to doing business globally; a stable industrial relations regime, robust to challenge, and a strong and reliable business culture, favourable to commerce and transaction. This comes with the guarantee that where problems arise, companies have unique high level stakeholder access.

Once this pro-business environment was in place, Irish convergence took place in rapid time, resulting, from the late 1980s onwards, in a massive influx of foreign direct investment coupled with a move up the value chain.

Foreign Direct Investment

Foreign investment, attracted by Ireland's excellent pro-business environment, has helped transform the Irish economy. Total multinational employment rose from 65,000 in 1985 to 142,000 in the year 2000 and just under 200,000 in 2017. The indirect employment of companies in their supply chain is likely to be more than double this figure – or one in five jobs in the total economy.

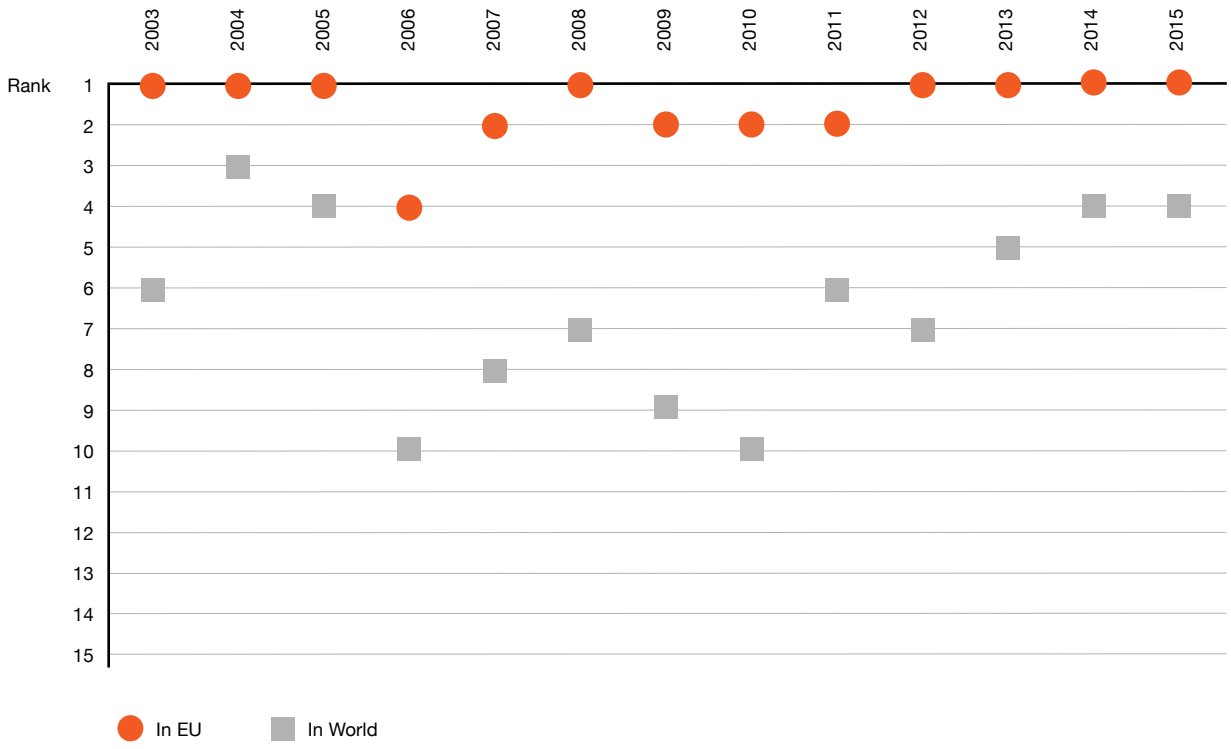
Figure 2: Employment in foreign Multinational Enterprises in Ireland, 1985 to 2016

Source: IDA, CSO, Ibec calculations

This investment is of a substantial nature, with Ireland among the world's top greenfield foreign direct investors (in plant, machinery and capital development) over the past 12 years. Excluding oil exporters, Ireland has been among the top three for nine of those years, while among EU countries, it was top for eight of those years. The only country with a comparable consistent record for substantial greenfield investment is Singapore which in many ways provides a gateway to Asia in the same way as Ireland does to the European Union and further afield.

Figure 3: Greenfield Foreign Direct Investment per capita in Ireland 1985 to 2016

Source: Bank for international settlements



Ireland by numbers

#1

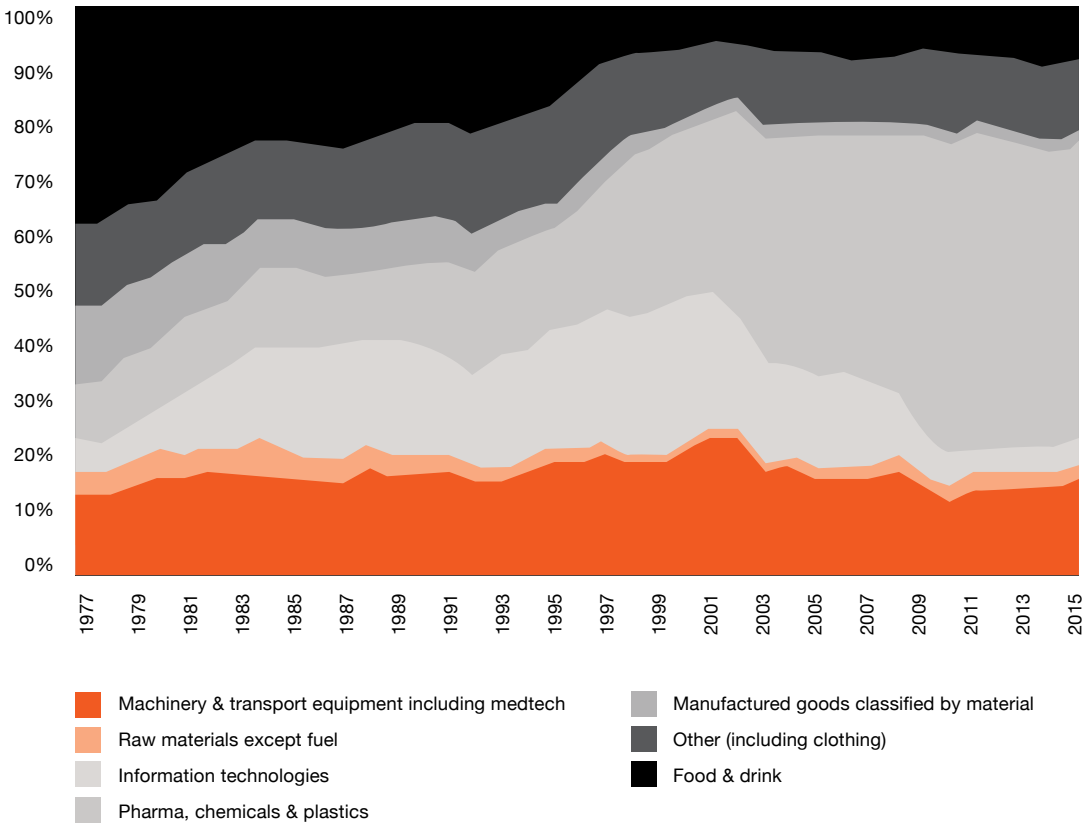
Six of the world's top 10 selling pharmac-eutical products are produced in Ireland.

Moving up the value chain

The complexity and scope of Ireland's enterprise base has developed significantly since the 1980s for both indigenous and multinational enterprises. As Figure 4 shows, Ireland has evolved from a country selling mostly primary unprocessed agricultural products along with low value-add manufacturing, to a high-tech manufacturing hub for areas such as food, pharmaceuticals, information technologies and medical devices.

Figure 4: Ireland's Goods Export shares, %

Source: CSO



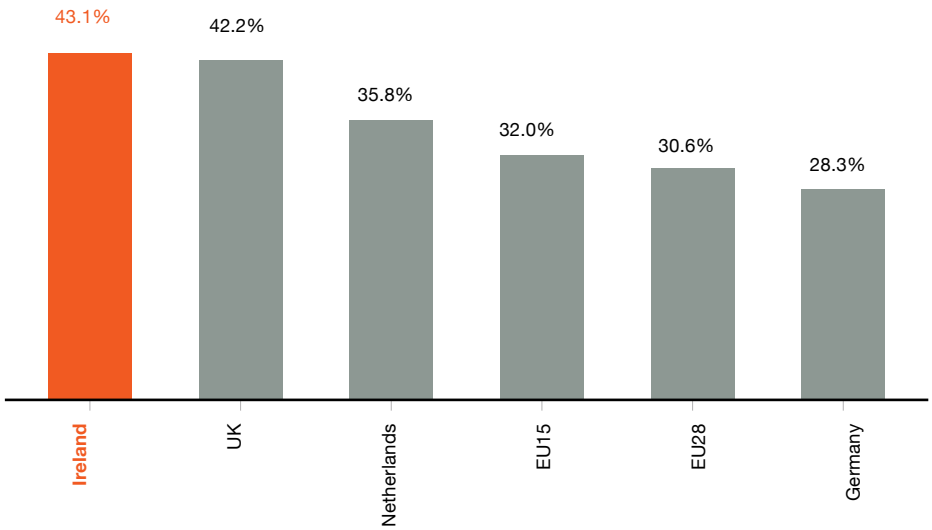
For every one worker it took to manufacture a unit of output in Irish factories in 1998 it took only 0.2 of a worker by 2016. This compares to 0.6 workers in the US and 0.7 in the UK. Output per hour worked in Ireland is now amongst the highest of any country globally. Information Technology in particular has contributed to a 4% increase in total productivity growth in Ireland in the period 2001-2013, against an average 2% OECD increase.

Ireland's ability to manage the move up the value chain whilst maintaining low unemployment and high wages is testament to how a flexible labour market, strong social cohesion, and a good education system can provide alternative opportunities to displaced workers.

Ireland has the highest number of persons with a tertiary education in the EU as a proportion of population, and the highest proportion of high skilled migrants in its labour force. Companies in Ireland know that they have access not only to a skilled domestic pool but a pool of skilled labour across 27 other EU states and further afield.

Figure 5: % of population 25 to 64 with a tertiary education

Source: Eurostat



Ireland by numbers

#2

Four out of every five of the world's cardiovascular stents are produced in Ireland.

Ireland's international tax regime and OECD Base Erosion Profit Shifting (BEPS)

Ireland's tax regime is central to attracting Foreign Direct Investment (FDI) and to maintaining economic success. This regime is built on: the 12.5% corporate tax rate; reliability (e.g. assuring the business community of the permanency of the tax rate); a best in class R&D tax credit introduced in 2004; and the world's first Base Erosion and Profit Shifting (BEPS) compliant patent box.

In 2009 the OECD established BEPS to address concerns about dealing with changing business models and the digital economy, as well as to challenge current international tax rules which allow for the allocation of taxable profits to jurisdictions separate to where a company's business activity takes place. The initiative has been singularly ambitious and has progressed the discussion on international tax over a relatively short time period. Ibec, and the Irish state as an OECD member, played an active and enthusiastic part in the process.

The BEPS process has meant that tax bases have been harmonised across the globe with less scope for mismatches, and profit now has to align to where substantial activity occurs. As a result the onus is on countries to prove and demonstrate their economic substance. Since Ireland has spent decades evolving a pro-business environment and encouraging substantial activity (e.g. a transparent competitive tax rate, a strong skills base, market access, stable industrial relations, cross-pollination of intelligence, the full business lifecycle) the BEPS reforms have benefited Ireland more than any other country.

The BEPS compliant patent box confirms Ireland as a model of substance. As a result of this and other deductions, the effective rate of corporate tax for companies in Ireland averages around 10%. Compliance and being the best in class mean that Foreign Direct Investment flows into Ireland have increased in the past few years.

The OECD process on alignment of substance and corporate tax strategy has accelerated Ireland to eye popping growth rates driven by business migration. This new world dynamic uniquely favours the most globalised nation on earth.

The evolution of the Irish model timeline 1926 → 2017

The evolution of the Irish model timeline
1926 → 2017

1926 → 1.2 million people are at work in Ireland, predominantly in agriculture which accounts for half of the workforce

1936 ← Women account for 27% of the workforce and this share doesn't rise until 1986

1949 → Industrial Development Agency established

1951 ← Census records show positive population growth for the first time in more than 100 years

1956 → Export Profits Tax Relief introduced

1958 ← First Programme for Economic Expansion

1965 → Anglo-Irish Free Trade Agreement

1966 ← Free education announced

1966 → Industry now accounts for 26% of workforce, double its share in 1926

1973 ← Ireland joins European Union

1973 → Irish goods exports reach IR£1 billion for the first time having doubled in the space of 5 years

1974 ← Ireland enters into a period of extremely high inflation, the price level doubles over the space of 5 years

1975 → Inflation in Ireland peaks at 21%

1979 ← Census shows that net migration is positive for the first time, but this doesn't last and only in 1996 does it become positive again

1980 → There are more people than sheep in the country for the first time since the State was formed, but there are still twice as many cattle as people

1981 → The population of the capital Dublin reaches 1 million for the first time

1985 → The rest of the EU becomes a more important market for goods exports than the UK for the first time

1985 ← Ireland runs a trade surplus in goods for the first time in its history (excluding the drop in imports during 1943/1944 due to WWII)

1987 ← The value of pharma exports is greater than the value of live animal exports

1993 → Ibec formed from the merger of the Federated Union of Employers and the Confederation of Irish Industry

1996 ← 12.5% corporate taxation regime introduced

1998 → Irish GDP per capita surpasses the EU 15 average for the first time

1999 ← Ireland joins the euro currency

2006 → Population reaches 4 million for the first time since 1871 and 2 million people are now at work

2008 ← The US becomes a more important export destination than the UK

2010 → Ireland enters Troika bailout programme after the collapse of the construction sector and related banking and public finances crises

2012 ← Celtic Phoenix begins

2015 → OECD Base Erosion Profit Shifting process brings large benefits to Ireland

2016 ← Inward net migration is positive and employment is back over 2 million for the first time since the crisis

2017 → Private sector employment grows at 7% in Q1 as the economy witnesses its fastest growth in full-time employment since 1999

Case Study
Carbery Group

From being a subsidiary of a US multinational food company, Carbery became an independent food company with subsidiaries in four continents.

“We started as a small part of a large multi-national. Now we are an international business again, with our headquarters in West Cork and our subsidiaries in the UK, USA, Brazil and Thailand.”

Dan McSweeney joined the Carbery Group in 1979 after beginning his career in the pharmaceutical sector. Back then Carbery was a dairy processing plant, based in West Cork and it was owned by the giant food and drinks multinational, Grand Metropolitan. He spent his early years in the business immersed in the operations side of the business, focusing on commercialising new and innovative technologies in the dairy ingredients area.

In 1992, the Carbery business was sold by Grand Metropolitan to the four local farmer-owned cooperatives: Bandon, Barryroe, Drinagh and Lisavaird. This was a transformational change for the business as now, instead of being part of a major multinational, it was an independent business faced with the challenges and opportunities of growing outside of the multinational umbrella. McSweeney became CEO of the new business that year.

GOING FULL CIRCLE

The Carbery Group is now an international manufacturer of speciality food ingredients, flavourings, and cheese. It operates from eight locations in four continents, and employs approximately 600 people, two-thirds of whom are outside of Ireland. For McSweeney, it is gratifying to see inward foreign direct investment turn in the opposite direction: “We’ve gone full circle,” he says. “We started as a small part of a large multinational. Now we are an international business again, with our headquarters in West Cork and our subsidiaries in the UK, the USA, Brazil and Thailand.”

Dan McSweeney,

Cheese vats at Carbery's plant in Ballineen, Co. Cork.

McSweeney describes Carbery as an 'indigenous captive': "We have to be where our milk is. Our milk pool and our milk suppliers - who are our shareholders – are here. Our total focus is developing our business to allow us to pay a strong milk price to our milk supplier shareholders, and to maximise shareholder value."

INCREASING PRODUCTIVITY

The early part of Carbery's history was dominated by the EU milk quotas that limited the level of milk produced by the 1,450 farmers that supply the company. Now that the quotas have been lifted, the company expects its suppliers to increase production by as much as 45%, and Carbery has the capacity to process that increased supply. For McSweeney this is a matter of pride. Born and raised in West Cork, he sees this as an opportunity to pump an extra 45% more income into his local rural economy. "It has very positive knock-on effects," he says. "Farmers tend to spend money locally, so it is good for businesses in the area's towns and villages."

Now that the quotas have been lifted, the company expects its suppliers to increase production by as much as 45%, and Carbery has the capacity to process that increased supply.

We've gone full circle: we started as a small part of a large multi-national, now we are an international business again, with our headquarters in West Cork and our subsidiaries in the UK, the USA, Brazil and Thailand.

GLOBAL AMBITIONS

Carbery's move into the wider food and beverage market arose from an ambitious acquisition programme launched in the late 1990s. The group's objective was to become a leading international supplier of added-value ingredients and flavours, while retaining its heritage and expertise in dairy. Through a series of acquisitions in the UK, the USA, South America and Asia, Carbery has successfully built its international flavours business, which is called Synergy.

In line with this strategy, Carbery is one of the largest producers of cheese in Britain and Ireland, and has also become a leading innovator in whey proteins and other dairy-derived ingredients. Its whey protein concentrates and isolates are used primarily for infant formulae, sports and clinical nutrition, and other functional foods.

STRATEGIC PLATFORMS

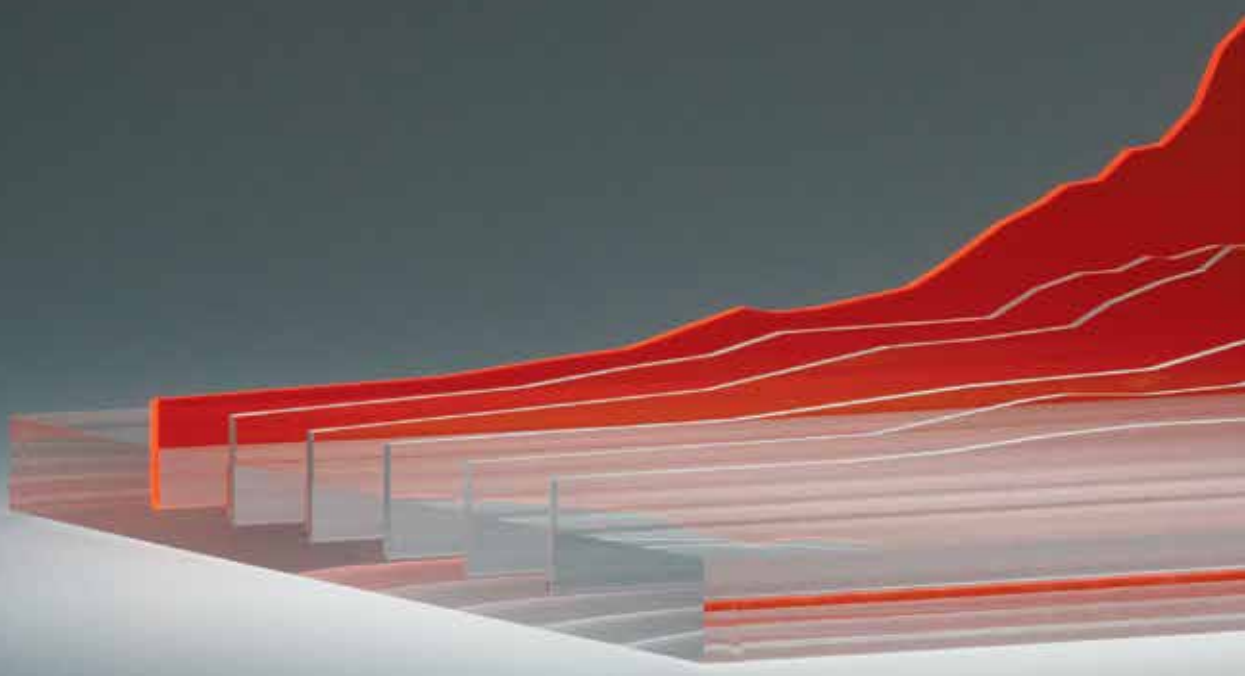
Carbery now operates across three key strategic platforms: Nutrition, Dairy and Taste. Its Nutrition business develops, produces and markets an advanced range of whey proteins, and invests in research on the role of hydrolysed dairy proteins to improve muscle health, mobility, insulin sensitivity, appetite control and immune protection.

LOCAL EXPERTISE

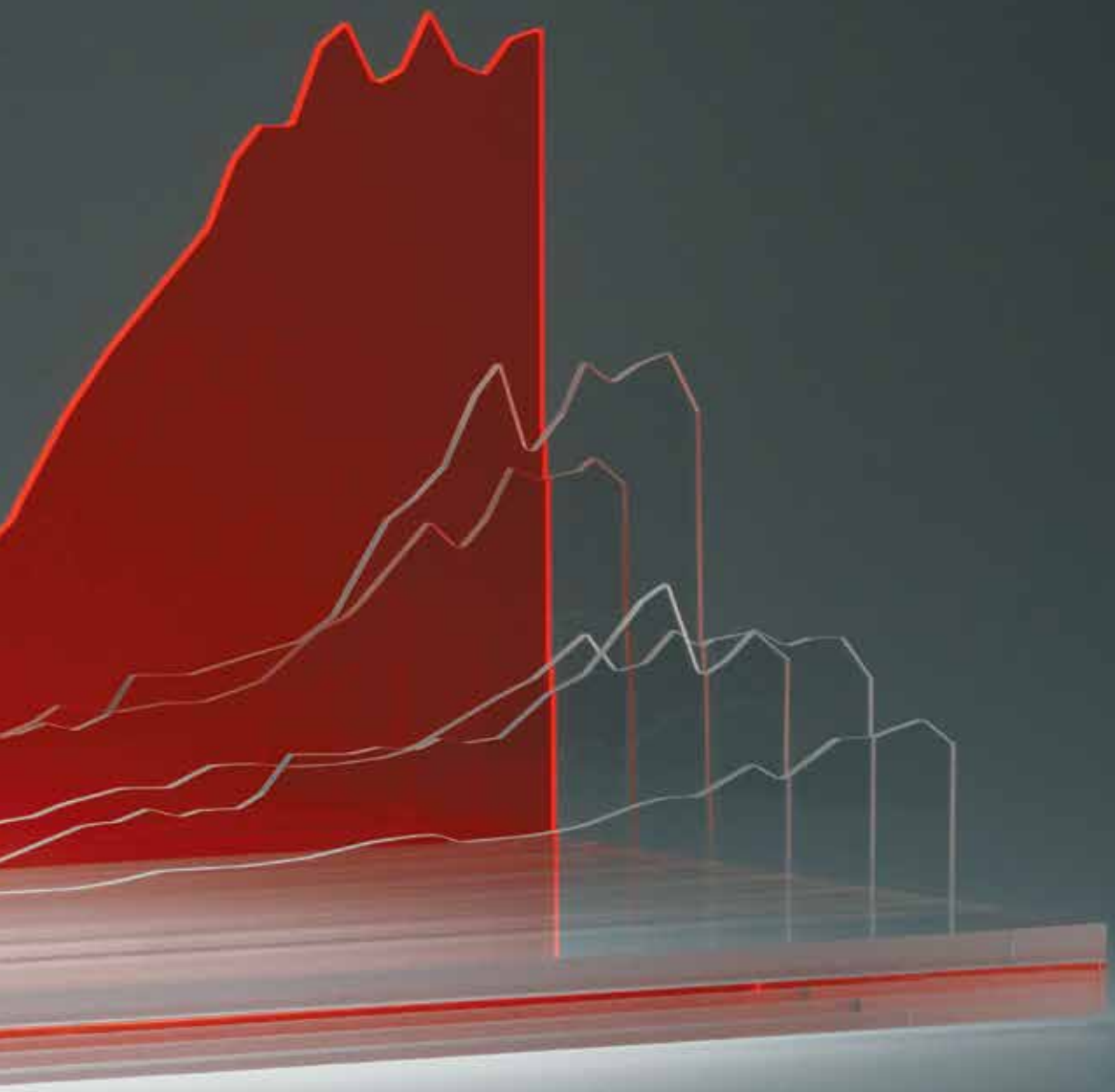
Carbery's Dairy facility processes all of the milk supplied by its local farmer shareholders, and it produces almost 25% of Ireland's annual cheese output. It produces more than 20 market-leading cheeses for retail, food manufacturing and food service customers throughout the world. It also provides a range of dried dairy products.

Carbery's Flavours division, Synergy Flavours, is a leading global manufacturer and supplier of flavourings, natural extracts and essences. The Synergy part of Carbery has given rise to plants in Sao Paulo, Brazil; Hamilton, Ohio; Rochester, New York; Wauconda, Illinois; High Wycombe, England; Samut Prakan, Thailand; as well as Ballineen in West Cork.

For McSweeney, an important part of Carbery's research and development work arises from the company's links with his alma mater, University College Cork. As a dairy science graduate-turned-businessman, he sees the importance of technical training, allied to exposure to business and entrepreneurial skills. He sees Irish graduates as having a high level of flexibility, which he sees as important for the future development of the company.



Ireland is by far the top performer, with exports now 290 times higher in value terms than of those in 1970.



Model representing export index (1970 = 100),
of Ireland and other OECD countries, 1970 - 2016

See Figure **6, Page 31**

2. Global Footprint

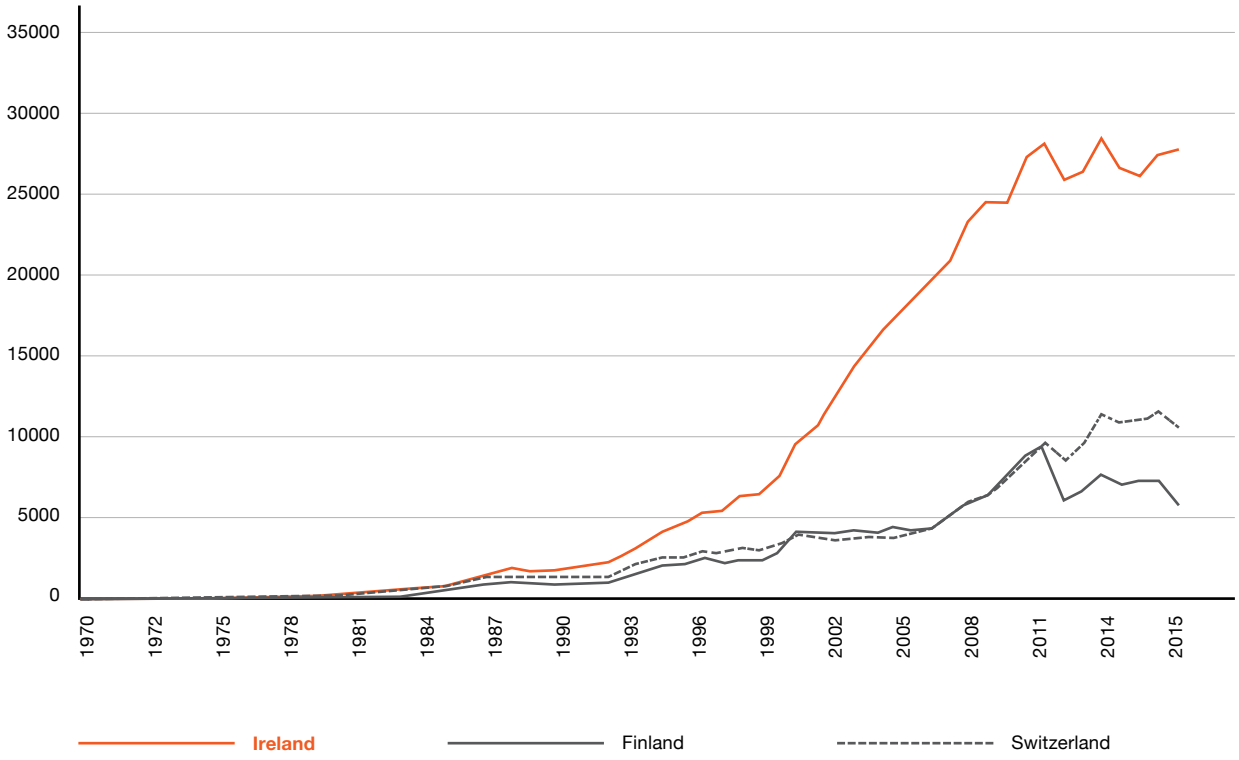
Ireland's outward investment matches Foreign Direct Investment and Irish companies employ almost as many people in the USA as US companies employ in Ireland. Ireland is now the largest net exporter of dairy ingredients, beef and lamb in Europe and the largest exporter in Europe of powdered infant formula, while over half the world's fleet of leased aircraft is managed through Irish companies (rising from a base of just 2% in 1998).

The massive influx of Foreign Direct Investment into Ireland has grown the economy and encouraged indigenous Irish companies to improve competitiveness – investment is now flowing out of Ireland, with outward investment matching inward. Figure 6 shows the growth of Irish exports versus those of two other successful OECD countries, with similar export sizes in 1970. Ireland is by far the top performer, with exports now 290 times the size in value terms than of those in 1970. This is a much larger increase than other similar sized countries over the same period, and the total number of destinations which Irish exports sell to has greatly increased and diversified. In 1965 Irish exports relied hugely on one market, the UK, which took 70% of all exports. By 2016, UK exports were down to 12.6% of the total, and Ireland was exporting on a regular basis to more than sixty countries.

Contd. →

Figure 6: Export index (1970 =100), of Ireland and selected other OECD countries, 1970 – 2015

Source: OECD



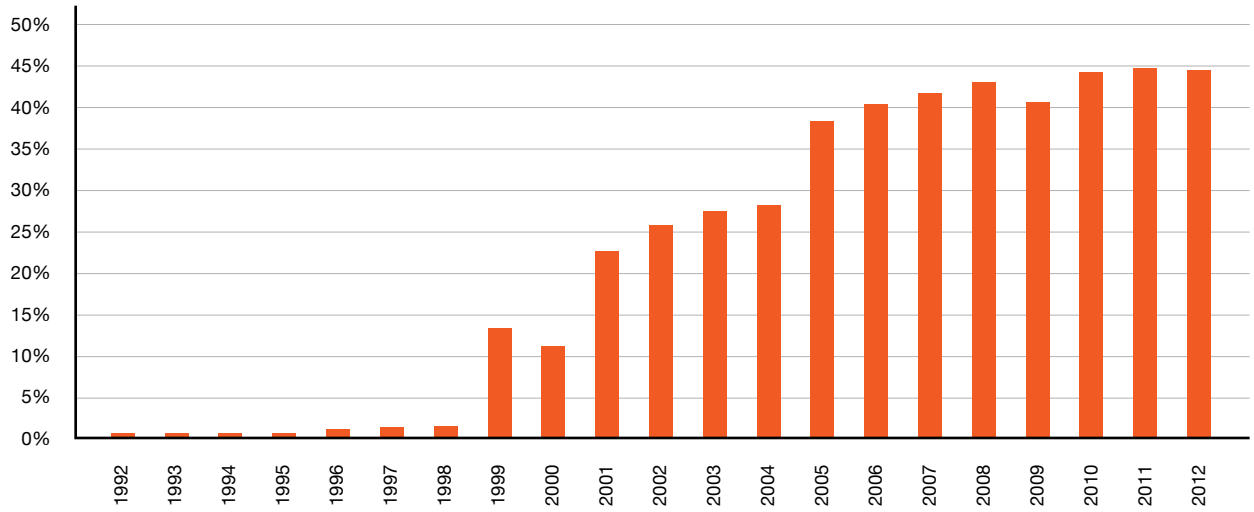
Increased exports have been accompanied by a shift up the value chain, initially spurred by Foreign Direct Investment, but now seen across indigenous sectors. For instance, the technology sector today directly employs 105,000 people in Ireland, up 40% from 2010. This includes a scaling indigenous technology sector that employs 12,000 people and has total sales revenue of more than €2 billion per annum.

Between 1990 and 2005, output per worker in the goods export sector of food and beverages almost doubled, with a matching increase in wages in Ireland's largest industrial employer. Ireland is now the largest net exporter of dairy ingredients, beef and lamb in Europe and the largest exporter in Europe of powdered infant formula.

In areas such as aircraft leasing, Ireland has seen the complexity of its services sector achieve major successes. The Irish aviation industry, benefiting from early adoption and the expertise built up in Guinness Peat Aviation, now dominates the global market, with nine of the world's top ten leasing companies currently operating in Ireland, and their operations span the industry value chain from sales to asset management and technical services (see Figure 7). Over 50% of the world's leased aircraft fleet is managed by Irish companies.

Figure 7: Irish share of European aircraft leasing operations exports, 1992 to 2012

Source: Eurostat



A similar shift up the value chain occurred within technology sectors, taking Ireland away from its core manufacturing competency and further into the services space, as demonstrated by Figure 8. By 2016 this transition had been successfully managed to the point where all of the world's top 10 born-on-the-internet companies have a presence in Ireland.

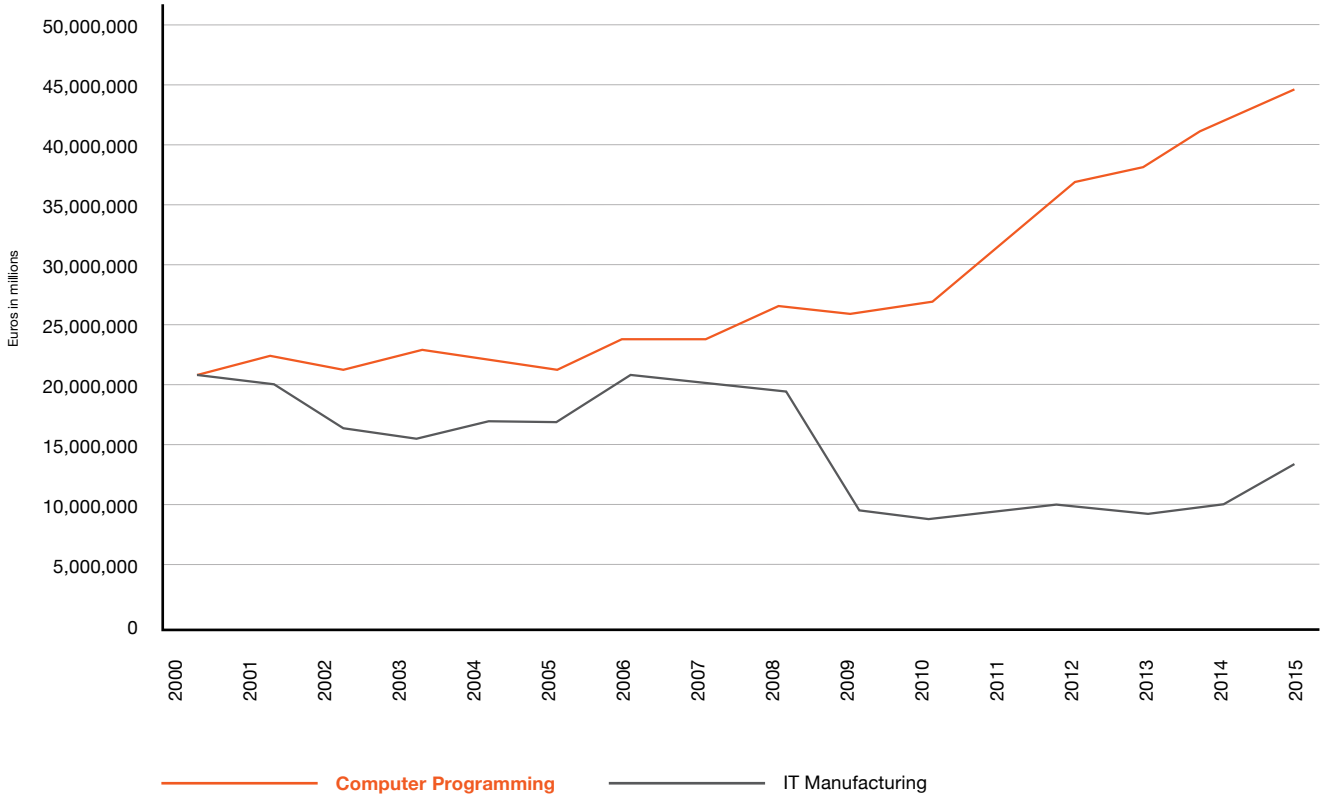
Ireland by numbers

#3

Ireland manages half of the world's leased aircraft fleet.

Figure 8: Total sales by Irish IT manufacturing vs Computer programming

Source: CSO



Ireland by numbers

#4

Ireland has the highest proportion of high tech exports in Europe

Case Study
Aerogen

John Power's Aerogen has made the most of two-way transatlantic investment to become a world leader in aerosol drug delivery technology.

“We perfected a way of turning liquid drugs into aerosols. Our aim is to offer superior clinical solutions in both drug and device to a global market.”

Galway firm Aerogen is the world leader in the design and manufacturer of high performance aerosol drug delivery technology for hospitals and clinics. Its products are used in emergency departments and intensive care units in over 75 countries.

AEROGEN TECHNOLOGY

Aerogen's products are all based on a small piece of technology called the Aerogen Vibronic; a palladium vibrating mesh just 5mm in diameter, and perforated with 1,000 holes that vibrate at 128,000 times per second. The vibrating mesh creates a mini-pump effect, and the tiny holes produce a fine spray of medicinal particles that penetrate deeper into patients' lungs.

Aerogen's technology can effectively aerosolise a vast range of proteins, peptides, suspensions and solutions, and this has paved the way for targeted drug delivery to the lungs for millions of patients worldwide.

John Power,
Aerogen CEO

GLOBAL LEADER

"We perfected a way of turning liquid drugs into aerosols," explains Aerogen founder and CEO John Power. "We became the first company in the world to develop a drug delivery system that could effectively deliver aerosolised drugs to neonates and pre-terms during mechanical ventilation."

In its 20 years so far, Aerogen has been an Irish company, then became American-owned, and now is Irish again.

Power founded Cerus Medical in 1997, which merged with Aerogen Inc in 2000, and the merged entity had a NASDAQ IPO.

KNOWLEDGE & EXPERIENCE

The company was bought in 2005 by San Francisco biopharmaceutical business Nektar Therapeutics, but changed ownership again in 2008, following a management buyout led by Power. He has since led the company through eight years of over 30% annual growth. His positioning of Aerogen as the world leader in its field earned Power the title of European Entrepreneur of the Year in 2016.

Aerogen employs 45 people in its support offices in San Francisco, Chicago, London and Beijing, and 95 at its headquarters in Galway.

Power sees the continued tie with Galway as important: "We are part of a well developed medtech cluster that contains all the requirements that enable a healthy eco-system: an educated and experienced Medtech workforce; industry knowledgeable sub-supply and service sector; and very supportive third level institutions offering specialist applied research."

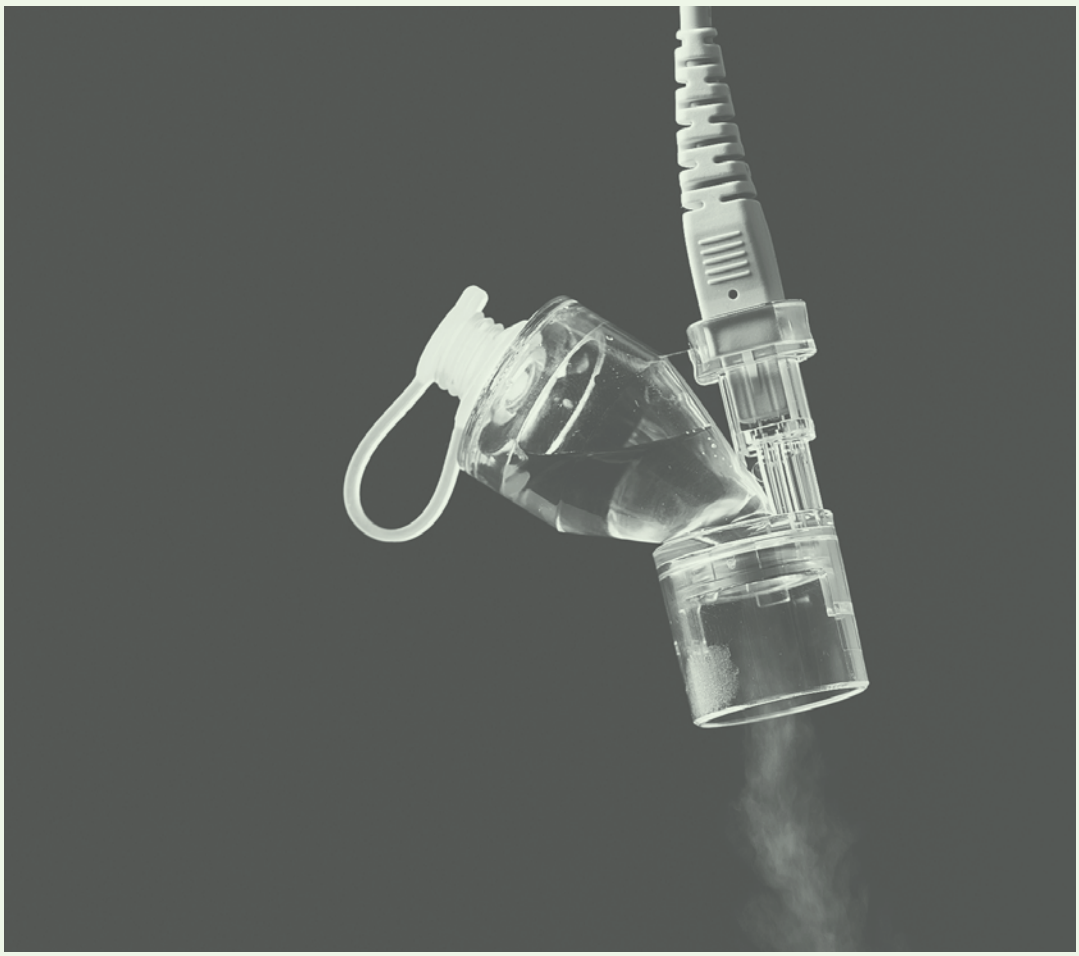
EDUCATIONAL EXPERTISE

The link with third level institutions goes both ways, and Power is ideally positioned to hone the skills of his company's future recruits. He is an adjunct lecturer at National University of Ireland Galway (NUIG), where he guest lectures in Business and Commerce and Engineering and Science; as well as his favourite subjects Innovation Strategies and Technology Entrepreneurship. In recognition of his contribution to the development of medtech sector in Ireland, Power was conferred with an honorary PhD by NUIG last year.

Aerogen employees represent twelve nationalities, with people from seven countries employed in its Galway office. Approximately 95% of the company's workforce are educated to degree level and above. "These are high value, highly paid employees," says Power, "and we create approximately a further 140 local jobs through our external sourced service."

Despite Aerogen's substantial contribution to the Irish economy, he feels the tax system is not sufficiently supportive of innovation-driven indigenous exporting companies.

We are part of a well-developed Medtech cluster that contains all the requirements that enable a healthy eco-system



Aerogen's core product, the Aerogen Solo.

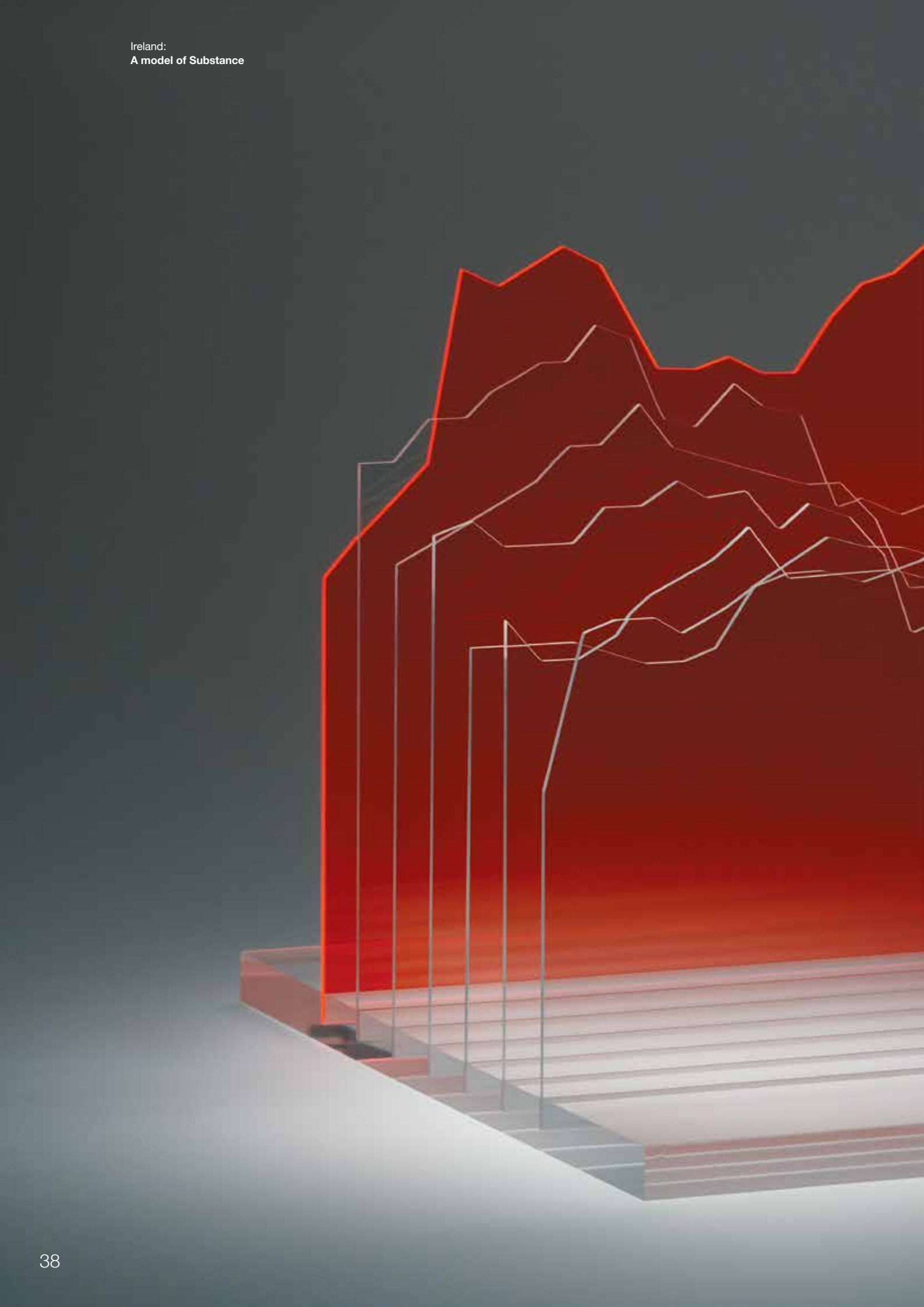
FUTURE INNOVATIONS

"The world is changing and we need to refocus on growing indigenous industry and enterprise, and create a tax climate that makes it attractive to the entrepreneur and the risk takers who support them. Ireland benchmarks poorly in this regard in both Capital Gains Tax and tax treatment of Employee Stock Ownership Plans."

So, what will Aerogen look like in 10 years time? "We created a Blue Ocean market in high performance aerosol delivery within the acute care market and we intend to drive that advantage broad and deep within the hospital so that everywhere an aerosol drug is required Aerogen will be there."

Power says that by 2021 Aerogen will have two of its own drugs on the market, one of which will be the first nebulisation of life saving surfactant to the lungs of premature babies. "I really believe we have the people and technologies that can offer a huge clinical advancement and in doing so make Aerogen a truly great Irish company," he say. "Our aim is to offer superior clinical solutions in both drug and device to a global market."

And will the company still be headquartered in Galway? "Like all indigenous medtech companies, Aerogen was 'born global'. In that regard we are well-positioned with our HQ in Galway," he says. "Silicon Valley is a world hub for medical technology and biopharma; with the correct incentives in place I see no reason why we can't replicate this in Ireland."



Ireland has developed a world beating reputation for process innovation, compliance and advanced manufacturing.

Model representing the percentage of the workforce in high-tech sectors, with Ireland represented in red, shown against other territories

See Figure **15, Page 66**

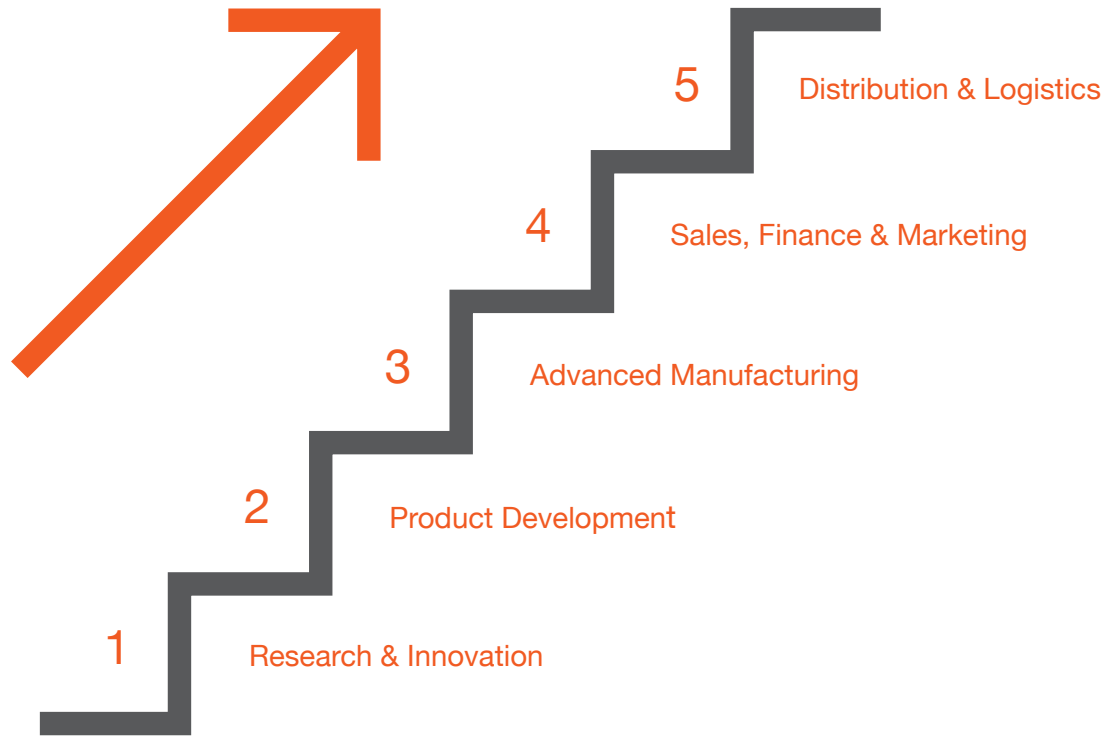
3. Full Business Lifecycle

Ireland specialises in the full lifecycle of business – from R&D to production, on to sales, marketing, logistics and finance. Ireland manufactures a third of the world's contact lenses, three quarters of global orthopaedic knees and 80% of stents globally, while over 30 million diabetes sufferers rely on injectable devices manufactured in Ireland.

Contd. →

Central to Ireland's reputation as an economy of substance is its prominence as a location specialising in the full lifecycle of business for high value added products from R&D to production, on to sales, marketing, logistics and finance. The aircraft industry story is a typical one: from its beginnings in leasing, its operations now span the entire business value chain from sales to asset management and technical services. The business lifecycle in Ireland is supported along the way by excellent capabilities in research and process innovation, strong transport links, and large scale professional service support industries. Ireland's place in the Greenwich Mean Time (GMT) time zone allows easy facilitation of both western and eastern markets during a working day.

Full Business Lifecycle



Research, Innovation and Product Development

Among the most lasting resolutions of the Celtic Tiger was the decision to invest in R&D. In 1999 the Programme for Research in Third Level Institutions (PRTLI) launched, and the following year Science Foundation Ireland (SFI) launched. Research funding was protected during the global recession and the SFI Act of 2013 widened SFI's remit to include applied research so as 'to increase the potential of research to yield commercial opportunities and jobs as well as other societal benefits'. This commitment has resulted in multinationals and indigenous companies partnering with Irish universities and research institutes to carry out high-level applied research. Ireland is home to some of the world's most innovative companies and consistently competes for R&D projects of major scale in areas such as pharma, medical technology and food. For example, despite accounting for only 2.7% of US multinational enterprise (MNE) employment in the EU, it competes very much at the high-end of that scale with an 8% share of US R&D expenditure in the EU.

Advanced Manufacturing

Ireland has developed a world-beating reputation for process innovation, compliance and advanced manufacturing. Manufacturing excellence is key to the success of Irish business. Sectors operate through collaborative clusters where knowledge sharing is a key driver of operational and research excellence. As a result, the proportion of Irish workers in high-tech manufacturing sectors is three times the EU15 average and twice that of even other advanced manufacturing countries such as Germany. Ireland manufactures 33% of the world's contact lenses, 80% of stents globally, and 75% of global orthopaedic knees. 10 billion glucose strips have been manufactured by one company in Ireland over the last 10 years. Over 30 million diabetes sufferers rely on injectable devices manufactured in Ireland.

Sales, Finance and Marketing

The location of EMEA headquarters in Ireland of so many multinational companies has seen a strong ecosystem develop of professional and legal services. These, along with other auxiliary services allied to Ireland's established track record for corporate investment and common law legal structures, are a strong selling point for companies locating in Ireland. They also provide greater expertise to indigenous firms increasing their international reach.

Distribution and Logistics

Through EU membership and the embracing of globalisation, Ireland has become a centre for global trade in both goods and services. One of Ireland's key advantages for supply chain management is its position on GMT and openness to high skilled immigration. Together these mean that operations based in Ireland can manage distribution across multiple time zones and languages. Ireland's central place in globalisation is best illustrated by the fact that 60% of our final exports are part of global supply chains (either fully or in part processed), the highest such ratio in the world.

The Irish meat industry has grown exponentially since EU membership, and new technology enabling farm-to-fork traceability, developed in Ireland, gives the country a comparative advantage in a consumer-sensitive world. A country of under 5 million is producing enough to feed 30 million people.

Ireland by numbers

#5

Ireland is the largest net exporter of dairy ingredients in Europe

Case Study
Pfizer

With 3,300 employees across seven locations in Ireland Pfizer's pipeline comprises some of humanity's most important pharmaceuticals.

“We benefit from a highly-skilled work-force, a proven level of manufactur-ing and compliance, and easy access to the European market.”

As one of the first pharmaceutical companies to locate in Ireland (1969), Pfizer is one of the country's largest pharmaceutical sector investors, and one of the country's leading employers. Total capital investment by the company in Ireland exceeds €6.6bn, and over 3,300 people are employed by the company across seven locations. Overall, Pfizer's activities are worth around €2.2bn to the Irish economy.

GLOBAL EXPORTER

Many of Pfizer's leading and newest medicines are manufactured in Ireland for global export. The company's pipeline comprises more than 96 innovative therapies, including potential vaccines for two deadly hospital-acquired infections; new antibodies for lupus and inflammatory disease; and the next generation of targeted therapies for cancer.

Paul Duffy, Pfizer VP

As the marriage of Pfizer Inc. and Ireland Inc. nears its golden anniversary, what is it that keeps the relationship strong?

HIGHLY SKILLED WORKFORCE

According to Paul Duffy, Pfizer's VP of Biopharma, part of the reason relates to Ireland's reputation as a location of choice for pharmachem and biopharma companies. "We benefit from a highly-skilled workforce, a proven level of manufacturing and compliance, and easy access to the European market," he says.

Another reason, says Duffy, is that Ireland's pharmaceutical sector has a good track record in terms of compliance with statutory and quality regulations, and this brings a key competitive advantage over other regions around the world: "The US Food and Drug Administration, the Health Products Regulatory Authority, and consumer audits consistently rate Irish manufacturers' compliance as world class."

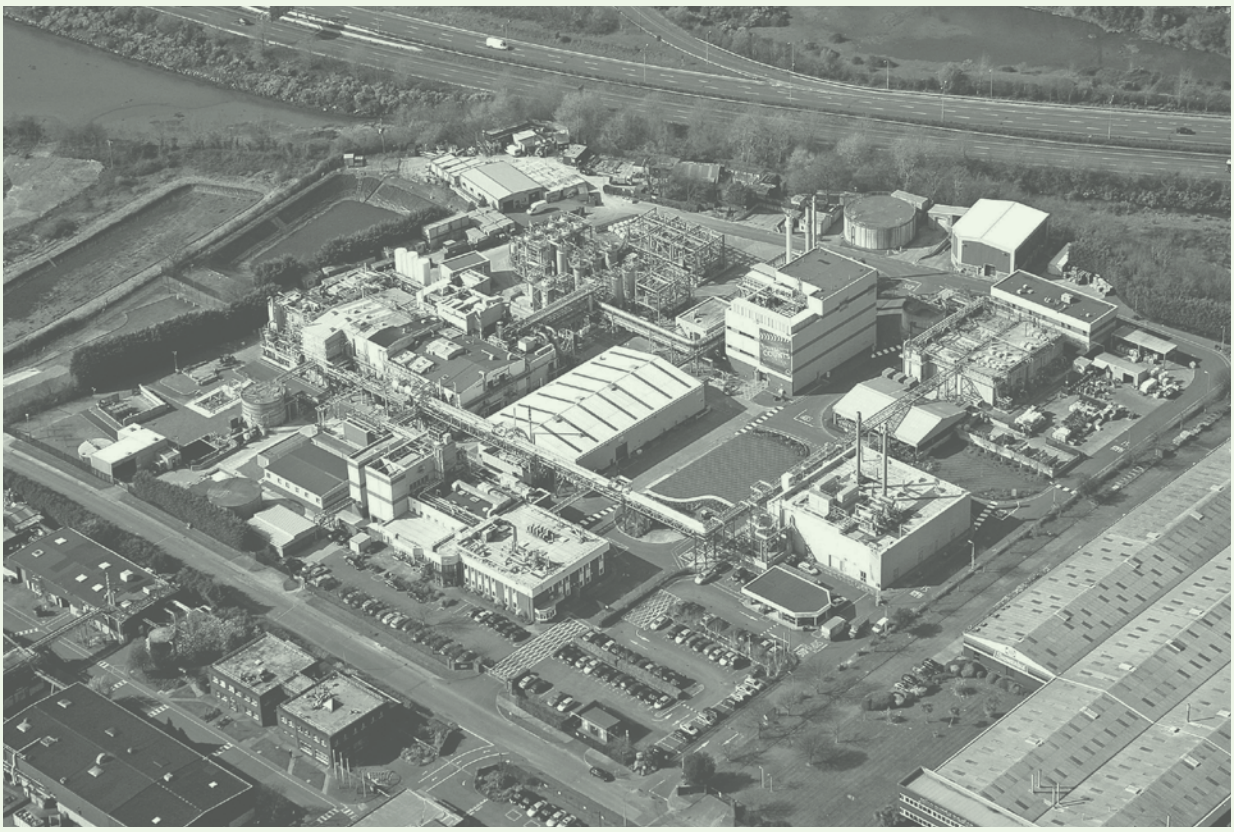
However, the pharma industry has seen upheaval in the last decade, which has led to a significant shift in Pfizer's product portfolio. With many of its large volume 'blockbuster' products now off-patent, the company has moved its research portfolio to include smaller volume niche medicines.

For the Cork sites at Ringaskiddy and Little Island, this had a dramatic effect on the business model. The company forecasted a decline in demand for the cholesterol-lowering medication, Atorvastatin, and a decision was made to close the Little Island site.

ADAPTIVE APPROACH

Around this time, Pfizer recognised that greater change was needed as it adjusted to an era of much smaller volumes, and approved a €25m investment. This saw the removal of the old large reactors used for manufacturing blockbusters, and the installation of new equipment that is better suited to making smaller volume products.

Pfizer has a rich history in vaccine research and development. Over the years, we've played a pivotal role in nearly eliminating the world of deadly diseases like smallpox and polio.



Pfizer's plant at Little Island, Co. Cork.

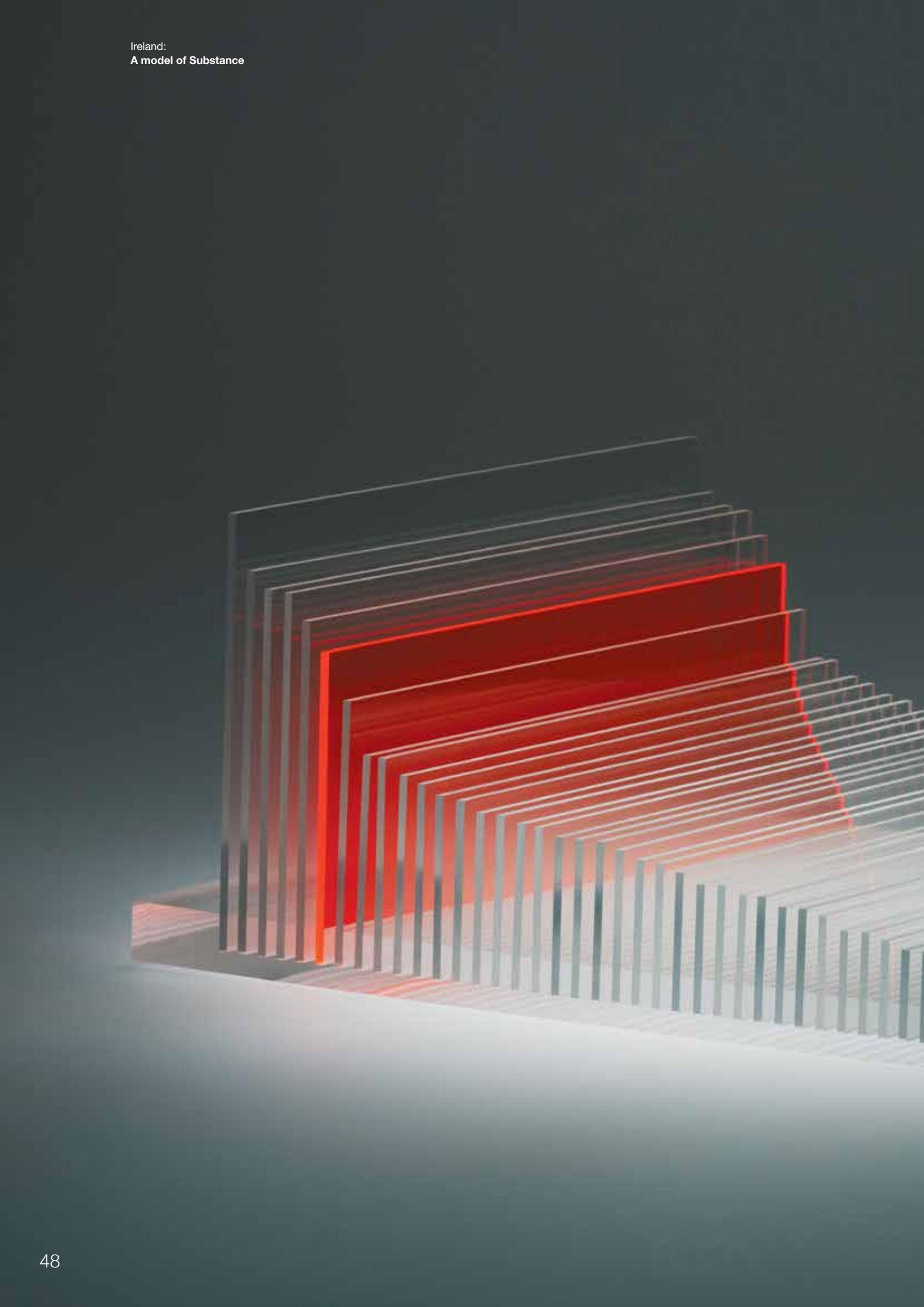
In contrast, the investment in Pfizer's Grange Castle site in Dublin was designed, not to move from large to small volumes, but to increase manufacturing capacity. Work has been completed on a €250m expansion of the manufacturing facility for an invasive pneumococcal vaccine.

"Pfizer has a rich history in vaccine research and development," says Duffy. "Over the years, we've played a pivotal role in nearly eliminating the world of deadly diseases like smallpox and polio, and now in Ireland we manufacture a leading vaccine to protect against pneumococcal diseases."

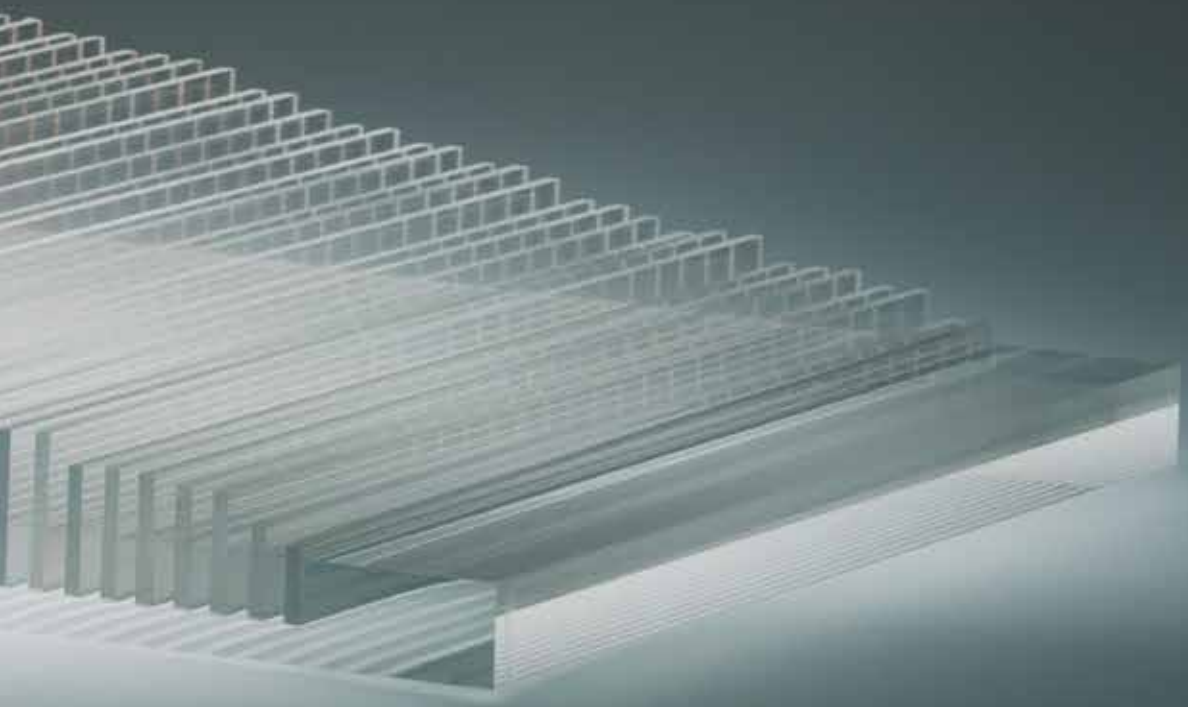
KEY COLLABORATIONS

Pfizer feels that a key advantage of Ireland is the high level of collaboration between the industry and the Irish government, through the IDA and research communities including the Synthesis and Solid State Pharmaceutical Centre (SSPC); the Pharmaceutical Manufacturing Technology Centre, SFI and the National Institute for Bioprocessing Research and Training (NIBRT) "It is the support we receive that helps us evolve and react," says Duffy. "Many different technologies are currently being explored, and our teams in Ireland are very well positioned to implement these technologies into Pfizer's global supply chain."

By the time our patent expired in late 2011, we had achieved very competitive benchmarks for cost and manufacturing performance.



Ireland's continued success as a global hub is built on flexibility of approach and good horizon scanning.



Model representing inward cross-border investment projects in R&D by major OECD cities 2003 to 2011

See Figure **13, Page 64**

4. World Class

Ireland's world class economy is globally competitive in terms of human capital, and research. Ireland's non-national workforce is double the EU average and twice as likely to be educated to third-level. Ireland has the EU's highest proportion of workers in high-tech manufacturing, with twice the level of Germany in second place, and 7.5% of Ireland's workforce is in high technology sectors, far outstripping the EU average of 4%.

An economy of substance is world class and globally competitive in terms of human capital, research, and performance. It is driven from a strong and collaborative business culture with principles of operational excellence deeply embedded into the thinking of all leaders and employees. In the past two decades Ireland has successfully attracted skilled workers from both inside and outside the EU. In 1998 only 3.2% of Ireland's workforce comprised non-Irish national workers, this wasn't far from the EU average of 4%, but after the 2004 enlargement when ten new countries joined the Union, numbers coming to Ireland rose steeply. They fell slightly in 2008, but today over 15% of Ireland's workforce is non-national, and this is twice the EU average.

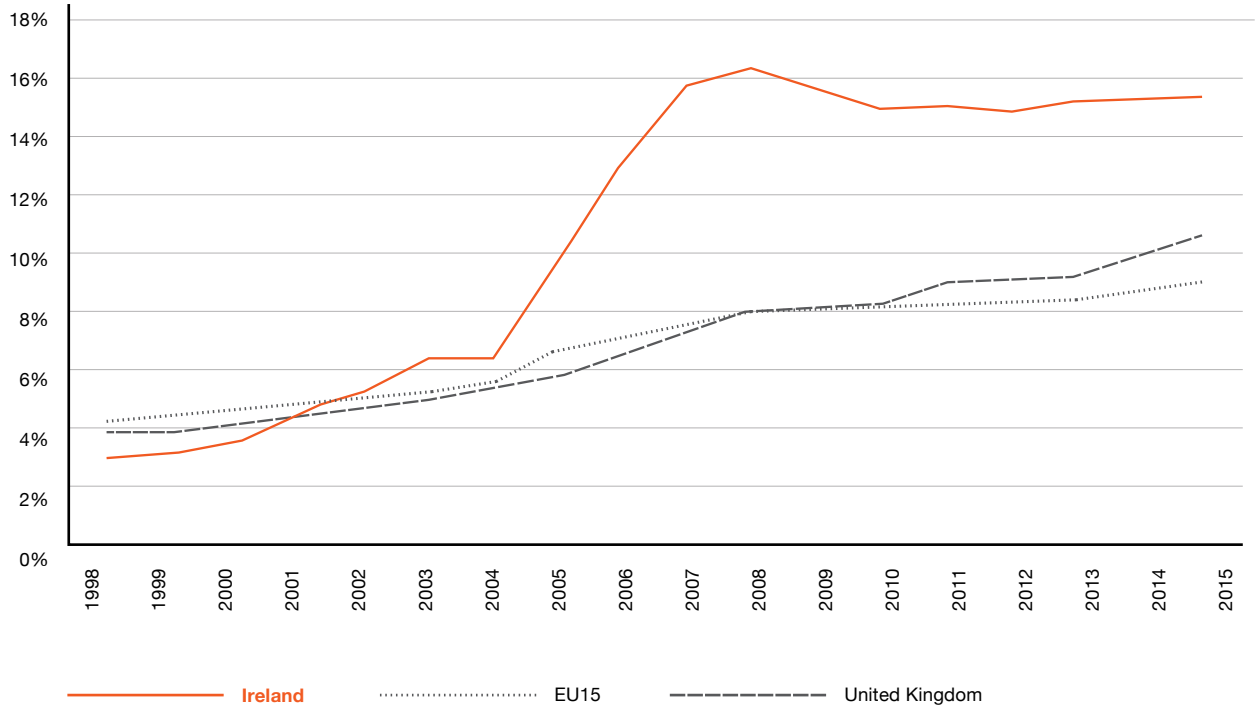
Contd. →

Leading in operational excellence

The Shingo Prize is the world's most prestigious honour to recognise companies that demonstrate broad application of lean principles across core business processes, as well as leadership commitment to build and sustain a culture of continuous improvement. The prize is based on a thorough assessment of organisational culture and operations and is awarded in recognition of a company site's ongoing commitment to operational excellence throughout all levels of the organisation. Ireland is recognised as a world leader having seven companies with a total of eight Shingo awards, the most awards of any country per capita in the world. Four gold awards, one silver and three bronze awards to date.

Figure 9: Non-nationals as a % of the Irish workforce

Source: Eurostat

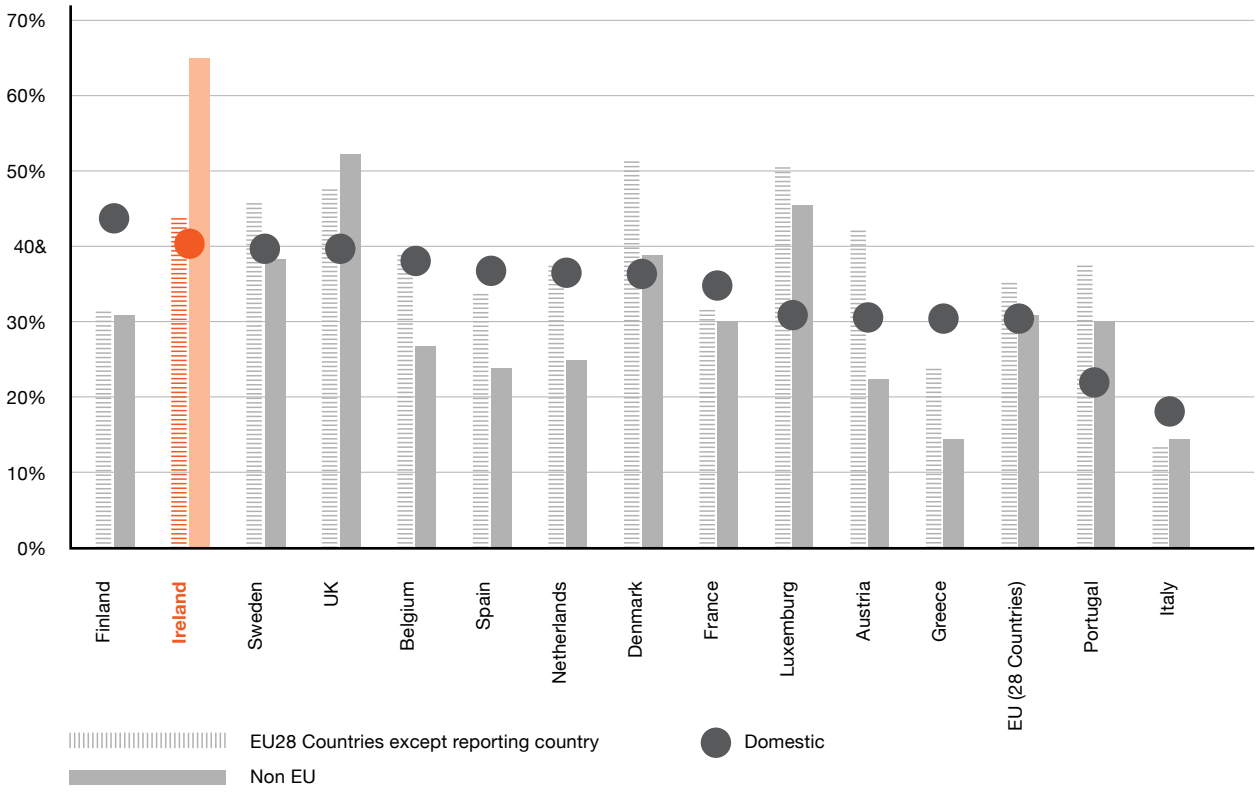


Highly educated population

Inward migration to Ireland has skewed towards higher skilled workers, and this is true of both those coming from within the EU and from outside. By 2016, almost two thirds (65%) of Ireland's non-EU workers were educated to third level – more than double the EU average of 30%. The only country with a similar story is the UK with 52%, still far off the Irish experience. Among EU workers in Ireland, almost half, 45%, have third level qualifications – 10 percentage points above the EU average. Significantly, the proportion of both EU and non-EU workers in Ireland with third-level qualifications is higher than the proportion for Irish workers – even though, at 40%, Ireland has one of the highest educated populations in the EU (see Figure 10).

Figure 10: Third level qualifications by nationality in the Irish workforce

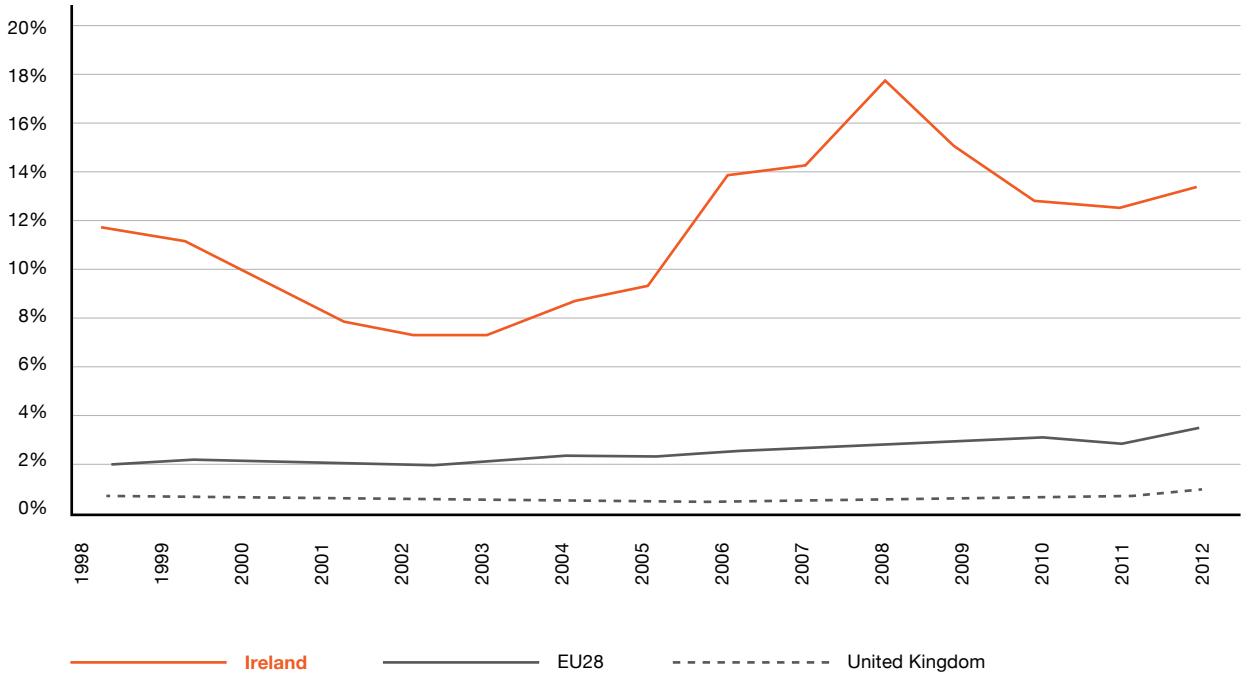
Source: Eurostat



A key factor bringing high-skilled migrants to Ireland is the country's continued high-ranking for quality of life. Ireland's GDP per capita at €53,200, adjusted for purchasing power, is second only to Luxembourg in Europe (including the EFTA countries outside the EU). The flow of talent hasn't been all one way: Irish undergraduate students are almost four times more likely than their European counterparts to study abroad temporarily in any given year, and almost 15 times more likely than their UK counterparts, see Figure 11.

Figure 11: % of student population at undergraduate level studying temporarily in another EU/EEA country

Source: Eurostat



Ireland by numbers

#6

Ireland has been awarded the highest number of Shingo awards ever per capita

Ireland has the highest birth rate in the EU, the sixth highest proportion of EU inward movement and the EU's fifth highest proportion of population not born in the country. With high-skilled migration and one of the youngest and most educated workforces in the world, Ireland has transformed itself into a cosmopolitan, multi-cultural global hub.

High global rankings

As a result of our world class talent and business environment, the 2017 IMD World Competitiveness Yearbook ranks Ireland as the sixth most competitive economy in the world and the second most competitive economy in the euro area. Of the four competitiveness measures assessed by the Yearbook, Ireland performs particularly high in:

Economic performance (4th in the world), particularly in gross fixed capital formation growth (1st), balance of trade (1st), exports of commercial services (3rd), and GDP per capita and growth (4th and 5th respectively);

Business efficiency (3rd), particularly in productivity performance (1st), attracting and retaining talent (1st), perception-based indicators regarding national culture (top 3), attitudes to globalisation (1st), and flexibility and adaptability of people (1st).

Government efficiency (9th) - Ireland's strengths lie in perceived attractiveness for investment incentives (1st), lack of protectionism (1st), real corporate taxes (2nd), and startup procedures (5th).

More attention is needed to **infrastructure (19th)** including energy infrastructure and public expenditure on education per capita.

In the World Economic Forum's Global Competitiveness Report, Ireland ranks in the top 15 across 23 indicators of competitiveness, scoring particularly high in measures focusing on skills, technology adoption, industrial relations, public institutions, property rights and trade barriers.

Ireland's excellent showing in these rankings is particularly impressive because it scores so highly across such a range of indicators: from attracting and retaining talent to strength of investor protection; from exports as a percentage of GDP to FDI and technology transfer; from R&D to corporate taxes.

This range signifies the depth, diversity and substance of the Irish economic model and is the result of long-term planning and implementation taking into account international best practise and local particularity.

Ireland's ranking across Global Competivness Report indicators

Openess

1st	Prevelance of foreign ownership
1st	Business impact of rules on FDI
5th	Trade tariffs
6th	Burden of customs procedures
6th	Exports as a percentage of GDP
7th	Prevelance of trade barriers

Skills

1st	FDI and technology transfer
2nd	Technological adoption
7th	Reliance on professional management
9th	Quality of the education system
9th	Country capacity to attract talent
9th	Availability of scientists and engineers
12th	Production process sophistication
15th	Quality of scientific research institutions

Business Climate

9th	Property rights
6th	Strength of investor protection
10th	Intellectual property protection
11th	Transparency of government policy making
13th	Burden of government regulation
13th	Labour market efficiency
13th	University-industry collaboration in R&D
15th	Co-operation in labour employer relations

Case Study
Zalando

German fashion retailer Zalando makes big splash in Dublin's docklands.

“Many of our people like the urban/rural lifestyle that Dublin offers. They live during the week in the city, but at the weekend they surf off Clare or Sligo.”

When German fashion platform Zalando opened its Fashion Insights Centre in Dublin in 2015, one could have expected a modest number of jobs for fashionistas and design graduates. Instead, almost all of the 75 positions created involve R&D: 20 are PhD data scientists, and 45 are software engineers.

EUROPE'S LEADER

Headquartered in Berlin, Zalando was founded in 2008 and already is Europe's leading online fashion retailer. Its website, which receives close to 2 billion visits per year, boasts "more brands than any other fashion retailer" (over 1,500). Each product sold is sent to customers from its massive logistics area near Berlin which it has dubbed "Europe's largest wardrobe". With revenues of €3.6bn in 2016, Zalando has 20 million active customers, drawn from 15 European countries. The company expects to hire 2,000 people this year.

Deirdre O'Brien,
Zalando's Site Lead in Dublin

The opening of Zalando's Dublin office happened just three months after the company visited the city on a scouting exercise.

EXPERT KNOWLEDGE

The company's success stems from gaining deep insights into the purchasing patterns and online behavior of its customers, and the work in Dublin is key to its strategy. The Fashion Insights Centre team has established Zalando as the expert knowledge platform, allowing other businesses (including its rivals) draw upon its vast knowledge of consumers and their buying habits. "We're building infrastructure to support big data," says Deirdre O'Brien, the Site Lead at Zalando's office in Dublin's Silicon Docks area. "We use machine learning techniques to provide highly accurate expert knowledge and insights into the fashion industry."

Despite its pan-European success, the company's marketing is very localised. It's not enough to understand that women of a particular age and socio-economic grouping like a certain type of shoe. Zalando recognises that fashions differ in each market, as do measuring sizes. "In the UK, customers use ApplePay, but in Italy it's cash on delivery," says O'Brien. One standard that is a constant across all its regions is Zalando's policy of free delivery and free returns.

IRELAND'S ATTRACTION

Zalando's decision to locate in Dublin highlighted once again Ireland's attractiveness as a centre of excellence. O'Brien says that Dublin was chosen because of "its ready availability of multi-disciplined and highly-skilled data scientists and software engineers, alongside a honed educational system to further feed this pipeline.

EXPERT KNOWLEDGE

The specialised nature of its work meant that Zalando needed to hire from across the EU, and beyond. The company found the work permit system in Ireland easy to navigate, with the help of the IDA's fast-tracking process. Currently there are 15 non-EU nationals (20% of the Dublin workforce) working in the Insights Centre, including two from the USA.

"We needed a location that would attract and hold the kind of staff that we wanted to hire," says O'Brien. "We needed somewhere cosmopolitan; close to good restaurants, theatres and entertainment. Dublin has all that."

PERFECT LIFESTYLE

"Good public transport was important, and we are right beside a train station. Half the office cycles to work, so bike lanes and a cycling culture were important factors. Running is also a big thing in our office, and at lunchtime, some of our team jog along Sandymount Strand.

"Many of our people like the urban/rural lifestyle that Dublin offers. They live all week in the city, but at the weekend they surf off Co. Clare or Sligo. Dublin caters for all those staff needs," she says.

Zalando's Fashion Insights Centre in Dublin's Silicon Docks.

TECH ECO-SYSTEM

From the company's perspective, Dublin yielded the benefits of a well-established tech eco-system, where service providers are experienced in dealing with major tech multi-nationals. The IDA facilitated introductions with local experts in employment law, data protection, finance, tax and real estate. Incredibly, the opening of Zalando's Dublin office happened just three months after the company visited the city on a scouting exercise.

Being a German company, Zalando's decision to locate in Ireland was not influenced by corporate tax rates or access to EU markets. Zalando has availed of IDA's grant-aid for RDI projects, which according to O'Brien, helped to level the costs associated with renting in the Dublin area.

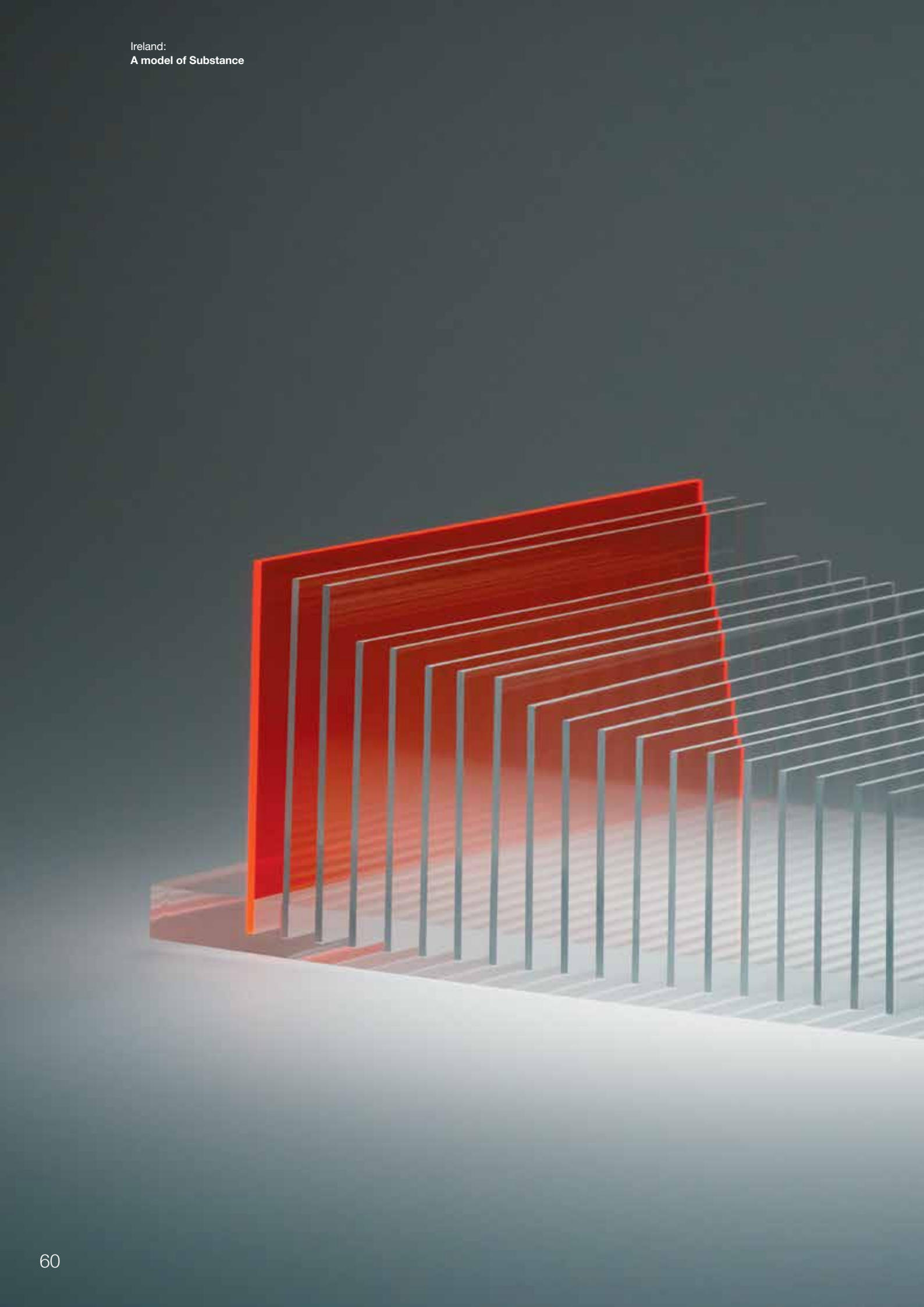
CONNECTIONS TO EDUCATION

Zalando has built relationships with research institutes and universities in Ireland, through research collaborations and internships. It has connected to the four Dublin universities through ADAPT, the research centre that combines expertise of researchers at the universities, with those of industry partners, to produce ground-breaking digital content innovations.

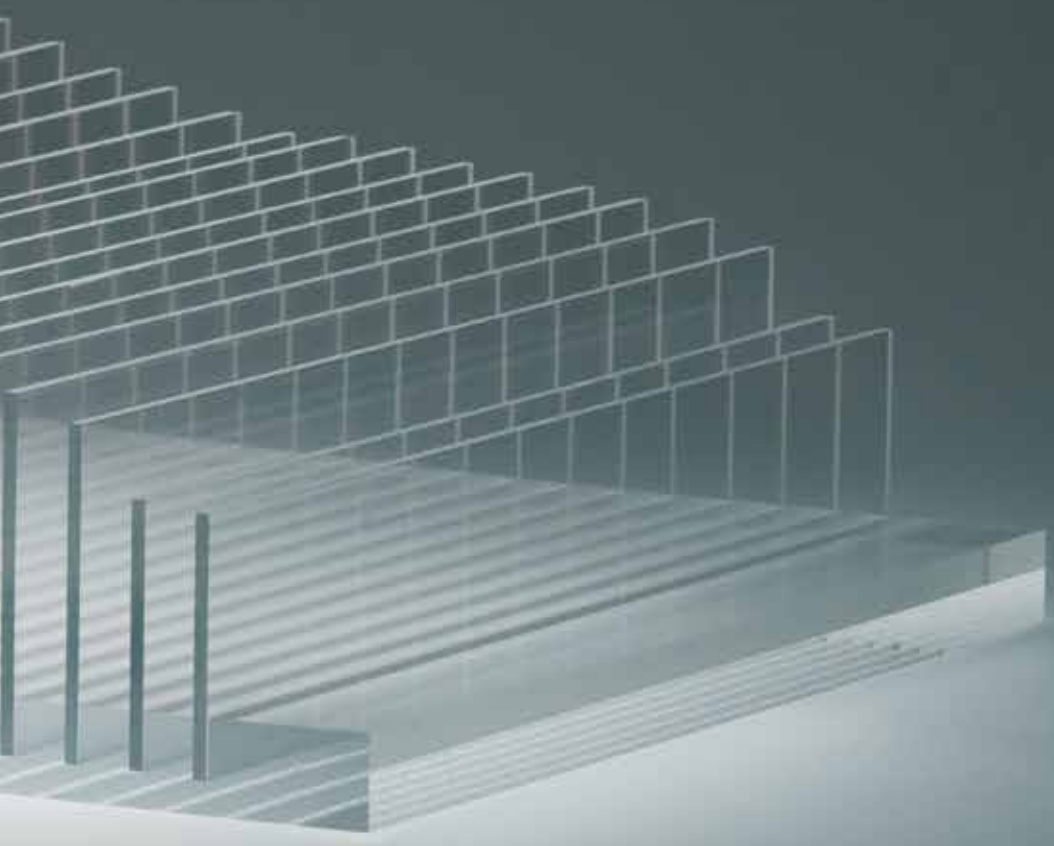
Separately, Zalando has also linked with Ireland's universities through the Insight Centre for Data Analytics, which is one of Europe's largest data analytics research organisations.

STRONG FUTURE

Although the Zalando name is firmly established as a fashion retailer across Europe, Zalando sees itself as a company in transformation, from an e-commerce company into a multi-service platform that provides 'fashion as a service'. The company intends increasing its Dublin workforce to 120 by the end of 2017, with ambitions to hit 400 in the next few years.



The Irish med tech industry is the largest (in value terms) supplier of medical devices to the EU market



Model representing foreign value added in export
Ireland and a group of comparator countries, %

See Figure **12, Page 63**

5. Global Hub

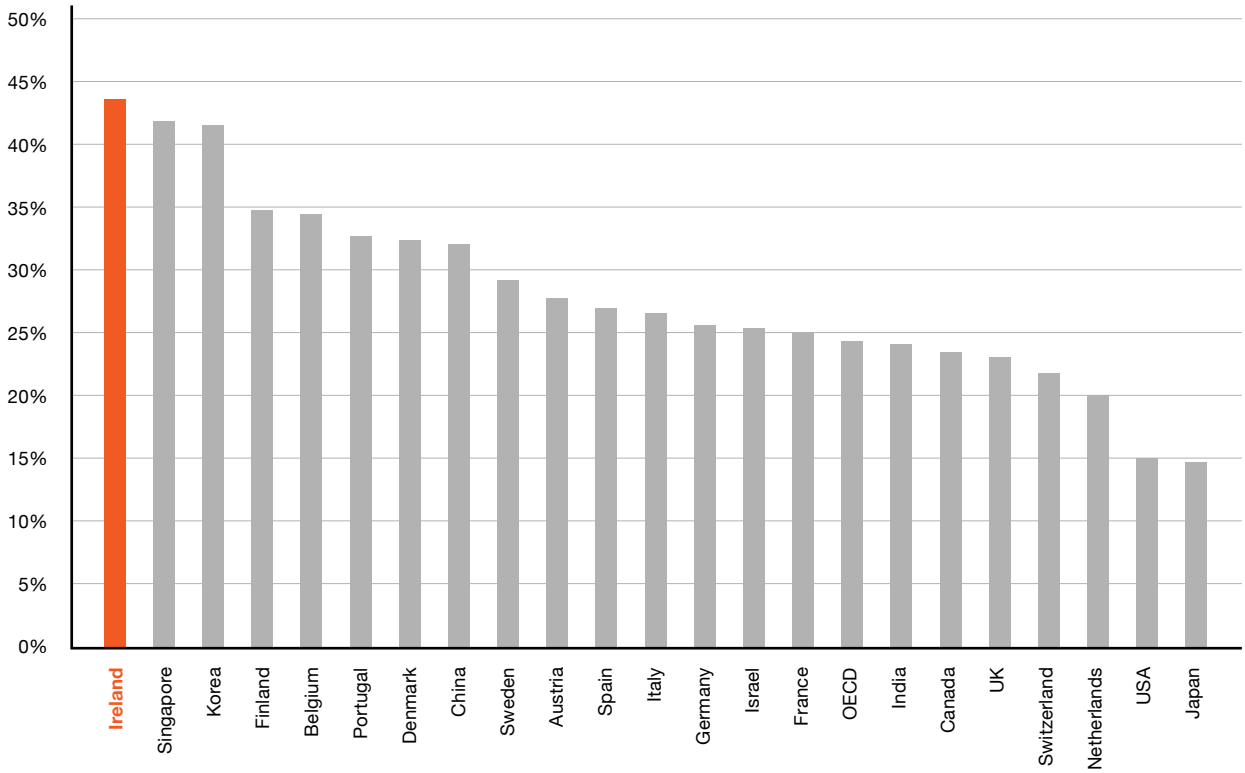
Since 1980, Ireland's GDP growth has been almost perfectly aligned to world GDP growth, and ease of access to global markets has proved crucially important to companies operating here. Ireland is now home to all of the top 10 global technology companies, 18 of the top 20 pharmaceutical companies, and 18 of the top 25 medical technology companies.

Contd. →

Products manufactured in Ireland are not Irish alone, they are part of vast global supply chains: 43% of the value-added content that goes into any Irish export is first imported from abroad, and this is the 5th highest such ratio in the world. 60% of Ireland's exports are part of global value chains – the 5th highest such ratio in the world.

Figure 12: Foreign value added of total exports in Ireland and a group of comparator countries, %

Source: OECD

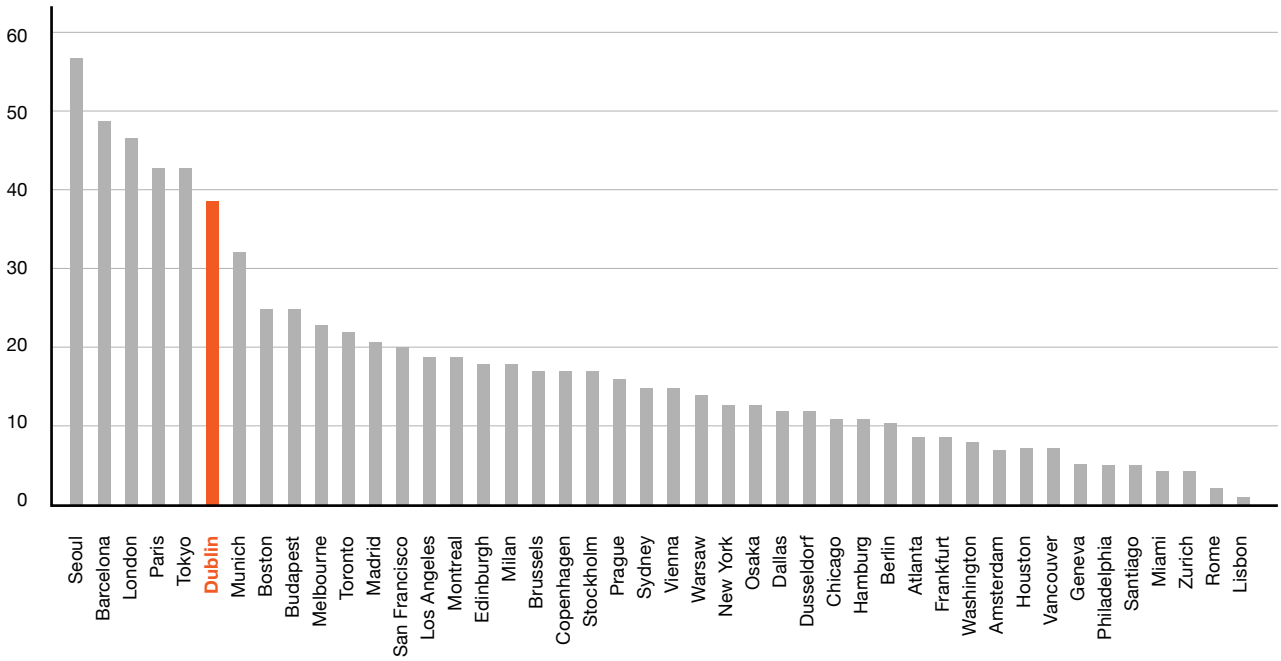


To take a sectoral example of Ireland's role in global supply chains: the med-tech industry is the largest (in value terms) supplier of medical devices to the EU market and one in ten pharmaceutical products exported from the EU are manufactured in Ireland.

Ireland is not only a global hub for manufacturing and services activities but also R&D. OECD data shows that of over 40 OECD cities, Dublin attracted the 6th most inward cross-border R&D investment projects over a nine year period between 2003 and 2011. Dublin is competing for R&D projects successfully with cities 10 times its size, such as London, Tokyo, and Paris. The only other mid-sized European city in the same range is Barcelona.

Figure 13: Inward cross-border investment projects in R&D by major OECD cities 2003 to 2011

Source: Belderbos et al (2016)



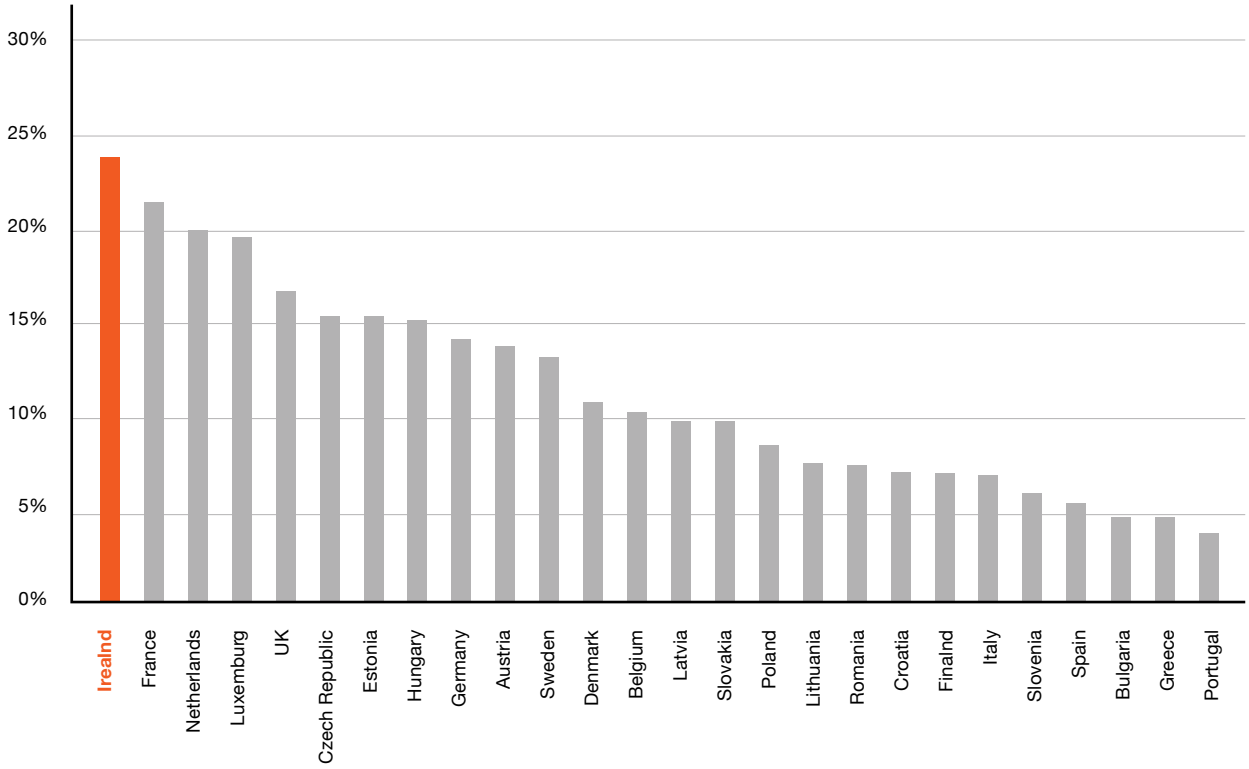
As our IBM case study illustrates, flexibility is one of the key determinants for success as a global hub. Because customer needs and business models change rapidly, regions have to be well-positioned to help corporations adjust their models as required; in the case of the information technology sector, shifting from hardware manufacturing to cloud platforming. Ireland's continued success as a global hub is built on flexibility of approach and good horizon scanning.

To see the substance of the activity taking place in Ireland you needn't look further than its export profile: Ireland has the highest proportion of high tech exports (24%) of any European country – 10 percentage points higher than Germany and 7.3 percentage points higher than the UK.

These exports link directly back to employment: Irish employment in high technology sectors, at 7.5% of its workforce, is the highest in Europe, far outstripping the EU average of 4%. In high-tech manufacturing in particular, Ireland's high employment levels stand out: Ireland has the highest proportion of workers in high-tech manufacturing, with twice the level of Germany.

Figure 14: High tech exports, % of total

Source: Eurostat



Ireland by numbers

#7

Half of all hospital ventilators worldwide are manufactured in Ireland

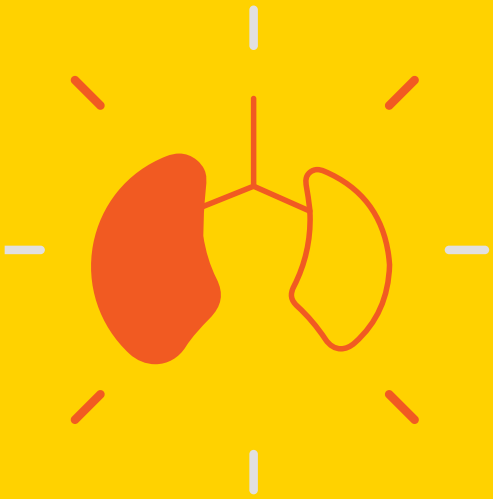
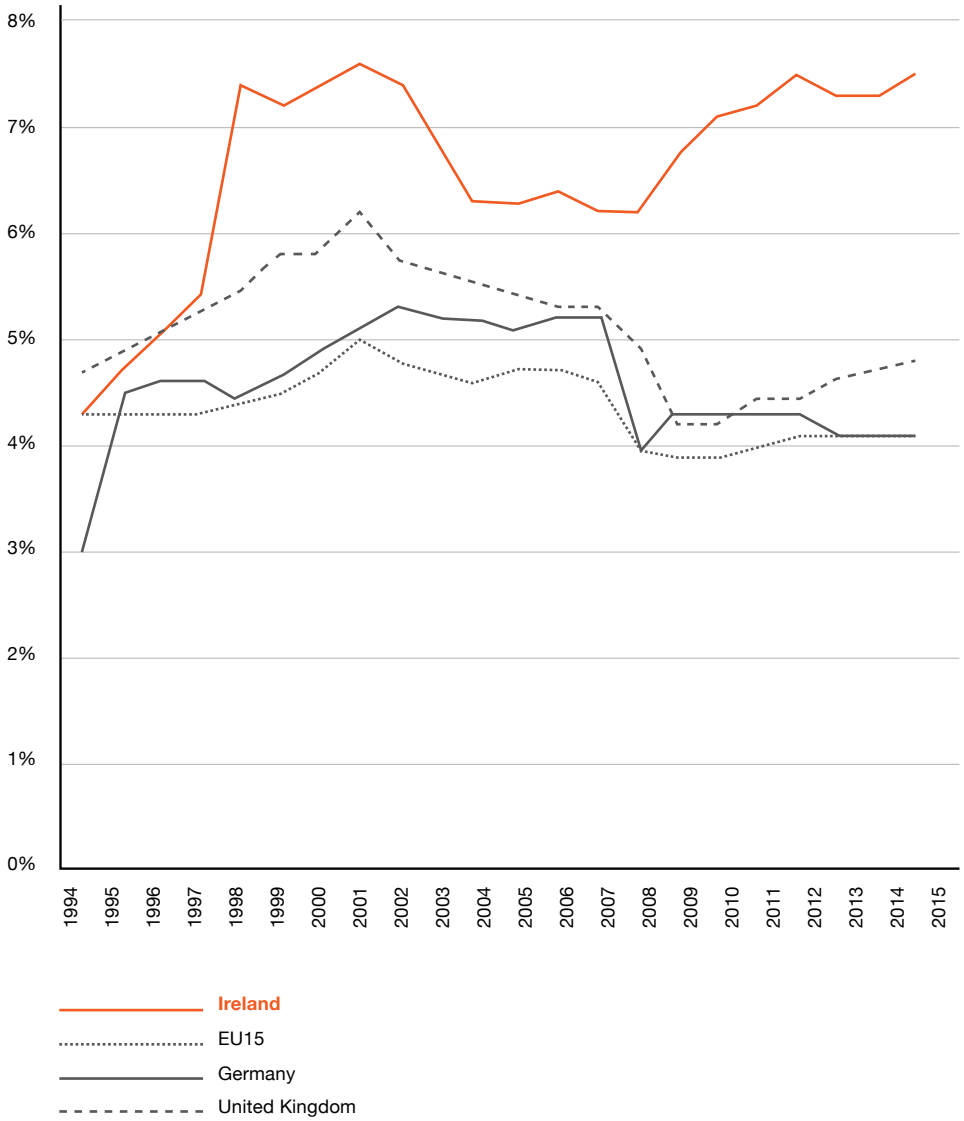


Figure 15: Percentage of the workforce in high-tech sectors

Source: Eurostat

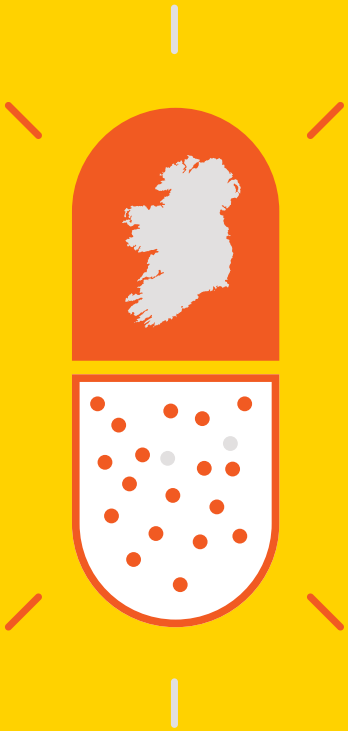


This translates directly through to living standards with the median Irish worker having the 2nd highest hourly pay (€18.25) in the EU. Ireland's top 5% of workers are the 3rd highest paid in Europe, with our bottom 5% of lower earners the 6th highest paid.

Ireland by numbers

#8

Ireland has all of the top 10 global technology companies, 18 of the world's top 25 medtech companies and 18 of the world's top 20 pharma companies



Case Study
IBM

The half-century of IBM in Ireland shows that flexibility on both sides is the most important indicator of success as a global hub.

“We have a major international sales and marketing centre with 700 people. We sell to 21 countries across Europe, using 19 languages”

Peter O'Neill, IBM's country manager in Ireland, is in a unique position to comment on foreign direct investment (FDI) trends in Ireland. Having worked for IBM for 36 years in its Dublin, London, Paris and New York offices, he has experienced the FDI relationship both in the Irish subsidiary of a large corporation, and in the international head office. The good news is that he sees Ireland as being very strong in one of the key ingredients that determine success in the FDI space: flexibility.

"IT is an industry that is fundamentally reordering at an unprecedented pace," he says. "Today, IBM is much more than a 'hardware, software, services' company. IBM is now a cognitive solutions and cloud platform company. These technologies will in fact change everything and will have major implications for our customers in Ireland."

BIG HISTORY

On several occasions during its 105-year history, IBM has made big strategic changes. "Most recently, in 2014, IBM pivoted and restructured," says O'Neill. "It divested commoditising businesses, restructured others, and accelerated our strategic imperatives of Data, Analytics, Cloud, Mobile, Social and Security to help our clients become digital."

Peter O'Neill, IBM Ireland,
Country General Manager

Seventeen years ago, two-thirds of our staff in Ireland manufactured products. Now, none of our staff manufacture. But we have more employees.

ADDED VALUE

For O'Neill and his colleagues, this pace of transformation meant looking at IBM in Ireland as if it were a start-up: "We had to ask ourselves, 'Where are we adding value?', 'What are we holding on to that is no longer benefitting us?', 'Are we willing to do what former IBM chairman Tom Watson said – and change everything?'"

This approach is nothing new for IBM in Ireland. IBM opened its first office in Ireland in 1956. By 1995 it had a workforce of 500 people, focused mostly on domestic sales. The crisis and rebirth at IBM in the mid-90s, plus the Watson-influenced thinking, pushed the Irish leadership team to approach the corporation to make a case on Ireland's behalf.

O'Neill and colleagues explained that Ireland would be a suitable site for IBM's new international missions as it embraced the globalisation of IT business opportunities. They were successful, and IBM in Ireland went from 500 to 3,000 people in a five-year period. "But we had to continuously keep ahead of the changes," says O'Neill. "Seventeen years ago, two-thirds of our staff in Ireland manufactured products. Now, none of our staff manufacture. But we have more employees."

RESEARCH & DESIGN

"Across Dublin, Cork and Galway we now have a significant number of graduate engineers, architects and graphic designers in our software development lab and design studio. Plus scientists in our IBM Research lab in Dublin who are mostly PhDs," says O'Neill proudly. "We also have a major international sales and marketing centre and we sell to 21 countries across Europe, using 19 languages."

In total, IBM in Ireland employs over 4,000 people across a broad range of businesses and locations. Its latest initiatives include cognitive computing, cloud, Watson Health, cyber security and next-generation data centre services. At IBM Research Ireland, scientists and engineers are helping clients and partners make better decisions using an array of cognitive IoT technologies.

IBM European Digital Sales Centre, Dublin.

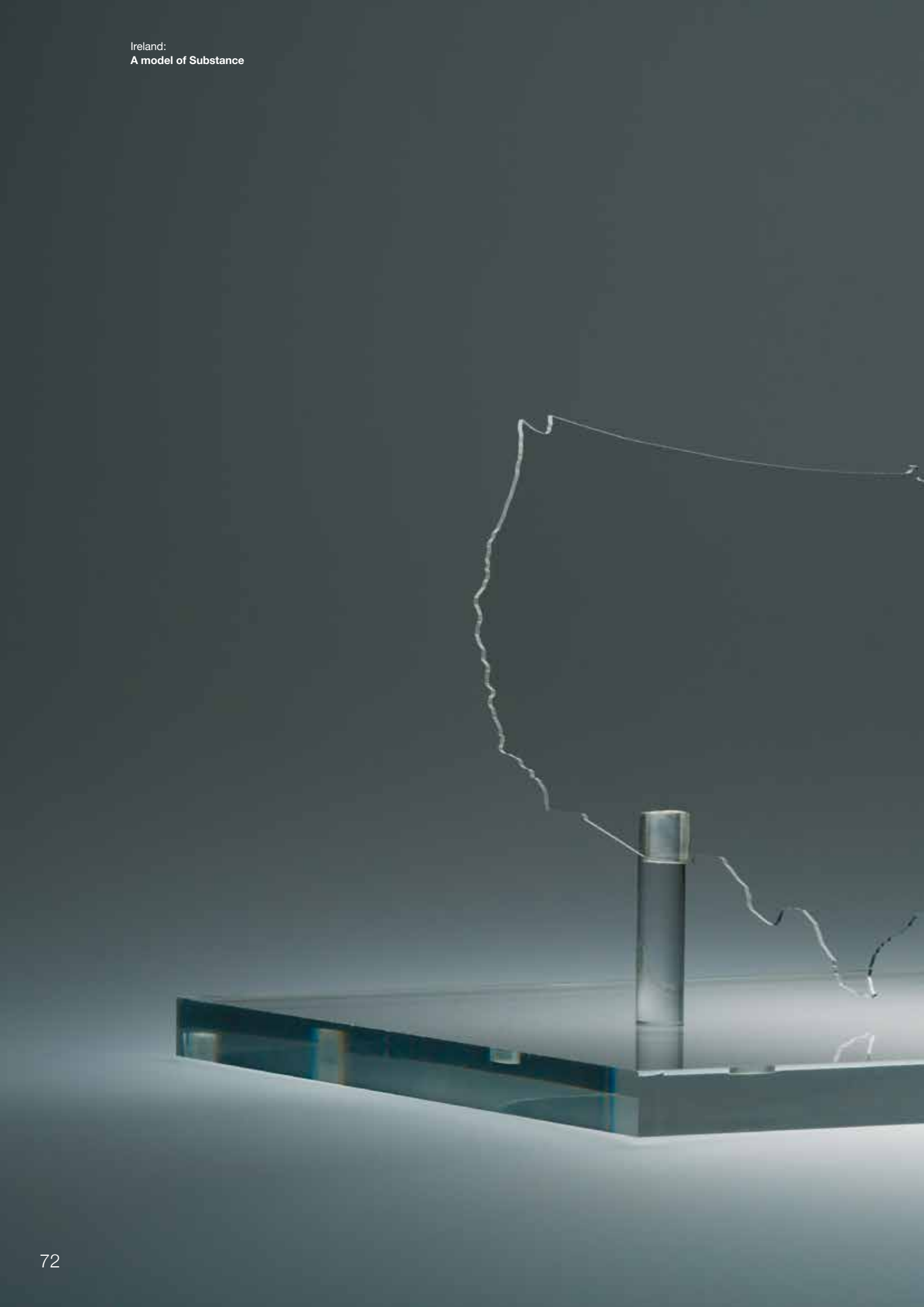
CONTINUOUS IMPROVEMENT

"Great transformation requires great flexibility from people," says O'Neill, and that ingredient is in plentiful supply in Ireland. He says that this bodes well for FDI in Ireland, but also sounds a caution. Citing the IBM Global Location Trends Annual Report, which outlines the factors that influence where companies locate, he says the three most important factors for FDI decisions are a favourable business environment; strong cluster/sector strength; and the availability of skills.

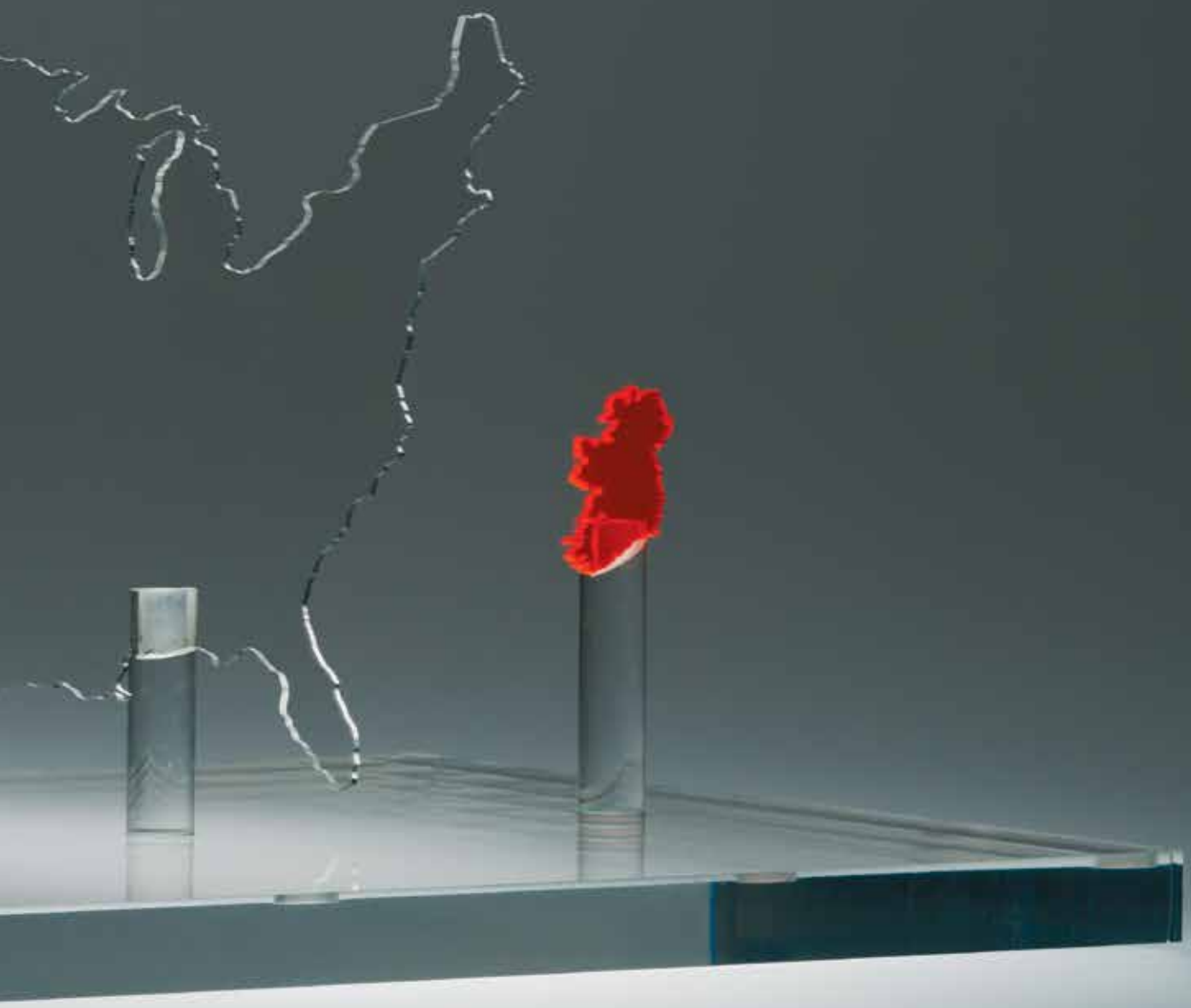
Ireland has the first two qualities in abundance," he says, "An English-speaking society and being supportive of the EU; and strong clusters in Pharma, IT, Life Sciences, Medical Devices, Internet-centric and Gaming.

But, he adds: "Skills is an important factor that Ireland must keep improving. While Brexit is important, the levels and availability of applicable skills may be more important long terms determinants of FDI. They affect not only our ability to start new missions, but also that ever-important flexibility."

Great transformation requires great flexibility from people, says O'Neill, and that ingredient is in plentiful supply in Ireland.



The physical proximity of leading edge companies and talent in Ireland, gives huge comparative advantage.



Model representing the relative size of the island of Ireland versus the lower 48 states of the USA.

See Table, **Page 75**

6. Clusters

In an increasingly networked global business community seeking collaborative innovation, the proximity of Ireland's leading edge sectors and talent gives it a huge comparative advantage. In Ireland it takes a life science executive just an hour and a half to drive to an ICT company, on average in the US it means a six hour flight.

Ireland is an island, off an island, off a continent, yet is central to a globalised business community and is one of the EU's greatest economic success stories.

Today Ireland is home to all of the top 10 global technology companies as well as those born on the internet; 18 of the world's top 25 medical technology companies, and 18 of the world's top 20 pharmaceutical companies, with six of the world's top 10 selling pharmaceutical products exclusively produced here.

All this in an area smaller than Maine in the United States! The confluence of talent across these three sectors allows for greater collaboration in research, access to cross functional skills, business links to specialist suppliers locally, and makes managing global supply chains much easier.

Contd. →

Ireland is particularly fortunate in the proximity it enables for corporations. The table below compares Irish proximity to the US in three sectors. Looking at the matrix of the distances between the sites of 15 multinationals in Ireland and their sister HQs in the US, the average pair-ways distances between any two of the 15 sites in Ireland is 128km; in the US it is 2,242km.

Average distance between company HQs in IT and Life Sciences
Ireland versus the US

	Ireland	US	Ratio of US to Irish distance
Total (avg. distance between two pairs)	128km	2,242km	17.5
ICT (within sector)	73km	1,237km	16.9
Life Sciences (within sector)	142km	772km	5.4
Between sectors (ICT x Life Sciences)	147km	3,278km	22.3

Proximity is less important for projects within sectors as firms tend to cluster in the information technology sector in the US. For example, large multinationals are on average 20km apart once Dell's HQ at Round Rock, Texas, is excluded. But proximity becomes vital where clusters of sectors are significant distances apart. For example, the confluence of medical device and information technology companies is hugely important when developing Internet of Things or e-health initiatives.

In Ireland, the average life science company is less than 147km from the average information technology company; around 1.5 hours drive. The average distance in the US is 3,278 km. Even if one goes by air, this is equivalent to a six hour flight. Remarkably, the average life sciences multinational in the US is only an hour or so closer in flying time to Palo Alto than to Dublin!

Case Study
Abbott

Abbott finds the ‘unique supportive environment in Ireland’ invaluable for sharing knowledge, benchmarking and for the collaboration leading to innovation.

“This collaborative environment among Irish-based companies is hard to find anywhere else in the world.”

Abbott is a global healthcare company devoted to helping you live your best possible life through good health. Headquartered in Illinois, the company has been in Ireland since 1946. Its Irish-manufactured products are distributed to more than 130 countries, with 11 sites across Ireland, including six manufacturing plants.

With approximately 3,000 employees in Ireland, Abbott's contribution to the local economy carries extra significance because much of its activity is in rural areas where there are few other industrial employment opportunities.

KNOWLEDGE SHARING

While the attraction of Abbott to Ireland is clear, what is it about Ireland that attracts Abbott? Ciaran Corcoran, Longford Site Director for Abbott's diagnostics business says that much of what Ireland offers comes in the form of possibilities to share knowledge, benchmarking and collaboration, all of which lead to innovation: "Ireland offers Abbott a unique supportive environment, including groups such as the Irish Medtech Association, Ibec, Irish Centre of Business Excellence, BioPharmaChem Ireland, plus the newly-established Irish Manufacturers Association."

Ciaran Corcoran, Longford Site Director.

Colleagues at Abbott's manufacturing facility in Longford.

COLLABORATIVE ENVIRONMENT

Corcoran sees the concentration of the world's top medtech firms in such a small geographical area as a distinct advantage. "This collaborative environment among Irish-based companies is hard to find anywhere else in the world," he says. "As a result, Irish-based companies share best practices in areas such as culture, operational excellence, leadership behaviours and strategic alignment, the fundamentals of sustainable high quality business performance."

As an example of this sharing, Abbott's Longford facility welcomed approximately 30 groups – over 300 people – from different companies in the Irish medtech sector since it won the Shingo prize in 2016. The prize, awarded by Utah State University, recognises organisations that demonstrate an exceptional culture that continually strive for continuous improvement and progress.

Abbott doesn't just host visits by its peers; it gets assessed by its visitors, and it also visits the sites of other Irish-based companies. Corcoran says that this type of collaboration and benchmarking is key to innovation, idea generation, and a guide to what else is possible. Abbott strongly supports and encourages this activity.

We can demonstrate the impact of having this successful collaborative environment with a view to potentially attracting future investments into Ireland.

Irish-based companies share best practices in areas such as culture, operational excellence, leadership behaviours and strategic alignment, the fundamentals of sustainable high quality business performance.

INNOVATIVE FUTURE

Abbott Ireland also has a Business Advisory Council, through which its site leaders in Ireland meet regularly to ensure that the business is aligned, innovative and unified in its strategies. All of this indicates that Abbott and Ireland have a long future together. Corcoran says: "We can demonstrate the impact of having this successful collaborative environment with a view to potentially attracting future investments into Ireland."

ABBOTT ACROSS IRELAND

Abbott's business has manufacturing facilities located in Clonmel, Cootehill, Donegal, Longford and Sligo. The other sites are commercial, service and financial support organisations located in Dublin and Mayo. The story of Abbott in Ireland started in Liffey Valley, Dublin, just after the Second World War. This part of the business is now responsible for the sales, marketing and distribution of a wide range of diabetes, diagnostic, and nutritional products in Ireland.

In Clonmel, Abbott operates from a 250,000 square foot facility on a 19-acre site, manufacturing a broad range of vascular devices, including stent delivery systems. Abbott's Cootehill facility, established in 1975, is the largest infant formula powder manufacturing facility for the company worldwide. Approximately 1,000 dairy farms in Ireland and Northern Ireland supply milk to the facility, which processes 500,000 litres per day. Marketed under the brand names Similac and Gain, the product is distributed throughout Europe, Southeast Asia, the Middle East, Latin America and Canada.

Abbott's Donegal facility produces the worldwide supply of the company's blood glucose test strips, which help patients manage their diabetes more effectively and comfortably. Abbott Longford manufactures diagnostic reagent products to help patients' thyroid function, fertility, cardiology, renal and metabolic rates. The facility spans 135,000 square feet and is located on a 20-acre site on the outskirts of Longford town.

Sligo's Finisklin Business Park is where Abbott established its first Irish diagnostics manufacturing facility in 1994. Since its inception, the facility has expanded eight times and now spans nearly 170,000 square feet over a nine acre site. It is now the second-largest facility in the world that manufactures diagnostic products, which includes those that detect hepatitis B, and prostate, ovarian and testicular cancers.

In Westport, the Abbott team works with the Liffey Valley office to provide advanced eye-care technologies to patients in Europe, the Middle East and Africa.

The Future

Ireland is a model of substance – at the centre of this has been our commitment to a solid, transparent and business-friendly regime, ensuring that we remain a great place to do business over the long term.

Ireland has been one of the big winners from globalisation. It's important for small countries like ours that global economies remain committed to the open policies which have benefitted so many. This can be done whilst attending to the legitimate fears of those who lose out.

The global market economy needs constant attention and tweaking to ensure that it keeps delivering and working for both business and society. This can be done. We know globalisation works, that Ireland is a beneficiary and that it is flexible to adapt and adjust to new realities. As the world's sixth most competitive economy, with proven resilience, Ireland must be at the forefront of defenders of the global market economy.

Substance has taken Ireland from economic laggard to the fastest growing economy in the developed world, and substance will help us lead the world to an assured future.

“The OECD process on alignment of substance and corporate tax strategy has accelerated Ireland to eye popping growth rates driven by business migration. This new world dynamic uniquely favours the most globalised nation on earth.”

About Ibec

We are Ireland's largest and most influential business representation organisation. We speak proudly on behalf of 7,500 Irish businesses; home grown, multinational, big and small, spanning every part of the economy and employing 70% of the private sector workforce in Ireland. Together with our 40+ trade associations, we lobby government and policy makers nationally and internationally to maintain a positive climate for business and drive economic growth. Our policy is shaped by our members and our work has probably influenced your business.

We regularly produce market leading industry and business events, positions on issues impacting business, economic research, forecasts and analysis. We also provide a wide range of professional services and management training to members on all aspects of human resource management, occupational health and safety, employee relations and employment law.

With 220 staff in six offices around Ireland, as well as an office in Brussels and connections in the U.K and Washington, Ibec communicates the Irish business voice to key stakeholders at home and abroad.


Transport
Property
Engineering
Energy
Retail
Wholesale
Technology
Manufacturing
7,500
Members
Ibec
For Irish Business
Pharma and Bio
MedTech
Food and Drink
Energy and Resources
Media
Education

Written and Edited by
Ibec

Research
Ibec

Design
Red&Grey
www.redandgrey.ie

Perspex Models
Shadow Creations
www.shadowcreations.ie

Photography
Ros Kavanagh
www.roskavanagh.com

Print
Business Print
www.businessprint.ie

Digital addresses
@Ibec_irl
www.linkedin.com/company/ibec
www.ibec.ie

Ibec Head Office
84/86 Lower Baggot Street
Dublin 2
Tel: + 353 1 605 1500
Email: membership@ibec.ie
Web: www.ibec.ie/membership

Limerick
Gardner House Bank Place
Charlotte Quay
Limerick
Tel: + 353 61 410411
Email: midwest@ibec.ie
Web: www.ibec.ie/midwest

Galway
Ross House
Victoria Place
Galway
Tel: + 353 91 561109
Email: galway@ibec.ie
Web: www.ibec.ie/west

Donegal
3rd Floor, Pier One Quay Street
Donegal Town
Donegal
Tel: + 353 74 9722474
Email: northwest@ibec.ie
Web: www.ibec.ie/northwest

Cork
Knockrea House
Douglas Road
Cork
Tel: + 353 21 4295511
Email: cork@ibec.ie
Web: www.ibec.ie/cork

Waterford
Waterford Business Park
Cork Road
Waterford
Tel: + 353 51 331260
Email: southeast@ibec.ie
Web: www.ibec.ie/southeast

Brussels
Avenue de Cortenbergh, 89,
Box 2
B-1000 Brussels
Belgium
Tel: + 32 (0)2 512.33.33
Fax: + 32 (0)2 512.13.53
Email: europe@ibec.ie
Web: www.ibec.ie/europe


Ibec
For Irish Business