IRELAND FINANCIAL SERVICES CLUSTER

Microeconomics of Competitiveness Spring 2017

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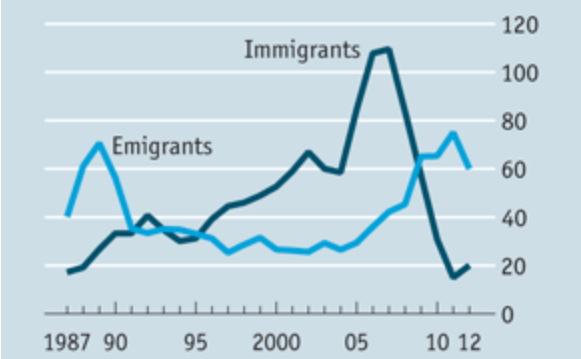
Introduction

In the last 30 years, the Irish economy, and its financial sector have been on a roller coaster that is unprecedented within the developed world. The Economist summarized this wild ride of the Irish economy as follows: "*In 1988 it was dubbed the "poorest of the rich" […]. By the 1990s it had transformed itself into the Celtic Tiger […]. In the 2000s it was turbo-charged by the low interest rates that came with membership of the euro […]. But by the end of 2010 it was a ward of the IMF, as its twin housing and credit booms turned to bust. Now its speedy recovery from the crash has earned Ireland a new title: the Celtic Phoenix*[1]*".* We will subsequently assess how Ireland got to its current position, and how these shifts have contributed to the state of its financial services sector.

1987-2008 – The Celtic Tiger years and the emergence of the Financial Services Centre

Whilst the late 1980's and early 1990's continued to see high levels of emigration due to a lack of economic opportunities in Ireland, the foundations for a sustained turnaround had been put in place. In subsequent years, Ireland would further accelerate its integration into the European economic system, joining the European single market in 1992, and becoming a founding member of the Eurozone in 1999.



Migration to and from Ireland, '000. Source: The Economist, "After the race", 2011

Until 1987, Ireland's financial services sector was negligible. This changed when the government created a new hub for the financial service industry at the heart of Dublin, the International Financial Services Centre (IFSC).

[1] The Economist, "Getting Boomier", November 2015

The IFSC was established in 1987 under legislation designed to boost activity and employment in the Irish economy. The Government had identified the growth potential of the international financial services sector and recognized that Ireland had the capacity to develop in the industry because of its well-developed financial infrastructure, a sophisticated internal and international communications system and a young and highly educated population.

The IFSC quickly developed into a major location for investment from both Europe and the US, attracting a significant number of foreign banks and other financial services providers. The IFSC is integral to the development of the Irish financial sector, leading Accenture to present it as "compelling evidence of Ireland's ability to excel as a financial centre". Based on this analysis, "with around 500 firms, total employment of 32,700 and a tax contribution of €2.1bn, the IFSC represents approximately 7.4 per cent of Irish GDP." [2]. In its beginnings, companies investing into the IFSC needed to locate in the physical space created in Dublin's docklands, and qualified for a concessional tax rate of just 10 per cent. More recently, it has become possible for financial service providers to locate anywhere in Ireland and still be considered part of the IFSC. Whilst the corporate tax rate has been adjusted to the national rate of 12.5 per cent, this is still very low in international comparison. The IFSC attracted investments from a variety of subsectors within financial services, such as banking, insurance, treasury, asset management payments and others, creating significant employment and tax revenues.

The IFSC has been successful in attracting funds management to Ireland, and at the end of 2009, €1,441bn in assets were administered in Ireland, with €749bn also domiciled here[3].
Fund managers present include most of the world's leading institutions, such as BNY Mellon, BNP Paribas, Merrill Lynch, Citi, JP Morgan and others.

[2] Source: "The IFSC - the international financial services sector in Ireland", Accenture, 2010
[3] Source: "The IFSC - the international financial services sector in Ireland", Accenture, 2010

In banking, the IFSC has also been successful in building a broad base of investment. In 2009, 58 IFSC banks operated internationally, employing 10,121 people[4].

The IFSC has emerged as a major hub for aircraft leasing companies. As of 2009, nine of the world's top 10 aircraft leasing companies operated in Ireland, with operations spanning the industry value chain, from sales to asset management and technical services[5].

The IFSC also hosts significant companies in the insurance, securitization, payments and corporate treasury sectors. Of interest is the technology and services sector, which comprises consultancies such as IBM, Oracle and Accenture, as well as the technology facilities of major organizations such as Allianz, AXA and Fidelity[6].

2008-today – A global crash and the shoots of recovery

Whilst the parting shot for the financial crisis in 2008 was Lehman's downfall on Wall Street, funds registered in Ireland had a significant role to play in the global collapse that followed. A key reason for this was lax regulation, a key selling point that distinguished Ireland from other marketplaces. Whilst officially regulation standards for Ireland were quite high, in the words of Stewart, "*a significant number of the sub-prime and other funds that collapsed in value in the recent financial crisis were listed on the Irish Stock Exchange. The collapse of these funds led in turn to large losses at banks and especially four German banks with subsidiaries at the IFSC (Sachsen Bank, WestLB, IKB and Depfa/Hypo Vereinsbank")*[7]. At the heart of the lax regulation was an institutional setup that required the regulators to also play the role of supporters and active promoters of investment. As an example, "for the period 2003-2010 the Central Bank (the regulator of the financial sector) was specifically

[4] Source: "The IFSC - the international financial services sector in Ireland", Accenture, 2010
[5] Source: "The IFSC - the international financial services sector in Ireland", Accenture, 2010
[6] Source: "The IFSC - the international financial services sector in Ireland", Accenture, 2010
[7] Source: Steward, "Low tax Financial Centres and the Financial Crisis: The Case of the Irish Financial Services Centre", 2013

required to promote the development within the State of the financial services industry"[8]. Furthermore, even if the incentives had been corrected, it is questionable whether it would have been possible for regulators to control the riskiest elements within the industry, given that only two people within the agency were responsible for enforcing regulation across the entire sector[9]. According to the Economist, in the bubble years, Ireland became a "poster child of what not to do"[10]. When the market faltered, the government guaranteed liabilities of €400bn at six financial institutions, and converted private risk into public liabilities. In 2010, Ireland accepted a bailout of €64bn by IMF and the EU, followed by public expenditure cuts across the board. This created a massive spike in unemployment, emigration and a sharp economic contraction. Between its pre-crisis peak in late 2007 and its nadir at the end of 2009, the economy contracted by 11.2 per cent[11].

Since then, Ireland seems to be on the road to quick recovery. GDP reached pre-crisis levels in 2015, and unemployment is on the way to levels last seen in 2008. Growth has been so strong that the Economist warns of the next bubble and questions whether the lessons of the crisis have been learnt. "On its current trajectory", it argues, "Ireland will soon once again be an economy ill-suited to the ECB's monetary tailoring"[12]. At the same time, the recent public declaration by the Irish Central bank not to pursue highly risky investments points to a more prudent approach. A source in a large investment bank confirms this new approach by the Irish government: "If you've come from all the troubles Ireland has, you want to be very careful about taking on risks[13]. Whilst the domestic banking sector is still suffering from the effects of the crisis, the nonbank financial sector has continued to

[8] Source: Steward, "Low tax Financial Centres and the Financial Crisis: The Case of the Irish Financial Services Centre", 2013

[9] Source: Tax Justice Network, "How Ireland became an offshore financial centre", 2015

[10] Source: The Economist, "Getting Boomier", 2015

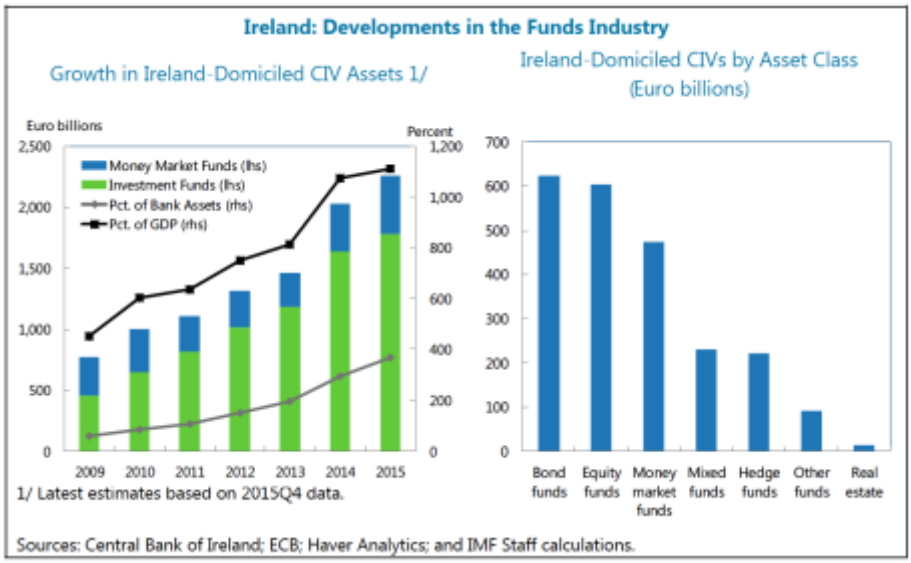
[11] Source: The Economist, "Celtic Phoenix", 2015

[12] Source: The Economist, "Getting Boomier", 2015

[13] Source: Reuters "Ireland reluctant to host high-risk bank trading after Brexit", 2016

thrive, as shown in the table below. Since 2009, Ireland has shown growth in attracting collective investment vehicles (CIVs), which consist of money market funds, investment funds and financial vehicle corporations. Assets held in CIVs totaled €2.7 trillion at end-2015, equivalent to 12.5 times GDP (see Figure 1).[14]

FIGURE 1: Ireland-Domiciled CIV Assets



Source: IMF Financial System Stability Assessment – Ireland, 2016

Partly, this growth refects part of a global trend towards alternative sources to financing, away from banks towards non-traditional vehicles, such as hedge funds, pension funds, and insurance companies, which happen to be prominent in Ireland. Even taking these factors into account, growth in CIVs points toward the attractiveness of Ireland for the financial sector

The insurance sector has also gained significance for Ireland, and the country is punching well above its weight. Whilst the domestic insurance sector is relatively small, many international insurance businesses are currently operating from Ireland as a hub. Eighty-two percent of Irish-based insurance

[14] IMF, "Financial System Stability Assessment - Ireland."

business is written outside Ireland, and the country is the third-largest host for reinsurance business in Europe.[15]

Ireland's Recent Economic Performance

As alluded to in the previous section, prior to the 2008 Global Financial Crisis (GFC) Ireland had experienced a long period of strong economic growth, averaging annual real GDP growth of 6.5 per cent between 1990 and 2008. However, Ireland was one of the hardest hit by the global financial crisis, including the bursting of a housing bubble in Ireland, which saw real house prices halve between 2007-2012 and result in a domestic banking crisis. The Irish government's fiscal position also deteriorated substantially reaching a deficit of over 32 per cent of GDP in 2010 and gross government debt peaked at over 120 per cent of GDP in 2012.

More recently, Ireland's economy has recovered strongly, experiencing amongst the highest economic growth rates in the developed world (for example in 2016, real GDP growth was 4.9 percent). Key characteristics of the Irish economy are detailed in Table 1.

[15] Ibid.

TABLE 1: Ireland's economic and political system

opulation:

7 million in 2016. Favorable demographics - Ireland has the youngest population in Europe with 1/3 o e population under 25 years old. Diaspora, over 17 per cent of Irish-born people live overseas – the ghest in the OECD.

olitical system:

he parliament in Ireland consists of a lower house, whose 166 members are elected by proportional presentation for five-year terms, and an upper house (the Seanad) with 60 members, 11 appointed and 9 elected by various interest groups. The prime minister, is chosen by parliament. The president, whose nctions are largely ceremonial, is directly elected for a 7-year term. There are 114 local government thorities in Ireland. They provide a range of services, including housing, transport, water, waste anagement, education, health and welfare.

iving standards:

DP per capita is $69,375 (in PPP terms) in 2016, compared to $39,212 average for the EU; inequality i ose to the EU average (gini of 29.8 compared to EU average of 31); life expectancy is 81.1years (EU verage 80.5 years). Education levels are high, e.g. in 2014, 35.8 per cent of Irish working age people ave tertiary education compared to 26 percent for the EU.

conomic system:

arket-based open economy, characterized by:
mall size of government (the lowest expenditures in the EU as percentage of GDP) and budget close to alance (deficit of 1.9 per cent of GDP) but high government debt (92 per cent of GDP) due to legacy om financial crisis;
arge tradeable sector with exports at 120 per cent of GDP, and almost a quarter of exports classified as igh tech';
rong Foreign Direct Investment (FDI) inflows – from 2010-15 Ireland received approximately 18 ercent of FDI to the EU for this period. Ireland has the second highest (behind the UK) stock of FDI in e EU. The US continues to be the largest single investor in Ireland, accounting for over 70 per cent of vestments since 2010;

inancial Regulation:

he Central Bank of Ireland oversees the development and implementation of regulatory policy in lation to financial services sector both domestically and internationally. This includes the prudential pervision of investment funds, and insurance and reinsurance undertakings authorized in Ireland. Ther also the Single Supervisory Mechanism (SSM) for banks, in which the ECB is responsible for direct versight of the "significant institutions" that make up the bulk of the Irish banking system.

Sources: For exconomic data: Eurostat, see http://ec.europa.eu/eurostat/data/database; IMF, see http://www.imf.org/en/Data; and OECD, see https://data.oecd.org/. For political information, see Freedom House, https://freedomhouse.org/report/freedom-world/2016/ireland.

The Irish economic recovery has been export led, which in turn has been underpinned by domestic policy settings supportive of foreign investment (see Table 2 below).

TABLE 2: International Competitiveness Comparisons*

orld Bank, Ease of oing Business Index[16]	verall ranking for 2017 was 18th (compared to 15th for 2016). Ranked number 1 om OECD countries for paying taxes.
orld Economic Foru Global ompetitiveness Index	anked 23rd out of 138 countries for 2016-17 (compared to 24th out of 140 for 015-16). Financial market development ranked 67th. rengths at the sub-level: Prevalence of non-tariff barriers (4th); Trade tariffs ercentage duty (5th); Prevalence of foreign ownership (2nd); Business impact of les on FDI (1st); Burden of customs procedures (6th); FDI and technology transf st); and Quality of the education system (6th).
MD – World ompetitiveness earbook[18]	anked 7th out of 61 countries for 2016 (compared to 16th for 2015). Highest nkings: domestic economy (3rd); international investment (3rd); productivity and ficiency (1st); attitudes and values (2nd).
uropean Central ank[19]	armonised competitiveness indicators based on unit labor costs indices for the tal economy: 2016 Q3 (period averages - index 1999 Q1=100)

	uro area	**eland**
Average	2.2362	7.0145
Growth rate to previous period	0314	.2960
Annual rate of change	1194	2249
Percentage change since December 1998 998 Q4 for quarterly data)	0.9962	6.9684

*A ranking of 1 is the highest possible ranking for the relevant competitiveness indicators.

Ireland has one of the lowest corporate tax rates (12.5 percent) amongst developed economies. The effective corporate tax rate is believed to be much lower, for example the Financial Times reports that, "some US multinational subsidiaries operating in Ireland paid an effective rate of tax of just 2.2 per cent on their Irish activities"[20]. Some of these tax arrangements have now ended or are in the process of ending, such as the phasing out of the "double Irish" by 2020. Further, the EC has ruled in 2016 that Ireland granted €13billion of illegal tax benefits to Apple which need to be repaid (currently under appeal)[21]. It will remain to be seen how these changes impact on Ireland's ability to attract and retain FDI.

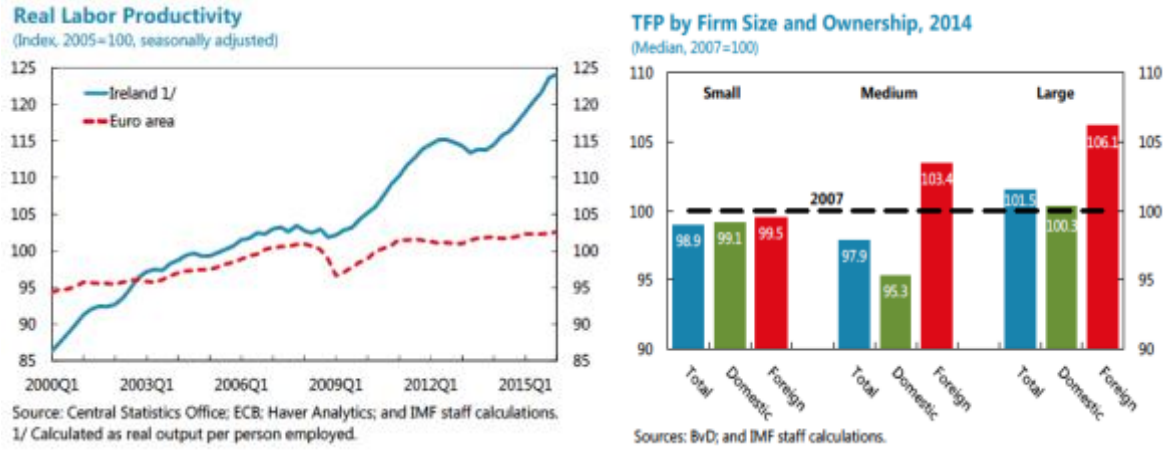
[16] World Bank, "Ease of Doing Business Index."
[17] "The Global Competitiveness Report 2016-2017."
[18] IMD, "IMD World Competitiveness Online."
[19] European Central Bank, "Selected Euro Area Statistics and National Breakdowns."
[20] Houlder, Boland, and Politi, "Tax Avoidance."
[21] "European Commission - PRESS RELEASES - Press Release - State Aid: Ireland Gave Illegal Tax Benefits to Apple Worth up to €13 Billion."

The economic recovery also reflects Ireland's strong competitive position, evidenced by relatively low unit labor costs and labor productivity growth outpacing the rest of the region. This growth has been partly attributed to the strong presence of large multinational corporations in Ireland. The IMF says that "the flexibility and extreme openness of the Irish economy, where multinationals—including offshore financial institutions—are major employers and investors, were key for the recovery".[22]

However, Ireland's total factor productivity (along with other developed countries) has been falling and the IMF, among others, have pointed to, "domestic firm-level factors, including limited access to finance, weak financial soundness, and low research and development (R&D) activity".[23] The OECD also notes that, "Ireland ranks last in the OECD for public investment as a share of government expenditure. Although the infrastructure quality remains above the EU average, it lags the "best in class" countries with which Ireland competes for high value-added exports. Technology infrastructure (broadband) and core infrastructure (power distribution and ports) need an upgrade, and maintenance of the existing infrastructure stock is not fully met."[24]

[22] IMF, "Financial System Stability Assessment - Ireland."
[23] IMF, "Ireland : 2016 Article IV Consultation and Fifth Post-Program Monitoring-Press Release; and Staff Report."
[24] OECD, "Economic Survey of Ireland - 2015."

FIGURE 2: Productivity



Source: IMF Ireland Article IV, 2016.

Recognizing these concerns, the Irish Government has committed €42billion of capital investment for the period 2016-2021. Priorities to be addressed include transport, broadband, education, health and flood defense. The government is also promoting access to finance through the establishment of the Strategic Banking Corporation of Ireland (SBCI), (a wholesale lender to frontline small and medium enterprise lenders) and the Ireland Strategic Investment Fund (ISIF), with the mandate to invest on a commercial basis in a manner that supports economic activity and employment in Ireland.[25]

Cluster focus: Dublin's Financial Services

Overview

Overall, there are approximately 430 companies and 35,000 workers in the International Financial Services Cluster in Ireland. Approximately 200 are foreign multinational companies and 200 are Irish owned IFS companies operating in a wide range of sub-sectors including Payments, FinTech, Insurance, Funds, & Business Products Outsourcing. In looking at the cluster maps one can see the investment and expansion made in the cluster by government and private sector business associations.

[25] Department of Finance and Department of Public Expenditure and Reform, "Summer-Economic-Statement-2016."

Insurance: The Central Bank has approved 61 life insurance companies and 134 non-life insurance companies.

Investment Funds: The value of investment funds domiciled in Ireland is EU$3.2T and these funds are managed by 900 asset managers from 50 countries.

Banking & Payments: The banking and payments sub cluster of Dublin Financial Services is focused on Dynamic Currency Conversion, Payment Processing Platforms and Payment Card Industry compliance. There are currently 25 companies focused on payments and 2000 people employed in this sub-cluster. There are some 430 credit institutions registered in Ireland.

Aircraft Leasing & Payments: Ireland possesses 50 per cent of all business in this field and hosts 14 out of 15 of the top lessors. Ireland has two competitive advantages in airport leasing: it was one of the first countries to sign and ratify the Cape Town Convention, the international treaty governing moveable property and has a web of 70 double taxation agreements with other countries including Asian countries in which demand for leasing has been on the rise.[26]

FinTech: FinTech in Dublin is an emerging sub-cluster of International Financial Services. In Ireland, FinTech includes the sub-clusters of Business Platforms and Outsourcing (BPO), Mobile Banking Payments, Fund Service, Securitization and Cyber-security. Some may argue that soon FinTech may be a cluster all unto itself. Citigroup, Master Card and State Street are among the financial giants that have selected Ireland for R&D projects that will shape the future of their businesses. Currently, there are three FinTech accelerators in Dublin:

- National Digit Research Centre, MasterCard, and Accenture Innovation Labs

[26] Source: The Financial Times, "Dublin determined to maintain its cutting edge in aircraft leasing", 2016

Relative to FinTech, Ireland and the UK have seen FinTech deals triple since 2011, with a five-year compounding growth rate for FinTech financing twice the global average and twice that of Silicon Valley.[27]

The sub-clusters of the FinTech sub-cluster include:

- BPO, which includes Data Analytics, Cloud Computing and Peer2Peer Analytics
- Mobile Banking and Payments, which has been very successful
- Funds Service Cluster, which is engaged in Alternative Investment Fund Managers Directive (AIFMD), Undertakings for Collective Investment in Transferable Securities (UCITS), and European Securities and Markets Authority (ESMA). This sector has 891 designated investment companies in this field; there are 127 registered Alternative Investment Fund Managers registered and authorized by the Central Bank and 660 Investment Funds.
- Cybersecurity: The University College of Dublin now hosts Europe's leading center for research and development in Cybersecurity, cybercrime and digital forensics.[28] Because of the recent focus on data privacy, increasing and more sophisticating phishing and scamming efforts, and growth identity theft, Dublin has found a new niche sector in an overlap between the technology and financial sectors.[29]

[27] Source: The Financial Times, "Fintech developers seek place on global map", 2016
[28] "UCD Centre for Cybersecurity and Cybercrime Investigation Research, Training and Degree Programs."
[29] "Ireland, A cybersecurity cluster, Deloitte Ireland"

FIGURE 3: Ireland Financial Cluster: Change in Share of World Exports

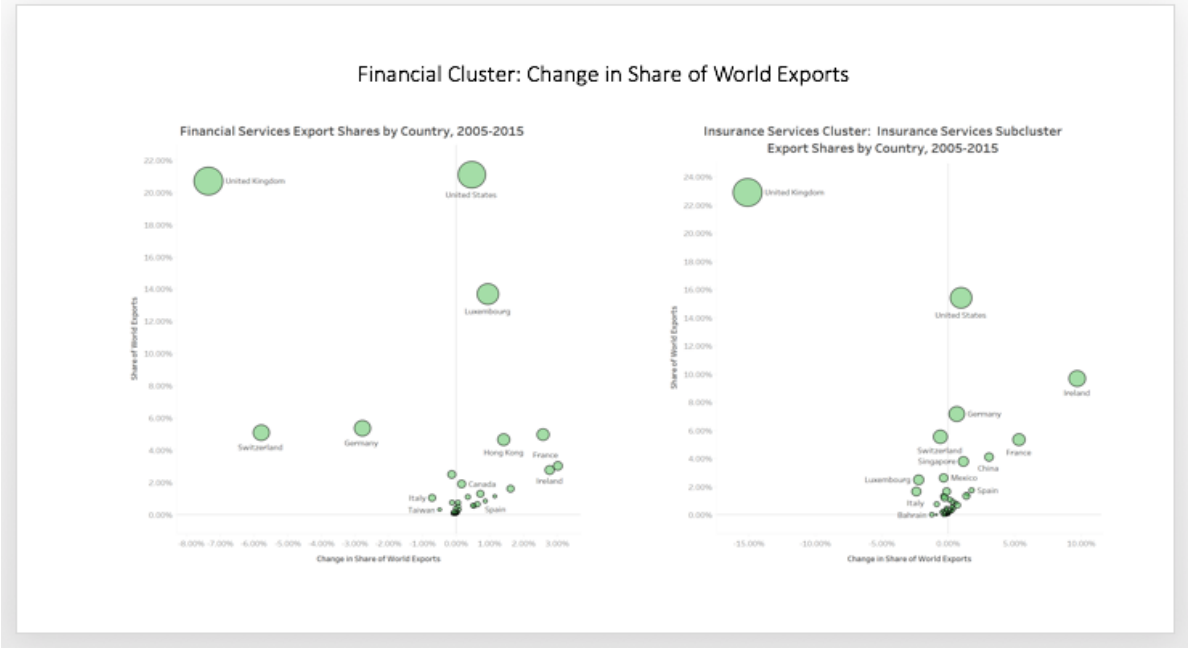
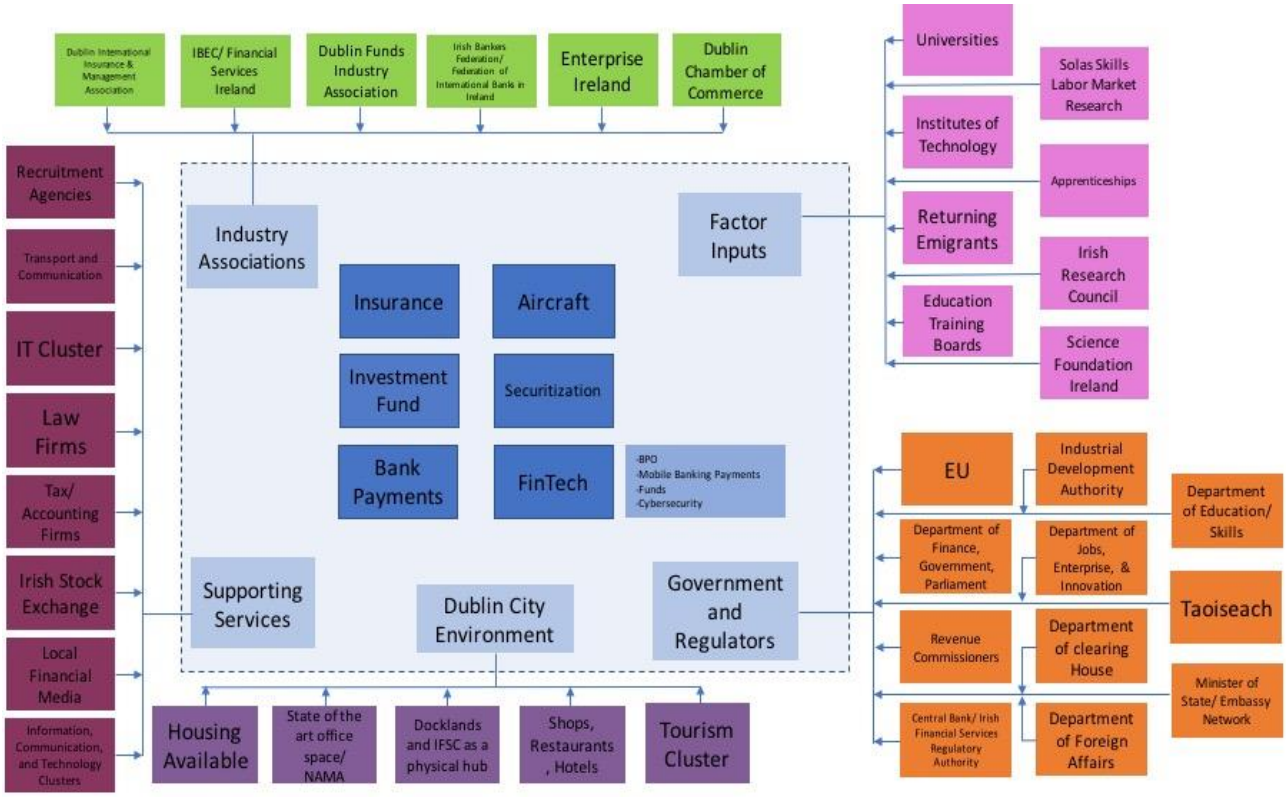


FIGURE 4: 2017 Cluster of the Irish Financial Services



Sources include IFS2020, "Dublin International Financial Services Cluster" HBS 2005

The cluster map of 2016 compares interestingly to the cluster map of 2005, reported by the Harvard Business School (HBS) MOC 2005. The comparisons of the two cluster maps (See Appendix 2) demonstrates the commitment made across the board from government, industry and academia. The 2016 cluster map illustrates the expansion of supportive government departments involved in growing the cluster. Industry has also coordinated into additional groups to help attract foreign investment and promote domestic entrepreneurship. Equally important, the universities, government and industry have collectively created more opportunities for workers to obtain the skills necessary to work in the sector.

The collaboration of industry, government and the universities and skill programs have helped foster the development of three new subsectors within the cluster: aircrafts and leases, securitization, and FinTech. Given that FinTech already possesses four sub-sectors within its sub-cluster of financial services, one can easily forecast that FinTech will soon be its own cluster outside of, but closely related to, Financial Services.

FinTech includes BPO, Mobile Banking Programs, Funds Service and Cybersecurity. Each of these sub-clusters in FinTech is the new generation of electronic, internet-communications-technology, that is expected to replace "brick and mortar" consumer services. As business to business and consumer financial services continue to grow on-line one can expect FinTech services to continue to grow and be on the cutting edge of the financial services industry. Dublin's emphasis on on-line banking services demonstrates its commitment to continue to keep pace with disruptive technological advancements.

In the Global Financial Centres Index, Dublin has recovered from a ranking of 70 out of 83 countries in 2011, to 33 in 2017 and is forecast to climb to eight in the next couple of years. There are three main reasons for this improved forecast for Dublin:

- The Irish Government, through the IDA and Enterprise Ireland, are positioning Ireland for growth by maintaining a schedule of aggressive benefits to locating in Ireland and providing support to the cluster such as Centres of Excellent in the field of Financial Services;
- The Irish Government is positioning Ireland to take advantage of the "relocation needs" of UK companies who will be adversely impacted without "passporting" rights due to Brexit;
- Dublin has a mature digit and technology cluster that has created great synergy with the Financial Sectors and is considered an innovative global leader in FinTech.

Going Forward

Going forward, Dublin, through Ireland's International Financial Services (sector) has strategized a plan to "drive continued growth and job creation" in the sector.[30] The vision of the IFS is to "be the recognized global location of choice for specialist international financial services building on our strengths in talent, technology, innovation and excellent client service, while focusing on capturing new opportunities in a changing marketplace and embracing the highest standards of government."[31]

The plan is aggressive, on point and fully takes advantage of the strengths of the cluster. The strategic priorities are:

1. Promote Ireland as a Location for International Financial Services & world class innovative products and services,
2. Drive continuous improvement in the operating environment & competitiveness of Ireland's IFS sector,
3. Drive research, innovation & entrepreneurship in the IFS sector, with a 'particular focus' on financial technology & governance, risk and compliance,
4. Develop job-creation opportunities from emerging IFS sub-sectors & new markets,

[30] "IFS2020.pdf."
[31] Ibid.

5. A new implementation framework for IFS2020.[32] (For more in depth action items see Appendix 3, and for a Strategy Review Test, Appendix 4).

Dublin Financial Cluster – Competitiveness Assessment

Cluster Competitiveness

Having described the Dublin financial cluster and understood its many moving parts and layers, it is important to ask the following question: how competitive is this cluster vis-à-vis financial clusters in other cities? To answer this question, we must first ask: what drives the performance of a cluster in general? There are several components to this response.

Cluster performance is driven firstly by its depth. A deep cluster is characterized by strong linkages both within the cluster and between other clusters in the same region.

On a macro level, the general business environment is another key driver of cluster performance. The following are some of the general features of a favorable business environment:

- Macroeconomic and political stability
- Legal system with enforceability mechanisms and protections
- Strong property rights and rule of law

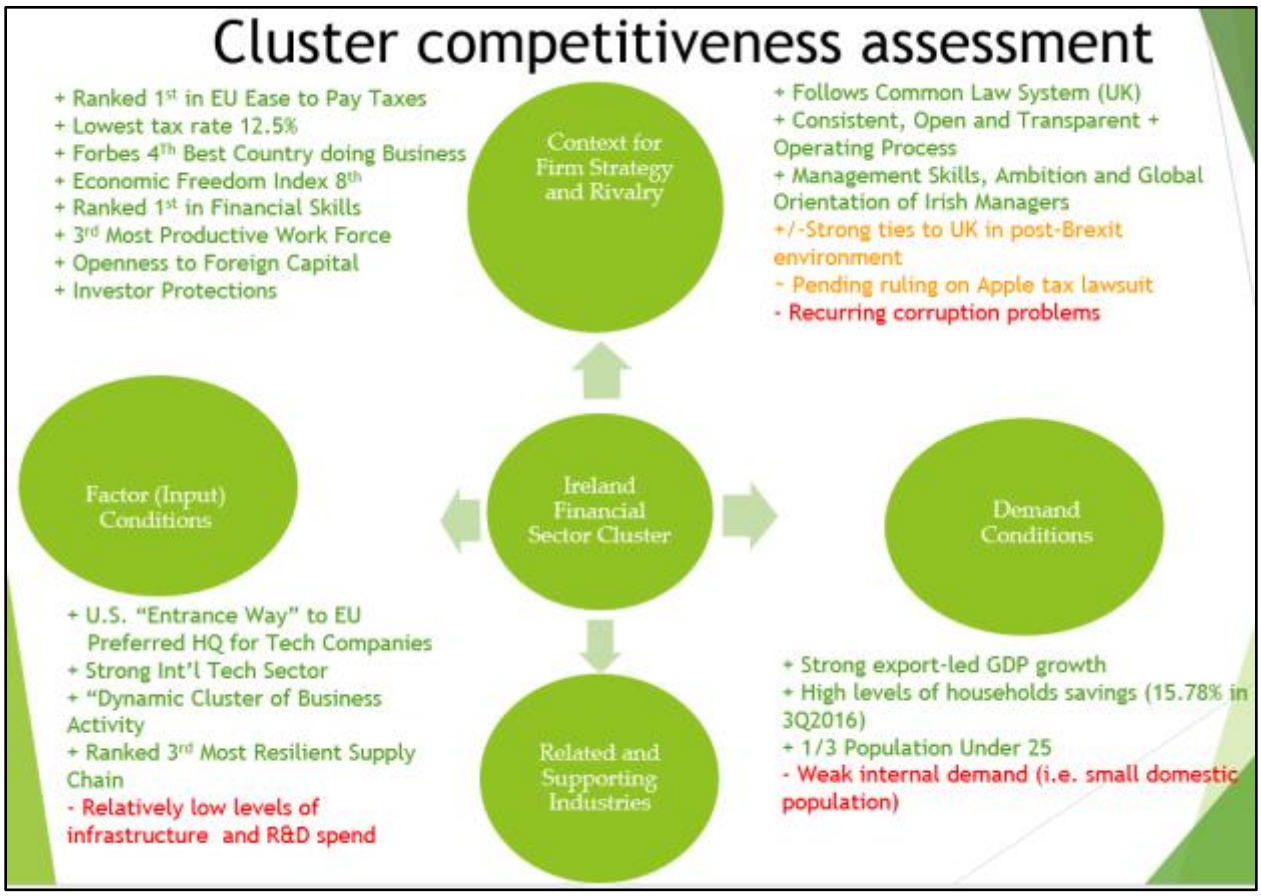
On the micro level, cluster performance is driven by the quality of individual firms and institutions within the cluster. Objective measures of quality are profitability and financial health metrics. More qualitative measures of micro-level quality relate to firm strategy and geographic footprint, factors which can be influenced by the overall cluster.

Ultimately, cluster competitiveness is driven by the interaction of these multiple factors. The 'Diamond Model' was developed at Harvard Business School as a framework to analyze how the various factors that determine cluster competitiveness interact. Policymakers can make clusters more competitive by addressing the various factors listed in the diamond model.

[32] Ibid.

We've applied the Diamond Model to Dublin's financial cluster to assess its strengths and weaknesses:

FIGURE 5: Dublin Cluster Competitiveness Assessment



Context for Firm Strategy and Rivalry → *Highly favorable business environment but potential headwinds from Brexit and pending tax regime lawsuits*

Strengths

Ireland's tax regime played a large role in the development of its financial cluster as it enabled the country to attract foreign companies. In a study published in 2016 by PwC and the World Bank, Ireland was identified as the easiest place for companies to file and pay taxes in the EU.[33] Its 12.5%

[33] Source: Irish Times, "Ireland Sixth Easiest Place for Firms to File and Pay Taxes", 2016

tax rate on corporate trading profits is the lowest in Europe and one of the lowest in the world, though it has the fifth highest rate of capital gains tax in the OECD at 33 per cent. Importantly for the financial cluster, the tax rate for foreign dividends is effectively zero for portfolio investors (i.e. dividend is part of shareholder's trading income) domiciled in Ireland.[34]

In 2016, Forbes ranked Ireland as the fourth best country for doing business based on the following 11 factors: property rights, innovation, taxes, technology, corruption, freedoms (personal, trade and monetary), red tape, investor protection and stock market performance.[35] As it relates to the financial sector, this high ranking primarily reflects Ireland's openness to foreign capital and its strong investor protections. The IMD's World Talent Report 2016 shows Ireland is first in the world in terms of the attractiveness of investment incentives to foreign investors, and openness to foreign investors.

Potential headwinds / areas for development

Brexit's impact on Dublin's financial cluster is uncertain. On one hand, Ireland's economy is strongly linked to the UK: 36 per cent of the total volume of Irish exports are to Britain and specifically 34 per cent of all financial services exports.[36] On the other hand, multinational financial services firms that currently base their European operations out of Britain might look to Ireland as the natural replacement. In addition to speaking the same language (English) and being physically proximate, Ireland follows the "Common Law" System that is adhered to in the UK, all factors which could make for a seamless transition. Amidst this uncertainty, Irish policymakers can play a critical role in determining whether Brexit has positive or negative consequences for the Dublin financial sector.

[34] Source: IDA Ireland "Invest in Ireland", 2017

[35] Source: Forbes "Sweden heads the best countries for business", 2016

[36] Source: The Journal "Britain is not Ireland's most lucrative EU trading partner – Belgium is", 2016

Another potential headwind for Dublin's financial cluster is changes to its tax regime. As discussed in the previous section, Ireland's tax system has historically allowed it to attract foreign companies. However, in December 2016 the EU ruled that Apple, the US-based tech company, should pay up to €13 billion in back taxes claiming that its tax arrangements in Ireland were illegal.[37] Regardless of the outcome of this case, which likely won't be resolved for years, the European Commission is making a clear statement that it is waging a war against what it views as corporate tax avoidance and countries offering tax havens. Whether Ireland is forced to increase its tax rate remains to be seen but we expect to see the difference between its effective and statutory rates dissipate.

Factor (Input) Conditions → *Very high quality human capital but reported scarcity of talent, low levels of public infrastructure investment, subpar financial capital availability and insufficient real estate to meet sector's growing needs*

Strengths

Ireland's human capital is a key source of competitive advantage. According to the IMD World Competitiveness Report 2016, Ireland ranks first in the world for the flexibility and adaptability of its workforce and features the third most productive workforce. In addition, 43 per cent of the working age population has completed third level education, with Ireland possessing the highest proportion of science, mathematics and computing graduates in the OECD. [38]

Ireland is also a natural beneficiary of its geographic positioning between the United States and the EU.

Potential headwinds / areas for development

While few doubt the *quality* of Irish human resources, there are concerns about the *quantity* of quality workers should financial services firms seek to move their operations to Dublin.[39] On the one

[37] Source: BBC "Apple fights back with appeal against EU Irish tax ruling", 2016
[38] Source: IDA Ireland "Invest in Ireland", 2017
[39] Source: Irish Times "Ireland lacks talent quantity in scramble for Brexit finance firms", 2016

hand, the IMD survey rated Ireland 5th best in the world in terms of the perceived availability of skilled labor and 1st for finance skills. In addition, the IDA contends that many Irish expatriates would move back to Dublin should the jobs be moved there. However, the European Commission identified a labor shortage in 'Financial and Business Services Professionals' in Ireland, specifically in the fields of risk, compliance, accounting, business intelligence and data analytics (NCC 2017 report). Furthermore, the 'Expert Group on Future Skills Needs' identified an Irish shortage in clerical personnel (e.g. multilingual financial clerks in fund accounting/administration, credit controllers & payroll specialists).

The Dublin real estate sector is currently not equipped to accommodate a large influx of both companies and talent. The city already suffers from a residential housing shortage. Rent is less affordable in Dublin than in other major financial market hubs like Frankfurt, Brussels and Singapore and residential rents are projected to increase due to continued limited supply of residential property (NCC 2017 report). In terms of commercial property, there is scant availability of office space which has also driven up commercial rents: prices have increased between 15.5 per cent and 19 per cent, depending on the part of Dublin that is being analyzed (NCC 2017 report).

Ireland's financial cluster is not well-equipped to address the needs of domestic entrepreneurship. According to the World Economic Forum, Ireland's levels of financial market sophistication, venture capital and credit availability are all below OECD averages.[40] Also, despite significant reductions, interest rates charged to Irish SMEs (small and medium-sized enterprises) are 60 basis points higher than those charged to UK SMEs and 20 basis points higher than the average charge across the European Union (NCC 2017 report).

Ireland ranks last in the OECD for public investment as a share of government expenditure and has relatively low public expenditure on R&D. R&D spending is linked to the financial services industry

[40] Source: WeForum "Pillar 7: Financial Access", 2012

insofar as R&D is linked to innovation which is key to securing new competitive advantages in commercial services. Irish spending on infrastructure as a percentage of GDP has historically been around 2 per cent, also lagging OECD peers.[41] In technological infrastructure, which is critical for the financial services industry that must execute global transactions as quickly as possible, Ireland lags the UK. According to the National Competitiveness Council's 2017 report, business fixed-broadband charges are almost 10 per cent cheaper in the UK and average bandwidth speed is slower (23rd vs 17th in global rankings).

Demand Conditions → *Strong domestic economic growth and supporting institutions but lacking depth due to small domestic population*

Strengths

Ireland has experienced robust GDP growth in the past few decades having averaged annual real growth of 6.5 per cent between 1990 and 2008 and 4.9 per cent most recently in 2016. Its demographics are favorable as Ireland has the youngest population in the EU with one-third of its population below the age of 25. The household savings rate of 15.78 per cent (Q32016) stands above the EU average. These factors imply favorable internal demand for financial services in both the short- and long-term. Furthermore, these strengths are supported by the presence of strict quality, safety and environmental standards in Ireland.

Potential headwinds / areas for development

Despite strong GDP growth and favorable demographics, the fact remains that Ireland is one of the smallest countries in the EU with a population of 4.6 million. As a result, the competitiveness of the Dublin financial sector will inevitably depend on its appeal to international companies and customers.

Related and Supporting Industries → *Robust IFCs and related industries*

Strengths

[41] Source: International Monetary Fund Country Report Ireland 2016

Insofar as the Dublin financial cluster seeks to develop its fintech sub-cluster, the presence of several large international technology companies is critical to its competitiveness. Google, Apple, IBM and other large global technology companies have established sizable operations in Ireland including the European headquarters for some companies like Microsoft.

The 2016 FM Global Resilience Index ranks Ireland as the third most resilient supply chain in the world.[42] This ranking reflects the view that Ireland has low risk of natural disasters, of political turmoil and corruption, or of supply chain disturbances. It also reflects the high quality of local suppliers.

Dublin's financial services cluster benefits from institutions for collaboration (IFCs) such as the IDA (Industrial Development Authority) Ireland and Enterprise Ireland. IFCs have grown in number and in strength over the past decade. However, Ireland lacks cluster organizations that link efforts across and within clusters.

Key Competitor Clusters

Identification of key competing clusters

The global nature of most financial services puts Dublin into competition with dozens of other international financial centers. The Global Financial Center Index (GFCI) currently ranks Dublin 33rd out of 88 global financial centers, and the fifth most important financial city in Western Europe.[43]

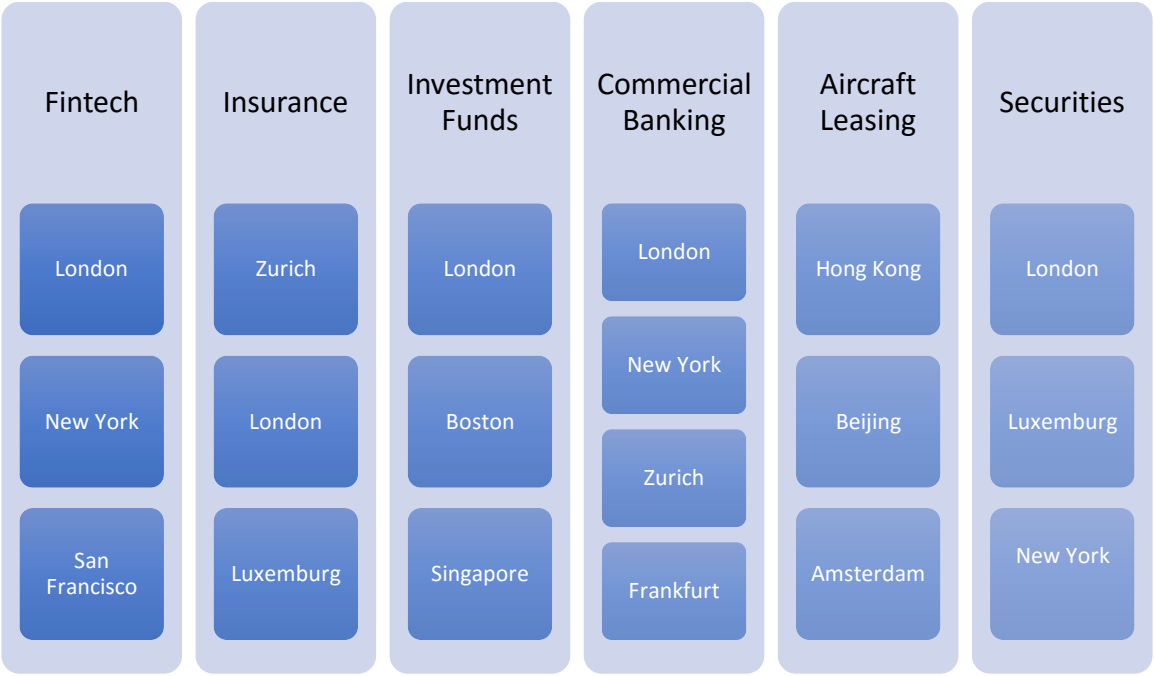
Dublin competes most directly with other EU-based financial services clusters, that operate in the same regulatory environment as Dublin and also enjoy access to the EU single market. Among Europe's IFCs, London, Frankfurt, Luxembourg, and Paris are the most relevant competitors for Dublin (see Appendix 1). They also rank ahead of Dublin in the GFCI, with London – even after Brexit – holding the top rank, Luxembourg placed 18th, followed by Frankfurt (23th) and Paris (29th).[44] With the UK's decision to leave the European Union, competition among these financial

[42] "Global Resilience Index 2016 - AnnualReport."
[43] Z/Yen Group, "Global Financial Center Index 21."
[44] Ibid.

centers has sharply increased, and is likely to become fiercer as the implications of Brexit become clearer over time.[45]

It is worth noting, however, that a lot of Dublin's various financial sub-clusters compete at a global rather than regional scale within their specialty area, often based on a small set of highly relevant factors, such as the presence of a local industrial or technological base, regulatory aspects, or specific taxation rules. Figure 6 gives an overview of the competitive environment of some of Dublin's specialized services.

Figure 6: Global competitors for Dublin financial sub-clusters



[45] "Picking up the Pieces: European Financial Centres after Brexit | The Economist."

Brexit

Economic Implications

The economic implications of Brexit for Ireland will ultimately depend on the terms of the agreement to be negotiated between the UK and the EU.

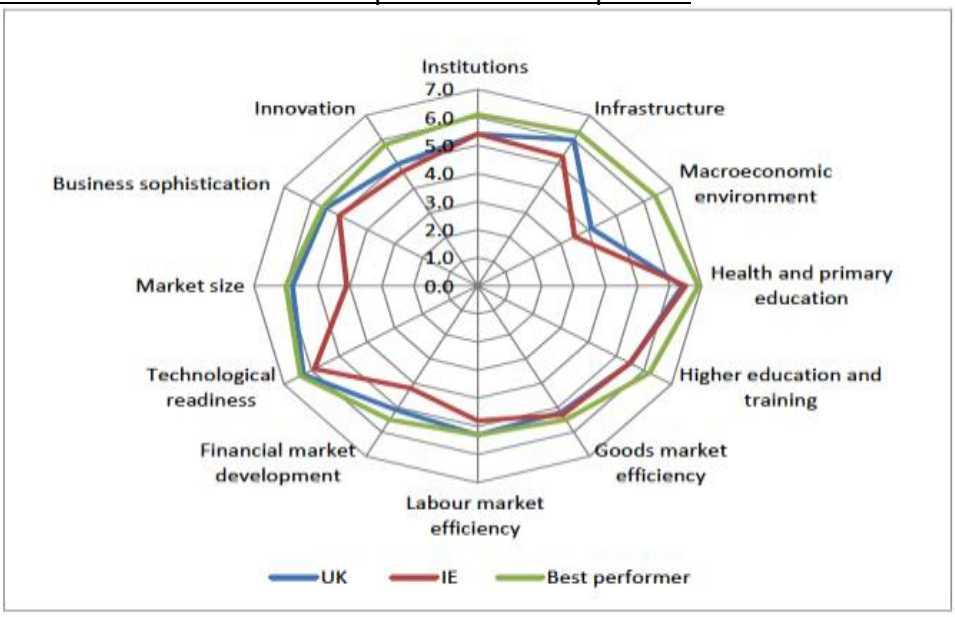
Assuming Brexit has a negative impact on UK growth as expected, Ireland's close trade and people links with the UK are likely to lead to a negative economic impact for Ireland. For example, Economic and Social Research Institute (ESRI) indicates that for each 1 per cent decline in UK GDP, Irish GDP tends to fall by 0.3 per cent.[46] The Central Bank of Ireland has estimated that a worst case (WTO) scenario with no bilateral trade agreement between the UK and the EU would result in a 3.2 per cent decline in the level of Irish GDP after 10 years (relative to the no-Brexit baseline).[47]

It has also been suggested that Ireland may be able to offset some of this negative impact by attracting some of the FDI inflows into the UK. However, the ESRI concluded that "changes in the UK's attractiveness to new FDI would impact only marginally on Ireland's attractiveness to current FDI. This result is consistent with the evidence indicating that Ireland's attractiveness to FDI is already high relative to its size and geographical position in Europe".[48]

From Figure 6 below, the UK has some clear competitive advantages over Ireland,

[46] Barrett et al., "Scoping the Possible Economic Implications of Brexit on Ireland."
[47] Central Bank of Ireland, "Central Bank Quarterly Bulletin."
[48] Barrett et al., "Scoping the Possible Economic Implications of Brexit on Ireland."

FIGURE 6: UK and Ireland Competitiveness Comparison



Source: Based on data collected with the Executive Opinion Survey conducted by the World Economic Forum, *Global Competitiveness Report 2014-2015.*

Source: ESRI, Scoping the Possible Economic Implications of Brexit on Ireland.

Implications for Europe's Financial Sector

The implications of Brexit for the financial services clusters in London, Dublin, and other EU-based financial centers, will depend on the outcome of the UK's negotiations with the EU, and whether or not the country can maintain access to the EU's single market. If it cannot, it is highly likely to lose its so-called passporting rights – which currently allow London-based firms to offer financial services to other EU countries –, and its ability to attract and hire talent from other EU countries. Such effects could entail a process of partial de-clustering and the relocation of some financial services operations from London to other EU financial centers.

Yet, the unmatched agglomeration of financial institutions and adjacent clusters in London's City has led many finance sector specialists and journalists to doubt a severe relocation trend from London towards other EU capitals.[49]

[49] "No, Paris Will Never Be the New London."

Nonetheless, the relocation of – at least parts of – London's financial services is highly likely, in the event of a hard Brexit. So how much business could be up for grabs if the UK loses its passporting rights? The Financial Conduct Authority estimates about 5,500 UK firms use passporting to do business on the continent, and that 8,000 companies based in Europe use it to access the UK. The UK Parliament's report[50] breaks London's finance activities into banking, insurance and reinsurance, asset management and clearing transactions. For banking, £25bn in revenues, or about 23 per cent of total retail and corporate banking, comes at present from EU-related business. The cumulative costs for banks of reorganizing their activities and complying with EU rules, including the opening of subsidiaries in EU countries, may reach £5bn-£8bn. For asset management, some £2bn-£3bn, or roughly a third to a half of total UK revenues from EU-related business, might be lost to the UK. If euro-denominated clearing is relocated to EU financial centers, about £6bn, or just over half of the City's revenues from this business, could be lost to competitors. [51]

A Brussels-based think tank, Bruegel, estimates that 35 percent of London's wholesale banking involves clients in other EU nations involving EU1.8 trillion (US$1.9 trillion) in euro-denominated assets – some 17 percent of the U.K. total under management – who might be obliged on regulatory grounds to exit Britain whenever an EU exit becomes reality. Traveling with them, Bruegel has calculated, could be 10 to 15 percent of British-based account managers and traders.[52]

In this context, the main question has become: which financial clusters are going to pick up the pieces? Dublin, Frankfurt, Paris, and Luxembourg are all considered to be high up among potential beneficiaries (see Figure 7).

FIGURE 7: Competitiveness of European Financial Centers

[50] "Brexit: Financial Services."
[51] Ibid.
[52] Batsaikhan, Kalcik, and Schoenmaker, "Brexit and the European Financial System."

	Connectivity	Law	Business environment	People	Critical mass	Financial market infrastructure	
Financial Services Attractiveness Indicator	**Market access (1 for passporting, 1 for reserve currency)**	**Strength of legal rights (0 = weak, 12 = strong)**	**Ease of doing business ranking**	**Employment (15-64) with tertiary education (%)**	**Domestic credit to private sector (% of GDP)**	**Activities auxiliary to FS as a % of total GVA**	**Index score (0-100)**
Weighting	*30%*	*14%*	*14%*	*14%*	*14%*	*14%*	
London	2	●	●	●	●	●	**68.8**
Dublin	2	●	●	●	●	●	**61.4**
Luxembourg	2	●	●	●	●	●	**52.1**
Paris	2	●	●	●	●	●	**49.4**
Vienna	2	●	●	●	●	●	**48.0**
Amsterdam	2	●	●	●	●	●	**47.8**
Frankfurt	2	●	●	●	●	●	**47.6**
Stockholm	1	●	●	●	●	●	**45.1**
Warsaw	1	●	●	●	●	●	**29.7**

● Above average of the 9 financial centres ● Below average of the 9 financial centres
Note: Strong legal rights mean that parts of the legal system facilitate a high degree of access to credit
Sources: PwC analysis, World Bank, Eurostat

The early running suggests that Frankfurt is out in front in terms of attracting business away from the UK, according to the Financial Times.[53] "The big prize is the clearing of trades in euros, which London dominates but which both Frankfurt and Paris hope to snaffle"[54], and given Frankfurt has the most sophisticated clearing system in Europe, it is well-positioned to pick up that priece. Frankfurt is also likely to attract operations from some of London's international banking sector that is looking to keep offering its services in the EU, while simultaneously being close to the European Central Bank and its regulatory clout.

Luxembourg is another important competitor for Dublin post-Brexit: with its strong sub-clusters in asset management and insurance, it is likely to pick up some of the jobs in these financial subsectors relocating from London to maintain passporting rights. [55] Luxembourg has a much more favourable regulatory regime for insurance companies[56], having already led the Irish to complain about 'regulatory arbitrage', after the decision by AIG to establish its EU base in Luxembourg. Lloyd's of London, and Blackstone and Carlyle are also tempted.[57]

[53] Shotter, Noonan, and Martin Arnold, "Frankfurt Takes Early Lead in Brexit Race to Poach City Jobs."
[54] "Picking up the Pieces: European Financial Centres after Brexit | The Economist."
[55] Shotter, Noonan, and Martin Arnold, "Frankfurt Takes Early Lead in Brexit Race to Poach City Jobs."
[56] Boland et al., "Irish Complain about Rivals in Brexit Race for London's Business."
[57] "Picking up the Pieces: European Financial Centres after Brexit | The Economist."

Paris has launched an aggressive campaign to attract some of the financial services sector currently located in London. Prior to the referendum, former minister of the economy and now presidential candidate Emmanuel Macron, announced France would roll out the red carpet for financial firms relocating to Paris in the coming years[58]. La Défense, the city's financial district, is currently adding seven more skyscrapers to accommodate business expansion over the coming years[59]. Efforts are being made to make the city more attractive to cosmopolitan top earners by recently changing tax rules in favor of foreign workers. Based on its sub-clusters, Paris is relatively well-positioned to pick up EU-oriented commercial banking operations – HSBC has already made announcements[60].

Within the light of all this competition, some market experts are still highly optimistic on Dublin overtaking London as Europe's top financial center in the wake of Brexit:[61] A recent PwC report ranked London the top European financial center and Dublin the second, further suggesting that Ireland could replace London as Europe's leader in financial services post-Brexit.[62] John King of Knight Frank made the prediction that Dublin could acquire 13,000 (15 per cent) jobs post Brexit, based on information from the European Parliament, British Banking Authority and Bruegel.[63] Some caution however, seems warranted: the Central Bank has stated that, "a substantial proportion of Brexit-related queries at this stage relate to a further scaling up of already-sizeable lines of activity or an expansion of the range of activities of currently-licensed financial entities"[64].

In the end, many of the opportunities Dublin might stand to benefit from post-Brexit, will depend on Irish capital proactively pursuing a well-targeted growth strategy for its financial cluster,

[58] "No, Paris Will Never Be the New London."
[59] "Paris Announces Seven Skyscrapers to Boost Post-Brexit Business."
[60] "Picking up the Pieces: European Financial Centres after Brexit | The Economist."
[61] Staff, "Dublin Could Overtake London as the Most Attractive Financial Centre in Europe."
[62] Kennedy, "Dublin Has Potential to Be Europe's Most Attractive Finance Hub."
[63] "Dublin Is Ranked Fifth in EU for Financial Services."
[64] Lane, "Remarks by Governor Philip R Lane at Barclays European Financial Capital Summit | Central Bank of Ireland."

while convincingly advertising its competitive advantages to businesses and operations looking to relocate from London.

Recommendations

1. **Develop Specialized Niches**

- Develop and grow specialized niche markets such as securitization, business product outsourcing and cybersecurity. Reinforce and buttress Ireland's strengths such as education, ease of doing of business, and cultural links. Joe Duffy, country executive in Ireland for BNY Mellon, names Dublin's, "proximity to London and lower costs" as two big attractions for Dublin. For instance, Dublin could aim to develop an EU-focused legal services cluster given that it is English speaking and follows the English common law system.

2. **Grow Clout**

- The city has established itself as an international center because it has concentrated on specific areas such as global funds administration which has ballooned from under €500bn to €3.8tn as of last September.[65] Similar growth and agglomeration strategies should be pursued for sub-clusters where Dublin has a competitive advantage over other EU-based financial clusters. Dublin's infrastructural limitations could be circumvented by attracting new business to other major Irish cities.

3. **Improve Cluster Linkages**

- The International Financial Services Center (IFS) must continue with such planning processes such as IFS2020 with annual reviews, benchmarks, measurements and strategic initiatives to improve the agglomeration of cluster components.

[65] "Dublin Ecosystem Offers Fertile Ground for Growth."

4. **Invest in Underlying Infrastructure**

- Invest in infrastructure including hard infrastructure such as transportation and housing. Furthermore, there will be a need to expand on other infrastructure that support incoming talent, such as quality schools, childcare spaces and others. Whilst the new international school that is being built in Dublin is a good start, more will be needed to accommodate growing numbers of expatriates.

5. **Embrace Brexit as Strategic Opportunity**

- As in the recommendation for Developing Specialized Niches, Dublin and Ireland must focus on the sub sectors of the Financial Cluster in which Dublin performs better than its competitors. Because Dublin does not have the infrastructure of a metropolis such as London or Frankfurt, it must strategically choose sectors that fit into the niche and boutique sub-sectors that will strengthen and add value to its cluster.
- Show to multinationals that Brexit is an opportunity to maintain tax status in view of changing US tax policy: Given that new tax regulation in the US is forcing Irish-based multinationals to prove that they have a "real" footprint in Ireland, Brexit should be embraced by the Irish government as an opportunity to show businesses a way to relocate employees to the Republic, thus both keeping a foot in the EU door, and maintaining its tax status by showing they have real presence here.

6. **Harness Spillovers of the Broader Irish Economy**

- Encourage International firms such as Google to conduct research and development, and establish incubators and accelerators in Dublin. Additionally, ask international firms to provide entrepreneurial mentorships to start-ups.

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- Eleanor Doyle, University College Cork

Bibliography

"Amazon to Hire 5,000 in Latest UK Tech Expansion." Accessed May 3, 2017. https://www.ft.com/content/7126e632-f535-11e6-95ee-f14e55513608.

Barrett, Alan, Adele Bergin, John Fitzgerald, Dereck Lambert, Mcoy McCoy, Edgar Morgenroth, Iulia Siedschlag, and Zuzanna Studnicka. "Scoping the Possible Economic Implications of Brexit on Ireland." *Research Series No 48, ESRI*, November 2015.

Batsaikhan, Uuriintuya, Robert Kalcik, and Dirk Schoenmaker. "Brexit and the European Financial System: Mapping Markets, Players and Jobs." *Policy Contribution*, 2017. http://bruegel.org/wp-content/uploads/2017/02/PC-04-2017-finance-090217-final.pdf.

Boland, Vincent, Oliver Ralph, Jonathan Ford, and Jim Brunsden. "Irish Complain about Rivals in Brexit Race for London's Business." *Financial Times*, March 14, 2017. https://www.ft.com/content/67d32988-08db-11e7-97d1-5e720a26771b.

"Brexit: Financial Services." UK House of Lords - European Union Committee, 2016.

"Brexit: Government 'May Have to Slash Corporation Tax' to Put Pressure on EU in Negotiations | The Independent." Accessed May 3, 2017. http://www.independent.co.uk/news/uk/politics/brexit-latest-business-corporation-tax-eu-referendum-article-50-a7376816.html.

Central Bank of Ireland. "Central Bank Quarterly Bulletin," July 2016. https://www.centralbank.ie/publication/quarterly-bulletins/quarterly-bulletins-list.

Department of Finance, and Department of Public Expenditure and Reform. "Summer-Economic-Statement-2016," June 2016. http://www.budget.gov.ie/Budgets/2017/Documents/SES/Summer-Economic-Statement-2016.pdf.

"Dublin Ecosystem Offers Fertile Ground for Growth." *Financial Times*. Accessed April 28, 2017. https://www.ft.com/content/826bd182-c3b7-11e6-81c2-f57d90f6741a.

"Dublin Is Ranked Fifth in EU for Financial Services." *Independent.ie*. Accessed March 31, 2017. http://www.independent.ie/business/commercial-property/dublin-is-ranked-fifth-in-eu-for-financial-services-35576496.html.

European Central Bank. "Selected Euro Area Statistics and National Breakdowns." *European Central Bank*. Accessed May 2, 2017. https://www.ecb.europa.eu/stats/ecb_statistics/escb/html/table.en.html?id=JDF_EXR_HCI_ULCT.

"European Commission - PRESS RELEASES - Press Release - State Aid: Ireland Gave Illegal Tax Benefits to Apple Worth up to €13 Billion." Accessed April 7, 2017. http://europa.eu/rapid/press-release_IP-16-2923_en.htm.

"Financial Services | Invest in Paris Region." Accessed May 3, 2017. https://investparisregion.eu/en/about-paris-region/sectors-excellence/financial-services.

"Global Resilience Index 2016 - AnnualReport." FM Global, 2016.

"Home | Deloitte International Tax Source." Accessed May 3, 2017. https://dits.deloitte.com/.

"Homepage - Frankfurt Main Finance." Accessed May 3, 2017. https://frankfurt-main-finance.com/en/.

Houlder, Vanessa, Vincent Boland, and James Politi. “Tax Avoidance: The Irish Inversion.” *Financial Times*, April 29, 2014. https://www.ft.com/content/d9b4fd34-ca3f-11e3-8a31-00144feabdc0.

“IFS2020.pdf.” Accessed April 1, 2017. http://www.finance.gov.ie/sites/default/files/IFS2020.pdf.

IMD. “IMD World Competitiveness Online,” 2016. https://worldcompetitiveness.imd.org/countryprofile/IE.

IMF. “Financial System Stability Assessment - Ireland,” July 2016.

———. “Ireland : 2016 Article IV Consultation and Fifth Post-Program Monitoring-Press Release; and Staff Report,” July 2016. http://www.imf.org/external/pubs/cat/longres.aspx?sk=44140.0.

“Ireland: A Cyber Security Cluster | Deloitte Ireland | Press Release.” *Deloitte Ireland*. Accessed April 1, 2017. https://www2.deloitte.com/ie/en/pages/about-deloitte/articles/ireland-cyber-security-cluster.html.

Kennedy, John. “Dublin Has Potential to Be Europe’s Most Attractive Finance Hub.” *Silicon Republic*, August 3, 2016. https://www.siliconrepublic.com/companies/dublin-financial-hub-post-brexit.

Lane, Philip. “Remarks by Governor Philip R Lane at Barclays European Financial Capital Summit | Central Bank of Ireland.” March 28, 2017. http://www.centralbank.ie/news-media/press-releases/governor-european-financial-capital-summit.

“Movinga: Best European Cities for Bankers Fleeing Brexit - Business Insider.” Accessed May 3, 2017. http://uk.businessinsider.com/movinga-best-european-cities-for-bankers-fleeing-brexit-2017-4.

“No, Paris Will Never Be the New London.” *Foreign Policy*. Accessed May 3, 2017. https://foreignpolicy.com/2016/06/14/no-paris-will-never-be-the-new-london-brexit-finance/.

OECD. “Economic Survey of Ireland - 2015,” September 2015. http://www.oecd.org/eco/surveys/economic-survey-ireland.htm.

“Paris Announces Seven Skyscrapers to Boost Post-Brexit Business.” *Dezeen*, February 27, 2017. https://www.dezeen.com/2017/02/27/paris-la-defense-business-district-seven-new-skyscrapers-brexit-france/.

“Picking up the Pieces: European Financial Centres after Brexit | The Economist.” Accessed May 3, 2017. http://www.economist.com/news/finance-and-economics/21717032-other-cities-compete-not-london-each-other-european-financial-centres.

Shotter, James, Laura Noonan, and Martin Arnold. “Frankfurt Takes Early Lead in Brexit Race to Poach City Jobs.” *Financial Times*, March 21, 2017. https://www.ft.com/content/fc39820c-05a2-11e7-ace0-1ce02ef0def9.

Staff, Fora. “Dublin Could Overtake London as the Most Attractive Financial Centre in Europe.” *TheJournal.ie*. Accessed March 31, 2017. http://www.thejournal.ie/dublin-financial-services-london-jobs-2-2907493-Aug2016/.

“TheGlobalCompetitivenessReport2016-2017_FINAL.pdf.” Accessed May 2, 2017. http://www3.weforum.org/docs/GCR2016-2017/05FullReport/TheGlobalCompetitivenessReport2016-2017_FINAL.pdf.

“UCD Centre for Cybersecurity and Cybercrime Investigation Research, Training and Degree Programs.” Accessed May 3, 2017. http://www.ucd.ie/cci/.

World Bank. “Ease of Doing Business Index,” 2016. http://www.doingbusiness.org/rankings.
Z/Yen Group. “Global Financial Center Index 21,” 2017. http://www.longfinance.net/images/gfci/gfci_21.pdf.

Appendix 1

London

London is the biggest and most important financial center in the world. It hosts the European headquarters of many international financial institutions, which use their London base to access the EU's single market, while benefiting from the unmatched density and accumulation of financial sector players in the City. London's financial services portfolio is highly diversified and specialized, making the cluster world-leading on derivatives trading, foreign exchange markets, international bank lending, money markets, international debt securities, and international insurance, as well as precious metal trading.[66] Like Dublin, the City has drawn a considerable amount of investment in Fintech, with the number of startups rising fast and big technology firms Amazon and Google currently building new offices for thousands of new employees in the city.[67]

London's clout and scale as a global financial center is unmatched, and – over the years – has created a strong set of adjacent business services sub-clusters, including lawyers, accountants, logistics, realty, IT infrastructure and communication services. Thirty years of consistent lobbying have also resulted in a highly favorable business, legal and regulatory environment, which is still one of London's major drawing points, compared to its competitors on the European continent. Corporate tax is scheduled to decrease to 17 per cent in 2020 (down from 28 per cent in 2010)[68]. Another important factor that sets the UK – but also Ireland – apart from its continental competitors is its common law system, which has been adopted widely for international finance, giving rise to a flourishing legal services cluster based in London, which provides legal services worldwide.

Soft factors which work in London's advantage relate to the city's abundant skills supply, use of the English language, and its rich urban culture.

Paris

[66] "No, Paris Will Never Be the New London."
[67] "Amazon to Hire 5,000 in Latest UK Tech Expansion."
[68] "Brexit: Government 'May Have to Slash Corporation Tax' to Put Pressure on EU in Negotiations | The Independent."

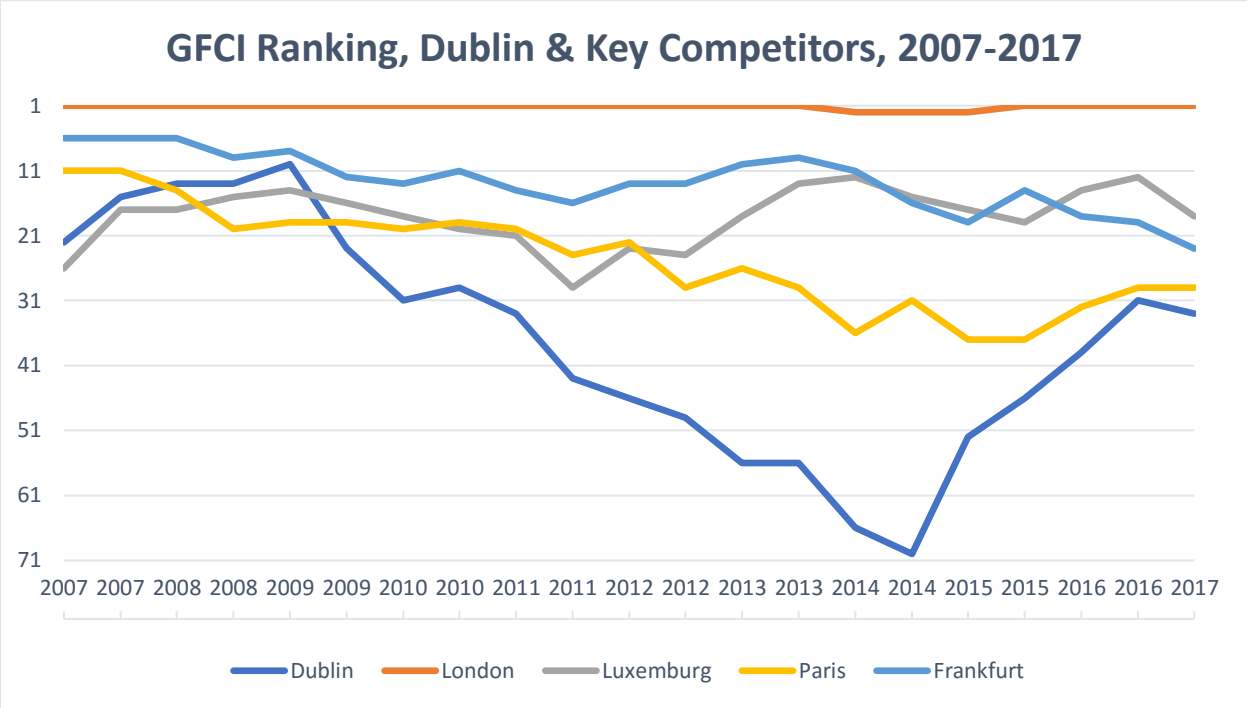
Paris itself is no small player among the Western European financial centers. 550,000 people, or ten percent of the city's workforce, work in finance. Its financial services portfolio is particularly strong on fund management and insurance. Paris is also a prominent center for equity and derivative trading, as well as commercial and investment banking. In terms of innovative sub-clusters, Paris aims to establish itself as a pioneer for social impact investment and innovative payment solutions. In 2007, the region launched the Finance Innovation competitiveness cluster, with more than 250 members, comprising major companies, SMEs, universities, training and research centers, and various public bodies.[69]

As a financial services center, Paris' reputation has long suffered from French politicians' unfavorable policies towards business and finance. The country's corporate tax of 33.3 per cent and top income tax of 49% are among the highest in the EU[70]. The regulatory environment is similarly challenging: heavy financial regulation and a rigid labor code have earned France rank 29 in the World Bank's ease of doing business index, with a score which equals the EU average[71].

Soft factors, that put Paris at par with other major financial centers are its talent pool supplied by the city's top universities, and the city's size and vibrant urban culture.

[69] "Financial Services | Invest in Paris Region."
[70] "Movinga: Best European Cities for Bankers Fleeing Brexit - Business Insider."
[71] World Bank, "Ease of Doing Business Index."

GFCI Ranking, Dublin & Key Competitors, 2007-2017



Frankfurt

Frankfurt, Germany, is the financial center of the EU's biggest economy. As such, the city is home to Deutsche Börse, the third biggest stock market in Europe, and a multitude of national and international commercial banks - the latter making up more than half of Frankfurt's banking sector - which benefit from Germany's strong industrial base and relative macroeconomic stability within the EU and the Eurozone. Frankfurt also hosts the European Central Bank (ECB), which decides the monetary policy for the Euro and has recently been given economic and financial supervisory powers over 18 Eurozone countries, effectively making it the financial center of the EU. In terms of its specialty portfolio, Frankfurt's financial center is developing some clout in terms of renminbi trading, and also

prides itself in a sizable and growing Fintech sub-cluster. In 2008, the association Frankfurt Main Finance e.V. was founded to market the financial center at home and abroad.[72]

Downsides relate to Germany's relatively high taxes and rigid labor law, as well as the city's limitations in terms of infrastructure. Germany has a combined corporate tax rate of 30-33 per cent, and levies a top income tax rate of 45 per cent[73]. Labor market rules are relatively rigid, and while Paris still scores worse on this account, London and Dublin make hiring and firing far easier for national and multinational companies alike.

Talent supply, and good global transport connections, with Frankfurt International Airport as a major hub just 20 min outside the city, are advantageous soft factors for the location, while limited housing supply and the city's small size put the cluster at a disadvantage.

Luxemburg

Luxembourg, currently ranked 18th in the Global Financial Center Index, although the majority of its service operations focus on the European market. Luxembourg's financial cluster is highly specialized: it is the largest investment fund center in Europe, and the most preeminent center for private banking in the Eurozone.[74] It also retains a large international banking sector. In terms of specialty areas, Luxembourg has developed a focus on Renminbi trading, for which it is the third largest center in the world, as well as Chinese investments in Europe.

Luxemburg's favorable tax and regulatory regime, with its relatively low corporate tax of 21 per cent (and many CT exemptions), tax incentives for multinational companies, and its tight bank secrecy laws for individual investors. With its high level of specialization, Luxembourg is developing increasing global clout for some of its sub-clusters, entailing international firms gravitating towards Luxembourg as their European headquarter.

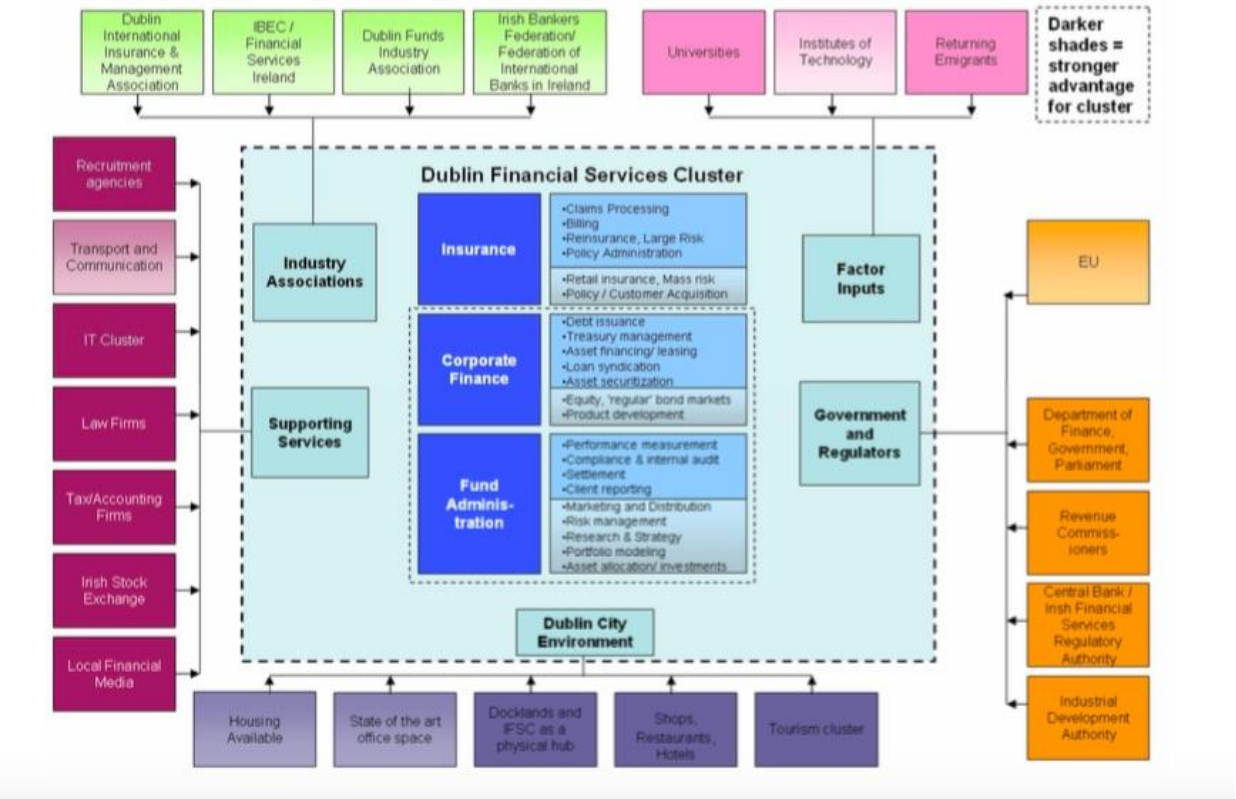
[72] "Homepage - Frankfurt Main Finance."
[73] "Home | Deloitte International Tax Source."
[74] Z/Yen Group, "Global Financial Center Index 21."

Despite its reputation as a tax haven, the World Bank rates its business climate poorly (59th)[75]. Homegrown talent is in short supply, and financial services companies tend to have a hard time recruiting talent from abroad, as Luxembourg seems to lack the flair and metropolitan vibe of London and Paris.

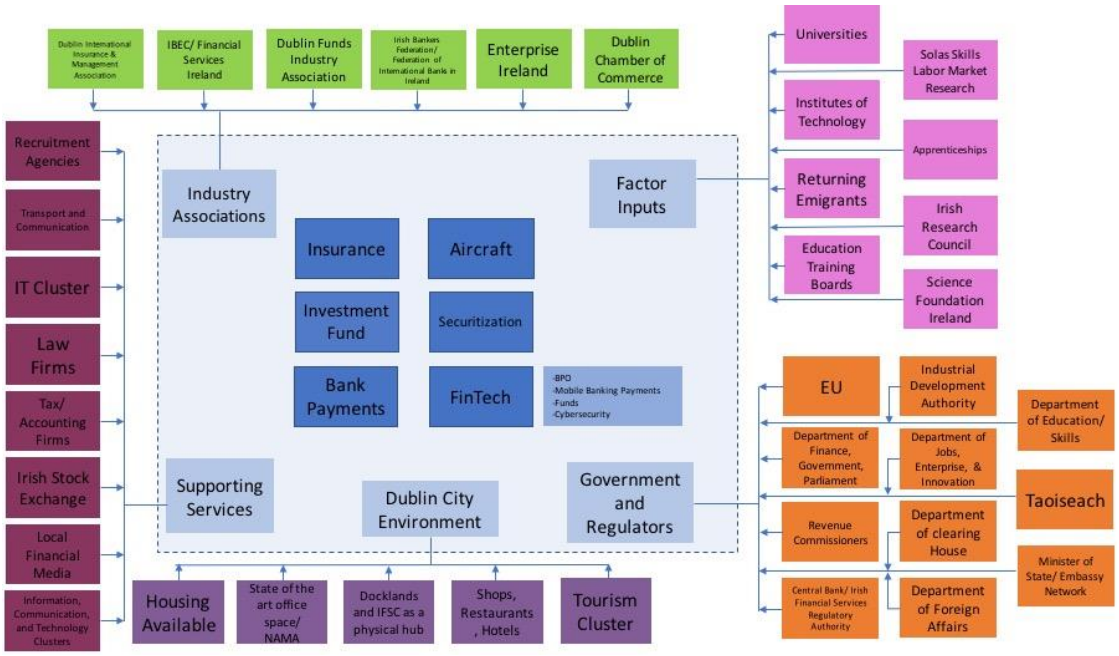
[75] World Bank, "Ease of Doing Business Index."

Appendix 2

Cluster Map 2005



Cluster Map 2016



Appendix 3 IFS2020 Action Items

The following are more specific action items of the IFS2020 implementation plan. It is important to note that this plan is reviewed each year for progress.

Action Item 1: IDA Ireland. Working through a dedicated IFS global team, IDA will actively promote and market Ireland as a high-quality location of choice for investment in IFS. This will be achieved working in partnership with key stakeholders at home and oversees including the Embassy network, with the intention of meeting investment and job creation targets to contribute to sector development and economic activity.

Action Item 2: Enterprise Ireland. Utilize the extensive EI (Enterprise Ireland) office network and dedicated Financial Services Global Team (FSGT) located in key target international markets to support the expansion and growth of Irish owned entities through increased international sales and exports to deliver on job creation targets and economic activity in Ireland, and in so doing, raise the profile of Ireland's expertise and capabilities in technologies and innovation in the IFS.

Action Item 3: Embassy Network. The IFS Public Sector Coordination Group will provide clear briefing materials and information to equip the Embassy network to engage in informed and insightful discussion, setting out the objectives, government support environment, existing enterprise base and distinctive strengths in IFS. Such briefings will be updated regularly, with presentations and/or verbal updates provided at regular intervals, including at local market team meetings, and annually to inform the update of local market plans.

Action Item 4: Embassy Network and Enterprise Development Agencies. Following the launch of IFS2020, the Embassy network and the overseas officers of the enterprise development agencies will ensure that appropriate priority is given to the IFS sector in their ongoing planning and activities, including through reviewing and updating local market plans, where applicable, and setting out actions that reflect the specific market potential, culture and resources:

This will include:

- A review of all Ministerial and o the r high-level visits to identify IFS opportunities;
- Identifying and collating significant local IFS developments and trends and disseminating information to relevant government departments including D/Taoiseach, D/Fin, D/JEI, D/FAT;
- Consultation with local Irish and international business networks, including Chambers of Commerce and members of the Global Irish Network and, where appropriate, the establishment of the new IFS-networks;
- Recommendation of International conferences and events where high-level attendance should be considered for the promotion of Ireland's IFS industry.

Action Item 5: Coordinated Approach to International Promotion of IFS: A coordinated international program of high profile IFS platform events, and oversea trade missions (Including Ministerial participation where appropriate) will be developed by the IFS public Sector Coordination Group in consultation with industry stakeholders. Industry representatives will be consulted on the international program and will be invited to participate in all appropriate events oversees.

Action Item 6: Targeted Secondments: Relevant Departments and Agencies will explore the possibilities of appropriate private-sector secondments both in Ireland and overseas to support the objectives of IFS2020.

Action Item 7: Export Trade Council: A representative from the IFS industry will be invited by the Minister for Foreign Affairs and Trade to participate in the Export Trade Council to reflect the priority attached to the sector and to support the Government's broader trade and investment activities.

Action Item 8: Banner Brand for the IFS Sector: Work with key stake holders, including industry associations, to develop a 'banner brand" and associated marketing material which will be used to promote Ireland's IFS sector, including during overseas trade missions and at selected international events.

Action Item 9: IFS Summit: Ireland will host a major IFS summit to highlight emerging trends and opportunities in the sector and facilitate the building of connections amongst investors, entrepreneurs, policy-makers, and representatives of leading global companies. This event will aim to attract leading international policy makers, companies, entrepreneurs and innovators across the sector with the intention of assisting them to build and renew relationships and pursue commercial opportunities, while simultaneously highlighting Ireland's role commitment and value to the global industry.

Article 10: Establish an IFS Education and Skills Liaison Group: Establish an IFS Education and Skills Liaison Group to provide a forum for the IFS industry to liaise with education sector stakeholders and relevant Government Departments and Agencies on implementing the skills/education elements of IFS2020, and to facilitate dialogue between industry, education/training providers and policy makers on emerging opportunities and challenges for the sector, feeding as appropriate into other fora and bodies including the Export Group on future skills Needs and the IFS2020 High Level Implementation Committee.

Action Item 11: IFS Training and Future Skills Needs Assessment: Deliver training needs and future skills needs assessment for the sector, taking into account the drivers of change within the industry, positioning for international competitiveness and the range of activities involved in a broader internationally Trading Financial Services sector.

Action Item 12: Enhance Finuas Network: Enhance the Finuas Network to take account of the broadening of IFS activities in Ireland with a "particular focus" on Payments and FinTech.

Action Item 13: Promoting IFS as a career choice: The IFS Education and Skills Liaison Group will consider ways to raise the profile of IFS career opportunities through new and existing career guidance initiatives and platforms. Industry will contribute to the development of IFS specific occupational information and multi-media content, to better inform school leavers and jobseekers regarding the nature and range of IFS opportunities.

Action Item 14: Talent Attraction-Employment Permits Critical Skills List: Ensure that the 6-monthly review of the critical skills list for employment permits continues to reflect the skills shortages experienced by the IFS.

Action Item 15: Talent Attraction-Single Website Portal: The Agencies with responsibility for engaging with industry to devise and implement a program around a single website portal, to attract international ICT talent.

Action Item 16: Placemaking and Regional Development: National-Reflect IFS appropriately in the planned Regional Action Plans for Jobs. Dublin-Further enhance the profile of the Dublin City region as a place to live, invest, grow a business and nurture innovation. Instigate a coordinate, partnership approach to forward planning and facilitation of Dublin's financial services ecosystem, taking into account the various dimensions that include: quality of life and culture, intra-city connectivity, welcome/landing services, events, workspaces, and the dynamic established through the Activating Dublin initiative.

Action Item 17: Marketing the overall opportunity in the SDZ. The is further scope for key stakeholders in the S DZ area to work together to market the overall opportunity to interested end user/investors in the IFS sector. In this context, Dublin City Council (as the SDZ Development Agency) will coordinate with the IDA, Enterprise Ireland and NAMFA (as funder and facilitator) around the identification of prospective end user demand with the focus on the pipeline of new space in the Dublin Docklands. Enterprise Ireland will consult with key stakeholders in the Irish start-up ecosystem regarding a designated IFS incubator space with the SDZ.

Action Item 18: Operational Metrics for Central Bank: The Central Bank and Department of Finance will, in accordance with their respective legal roles, review the authorization service standards reported by the Central Bank in 2015.

Action Item 19: Double Taxation Treaties. The Department of Finance, Revenue Commissioners, the Department of Foreign Affairs and Trade and the Enterprise Agencies will liaise with the IFS industry to identify potential target countries for consideration with regard to opening negotiations on double taxation treaties, and updating existing agreements where necessary.

Action Item 20. Financial Markets Infrastructure. Determine the position with regard to core markets infrastructure with input from the key stakeholders, examining key strategic issues dependencies and critical emerging issues.

Action Item 21. Drive Research and Innovation: Drive continued innovation in the IFS Industry by increasing the number of companies engaged in projects with research institutes though Technology Centers, Gateways and Strategies Research and Strategic Clusters including:

- Governance Risk and Compliance Technology Centre
- Centre for Applied Data Analytics Research
- Telecommunications Software & Systems Group
- The Irish Centre for Cloud Computing and Commerce
- INSIGHT Centre for Data Analytics
- The Financial Mathematics Computation Cluster

Action Item 22: Drive Research, Development and Innovation (RD&I) with existing firms. Encourage more IFS enterprises to Invest in RD&I, building on existing work to raise awareness of state investments and initiatives and to stimulate collaborative approaches between enterprises and between enterprises and research institutes.

Raise the profile and understanding of innovation in the financial services, and its potential impact in delivering economic and societal benefits. Facilitate peer-to-peer learning across companies, sectors and ownership through a semi-structural model of site visits, case study dissemination and on-line fora.

Action Item 23: Enhancing IFS-ICT sectoral collaboration, engaging both Irish-owned and foreign-owned SMEs and MNCs. IDA and Enterprise Ireland will work in partnership with other stakeholders to build a more cohesive financial technology ecosystem in Ireland to drive increased collaboration between Ireland's IT and international financial service sectors, indigenous and foreign-owned firms, and centers of research. The Agencies will expand and deepen the pool of FinTech companies and activities in Ireland by winning investment from both existing clients and new entrants.

Action Item 24: Sources of Funding for FinTech: Identify both domestic and international sources of funding for FinTech companies and develop an engagement process to facilitate introductions to investor ready companies. Review funding mechanisms for startups, including feasibility of developing a dedicated syndicate to fund FinTech start-ups.

Article 25: FinTech Accelerators. Partner with existing accelerators to support engagement and upskilling and the mentoring process with participating companies. Leverage EI's existing in –market advisory panels to support market activities. Identify other potential accelerator partners and examine the success of FinTech models in other jurisdictions, including the approach in these jurisdictions in relation to key enablers for enhancing the business environment and innovation ecosystem.

Action Item 26: Fund Services Cluster: Set up an indigenous "funds service cluster" and support the group to target key markets, in particular the UK and North America.

Action Item 27: Create a Payments Forum and develop a Sectoral Strategy for Payments. Create a payments Forum to coordinate sector-wide discussion and review of the Payments Industry in Ireland. This Forum should inform the development of a sectoral strategy paper, outlining a national approach to the future of Payments Industry.

Action Item 28. Business Process Outsourcing (BPO). Analyze the financial services capabilities of the BPO cluster in Ireland through a high level group and recommend actions to develop the international financial services capability of the BPO sector including a proposed "framework" of engagement with the banking industry.

Action Item 29. Securitization and Capital Markets. Develop a working group that will examine the opportunities for strategic positioning and skills enhancement.

Action Item 30. Data and Benchmarking. Relevant Departments and Agencies will work together to research, design and deliver a year-end annual IFS progress report, which will:

- Measure progress on implementation on the IFS2020 strategy
- Measure performance and trends in terms of economic impact of the IFS sector
- Assess risks to the sector
- Benchmark the competitiveness of the sector vis other international locations.

Appendix 4 -Strategy Test

Distinctive Positing	• Established Financial Services Sector • Strong Innovation Center/Strong Tech Sector • Entry way to the EU/English speaking-Follows Common Law
Potential Strengths	• Strong Business Climate • Easy to Do Business • Educated Workforce
Realistic	• Dublin is already recognized as a financial services Center • Has identifiable strengths to build on
Neutralize Weakness	• Infrastructure needs-housing and office space is being addressed • Strong marketing efforts • Strong initiatives to attract Research, Development & Innovation • Building Capital Markets
Broad thinking	• Expanding financial services by 1/3 • Building on Strong Technology and Financial Sectors • Moving toward FinTech, Payments, BPO and Funds innovation
Political Priorities	• Strong coordination between Government and Private Sectors • Top political priority • Includes both Domestic and International sectors of Government • Trade Missions • Focus on Developing Irish-owned companies
Communication	• Five year planning • Includes Forums to relay and develop ideas
Private Sector Engagement	• Strong industry groups: • Chambers of Commerce • Enterprise Ireland • IFS (Ireland Financial Services Centre) • IDA (Ireland Development Agency) • Talent Attraction Networks
Political Consensus	• Non-partisan focus
Structural Coordination	• Strong interaction between public (government-domestic and International agencies as well as the central bank) and private sector (Industry groups) • Strong interaction between universities, secondary schools & skills training
Review	• Central Bank and Department of Finance to Review Authorization Service Standards reported by the Central Bank annually • Review of Double Taxation Treaties and Targets • Relevant Departments and Agencies provide annual year end reports • Measure progress on implementation & performance • Benchmark competiveness of the sector vs. other int'l locations